

Comprehensive Territorial Space Consolidation: Challenges, Innovative Approaches, and Ningbo's Practices

PAN Ke, SANG Jin

Abstract: The comprehensive Territorial Space Consolidation is a new attempt in the comprehensive land consolidation, which reflects the optimization of urban and rural spatial layout and the implementation of Territorial spatial planning on a larger scale. Taking advantage of the national pilot opportunity, Ningbo has expanded the connotation of comprehensive land consolidation from the dimensions of goals and positioning, connected the comprehensive land consolidation with Territorial Space development strategies and project planning and implementation, and strengthened its role as a tool for implementing national spatial planning. In response to the difficult issues in the current comprehensive land consolidation, pilot projects have explored implement territorial spatial planning in a large scale, optimize the layout of territorial space across the entire region, establish a "remediation-preparation-reuse" mechanism for managing existing spatial resources, and create a market-oriented coordinating entity, and extensive practice has been carried out throughout the city. The practical experience will provide inspiration for the transformation of spatial governance methods.

Keywords: comprehensive territorial space consolidation; comprehensive land consolidation; flow of urban-rural factors; implementation of territorial spatial plans; pilot project in Ningbo

Chinese Library Classification No.: TU984; Document Code: A

DOI: 10.16361/j.upf.202501006; Article No.: 1000-3363(2025)01-0040-06

Author Biography: PAN Ke, Deputy Director and Senior Engineer, Shanghai Branch, Guangzhou Urban Planning & Design Survey Research Institute Co., Ltd. Email: 19172428@qq.com; SANG Jin, Director and Professor-level Senior Engineer, Shanghai Branch, Guangzhou Urban Planning & Design Survey Research Institute Co., Ltd.; corresponding author. Email: powersang@126.com.

Funding: Guangzhou Collaborative Innovation Center for Resources Planning and Marine Science and Technology Project (Project No. 2023B04J0301).

Land consolidation has evolved from agricultural-land consolidation to comprehensive land consolidation, and has become an integrated platform and important instrument for advancing modernization, ecological civilization, rural revitalization, and urban-rural integration in a coordinated manner^[1]. As the range of elements involved has expanded, the issues to be addressed have become increasingly complex, making the optimization of methods and implementation pathways a central concern. In 2022, the Ministry of Natural Resources officially approved Ningbo as China's first municipal pilot for comprehensive territorial space consolidation. Over nearly three years of exploration, Ningbo has developed extensive practices in work organization, planning, policy, and supervision. Its achievements were selected among the ministry's first batch of exemplary cases for nationwide dissemination, and its experience was incorporated into subsequent policies on comprehensive land consolidation. The initiative has also become a catalytic project for economic and social reform in Ningbo. Its successful practices in urban-rural coordination, state-owned enterprise reform, and fiscal and financial reform received the Gold Award of the 2023 Zhejiang Reform Breakthrough Awards.

1 Current Challenges in Comprehensive Land Consolidation and Local Explorations

1.1 Obstructed Urban-Rural Factor Flows and the Difficulty of Optimizing Territorial Spatial Layout as a Whole

China's urban-rural space is undergoing a staged transition from "rural China" to "urban China" and then to "urban-rural China"^[2], and has become a highly coupled hybrid space. As an important instrument of spatial governance, urban-rural integration is also a major orientation of comprehensive land consolidation^[3]. Although current practice is described as "comprehensive" or "region-wide," it still focuses primarily on rural areas and has yet to achieve genuine region-wide consolidation and optimization. Facilitating the flow of factors between urban and rural areas has therefore become a major research focus.

The transfer of land-use quotas is currently the principal means of promoting urban-rural factor flows. Since 2009, Zhejiang Province has explored cross-urban-rural trading of quotas generated through the linkage between increases and decreases in construction land, introducing such instruments as enclave quotas, revolving quotas, and point-based land supply^[4]. Shanghai has established mechanisms linking annual new-construction-land plans with construction-land reduction quotas, together with a system for circulating reduction quotas, thereby connecting rural land reduction with urban construction^[5].

Strengthening distinctive rural resources to attract urban factors into the countryside is another important approach. Xuguang Village in Dazu District, Chongqing, developed a fragrance-production base around roses, rosemary, and other specialty plants, using the industry to attract social resources^[6]. Qingyang, Gansu Province, used red-culture resources and the Dazhai spirit to attract visitors and establish an industrial spatial system in the Puhe River basin^[7]. Both are representative explorations.

1.2 High Consolidation Costs and Insufficient Local Incentives

Rural and urban areas are both human settlements, but the countryside embodies a logic and set of values distinct from those of the city; rural value cannot be realized simply through the value logic of urban development^[8]. The current state-led model of "project-based governance" makes it difficult for rural areas to develop endogenous capacity^[9]. Comprehensive land consolidation has likewise relied heavily on public finance, faced substantial funding gaps, and lacked effective benefit-balancing mechanisms. Expanding funding sources, diversifying pathways for converting natural-resource value, and encouraging social participation have consequently become key areas of local experimentation.

Broadening funding channels is a primary way to strengthen local motivation. Tangtang Town in Fogang County, Qingyuan, combined an ecology-oriented development (EOD) model with comprehensive consolidation and sought special funds, special-purpose bonds, and policy-based finance through multiple channels, thereby increasing the willingness of private capital to participate^[10]. In Nanhai District, Foshan, the comprehensive land consolidation program combined land vouchers (certificates for quotas generated after reclamation), housing vouchers (certificates exchangeable for industrial support housing), and green vouchers (reward certificates for construction land following revegetation). This expanded the application of quotas generated through consolidation and increased the asset value of natural resources^[11].

Encouraging participation by social actors is another focus. Xinan Town in Huangshan, Anhui Province, introduced Professor Yu Kongjian's "Living with the Mountains" team and developed a model involving new rural elites, government, and villagers to promote the consolidation of rural construction land and the protection of historic culture^[12]. In Yuhang District, Hangzhou, villagers were mobilized to participate in co-construction, co-governance, and benefit sharing, making it possible for "village affairs to be discussed and decided by everyone" and broadening the social base for land

consolidation^[13]. These explorations have expanded investment channels and stimulated participation from across society.

1.3 Unclear Departmental Responsibilities and the Lack of Effective Instruments for a "Consolidation Plus" Platform

Comprehensive land consolidation is a systemic undertaking that optimizes production, living, and ecological spaces, coordinates urban-rural development, and harmonizes human-land relations, involving multiple sectoral lines of work^[14]. Given the complexity of rural governance, it is not merely a matter of physical investment, but also a process of mobilizing public resources for grassroots organization and development^[15]. In practice, however, the separate regulations and implementation requirements of different departments make their respective responsibilities difficult to clarify. Fragmented administration and conflicts of authority are common. Building a platform around consolidation, establishing interdepartmental consultation, and integrating departmental resources are therefore major areas of exploration.

In terms of interdepartmental coordination, Shanghai has developed a three-tier land-consolidation planning system of municipality, district, and countryside unit, together with a cross-sector "land consolidation plus" platform, forming a close coordination mechanism that has strongly advanced comprehensive consolidation^[16]. Guangdong Province has established a three-tier development and operation cost-benefit mechanism to coordinate the public interest, village collective interests, and market-capital interests involved in comprehensive consolidation, creating a long-term operating mechanism based on shared costs and shared benefits^[17].

For sectoral resource integration, Shanghai systematically inventoried the funding for centralized farmer resettlement, rural industry, municipal transport, land consolidation, agriculture, river regulation, and ecological restoration, replacing fragmented departmental management with coordinated governance^[18]. Yuyao in Zhejiang integrated government-fund revenues, farmland infrastructure construction, irrigation works, mountain-area poverty alleviation, village improvement, rural housing reform, and subsidies for central village construction under a unified mechanism, generating economies of scale in the use of funds^[19]. These practices provide a strong foundation for comprehensive consolidation.

1.4 Scattered Project Distribution and Weak Support for Implementing Urban Strategies

Because of unclear rural property rights, close place-based social relations, and weak public-service provision, the rural planning on which comprehensive land consolidation relies remains oriented primarily toward maintaining rural social order^[20]. Land-consolidation projects consequently tend to lack top-down strategic coordination, remain spatially fragmented, produce localized effects, and show weak alignment with urban development strategies.

Localities have begun to strengthen the systemic character of consolidation. Guangzhou's Conghua District uses territorial spatial planning to guide county-wide coordination and has established a four-tier system of consolidation structure, consolidation units, consolidation areas, and consolidation projects. This connects project implementation with the territorial spatial structure^[21]. Shanghai has created an integrated implementation platform combining land consolidation with countryside-unit planning, using that planning system to support and secure implementation^[22].

Region-wide integrated design is also an important principle in current consolidation planning. Zhejiang takes whole towns and villages as planning objects, coordinates township planning, village planning, and engineering design, and applies the concepts of "region-wide planning, region-wide design, and integrated governance" and "multiple plans in one, planning and design in one"^[23]. These

explorations are highly significant for integrating consolidation outcomes and strengthening the implementation of urban strategies.

2 Innovative Approaches in the Ningbo Pilot

2.1 Ningbo's Urban-Rural Spatial Characteristics and Consolidation Needs

Located in the Yangtze River Delta, Ningbo has urbanized rapidly and faces pronounced urban-rural development tensions. Its territory is characterized by mixed urban-rural functions, highly fragmented land use, severe ecosystem encroachment, and numerous low-efficiency urban sites dispersed between urban and rural areas, obstructing improvement of the city's functional structure. On the one hand, Ningbo's dense population and dynamic private economy have produced a pattern of small and dispersed parcels. Farmland parcels smaller than 15 mu (1 ha) account for more than one fifth of the city's farmland; 55% of rural settlements occupy approximately 2-10 ha; and one third of industrial land lies outside industrial parks (Fig.1). On the other hand, Ningbo has an exceptionally diverse range of territorial space, including mountains, water, forests, farmland, lakes, sea, and islands. It contains dense built-up areas such as the metropolitan region, port district, and major industrial zones, as well as highly distinctive peri-urban and rural landscapes. Demand for comprehensive territorial space consolidation is therefore particularly strong. Since the pilot was approved, Ningbo has advanced the consolidation of five major categories of elements in eleven demonstration areas through comprehensive planning, integration of all factors, and whole-cycle supervision^[24].

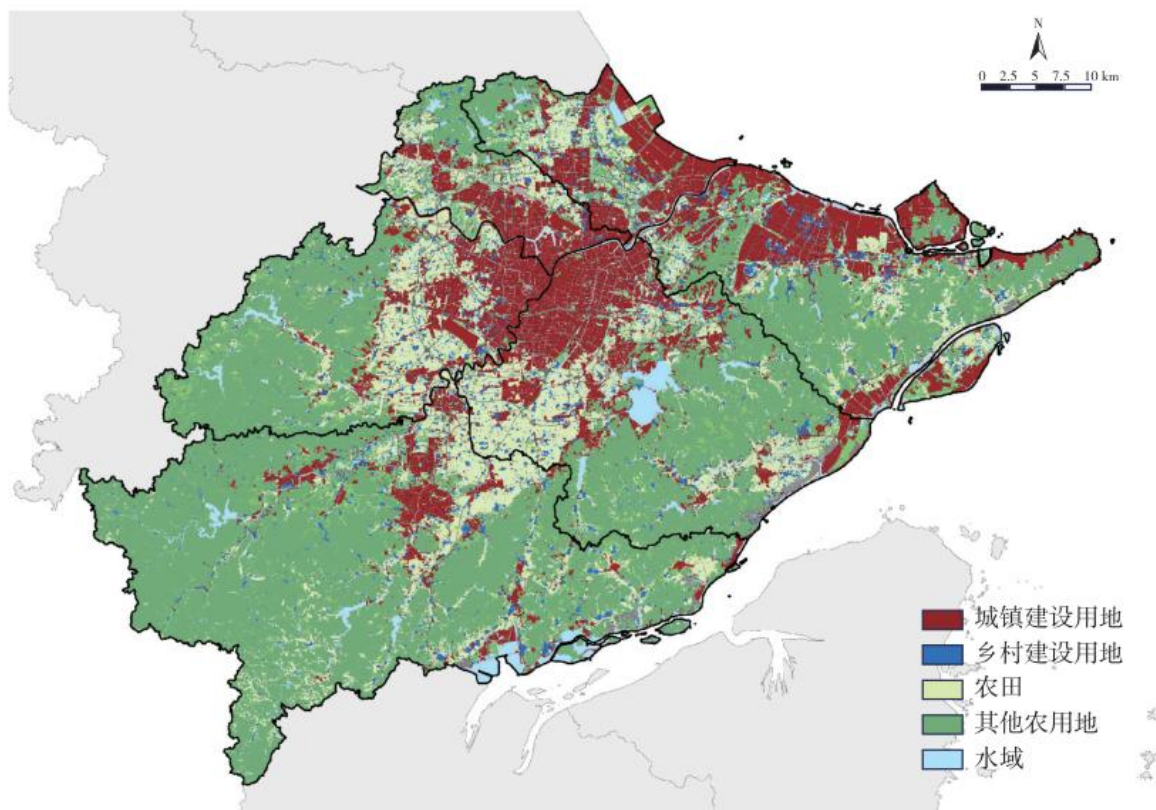


Fig.1 Distribution of urban and rural construction land in Ningbo city

2.2 Breakthroughs and Innovations

Overall, the Ningbo pilot represents a deeper exploration of comprehensive land-consolidation methods. Its principal breakthroughs and innovations concern both the scope of the work and its implementation pathways (Fig.2).

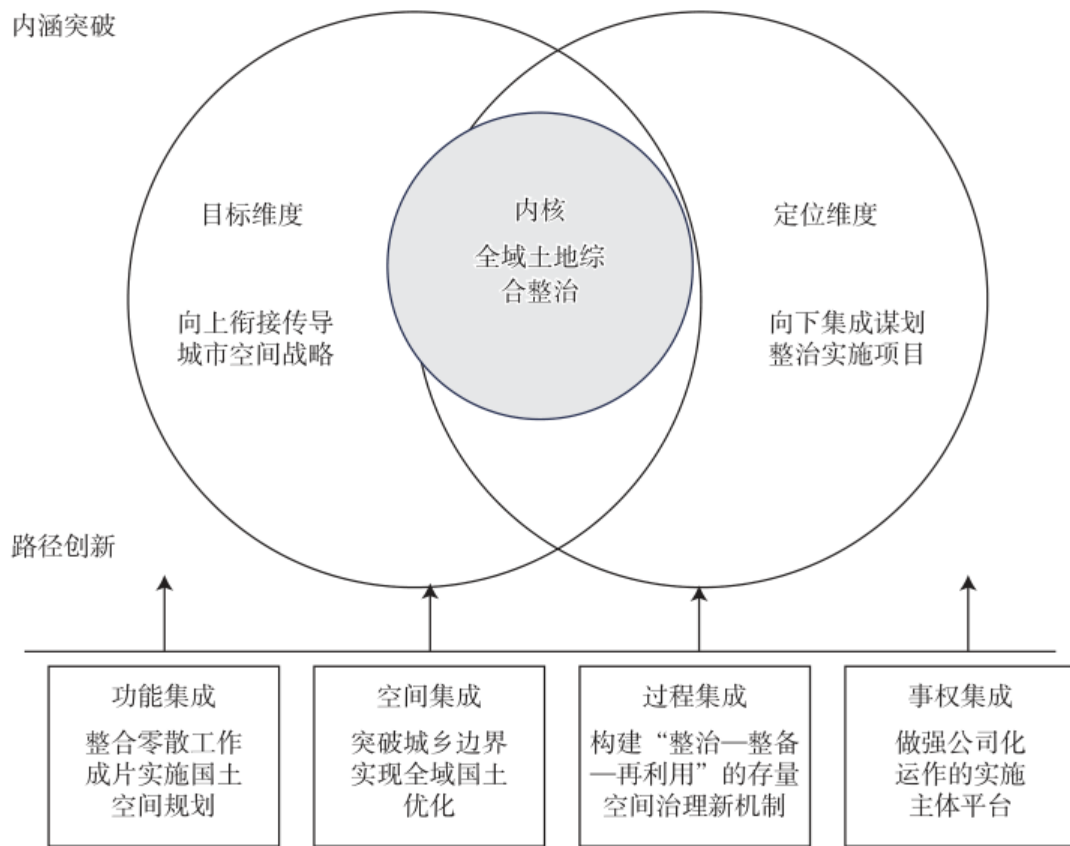


Fig.2 Schematic diagram of the connotation logic of the comprehensive territorial space consolidation

2.2 Breakthroughs in the Scope and Substance of the Work

2.2.1 Goal Dimension: From Local Spatial Optimization to Implementing Urban Development Strategies

The current master-detailed territorial spatial planning system is constrained by the complexity of urban-rural development and still lacks an effective pathway for accurately transmitting and implementing urban strategies^[25]. Comprehensive territorial space consolidation, oriented toward implementation, provides an effective means of implementing territorial spatial plans. The pilot emphasizes guidance by urban development strategies and treats land consolidation, together with infrastructure construction, area-wide development, and urban renewal, as an important spatial-governance instrument through which government actively implements territorial spatial plans and urban strategies. Guided by territorial spatial planning, projects are planned from the top down around important functional sectors. Land consolidation in the Ningbo pilot is therefore not confined to improving cultivated land, rural environments, and rural settlement patterns. It aims to reorganize urban and rural space across the entire territory, optimize the urban spatial structure, support strategic functions, and make land consolidation a genuine instrument for achieving urban development goals.

2.2.2 Positioning Dimension: From a Coordination Platform to an Integrated Innovation Instrument

China's political system gives the state a fundamental role in urban-rural spatial governance. Through the regulation of land, capital, and household registration, the state shapes the overall effectiveness of spatial governance^[26]. Comprehensive land consolidation is an important means through which state institutions actively intervene in urban-rural spatial governance. The pilot

therefore emphasizes "integration": beginning at the planning stage, it uses urban development strategies to guide the collective generation of projects across sectors so that they reinforce one another spatially and in their outcomes. Resources, policies, and funding from different sectoral lines are combined to maximize implementation benefits and support strategic objectives. The Ningbo pilot does not treat comprehensive land consolidation merely as a bottom-up action. It incorporates an approach of "managing the city" and extends beyond spatial planning and design to the entire process of project conception, organization, and implementation. It emphasizes balanced interests, interconnected stages, and orderly implementation, and innovatively removes bottlenecks between stages to integrate the full consolidation process.

2.3 Innovations in Implementation Pathways

2.3.1 Functional Integration: Consolidating Fragmented Tasks to Implement Territorial Spatial Plans by Area

Following a logic of "strategic objectives - core spaces - core projects - spatial project packages," the pilot uses planning goals to guide project generation. This corrects the weak interconnections and frequent conflicts among bottom-up projects. Basic implementation units are delineated around major functional sectors identified in urban strategies and organized in a two-tier model of consolidation area and consolidation unit. A consolidation area is delineated around a thematic urban strategic goal and may contain one or more functional sectors defined in the territorial spatial plan. A consolidation unit is delineated according to implementation needs, with priority given to places involving numerous projects, complex ownership relations, and extensive coordination requirements. Its purpose is to resolve key implementation difficulties and accelerate progress. Under this approach, Ningbo's eleven pilot areas were delineated primarily around urban strategies such as construction of the ring-city ecological belt, coordinated development in the Yuyao-Cixi region, and improvement of coastal functions.

2.3.2 Spatial Integration: Crossing the Urban-Rural Boundary to Optimize Territorial Space across the Entire Region

Implementation areas and units may cross administrative jurisdictions and urban development boundaries. Breaking through these spatial boundaries means treating urban and rural areas as a whole, making genuine region-wide optimization possible. It also requires overcoming the constraints of existing administrative systems and the urban-rural dual structure. Cross-boundary functional coordination, infrastructure construction, project admission, planning adjustment, and land-quota guarantees must all be planned holistically within an area. Quota revenues, public-service facilities, and the distribution of population and productive capacity must likewise be coordinated as a whole. Higher-level coordination mechanisms are also required to address obstacles arising from villager and enterprise relocation, construction-land quotas, and the use of requisition-compensation balance quotas.

2.3.3 Process Integration: Establishing a New "Consolidation-Preparation-Reuse" Mechanism for Existing-Space Governance

The pilot treats agricultural-land consolidation, village consolidation, industrial-land consolidation, consolidation of inefficient urban land, and ecological protection and restoration as five major categories. It also incorporates the renewal and activation of existing urban construction land inside the development boundary, greatly expanding the scope of consolidation. This expansion connects the pilot with urban renewal, integrated development, major infrastructure construction, and a series of activities including reclamation, consolidation, renovation, land acquisition and reserve, transfer, and

construction. The pilot therefore links the use of spatial resources after land consolidation with land preparation for construction and the redevelopment and reuse of existing areas. It integrates operating procedures, review requirements, and supporting policies across these tasks to improve the governance efficiency of existing urban-rural space.

2.3.4 Integration of Administrative Authority: Strengthening a Corporatized Implementation Platform

As urban spatial governance becomes increasingly complex, a single-entity governance mechanism based on unified administrative authority is essential for coordinating complex resources, space, and responsibilities and avoiding excessive fragmentation. The Ningbo pilot proposes implementation entities led by platform companies to direct consolidation tasks and coordinate work within each area. These entities are established primarily by municipal- and district-level state-owned enterprises and are responsible for participating in planning, integrating resources, and coordinating the rights and responsibilities of all parties. To support their work, the pilot has explored area-level organizational mechanisms, project approval, fiscal support, and innovative investment and financing models. In most of the eleven pilot areas, district-owned state enterprises have already formed implementation entities; some areas have also introduced municipal state-owned enterprises.

3 Practical Case: The Jiaochuan Consolidation Demonstration Area

3.1 Overview of Consolidation in Jiaochuan

Zhenhai District was one of the earliest and most successful pilot areas in Ningbo^[27]. The Jiaochuan consolidation area lies in northern Zhenhai and includes Jiaochuan Subdistrict, Xiepu Town, and Guisi Subdistrict. It encompasses major urban functional sectors such as the Yongjiang Science and Technology Innovation Zone and the Ningbo Petrochemical Base, while the ecological protection forest belt of the petrochemical zone crosses its western side. The area has mixed urban-rural functions, fragmented land parcels, crisscrossing infrastructure, and poor environmental quality. In particular, urban construction has interrupted the ecological protection forest belt, creating significant risks to the ecological security of Ningbo's central city and making consolidation urgent.

Jiaochuan was among the first Ningbo consolidation areas registered with the Ministry of Natural Resources. Its work takes the spatial blueprint established by the territorial spatial master plan as its target and focuses on major projects such as building strategic functional sectors and restoring urban ecological security corridors. It has jointly planned a series of projects to fill gaps in the forest belt, restore the river ecological network, relocate villages exposed to safety hazards, and activate inefficient industrial land. Innovations in area delineation, functional organization, project planning, factor guarantees, and the coordination of authority have opened a new pathway from territorial strategy to project planning and implementation, fully expressing the overall logic of the Ningbo pilot.

3.2 Strengthening Spatial Integration through Guidance by Urban Strategies

3.2.1 From Strategic Spatial Structure to Consolidation Area

Covering 27 km², the Jiaochuan area is an important component of Ningbo's ring-city ecological belt. In the territorial spatial master plan, the belt has critical strategic value: it is a major functional linkage in the central city's "one core and four sectors" structure, connecting municipal strategic sectors including the Yongjiang Science and Technology Innovation Zone, Ningbo West Hub, Dongqian Lake, Cuipingshan Central Park, and the world-class petrochemical base. It is also a backbone corridor in the municipal ecological network. Consolidating the belt is therefore important for urban safety, ecological connectivity, and the integration of strategic spaces. In the pilot, Ningbo designated the

entire ring-city ecological belt as a priority urban-rural coordinated consolidation zone within the municipal "3611" consolidation framework and guided districts to delineate pilot areas around it. Jiaochuan was delineated through municipal-district consultation under this guidance. Its consolidation can improve the living environment along the ecological belt, advance construction of the core area of the Yongjiang Innovation Zone and petrochemical support base, and closely link consolidation with strategic implementation, thereby promoting comprehensive territorial optimization.

3.2.2 From Strategic Objectives to Consolidation Projects

Project planning in Jiaochuan is organized closely around the area's strategic objectives. The area contains 64 projects. Several major projects - including relocation of seven villages around the Zhenhai petrochemical zone, construction of a modern agricultural park, transit-oriented development along Metro Line 7, and development of the core area of the Yongjiang Innovation Zone - had already been planned or were under construction, while most projects were conceived through the integrated area-planning process. They are organized around such tasks as rebuilding the ecological security barrier, relocating villages near the petrochemical zone and improving residents' quality of life, securing land for strategic functions and improving urban services, and activating inefficient land to support urban transformation. Project generation follows the spatial layout established by territorial spatial planning and considers implementation conditions, consistency with consolidation tasks, and the willingness of the implementation entity. See Fig.3. In areas where projects are concentrated, consolidation units are further delineated and refined as a whole to strengthen spatial integration.

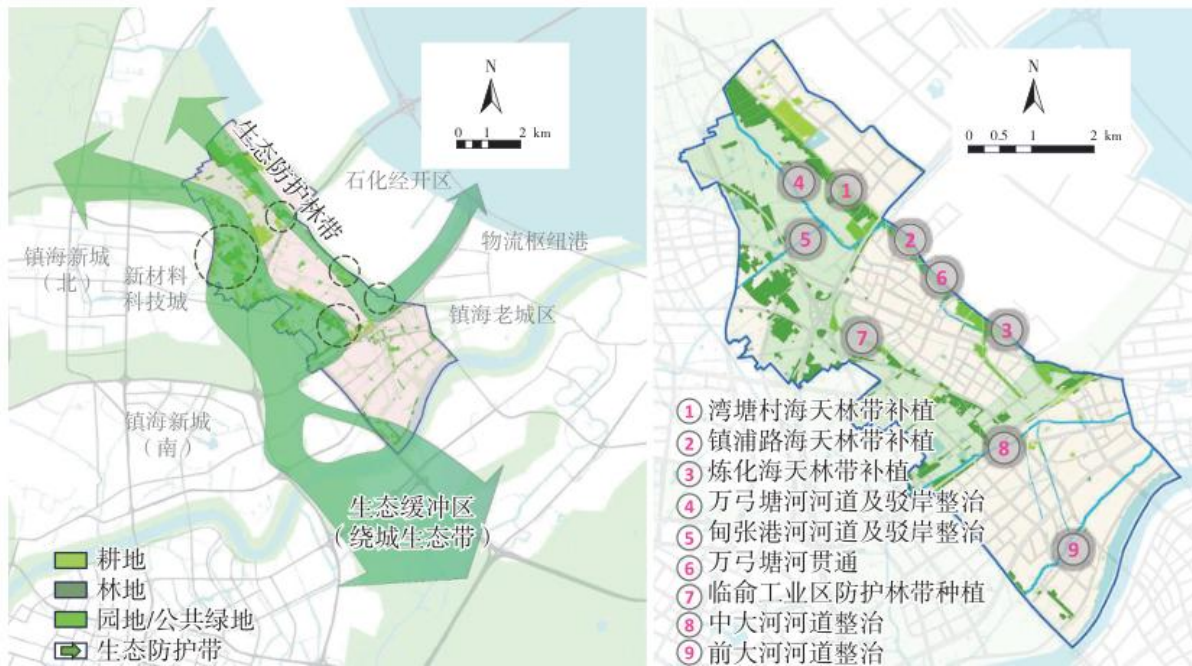


Fig.3 From strategic objectives to consolidation projects in Jiaochuan area

3.3 Promoting Functional Integration through Urban-Rural Factor Flows

3.3.1 Coordinating Quota Factors across Urban and Rural Areas

Land inside and outside the urban development boundary each accounts for roughly half of the Jiaochuan area. The pilot makes full use of the policy advantage of linking increases and decreases in construction land within comprehensive land consolidation. Quotas generated by reclaiming construction land are concentrated in suburban public-service facilities serving both urban and rural

residents, including agricultural, cultural, and tourism facilities, agricultural-product service centers, and public rental housing. The pilot also systematically reviewed policies on comprehensive land consolidation, urban renewal, and inefficient land redevelopment, integrated policy benefits, and used the policy flexibility of the ministerial pilot to coordinate new construction-land quotas, cultivated-land requisition-compensation quotas, and compensation quotas for forest, water, and wetland with the activation of existing construction land. This has secured the construction of major cross-urban-rural linear corridors, including the Haitian Forest Belt, the Wangongtang River leisure corridor, and Zhenpu Road, supporting comprehensive functional improvement.

3.3.2 Sharing Public Facilities across Urban and Rural Areas

The pilot divides the area into eight functional clusters, each treated as an integrated urban-rural functional zone. It breaks through the constraints of the original detailed-planning units and plans public facility needs across the urban-rural zone as a whole. By making full use of village relocation near the petrochemical zone, the relocation of scattered industry in Nanhong, and renewal of Mianfeng Industrial Park, the pilot coordinates post-consolidation land and building resources to create shared facilities such as an under-forest recreation base, the Houshi Market urban-rural marketplace, and the Nanhong Community Public Center. It also strengthens research and demonstration for major cross-urban-rural public corridors and facilities. The implementation of linear projects such as the greenway along the Wangongtang River and Jinfeng Road, an urban-rural connector, has strengthened urban-rural linkages.

3.3.3 Jointly Building Core Functions across Urban and Rural Areas

Industrial functions introduced through the petrochemical zone and the Yongjiang Innovation Zone bring new industrial populations and service demand, reshaping the area's urban-rural population structure. Former rural residents have been resettled in riverfront communities such as Yinfeng Community, increasing population density and vitality along the Yongjiang River. Land released through consolidation around the petrochemical zone and along old industrial sites beside the river accommodates not only core projects such as the Petrochemical Research Institute and headquarters of innovative enterprises, but also talent apartments, small and micro-enterprise parks, and supporting commercial streets, creating employment and stable income opportunities for surrounding urban and rural residents.

3.4 Implementing Authority and Process Integration through the Platform Entity

3.4.1 Coordinating the Authority Boundaries of Sectoral Projects through the Platform

Zhenhai District designated Ningbo Zhenhai Urban Renewal Investment, Construction and Operation Co., Ltd. and Ningbo Urban Construction Investment Group Co., Ltd. to jointly establish Ningbo Zhenyu Land Consolidation Co., Ltd. (the Zhenyu Company) as the implementation entity. It is responsible for unified financing, implementation coordination, integrated planning, technical standards, feasibility studies, project approval, and financing guarantees. Fourteen other project implementation entities are involved, including Jiaochuan Subdistrict, Xiepu Town, Guisi Subdistrict, the urban renewal company, the agricultural investment company, the comprehensive consolidation company, the district land acquisition and relocation office, the district culture and tourism group, the refining and chemical company, Yongzhen Company, the construction bureau of the petrochemical zone, the transport engineering development company, Mingzhou Group, and the municipal construction and transport bureau. During implementation, the Zhenyu Company has used the district leading group for comprehensive consolidation to establish a stable project consultation mechanism. It has played an important role in assessing project layouts, coordinating project functions, allocating

authority, and strengthening spatial coordination, significantly increasing implementation efficiency (Fig.4).



Fig.4 Coordination diagram of model unit project in Jiaochuan area

3.4.2 Refining Spatial-Unit Planning around Platform Operating Requirements

The newly established Zhenyu Company is responsible not only for project financing, fund management, and coordination, but also for the full chain of land consolidation, land preparation and reserve, development and construction, and operational management. It thus acts as an integrated urban operator. To generate returns, the company develops detailed plans for spatial products, business formats, and industry attraction within each consolidation unit. Through planning, it enhances spatial value and connects land consolidation with construction and operation. It has also prepared a whole-life-cycle dynamic financial balance sheet and uses asset-operating income and incremental tax-revenue sharing as important sources of return when planning projects, coordinating investment across the area, and conducting whole-life-cycle supervision.

4 Conclusion

Comprehensive territorial space consolidation is not only an optimization of comprehensive land consolidation, but more importantly an exploration of pathways for implementing territorial spatial plans. With the establishment of the territorial spatial planning system, comprehensive land consolidation has become an important instrument for optimizing spatial layout. It possesses policy advantages not available to other implementation instruments such as area-wide development, urban renewal, and infrastructure construction, and is highly valuable for overcoming urban-rural spatial fragmentation and improving land-use efficiency.

Because comprehensive territorial space consolidation spans urban and rural areas, crosses township boundaries, and introduces platform entities, it inevitably faces more complex challenges. At present, the Ningbo pilot is still exploring implementation procedures, incentive mechanisms,

interdepartmental coordination, technical standards, and other issues. Nevertheless, the spatial-governance approach it represents has far-reaching value for improving the territorial spatial planning system.

References

- [1] XIA Fangzhou. Comprehensive land consolidation: Development background, systemic connotations, and future trends [J]. *Zhejiang Land & Resources*, 2018(10): 23-25. (in Chinese)
- [2] GONG Hua, TONG De, ZHANG Chujing, et al. Optimizing comprehensive land-consolidation models from the perspective of urban-rural integration [J]. *Planners*, 2023(12): 38-52. (in Chinese)
- [3] CHEN Xiaohui, HU Jianshuang. Rural spatial-governance practice in Jiangsu Province: Stages, pathways, and models [J]. *Urban Planning Forum*, 2024(1): 38-45. (in Chinese)
- [4] HE Youyong, XU Hanliang, YU Zhoulu, et al. Connotations and mechanisms of comprehensive land consolidation from the perspective of the "Thousand Villages Demonstration and Ten Thousand Villages Renovation" project: Evidence from Zhejiang Province [J]. *Acta Agriculturae Zhejiangensis*, 2023, 35(12): 2988-2998. (in Chinese)
- [5] GU Shoubai, LONG Teng, LIU Jing. Innovation and practice in comprehensive land consolidation: The case of Shanghai [J]. *China Land*, 2017(9): 52-55. (in Chinese)
- [6] YANG Lulu, WANG Hanghang. Pathways for activating homestead land consolidation and developing rural industry: A study of seven pilot villages in two municipalities [J]. *Journal of Northwest University (Philosophy and Social Sciences Edition)*, 2022, 52(3): 63-79. (in Chinese)
- [7] ZHU Jingma, SI Qi, HONG Weikai, et al. Development pathways for rural industrial revitalization under comprehensive land consolidation: The case of Puhe Village, Xiansheng Township, Gansu Province [J]. *Journal of Northwest University (Philosophy and Social Sciences Edition)*, 2022, 52(4): 602-616. (in Chinese)
- [8] YANG Yani. Value reflection and pathway optimization in rural development practice in China [J]. *Urban Planning Forum*, 2021(4): 112-118. (in Chinese)
- [9] SUN Ying, ZHANG Shangwu. Changes and development in rural governance from the perspective of urban-rural relations [J]. *Urban Planning Forum*, 2022(1): 89-95. (in Chinese)
- [10] DAI Xiulong, ZHAO Jiamin. Pathways for comprehensive land consolidation from the perspective of watershed ecological units: The provincial pilot in Tangtang Town, Fogang County, Guangdong Province [J]. *Planners*, 2024(1): 83-90. (in Chinese)
- [11] YUAN Fangcheng, ZHOU Weilong. How factor flows promote county-level urban-rural integration: Experience and logical interpretation from comprehensive land consolidation in Nanhai District, Foshan [J]. *Journal of Nanjing Agricultural University (Social Sciences Edition)*, 2024, 24(2): 63-74. (in Chinese)
- [12] WANG Xiaobing. Research on pathways for integrating social capital into comprehensive land-consolidation planning [J/OL]. *Natural Resource Economics of China*, 2024. <https://doi.org/10.19676/j.cnki.1672-6995.001064>. (in Chinese)
- [13] JIANG Jie, DAI Chen, MAO Yanwu, et al. Xiaogucheng Village in Yuhang District: A small step in villager co-governance and a major step in consultative democracy [J]. *Hangzhou*, 2023(6): 48-49. (in Chinese)
- [14] SUN Jingwen, LU Yuqi. Mechanisms and optimization pathways for comprehensive land consolidation oriented toward urban-rural integration [J]. *Journal of Natural Resources*, 2023, 38(9): 2201-2216. (in Chinese)

- [15] SUN Ying, ZHANG Shangwu. Rural development as a governance process: Policy supply and village response [J]. Urban Planning Forum, 2019(6): 114-119. (in Chinese)
- [16] XIA Jie. The situation, challenges, and responses of land consolidation in Shanghai: From comprehensive consolidation to spatial governance [J]. Shanghai Land & Resources, 2023, 44(4): 5-10. (in Chinese)
- [17] WU Jun, MENG Qian. Dilemmas and transformation of territorial spatial governance in semi-urbanized areas of the Pearl River Delta: A land-preparation-based approach [J]. Urban Planning Forum, 2021(3): 66-73. (in Chinese)
- [18] JIANG Danqun, HE Jing. Exploring comprehensive land-consolidation practice in Shanghai in the new era [J]. Shanghai Urban Planning Review, 2023(1): 83-87. (in Chinese)
- [19] SHAO Qunping. Yuyao, Zhejiang: Managing the "purse" of rural land consolidation [J]. China Land, 2015(3): 46-47. (in Chinese)
- [20] QIAO Jie, HONG Liangping. From "relations" to "social capital": The theoretical dilemma and way forward for rural planning in China [J]. Urban Planning Forum, 2017(4): 81-89. (in Chinese)
- [21] DU Jinying, QIU Jiehua, HE Donghua. Pathways through which comprehensive land consolidation promotes rural revitalization under the concept of urban-rural equivalence: The case of Conghua District, Guangzhou [J]. Planners, 2023(5): 34-39. (in Chinese)
- [22] CHEN Lin, SHEN Gaojie. Spatial planning for countryside areas: Shanghai's innovative practice for action-oriented management [J]. Urban Planning Forum, 2022(2): 90-95. (in Chinese)
- [23] YU Jianzhong, DONG Yiming, TIAN Yuan, et al. Pathways for comprehensive land consolidation in Zhejiang Province based on natural-resource integration [J]. Planners, 2021, 37(22): 17-23. (in Chinese)
- [24] ZHANG Baolong, SU Yan. Ningbo deepens comprehensive territorial space-consolidation reform to unlock urban-rural development potential [J]. Zhejiang Land & Resources, 2024(4): 21-22. (in Chinese)
- [25] WANG Xinzhe, YANG Yuhan, ZONG Li, et al. Spatial transmission from territorial spatial master planning to detailed planning: Practical dilemmas, basic logic, and optimization measures [J]. Urban Planning Forum, 2023(2): 96-102. (in Chinese)
- [26] GE Tianren, LI Qiang. From "growth coalitions" to "equitable governance": A state perspective on the transformation of urban spatial governance [J]. Urban Planning Forum, 2022(1): 81-88. (in Chinese)
- [27] CAI Jie, CHENG Chao, ZOU Jieyu. Exploring comprehensive territorial space consolidation through planning coordination and integrated innovation: The case of Zhenhai District, Ningbo, Zhejiang Province [J]. China Land, 2023(8): 21-23. (in Chinese)

Revised: November 2024