

Basic Research on the supervision system of land spatial planning implementation

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Abstract: Taking the construction of the supervision system for the planning implementation of the competent department of Territorial and spatial planning as the object, on the basis of the comprehensive analysis of the implementation of the whole life cycle management of the planning, this paper analyzes three types of supervision on the implementation of planning: Supervision on the approval of land space planning at the lower level, supervision on the use of land space projects and supervision on the actual use of land space. According to the principles of “Who organizes and prepares, who is responsible for the implementation” and “Who examines and approves, who supervises” the implementation and management of territorial and spatial planning, the paper puts forward the concrete contents and items of supervision over the implementation of the plans compiled by the government organizations at the same level and the implementation of the plans approved by the government at the same level. To further explore the supervisory process for the implementation of territorial and spatial planning, which consists of three stages: monitoring, assessment and decision-making, and explain its inherent logical relationship: according to the requirements and needs of decision-making to determine the implementation of various types of planning and evaluation of the type and content, according to the data types of different types of assessment, that is, indicators to determine the content and data requirements of planning and implementation of monitoring, and then provide a basis for the layout of various monitoring means and the use of monitoring methods.

Key Words: Territorial Space Planning; planning implementation; planning implementation supervision; planning implementation supervision system; planning implementation monitoring; planning implementation evaluation

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A Preliminary Study on the Supervisory System for Territorial Spatial Plan Implementation

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Abstract: Based on the analysis of the entire process of territorial spatial plan implementation, this paper identifies three areas for planning supervision: the review and approval of lower-level plans, projects entailing spatial change, and space use activities. Following the principles that “The responsibility for plan implementation lies with the party making the plan” and “The responsibility for plan monitoring lies with the party approving the plan”, the paper outlines supervisory duties and contents for planning authorities at different levels. These two aspects constitute the key components of the implementation supervision system in territorial spatial planning. Moreover, the paper explores the three-stage procedures in planning supervision: monitoring, evaluation, and decision-making. The internal logic of The system design is summarized as follows: The methodology and content of plan evaluation should decision types and needs, while monitoring indicators should be consistent with evaluation methodology and

data types. The paper aims to provide reference for planning supervision.

Keywords: Territorial Spatial Planning; plan implementation; PLAN implementation supervision; Plan Implementation Supervision System; PLAN implementation monitoring; plan implementation evaluation

1 definition of research object

The implementation supervision of territorial space planning is an important part of territorial space planning system, and also the key content of its construction and function. "The CPC Central Committee and the State Council on the establishment of territorial space planning system and supervision and implementation of a number of opinions" not only clearly put forward the requirements for supervision and implementation, but also put forward the specific content of system building ^[1].

From the text point of view "Supervision", "Supervision" is a continuous observation and observation of the meaning of "Supervision" is a supervision, supervision is guidance, control and implementation of the meaning. Therefore, the core of supervision is the implementation of specific objects or events, through continuous collection of information and analysis, evaluation, feedback or measures to ensure the achievement of the intended goals. Compared with the word "Monitoring", which is often used, monitoring emphasizes more on "Testing"(1) and supervision emphasizes on "Supervision", sourcing circumstances: only through scientific monitoring can we ensure the accuracy of the data and information, can help to make correct decisions and take effective measures.

As far as the supervision of the implementation of territorial space planning is concerned, there are many forms of supervision, the main types of which include: first, the supervision of the implementation of the planning by the government departments; There is also the supervision of the planning departments on the spatial use behavior of users of various territorial space plans and on the overall implementation of territorial space plans; second, the supervision of the legislative bodies on the implementation of plans, this kind of supervision mainly is to the plan implementation management behavior of the administrative department of the same level as well as to the plan implementation situation supervision in this administrative region; Including the public or all kinds of institutions, public opinion on the implementation of government planning management and supervision of the use of various types of space ^[2].

In these forms of supervision, the competent government departments of planning assume the responsibility of planning implementation management, and continuous supervision of planning implementation is the basic component of implementing planning management, however, the legislative bodies and social supervision are more incident or special, so the focus of this paper is to discuss the establishment of the supervision system for the implementation of planning by the Competent Department of land and Space Planning, in the discussion on the establishment of a mechanism for monitoring the implementation of the plan, the legislative bodies concerned and the society concerned are not allowed to carry out supervision, even though it covers the whole process of territorial spatial planning, the requirements and contents of legislative and social supervision will be taken into consideration.

2. The connotation of supervision over the implementation of territorial and spatial planning

The object of land space planning implementation supervision is planning implementation. The implementation of planning is a social undertaking, and the participants in the process include all levels of government and its departments, all walks of life and various groups of institutions and individuals ^[3]. From the whole process of planning implementation, the connotation of supervision mainly consists of three types.

2.1 supervision over the examination and approval of land and space plans at all levels

In accordance with the principles of “Who organizes and prepares, who is responsible for implementation” and “Who examines and approves, who supervises”, governments at all levels are responsible for planning and implementation, although specific planning and implementation actions are undertaken by various government departments, organizations and individuals from all walks of life, however, it is the responsibility of the government and the planning department to organize and supervise the implementation. In the system of territorial space planning, the upper level planning needs to be implemented through the lower level planning, and the detailed planning and related special planning at the same level are all arrangements for the implementation of the overall planning, in particular, detailed planning as a variety of territorial space use activities to carry out the legal basis, will directly regulate the specific use of space behavior [2,4-5]. Therefore, in order to ensure the effective implementation of this level of land and space planning under the system of examination and approval at different levels, it is necessary to pay attention to whether the contents of the lower-level and lower-level planning meet or carry out the requirements and contents of the present-level planning, which requires supervision of the planning approval of the lower-level governments ^[6].

2.2 monitoring of various land-use projects

The essence of land space planning control is the change of land space use, and most of the change of land space use is achieved through various types of projects or provide a basis for achieving such a change (2). This kind of project not only refers to various types of development and construction projects, but also includes land comprehensive rehabilitation, ecological restoration and various types of protective engineering projects. These projects are carried out with the encouragement of the investor (government, enterprise or individual) and approved in accordance with legal procedures. This kind of implementation behavior takes the project as the unit, has the sporadic, the distributed characteristic, this not only refers to the project itself space use type or the land use nature is diverse, it also has the characteristics of scattered random distribution in spatial distribution ^[7]. Even the most important projects or projects that occupy a large scale of space scope are relatively single in terms of space use types compared to the scale of urban or rural or territorial space, it is only linear or dotted in space, and the projects that are carried out at the same time are often not related to each other.

The operational process of space use projects can be divided into three stages: first, the stage of Project Formation and approval, including the process of Project Planning, project establishment and approval, at which time the space entity itself has not changed, however, it will have a

decisive impact on the change of the space entity and on the actual implementation stage of the project, which is commonly referred to as the construction or renovation process after the project has commenced, this phase begins by changing the existing space entity; and the third is the acceptance and delivery phase of the project completion, when the new space entity has taken shape.

From the point of view of the supervision of the implementation of territorial and spatial planning, the supervision of the first stage is mainly on the supervision of government departments, especially on the examination and approval of planning permission, the outcome of its approval will determine not only the legality of the implementation of the project to change the composition of the space itself, but also the subsequent actual use of the space, and therefore whether the project conforms to the content of the statutory plan and its intent, or affect the implementation of other statutory planning or other content for the implementation of planning is very important. Planning permission approval is carried out by the competent department of Planning, although it is subject to internal regulations and approval processes and related administrative remedies, but in terms of its impact on the implementation of upper planning, it should also be supervised by the competent department of the government at a higher level. For the second and third stages of supervision, the project is the substantive supervision, that is, the project implementation process and the results of the formation and planning approval requirements of compliance, according to the principle of "Who examines and approves, who supervises", this matter should be supervised by the examination and approval authority.

2.3 supervision over the actual use of territorial space

After the completion of various types of space use projects, the space will enter the actual use stage, starting from the requirements of the life-cycle management of territorial space planning, the actual use of territorial space should be an important part of planning and implementation supervision. This is not only because space use is a long-term process, but is also key to achieving planning utility, where all arrangements are made in accordance with the needs and requirements of actual use. In addition, the illegal use of territorial space is also in this kind of supervision can be found and dealt with. It should be noted that from the implementation of the space use project to the actual use of the space phase, the main body will usually change, such as urban housing development by the developers and the actual use of residents; Comprehensive land rehabilitation or ecological restoration projects are usually organized and implemented by the government or enterprises. After the rehabilitation or restoration, the users are villagers or other enterprises. Of course, the government also takes over, for example, the restored land is open to the public as a park. Because of this transformation, the overall and effective transmission of planning conditions or requirements for space use should also become an important link in the management and supervision of planning implementation.

This stage of supervision focuses on the actual use of land space and planning provisions of the content of the compatibility. It is possible to use a particular space for multiple purposes, with some capacity or compatibility set in the plan, however, consideration should also be given to not adversely affecting the normal use of its dominant function or its subsequent use. Different

ways of space use have different externalities, some space use will lead to changes in the surrounding areas, and some space use will lead to environmental pollution, unsanitary, unsafe and other hazards, some will also affect the operation of their own and surrounding supporting facilities, such as a large number of residential areas for office or commercial use, not only will the influx of migrants affect the daily lives of residents, but it will also lead to a massive increase in electricity consumption, etc. . On the other hand, since space use is a long-term process that is affected by various socio-economic and technological developments, changes in regional patterns or modes of production and life and changes in technological and environmental conditions, the need to adjust or change the way in which space is used, to add or change facilities and so on, which requires a timely response based on an assessment, through adjustment, optimization and other ways to improve the contents of planning, so as to adapt to the actual development situation and needs, which is also an important part of planning supervision and decision-making.

The contents of hierarchical supervision of territorial space planning implementation

According to the grading examination and approval system for land and space planning and the principles of “Who shall examine and approve, who shall supervise” and “Who shall organize and compile, who shall be responsible for implementation”, the supervision of planning implementation is also a grading system. As far as the content of supervision is concerned, according to the object of supervision, it can be divided into two major types: one is the supervision of the administrative acts of the government (departments) , that is, the government (departments) planning and planning of the results of the approval and approval of the project planning supervision, such as the main focus on the administrative process and the results of the decision-making; The second is to supervise the space use behavior of the society, that is, to supervise the process and result of the change of the land space and the activities of its use, and this kind of supervision is to supervise the change of the space entity. Under the pattern of hierarchical supervision, not only the spatial scope of supervision is different because of the difference of the size of administrative regions, and more importantly, different levels of government in the planning and implementation of the supervision of the different responsibilities of their focus on different ^[2] , for example, the central government pays more attention to the implementation of national strategies and specific policies as well as the overall spatial pattern; The supervision of municipal and sub-municipal governments focuses on the planning units and the spatial use of land parcels in central urban areas and towns, in addition to this area of jurisdiction is the planning area (the monitoring of land plots, planning units, planning areas, etc. , will be discussed in conjunction with the monitoring of the implementation of the planning below) .

According to the principles of “Who shall organize and compile, who shall be responsible for implementation” and “Who shall examine and approve, who shall supervise”, in the hierarchical supervision of the implementation of plans, there are different requirements for the implementation and supervision of the planning by the departments in charge of land and space planning at different levels.

3.1 the implementation and supervision of the plans compiled by the local government organizations

For the government and its competent planning department, being responsible for planning implementation includes the responsibility of organizing implementation, such as through the preparation of lower-level implementation planning, planning of the implementation steps of the plan and coordination of major project arrangements, coordination of departmental actions to promote the implementation of the plan ^[3], the implementation and management of the plan at the same level and the supervision of the preparation and implementation of the plan at the lower level are the continuity and daily work of the implementation and management of the plan.

In the process of planning implementation management, the Competent Department of planning is responsible for both the implementation of the plan of the actor and the plan to carry out supervision of the dual identity. As an actor, is to continue to organize and promote the implementation of the level of planning, organizing the preparation and approval of the implementation of planning, planning and approval of space use projects. From the perspective of separation of action and supervision, these acts need to be subject to the supervision of higher government authorities. As a supervisor, we need to supervise not only the implementation of the projects approved by them and the actual use of all kinds of space in the jurisdiction, but also the implementation of the planning department at the lower level.

As far as the supervision of the implementation of plans is concerned, the governments at all levels and their competent departments of planning should, in principle, take the contents of the plans at their respective levels and the requirements for their implementation as the basis, and not take the plans at the lower levels as the basis, whether it is to supervise the examination and approval of lower-level planning or to supervise the space use projects and the actual use of territorial space, need to be from the level of planning to comply with, implement or whether to violate, break the level of planning arrangements, to avoid overlapping supervision of the phenomenon.

3.2 supervision of the implementation of the plans approved by the local government

To supervise the implementation of a plan approved by the government at the same level and carried out by the government at a lower level is to supervise all the actions, processes and results of the implementation of the plan by the government at a lower level, it mainly includes the organization of planning implementation, the approval of lower-level planning, the approval of project permission, and whether the land and space use projects and their actual use comply with or meet the requirements of the approved planning. Such oversight requires attention not only to the lower levels of planning, the results of project licensing and the consistency of space-use activities with approved planning and with the content and requirements of use control, while this is important and fundamental, it is not enough. Even if the content of the implementation plan is consistent with the results of the preparation of the plan, there are still many elements for the implementation of the plan that require attention ^[8], including but not limited to:

(1) the overall implementation of the major functions identified in the various planning subareas, in particular whether the major actions for enhancement and improvement of the functions and facilities in the subareas have been carried out; For example, the construction of high-level farmland, the implementation of protective measures in historical protected areas, and the construction of facilities for people's livelihood and public welfare, in particular, in some areas of greater disaster risk in the construction of disaster prevention facilities or the implementation of preventive measures, and so on.

(2) the resolution of existing problems, especially those related to people's livelihood that have been identified in the planning, such as the lack of schools, hospitals, fire stations or green space. It is also necessary to pay attention not only to whether the quantitative requirements in the statistical sense are met, but also to the problems of spatial distribution. For example, after several years of implementation, some regions have met the planning requirements in the quantitative sense according to the statistical caliber, but they may not be appropriate for population distribution, or they may be built on the periphery of the city and not improve in the densely populated urban centers that lack them.

(3) the rationality of the relationship between various types of space use should not only focus on the relationship between quantity, but also the relationship between spatial distribution and its supply effect ^[5]. For example, in a certain area, the construction of housing and all kinds of infrastructure, public facilities, green space, and so on. In the process of rural construction and comprehensive land renovation, the relationship between farmland distribution and village should be considered, especially the relationship between land use under specific production and life style.

(4) the relationship between the distribution of various types of space-use projects and construction quantities and the time-series arrangements, such as the functional positioning of the zoning areas, the major development directions or the key construction areas determined in the planning; In particular, it relates to the requirements for key protection, development and restoration identified in the upper-level planning.

(5) access to subareas outside the boundaries of planned urban development, as the dominant use of subareas has been defined in the overall territorial and spatial plan for this round, but the corresponding access conditions and binding indicators have not yet been clearly defined; Therefore, the relevant policies and the implementation process of the entry conditions and the corresponding binding indicators need to be effectively supervised, and the relationship between their space organizations must be paid full attention to.

(6) attention should be paid to the unbuilt conditions in the implementation of the plan according to the schedule of the plan, in particular public welfare and livelihood public services and municipal infrastructure as well as facilities related to public safety. In the sense of rationality, the public facilities invested by the government should be implemented according to the population distribution and the needs of production and life, the implementation of market-oriented projects and social investment projects is passive to the planning implementation management, that is, decisions are made in accordance with the application, but

the government can promote its implementation through land supply, facilities, and financial or other policy support.

(7) to supervise the opening up and planning of various types of strategic white space in the planning process.

(8) it is necessary to have sufficient prediction of the following effects and external effects after the protection, development, utilization, restoration and renovation projects are carried out or put into use, fully consider its impact on the future implementation of the level of planning and the upper level of planning strategic objectives.

4. The logic of establishing a supervisory system for the implementation of territorial and spatial planning

The whole supervision process of the implementation of territorial space planning is the whole process from monitoring to decision-making. Monitoring is the continuous observation and collection of data on the implementation of the plan. All monitoring is purposive, that is to plan for the implementation of the monitoring of the decision-making basis. Decision-making is the decision to deal with the problems found, such as early warning, or request correction, punishment, warning, or to revise the results of planning, optimization, and so on. Once a decision has been made, the implementation phase is entered and, in the case of the monitoring process, the monitoring phase is resumed.

The decision-making of plan implementation supervision is based on the evaluation of plan implementation status, or the result of plan implementation evaluation. Therefore, planning implementation evaluation is an important part of planning implementation supervision, from monitoring data to decision-making of the key link. Because of the diversity of the contents of the supervision, the multi-level and the different requirements of the decision-making, the evaluation of the implementation of planning has many types. From the needs of decision-making, it can be broadly divided into the following three types:

(1) the assessment, which provides a basis for making immediate decisions, mainly includes three scenarios: first, the approval of various types of planning by lower-level governments (including planning approval and planning permission for space use projects, etc.) ; Second, the implementation of various types of projects to comply with the planning requirements, and third, all kinds of illegal use of space behavior. Problems with this type of conduct require early detection and early decision-making to avoid subsequent impacts, and such assessments are usually based primarily on compliance with specific elements of the approved plan.

(2) regular planning and implementation assessment, including short-term (such as annual) assessment, medium-term (such as five-year) assessment and long-term (planning period end-RRB- assessment. Although the content and complexity of these assessments vary, their focus is primarily on the extent to which planning objectives are achieved, or the extent to which planning intentions and principles are implemented, as well as the above-mentioned structural relationships and the effectiveness of the implementation of the plan ^[9-11] , the implementation

of the plan to analyze the problems and propose measures to solve the problem, to provide a basis for decision-making. In general, short-and medium-term planning and implementation evaluations pay more attention to various types of space use and the configuration of related facilities, the mid-and long-term evaluation of the implementation of the planning should also be on the adaptability of existing planning and the need to adjust the content of analysis and demonstration.

(3) assessment of the implementation of specific plans, the assessment of specific issues or elements, such as the assessment of the implementation of specific strategies or the assessment of certain specific inspections. Such assessments have relatively well-defined assessment requirements and objectives, and it is important to note the distinction between what has been done by existing implementation actions and the contribution to the implementation of planned objectives or strategies, attention should also be paid to the interrelationship between individual objectives and the achievement of the overall objectives of the plan.

In order to carry out the assessment, a large amount of information, data and cases needs to be collected, which is the work of the monitoring phase, and what is monitored and what data is obtained needs to be determined according to the needs of the assessment. Therefore, it is necessary to determine the necessary indicator system in the light of the requirements of the content of the assessment and the type of data needed for monitoring based on the content of the indicator system, then the concrete monitoring object, monitoring content, monitoring equipment configuration and data collection method are determined. For specific monitoring, such data need to include not only information on the administrative actions and results of government planning and approval, projects for the use of territorial space, and the actual use of territorial space, it also includes social and economic information related to population and economy, as well as various kinds of information or public opinion related to legislation and social supervision. Therefore, according to the current types of networks, the main monitoring data information for planning and implementing supervision should include at least four types of networks, and the integration and fusion of these types of networks is the key to the construction of monitoring networks, and needs to carry on the essential classification, the classification and the spatialization processing to these multi-source heterogeneous data ^[12].

(1) the operational network for planning and management ^[12-13], which relies on the “One-chart” system for territorial space planning to obtain information on the examination and approval of planning results and the approval of various types of space use projects. The examination and approval results of the planning and preparation and the approval results of the planning and approval of all kinds of space-using projects shall adhere to the principle of top-down access, and the actual examination and approval of the lower-level planning shall be filled in the framework of the upper-level planning, pre-set focus on partitions, sensitive types, and so on, to provide information for the timely detection of conflicts and conflicts. For the approval of various types of space use projects, not only the results of their approval, but also the process of processing planning permission applications for various types of projects can be incorporated into the planning operations network, if administrative and technical conditions permit, to enable higher-level government departments to intervene earlier in the approval process, and to respond as early as possible to applications that may violate or affect specific strategies, policies,

proposed projects and those planned and implemented at higher levels, or the UK central government's "Call-in" right to local planning permission, whereby planning permission is given by a higher authority for specific projects that may affect the implementation of planning ^[14]. In addition, in order to monitor, for example, the implementation of space-use projects, elements such as planning conditions need to be entered, thus also providing a basis for checking the regulation of use activities.

(2) a monitoring network for the use of territorial space activities, that is, the acquisition of data for the physical monitoring mentioned above, combined with the basic territorial space information platform, full use of satellite remote sensing, big data and various types of monitoring methods such as field monitoring data obtained. Such monitoring should fully consider the work requirements of different levels of planning and implementation supervision to meet the needs of different levels of evaluation. At the spatial scale, the monitoring of plots or projects is mainly concerned with the types of space use, the intensity of use and the various planning control requirements; the monitoring of planning units is not only based on the monitoring of plots, the emphasis is on the relationship among the plots (projects), including the quantity of space use, the spatial structure relationship, and the supporting and related degree of various facilities. Zoning has different divisions and connotations because of different levels of planning, but its main concerns are the structure and configuration relationships between units (or sub-level partitions) and the actual utility and externalities of the main function of the partition [5,15-17]. This hierarchical structure of land-planning units-planning subareas, if superimposed with specific policy areas, not only has a nested relationship between them, but also has the characteristics of independent monitoring and evaluation units, it is therefore possible that the content or precision of the data required under the same indicator may vary, which requires further differentiation in the planning and implementation of assessments and the identification of indicators, special attention should be paid to setting monitoring objects, data types and collecting data in monitoring. In addition, such monitoring needs to be linked to planning approvals and project approvals, which are, after all, the basis for monitoring approved projects and projects, illegal land and construction without permission or approval also need to be found through such a link.

(3) a government department or an integrated government network, which includes both the government service platform of the department in charge of territorial and spatial planning and the government service platform of the People's government and relevant departments, to obtain data on the socio-economic environment related to the implementation of the plan, policies of government departments, developments in project planning and management, and public opinions from public mailboxes for the assessment of the implementation of the plan.

(4) social public networks, social media, etc. to facilitate timely access to space usage and public opinion.

5 the operational mechanism of the implementation and supervision of territorial spatial planning

The whole process of monitoring, evaluation and decision-making constitutes the supervision system of land space planning implementation. Monitoring is the foundation, decision-making is the goal, and evaluation links the front and back ends. In general, the assessment as an element of the system is based more on technical requirements, and decision makers also need to make comprehensive judgments and decisions based on internal and external circumstances, decision-making procedures, mechanisms and related systems need to be built under the administrative system, this paper does not make further elaboration. In this sense, the technology-oriented evaluation of planning and implementation is mainly to provide decision-makers with the basis of decision-making type, or to make a decision-making tips or reminders.

For the entire monitoring system, all the data comes from monitoring. The Ministry of Natural Resources has drawn up a programme for the construction of a monitoring network for territorial spatial planning and has deployed a pilot project for the construction of a monitoring network. For the construction of monitoring network, the key is to do well: (1) the construction of monitoring network is targeted and serves the whole plan implementation supervision system, therefore, the selection, arrangement and network construction of monitoring facilities should be based on the overall situation, and on the basis of taking into full consideration the needs of planning implementation evaluation and decision-making, set up different application scenarios and determine their respective monitoring indicators, then, the monitoring objects and data types should be determined according to the requirements of monitoring indicators. (2) the establishment of a shared network among the various sectors, not only because many of the activities planned and carried out are carried out by the various sectors, but also because each sector has the responsibility for the specific management of activities involving the use of space; The specific policies, decisions and management processes of these sectors have a direct impact on the implementation of various types of projects and the actual use of territorial space. (3) the hierarchical monitoring system requires the establishment of hierarchical monitoring network which is suitable for the responsibilities at the same level, but it needs to be connected between different levels. The data for planning oversight is derived from monitoring, but it is not necessary to obtain all the data needed for each level of monitoring at that level. (4) there should be access ports for the public to participate in the supervision of the implementation of the planning, and there should be channels for the public to give opinions directly on the supervision of the implementation of the planning, it should also have the function of collecting public opinions through various channels, such as public networks, social networks and administrative platforms at all levels.

The monitoring network is not only hierarchical, but also comprehensive and full coverage, the data obtained is multi-source, the nature and types of various data are different, so all kinds of data only after cleaning, format sorting, etc. , to achieve multi-source data fusion, or stored in the database, or by setting a threshold once the breakthrough immediately wake up to start the subsequent assessment process, on the basis of data clustering for hierarchical, classification, time-sharing, sub-item evaluation and decision-making to provide basic data. As far as planning implementation evaluation is concerned, it is necessary to establish an appropriate planning implementation evaluation system and method according to the respective responsibilities of different levels and the different spatial and temporal dimensions mentioned above, in today's

digital governance discourse, it is necessary to establish a series of evaluation models and algorithms, so that data can be integrated throughout the implementation monitoring system [12].

As has already been mentioned, it is not enough to rely solely on the image and the planning results, planning implementation of the content and its impact factors are much richer. In a way, image recognition and comparison, as well as the comparison of target indicator data, are only the beginning of the evaluation, not the evaluation itself, except for some critical and tightly controlled elements (such as "Red lines"). For example, the use of arable land for construction or conversion to other agricultural land uses, it is also necessary to make a comprehensive assessment of the necessity of such use, spatial choice and its external impact, as well as the implementation of policy instruments such as "Increase-decrease linkage", "Occupy-supplement balance" or "Entry-exit balance" before making a decision. It can also be seen that there needs to be close correlation between the various types of data, and this should be fully noted from the very beginning of the construction of the monitoring network, otherwise it will mislead the final decision or add a lot of work.

The evaluation of planning implementation should aim at the established planning objectives, and should be carried out from the point of view of target realization. Different levels of planning, different spatial levels of planning zoning (a block is actually a block), have its need to implement different target positioning (also known as the dominant function). Ambitious national strategies or development goals, or problems to be solved, need to be translated into concrete, actionable targets (or leading functions) through the decomposition and transmission of different levels and types of planning, to guide or control specific space-use projects and space-use activities [2,4]. As far as planning implementation assessment is concerned, the direct basis or criterion of the assessment is the degree of accomplishment of the target and its contribution to the achievement of the target at the upper level [10-11]. It should be noted that for land and space planning, the goals are often multiple, and there is no logical relationship between them, but rather a relationship of "Both... and..." Moreover, just as space use is interrelated, goals are achieved through interaction with the periphery, so there are limitations to the measurement of any single indicator, in the assessment, it should be fully recognized that different paths can lead to the same goal and that the same goal can be achieved in many ways, but that the externalities that may arise from different means of implementation and the impact of subsequent oscillations may differ, and this needs to be clearly stated in the assessment results, so as to provide a basis for decision-making.

From monitoring to evaluation, it is a process from data collection to data clustering analysis and application in different scenarios; from evaluation to decision-making, it is a process from technical analysis to administrative decision-making. The operational logic and mechanisms of these two phases are different. As has already been analyzed before, in the construction of the whole plan implementation supervision system, needs to proceed from the decision-making type and the request to determine the plan implementation evaluation content and the result form, on this basis, the methods and methods for planning and implementing the assessment, as well as the range, type and quantity of data required for the assessment, determine the equipment configuration, locations, frequency of monitoring, and methods of data collection. The operation

of planning and implementation supervision system is to ensure that from monitoring to evaluation to decision-making, to meet the needs of different levels, different types and different timeliness of decision-making. The data collected by monitoring is not only stored in storage, some of it needs to be pushed directly to the assessment to make timely decisions; the assessment is not just the completion of a thick stack of reports, rather, it is about identifying specific problems and the reasons for their emergence, as well as the specific content of the decisions that need to be made.

Conclusion

In order to implement the major strategic plans of the CPC Central Committee and the State Council for the reform of the national planning system and ensure the effective implementation and full play of the territorial and spatial planning system, starting from the contents of land and space planning and the requirements of planning implementation management,^[2,18] this paper clarifies the relations between various links in the process of planning implementation and the contents of supervision over the implementation of various plans, it is of great significance to establish a relatively complete system of supervision over the implementation of territorial spatial planning.

In the era of digital intelligence, it is also a great challenge and an important task to realize the digital transformation of the implementation and supervision of territorial and spatial planning, through data platform and model construction, data flow from plan implementation monitoring and monitoring data to plan implementation evaluation to plan implementation monitoring decision can be connected^[12]. Based on the analysis of the whole life cycle management of land and space planning, this paper distinguishes the types of planning implementation supervision, and points out the key points that should be paid attention to under the hierarchical management system, thus, it provides a basic framework for the monitoring objects and contents of planning implementation monitoring. In addition to determining the object and content of planning implementation supervision, this paper further discusses the technical logic of planning implementation supervision process. In terms of the operational process of planning implementation supervision, it is a process that starts from monitoring and ends at decision-making, and the whole process serves for decision-making, need to proceed from the type, requirements and needs of planning for the implementation of supervisory decisions, which need to be assessed in the first place, that is to say, the behavior state of planning implementation (including the approval of the lower level planning results, the approval and implementation of space use projects, the actual use of land and space) and its effectiveness are evaluated. The conduct of any planned implementation assessment requires a significant amount of data and information from the monitoring system, but this data and information is not only large but also wide-ranging, so that in the construction of the monitoring system, on the basis of the need to group together different indicators according to different types of assessment requirements and to break them down into specific data and information required, the data is collected through the configuration of monitoring equipment or monitoring points. Therefore, different types of decision-making need to determine what type of planning implementation evaluation needs to be carried out, different types of planning implementation evaluation determines the need for different scenarios (time, space scale) of the indicators content,

different indicators determine what data and information should be collected. The operational process of plan implementation supervision is the process from plan implementation monitoring to plan implementation decision-making. Therefore, for the construction of digital and intelligent plan implementation supervision system, it is to ensure that the whole process of running through, according to the requirements of different levels, different time limits and so on, timely and effective assessment results to the hands of decision-makers (terminals) , the final decision-making is made by the decision-maker according to the duty and the related system, therefore, the system construction of the plan implementation supervision decision-making should also be the important content of the supervision system construction.

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Notes

(1) in some specific fields, such as medicine, the term“Surveillance” is used in a similar sense to“Surveillance”, such as epidemiological or clinical surveillance, see the“Monitoring” entry in CIHAI (6th edition) .

(2) in this paper, the items that will cause the change of space use are collectively called the land space use items, so as to be different from the actual land space use activities.