



# Territory spatial planning and national governance system in China

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## ABSTRACT

Spatial planning refers to the long-term planning and overall arrangement of land resources and space layout under the jurisdiction of a country or region government, aiming to achieve effective control and scientific management of territorial space and promote the balance between development and protection. It is generally considered as an effective instrument for promoting space governance and regional sustainable development. This study systematically reviewed the evolution history of China's spatial planning and the key issues it faces or brings, then analyzed the major measures and potential challenges taken by the country, and finally put forward countermeasures and suggestions to promote the establishment and implementation of national territory spatial planning (NTSP). Results demonstrated that as the largest developing country in the world, due to the lack of unified spatial planning system and superior laws, there are many problems in China's spatial planning, such as various types, overlapping conflicts, complex approval process and frequent revision of planning, and difficulties in planning implementation, which has led to the imbalance of territory spatial development, deterioration of ecological environment, tightening of resource constraints and regional unbalance development. To solve these problems, China is innovating to take its territory spatial as a system to establish a unified NTSP system, and promoting the transformation of spatial planning from multisector industry or special planning to integrated NTSP. At the same time, China is actively promoting the NTSP legislation, which will have a milestone role in promoting state affairs and space governance by law. However, the NTSP system's establishment still faces many challenges, and the its formulation and implementation need to consider the background of the times, follow the law of modernization development, and adapt to local conditions in combination with national conditions.

## 1. Introduction

Spatial planning is the soul of space optimization and development of a region or country. In the 1960s and 1970s, strategic spatial planning used to be the mainstream of urban and regional planning in Europe (Albrechts, 2004). Strategic spatial planning was regarded as a set of concepts, procedures and tools, which is also a public-sector-led socio-spatial process (Albrechts, 2006; Sartorio, 2005). In the 1980s, strategic spatial planning was despised by neoconservatism and doubted by postmodernism (Healey, 1997). After experiencing rapid and disordered urban development, increasing land fragmentation and environmental concerns, policy makers began to rethink the importance of long-term planning, so strategic spatial planning was revived in the 1990s and put on the agenda again (Friedmann, 2004; Albrechts, 2004). As a professional term, spatial planning first appeared in European Regional/Spatial Planning Charter adopted by the European Conference of

Ministers responsible for Regional Planning in 1983, and was defined as the geographical expression to the economic, social, cultural and ecological policies of society (Council of Europe, 1983). In 1999, European Spatial Development Perspective (ESDP) officially put forward the concept of spatial planning for the first time and made it clear that the purpose of spatial planning is to promote economic and social harmony, sustainable development and the balance of competitiveness among regions (Commission, 1999). The term of spatial planning became as popular in Europe in the 1990s as the common currency of the European Union (Dühr et al., 2010). Developed countries such as Britain, Germany, France and the Netherlands started their spatial planning earlier, and have established a systematic spatial planning system and a mature legal and regulatory system (Kunzmann, 2004; Hajer and Zonneveld, 2000; Zhou et al., 2017). The legal systems of spatial planning in Europe and North America are mainly rigorous and free, while those in Japan and South Korea are mainly neutral (Yan

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et al., 2019). Spatial planning can help to optimize land use structure and improve land use efficiency (Persson, 2013; Remøy and Street, 2018). It has been earmarked as an important instrument for achieving sustainable development and space governance (Nadin and Stead, 2008; Persson, 2013; Wang and Shen, 2016).

Territorial space refers to the territorial space under the jurisdiction of national sovereignty and sovereign rights, which is the carrier and place for human production and life, including land and ocean territorial space. National territory spatial planning (NTSP) is the spatial and temporal arrangements for the development and protection of territory space in a certain area. It is the basic basis for various development and protection and construction activities, including overall planning, detailed planning and related special plans (Xinhua Agency, 2019a). As the largest developing country in the world, China has obvious regional differences in natural geographical environment and location conditions, which requires more scientific and reasonable spatial planning to support regional sustainable development. Since 1949, China has drawn lessons from the five-year plan of national economic development of the former Soviet Union (Chen et al., 2017). The country has gradually formed a basic framework with the Five-Year Economic Development Plan as the general program and urban planning as the continuation and embodiment of the national economic plan ((Ng and Tang, 2004) Yu and Ou, 2018). Since the 1990s, the original planning system framework has been enriched with the expansion of urban planning to regional planning, and the emergence of land use planning, ecological environment protection planning, transportation development planning and main functional zoning planning (Hu, 2016). China's spatial planning has experienced the transformation from focusing on socioeconomic development under the planned economy in the pre-reform period to multiple targets of market economy after the reform, including urban scale expansion, real estate economy, vanity projects and place promotion (Zhang, 2002; Wang and Shen, 2016). Compilation of spatial planning has subsequently become a complicated arena, which is interfered by the central and local governments to varying degrees (Wang and Shen, 2016). More importantly, due to the lack of upper planning, there are many problems such as repeated planning content, overlapping planning space, boundary conflict of land use control, which has resulted in the waste of space resources, social conflicts, overheated land development and unbalanced regional development (Hu et al., 2013; Yuan et al., 2019). The problems of land degradation and disusing, soil pollution, decline in land production potential and tightening constraints on resources and environment are prominent in China, which is thought to be more or less related to the country's spatial planning (Liu et al., 2014; Li et al., 2014, 2017; Zhang et al., 2017; Ge et al., 2018; 2019; Liu et al., 2018a; Zhou and Liu, 2018). Although China attaches great importance to land system reform and land policy innovation, due to the lack of unity of urban-rural development, land use, national economy and social development planning, land use control and policy adjustment in this country have not achieved the expected targets (Liu et al., 2014, 2018; Liu, 2018; Wang et al., 2018). Extensive studies have been done on the theoretical cognition (Yan et al., 2017; Jia et al., 2019), function positioning (Lin et al., 2018), compilation method (Wang et al., 2019) and legislative logic (Li et al., 2019) of NTSP and its relationship with the carrying capacity of resources and environment (Ye et al., 2018; Chen et al., 2020), and the connection of different spatial planning systems (Guo et al., 2019; Wang and Chen, 2019; Qiao et al., 2020). These studies have important guiding significance for guiding China's spatial planning decision-making.

Reasonable development and protection of territory space is the foundation and premise of a country or region's sustainable development, which requires systematic spatial planning system and superior law as support. In recent years, with the gradual exposure of the traditional planning problems formed and evolved in the planned economy period, the establishment of a unified spatial planning system has been gradually concerned by the Chinese government and all sectors of society. This country has been trying to a good way to solve and optimize

the spatial pattern of territory space (Chen, 2016; Ye and Wang, 2019). Optimizing the development pattern of territory space and promoting the sustainable development of social economy have become an important part of improving China's national governance capacity and ecological civilization construction. To this end, in 2013, the country proposed to establish a NTSP system, delimit the regulatory boundaries of production, life and ecological space development, and accelerate the construction of ecological civilization, thus opening the prelude to the reconstruction of China's current spatial planning system. In recent years, the country is actively promoting its NTSP reform, innovating spatial planning system and introducing relevant superior planning laws to promote the optimization and layout of territorial spatial pattern. In this study, we systematically reviewed the evolution history of China's spatial planning and the problems and challenges it faces or brings, then analyzed the major measures and potential challenges taken by China to deal with these problems, and finally put forward the suggestions to promote the NTSP's establishment and implementation. As far as we know, due to the differences of land management system, the international understanding of China's spatial planning is still insufficient. Our findings will be of great significance for promoting the establishment of China's NTSP and national space governance system.

## 2. China's national territory spatial planning

The current international and domestic environment has given new missions to the NTSP. The NTSP is a key measure to promote the construction of ecological civilization and an important way to achieve high-quality development and high-quality life. Promoting the national strategy of beautiful China and rural revitalization need to give full play to the NTSP's regulation and optimization of the spatial pattern of production, life and ecology, and to establish a new pattern of harmonious coexistence of human and nature. Thus, the formulation of the NTSP is of great significance to optimize territorial spatial layout and enhance space governance capacity, but it also faces many opportunities and challenges.

### 2.1. (China's national territory spatial planning

Territory space is a regional space under the jurisdiction of national sovereignty and sovereign rights, which is the carrier and place of human production and life. The NTSP is a spatial and temporal arrangement for the development and protection of territory space in a certain region, including the overall planning, detailed planning and special planning (Zhang et al., 2017). Since the implementation of the reform and opening-up policy in 1978, China has implemented regional planning, focusing on regional productivity and urban layout (Yu and Ou, 2018). At the end of 1970s and the beginning of 1980s, when the problem of environment and development was put forward internationally, Chinese scientists and decision-making departments also realized the importance of rational use of natural resources to strengthen the construction of ecological environment. China has successively organized and implemented the investigation and evaluation of land, water and climate resources, which provide scientific basis for making the NTSP. In 1987, China issued the measures for the compilation of land planning and determined the principles, tasks and contents of land planning. In 1990, the General Plan of Land and Resources (Draft) was formulated, but the plan was not approved for implementation due to the differences in the level of national economic development and understanding at that time.

At the beginning of the 21 st century, this country has successively carried out territory planning pilot projects in Tianjin, Xinjiang, Liaoning and Guangdong provinces to explore new ideas and methods of spatial planning. During this period, the territory planning realized the transformation from planning leading type to guiding type, from highlighting the utilization of resources to paying equal attention to both development and protection, from simply pursuing economic

development to coordinating economy, population, resources and environment, and from taking industry as the core to coordinating regional spatial layout (Zhang et al., 2017). In 2010, China promulgated the National Main Function Zoning. Based on resource endowment, China has divided its territory into four categories: optimized, key, restricted and prohibited-development zones, and clarified the development strategies for different types of zones, which provide beneficial exploration for the NTSP's formulation (The State Council, 2011). But it is difficult to implement the planning because its protection theme is not prominent. Before that, China's NTSP was more land use planning and regional development planning, which were scattered in various planning, such as land use, main functional zone and environmental protection planning (Wang et al., 2020). In recent years, China is integrating the past planning of main functional zone, land use, urban-rural development and eco-environmental protection into a unified spatial planning, so as to achieve multiple planning integration and establish a unified NTSP system. Since 2014, 28 counties and cities have been selected as typical examples in China to launch multi-planning integration pilots. On this basis, China has successively introduced measures for the NTSP's preparation, examination and approval, supervision and management, and is promoting the legislative process of territory space development and protection law and spatial planning law.

In general, China's NTSP has gone through three stages from reform and opening up to now. At the beginning of reform and opening up, China's spatial planning was dominated by land use planning, aiming at scientific development of land use resources and promoting agricultural development. With the development of industry and urbanization, the country's spatial planning has been transformed into urban planning and regional planning, aiming at promoting the development of urbanization and industrialization. At the present, China pays more attention to high-quality development, rational development of resources, protection of ecological environment, construction of ecological civilization and national sustainable development. The country's spatial planning has been transformed into the NTSP, aiming at optimizing the layout of territory space and promoting regional sustainable

development.

## 2.2. Challenges faced by China's national territory spatial planning

Due to the absence of superior planning laws, China's spatial planning is generally faced with some difficulties in preparation, implementation and assessment, which has affected the process of territory space governance modernization and ecological civilization construction in this country (Yan et al., 2019). These problems and challenges are mainly reflected in three major aspects. Firstly, China's spatial planning has a wide range of types and systems, involving urban-rural construction, national economic development, land use, environment protection and infrastructure layout (Wang and Liu, 2012). Different planning has formed its own system under the supervision of different departments, and each system has many different levels and different depth of specific planning types (Table 1). As a result, China's spatial planning system is not conducive to the understanding of public recognition, but also complex and ineffective. There are contradictions and conflicts in the scale and boundary, the nature of land use right, the management and control of different areas, and the target indicators of various spatial planning (Hu et al., 2013; Liu et al., 2018; Kong et al., 2019; Yan et al., 2019). For example, the major function-oriented zones planning and land use planning are not unified in administrative boundary and scale (Zhou et al., 2017; Liu et al., 2018b). The different classification standards of planning land lead to the conflict of land ownership and property and the coexistence of multi-purposes and multi-properties of a type of land use (Liu and Wang, 2016). There is no land classification method for the main functional zone planning and environmental protection planning. Land use types in urban-rural construction planning adopts a three-level classification system, while land-use status in land use planning follows a two-level classification system (Ministry of Housing and Urban-Rural Development of China (MHUD), 2011; Ye et al., 2013). As a result, there are different identification methods for agricultural land, forest land and grassland in different planning. This is bound to lead to a problem of multiple attributes and multiple-uses of a type of land use.

**Table 1**  
Relevant spatial planning information in China.

Planning content	Main functional zone planning	Urban-rural planning	Land-use planning	Eco-environmental protection planning
Planning property	Global strategic, fundamental and binding	Regional comprehensive, binding and implementation	Global strategic, fundamental and binding	Regional comprehensive, fundamental and binding
Planning scope	Full coverage of land and sea areas	Urban and rural construction area	Full coverage of land area	Jurisdiction
Planning years	10	20	15	5
Planning types	Overall planning	Overall planning, regulatory and constructive detailed planning	General, detailed and special planning of land use	Special planning
Planning objectives	Building an efficient, coordinated and sustainable pattern of land and space development	Constructing the spatial distribution of urban and rural areas, improve the living environment and promote the sustainable development of urban and rural economy and society	Rational use of land and protection of cultivated land	Protecting the environment
Space management and control	Optimize main functional areas of general, key, limit and prohibit development	Forbidden, restricted, suitable areas, and green, blue, purple and yellow lines	Urban-rural construction land scale, expansion, forbidden boundary, and permitted, conditional, restricted and prohibited construction areas	Red line of ecological protection, bottom line of environmental quality, online resource utilization and negative list of environmental access
Planning hierarchy	National and provincial level	National, provincial, municipal, county and township level	National, provincial, municipal, county and township level	National, provincial, municipal and county level
Legal basis of planning	No	Town and Country Planning Act of China (2015 amendment)	Land Management Law of China (2004 amendment)	Environmental Protection Law of China (2014 amendment)
Compilation of planning	Prepared by relevant state departments and provincial government	Prepared by relevant state departments and government organizations at all levels	Prepared by relevant state departments and government organizations at all levels	Prepared by environmental protection departments at all levels
Approval of planning	Grading approval	Grading approval	Grading approval	Peer approval
Supervision of planning implementation	Multi-department joint	Urban-rural authorities	Land Management Department	Environmental protection department

Notes: Summary of existing literatures such as Yan et al., 2019; Ye and Wang, 2019.

Secondly, the lack of a unified planning system in this country leads to poor coordination among planning categories and prominent problems of planning dislocation, offside and vacancy. The discordance between different types of spatial planning and even within the same planning (such as master planning and special planning) in China is due to the lack of unification of basic data, different planning preparation period and planning period, and the lack of linkage mechanism between different departments and platforms. China's planning layers are accumulated and relevant legislation is scattered due to the decentralization of planning departments and planning functions (Liu and Wang, 2016; Yan et al., 2019). China's spatial planning is scattered in more than 10 national departments, with different levels of planning and overlapping functions, which makes it difficult to coordinate and control all kinds of planning (Wang and Liu, 2012). For example, the Ministry of Land and Resources (now renamed as Ministry of Natural Resources), the Ministry of Housing and Urban-Rural Development, the National Development and Reform Commission and the Ministry of Environmental Protection of China are respectively responsible for the planning of land use, urban-rural development, main functional zone and environmental protection. The inconsistency of various planning periods is also one of the reasons for the discordance and conflict in the development sequence and plan, target task and arrangement of China's territory space (Wang and Liu, 2012). For example, the planning period of national main functional zone, urban-rural construction, land use and environmental protection is 10, 20, 15 and 5 years, respectively (Yan et al., 2019). Different planning periods lead to incongruity, which leads to continuous conflicts in space utilization. More importantly, the relationship between different kinds of planning are not clear. On the whole, the basis of the main spatial planning in this country is the national socioeconomic development planning that changes every five years, which indirectly aggravates the instability of various kinds of spatial planning in practice.

Last but not least, the construction of spatial planning's legalization and standardization lags behind (Wang and Liu, 2012; 2016; Yan et al., 2019). In recent years, China has implemented more than eighty kinds of spatial planning, forming a legal system of spatial planning with the constitution as the core, and urban and rural planning law, land management law and other administrative laws as the main body (Yan et al., 2019). However, there are still some defects in China's current spatial planning system, and the relationship between rights and responsibilities is not clear. There are many types of spatial planning, different technical standards, overlapping contents and mutual contradictions (Gu, 2015). The level of laws and regulations on planning legislation is not high, and even there is no special law on main functional zone planning. The contents, formulation and approval, implementation and modification, and the responsibilities of the main body of various plans are all lack of clear legal provisions. Most of the current relevant legislation reflects the characteristics of administrative legislation, focusing on the management of various aspects of planning and implementation, and the provisions of public participation are inadequate.

### 3. Establishment of China's national NTSP system

Territorial spatial planning is a guide for a country's space governance, a spatial blueprint for sustainable development, and the basic basis of various development, protection and construction activities (Xinhua Agency, 2019a). Since the Communist Party of China took power in 1949, there has been no basic planning or superior planning for territorial space governance in the country, which has become one of the main roots of overheated and disordered urban expansion, larger-scale loss of cultivated land, inefficient use of resources and spatial mismatch of water-land resources, ecological degradation, causing constant social conflicts, regional unsustainable development and human-nature imbalance (Hu et al., 2013; Liu et al., 2014; Wu et al., 2018; Zhou and Liu, 2018). To solve these conflicts and unsustainable

development problems caused by spatial planning, China has carried out a number of reform measures, and implemented multi-planning integration pilot to establish a unified NTSP system (Liu and Wang, 2016).

#### 3.1. Major institutional reforms

The reform of spatial planning department is the foundation and premise of the establishment of the NTSP system (Jia et al., 2019). Driven by the goal of ecological civilization and beautiful China construction, in 2018, China has carried out a major institutional reform of the State Council, and removed the Ministry of Land and Resources (MLR) and established the Ministry of Natural Resources (MNR). The MNR has integrated the spatial planning functions previously scattered across multiple departments, including the land use planning in the MLR, the urban-rural construction planning in the Ministry of Housing and Urban Rural Development, and the main functional zone planning of the National Development and Reform Commission, and the ecological environmental protection planning of the Ministry of Ecology and Environment of China. One of the responsibilities of the MNR is to establish and implement a unified NTSP system. The reform of China's major institutions provides organizational guarantee for the establishment of an integrated spatial planning system.

#### 3.2. Unified spatial planning system

To solve the practical problems such as too many planning types, content overlapping conflicts, complex approval process, long cycle, and local planning changing day and night, China is promoting the construction of the NTSP system for the goal of beautiful China and ecological civilization construction. The newly spatial planning system will integrate the main functional zone, land use, urban-rural development and eco-environmental protection into a unified spatial planning to achieve multiple planning integration (China Daily, 2019). In May 2019, China issued the Opinions on the Establishment and Supervision of the Implementation of the NTSP system, which defined the NTSP's objectives, overall framework, preparation requirements, implementation and supervision procedures, and clarified its guidance and constraint role in various special planning (Xinhua Agency, 2019a; Fig. 1). The Opinions has put forward the goal of three steps. The first step is that, by 2020, it needs to establish a NTSP system and complete the compilation of overall planning of territory space at all levels above the city and county level, and preliminarily form a "One Map" of national territory space development and protection. The second step is that, by 2025, this country will improve the system of laws, regulations, policies and technical standards for the NTSP, fully implement the mechanism of territory space monitoring, early warning and performance evaluation, and form a territory space development and protection system. The third step is that, by 2035, the modernization level of territory space governance system and governance capacity will be improved in an all-round way, and a space pattern of intensive and efficient production space, livable living space, beautiful ecological space and harmonious, competitive and sustainable development will be basically formed. The NTSP's strategy, authority, coordination, scientificity and operability are also emphasized. The evaluation of resources and environment carrying capacity and the suitability of space development are the basis of making the NTSP. The NTSP system includes general planning, special planning and detailed spatial planning, and the general and special planning include five levels of national, provincial, municipal, county and township spatial planning, and the detailed spatial planning is divided two levels, i.e., control detailed planning and construction detailed planning (Fig. 1). The NTSP is a global arrangement for national land and space, a policy and general outline for the territory space protection, development, utilization and restoration, which focuses on strategic coordination. It is organized by the Chinese MNR and relevant departments.

The country's NTSP will pay more attention to the scientificity of



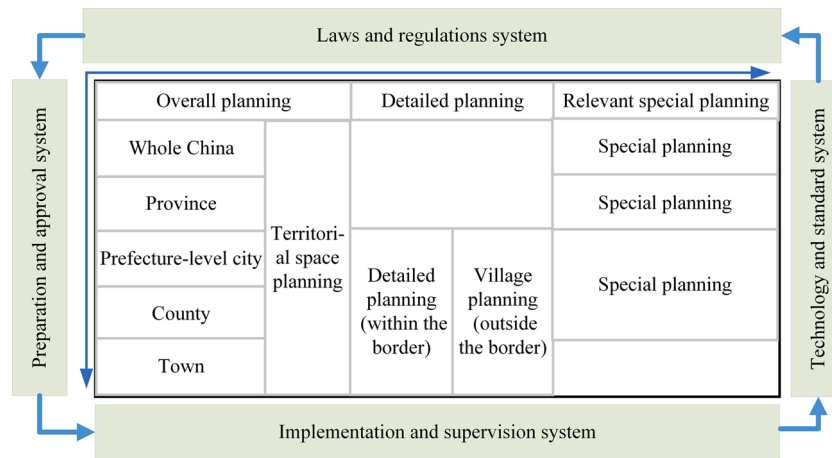


Fig. 1. China's national territory spatial planning system.

planning (Xinhua Agency, 2019b). The NTSP's compilation needs to be based on the assessment of resources and environment carrying capacity and the suitability of territory space development, and scientifically delimitation of three bottom lines, i.e., red line of ecological protection (RLEP), permanent basic farmland (PBF) and urban-town development boundary (UTDB) (Fig. 2; Xinhua Agency, 2019b). The RLEP refers to the areas that have special and important ecological functions within the scope of ecological space and must be strictly protected, including the areas with important ecological functions, ecological sensitive areas, national parks and nature reserves. The delimitation of EPRL needs to give priority to the areas with extremely important ecological functions such as water conservation, biodiversity maintenance, water and soil conservation, wind and sand fixation, coastal protection, as well as the areas with extremely sensitive and fragile ecology such as water and soil loss, desertification, rocky desertification and coastal erosion. The UTDB is a regional boundary that can focus on urban development and

construction and focus on improving urban functions due to the needs of urban development in a certain period, involving cities, towns and various development zones. The delimitation of UTDB is based on the current situation of urban and town development, comprehensively considering the resource carrying capacity, population distribution, economic layout, urban and rural overall planning, urban development stage and development potential to prevent the disordered urban sprawl. The PBF is a kind of farmland with permanent and special protection to ensure the national food security and the supply of important agricultural products. The purpose of scientific demarcation of three control lines is to optimize the living, production and ecological space, and to promote the sustainable development of economy, environment and ecology of a country or region.

Undoubtedly, the establishment of national territorial spatial planning system will be of milestone significance for China's space governance and play an extremely important guiding role in the preparation,



Fig. 2. Three bottom lines for China's national territorial spatial planning.

implementation and supervision of the territorial spatial planning in the future. The NTSP's establishment will be helpful to solve the problems such as too many planning types, overlapping content conflicts, complex approval process and long cycle, and inconstant in policies (Yan et al., 2019). It is also expected to break the original system and mechanism constraints of multiple planning subjects, division of departments, and interest orientation of departments, as well as the difficulties of planning implementation and the situation planning changing day by day, which is beneficial to reverse the trend of the country's eco-environmental deterioration from the source.

### 3.3. The NTSP legislation

Spatial planning law is the basic compliance of spatial planning formulation, implementation and supervision. The lack of superior laws has made it difficult for China's spatial planning to be implemented in accordance with the law. As an important part of the establishment of spatial planning system, spatial planning law is being formulated in China. In March 2020, China's relevant departments are soliciting opinions from all walks of life on the NTSP legislation to establish a spatial planning system. This is a great innovation and pioneering work in the history of China's territory space governance. This new law will establish a multi-level and three-dimensional spatial planning system from the overall planning at the national level to village constructive planning, which is of great significance in China's territory space governance.

The introduction of the upper territorial spatial planning law will help to promote the implementation of China's unified spatial planning. The NTSP law is aimed at regulating the compilation and implementation of land planning, and adjusting the legal relationship between planning activities. NTSP law's function is to ensure the legal rationality, fairness and justice of the compilation, implementation and supervision of spatial planning. This new law will involve the formulation, examination and approval, revision, supervision, legal responsibility and public participation of spatial planning. It will stipulate the legal procedures for the formulation, approval, implementation and revision of spatial planning and basic principles to be followed, and clarify the principle that spatial planning should not be modified without legal procedures to avoid frequent changes of planning. The strategic, basic and binding legal status and superior planning functions of spatial planning will be emphasized. More importantly, the law will emphasize the important role of public participation in spatial planning. It is clear that before the planning is submitted for approval, the relevant department should disclose the draft plan in accordance with the law, and solicit experts and public opinions in the form of demonstration meetings or hearings. The law also will clarify the main body of spatial planning preparation and approval, and the procedures to implement, evaluate and revise, as well as the legal responsibilities of supervision and implementation, to ensure that the spatial planning is implemented in accordance with the law. In addition, the law also requires the supervisory committee to supervise and review the preparation, approval, modification and public participation of spatial planning, and punish those who violate relevant regulations.

The establishment of the Chinese NTSP legal system is an important measure to make up for the long-term lack of macro top-level design in national planning and to solve the conflict of existing laws and regulations of spatial planning, which is conducive to the improvement of legal system of spatial planning and national governance capacity. The NTSP legislation is conducive to further defining the subject of planning responsibility and management, promoting the appropriate separation between the subject of planning formulation and the subject of implementation, and making the rights and responsibilities clear. On the premise that the NTSP is in charge of all kinds of space utilization planning, the spatial planning legislation plays a decisive and fundamental role in the integration of the existing planning legal system and the revision of laws and regulations. China's NTSP legislation is also an

important support for the implementation of ruling the country by law in an all-round way and an important guarantee for the construction of ecological civilization system.

## 4. Discussion

Spatial planning is considered as an important governance instrument to cope with uncoordinated regional problems (Wang and Shen, 2016). Spatial planning can contribute to the integration of policies in comprehensive visions, but a planning system does not escape from the evolutionary rigidity introduced by interdependence and path-dependence (Van Assche and Djanibekov, 2012). Spatial planning is essential for regional or urban sustainable development, disaster risk management and effective national/territorial governance (Burinskiene and Rudzkiene, 2009; Ran and Nedovic-Budic, 2016; Tulumello et al., 2020). Spatial planning concerns major spatial development issues, which aims to give guidance in situations that are characterized by uncertainty and conflict around spatial development where there needs to be mutual leaning (Faludi, 2000). The impact assessment of spatial planning to territorial development has received attention (Medeiros, 2019). In China, the previous spatial planning is scattered in land use, urban-rural development, environmental protection and main functional zone planning. These plans all have the spatial planning attribute, but they have some emphases and overlaps. For example, the main functional zone planning focuses on industrial layout, urban-rural planning focuses on urban and rural construction, and land use planning focuses on the adjustment of land use structure and layout. However, due to the lack of unified upper spatial planning, there are overlaps and intersections between different plans. The root of the problems in China's spatial planning lies in the game of interests between the central and local governments, between different departments and within the country, and multi-management, as well as the insufficient understanding of the rules of spatial layout by planners and decision makers (Meng et al., 2019). The land use planning failed to play the expected role, because land use is under the control of two different spatial planning systems (the urban planning zone and the non-urban planning zone), which leads to the discrepancy in land control (Zhou et al., 2015). China's urban planners are constrained by land-use rights and have difficulty coping with the changing circumstances and requirements (Friedmann, 2004). To a certain extent, the preparation of space planning is out of touch with basic theoretical research. For example, land-change science closely related to spatial planning pays more attention to land use change and its driving forces as well as regulation policy, and has devoted little attention to spatial policy and planning (Liu et al., 2014, 2018; Fuseini and Kemp, 2015; Hersperger et al., 2018; Zhou et al., 2020a, 2020b).

The NTSP needs to give priority to homeland security, ecological security and food security, and to be guided by solving problems, with goal of realizing space governance modernization and regional sustainable development. Spatial planning is an expected plan for future space development and protection, in essence, it is the expectation and goal orientation of the future, and its foresight is crucial to the success of planning. The main purpose of preparing the territorial spatial planning is to make up for the shortcomings, promote the advantages and realize the optimal allocation of spatial resources. It is necessary to make clear the role of different levels of the NTSP in promoting space governance in an all-round way. National or provincial territory spatial planning focuses on solving strategic issues related to the overall situation, such as food security, energy security, economic security, ecological security and other issues. Municipal and county-level spatial planning focuses on the rationality of territory space layout, the intensity and mode of resource development, environmental quality and degree of stress (Ye and Wang, 2019). The delimitation of three bottom lines or control lines in the process of NTSP preparation is a challenging task. The ecosystem has integrity, and the delimitation of ecological red line needs to fully consider the connectivity of the system to avoid the phenomenon of

ecological island. The delimitation of urban-rural development boundary needs to take full account of the current situation, scale and future development potential of urban development, especially the issue of urban contraction. Since the reform and opening up in 1978, China's urbanization rate has increased by 41 percentage points, with an average annual increase of 1%. However, in the process of rapid urbanization, there is also an abnormal phenomenon of urban contraction. Previous studies have shown that one third of China's population density is declining, or the population of more than 10,000 towns and street offices is losing from 2000 to 2010 (Long and Wu, 2016).

Making the NTSP needs to combine the top-down overall arrangement with the bottom-up development needs. At present, China is comprehensively promoting the national strategy of rural revitalization. Revitalizing the countryside needs planning first. Village planning is a statutory planning integrating village land use planning, village construction planning and other rural planning to realize the organic integration of multiple-planning. Detailed village planning is also the legal basis for carrying out land and space development and protection activities, implementing territory space use control, issuing planning permission for rural construction projects, and carrying out various constructions. The long-term and overall situation of the rural revitalization strategy determines that it must adhere to the principle of planning before construction, comprehensively consider land use, industrial development, residential layout, human settlement environment improvement, ecological protection and historical and cultural heritage, and work out the practical village planning of "multiple compliance". Detailed village planning needs to fully consider the current situation, scale and future development trend of the village, the level of urbanization and the change of rural population. In the past 30 years, China's villages are experiencing rapid decline or even extinction (Liu and Li, 2017). The number of natural villages in China decreased from 3.77 million in 1990 to 2.61 million in 2016, a decrease of more than 1.1 million in 30 years, with an average reduction of more than 100 villages per day (Ministry of Housing and Urban-Rural Development of China (MHUD), 2017). According to China's new urbanization plan, China's urbanization rate will reach about 70–75 % by 2035 (Bai et al., 2014). Based on this rate, hundreds of thousands of villages will disappear in China by 2035. The detailed village planning needs to take full account of the future development trend of the village, avoid a large number of infrastructure waste, idle and inefficient use of homestead, so the forward-looking village planning is of great significance for rural revitalization. Therefore, the NTSP needs to combine the objectives of the rural revitalization strategy, formulate detailed village planning and to promote the strategy's implementation (Dong, 2019).

Compared with the past spatial planning, China's NTSP will realize the transformation of planning platform, focus, development mode, compilation results and work organization mode (China's Territory spatial planning (CTSP), 2019). First of all, the compilation of China's NTSP will make full use of new technologies and big data, and establish a big data platform for the NTSP based on China's latest third land survey data, so as to realize the full range of numerical expression and information-based floor of land and space. Secondly, the NTSP will realize the full range control of land and ocean space under jurisdiction, focus on the construction space and non-construction space control, scientifically delimit the production space, living space and ecological space, and strengthen the use control of non-agricultural land and ecological land. It will also realize the unity of plane space and three-dimensional space, emphasizing the integration of land and sea, urban and rural areas and the integration of planning and development of underground and above ground (Li and Liang, 2020). This will help to break the past situation of urban-rural division and separation in China and realize the free flow and equal exchange of urban-rural elements as well as the development of urban-rural integration. Thirdly, the concept of guiding land and spatial planning will change from emphasizing economic development to paying equal attention to high-quality development and eco-environmental protection in the past, paying

more attention to efficiency and fairness. People's sense of gain and happiness will be improved through the integration of the public into the planning process. Furthermore, China will establish a management and control index system for the development and protection of territory space, scientifically delimit the boundary of production, living, ecological space and ecological protection red line, permanent basic farmland and urban development, and strengthen the constraint of development bottom line. Finally, China also should strengthen the responsibility subjects of planning formulation and implementation through legislation, and establish a multi-sector linkage NTSP's formulation, implementation and dynamic monitoring system. The NTSP legislation is an important guarantee for the scientific development of planning behavior, the orderly implementation of planning, and the standard and effective planning management.

Facing the goal of spatial pattern optimization and space governance modernization, the NTSP's real breakthrough and innovation need to break traditional thinking mode of the past spatial planning, identify the major demand changes of social development, innovate technical methods and improve the key points of compilation (Wu, 2019). China's NTSP needs to integrate space, resources and assets to continuously stimulate and innovate regional development vitality. It must protect the bottom line of land and space assets, enhance the value of assets, and promote the overall optimal allocation and recycling of land and space resources. To improve the utilization efficiency of resources, the NTSP's compilation and implementation should fully consider the major changes in social development needs. In the face of increasingly complex international environment and rapid globalization, geopolitics has great uncertainty. The NTSP's compilation should adapt to the new situation and changes, and put national security and the bottom line in a more prominent position. At present, China emphasizes more on high-quality and green development, and attaches great importance to the construction of ecological civilization, and the establishment of NTSP system is an important starting point for the construction of ecological civilization and national governance. The structure of residents' consumption is changing, and the spatial pattern is being changed by the modern network or high-tech. This county has proposed to comprehensively improve the modernization level of national territory space governance system and governance capacity, and basically form a sustainable land spatial pattern of coordinated production, life and ecological space by 2035. Therefore, the NTSP needs to innovate ideas and methods, comprehensively consider the international environment situation, national development needs and local development demands, so as to promote the modernization of national space governance capacity and governance system. Territorial spatial planning under the modernization of the space governance system should reflect strategic, authoritative, systematic and scientific characteristics (Meng et al., 2019).

## 5. Conclusions and policy implications

Planning is the soul of national territorial spatial optimization. In the past few decades, due to the lack of superior planning and related laws, China's spatial planning has been scattered in multiple departments, facing such problems as complex planning types, overlapping conflicts, long approval processes, local planning changes day by day and planning implementation difficulties, which has led to serious resource space mismatch, inefficient use of resources, ecological deterioration, environment pollution and regional development imbalance. The country's spatial planning has transformed from single actor to multiple actors, from mono-target to multi-target and from top-down control towards more decentralized approaches at the local level. At present, China's spatial planning pays more attention to the efficient use of resources, the protection of ecological environment and the high-quality development of economy. To solve these problems and achieve the goal of optimizing the layout of territory space and building ecological civilization, China is currently innovating to take the territory space as a whole for long-term

planning, and promoting the establishment of a unified NTSP system and legislation. The spatial planning law is the fundamental compliance of spatial planning, which can guarantee the spatial planning to be implemented effectively. The establishment and legislation of the NTSP system will be a great change in the history of China's spatial planning, which will have an epoch-making significance of the milestone for promoting China's sustainable development, space governance and ruling the country by law.

However, the compilation and implementation of China's NTSP may also face some new problems and challenges. Five aspects of work need to be further done to ensure the implementation of spatial planning. Firstly, with the implementation of the spatial planning law, it is necessary to formulate supporting measures for the preparation and implementation of spatial planning, and to clarify specific measures for the preparation, review, evaluation, implementation, modification, supervision and responsibility of spatial planning. Secondly, there is an urgent need to formulate the technical guidelines for the preparation of spatial planning, clarify the detailed technical path and preparation procedures, and simultaneously refine and formulate the specific standard system of land classification, spatial zoning, intensity measurement and control of planning space. Thirdly, it is necessary and urgent to systematically improve the existing laws and regulations on spatial planning, make structural adjustments in the establishment, reform and abolition, and form a new legal system with perfect functions and co-ordinated supporting as soon as possible. In the current situation that the new spatial planning law has not been formally promulgated and the old law has not been changed, in addition to taking measures to speed up the new law's legislation and the new standard's preparation progress, it is also necessary to formulate relevant laws and standards in the transitional period, so as to provide the necessary institutional guarantee for the preparation of spatial planning. Fourthly, China needs to deal with the relationship between top-down macro planning and bottom-up micro demands or participation. Under the premise of ensuring the state ownership of land unchanged, the NTSP should be combined with the development needs of local and even people to promote the optimal allocation of land resources. Finally, it is suggested that the third-party evaluation of spatial planning should be included in the spatial planning law to evaluate the scientificity of spatial planning formulation, the standardization of examination and approval procedures, and the effect of planning implementation. To sum, China's NTSP legislation will play a milestone role in promoting space governance by law. Meanwhile, as the largest developing country, China should learn from international experience and adapt to the laws of modernization and the requirements of the times to promote territory spatial governance based on people-oriented and law, and make a demonstration for developing countries.

#### CRedit authorship contribution statement

**Yansui Liu:** Conceptualization, Funding acquisition, Supervision, Writing - review & editing. **Yang Zhou:** Conceptualization, Methodology, Data curation, Formal analysis, Writing - review & editing.

#### Declaration of Competing Interest

No conflict of interest exists in the submission of this manuscript, and manuscript is approved by all authors for publication. I would like to declare on behalf of my co-authors that the work described was original research that has not been published previously, and not under consideration for publication elsewhere, in whole or in part. All the authors listed have approved the manuscript that is enclosed.

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