



Toward smart governance and social sustainability for Chinese migrant communities



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ABSTRACT

In the regeneration of Chinese migrant communities, which are usually referred to as “villages in the city,” various modes of governance have been formed based on the relationships between the three key actors (state, market, and society). These modes of governance are characterized by problems ranging from a lack of a transparent planning process, to ineffective collective decision-making. Rural migrants also play only a marginal role, or no role at all, in the regeneration practices, resulting in actual and potential social conflicts and inequality. This article contributes to current debates on social sustainability by presenting smart governance for the engagement of marginal migrants and other marginal social groups, and the establishment of an equitable relationship between the three key actors in the regeneration process. It firstly analyzes issues and problems of existing modes of governance in the regeneration of Chinese migrant communities. It then sheds light on the further exploration and application of new types of web-based Planning Support Systems, which can be developed based on SoftGIS methodology and easily used in social media on smartphones, in formulating smart governance. This article finally presents a framework on smart governance and social sustainability for migrant communities in China.

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1. Introduction

Globalization has exacerbated social polarization between rich and poor through, for example, the generalization of flexible production processes (Kesteloot, 2003). Many cities in developing countries are characterized by high numbers of migrants and, consequently, social inequality. It is almost impossible for governments in the developing world to provide or subsidize sufficient housing for the increasing number of migrants who arrive in their cities. The presence of low-income migrant households in rapidly growing cities thus often contributes to the widespread proliferation of migrant communities.

Engaging marginal migrants and their organizations in the planning process, and thus enhancing social equity, is crucial for the

sustainable regeneration of these communities. This refers to current debates on social sustainability. According to the [World Commission on Environment and Development \(1987\)](#), “sustainability” is generally defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainable development encompasses economic, social, and ecological/environmental aspects of conservation and change (Hediger, 2000; Wang et al., 2014). It was not until the late 1990s, however, that social sustainability received academic interest (Hediger, 2000; Wang et al., 2014). According to McKenzie (2004), social sustainability occurs when the formal and informal processes, systems, structures, and relationships actively enhance the capacity of current and future generations to create healthy and livable communities. Social sustainability includes five key principals, namely equity, democracy and governance, diversity, social cohesion, and quality of life (Hodgson, 2008). In terms of democracy and governance, it is crucial to allow a diverse range of people (especially marginal social groups) to participate and be represented in the decision-making process (Hodgson, 2008). Their information and knowledge will play a prominent role in governance to promote sustainable urban development by

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dealing with complex social issues (Geertman et al., 2013). Therefore, this article contributes to current debates on social sustainability by presenting smart governance, which is supported by e-participation techniques (Giffinger et al., 2007) and can help to build a balanced relationship between the various actors in the decision-making process (Suk-Joon, 2013), to enable the engagement of marginal migrants and establish a more equitable partnership between the three key actors (state, market, and society) in the regeneration of Chinese migrant communities.

In China, migrant communities are usually referred to as “villages in the city” or “urban villages” (*chengzhongcun*) (e.g., Lin et al., 2011; Hao et al., 2012; Lai et al., 2014). Villages in the city (ViCs) were once traditional rural settlements on the edges of cities. In the process of rapid urbanization, city governments usually requisition the farmland of these villages while leaving residential areas intact. Indigenous villagers adapt their houses to accommodate a large number of rural migrants, who are largely excluded from the formal urban system. Due to ineffective guidelines, ViCs are characterized by poor infrastructure and illegal buildings. However, ViCs provide affordable housing for the majority of rural migrants in many Chinese cities. For instance, 116 ViCs on the urban fringes of Beijing accommodate more than 4 million rural migrants (Bao, 2010), and 320 ViCs in Shenzhen provide cheap housing for more than 5 million rural migrant (Hao et al., 2011). The Chinese *hukou* (household registration) system assigns people either urban or rural *hukou* status according to their birth place, distinct from housing, employment opportunities, and social welfare. Without urban *hukou*, the majority of rural migrants cannot access formal housing, formal job opportunities, education, or social welfare in the city (Lin et al., 2011). They therefore develop survival strategies in terms of housing, education, and employment (Lin et al., 2011). The collective industrial land of ViCs also accommodates a considerable number of industrial developments (Lai et al., 2014).

Many scholars have paid attention to various governance approaches in the regeneration of ViCs in several Chinese big cities (Hao et al., 2011; Wu et al., 2013; Lin et al., 2011, 2014a, b). Partnerships between local governments, developers, and the collective organizations have been created to undertake the demolition and redevelopment of ViCs. Nevertheless, more and more social conflicts are arising during demolition processes. Bottom-up approaches in which the collective organizations, villagers, and migrants play a crucial role have also been implemented. However, these approaches encounter bottlenecks such as a lack of effective regulation and cooperation. Although rural migrants usually make up the majority of the population in ViCs, they play only a marginal role, or no role at all, in the regeneration practices, resulting in actual or potential social unrest and instability. New modes of governance are urgently required to engage rural migrants and other marginal social groups in the decision-making process, resulting in an inclusive planning approach (Lin and De Meulder, 2012; Lin et al., 2014a).

This article therefore explores new modes of governance – namely smart governance with web-based Planning Support Systems (PSS) – that will promote the participation of marginal social groups (especially rural migrants) and establish more equitable relationships between various actors, promoting social sustainability within ViCs. After analyzing issues and problems of existing modes of governance in the regeneration of Chinese migrant communities, this article sheds light on the exploration and application of new types of web-based PSS in promoting smart governance. It finally proposes a framework on smart governance and social sustainability for the regeneration of migrant communities in China.

2. Traditional modes of governance and smart governance with web-based PSS

Both “governance” and “modes of governance” are much debated terms. From a Western perspective, governance is the process of interactions and decision-making among the actors involved in a collective issue (Hufty, 2011); modes of governance indicate the different relationships between three actors (state, market, and civil society) (Driessen et al., 2012). In China, urban development has been promoted by various state actors that may have complex roles and be influenced by the market, such as the local corporatist state (Oi, 1992) and the central state in urban land governance (Xu and Yeh, 2009). Unlike regular urban areas, which are dominated by state and market actors, ViCs are formerly rural settlements in which actors from society (*minjian*) played a crucial role in spatial formation (Lin and De Meulder, 2012; Lin et al., 2012). In the past 20 years, various partnerships between new actors (collective companies, external enterprisers, the informal sector, the government, villagers, migrants, etc.) have been formed in the development or redevelopment of ViCs (Lin et al., 2012). Rather than “civil society,” “society” is a more suitable term to indicate the collective company, the informal sector, villagers, and migrants (Lin et al., 2012). Based on the relationships between state, market, and society, Lin and colleagues (2014a) developed a conceptual framework on modes of governance for the regeneration of ViCs. There are seven modes of governance, namely centralized and decentralized modes of governance, public–private governance, self-governance, interactive governance, public–collective–private governance, and collective–private governance. Lin and colleagues (2014a) argue that these traditional modes of governance have encountered various issues, and that new inclusive and interactive modes of governance are urgently needed to engage marginal social groups (particularly rural migrants) and establish a balanced relationship between the three main actors (state, market, and society) in the decision-making process.

There is a strong argument that PSS can deal with some crucial deficiencies in traditional governance arrangements, in which the relationships between the state, the market, and society are unbalanced (Lin and Geertman, 2013). PSS are a subset of geo-information based instruments that incorporate a suite of components (including data, information, GIS, statistical tools, and models) that collectively support a unique planning task (Geertman, 2006). Recently developed web-based PSS that promote civic engagement and communication have a potential role in promoting inclusive modes of governance. Online participation PSS can allow citizens, as either individuals or members of civil society organizations, to participate in public debates, to express their opinions, and to hear about or develop new solutions to urban problems (Poplin et al., 2013). SoftGIS (a type of web-based PSS), which can be connected with social media and easily used by lay persons, can allow the majority of citizens to map a city and develop new planning approaches (Kahila et al., 2014). Web-based PSS can play a strong role in helping online participants to understand spatial conditions and can facilitate consensus building (Lieske et al., 2009; Lin and Geertman, 2013). “Citizen participation is a categorical term for citizen power. It is the redistribution of power that enables the have-not citizens, presently excluded from the political and economic processes, to be deliberately included in the future” (Arnstein, 1969, pp.216). By supporting the participation of “have-not citizens” and promoting a more balanced power relationship between actors, web-based PSS can thus enhance social equity and social sustainability. This suggests that web-based PSS can add value to planning participation and even to democracy. Pelzer et al. (2014) conclude that the potential added value of PSS to planning practice at the group level can be

communication, collaboration, consensus, and efficiency. With this added value, PSS have a strong relationship with smart cities, and especially smart governance.

The incorporation of web-based PSS into collaborative planning can be an alternative strategy to deal with wicked problems and promote smart cities (Goodspeed, 2014). Smart governance is a key component of smart cities (Giffinger et al., 2007), in which investments in social capital and ICT infrastructure fuel sustainable economic development and a high quality of life through participatory action and engagement (Caraliu et al., 2009). Giffinger et al. (2007) state that smart governance is related to participation in decision-making processes, the transparency of governance systems, the availability of public services, and the quality of political strategies. It is supported by e-participation techniques (such as online consultation) and deliberation over proposed service changes that support the participation of users in the democratization of decisions taken about future levels of provision. Kickbusch and Gleicher (2012) point out that the main characteristic of smart governance is co-produced collaboration, in government and throughout society, that incorporates all relevant actors and methods for scrutinizing power and authority, in order to increase resilience and adaptability. Suk-Joon (2013) indicates that smart governance can help to build a balanced relationship between state, market, and civil society, reconciling conflicting principles and values. In particular, it enables marginal social groups to engage and participate in the decision-making process directly and facilitates social equity, preventing the emergence of social conflicts and contributing to social sustainability.

3. Methods and data collection

A case study approach was adopted to understand the issues and problems related to existing modes of governance in the regeneration of ViCs. The materials for the case studies were mainly collected in the period 2008–13, with substantial assistance from local universities and governmental agencies. Several periods of in-depth fieldwork were conducted to collect project documents, observe ongoing planning activities, and understand the roles of key actors. To identify the main modes of governance and their common issues, we visited a number of ViCs in Guangzhou, Shenzhen, Foshan, and Beijing. These ViCs had undergone, or were undergoing, regeneration during the fieldwork. In order to understand the roles of and relationships between key actors, we conducted a number of semi-structured interviews with public authorities, planners, experts, rural migrants, villagers, leaders of civic organizations, and collective companies. The content of the interviews ranged from the role of the interviewee to the practical issues that emerge in the governance process. We also participated in several meetings organized by public authorities or civic organizations in relation to the regeneration practices. These meetings led to a deep understanding of issues within each mode of governance. Furthermore, we collected data from the Internet and social media (e.g., ViC community websites, PSS websites, information from Weibo). We then developed a conceptual framework on smart governance and social sustainability for migrant communities, on the basis of the in-depth case studies and data we had gathered.

4. Modes of governance in the regeneration of ViCs

Our in-depth fieldwork (site visits, observations, semi-structured interviews, etc.) in the four Chinese cities (Guangzhou, Shenzhen, Foshan and Beijing), where ViCs have proliferated and diverse modes of governance have been adopted for the regeneration process, revealed that there are three common modes of governance in the regeneration of ViCs, namely

public–collective–private governance, collective–private governance, and self-governance. The following analysis focuses on how these three modes of governance affect rural migrants and generate social issues.

4.1. Public–collective–private governance

Chinese governments in general have a negative attitude toward ViCs, claiming that their environment is chaotic and that they clash with the aspiration for and the official vision of modern urban aesthetics. Their redevelopment can also bring in huge profits for developers and collective organizations, and generate revenues for local governments. Because of the negative attitude and the potential benefits, many ViCs have been demolished and redeveloped in big cities such as Beijing, Guangzhou, and Shenzhen (Hao et al., 2011; Lin et al., 2011; Wu et al., 2013). These ViCs are usually located in the city center and thus occupy valuable land. The approach is characterized by public–collective–private governance. Local governments, developers, and collective organizations are the key actors. Although rural migrants often make up a large percentage of the population in ViCs, they are absent from this mode of governance.

This mode of governance has recently been confronted with several social issues. On the one hand, the demolition and redevelopment of ViCs has often led to conflicts with villagers. “Nail houses” (*dingzihu*) have often emerged during the demolition process, as some villagers refuse to vacate their houses to make way for urban development. For instance, the demolition of Yangji village in Guangzhou started in 2010 but is still (in 2014) incomplete. When we visited the village in March 2013, we observed that the majority of the houses had been demolished, leaving several nail houses (Fig. 1). Interviews with the villagers showed that there were issues related to governance and the compensation scheme: They wanted more compensation for their houses, and argued that the decision-making process was not transparent and that the project had not been approved by all the villagers. As a result, they resisted moving out of their houses. The demolition and redevelopment of ViCs in Shenzhen has encountered similar problems. For instance, the municipal government proposed the redevelopment of Gangxia village in 1998. However, the project was stalled for a very long time due to the villagers' demands for high level of compensation. It was not until 2009 that redevelopment agreements were finally signed with two external developers and demolition started.

On the other hand, the demolition and redevelopment of ViCs has led to the displacement of a large number of rural migrants and exacerbated social inequality. For instance, the redevelopment of Tangjialing in Beijing had a significant impact on rural migrants (also see Lin et al., 2014b). It led to the demolition of cheap villager's housing and the withdrawal of services for 50,000 rural migrants. The majority of rural migrants were forced to live in nearby ViCs. As a consequence, they have to spend more time and money on commuting, aggravating their poverty status.

4.2. Collective–private governance

ViCs usually have a considerable amount of collective industrial land (Lin et al., 2011; Hao et al., 2012; Lai et al., 2014). The development of this land is important for the urban economy in many cities, particularly those that depend largely on labor-intensive industries (e.g., Guangzhou, Shenzhen, Foshan). For instance, the collective industrial land of ViCs in Shenzhen makes up more than half of the total industrial land in the city. This land accommodates a wide range of labor-intensive manufacturing industries and contributes greatly to urban development. The development of



Fig. 1. "Nail houses" in Yangji village (photograph by the first author, 2013).

collective industrial land is usually within the mode of collective–private governance, in which partnerships between the collective organizations and developers are created. For instance, the collective organization develops industrial and commercial buildings on the land, and then leases or sells the buildings to external enterprises; or the collective organization and external enterprises develop and manage the buildings on the land together. The mode of collective–private governance has some advantages such as low risk investments, but has recently been confronted with many challenges.

Huakou village in Foshan city serves as a good example. It was once an agricultural village but is now an affluent industrial village. Since the late 1980s, external investment has been accompanied by a great influx of rural migrants, creating a strong industrial economy centered on electronics manufacturing. In 2003, the collective organization cooperated with external developers in land development. They illegally transformed agricultural land into industrial land without the agreement of the villagers and without compensating them. This led to conflicts and long-lasting distrust between villagers and the collective organization. In 2013, we visited the village and conducted an in-depth survey. The village had 6000 villagers and 50,000 migrant workers. There were about 600 enterprises, mostly electronics and appliance factories. Many factories polluted the environment and their outputs were relatively low. A program aimed at upgrading the industry of Huakou village was therefore initiated by the local government. It proved difficult, however, to regenerate collective industrial land. Firstly, the contract between the collective organization and the developers would not end until 20–30 years later. Although the collective organization and the local government had a strong desire to restructure the industrial sites, it was difficult to do so. One of the main reasons was that the value of the land had increased dramatically in the previous few decades. This suggested that its redevelopment required a higher level of compensation. Another issue was the mentioned distrust between the villagers and the collective organization.

Generally speaking, the development of collective industrial land within the mode of collective–private governance suffers from such problems as incomplete property rights and conflicts of interest between various key actors (e.g., the collective organizations, developers, villagers). Development is initiated by collective organizations or external developers, while the state is absent or

plays only a small role in the development process. Without effective regulations, this bottom-up approach results in an inferior and disordered environment. Although rural migrants are both laborers and tenants in ViCs, social and environmental issues concerning them are of the least concern to profit-driven investors. They are the group that is most vulnerable to the polluted and inferior living environment.

4.3. Self-governance

There are bottom-up approaches in the upgrading of housing and public facilities in ViCs. These approaches are within the mode of self-governance, in which the informal sector, experts, civic organizations, and households play a crucial role. It is documented that informal organizations of migrants have cooperated with villager households in the upgrading of housing. For instance, before the demolition of Zhejiang village in Beijing, Zhang (2001) reported that many migrant compounds were owned and managed by various migrant bosses. One rich migrant had invested in the construction of a new compound with good facilities for about 6000 rural migrants. Informal property management companies established by rural migrants were also active in the upgrading of housing in several ViCs in Guangzhou (see also Lin et al., 2011). The company rented a number of the villagers' houses and upgraded them. Although these bottom-up approaches were effective in dealing with financial problems, stakeholder agreements, and implementation activities, there were also such problems as the illegal status and a lack of cooperation.

The informal sector and civic organizations are also active in the provision of "public" facilities for rural migrants, who are largely excluded from public facilities and services in cities (also see Lin et al., 2011). For instance, informal migrant organizations rent villagers' houses or collective buildings in ViCs to establish private schools for migrant children. However, due to poor access to state redistribution, many schools are in poor condition and cannot obtain official certification. They may be shut down by local governments. Our fieldwork in March 2013 showed that international and local experts were also involved in these bottom-up approaches. For instance, an international research team cooperated with local civic organizations in the provision of public facilities for rural migrants in Shigang village in Guangzhou. The team rented a villager's house to accommodate a self-organized migrant children

daycare center (Fig. 2). It was responsible for upgrading the house and finding financial resources (e.g., international donations), while a civic organization called the “Sunflower Organization” managed the center. We participated in several meetings related to the project and found that the provision of education facilities within the mode of self-governance encountered several issues. Due to the limited budget, it was difficult for the migrant children daycare center to become a formal one, which required registration with local governments and the payment of all kinds of fees. Similarly, Professor Wu (interview, March 2013) proposed a project to upgrade a primary school and create public space for migrant children in Huanli village in Wuhan city. However, the project might come to a halt due to legal problems and a lack of funds. Without official certification, private migrant children schools are liable to be shut down by local governments.

5. Toward smart governance and social sustainability for migrant communities

The case studies revealed several issues and problems within the existing modes of governance in the regeneration of ViCs. Firstly, the mode of public–collective–private governance is confronted with such issues as a lack of a transparent planning process and social conflicts. It leads to the displacement of rural migrants and increases social inequality. Secondly, the development of collective industrial land within the mode of collective–private governance suffers such problems as incomplete property rights and conflicts of interest between various key actors. Although rural migrants are both laborers and tenants in ViCs, they are the group that is the most vulnerable to polluted and inferior living environments. Thirdly, although the mode of self-governance engages some migrants in the governance process, it cannot lead to the development of decent public facilities and housing for the majority of migrants due to its small scale, informal status, and lack of funds. Therefore, rural migrants and their organizations usually play only a marginal role, or no role at all, in the regeneration practices. There appeared to be a lack of a balanced or equitable

relationship between the three key actors (state, market, and society), resulting in actual or potential social conflicts. To deal with these problems, new modes of governance are required to engage rural migrants in the decision-making process and building consensus between the three key actors.

Here, information and communication technologies (ICT) can play a role, as they can broaden and deepen participation by enabling the public to connect with one another and with their elected representatives. For instance, social media have a latent capacity for understanding urban problems and generating new solutions (Batty et al., 2012). The important social function of social media lies in the possibility to harness large-scale online networks and then perform powerful collective actions (Gordon and Manosevitch, 2011). Citizens can increase their power to achieve certain goals by developing their own networks, which helps to build a stronger civil society and more effective public participation (Tayebi, 2013). The combined use of social media and computer-based simulations (e.g., PSS) in decision-making processes is an important ingredient in exploiting the availability of an increasing amount of data as well as of the “connected intelligence” present in urban areas (Ferro et al., 2012). This newly emerging paradigm appearing on the horizon seems to introduce new modes of governance that are value-driven, data-intensive, and participatory (Ferro et al., 2012). In China, social media, smartphones, and community websites have rapidly developed in the last few years. The use of PSS has also recently been advocated for dealing with complex multi-stakeholder planning process. It seems that web-based PSS (connecting with social media, smartphones, and community websites) have the potential to integrate rural migrants and other actors in the planning process, resulting in new modes of governance.

5.1. The new generation of rural migrants, social media, and smartphones

The new generation of rural migrants (i.e., those born after 1980) has recently attracted the particular attention of scholars and policymakers in China. This new generation comprises 100 million



Fig. 2. An initiative meeting for the self-organized migrant children daycare center (photograph by the first author, 2013).

rural migrants, about half of the total number of rural migrants in China (ACFTU, 2010). They work and live in cities “to experience life” and “to pursue dreams,” and they attempt to stay in cities permanently (ACFTU, 2010). This suggests that they are different from the old generation of rural migrants who aim “to improve life” and will return their hometowns. There is also a high probability of social instability, as more than half of them are willing to safeguard their rights by going on strike and signing petitions (ACFTU, 2010). Similarly, our fieldwork in many ViCs in Guangzhou and Shenzhen also revealed that a large number of young migrants had lived in the same ViC for more than five years and were attempting to stay in the city much longer.

Furthermore, social media, the Internet, and smartphones have become a part of the daily lives of young rural migrants. The rise of social media and their use on smartphones since 2010 have fundamentally changed how people communicate and share information, and have had an impact on decision-making in China. Two popular social media platforms in China – Weibo (the Chinese version of Twitter), which has 536 million registered users (Rauchfleisch and Schäfer, 2014), and Weixin (the Chinese version of WeChat) – have become as great a challenge to the printed media as governmental interference (Stockmann, 2012). A report by Flurry also showed that there were more than 200 million smartphone users in China (Frago, 2013). Most of young migrants used their smartphone to read news, learn new knowledge, communicate with friends, and relieve stress (Zhang and Teng, 2014). Smartphones and Internet resources can therefore offer additional channels for the flow of daily life information, community news, or city news. A survey by Yifeng Jiao (a representative of rural migrants at the National People’s Congress) showed that the new generation of rural migrants had monotonous lives characterized by “three points and one line” – factory, dormitory, and canteen (Zhang and Teng, 2014). The Internet resources available via the smartphone have changed their traditional lifestyle, which used to be “information isolated island.” Nowadays, they prefer to lie in bed after work, reading the news and other information on their smartphones in order to relax. Yifeng Jiao also indicated that young migrants spent about 10% of their salaries on smartphones (Zhang and Teng, 2014). Considering that rural migrants have widely used smartphones to access the Internet, she suggested that governments could establish skills training websites and digital libraries for migrant workers.

The widespread use of the Internet and social media on smartphones thus has the potential to promote the integration of rural migrants in Chinese cities.

5.2. ViC websites

There are numerous ViC websites. For instance, the Huguang website (www.heguanglu.com) is a community website of Shangsha and Tangxia villages, which are located on the edge of Guangzhou’s Tianhe district, the city’s business, commercial, and technological center. Our fieldwork revealed that these ViCs accommodated a large number of the new generation of migrant workers, who worked in high-tech industrial parks in the surrounding urban areas. The migrants and indigenous villagers use the community website to communicate information about housing, employment, and shopping. The website also has a QQ group (QQ is a smartphone messaging app), which allows members can chat and share community living experiences. It has a large number of users and thousands of visitors every day. Another example is Shangxiasha community website (www.shangxiasha.com), which is the largest forum of ViCs in Shenzhen. It was established in 2008 and has become a big service

center for rural migrants and other residents in Shangsha and Xiasha villages.

It could therefore be meaningful and effective to use ViCs websites to inform and communicate with rural migrants, villagers, and other actors in the planning process. The websites can link with web-based PSS that promote the participation of various actors in the planning process.

5.3. Web-based PSS for public participation

Several types of web-based PSS that can be easily used by lay persons and connected with social media through smartphones have recently been developed to support public participation in Finland, the USA, and many other countries (e.g., Poplin et al., 2013; Kahila et al., 2014; Goodspeed, 2014). In China, the rapid development of social media and the Internet have offered new participative platforms for marginal social groups, citizens, and civic organizations to express their interests and take collective actions (Cheng, 2013; Deng et al., 2014). The combination of web-based PSS and social media (Sina Weibo) has recently impacted on planning practices in China (e.g., Xu, 2013). The “Bell and Drum Tower” neighborhood regeneration project in Beijing is an example of this.

In 2010, the local government initiated a project to regenerate the Bell and Drum Tower neighborhood. According to this project, a number of historical buildings along several streets in the neighborhood would be demolished. Information about the project was widely disseminated in Sina Weibo, arousing heated debate and the opposition of experts, planners, and users. Based on Weibo, a civic group (the Bell and Drum Tower neighborhood team) of experts, planners, and students was established (Weibo: <http://www.weibo.com/u/3229147557>). The members of the group took photos of historical buildings, mapped the neighborhood, interviewed residents, and wrote research reports. The group also asked Dr. Zhou to create a WebGIS (a type of Web-based PSS) called “The protection of the north axis: community participation and communication website for Beijing’s “Bell and Drum Tower” neighborhood regeneration project.” The WebGIS shows data about the historical buildings in the neighborhood; users can add their comments and communicate with each other (Fig. 3). The interview with Dr. Zhou (February 2014) showed that through linking with the civic group’s Weibo, the WebGIS attracted a lot of attention. In addition, many citizens criticized the original project in the local government’s Weibo. The local government thus faced a lot of pressure and had to abandon the planned large-scale demolition and instead carry out small-scale renovation (Xu, 2013). However, the messages in the civic group’s Weibo (13 October 2014) contain a lot of criticisms. Although the local government modified the project, it did not fully consider the opinions of the participants (Xu, 2013) and demolished some historical buildings. This was probably due to the hierarchical planning system, which lacks an effective mechanism to guarantee public participation and to take into account the outcomes of such participation in the decision-making project. New policies and planning support may be required to deal with this problem.

We can also learn from experiences in Finland, where SoftGIS is used to engage citizens in public participation. SoftGIS is an advanced example of public participation GIS and a type of web-based PSS (Fig. 4). It can be made with the Maptionnaire tool (<http://maptionnaire.com/>), and has been recently applied to promote public participation in the Helsinki 2050 master planning process (Kahila et al., 2014). Through the web-based PSS that connected with social media on smartphones, citizens could fill in questionnaires (e.g., everyday mode of transport, preference for future living environment) and make planning proposals such as pinpointing locations of new building sites (Fig. 5), green areas, and



Fig. 3. A GIS-based PSS: protection of the north axis: community participation and discussion website for Beijing’s “Bell and Drum Tower” neighborhood regeneration project (Zhou, 2013).

areas that needed changing as well as drawing new connections (http://helsinki.asiatkartalle.fi/geoforms/2/#page_1). The successful application of web-based PSS for public participation is partly attributed to the democracy context, a high level of Internet coverage, and the widespread use of social media in Finland (discussion with Kahila and Kytta in AESOP, July 2014).

Because of the different contexts, it would not be possible to use the above mentioned two types of web-based PSS in the regeneration of ViCs, but they do provide clues for further exploration and application. A ViC is a specific neighborhood transformed by contestation, difference, and negotiation among various key actors. To deal with actual and potential social problems, it is essential to empower rural migrants, villagers, and civic groups to participate in the decision-making process. New types of web-based PSS could be developed to support public participation in the regeneration of ViCs. These types of PSS could be developed based on SoftGIS

methodology, link with ViCs websites, and be easily used in social media on smartphones. They could become a platform for the communication between rural migrants, villagers, the government, the collective company, and other actors.

5.4. Toward smart governance and social sustainability

As Tapscott et al. (2007) put it, governments no longer have sufficient in-house scope, resources, information, or competences to respond effectively to the policy needs of an interconnected, rapidly evolving, and unpredictable global environment: Policy-makers must seek out new partners and participants to help identify problems and create innovative solutions. In this respect, ICT may allow the creation of decision-making processes that rely on distributed attention, thus enabling a new form of governance – “extended governance” – whereby the intelligence and the

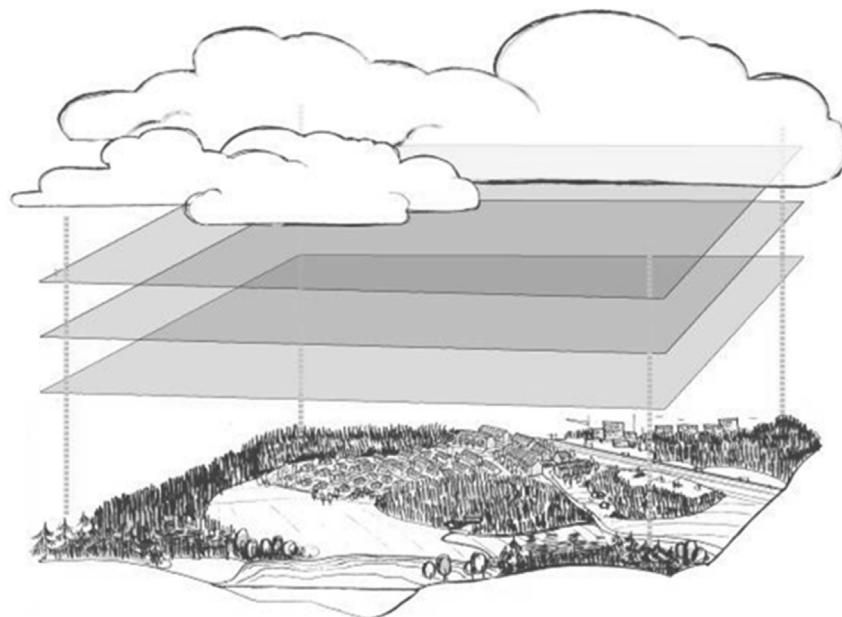


Fig. 4. The “soft” GIS: developing a GIS-based method for studying the environmental experiences locality-based; adding new “soft” layers with the help of Internet-based methods into the GIS (source: Kahila et al., 2014).

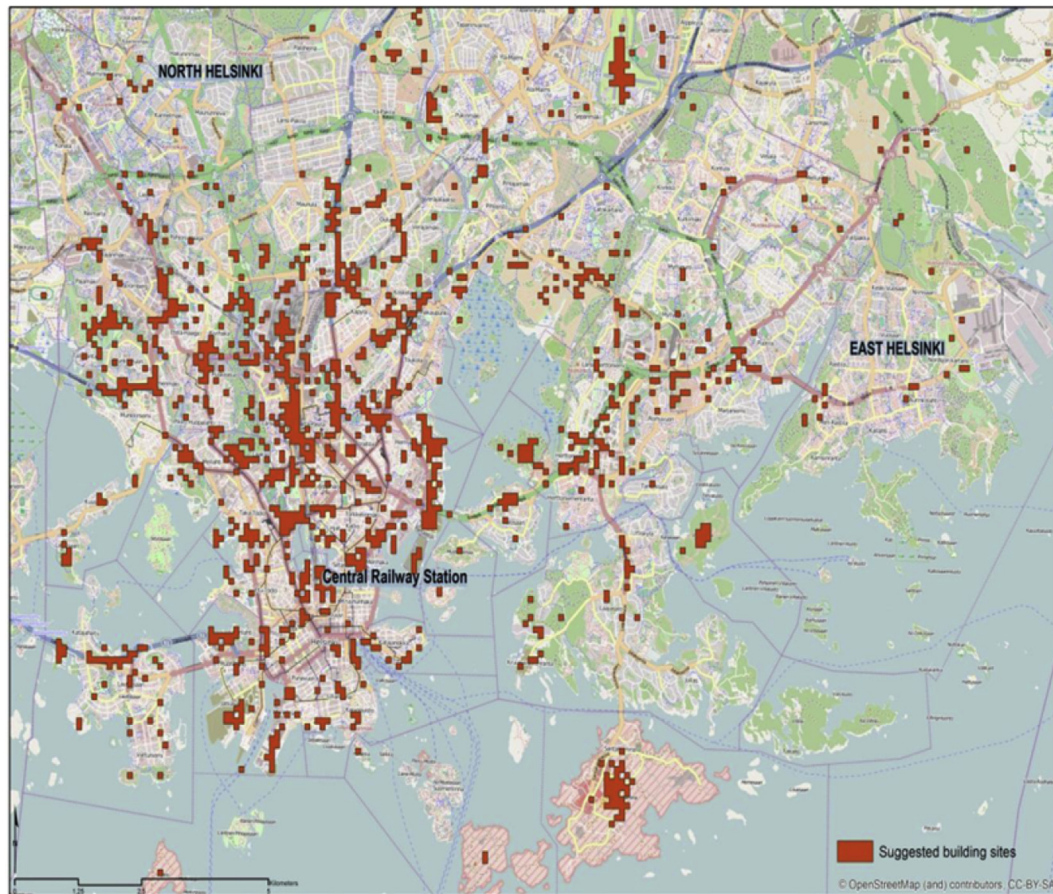


Fig. 5. Locations of new building sites, mapped by citizens (source: Kahila et al., 2014).

attention of actors outside governmental boundaries are harnessed in the management of public resources (Ferro et al., 2012). According to Shirky (2008), in the governmental opening up, social and technological drivers generated by Web 2.0 applications and social media platforms have brought with them new organizational forms, through the capacity of the Internet and its users to “organize without organizations.”

Although PSS is still in its infancy in China, it has the potential to deal with complex multi-stakeholder processes. Social media and mobile devices have become part of the daily lives of the new generation of rural migrants. New types of web-based PSS could be developed to support public participation in the sustainable regeneration of ViCs. By enabling the majority of marginal migrants to participate in the decision-making process, they could solve actual and potential social conflicts and contribute to social equity. They could become platforms for the communication of various actors (governments, experts, the private sector, civic groups, migrants, villagers, etc.). Although new media enable marginal citizens and civic organizations to play a role in the planning process, it should be recognized that there is a potential digital divide (Castells, 1989), that is, a gap between those who can and those who cannot use new media. Traditional platforms for public participation (e.g., workshops and face-to-face meetings) are still required to support the participation process. Consequently, a more equitable relationship between the three key stakeholder could be established, resulting in smart governance for the sustainable regeneration of migrant communities.

Smart governance is tightly linked with “interactive governance” (Driessen et al., 2012), in which there are equal relationships

and intensive interaction between key actors. Smart governance strengthens the role of web-based PSS (linked with ViC websites and easily used by social media on smartphones) in engaging the majority of marginal migrants in the planning process and facilitating the communication and collaboration between the three key actors. It could help avert the problems of traditional modes of governance in the regeneration of migrant communities, such as the exclusion of rural migrants, a lack of collaboration, and ineffective actions.

Smart governance for the regeneration of migrant communities can contribute to the implementation of new policies concerning rural migrants, public participation, and smart cities. “The National New-type of Urbanization Plan (2014–2020)” was recently issued by the central government. One of the key objectives is to improve the lives of rural migrants by providing them with public facilities, skill training programs, and social housing, and by empowering them in the decision-making process. However, it is hard to achieve this objective if the policy does not pay attention to the actual demands of rural migrants, demands that are usually related to a particular place. For instance, it is more effective to upgrade or construct public facilities for rural migrants in ViCs that are rural migrants’ residential areas and working places, as it minimizes their commuting time and costs (Lin and De Meulder, 2012). This can improve the quality of life among rural migrants who suffer from poor facilities and living environments. Considering that it is almost impossible for Chinese governments to provide high-standard public rental housing for the majority of rural migrants in many big cities such as Beijing and Guangzhou in the short term, Lin et al. (2014b) suggest that the provision of public rental housing

could be combined with the incremental upgrading of public facilities, housing, industrial estates, and open spaces in ViCs. This combination requires collaboration between multilevel governments, collective companies, villagers, migrants, civic groups, experts, and other actors. It is crucial that multilevel governments establish partnerships to subsidize, improve, and legalize public facilities (particularly informal migrant children schools) and housing in ViCs, and to empower the majority of rural migrants in decision-making process.

Therefore, new types of web-based PSS that can be used in social media on smartphones can add the following values to planning practices in the regeneration of ViCs (Fig. 6). Firstly, they can enable the majority of rural migrants and villagers to participate in the decision-making process. Rural migrants and villagers can view a map of their ViC and identify the ViC's problems and opportunities. For instance, rural migrants and villagers can write comments on the ViC map, attach smartphone pictures to show the problems of migrant children schools, roads, and public spaces, and indicate their preferences for upgrading. Secondly, the outcomes (e.g., maps, documents) from traditional planning measures (e.g., stakeholder workshops, in-depth surveys) can be shown on the web-based PSS. Thirdly, the web-based PSS can provide information on new plans and obtain feedback from rural migrants, villagers, and others. It can facilitate the timely communication and collaboration between the three key actors and build consensus among them.

Besides, international experiences show that a national poverty alleviation policy and a city government committed to initiating, financing, and constructing partnerships with various actors (Conde and Magalhaes, 2004; Silas, 2010; Calderon, 2012) are crucial to the successful upgrading of informal settlements. Thus, the application of web-based PSS in the regeneration of ViCs toward smart governance and social sustainability could be supported by national policies (e.g., Civilization of Rural Migrants (nongmingong shiminhua)), initiated by the city government and based on partnerships between the three actors. Considering the

current technical and institutional contexts in China, it would be too radical to apply web-based PSS to all ViCs, but some ViCs with a high percentage of young and skilled rural migrants could be selected for experiential learning trials. In the long term, the development of ViC websites and the increasing use of social media and smartphones can enable the majority of rural migrants and villagers to participate in the planning process through web-based PSS. Smart governance for the regeneration of migrant communities in China can gradually be developed. Characterized by an interactive, inclusive, collaborative, and transparent planning process, it will lead to a more equitable relationship between state, market, and society. It can be linked with area-based plans, for example effective investment and actions in specific places. An incremental upgrading strategy can be adopted (Lin and De Meulder, 2012). The quality of life of rural migrants can be improved by upgrading public facilities and improving living environments. Smart governance can thus facilitate social sustainability, in which social equity, governance, and quality of life are the key concerns.

6. Conclusions

Based on the relationships between state, market, and society, this article discussed several existing modes of governance in the regeneration of Chinese migrant communities. It pointed out that the governance modes encounter issues ranging from ineffective collective decision-making to a lack of a transparent planning process. Rural migrants play only a marginal role, or no role at all, in the regeneration practices, resulting in actual or potential social conflicts and inequality. There is a lack of a balanced relationship between the three key actors (state, market, and society). New methods and approaches to engage the majority of rural migrants (particularly the new generation of rural migrants) in the decision-making process are thus required.

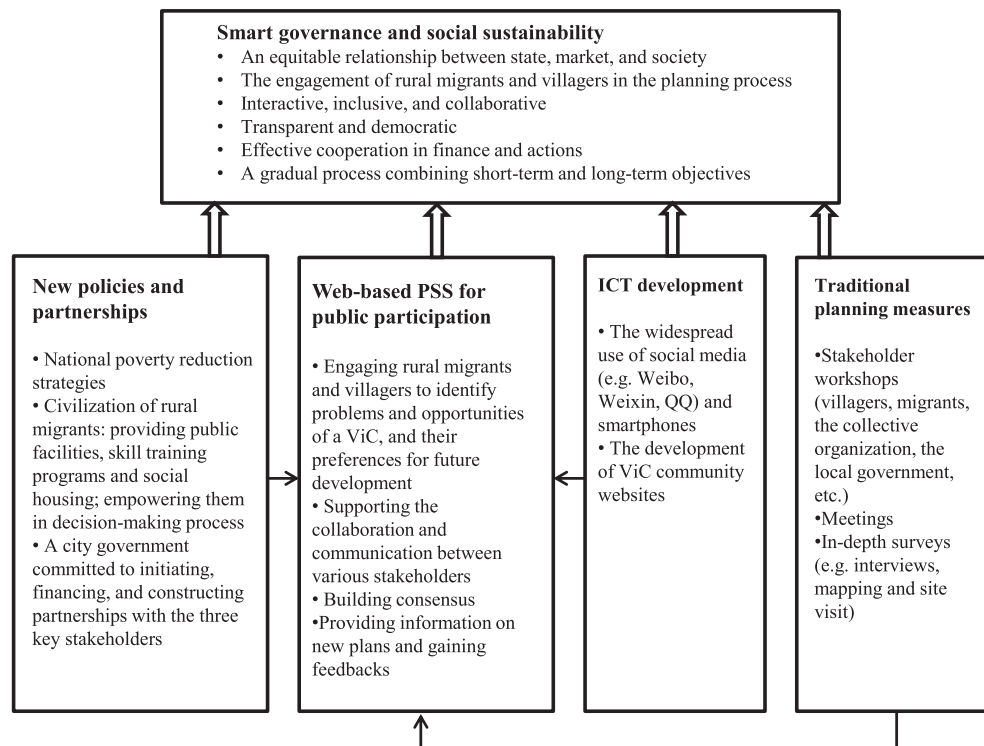


Fig. 6. A conceptual model on smart governance and social sustainability for Chinese migrant communities.

Unlike the rural migrants before them, the new generation of rural migrants want to stay in the cities permanently and to safeguard their rights by going on strike and signing petitions. There is actual and potential social instability and unrest. Furthermore, social media, the Internet, and smartphones have become a part of their daily lives. Numerous ViCs have websites with a large number of users (mostly young migrants). Moreover, although web-based PSS is still in its infancy in China, it has the potential to deal with complex planning tasks and can become a platform for the cooperation of various actors.

Therefore, this article suggests that new types of web-based PSS can be developed to support the upgrading of migrant communities. These web-based PSS can be developed based on SoftGIS methodology be used in social media on smartphones, and link with ViC websites. They could be supported by new Chinese policies concerning rural migrants (e.g., Civilization of Rural Migrants, national poverty reduction strategies), and by city governments that are committed to initiating, financing, and constructing partnerships with actors. They can be a platform for the communication and collaboration between the three key actors. The empowerment of rural migrants and villagers in the decision-making process can help to identify the problems and opportunities of ViCs and prevent social conflicts. Considering that there is a digital divide, traditional participation platforms (e.g., stakeholder workshops) are still required to engage other actors who cannot use social media and websites. Their outcomes could also be shown on the web-based PSS. Consequently, a more equitable relationship between state, market, and society can be established. Smart governance that is interactive, inclusive, collaborative, transparent, and effective can thus be formed for the sustainable regeneration of migrant communities. By enhancing social equity and improve the quality of life of rural migrants, smart governance can contribute to social sustainability, which is crucial for sustainable urbanization in China.

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