

Article

Exploration on the Innovation Model of County Urbanization Development with the Resource Constraints in China

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Abstract: The 14th Five-Year Plan for China proposes to promote the urbanization process from a county perspective, presenting an unprecedented opportunity to develop county urbanization. However, in the context of relatively limited resources, insufficient funds, and comparatively lower land values in Chinese counties, how to promote county urbanization remains the primary challenge, which has not been studied yet. This study first analyzes the necessity of promoting county urbanization from four dimensions: national development strategy, industrial policy development, local government status, and enterprise development demands using literature research and survey interviews. Based on field research conducted in 32 counties in China, the strengths, weaknesses, opportunities, and threats (SWOT) analysis is carried out on the county urbanization process in this study. By analyzing the developmental status and challenges of major urban areas, expansion areas of counties, and their surrounding countryside, this paper proposes a “three-level gradient integration” concept for the spatial integration of county urbanization. Furthermore, the mechanism of multi-agent linkage to promote county urbanization was explored based on the theory of urban governance and the characteristics of county urbanization. Subsequently, relying on the analysis of policies, such as land acquisition and integrated land improvement, and adopting modes, such as “Investor + Engineering Procurement Construction + Operation” (investor + EPC + O) and renovate–operate–transfer (ROT), we propose a pathway for promoting county urbanization through the linkage of government, enterprises, and residents. This study provides insight into promoting the county urbanization process. Additionally, each country faces the common issue of how to use limited resources to promote regional development, and this article can provide valuable insights and inspiration for addressing this shared issue by the principle of adapting to local conditions and adhering to the concept of efficient market and proactive government.

Keywords: multi-agent linkage; county urbanization; mechanism; pathway; resource constraints



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1. Introduction

Urbanization in developing countries is currently advancing. China, as the largest developing country, has valuable urbanization experience that can serve as a reference for other developing countries. Since the reform and opening up, urbanization has rapidly progressed in China, and its achievement has received global attention. Using factors, such as urbanization level and land policies, the urbanization process in China can be divided into three stages: From 1978 to 1998, rural land reform laid the foundation for urbanization; from 1998 to 2014, reforms driven by urban land policies facilitated land urbanization; since 2014, interactions between urban and rural land policies became prominent, and the trend towards population urbanization became evident [1] (Table 1). By the end of 2022, China’s urban resident population reached 920.71 million, with an urbanization rate of 65.22% [2]. County and county-level cities, as crucial components of China’s urbanization

system, account for nearly 30% of the national urban population. In May 2020, the National Development and Reform Commission issued the Notice on Accelerating Urbanization of County and Strengthening Weak Areas, which pointed out that county or county-level cities play a critical role in China's socioeconomic development.

Table 1. The three stages of China's urbanization process.

Development Phase	Major Decisions	Significance
1978–1998	1978: The Third Plenary Session of the eleventh Central Committee proposed reform and opening-up.	The beginning of reform and opening-up.
	1980: In Xiaogang Village, Fengyang, Anhui, 18 farmers initiated the household contract responsibility system.	The beginning of rural land reform in China.
	1988: The first amendment to the “Land Administration Law of the People's Republic of China”.	Laid the legal foundation for the entry of state-owned land into the market.
1998–2014	1998: The second amendment to the “Land Administration Law of the People's Republic of China”.	Prohibited the transfer, assignment, or leasing of collectively owned land by farmers for non-agricultural purposes.
	1998: Introduction of monetary compensation for housing allocation.	Accelerated China's urbanization through the commodification of housing.
2014–Present	2014: “China Urbanization Plan for 2015–2020”.	Shifted from land-based urbanization to population-based urbanization, driven by the consumption needs of the migrant population.
	2017: Introduction of the “multi-subject supply, multi-channel guarantee, and the simultaneous development of rental and purchase housing system”.	Addressed the housing issues of migrant populations, requiring interaction and coordination of urban and rural land systems.
	2022: “Opinions on Promoting Urbanization Construction with Counties as an Important Carrier”.	Holds significant importance in promoting the construction of new urbanization and establishing a new urban–rural relationship.

Urbanization mainly manifests as the shift of factors, such as population, economy, society, and culture, from rural areas to cities [3]. County urbanization refers to the process centered around counties proper, highlighting their role in providing services across the entire county area. It emphasizes addressing infrastructure deficiencies and driving comprehensive development within the county area. Additionally, it is vital to guide the transformation and development of different types of counties according to the principles of urban development. Counties, as significant spatial nodes bridging major cities and rural areas, play a crucial role in the integrated development of urban and rural areas. By the end of 2021, the urbanization rate of China's registered residence population was 46.7% [2], far lower than the urbanization rate of the permanent population. Counties have a particular industrial and public service foundation, becoming an essential carrier for a large number of low-income people, including migrant workers, facilitating their stay in the city (Figure 1).

From the perspective of county-level governments, many counties are currently facing problems, such as population outflow, exacerbated aging trends, low industrial level, limited land use indicators, limited financial resources, lagging public services, difficulty in demolishing old urban areas, and difficulty in supporting the growing demand for high-quality urbanization construction. There is a Chinese proverb that says that if you have no hand, you cannot make a fist. In the context of the challenges and difficulties mentioned above, resource constraints represent the primary obstacles to county urbanization development. These constraints mainly include restricted land use indicators, limited local government financial resources, and constrained operational capabilities.

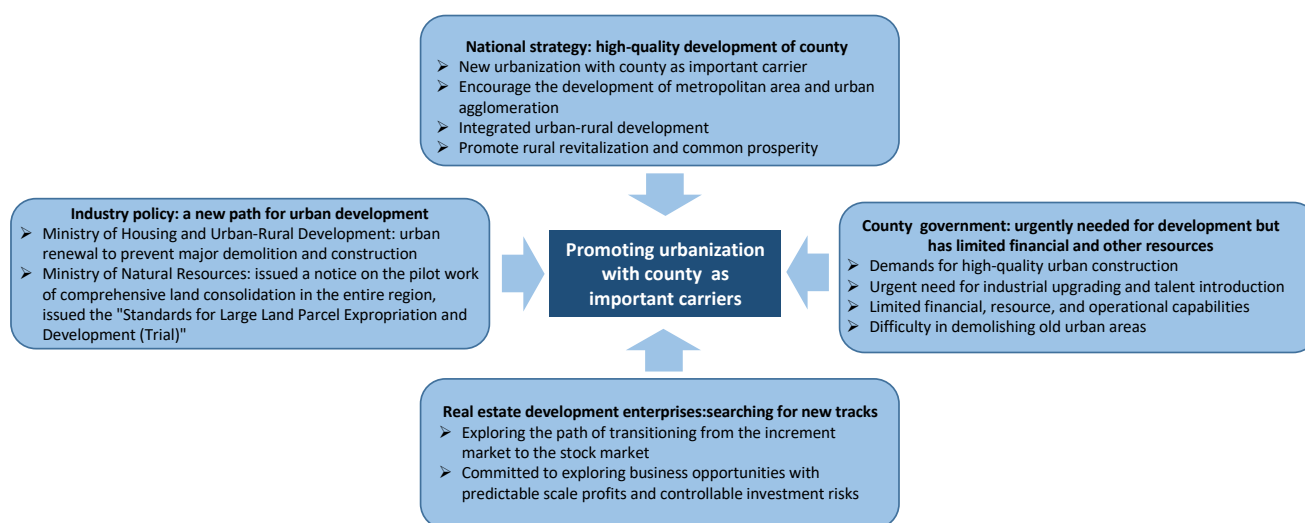


Figure 1. Macroscopic environment analysis for promoting county urbanization.

As competition intensifies, many governments have increasingly realized the importance of integrated development involving the introduction of industries and a highly educated population. In the context of high-quality development, innovation-driven business has become a core element. Therefore, the transformation of economic and social development to innovation-driven development is a new challenge to the urban construction capacity of governments, especially county-level governments [4–8] (Figure 1).

From the perspective of industrial policy, many policies introduced at the national level in recent years have had a profound impact on the development path of county urbanization. In December 2019, the Ministry of Natural Resources issued a notice on the pilot work of comprehensive land consolidation in the entire region, which implies that counties can effectively promote comprehensive land consolidation across the entire region, thereby breaking through the constraints of limited land use indicators on urban development within counties [9]. In November 2020, the Ministry of Natural Resources issued the “Standards for Large Land Parcel Expropriation and Development (Trial)”, which provides regulation on the content and declaration of land expropriation and large-scale development plans, thereby establishing an institutional foundation for local governments at or above the county level to promote urbanization through the mode of land expropriation and large-scale development [10,11]. In August 2021, the Ministry of Housing and Urban-Rural Development issued a notice on preventing large-scale demolition and construction in the implementation of urban renewal actions, which means that the traditional development path of promoting urbanization construction through “large-scale demolition and construction” has to be replaced by new urbanization development paths [12] (Figure 1).

From the perspective of investment and development enterprises, with the implementation of the housing not-for-speculation policy, the previous investment and development model in real estate enterprise, characterized by being short-term, straightforward, and fast, is challenging to sustain. Enterprises are transforming from the project development market to the asset operation market. In the context of strict regulation and high competition in the real estate markets of large cities, some real estate investment and development enterprises have begun to pay attention to the development and operation of service business opportunities in county-level markets with good basic conditions and a large population and are committed to exploring business opportunities with predictable profits and controllable investment risks [13] (Figure 1).

However, county urbanization faces numerous challenges, including low population density, limited attractiveness to talent, low quality of public services, low levels of economic development, restricted land use indicators, and the limited financial resources of local governments. In the context of limited resources, methods to promote high-quality

development of counties still need to be explored. Therefore, this paper explores the mechanism and pathways for promoting county urbanization through multi-agent linkage. By analyzing 32 counties as case studies, we have drawn relevant research conclusions, illustrated in Figures 2–6 within this article.

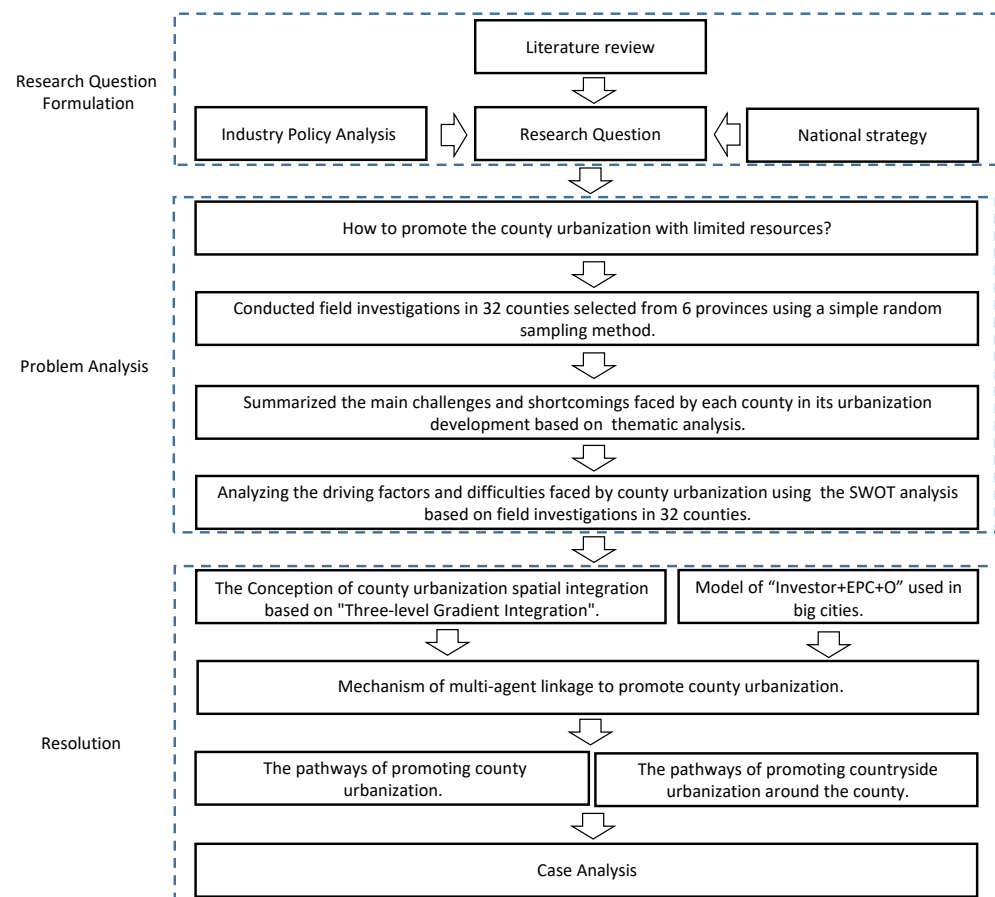


Figure 2. Research roadmap.

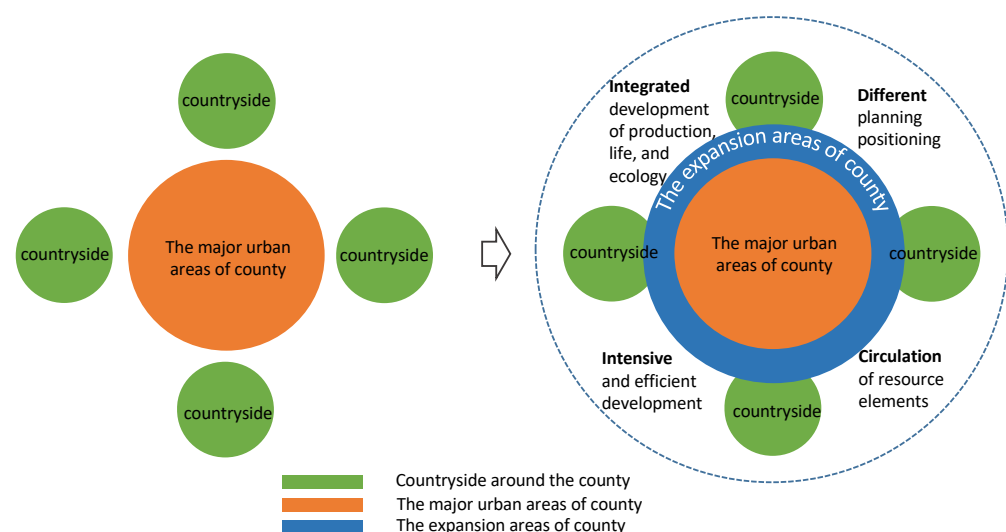


Figure 3. The concept of county urbanization spatial integration based on "Three-level Gradient Integration".

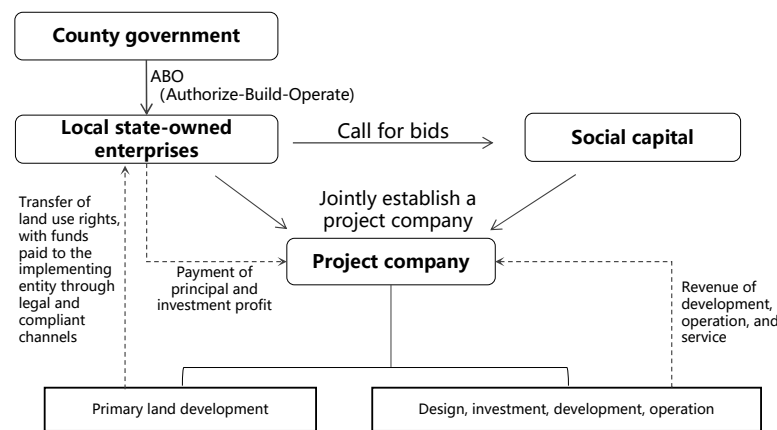


Figure 4. Model of “Investor + EPC + O”.

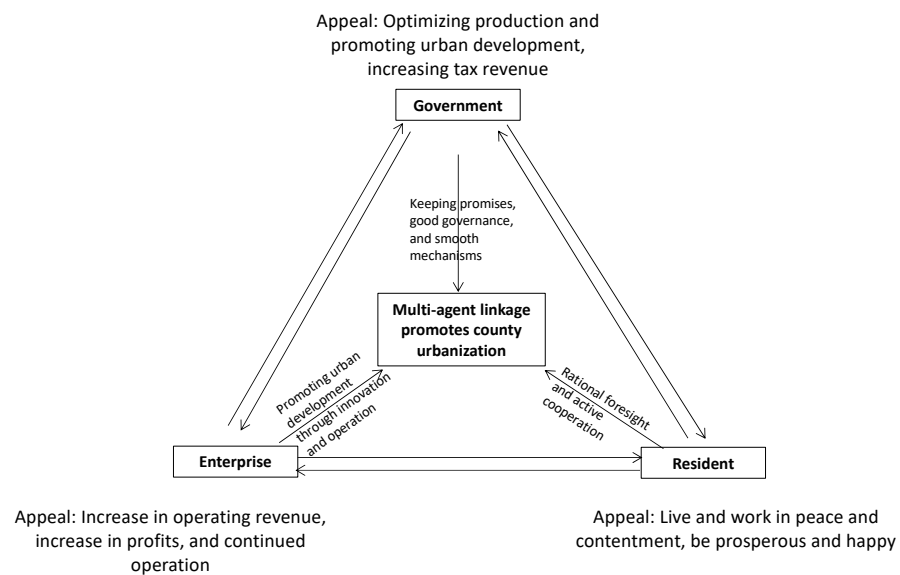


Figure 5. Mechanism of multi-agent linkage to promote county urbanization.

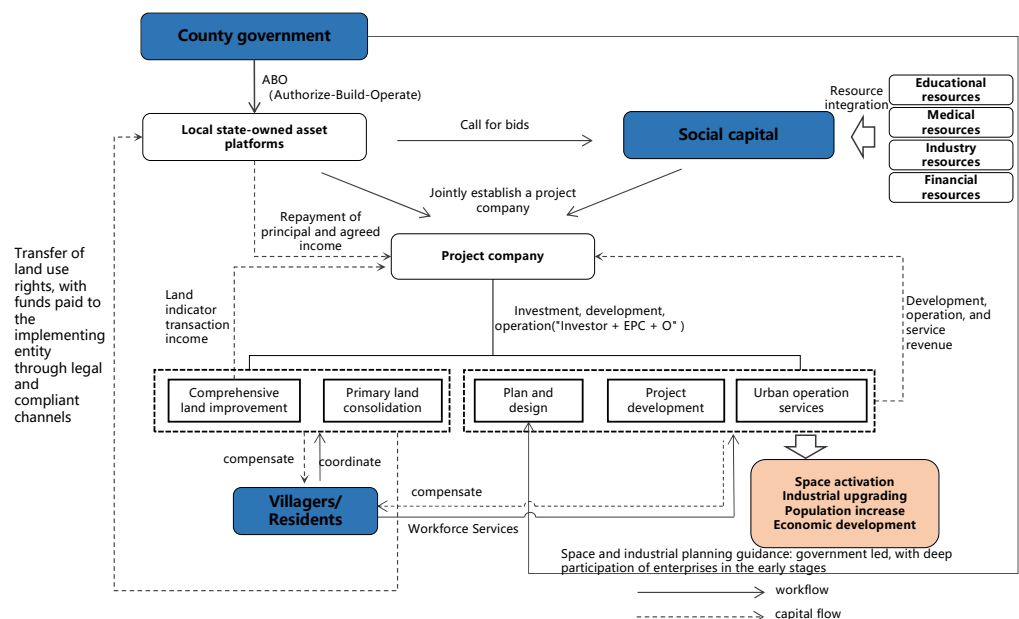


Figure 6. The pathways of promoting county urbanization.

2. Literature Review

The current research on county urbanization in China mainly focuses on the following four aspects:

- (1) Connotations and theories of county urbanization: this encompasses the formation and development process, inherent logic, and critical ideas of county urbanization [5,14,15]. The urbanization of counties is an important part of people-oriented modern urbanization, which is helpful in optimizing the urban hierarchy and building a three-level gradient connection among major cities, counties, and rural areas [16–18]. The agglomeration index is an essential theoretical foundation for promoting nearby urbanization. Integrating and aggregating limited resources within counties facilitates the optimization and development of their economies and societies [19,20]. Some researchers have defined the connotation of urbanization from three dimensions: human settlement, cultural environment, and urban–rural relationship [21].
- (2) Factors and driving mechanisms of county urbanization: the development level of county urbanization has been measured using multiple indicators, such as population and economy, revealing the comprehensive driving mechanism of county urbanization [6,22–25]. This measurement system has verified that industrialization, informatization, agricultural modernization, e-commerce, vocational education, innovation, and modern logistics are conducive to promoting the development of urbanization in counties [26–29].
- (3) Temporal–spatial evolution, patterns, and types of county urbanization: previous research primarily analyzes the spatial patterns and mechanisms of county urbanization from rural population spatial migration, non-agricultural industry clustering in towns, and the non-agriculturalization of agricultural labor forces [30,31]. County urbanization is categorized into commercial-oriented, industrial-oriented, and agricultural-oriented types [32]. It reveals the spatiotemporal evolution characteristics of county urbanization at different scales [33].
- (4) Pathways and implementation strategies for promoting county urbanization: previous research emphasizes the interconnection of urban and rural areas as an entity [34], and that promoting county urbanization by combining large cities, counties, and rural areas is necessary [35]. It seeks to achieve multi-level planning integration through territorial spatial planning, fostering integrated development of production, living, and ecology [36]. Government guidance and rational cooperation with families are essential for county urbanization [37], while social capital has a promoting effect on urbanization [38,39]. The research reveals that slow population growth and low construction investment are the prevalent challenges for county urbanization [40]. The aim is to enhance the attractiveness and concentration of production factors in counties, pursue intensive urbanization, solidify industrial foundations, highlight cultural heritage, advance the linkage of surplus indicators for urban and rural construction land, create a comprehensive county service system, and innovate sustainable public services and policy incentive mechanisms [41–43].

From the urbanization development processes in developed countries, such as the United States, the United Kingdom, and France, each has its own characteristics that can provide valuable insights for China's urbanization development.

Since the 19th century, the urbanization process in the United States can be summarized into three stages: the first stage realizes urban agglomeration due to the transfer of agriculture and migrant populations from 1810 to 1860, the second stage promotes the development of small towns due to the reversal in the population flow from 1860 to 1920, and the third stage realizes urban–rural integration from 1920 to 1960. Since 1960, urbanization in the United States has entered a slow development stage, accompanied by the phenomenon of counter-urbanization. With the development of globalization and informatization at the end of the 20th century, a new round of rapid urbanization emerged, and by the year 2000, the urbanization rate had increased to 82% [44].

The urbanization process in the United Kingdom has spanned over 350 years and can be summarized into three stages. Beginning in the 16th century, the development of manual industries and urbanization in the United Kingdom progressed rapidly, reaching an urbanization rate of 17% by 1750. In the 1860s, the industrialization in the United Kingdom drove urbanization, resulting in rapid development, with an urbanization rate as high as 62.3% by 1861. By 1891, the urbanization rate in the UK had reached 72%. However, as urbanization continued to advance, issues, such as environmental pollution and traffic congestion, gradually became apparent. The urbanization process noticeably slowed down, and there was even a temporary trend of decline [44].

France has a relatively slow urbanization development, primarily characterized by two stages. Urbanization in France began in the 1930s, with a focus on planning for medium and small-sized cities. By 1931, the urban population exceeded 50%. After the Second World War, urbanization in France accelerated. During this period, urban development was centered around major cities and then expanded to the surrounding areas. Large cities experienced slow growth, while medium and small-sized cities played a significant role in the urbanization system. By 2017, the urbanization rate in France had reached 80% [45].

Urbanization in developed countries has also formed development models with unique characteristics for each country. For example, there is the laissez-faire model of urbanization in the United States, the government-guided model of urbanization represented by Western European countries like the United Kingdom, France, and Germany, and the metropolitan area-focused urbanization model as seen in Japan.

The urbanization developments in developed countries indicate that urbanization and industrialization mutually reinforce each other. On the one hand, industrialization serves as the primary driving force for urbanization. On the other hand, urbanization manifests as the spatial concentration of industrialization. There is a reciprocal relationship and causality between urbanization and the development of the service sector. Urbanization forms the demand foundation for the development of the service sector. Likewise, the service sector serves as the sustained driving force and essential condition for urbanization development.

Relevant studies indicate that the manifestation of urban size structure varies among countries worldwide [46]. Currently, China has proposed advancing urbanization with counties as a crucial carrier, representing a significant measure based on the national conditions of China and dedicated to addressing the urbanization of hundreds of millions of people.

In the urbanization process, funding is one of the most critical factors. Different countries have distinctive urbanization investment and financing models. For example, the United States operates under a fully market-oriented economic system. Canada has established a multi-tiered investment structure, predominantly led by government agencies, including municipal governments, provincial state-owned enterprises, privately licensed entities, public-private joint venture companies, and community collectives. The model in France is similar to that of the United States. Operational projects allow for the introduction of private capital, while non-operational projects or those with significant social benefits are provided by the government. However, for non-operational infrastructure projects, in addition to government investment, franchise operations and market mechanisms are introduced [47].

Fundamentally, the successful implementation of urbanization investment and financing models ultimately depends on the sources of fund repayment. For economically underdeveloped counties with limited financial resources and residents' limited consumption capacity, the ultimate question is how the investment will be recovered, no matter whether it is government investment or private capital investment. Without innovative ways to break through the constraints of existing resources, it is difficult to advance county urbanization in China. However, there are few studies on how to innovate through investment and financing models to empower the enhancement of urban values.

In terms of county urbanization, there is relatively little research in other major countries except China. The following articles provide effective references for this study.

Regarding factors promoting urbanization, Newman et al. (2015) examined the effects of the development of Britain's railways in the Victorian Era on the predominantly rural counties of Hertfordshire, Bedfordshire, and Buckinghamshire [48]. Bocquier et al. (2018) conducted a study on the economic determinants of urban transition in 19th-century France from a regional perspective. The results affirm that the 19th-century urban transition was primarily propelled by the redistribution of economic production through migration, rather than the demographic transition [49]. Caldwell et al. (2022) reported that provincial policies and local planning frameworks have jointly played a significant role in shaping the agricultural land base in southern Ontario based on a dataset of 36 counties/regions [50]. Arif et al. (2020) illustrated the importance of advancing spatial development planning for land use and infrastructure to accommodate a rapidly growing population by taking the city of Burdwan in India as an example [51].

Regarding the impacts of urbanization, Golding et al. (2020) introduced a modified rural–urban continuum classification, namely the rural–urban gradient (RUG), which demonstrates how migration patterns correlate with changes in demographics and housing, depending on the location of counties along the RUG, thereby shaping a widening disparity across rural contexts in the USA [52]. Brunt et al. (2022) reported that when rural workers move to cities, the resulting urbanization produces technological change and productivity growth [53]. CUSIN François et al. (2016) showed that in the early 1970s, France entered a new cycle of urbanization that involved a combination of centripetal and centrifugal forces, the first working to concentrate highly skilled jobs in a limited number of large cities while the second led inhabitants and a number of activities to move increasing distances outward from those cities, and so resulted in peri-urbanization [54]. Raju Sarkar (2019) investigated the impacts of demographic changes and urbanization in India during the period 1991–2011, and found that the process of urbanization has led to a reduction in both fertility and mortality rates in India [55].

In terms of research methodologies, Boyle et al. (1991) employed a statistical modeling approach, based on the gravity model, to test various migration theories, and found that population density proved to be a useful proxy for urbanization [56]. Arif et al. (2023) conducted a SWOT analysis on the Urban Spatial Strategies of the Gulf Cooperation Council. They applied an interdisciplinary approach that combined a household survey with temporal change analysis over three different time periods (1991, 2001, and 2011), all based on geographical information systems [57]. Du et al. (2015) conducted a comprehensive assessment of county urbanization development levels in Yibin City using the analytic hierarchy process (AHP) method [29]. Qu et al. (2023) employed the entropy method, obstacle degree model, and geographical detector model to reveal the evolution process, shortcomings, and influencing factors of urbanization quality in counties of the middle reaches of the Yangtze River [40]. Lachang Lyu et al. (2019) constructed an urban innovation regression model using the spatial Durbin method to support the concept of innovation-based urbanization [58].

The above research provides valuable insights into the county urbanization construction in China. Most studies have been conducted on the city urbanization in the developed countries, such as analyzing the reasons for promoting city urbanization in different periods, examining the impact of transportation, land use policies, planning policies, and the redistribution of economic production through migration on the city urbanization. Currently, it is greatly important to advance county urbanization for development in China. Many studies have been conducted on the spatial planning and driving factors of county urbanization processes in China. However, how to promote county urbanization with limited resources, insufficient funds, and comparatively lower land values remains the primary challenge. Additionally, each country faces the common issue of how to use limited resources to promote regional development. This article can provide valuable insights and inspiration for addressing this shared issue.

3. Methodology and Study Area

This article follows the research route of proposing problems, analyzing problems, solving problems, and discussing and analyzing conclusions. Specifically, this study raises the research question by literature research and investigation, which is how to promote county urbanization with limited resources. Then, we conduct field research and interviews in 32 counties and summarize the existing challenges of county urbanization through SWOT analysis. Then, the concept of three-level gradient integration is proposed based on the current characteristics and development difficulties of different sectors in the county, combined with the “Investor + EPC + O” model, and we propose two innovative modes of county urbanization, demonstrated through two case studies. Finally, we conduct a full discussion and draw conclusions. Regarding field research and interview methods, the specific introduction is as follows.

This study conducted field investigations in 32 counties selected from 6 provinces using a simple random sampling method. The selected 32 sample counties are distributed across six provinces in eastern, central, and western China, demonstrating good representativeness. There are relatively economically developed cities, like Cixi City, Zhangjiagang City, and Changxing County in the eastern provinces, as well as economically relatively underdeveloped counties like Yuexi County and Puge County in the western provinces. The sample includes counties with a population of around 1.66 million, such as Shuyang County, as well as counties with a population of only 33,000, such as Daocheng County. The selection also covers diverse cases, including the historic city of Linhai and the newly established county city of Longgang in 2019.

For analyzing the level of counties urbanization, we conducted field investigations, with a focus on examining the modernization levels of local infrastructure, such as roads, parks, schools, hospitals, residential communities, and cultural and entertainment facilities. Through interviews with local government officials, we specifically gained insights into the funding situation required for urbanization development, land development space, land use indicators, future directions for industrial development, and key development areas in the planning.

We selected 10–20 interviewees aged between 20 and 60 for interviews in places like shopping malls, office buildings, factories, and restaurants. These interviews aimed to understand their perspectives on the current status of the county in terms of industries, employment, transportation, healthcare, education, residential environment, and their expectations for the future. Finally, we summarized the main challenges and shortcomings faced by each county in its urbanization development based on using thematic analysis, which is the basic method of qualitative analysis. We conducted interviews with over 400 relevant interviewees, out of which 358 were deemed effective. From the interview content, we identified codes, then categorized them into groups, summarized the theme characters of these groups, and ultimately derived research conclusions. This process provides support for the SWOT analysis, particularly in the “weaknesses” and “threats” sections.

The research roadmap is illustrated in Figure 2.

4. The Innovative Mechanism for Promoting County Urbanization

4.1. Analysis of Difficulties in County Urbanization

This study conducted field investigations in 32 counties selected from 6 provinces using a simple random sampling method. Overall, the level of urbanization in these counties is relatively low. When divided by regions, county cities in eastern China exhibit the highest urbanization levels, followed by those in central regions, while those in western regions show relatively lower levels. Within each province, there are variations in urbanization development among different counties, with mountainous areas and those farther from major cities having lower urbanization levels. Our results indicate that the overall level of county urbanization in China urgently needs improvement. A common issue is the lack of funding for urbanization development and a widespread deficiency in operational

capabilities. Additionally, there is substantial variation among counties in terms of urbanization development, population structure, industrial foundations, fiscal situations, and land quotas. These findings underscore the importance of implementing a tailored approach for advancing urbanization in each county based on its unique circumstances. The findings highlighted the existing research primarily addressing the challenges faced in county urbanization, particularly resource constraints.

Based on the above field research, we carry out a SWOT analysis on county urbanization process in China. The strengths of promoting county urbanization in China are that property prices in the county are relatively low compared to those in the city, and that the county already possesses essential living infrastructure. The weaknesses include the inadequate support facilities for education, healthcare, culture and entertainment, the poor industrial foundation, and the limited financial and land resources. For the opportunities, the release of national policies contributes to accelerating the development of county urbanization. Due to the excessively high property prices in major cities, people, such as farmers and migrant workers, tend to settle down in nearby counties. Additionally, considering the industrial development in major cities, some industries are starting to shift to counties. The threats come from improved transportation infrastructure, such as high-speed railways, which make it easier for people in counties with skills and resources to move to cities for employment, healthcare, living, and consumption. This hinders the development of county urbanization. Therefore, county urbanization in China needs to continuously enhance industries, supporting facilities, and public services (Table 2).

Table 2. SWOT analysis on county urbanization process in China.

Strategies	Strengths	Weaknesses	Opportunities	Threats
<p>1. By 2025, select counties with strong foundations in location, industry, resources, and economic conditions will show remarkable progress. Public resources will align with local populations, unique industries will thrive, infrastructure will be well-developed, public services will improve, and the overall quality of life will significantly increase, with more rural residents finding employment and settling in counties.</p> <p>2. In May 2022, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the “Opinions on Promoting Urbanization Construction with counties as an Important Carrier”. This document proposed expediting the development of counties around major cities.</p>	<p>1. There are low property prices in the county.</p> <p>2. The county possesses the essential living infrastructure.</p>	<p>1. The county has inadequate supporting facilities for education, healthcare, culture, and entertainment, compared to around big cities.</p> <p>2. The county has a poor industrial foundation, compared to around big cities.</p> <p>3. The county has limited finances and land resources, compared to around big cities.</p>	<p>1. The release of national policies contributes to accelerating the development of county urbanization.</p> <p>2. Due to the excessively high property prices in major cities, people, such as farmers and migrant workers, tend to settle down in nearby counties.</p> <p>3. Considering the industrial upgrading in major cities, some industries are starting to shift to counties.</p>	<p>1. The threats come from improved transportation infrastructure, such as high-speed railways, which make it easier for people in counties with skills and resources to move to cities for employment, healthcare, living, and consumption. This hinders the development of county urbanization.</p>

China has a vast territory and numerous counties. Each county has its own situation and characteristics, and the urbanization path of each county will reflect these. In May 2022, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the “Opinions on Promoting Urbanization Construction with Counties as an Important Carrier”, This document proposed expediting the development of counties around major cities, actively nurturing counties with specialized functions, such as agricultural-oriented and/or ecology-oriented types. It can be observed that advancing urbanization with counties as important carriers requires a context-specific approach. From the perspective of county urbanization pathways and mechanisms, it is advisable in the current stage to emphasize research on commonalities, aiming to enhance the universality of mechanisms and pathways.

4.2. Classification of County Space from the Perspective of Planning

In order to explore the county urbanization process in China, the county was divided into three regions in this study: (1) the major urban areas of the county, which are generally the administrative, economic, and cultural center of counties. Construction development is usually relatively early; houses are relatively dilapidated; the population is relatively dense; and the public facilities, such as roads, parking spaces, and pipelines are relatively underdeveloped, making it difficult to accommodate an increase in population. (2) The county expansion areas, which are adjacent to the major urban areas of the county, as connecting areas between central urban areas and rural areas. They usually have transportation and location advantages, as well as certain public facilities, but the level of public distribution and service is comparatively low compared to a major urban area. (3) Countryside around the county, which is in the outermost area of the county. Correspondingly, county urbanization includes the urbanization of the three regions mentioned above as well. The current development status, difficulties, and future development directions of urbanization vary among the three regions (Table 3).

Table 3. The current situation and difficulties in the development of the major areas, expansion areas, and countryside around the county.

Classification	Current Development	Difficulty
The major urban areas of county	<ol style="list-style-type: none"> 1. Urban construction “old, dilapidated” 2. Weak industrial foundation 3. Obsolete commercial, cultural, and entertainment facilities 4. The population density in counties is relatively low, and the outflow of young people is common 	<ol style="list-style-type: none"> 1. At the national level, urban renewal is required to prevent “large-scale demolition and construction”, and the development space of old urban areas is limited 2. Limited financial payment capacity 3. Limited construction land indicators 4. The local government’s ability to enhance industries is limited, and the development and operation capabilities of the area are limited
The expansion areas of county	<ol style="list-style-type: none"> 1. Municipal infrastructure needs to be improved 2. Weak industrial foundation 3. Low agricultural production efficiency on cultivated land 4. Lack of overall planning 	<ol style="list-style-type: none"> 1. Limited construction land indicators 2. Lack of funds for large-scale development and construction
Countryside around the county	<ol style="list-style-type: none"> 1. The municipal infrastructure is relatively backward 2. The industry is mainly based on traditional agriculture 3. “One household with multiple houses” is common, and land use efficiency needs to be improved 4. The phenomenon of people going out to work is common, and the hollowing out and aging of rural areas are more common 	<ol style="list-style-type: none"> 1. Lack of facilities supporting cultural tourism 2. Lack of operational service capabilities

Based on field research conducted in 32 counties in East China, Central China, and West China, combined with a literature research, this study found the current situation in major urban areas of county to be as follows: the urban construction is mostly old and dilapidated; the industrial foundation is weak; commercial and cultural entertainment facilities are outdated; the population density in counties is low; and the trend of population outflow is obvious. The difficulties in major urban areas of county counties mainly include

the following. For example, there is limited development space in major urban areas due to the national requirements for urban renewal to prevent “large-scale demolition and construction”. Limited financial payment capacity in major urban areas makes it difficult to undertake large-scale new city construction and infrastructure construction, and there are limited construction land indicators. The local government’s ability to enhance industries is limited, and it still focuses on traditional low-end industries and downstream industries in the industrial chain. There are also limited overall planning, integrated development, and operational capabilities as well.

Most county expansion areas face problems, such as inadequate municipal infrastructure, weak industrial foundation, low production efficiency on arable land, and lack of overall planning. The main difficulties lie in the limited construction land indicators and the lack of funds for large-scale development and construction. The future direction of development can be to carry out comprehensive land consolidation across the entire region, and actively explore land acquisition and development within the boundaries of urban development.

The countryside around the county faces relatively backward municipal infrastructure, with traditional agriculture as the main industry. The phenomenon of “one household with multiple houses” is common, and overall land use efficiency needs to be improved. The phenomena of people going out to work, rural hollowing out, and aging are more common. The current difficulties mainly include the lack of facilities supporting cultural tourism and operational service capabilities. In the future, comprehensive land consolidation can be carried out throughout the region, social capital can be introduced, and cultural tourism, modern agriculture, and other operational services can be jointly carried out to tap into the value of resources.

4.3. Conception of Spatial Integration of County Urbanization

For historical reasons, China’s urbanization development has maintained an “urban-rural dual structure”, and there is still a significant gap in rural and urban development [59]. Given the limited carrying capacity and public resources of large cities, as well as high housing prices, many counties have become important carriers of urbanization. In the context of the national policy “Promoting Urbanization with County as Important Carriers”, counties are expected to experience a population influx. Zhang et al. (2017) explored the residential location selection for returning migrant workers using a case study of Yongcheng City (a county-level city). Their research revealed that the major urban area of counties is the main residential location for returning migrant workers, and the transformation of residential locations mainly tends towards the main urban area rather than the township center [60]. However, as policies for urban renewal with a focus on controlling large-scale demolition and construction are implemented, the major urban areas of counties will place greater emphasis on infrastructure improvement and cultural heritage preservation.

Based on the agglomeration effect theory of urban development, the expansion areas of counties are poised to become the main areas for accommodating the influx of new population into the county by leveraging their advantages in terms of location, industries, infrastructure, and public services. These areas are often distributed within the boundary of urban development and may also retain some agricultural land. Consequently, they are likely to benefit from favorable policies, such as land acquisition for comprehensive development and integrated land management, which could drive the urbanization construction of the expansion areas of county.

The countryside around the county is situated at a distance from the major urban area of the county, with a relatively low population density and infrastructure that needs to be improved. On the one hand, the countryside around the county can engage in comprehensive land consolidation throughout the entire area, creating new construction land indicators through the increase or decrease in linkage, to some extent alleviating the problem of construction land indicators. On the other hand, by introducing operational service providers, we continuously improve our living environment and supporting facilities, and

simultaneously achieve rural revitalization. From this perspective, the countryside around the county plays a crucial role in promoting urbanization with the county as an important carrier, serving as a significant support for overall county urbanization.

The concept of three-level gradient integration is based on the current characteristics and development difficulties of different sectors in the county. Grounded in the concept of “integrated development of production, life, and ecology”, and operating within limited resource conditions, through spatial governance and multi-agent linkage, we aim to achieve efficient production agglomeration, comfortable and livable life, and ecological green environmental protection, thereby achieving high-quality urbanization development in the county (Figure 3).

The major urban area of counties could place greater emphasis on infrastructure improvement and cultural heritage preservation, as the state prohibits the use of large-scale demolition and construction to promote urban renewal. Urban renewal efforts can be initiated in these areas. For the countryside around the county, there is great potential for land development, which is likely to benefit from favorable policies, such as large land parcel expropriation and development, comprehensive land consolidation. For the countryside around the county, there is a relatively low population density and infrastructure that needs to be improved. By implementing comprehensive land consolidation throughout the entire region and establishing new construction land indicators, and by introducing operational service providers to enhance the living environment and supporting facilities, we can promote eco-friendly agriculture and rural tourism, thus, creating beautiful rural landscapes.

4.4. The Mechanism of Promoting County Urbanization

Regarding the mechanism of urban development and construction, previous research has mostly been based on urban governance theory and stakeholder theory. This theory originated in the United States and focuses on the relationship between government, society, and the market. It is believed that their cooperative and consultative relationships, as well as alliances based on common interests, are key to urban development. For example, Zhang et al. (2016) emphasized informal public–private cooperation interest entities and the incentive mechanisms in cooperative and negotiation processes [61]. Zhang and Li (2020) have argued that attention should be paid to the demands and conflicts of different stakeholders, as well as the secondary alliances formed during the negotiation process for diversified goals, such as economic and social development, and social equity, such as government enterprise, government society, and social enterprise. This secondary alliance enables various stakeholders to achieve cooperation goals [16,62]. Jin et al. (2023) have constructed an analytical framework based on a stakeholder perspective by conducting the transformation project of a village-level industrial park in Guangdong Province, exploring the realization of diverse urban development goals in politics, economics, and society through interest distribution and incentive mechanisms [7].

Funding is the most important factor in urbanization construction. In the new situation, county urbanization urgently needs to be promoted, but some local governments, especially county-level governments, are facing funding limitations. In 2022, the local public budget revenue in China decreased by 2.1% compared to the previous year. Many governments experienced defaults on local government financing platform debt. Since 2021, most cities have faced a downturn in the real estate market, with county-level cities being hit the hardest, resulting in increased pressure on local finances. Taking the economically developed province of Guangdong as an example, in 2021, there were still 50 counties (cities, districts) in the province with a budget income of less than 1 billion yuan. Therefore, introducing social capital to participate in the development of county urbanization is an inevitable trend.

For decades, social capital has actively participated in China’s urban development, contributing significantly to the success of urbanization construction. This study has summarized the main patterns of social capital participation in urban construction in recent

years. The overall trend shows a shift from heavy investment to a balanced approach that emphasizes both investment and efficient operation. Under the increasing financial expenditure pressure of some local governments, two modes of “Investor + EPC + O” which features integrated planning and construction, as well as operation, and ROT, which can help local governments improve asset operation efficiency, are becoming increasingly favored by local governments (EPC is the abbreviation for engineering procurement construction, “O” is for operation, and ROT is the abbreviation for renovate–operate–transfer).

In recent years, the “Investor + EPC + O” model with the advantage of “integration of investment, construction, and operation” has been widely used in urbanization construction. For example, Lin et al. discussed the “Investor + EPC” model, which leverages collaborative strengths of the government, state-owned platforms, and private investors [63]. And Chen et al. presented a comprehensive development case study of the Longhu District in Longgang City, illustrating the application of the “Investor + EPC + O” model [64].

This study has reviewed more than 30 cases of comprehensive development projects being implemented by governments in recent years, such as comprehensive development projects in Chengdu, Jinan, and Wenzhou cities. Most of the projects have adopted the “Investor + EPC”/“Investor + EPC + O” operating mechanism. This entails local government authorizing local state-owned assets to serve as the project implementation entity. This entity then conducts bidding to engage social capital partners, after which a project company is jointly established. The required funding for the project is primarily borne by the project company or the social capital partner. Simultaneously, the project company is responsible for land consolidation investment, resettlement housing, and the construction of municipal infrastructure for the comprehensive development of the district. Once the land is prepared through primary consolidation, it is put up for public auction. The relevant funds are returned to the implementers through legal and compliant means. The implementers then pay the invested capital and returns. Additionally, the project company can also participate in the development and operation of projects within the district, earning profits from development and operation to further enrich the sources of repayment funds for the project (Figure 4).

Essentially, the current mainstream “Investor + EPC + O” model is a multi-agent linkage model dominated by social capital, mainly relying on the income of the project itself within the area to achieve capital balance, which is the key factor for the smooth implementation of the project. The main source of funding balance for the above model is income from transferring land use rights.

However, due to the relatively limited value of land in counties, it is challenging to balance the investment funds through land transfer fees within the district. Moreover, this model also faces uncertainties, such as industrial introduction and supporting enhancement. Only by establishing a scientific mechanism can the county urbanization construction be carried out smoothly. Based on the theoretical analysis of urban governance, different stakeholders have different demands. From the perspective of these demands, the government hopes for high-quality industries and prosperous urban development; enterprises hope for increased revenue; the public hopes for comfortable living and thriving businesses. To achieve a win–win situation for multiple parties, efforts should be made. Most cities lack the necessary resources for urban development, such as infrastructure, talent, and high-quality industries. If enterprises contribute with quality capital and resources, it will help attract talent to the county, ultimately forming a high-quality collaborative development model that promotes production through intelligence. The premise for all of this is a government with stable policy planning, effective incentives and penalties, as well as active cooperation from the public. Through all efforts made by the multi-agent collaboration of government, enterprise, and residents, the construction of county urbanization can be effectively advanced (Figure 5).

4.5. The Pathways of Promoting County Urbanization

In the third part of this article, we propose the concept of spatial integration of county urbanization based on the “three-level gradient integration”, pointing out the characteristics, development difficulties, and corresponding urbanization development strategies for the major urban areas, expansion areas, and countryside around the county. In the fourth part of this article, we elucidate the current involvement of social capital through the “Investor + EPC + O” mode in urban construction. We point out that the primary source of financial balance for this model relies on land use rights transfer fees. However, for many counties, the overall land value is relatively low, and the land value of surrounding rural areas is even lower compared to the major urban areas and expansion areas. Consequently, a multi-stakeholder collaborative approach, considering the distinct spatial contexts, is essential to establish appropriate urbanization development pathways. In general, the “Investor + EPC + O” model is suitable for the major urban areas and expansion areas of the county, while the ROT model is more suitable for countryside around the county.

For the major urban areas and the county expansion areas, the land value is relatively high compared to the countryside around the county. These areas offer significant potential for industrial improvement and future operational returns. In the context of the housing not-for-speculation policy and the intensifying competition in real estate investment and development in the metropolis, social capital can collaborate with the county that aligns with their capabilities and demands. By integrating resources, such as education, healthcare, industry, and finance, social capital can participate in investment, development, and operations in the major urban areas and expansion areas of counties. Enterprise can contribute to the elevation of the county’s capabilities by engaging in urban planning, industrial planning, land consolidation, urban construction, and urban operations, thereby accessing multiple channels of development and operational benefits. Governments can establish cooperation rules, select social capital partners, and provide efficient administrative services, leveraging the power of social capital to achieve urban construction and development with minimal financial, human, and material resources. As for residents, they need rational foresight and active collaboration in initiatives, such as land consolidation and comprehensive land improvement. Through multi-stakeholder collaboration, the advancement of various development objectives, such as activating the spatial dynamics of the county, facilitating the flow of resources, upgrading industries, attracting population return, and fostering economic growth, is being pursued (Figure 6).

For the countryside around the county, it can also be promoted by multi-agent linkage to achieve a higher quality development. The countryside around the county usually possesses natural and scenic resources, but population density is relatively low, and their basic facilities are inadequate as well. Introducing professional operational teams to engage in countryside operations through ROT is currently a mainstream collaborative model. In this model, the government primarily organizes incentivizes and subsidizes cooperative enterprises for good performance. Neighborhood committees are mainly responsible for coordinating villagers’ opinions, introducing cooperative enterprises, and supervising and assessing the effectiveness of operations. Social capital is usually responsible for the design, construction, and some investment responsibilities of the project. By integrating relevant resources and providing first-class operation services, the idle resources of the countryside are turned into valuable assets, and then earn rent and operation service fees. Once a brand is established, social capital can conveniently promote the business model and brand. Villagers, as owners of leased properties, receive property funds according to contract terms and can also provide labor to earn compensation. The increase in township income and the improvement of the environment will attract more people to return. On the other hand, villagers will have the opportunity to achieve urbanization by purchasing commercial housing nearby, while urban residents can choose to live in towns for either the short or long periods due to the favorable environment. Through the smooth flow of population, resources, and funds, a higher-quality county urbanization can be achieved (Figure 7).

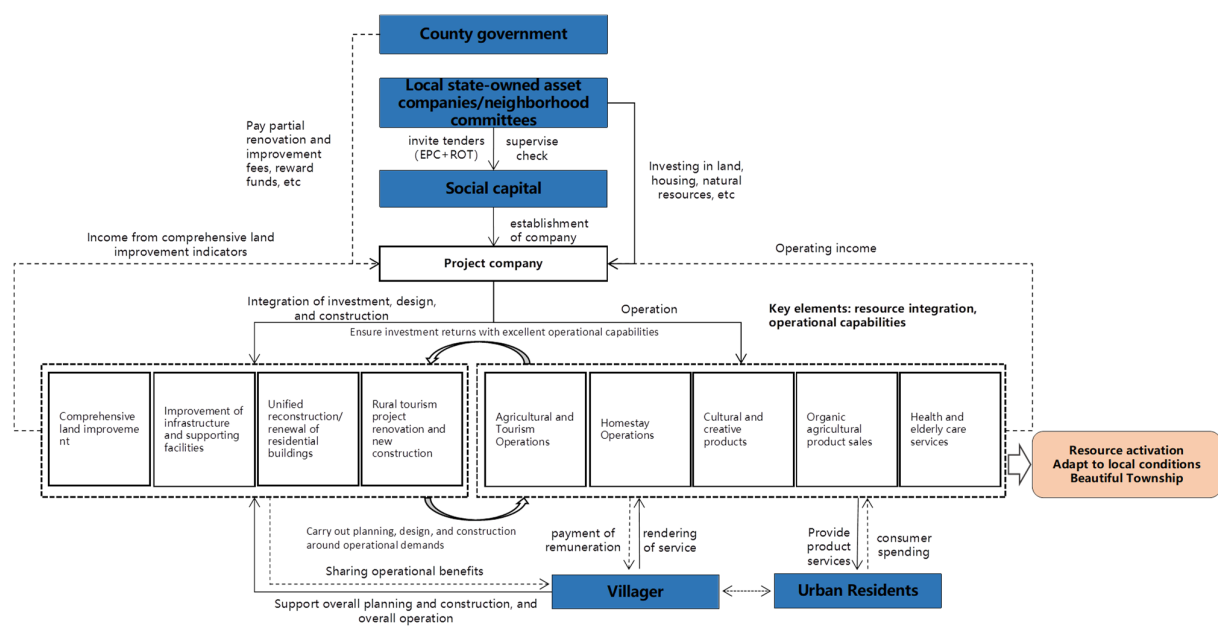


Figure 7. The pathways of promoting countryside urbanization around the county.

Regarding the two county urbanization modes mentioned above, there are two typical cases in Chinese counties. In October 2020, a state-owned enterprise (China Communications Construction Group Co., Ltd., Beijing, China) won the bid for a comprehensive development project in the Longhu area of Longgang City, which is a county-level city in Wenzhou City, Zhejiang Province. The development and construction of the project follow the “Investor + EPC + O” model, with a total investment of 6.62 billion yuan, and the expected project cooperation period is 12 years. This project is in the new city district of Longgang City, equivalent to the expansion areas of counties mentioned in this study. Social capital is involved in cooperation within the urban planning, infrastructure, and public facility construction, operation, and maintenance, industrial investment attraction, and operation. The project is currently progressing smoothly and has played a crucial role in providing the necessary funds, technology, industry, and operation for the urbanization of Longgang City. Although the final results await future verification, the urban environment and infrastructure have already undergone a significant transformation. According to data released by the government, despite the impact of the COVID-19 pandemic, Longgang City has made progress in economic and social development in recent years (Table 4).

Table 4. Development situation of Longgang City before and after advancing urbanization using the “Investor + EPC + O” model.

Economic and Social Development of Longgang City						
Year	GDP (Billion Yuan)	Population (Ten Thousand)	Urbanization Rate	Fiscal Revenue (Billion Yuan)	Fixed Asset Investment Growth Rate	Per Capita Disposable Income (Yuan)
2020	316.40	46.47	96.90%	25.33	0.10%	45,994
2021	340.34	46.77	97.20%	30.37	11.50%	50,619
2022	370.14	46.94	97.98%	31.69	15.20%	53,982

Regarding the countryside around the county, there is a successful case in Anji County, Huzhou City. This project is located in Hengshanwu village, covering an area of 161 acres and approximately 10 km from Anji County. About 10 years ago, an investor leased the vacant houses in this village, conducted overall design and renovation, and introduced various institutions, such as homestays, hotels, cultural and creative enterprises, catering,

and entertainment. After years of operation, it has now developed into a well-known beautiful countryside area.

The village provided strong support for social capital in terms of land use, allowing social capital to build some properties for operation. However, the property rights belong to the residents of the village. Through collaboration among the government, enterprises, and residents of the village, after field research, in 2021, the village achieved a business income of 61 million yuan, contributing 1 million yuan to the village collective's income, and providing employment for more than 200 people in the nearby villages.

Through analyzing the two cases mentioned above, we found that the former is located in Zhejiang Province, an economically developed region in China, with a strong government performance. The latter boasts a picturesque natural environment and is adjacent to major cities, such as Hangzhou and Shanghai, with a large customer base. In terms of policy support, both counties endorse innovative approaches to promote urbanization, with the former adopting the "Investor + EPC + O" model and the latter supporting the innovation of revitalizing idle assets and promoting innovative land use methods. This enlightens us in two aspects: on the one hand, the innovation of urbanization paths and models must be rooted in local objective conditions, advancing town development in a tailored manner. For governments and enterprises, it is crucial to determine the scope of cooperation, investment scale, and business models based on the market and objective conditions. On the other hand, innovation in models is inseparable from policy support, which is a crucial factor for proactive government and effective market integration.

5. Discussion

Model innovation requires policy support. Many studies have been conducted on the factors and driving mechanisms of county urbanization, such as temporal-spatial evolution, patterns and types of county urbanization, and how migration patterns correlate with changes in demographics and housing. However, how to promote the county urbanization with limited resources, insufficient funds, and comparatively low land values remains the primary challenge. Relying on analyses of policies, such as land acquisition and integrated land improvement, and adopting modes, such as "Investor + EPC + O" and ROT, we propose a pathway for promoting county urbanization through the linkage of government, enterprises, and residents. However, the innovation and application of these models require policy support; otherwise, it will be difficult for enterprises to participate. For example, demolition policies, land policies, bidding policies, etc., all have a significant impact on model innovation.

The county urbanization is a development process. Taking China as an example, county urbanization has gradually expanded from its initial focus on the major urban areas of county. This expansion is in response to challenges, such as the aging of old cities and accommodating the influx of new urban populations. Under the guidance of policies promoting integrated urban-rural development, equalized public services, and shared prosperity, the notion of countryside urbanization is emerging as a development trend. It is precisely due to this evolving nature that this article tentatively introduces the concept of "three-level gradient integration" as a spatial integration framework for county urbanization.

Counties provide an effective pathway for achieving decentralized urbanization, and the trajectory of county urbanization is worth continuous exploration. According to the data of the Seventh National Population Census of China, there are around 493 million people who live separately from their registered households due to disparities between their registered residence and their work or living location. Due to the greater difficulty in providing social security, such as housing, children's education, and medical insurance for inter-provincial or inter-jurisdictional migrants, nearby urbanization has become a new trend. It requires us to continually explore multiple dimensions, such as spatial governance, industrial policies, and business models.

County urbanization requires guided and tailored approaches based on local conditions. The county is the connecting point between urban and rural areas, industry, and agriculture. In the entire urban structure system, the construction and development of counties plays an irreplaceable and important role. But different types of counties have different functional positioning and play different roles. Guiding counties around large cities in different categories, such as those in key agricultural product production areas, ecological priority zones, or areas experiencing population outflows, will effectively promote diverse development trajectories for various counties.

The improvement of efficiency relies on the combination of government and effective markets. The agglomeration index serves as a crucial theoretical foundation for promoting nearby urbanization. After the spatial relationship meets the agglomeration index, the core is to coordinate the functional zoning and industrial relationship between the county and city, as well as between the county and countryside around the county. This involves components from various planning levels and must also adhere to market principles, leveraging the synergistic role of a proactive government and an effective market. Particularly in cases where county development resources are limited, achieving a win-win situation for all participating parties requires concerted efforts from the government, the market, and residents, collectively establishing a mechanism for multi-stakeholder collaboration.

County urbanization should always prioritize a people-centered approach. Balancing the development of production, living conditions, and the environment is essential to achieve sustainable and high-quality development for counties. The development of industries in counties will drive county urbanization through various pathways, such as job creation, income improvement, and increased government revenue. This is a crucial prerequisite for promoting county urbanization in China. Good living amenities and a pleasant environment are important factors that residents consider when settling in counties. Therefore, achieving high-quality and sustainable development in counties involves balancing the development of production, living conditions, and the environment.

From the perspective of urban agglomeration development, what is the relationship between county urbanization and the development of urban agglomerations? If it is a mutually beneficial relationship, what is the mechanism for achieving a “win-win” situation between county urbanization and the development of urban agglomerations, and how should it be carried out?

Studies have been conducted on the individual county urbanization assessments based on the AHP and other methods. However, there is an urgent necessity to develop a comprehensive assessment system for counties with varying conditions in China, which can be conducive to achieving tailored, precise, and intensive development for county urbanization.

In the context of county urbanization, previous studies have primarily explored mechanisms, driving factors, and developmental pathways. However, there is a limited focus on researching specific collaborative modes. This study, in contrast, explores how counties, operating within relatively limited resources, can innovate urbanization development through collaborative efforts involving the government, enterprises, and residents. The objective is to achieve a win-win situation where the combined effect is greater than the sum of its parts, symbolized as “ $1 + 1 + 1 > 3$ ”.

This study has limitations primarily in three aspects. Firstly, there are limitations in the selection of counties, making it difficult to cover all counties in China. Secondly, the empirical evidence for innovative models still requires further verification in the future. The cases selected in this study using measures, such as ‘three-level gradient integration’ and ‘Investor + EPC + O’, have shown clear effectiveness in addressing resource constraints in counties. However, the quantitative analysis of county urbanization development levels still requires further research. Thirdly, the proposed models for achieving county urbanization have a temporal aspect. Given that policies and markets are continuously evolving, the specific methods and pathways proposed in this study may need ongoing adjustments. Nevertheless, the principle of adapting to local conditions and adhering to the concepts of

the ‘efficient market’ and ‘proactive government’ in county urbanization development, as presented in this study, will continue to serve as a reference for future research.

6. Research Conclusions

China has numerous counties, each with its unique characteristics. In the context of relatively limited resources, insufficient funds, and comparatively lower land values in Chinese counties, how to promote county urbanization remains the primary challenge. Our study proposes an innovative pathway for promoting county urbanization through the linkage of government, enterprise, and residents. This study provides insight into promoting the county urbanization process. Firstly, this paper comprehensively reviews policies, such as large land parcel expropriation and development, comprehensive land consolidation and so forth. Secondly, based on field research conducted in 32 counties, a SWOT analysis on county urbanization process in China, and a literature review, this study analyzes the necessity of promoting county urbanization where limited resources, insufficient funds, and comparatively low land values remain the primary challenges. Thirdly, this paper proposes a “three-level gradient integration” concept for the spatial integration of county urbanization by analyzing the developmental status and challenges of the major urban areas of county, expansion areas of counties, and countryside around counties. Furthermore, based on mainstream urban comprehensive development models, such as “Investor + EPC + O” and ROT, and taking into account other factors, such as difficulties in demolishing major urban areas, weak industrial foundations, significant population outflows, limited county-level finances, restricted land indicators, and low land values in counties, this paper proposes a pathway for county urbanization propelled by multi-stakeholder cooperation involving governments, enterprises, and residents. This study provides a pathway reference for promoting urbanization with counties as crucial carriers.

To illustrate the feasibility and effectiveness of the two specific county urbanization development paths proposed in this study, we selected Longgang City in Wenzhou City and Anji County in Huzhou City as empirical cases representing different regions’ advancing urbanization development. The data indicate that, through the collaborative efforts of the government, enterprises, and residents in implementing modes, such as “Investor + EPC + O” and ROT, both county towns have achieved positive outcomes. This provides a certain support for the innovation modes proposed in this study.

This study provides insight into promoting county urbanization process for policymakers. For policymakers, the government should innovatively employ national policies to enhance land use efficiency and increase land allocation, such as through comprehensive land consolidation and so forth. Additionally, the government should provide robust policy incentives and create an attractive environment for private capital to participate in the investment, construction, and operation of counties, while ensuring the provision of quality public services.

For urban planners, this study can guide them in adopting an intensive and efficient planning approach tailored to local conditions. It emphasizes respecting the market and striving for county development. If planning is not carried out sensibly, it could result in the wastage of limited resources, such as land allocation and finances in counties, thus, preventing counties from maximizing their resources and value. Additionally, business may no longer participate in county urbanization because of an unreasonable urban plan.

For stakeholders, their role in county urbanization is diverse. They are not only asset owners but are also the main group for future urbanization. They serve as labor providers and potential consumers. Overall, stakeholders, while safeguarding their individual interests, should actively cooperate with government planning and business operations to reduce resistance and costs in the project implementation process, thus, laying the foundation for efficient project advancement. Otherwise, many projects may be forced to terminate due to a small number of people not cooperating, leading to missed opportunities for county urbanization.

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