

Article

Scaling-up Strategy as an Appropriate Approach for Sustainable New Town Development? Lessons from Wujin, Changzhou, China

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Abstract: China has achieved rapid urbanization and unprecedented economic booming over the past three decades. Numerous cities and towns dreamed of cloning the miracles of Shenzhen and Pudong, Shanghai, in terms of their international development. However, inappropriate development strategies have meant that the majority of fast expanding urban suburbs or newly developed towns suffer a high ratio of vacant dwellings in real estate markets and a massive loss of farmland. The frequent exposure of these empty cities to mass media or the public has urged urban governments to impose fiscal austerity. These unexpected and negative consequences of urban development have explicit conflicts with sustainability. This paper aims to provide a political economy view of these unsustainable outcomes of new development. To achieve this, the processes and agendas of new city or town planning in Wujin District, Changzhou City, are analyzed and evaluated from the

perspective of scale theory. Extensive interviews conducted with local politicians at different levels, planners, real estate agents and local residents facilitate the interpretation of these processes and agendas. It is argued that the legends of Shenzhen and Pudong, Shanghai originate from a modified neoliberal capitalism intervention at the right time and place, with which other peer cities are not comparable. It is concluded that the scaling-up strategy is not appropriate for the local new town development of Wujin, which has led to unsustainable outcomes—empty cities and towns—and created important lessons for the sustainable development of Chinese cities.

Keywords: scaling-up strategy; sustainable development; local new town; neoliberal capitalism; Wujin; China

1. Introduction

Debates over scale theory have been actively discussed since the 1980s, including the extension of its meaning from traditional mapping solutions to socio-spatial production in 1990s [1–3], and the disputes between the horizontal vs. vertical scales of spaces and social entities [4,5]. Nevertheless, these debates do not agree that scaling-up strategies are extensively applied as panaceas in the restless tide of urban development, urbanization movements and scale reformation in many newly industrialized countries (NICs) in the context of globalization or internationalization [6,7]. It is certain that China, as a protagonist of this arena, has undoubtedly been proficient in applying these strategies to pursue fast urbanization and fascinating economic growth in the new millennium of the reform era [8]. Numerous cities and towns envisaged repeating the miracles of Shenzhen and Pudong, Shanghai in their internationalization paths with sustainable development rationales, green technology and aggressive scale reformation strategies [9].

However, inappropriate development strategies have led to the emergence of many socio-spatial problems either in economic growth or in urban and regional development [10]. Within an urban society, social differentiation and residential segregation have been deteriorating the system [11–13] and separate housing and job spaces have exacerbated traffic congestion and produced serious air pollution in these fast growing cities in China [14]. On the urban and regional scales, the majority of fast growing suburbs or newly developed towns have suffered a high ratio of vacant dwellings in real estate markets and a massive quantity of loss of farmland [15]. The frequent exposure of these empty cities or towns to mass Media and the public [15] have urged their urban governments to impose fiscal austerity. Undoubtedly, these unexpected and negative consequences of urban development have explicit conflicts with sustainability, which is defined by PNAS as: “...dealing with the interactions between natural and social systems, and with how those interactions affect the challenge of sustainability...meeting the needs of present and future generations while substantially reducing poverty and conserving the planet’s life support systems” [16].

Therefore, it might be questioned what has contributed to the sharp contrast between the beautiful boulevards, amazing daytime views and darkness of empty cities at night? What has contributed to the

contrast between urban fiscal austerity and fast urbanization? Why have these internationalized cities or towns planned with sustainability rationales and equipped with green technology become empty cities?

In sum, what have made the urban development strategies unsustainable in planning practice? This paper unfolds the causes behind these questions from the perspective of scale theory. After this introduction, Section 2 aims to give a concise review of the conception of “scale”, debates on the scale theory and scaling-up strategies in the context of Chinese urban development. Section 3 focuses on a study area and case study methodology. In Section 4, the practices of scaling-up planning of Wujin City are analyzed at all phases and the unrealistic dream of scaling-up strategy is criticized, followed by addressing a paradox regarding the unsustainability of green technology in this case.

2. Scale and Scaling-up in the Context of Chinese Urban Development

During the evolution of the conception and theories of Scale, there have been several well-known theories in the published international literature, such as scale jumping [3], scale penetrating [17] and scale overlapping [9], which provides a theoretical framework for analyzing the scale strategies in neoliberal urbanization policy in China. Howitt (2003) [1] contends that “scale” is far beyond a single definition, and has become a central theoretical process since 1980s. Other than the traditional definition in cartography as map resolution, scale has been deeply involved into social production [4,18], where scale is not understood as a hierarchy of environmental (or physical), social-economic and cultural (e.g., body and home) activities but can be interpreted as the outcomes of these activities and processes [18–20].

This definition of scale links to the ideology of social-spatial dialectic in which the social, economic and environmental processes and spaces and their scales interweave mutually and interact with each other in a causal direction [2,20]. Thus, Swyngedouw (2004) further pointed out in a historical materialism view that the social, economic and culture phenomena or processes are driven or operated “at a variety of interlocked and nested geographical scales” [21] (p. 129). Meanwhile, Brenner (2001) [22] applied the Structuration Theory of Giddens (1984) [23] into the conception of scale and argued that the social production of scale is the “scalar structuration”, which is endogenously embedded in and predicted on the relationships between hierarchical scales.

Unquestionably, there have been ongoing debates on scale in the process of theorizing scale. Marston (2000) criticized that the historical materialism view has neglected the social reproduction in the study of uneven development of capitalism on the production of scale [4]. Furthermore, Marston *et al.* (2005) analyzed the dominant research framework of scale and hierarchical conception of scale, and suggested replacing it with an ontology [5]. However, Harvey (2012) suspected the productiveness of this transformation on some particular milieu [24]; for example, Ostrom (1990) argued that the nested hierarchy of administration system on the design of commons governance should be avoided [25].

Nevertheless, what is the most important in urban governance practice? Smith (1992) [4] expanded the three-scale structure proposed by Taylor (1982) [26], with elaboration of scale’s relationship, to the discontinuous and contradictory feature of capital reproduction process, and creatively contributed to the conception “politics of scale” by defining the geographical scale as “the boundaries and bounds the identities around which control is exerted and contested” [4]. Smith (1993) further contended that the processes of scale formation are cut through by all manners of fragmenting, divisive and differentiating

processes (e.g., nationalism, localism, class differentiation and competition). Scale mediates between cooperation and competition, between homogenization and differentiation, and between empowerment and disempowerment [27].

Within the entrepreneurialism practice of neoliberal agenda [28], competing for scarce and mobile capital with their peers at same political scale for urban transformation encourages or motivates urban authorities to choose different strategies to attract foreign direct investment (FDI) and enhance their competitive advantages at larger geographical scales. This has been very prevailing in western society as well as in contemporary China [29]. Those urban political reforms have originated from a new rationality of governance practice on system of city governing county or “shi-guan-xian” policy since early 1980s, based on both localization and promotion of state authority activating local economy.

Chung (2007) [30] unscrambled these endeavors as impacts on the existing urban scale and the relationships between cities and other institutions but Ma [29,31] degraded the phenomena as a result of spatial pattern reconstruction. In fact, those endeavors could be extended or further epitomized as a pack of following scale strategies [9]:

First, Jumping of Scales, was described by Smith (2000) as a conception of a process that signals how political power, affixed at a particular geographical scale, is expanded to another scale [3].

That is to say, scalar political strategies are actively mobilized as parts of strategies of empowerment and disempowerment. The social power within and between scales changes with the scalar structure. Shen (2007) [9] articulated that scaling-up from county level to prefecture level, prefecture level to sub-provincial level, and sub-provincial level to provincial level [12] does not lead to spatial expansion, but empowers a city to control over land and economic interests in the newly developed areas instead. In contrast, when scaling-up the territorialization process, some cities, e.g., Kaifeng City in Henan province, have experienced a downsized re-territorialization from a sub-provincial city to a prefecture, and then suffered a decline continuously. Thereby, it is not surprised that scaling-up strategy has been restlessly applied in urban development practice under the orientation of urban growth machine and urban regime since the Chinese urban decentralization occurring in mid-1990s [32–34].

Second, as Brenner (1999) [17] argued that “world city” formation is the ultimate aim of urban planning and regional development in most cities, the strategy of penetrating scale is broadly embodied in majority of urban plans and growth agendas during the city internationalization movement, ranging from developed coastal areas to undeveloped inland area across China. This strategy refers to the aspiration to exert local influence to other scale, particularly, penetrating the influence or force of global or international scale into regional or urban scale.

Third, the strategy of overlapping of scale is also extensively utilized by lower-scale states to share a part of power and resources with higher-scale states through a top-down channel. For example, Shen (2007) [9] stated that a sub-provincial city in China is under administration of a province but it possesses much of provincial power. As a result, the sub-provincial city occupies a massive quantity of development zones, industry parks and technology zones, which are generally established on lower geographical scales, but are empowered by higher-level scale and control over a larger scale of resource in a nested bureaucratic system.

However, these ambitious strategies are not always successfully implemented. Recently, more and more mass media reports reveal that the internationalization movement of Chinese urban development

is going far away from their baselines [15]. This is because nearly all urban areas in either coastal areas or inland regions on the reports have large-scale vacant housing, contributing to the formation of empty cities or towns everywhere [35]. This will be explained in detail in the following sections.

3. Study Area and a Case Study Method

3.1. Study Area

Changzhou City is located in the center of northern sub-region of Yangtze Delta in eastern China and at the lower reaches of Yangtze River (Figure 1). Wujin has become a district of Changzhou city since 2002 after a very flexuous administrative boundary evolution [36]. During the period from 1949 to 1983, Wujin was a county with a total area of 1677 km², separated from Changzhou (Figure 2A), a county-level city, financially and administratively.



Figure 1. Location of the study area—Wujin.

However, after the administration reform in 1980s [37], Wujin County was administered by Changzhou city and the latter was promoted as a prefecture-level city in 1983 under the policy of “system of city governing county” [9,30]. As administered by Changzhou city, Wujin County first relocated its government site from a city to a county town - Hutang in 1993, then was transformed as a county-level city in 1995 (Figure 2B), finally, was merged into Changzhou city as a urban district in 2002 (Figure 2C).

Wujin was famous by its “Sunan” model of bottom-up urbanization [38,39] and ranked the second among the One Hundred Strongest Counties of China in 1992 and the eighth during the period from 2003 to 2005. It has a total population of 1.6 million and a total GDP of 153.67 billion yuan RMB, which amounts to 46.2% and 50.9% of whole Changzhou City respectively [40].

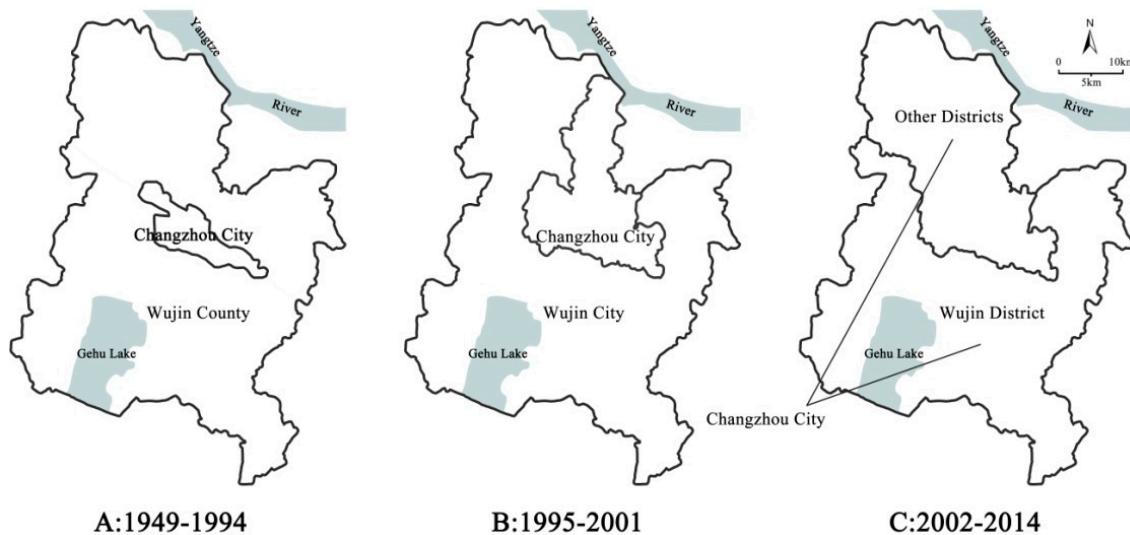


Figure 2. Changes of administrative structure of Changzhou and Wujin.

3.2. A Case Study Method

The research presented in this paper is based on Yin's (2003) case-study methodology [41]. Case studies are used to provide information for decision-making or to discover causal links in settings where cause-and-effect relationships are complicated and not readily known [41]. This method enables us to understand how local governments have selected the different scale strategies for new town development and why they failed to clone the trajectory of Shenzhen as well as Pudong and fall into the trap of unsustainability, with multiple sources of evidence. Such understanding allows us to illustrate and confirm the theoretical propositions previously enunciated in this paper.

The sampling of this case study, particularly the selection of interviewees, was based on previous research and consultancy projects with local governments, from which effective collaboration and efficient communication with relevant organizations have been successfully developed since the early 2000s. The case study data were collected from 49 face-to-face interviews at conferences, in offices or tea bars, or interviews by telephone, since the study involves different ideas, perspectives, opinions and interests from local business communities, developers and individuals. In this context, the interviewees include a set of opposite actors, namely, representatives of prefecture government *vs.* city government, the parishes officers of district government, some independent professionals *vs.* planners involved in local scaling-up strategies. The mixture of so diverse actors aims to investigate the interrelation of different actors in the mega-event. Therefore, it should be ensured that the criteria of actors' selection are relevant, neutral and objective. The interviews lasted for 20 to 90 minutes and then were transcribed into subsequent memo or research reports (see Table A1 in the Appendix).

Additional data sets were acquired from: (1) reports of master planning of Wujin; (2) documents and bulletins from Changzhou Municipal Bureau of Planning and Development and Wujin District government; (3) the Statistical Yearbooks (China, Jiangsu province, Changzhou municipality and Wujin District, *etc.*) from 1993 to 2014 respectively. At last, 23 semi-structured surveys were conducted to unfold the failure of scaling-up strategy in social-spatial dimension upon individual cognitions, involving cognitive maps of new Wujin and public attitudes of urbanization process of Wujin from local communities.

4. The Practices of Scaling-up Planning in Three Phases

4.1. Is it Another “Great Leap Forward”?

Wujin’s scale formation from a local to an international scale experiences three phases and four periods in the Chinese intuitional context of urban economic reform initiated in mid-1980s and of tax reform in mid-1990s (Figure 3):

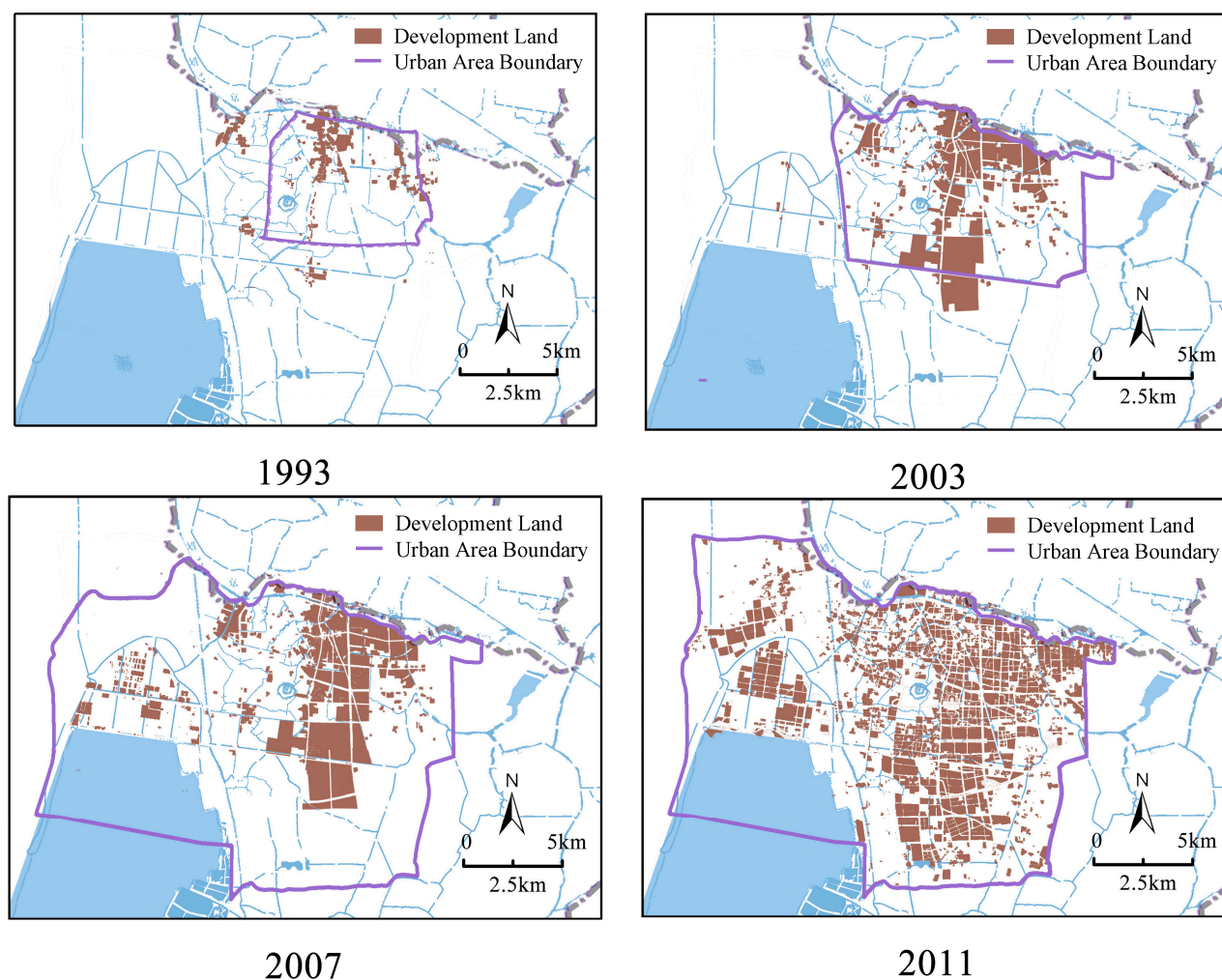


Figure 3. The rescaling of expansion of Wujin during 1993–2011.

4.1.1. Bottom-up Urbanization Before 2003

Although Wujin County was ranked the 2nd of the one hundred strongest counties across China in 1990s and has been famous for its “Sunan” model of bottom-up urbanization [38,39], it had to share a county town with the prefectural-level city—Changzhou due to complicated changes of administration (Figure 2). In the mid-1990s, Wujin has gained its financial independence motivated by the decentralization of central administration. The selection of building Hutang town as its capital was the protruded planning agenda in the master plan and the follow-up construction plan during the period from 1992 to 2003.

In this phase, Hutang Town was planned at a local scale and constructed as a common county capital of Wujin County. As an urban planner (Interviewee E1), who was involved with Wujin Master Plan in that phase, reviewed: “*although it was based on a massive scale of economic activities....., [Wujin] was compiled to the standard of middle or small city [construction regulation of Ministry of Construction of the People's Republic of China]. It [the city proper around Hutang capital] was planned to have a total area of 25 km² with a total population of 220,000.....a typical small city at local scale...*” (also see, Wujin Master Planning Report 1993–2020) [42].

4.1.2. Scaling-up Formation During 2003 to 2013

Encouraged by the successful scaling-up strategy of Shenzhen City expanding rapidly from a local village to a regional mega city as well as the marvelous transformation of Pudong from a desert area into an international financial and trade center, it is reasonable to foster its own scaling-up dream due to the strong economic power of Wujin. As such, Wujin has become one of many cities participating in the campaign of scaling-up “Great Leap Forward” since 2000s. This campaign can be divided into two periods of planning agenda: scale-jumping (2003–2009) and scale-penetrating (2009–2013).

4.1.3. Scale-Jumping Strategy Based Planning Agenda (2003–2009)

The administrative changes of Changzhou have made Wujin jump from a county to a county-level city, and then become a central district of prefecture-level city of Changzhou. Against this background, Wujin was transformed from a center of local-scale county-level city to a center of a semi-regional-scale prefecture-level city. A new scaling-up strategy was explicitly demonstrated in the Strategic Plan for Wujin District in 2003. The plan aimed to reposition the regional roles of Wujin from a comprehensive local central place to an important node of the Yangtze Delta, by twinning with Changzhou city at a final stage. Further, in the plan, Wujin, taking the regional role, was supposed to be more modernized, larger and more attractive. To meet these objectives, it is imperative to expand the city with a higher standard of urban development and construction. As a result, the population scale planned for the year 2020 was changed from 220,000 to 680, 000 population relative to those in the city planning of 1993 and correspondingly the total built-up area planned for 2020 increased from 25 km² to 82 km² [43]. It indicates that Wujin would be up-scaled from a middle-size city to a large-size city in China's city system, accordingly gaining a high level of political-economic mobilization in the Chinese institutional context [9,28,29].

Furthermore, Wujin was also proposed to be an eco-environmental friendly and greener city to attract more population and capital investment [43]. As such, ecological development was considered in the local planning or urban construction. As one planner who was interviewed explained (Interviewee E2): “*To be a functional center in the region, Wujin should be greener and more livable in the first instance*”. The pursuit of these aims make it necessary to increase land consumption, develop more green space and enhance the quality of urban construction.

4.1.4. Scale-Penetration Based Planning and Overlapping Scale Redemption Agenda (2009–2013)

During the new town movement, the land consumption of Wujin in 2008 has reached the peak of land development set for six years (2014–2020), which has invalidated the strategic planning formulated in 2003. As a tool for fighting back against the depression caused by the global financial crisis in 2008, Beijing strived to stimulate an export-inclined economy with a big budget throughout the whole country [44]. The authority of Wujin district government then decided to take advantage of this national policy and made a great leap into the scale of world city through new strategic planning, which began in May and was completed by December 2009 [45]. In the planning scheme, Wujin adopted a penetrating strategy to locate itself into a global world system [46] as a global node:

“In a flat world reconstructed by the process of globalization, the cities on the bottom of national hierarchical city system (political system or size system) could have an opportunity to fulfill important functions and play nodal roles in the global city system. Wujin, undoubtedly as such a city, is capable of penetrating into the global city system...because of its advantageous location in the Yangtze Delta and its economic strength.”—Strategic Planning Report for Wujin New City (2009–2030) [45] (also see, Interviewee E3).

Wujin was planned to be one of the cities with global influences in the world but at a lower-scale in national administrative or city-size system, such as example cities of Davos in Switzerland, Seattle in United States, and Kunshan in China [47]. Based on this penetrating strategy, it is projected that Wujin would be a driver of regional economic development and one of the most attractive destinations for foreign direct investments and migrations in the Yangtze Delta as well as Changzhou municipal area. Thereby, the plan has updated the targets of population growth and land development in 2020 up to 950,000 populations and 135 km², respectively.

This changed objective also stimulated the restructure of city form, formulating a polycentric spatial structure including a recreational business district (RBD) in front of Gehu Lake that is located in the west, and a tech-industrial town (TIT) in the south, as well as CBD in Hutang central area.

In addition, an “eco-friendly” and “most livable” proposal incorporated into the penetrating strategy into global circuits [45], became a substitute for the “simple greening” strategy formulated in 2003. As an official of planning bureau assessed the plan (Interviewee B5), *“Wujin city will be not simply greener, but also have a better ecological system and more harmonious relationship between growth and ecological environment. Thus, it is imperative to adopt not only greening technology but also eco-technology, such as water resources preservation technology, circular economic technology, and low-carbon technology. These endeavors in ecology construction would enable Wujin to ultimately become one of the most livable cities in the Yangtze Delta as well as one of most well-known livable cities in the world”*.

Unfortunately, both the tough economic situation in real estate market and strict land use policy by central government made the new town movement of Wujin face a challenging budget deficiency around 2012. As an officer in Wujin (Interviewee B3) released: *“...if our finance is no longer dependent on the land leasing incomes, the annual revenue of our functional zone would be only 0.8 billion yuan RMB; it is not sufficient to pay the debt which was produced by the excessive public*

infrastructure investments in previous years...only pay its interest; if we still some leftover, we may refund our stockholders a little bit...". This has induced the empowerment of scale overlapping strategy in Wujin. That means, Changzhou city paid for Wujin's debt and changed its urban development strategy from north back to south, then fully integrated Wujin into Changzhou's city proper geographically. However, due to unnegotiable political interest conflicts, the scale overlapping strategy was not properly implemented (IntervieweeB2). "...son's mergers father's? which is a metaphor of relation between Changzhou and Wujin in history. It [Changzhou] was a part of us [Wujin]!...humph, [Changzhou's]economy, I do not think, is better than ours...if so(merges Wujin into Changzhou), they should pay the bill[means huge debt and other cost]..." while the officer disagreed with this argument with laugh during the interview. The official in Changzhou Planning Bureau (Interviewee B7) and the planner in a state-run planning institute of Changzhou (Interviewee E4) also expressed similar viewpoints over the possibility of overlapping each other between Changzhou and Wujin for both historic and realistic conflicts of interest.

4.2. Evaluating Outcomes of Scaling-up Strategies

4.2.1. Consequence (or Outcome) of Great-Leap Land Consumption

The scaling-up strategy has stimulated the acceleration of land development in Wujin since 2003, and has ultimately led to an un-balanced relationship between land consumption and population growth (Figure 4). The built-up area of Wujin was only 47 km² in 2003 but 102 km² in 2008 already. Such rapid growth has surpassed the growth boundary and invalidated the land development limit set in the strategic plan (2003). Comparatively, its population in 2008 only reached 400,000, 58.8% of the planned population for 2020. As the consequence of low-density urban sprawl, population density in urban areas has dropped rapidly from 6600 in 2003 to 1980 population/km² in 2008, which is seriously threatening the sustainability of rural development.

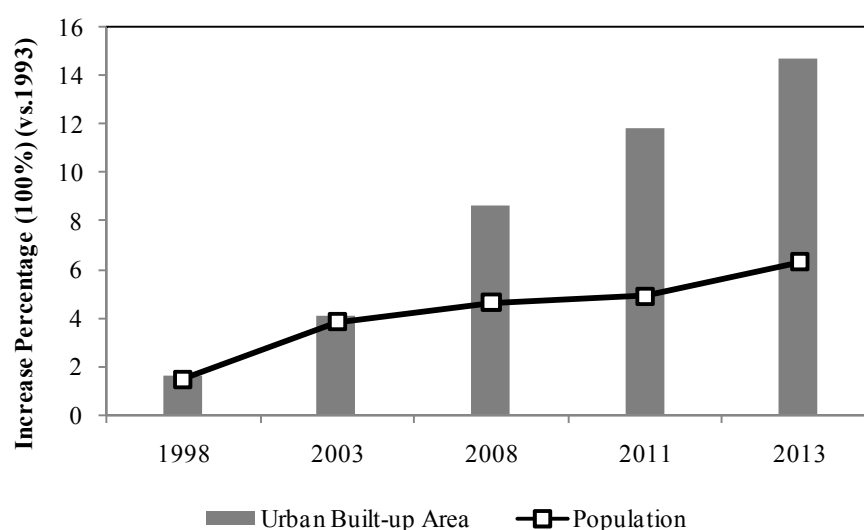


Figure 4. Increase percentages of land consumption and population growth from 1998 to 2013 compared to the data in 1993. Note: data from Wujin County Master Planning Report (1993–2020) [42]; Wujin City Master Planning Report (1998–2020) [48]; Urban Construction Development Report of Wujin Urban Area 2013 [49].

However, the land demand for urban development in Wujin has never ceased but instead kept an average growth rate of 6.8 km² per year from 2009 to 2013. These lands were mainly provided for developing the RBD area in the West and TIT area in the South. As a result, the built-up area has reached 136 km² in 2013, while the population density in Wujin's urban area continually increased to 1677 population/km² in 2013.

4.2.2. Social-Spatial Consequence of Continuous Urban Sprawl

The great-leap land consumption has caused large-scale urban sprawl since 2003, which inevitably led to a series of unsustainable land use, economic and social development.

First, the excessive land consumption has led to a lower efficiency of land resource utilization as well as a waste of public investment. Over the past ten years, a large amount of land resources have been used for housing, shopping malls, open spaces, and other public facilities. Among all the types of land resource uses in Wujin during 2003 to 2013 (Table 1), housing use ranked the second, green open space the third, and transport the fourth. However, all these land resource utilization suffered a very low rate of growth. For example, there is a huge gap between the actual *versus* designed traffic loadings at many avenues (Figure 5). An official survey [50,51] reported that the average rate of residential vacancy in Wujin was 21.7% in 2009, which increased to 22.5% in 2010. The actual vacancy rate should exceed the official rate based on our interview with the managers of real estate agencies or managers of property management companies in the 16 representative zones (Table 2; also see, Figure 5). One real estate sale agent commented (Interviewee A6) “...*eh, it is difficult to make a judgment of how many people live in their residential areas... We sold out around half [of property] ... Some [empty dwellings] are soled but nearly half of their owners never shown up [so, they need to pay the strata fee].*” Similarly, a female store owner confirmed the high rate of housing vacancy (Interviewee D5): “*I have lived here for eight years... till now maybe only two third [housing are occupied by residents] ... the price was around 5000 Yuan RMB per square meter... now around 6000 [the average housing prices in Nanjing and Shanghai had 3 to 4-fold increases during this period] [50] ... just for living... nobody invests on it...*”.

Table 1. Changes of land use structure.

Urban Land Use	1993 (km ²)	2003 (km ²)	2013 (km ²)	Growth (1993–2003) (km ²)	Growth (2003–2013) (km ²)
Housing	4.33	15.61	33.76	+11.28	+18.15
Manufacturing	2.87	17.46	43.08	+14.59	+25.62
Transport	0.62	11.57	18.97	+10.95	+7.4
Green land	0	0.19	13.58	+0.19	+13.39
Commercial and Public facilities	1.64	8.53	13.32	+7.49	+4.79

Note: data from Wujin County Master Planning Report (1993–2020) [42]; Wujin District Strategic Planning Report 2003[43]; Urban Construction Development Report of Wujin Urban Area 2013 [49].

Furthermore, the rapid urban growth has resulted in a crisis of social identity, undermining the sustainability of social development. The sharp contrast between increasing urban sprawl and declining population growth not only enlarged the geographical scale of Wujin, but also distorted the cognitive scale of residents as well as their community sense in Wujin (Figure 6).

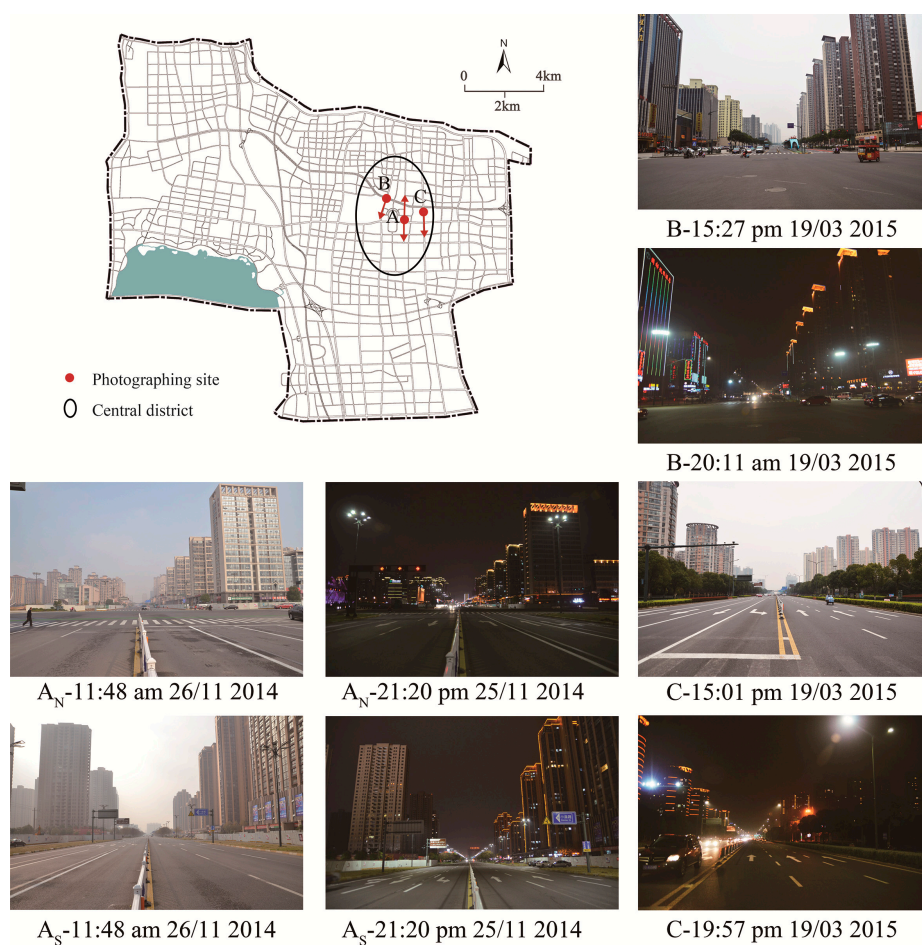


Figure 5. The city view both in daytime and nighttime at a site of downtown area.

Table 2. The surveyed housing vacancy rates in the 16 residential zones.

	Zones	Construction year	Residential vacancy rate
1	Chengzhonghuayuan zone	1990	<10%
2	Sijixincheng zone	2002	10%
3	Tian' anbieshu zone	2004	19.5%
4	Xinchengnandu zone	2005	13%
5	Changhonghuayuan zone	2006	43%
6	Daxuexincun zone	2006	48%
7	Cailingjiayuan zone	2006	30%
8	Nandianyuan zone	2007	30%
9	Yucheng zone	2007	30%
10	Hupanchunqiu zone	2008	35%
11	Tianjuanfeng zone	2010	45%
12	Hongjianyipin zone	2010	50%
13	Moershangpin zone	2010	66%
14	Xinchenggongguan zone	2011	35%
15	Laimengcheng zone	2011	50%
16	Xingheguoji zone	2013	90%

In a mental map on the spatial extent of Wujin new town created from a survey of 23 inhabitants (both locals and migrations) (Interviewees C1–C16; D1–D7), more than 75% interviewees defined the new town into a region no more than 50 km², and located in the built-up area prior to 2003. In addition, more than 60% these interviewees stated that they seldom travelled to the western RBD area and the southern TIT area. Nearly 50% these interviewees argued that they had little sense of community belonging in Wujin because of inappropriate spatial scale for living and a high rate of residential vacancy. The poor community sense has made Wujin not an ideal destination for migrants and this has adversely aggravated the degree of unsustainability. An official survey (2011) on the origins of buyers of commercial housing during 2006–2010 revealed that more than 75% to 85% buyers were locals, 10% to 15% buyers from other districts of Changzhou, and only 5% buyers from outside of Changzhou city [52]. These figures also revealed that Wujin has not become a real regional or global node attracting migrants from outside, and accordingly evidenced the failures of scaling-up strategies initiated in 2003.



Figure 6. The cognitive map of local community.

4.3. Evaluating Land Revenue Collection

Undoubtedly, a massive gap exists between local revenue generation capacities and the requirements of scaling-up strategy, which allure and push local governments to raise funds in numerous forms away from formal state channels [53]. Since the urban economic reform in the mid-1980s and the follow-up tax sharing reform in the mid-1990s [37], local governments such as Wujin, were anxious to

pursue a pro-growth development under the circumstance of decentralization. As the star of counties with the fastest economic growth in China, Wujin's GDP and local revenue in 2003 was 31.6 and 4.0 billion *yuan* RMB [54], much higher than the national average at county level [55]: 3.19 and 0.13 billion *yuan* RMB as well as the provincial average [56]: 12.2 and 0.7 billion *yuan* RMB respectively.

As such, there was not a big financial issue in 2003 for Wujin to confidently practice its scaling-up strategy. In fact, the logic behind the scaling-up strategy adopted by many local governments including Wujin, is transforming massive non-urban land into towns more than that required for urban development and gaining mortgage from banks before the excess land is sold out to real estate developers. Consequently, local authorities transform the loans from banks into infrastructure, public facilities, open spaces, and other fixed capitals to increase the value of urban land as well as its leasing price. Local authorities then lease the expensive land to developers and reclaim the proliferating land premium to repay the debt from banks. When the real estate market is growing, local governments are able to achieve the institutional led excessive “rent-gap” between farmland compensation fee and the proliferating land leasing fees [57–59].

However, the implementation of the strategy is very much dependent on the real estate market situation. Wujin has seemed to suffer a looming financial problem since 2012, caused by the declining real estate market. In the unexpected situation, both the new towns driven by scaling-up strategy and the game of institutional led excessive “rent-gap” are defunct. Local authorities have to face the unbearable financial crisis, confirmed by a local government officer (Interviewee B1) when commenting upon their endeavors of underplaying the looming crisis: “...*We [the Wujin government] do have some financial issues these years...eh...but, anyway, Wujin still has a huge number of population and an abundant amount of [farm] land for development...*”. However, an mid-ranked official agreed (Interviewee B3): “...*The debt of our zone [only a developing zone of new town of Wujin] has reached around 15 billion yuan RMB right now [Nov 2014]... With the declining real estate market and land market, the annual revenue of new town is as little as only 0.8 billion yuan RMB...maybe it depends on if the central government wishes to pay the debt at last or helps local government keep the housing price up...*”. A real estate developer confirmed (Interviewee A2): “...*After 2012, the [real estate market] business has declined steadily...[housing price] too high? I don't think so, at least our profit is lower than before...eh...maybe the compensation fee and tax is much higher than before....it is not our [real estate business] nowadays...*”. A Regional manager of a nation-wide real estate company also expressed his disappointment over real estate market of Wujin (Interviewee A1), “*if this situation [real estate market declined] goes on, we may have to withdraw from Wujin*”.

5. Discussion

5.1. Dream or Nightmare? An Unbroken Bubble of Scaling-up Strategy or Planning Competitions

The case study of Wujin may be a special case of many urbanization practices in China broadly utilizing scaling-up strategy. The National Development and Reform Commission (NDRC) Report (2013) [60] revealed that numerous new towns have been built in the surveyed 12 provinces during 2000 to 2012: 200 new towns in 156 prefecture-level cities, at least 67 new towns in 161 county-level

cities and 55 in 12 sub-province-level cities with an average size of 63.6 km², which equals to 55.3% of average built-up area of original towns. In summary, the factors contributing to the failure of Wujin are listed as follows.

Although Wujin was merged into Changzhou city as a central district, it was unable to acquire substantial financial support from Changzhou city government as a subprime center. For historic reasons, the development strategy made by Changzhou city was to develop the northern city proper and build a sub center in Xinbei District (Figure 1C). As such, most public resources such as Changzhou's administration center, large-scale gymnasium, hospitals, cultural centers, transport hubs, and other public facilities have been developed into the new northern center rather than into the area of Wujin in south (IntervieweeB4, B6, B7 and E4). Undoubtedly, Wujin's development was marginalized to a peripheral position in Changzhou city. The sharp contrast between the top-down strategy of Changzhou and the bottom-up strategy of Wujin determined the fate of Wujin's scale-jumping strategy.

Wujin was not the only city adopting the penetrating strategy across the Yangtze Delta. In fact, the new towns in Shanghai, Suzhou and Nanjing cities have also implemented the scaling-up strategies with support from their higher-level (or mother) cities, and were all expected to be a functional node within the global system. Comparatively, Wujin had two inherent disadvantages over others. For example, Wujin had a disadvantageous administrative status comparing to other new cities and towns in Shanghai and Nanjing. Changzhou was just a normal prefecture-level city in Jiangsu Province, compared with Shanghai, provincial-level city and Nanjing, a sub provincial-level city, who both could have more political and economic resources and more development opportunities. Wujin also had a geographical disadvantage. Contrasting to its above-mentioned cities, Wujin has a very poor spatial accessibility to the global city—Shanghai and is therefore less able to integrate into internationalized economy and society (Figure 1B). Thus, the economic structure of Changzhou (and Wujin) is more likely localized rather than globalized, same as other cities, which can be inferred from the comparisons of two statistics related to economic openness level (Figure 7). Consequently, Wujin was deemed a loser in the scaling-up competitions.

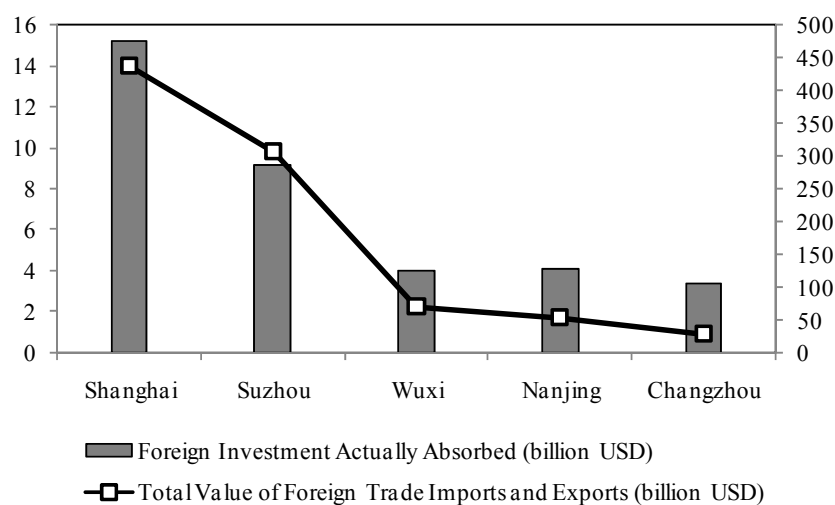


Figure 7. Comparison of economic openness level between Changzhou and its competitors in 2012. Note: data from Shanghai Statistical Yearbook 2013 [61] and Jiangsu Statistical Yearbook 2013 [55].

These lessons from the Wujin case reveal that globalization may present opportunities for local development but may be traps for local strategic decision-making. A successful practice of jumping to a higher scale or penetrating into the global system is not solely dependent on local initiatives. The winners should have global economic restructure and function as nodes of international capital production [24,62]. The failure of Wujin demonstrates that the grand scaling-up strategies are just illusory stories for most local cities, made up by global powers. It is infeasible for a local city to mobilize all of its resources for the illusory dreams. The losers in the gamble would inevitably face a cumbersome social-spatial unsustainability.

5.2. The development of Green Technology

It is undeniable that Wujin has deployed many greening and ecological strategies during the scaling-up practices since 2003. Therefore, why have these strategies not facilitated the production of sustainable outcomes?

Following these “greening”, “eco-friendly” and “most livable” strategies, Wujin has made a number of greening endeavors such as developing more green space, reserving waterfront space, and building wide green belts on roads or streets, which has resulted in a substantial increase of green land during 2003 to 2013 (Table 2). Moreover, Wujin also deployed several ecological technologies including the developments of its public transport system, green architecture technology, and low-carbon technology. For example, Wujin was a pioneering city in running bus rapid transit (BRT) system and a pilot city in developing a green architecture industry in China. Wujin also invested 0.2 billion *yuan* RMB in developing a low-carbon small town, which was the first low-carbon project in Jiangsu Province (Interviewee B5).

Through these greening and ecological practices, Wujin was awarded a series of prizes for its green or livable development. For example, Wujin gained its first national award of “national ecological demonstration zone” by State Environmental Protection Administration of China (SEPA) for its endeavors in tree planting in 2006. Continuously, Wujin won an award of “international garden city” in the 11th International Garden City Final sponsored by the international Federation of Parks and Recreation Administration (IFPRA) in 2007. In 2010, Wujin achieved “Dubai International Award for Best Practices to Improve the Living Environment”, which was issued by UN-HABITAT.

Unfortunately, these excellent efforts in greening and eco-friendly developments have not automatically led to successful practice for sustainable urban development. This is because all of these efforts and actions only rested on the ambitions of local government for marketing pro-growth urban development strategy, and failed to mobilize the whole society to autonomously participate in these, and they are never rooted in the daily practice of local residents. Thereby, the strategies of “let it be greener”, “let it be eco-friendly”, and “most livable” are not realistic manifestos to make a city sustainable but masks of entrepreneurialism policies to make the city greener and more attractive to capitals and high-skilled labors, to start the strategies of jumping scale or penetrating scale in a globalization context. Thereby, the greening strategy neither endorsed the scaling-up strategy, nor cut down the deficit budget of local government; instead it is more likely to provide a justification to overdraw local resources.

Furthermore, the investment in green technologies for implementing sustainable urban development strategies was far beyond the durable financial power of local governments. As a result, the local governments had to sell out more land plots for fundraising and then remarkably reduce the property price in real estate market. These actions jeopardized its revenue and threatened the development of agricultural sector and local environment. Consequently, these kinds of sustainable urban development strategy have inevitably led to unsustainable outcomes in planning practice.

6. Conclusions

Motivated by the successful scaling-up strategies of Shenzhen and Pudong, Shanghai in China, numerous cities and towns dreamed of repeating their paths of internationalization through similar economic policy, advanced green technology and eco-environment friendly rationale. Unfortunately, nearly all of fast booming suburbs or newly developed towns have, to some degree, faced a series of sustainable development challenges, such as a high ratio of vacant dwellings, a massive loss of farmland, and nearly bankrupted local governments. In the case study of Wujin, the unsustainable consequences of scaling-up strategies and sustainable technologies in urban development are twofold:

Given that the legends of Shenzhen and Pudong, Shanghai originate from a modified neoliberal capitalism [62] intervention at right time and in right place, their successful practices are definitely unrepeatable. Mr. Deng Xiaoping has demonstrated his outstanding political-economic wisdom on the design and development of Shenzhen in 1980s, and then of Pudong in 1990s. That is, both cases were embedded with incomparable state scale and economic scale, which are not available for any other peers in China. Although it was one of the most economically wealthiest county in China, Wujin was restrained in its embarrassing administration level, less motivated economic capacity, and less attractable regional housing market, making it impossible to practice scale jumping, scale penetrating and even the scale overlapping to achieve its scale formation in the context of internationalization.

Furthermore, the politician, bureaucrats and planners of Wujin have realized its weaknesses in scaling-up strategy; as complementary alternatives, they have practiced an eco-environment friendly strategy with extensive uses of advanced green technology into urban development. However, it is unreasonable to mistake “the light green” as “deep green”, either sustainability [63]. Consequently, the slogans “think globally and act locally” proposed by the founder of “Friends of the Earth”, David R. Brower would be the best philosophy for these local cities and towns than its reverse one “act globally and think locally”.

The analyzed case of Wujin may have important implications for the sustainable development of Chinese cities, which are undertaking rapid urbanization under the dual forces of market and government intervention. It is clear that local governments should learn the lessons from Wujin that economic unsustainability jeopardized sustainable urban development though it is still early to conclude that the Wujin’s case is unsustainable when the city has been developing very fast. Continuous monitoring of its development process and even quantitative models of evaluation would contribute to the appropriate design of local development strategies. Some potential efforts would be further developed in the future to reveal the sustainable and unsustainable practice of Wujin and its peers under the roofs of *policy boosterism* effort [64] or framework of *sustainability fix* strategy [65].

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Author Contributions

Mr. Hao Chen organized the field survey, wrote some sections and commented on the manuscript. Prof. Qiyao Wu as the correspondence author conceptualized and structured the paper, and wrote some sections. Dr. Jianquan Cheng revised and constructively commented on the paper. Mr. Zhifei Ma conducted the field survey and processed the maps and diagrams. Dr. Weixuan Song gave some constructive comments.

Appendix

Table A1. List of interviews from 2009–2014.

	Venues	Data	Interviewees	Contents
A Local Business Community (8 interviewees, A1–A8)				
1	Office	23 November 2014	A regional manager of a nation-wide real estate company	Sales performance; business environment and future investment consideration
2	Restaurant	23 October 2014	A local real estate developer	The development of real estate market in Wujin
3	Marketing hall	23 November 2014	A sale manager of a local real estate enterprise	Sales performance recent years
4	Store	23 November 2014	A local small business owner	Business environment; interest of investment in real estate
5	Community	23 November 2014	An employee of a trans-region company	Business and living environment in Wujin
6	Scale office	23 November 2014	A branch manager of a second-hand property agency	Business performance and appraisal over the second real estate market of Wujin
7	Park	23 November 2014	A shopkeeper in a community store	Business performance recent years
8	Restaurant	23 November 2014	A manager of a restaurant in the central business district (CBD)	Business performance; business environment in Wujin
B Officials (7 interviewees, B1–B7)				
1	Restaurant	23 October 2014	An official of tourism bureau, Wujin	Developing issue of Wujin; problems in restructuring economy
2	Restaurant	23 October 2014	An alcalde	Developing issue of Wujin, opinions on scale overlapping strategy from a Wujin perspective
3	Hotel	22 November 2014	An official in a functional zone	Finance issue of Wujin

Table A1. Cont.

	Venues	Data	Interviewees	Contents
4	Office	24 November 2014	Official A in a department of district government	History of planning-making
5	Office	24 November 2014	Official B in a department of district government	“Green” strategy in planning
6	Office	24 November 2014	An vice-director of a planning institute in Wujin	Problems of excessive land consuming
7	Office	24 November 2014	An official of planning bureau, Changzhou	Conflicts of spatial development strategies between Changzhou and Wujin; opinions on scale overlapping strategy from a Changzhou perspective
C	Local residents and managers of community property management companies (23 interviewees) (C1–C23)			
1–4	Sijixincheng zone; Chengzhonghuayuan zone;	22 November 2014	Two residents and two managers of property management companies	Vacancy rate; mental map; community sense; future plan of property investment
5–10	Nandianyuan zone; tianjuanfeng zone; xinchengnandu zone; xinchengnandu zone	22 November 2014	Three residents and three managers of property management companies	Vacancy rate; mental map; community sense; future plan of property investment
11–16	Laimengcheng zone; Xingheguoji zone; Moershangpin zone	22 November 2014	Three residents and three managers of property management companies	Vacancy rate; mental map; community sense; future plan of property investment
17–23	Other 8 zones	22 November 2014	One resident or manager of property management company in each zone	Vacancy rate
D	Migrant workers(7 interviewees) (D1–D7)			
1–3	Taxi; hotel; restaurant	23 November 2014	Three migrant workers in service sector	Attraction of Wujin’s living environment and their settlement plans; mental map
4–5	Street; store	23 November 2014	Two migrant workers in manufacturing sector	Attraction of Wujin’s living environment and their settlement plans; mental map
6–7	open spaces	23 November 2014	two migrant worker in high-tech industries	Attraction of Wujin’s living environment and their settlement plans; mental map
E	planners (4 interviewees) (E1–E4)			
1	In a meeting	15 October 2009	A planner joined in the master planning 1993	Details of the planning process
2	By telephone	26 November 2014	A planner joined in the strategic planning 2003	Details of the planning process
3	In university	4 November 2014	A planner joined in the strategic planning 2009	Details of the planning process
4	By telephone	26 November 2014	A planner in a state-run planning institute of Changzhou	Opinions on scale overlapping strategy from a Changzhou perspective

Conflicts of Interest

The authors declare no conflict of interest.

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