

# Negotiating Green Space with Landed Interests: The Urban Political Ecology of Greenway in the Pearl River Delta, China

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**Abstract:** Land-centred urbanisation has precipitated shortage of green space in Chinese cities. However, in the Pearl River Delta, an ambitious greenway system has recently managed to flourish. It is intriguing to ask how this has become possible. Informed by the perspective of urban political ecology, this paper finds that the greenway project in the Pearl River Delta represents a set of politically realistic endeavours to alleviate urban green space shortage by adapting to, rather than challenging, powerful landed interests. Three interlocking dimensions about land—municipal land quota, rural land use claims, and real estate development—have influenced why, where and how greenways have been created. Based on these findings, we argue that research on China's politics of urban sustainability necessarily needs to understand the country's land politics.

以土地为中心的城市化导致了城市绿地的短缺。然而，一个宏大的绿道系统最近在珠江三角洲蓬勃发展。这个绿道系统如何能够发展起来，成为一个引人注目的问题。借助城市政治生态学的研究视角，本文发现珠江三角洲的绿道项目应被视为一系列务实的政治尝试，它通过适应而非挑战强大的土地利益来缓解城市绿地短缺。为了解绿道项目的起因、位置和建设方式，我们将焦点放在城市土地配额、农村土地使用权和房地产开发这三个相互关联的土地维度上。基于这些研究结果，我们认为要研究中国城市可持续发展的政治，首先需要认识中国的土地政治。

**Keywords:** urban political ecology, urban sustainability, green space, greenway, land development, China

## Introduction

Environmental demands are re-contouring the governance landscape of Chinese cities. The narrowly economic form of entrepreneurialism enshrined by many municipal governments in China is under attack from multiple fronts. Within the state, although the central government still places economic growth as its top priority, it is growingly concerned about reducing the environmental costs of growth. Since the idea of sustainable development landed in China after the 1992 Rio Summit, it has been enshrined in every national five-year economic and social plan in terms of promoting resource-efficient industrialisation and eco-friendly urbanisation. A series of national policies and regulations have pressed for the implementation of these agendas at the municipal level (Chang et al. 2016;

Xu and Chung 2014). Outside the state, pressure is also mounting. A greener, cleaner city is needed not only for global interurban competition (Hodson and Marvin 2007), but also in response to an upsurge of environmental activism (Economy 2013). As recent inquiries on Chinese eco-cities (Caprotti 2014; Pow and Neo 2013; Xu 2017) show, critical engagements on urban China ought to move beyond their current focus on the politics of economic development. They should explore what is increasingly known as the “politics of urban sustainability” (Bulkeley and Betsill 2005; Flint and Raco 2012), which refers to the conflicts and debates over the balancing of economic and environmental interests in and around a city.

Researching the politics of urban sustainability requires more than a greater recognition of the growing social agency of environmental issues. It also needs to interrogate the lingering imprints of existing political economic processes and structures on environmental transformations in the name of promoting environmental wellbeing, as the theoretical orientation of urban political ecology (UPE) suggests. To approximate, UPE theorises urbanisation as a hybrid process co-determined by environmental and social changes. Urban power relations are nothing unnatural, but enacted through symbolic articulations and material interventions of natural elements and processes. Discourses and realities of nature in and around the city embody particular social, cultural, political and economic underpinnings. We should therefore study urban development as “interwoven knots of *social process*, *material metabolism* and *spatial form*” (Swyngedouw and Heynen 2003:905, emphasis original).

Following the perspective of UPE, this paper unpacks China’s politics of urban sustainability through examining the Pearl River Delta Greenway Project (PRDGP). The PRDGP was conceived in 2009 and launched in 2010. It has prompted the development of 8909 km of greenways in five years across the Pearl River Delta (PRD), a region of nine municipalities. This is a significant achievement considering that greenway is a relatively new idea in China, and Chinese municipal governments have typically downplayed environmental wellbeing vis-à-vis economic growth (Ran 2013). By analysing why and how these greenways are developed, we reveal that China’s politics of urban sustainability, defined by the quest to balance economic growth with eco-friendly urbanisation, has an important land dimension. This dimension involves the interplay between the aspirations of landed interests who derive economic benefits from land, and the public demand for more green space.

Our argument about the PRDGP is twofold. First, as the backdrop, urban green space shortage in China, including the PRD, is attributable to the land-centred nature of urbanisation (Lin 2007), i.e. urbanisation is driven by land development. Second, as the focus of this paper, the PRDGP is an attempt to alleviate this shortage without rocking the boat of existing power balance in land politics. It was conceived and has been implemented in adaptation to three powerful groups of landed interests: municipal governments, rural villages (including village collectives and villagers), and real estate developers. On one hand, instead of park making, planners advocated greenway development as it could remedy green space shortage without consuming the tight land quota valued by municipal

governments. On the other hand, as municipal governments and their subordinates take up the task to implement the project, actual greenway development has been shaped by issues on securing rural land use rights from villages and engaging real estate developers for material support.

This paper draws on our research work from 2013 to 2016 on the conception and implementation of the PRDGP. Apart from reviewing government documents, media coverage and academic publications on the project, we conducted semi-structured interviews with over 40 government officials, planners and researchers. Questions posed to them vary with their involvement in the PRDGP, but share a focus on why the idea of greenway was favoured, how plans on greenways were prepared and justified, and how greenways were actually created. These pursuits complemented visits to greenways in five PRD municipalities—Guangzhou, Shenzhen, Dongguan, Zhuhai and Huizhou—during the two summers in 2015 and 2016.

This paper is organised into six sections. Following this introduction, the next section reviews the theoretical perspective of UPE with a focus on its contribution to a politically charged understanding of green space. On this basis, the third section surveys how China's urban green space is entangled with the country's peculiar land politics, and sets the context for our empirical discussion. The fourth section gives more detail of the PRDGP and traces its precursor to urban green space shortage created by the PRD's land-centred urbanisation. The fifth section unpacks how the coming to ground of greenways is negotiated with different landed interests. The sixth section rounds off the paper with a summary of our main theoretical and empirical contributions to the study of the politics of urban sustainability in China.

## Understanding Green Space Production through Urban Political Ecology

Launched by Swyngedouw's (1996) paper, "The city as a hybrid", UPE first emerged as a response to the overemphasis of the political economy over the ecology in the problematisation of urbanisation. Now a widely acknowledged theoretical orientation, it seeks to "[integrate] critical urban studies with a distinct interest in nature and the environment" (Desfor and Keil 2004:70). Early contributions to UPE (Heynen 2006; Heynen et al. 2006; Swyngedouw and Heynen 2003) were heavily indebted to Marxism, not only for its appreciation of the dialectic relations between nature and society, but also for the precedence it gives to capital accumulation and class relations in interpreting urban socio-natural processes. This contrasts more recent work (Gandy 2012; Grove 2009; Holifield 2009), which sides with poststructural and posthumanist approaches, and focuses on extended agencies, subjectivities and cultural meanings of nature.

Given excellent reviews elsewhere (Heynen 2014; Lawhon et al. 2014) we do not dwell on the differences of these two strands of literature. However, we would highlight that these diverse endeavours share two tenets proposed by Swyngedouw and colleagues. First, "[a]ll [urban] socio-spatial processes are invariably [...] predicated upon the transformation or metabolism of physical, chemical, or

biological components" (Swyngedouw et al. 2002:125). Various agents produce and appropriate nature in the urbanisation process. These engagements with nature come in many creative forms. As studies on the UPE of water (Kaika 2005; Swyngedouw 2004) have demonstrated, they can be material (as dam building), social (as water supply marketisation) or discursive (as the reframing of water as a commodity). These engagements also have diverse drivers. They may reflect an aggressive desire to open up more sites for capital accumulation (Smith 2006). They can be attempts of the state to normalise its population for stability (Sevilla-Buitrago 2017). They can be emancipatory as well, aiming to stimulate new visions about the city (Loftus 2012).

Second, "[t]he type and character of physical and environmental change, and the resulting environmental conditions are not independent of the specific historical social, cultural, political, or economic conditions and the institutions that accompany them" (Swyngedouw et al. 2002:125). The prolific growth of UPE-informed investigations across a host of natures and contexts (Heynen 2014:599–600) testifies scholars' interests in "mak[ing] legible the ever-changing interplay between people, cities and things". This legibility is valuable for illuminating the historical-geographical contingencies of "what or who needs to be sustained and how this can be maintained or achieved" (Swyngedouw et al. 2002:125). In the same vein, Lawhon et al. (2014) appeal for "a more situated UPE" valuing situated understandings of power and the environment in theorisation. They argue that a context-sensitive choice of object of analysis is the prerequisite for a holistic understanding of a city's socionatural entanglements. In their case of African urbanism, which is characterised by informality, everyday practices constitute a more productive lens than the traditional, global North derived, focus of UPE on formal infrastructure.

One of the most conspicuous interfaces of nature and society, green space has been a favourite vector of UPE investigations. Studies have illustrated how spatialities and ecologies of green space and urban socioeconomic contestation implicate each other. The widespread reproduction of the American lawn reflects the success of agrochemical companies to moralise the maintenance of monoculture lawn as a social commitment (Robbins and Sharp 2003). Liberal property relations ensue spatially uneven reforestation after a tree disease epidemic, since poor households cannot afford to grow trees back in their backyard (Heynen 2006; Heynen et al. 2006). New-fangled observations of spatially concentrated investment in green space signal the rise of "green growth machines" (Gould and Lewis 2017:5) in which real estate developers and political elites collaborate in steering green gentrification, as the world-famous High Line in New York epitomises (Millington 2015). Yet green space can also be sites of hopes, where people farm—though not always successfully—against the neoliberal food regime (Classens 2015), and the queer community may creatively ally with wild plants to resist displacement (Patrick 2014). These findings point to the fact that green space does not exist in particular forms and locations simply at the mercy of nature. Instead, they are politicised spaces impinged by various strategies of, regulations on and resistance to capital accumulation. Any attempt to intervene in existing patterns

and characteristics of a city's green space would have to negotiate with, and thus evince, the intricate political economic dynamics reproducing it.

We believe that a UPE cut at greenways in the PRDGP can contribute to a better understanding of the politics of urban sustainability in China. This is not only because green space in general is theoretically revealing, as the above review shows. More importantly, it is because green space offers a lens to examine the influence of land in this politics. As the next section elaborates, China's urbanisation is intricately tied to the country's land system and related political-economic reforms. This is nowadays reflected by how ambitions of municipal governments on land development shape urbanisation profoundly. Since green space is a form of land use, land ownership and management unavoidably bear imprints on its production. These land-related issues affect the form, area and location of green space available. It is therefore meaningful to investigate the PRDGP in terms of its embeddedness in land politics and local biophysical conditions.

### **Political-Ecological Entanglements of China's Land-Centred Urbanisation**

Similar to urbanisation in other parts of the world, many Chinese cities have expanded rapidly and extensively. However, other than economic and population growth, municipal governments constitute a crucial group of drivers of urban expansion in China, as they pursue a land-centred fiscal and economic agenda. China operates on a state-dominated dual land system, consisting of urban and rural land. Urban land is state-owned and, after land reform in 1988, tradable on a leasehold basis for urban development. In contrast, rural land is owned by village collectives for primarily agricultural uses. However, the state has the right to expropriate rural land and convert it into urban land. Municipal governments are the primary agents to exercise this right, as territorial restructuring since the 1980s has allowed them to administer and annex their contiguous rural jurisdictions (Hsing 2010:94–98). Since the 1990s, municipal governments have been eager to capitalise on land to finance their budgets. This involves expropriating rural land parcels under their control for lease, development or mortgage to raise funds (Hsing 2010; Lin 2007; Wu 2015). This practice was attributable to two reforms. First, fiscal reform in 1994 saw the central government extracting the majority of local tax incomes, but allowing local retention of land-based revenues. Second, urban housing commodification in 1998 fuelled a real estate boom, in which real estate developers emerge as municipal governments' allies in land development. Urban expansion so resulted exacerbates environmental pressures in rural areas, where some village collectives and households have developed factories and housing beyond their permitted scale, and engaged in illegal land leasing. These processes, which virtually reduce the countryside into nothing more than a huge land reserve, costed China about a tenth of its cropland during 1987 to 2003 (Hsing 2010:2). This phenomenal threat to food security and ecological security compelled the central government to return to a more centralised approach on land management since the late 1990s. With the revision of the Land Administration Law in 1998, central and provincial governments

recentralised much of the power municipal governments commanded over converting rural land into urban land. The areal extent of conversion also becomes regulated by a top-down and growingly tightened annual land quota, decided by the Ministry of Land and Resources (MLR) and distributed down the state hierarchy to every local jurisdiction.

Not only has the countryside been environmentally worsened by this land-centred urbanisation, but—as a less acknowledged trend—urban areas have also suffered in green space supply. In their panel analysis of 285 Chinese municipalities, Chen and Hu (2015) unveiled that the more dependent a city's public finance is on land lease revenue, the lower its acreage of government-funded urban public green space. In their interpretation, municipal leaders' eagerness to maximise their economic gains from land development puts public green space in a disadvantageous position. With less tangible and immediate benefits to economic growth, green space is less likely to be invested in by municipal governments than other infrastructure like transport, energy and water networks. Especially for more developed cities, the creation and preservation of public green space are discouraged by the land leasing revenue forgone. This neglect of public investment in urban green space resonates with the conventional wisdom of some Anglo-American policymakers, who see parks as costly social merit amenities and assign them with low budget priorities (Crompton 2007:214). However, in today's increasingly environmentalised urban context, this view is being challenged by a growing recognition of urban greening as a strategy to accumulate further from the real estate market (Gould and Lewis 2017).

## The Pearl River Delta and its Greenway Project

The development of the PRD,<sup>1</sup> as China's frontier of economic reforms since 1978, is exemplary of the foregoing clashes of land-centred urbanisation with environmental needs. Lying within the southern province of Guangdong, the PRD is made up of nine municipalities, each of which is effectively a city-region encompassing an urban core and its rural (but rapidly urbanising) hinterland. The region's economic success has correlated highly with rapid urban expansion. From 1570 km<sup>2</sup> in the early 1980s, the aggregate extent of built-up areas in the PRD has experienced a fivefold increase in the next three decades to 8534 km<sup>2</sup> in 2013 (GDUPI 2015). Until the mid-1990s, to raise their income, village collectives drove the expansion in-situ through developing and leasing factory buildings and housing units to investors and migrant labourers flocking into the region (GDUPI 2014). However, subsequent to the aforementioned tax and housing reforms in the 1990s, municipal governments have played a growingly significant role in steering land development, both to create mixed land use new towns and new districts, and to finance their budget. In the regionally leading municipality of Guangzhou, the amount of revenue from land leasing and land-based taxes equalled 35–40% of the municipal fiscal income from 1994 to 2009 (Lin et al. 2015:1973). Real estate development began flourishing at the same time, epitomised by many large-scale suburban communities (GDUPI 2014).



Under the political imperative of GDP growth, and the intense intercity competition for investment, municipal governments in the PRD have generally “given production precedence over living” (*zhong shengchan, qing shenghuo*). They allocate more land to economic development and transport infrastructure than collective consumption, not least urban environmental amenities. A recent survey suggested that the PRD municipalities boast only a trifling amount of urban green space—some as little as 6% of their urban land (GDUPI 2015). Moreover, illegal encroachment by more profitable residential and commercial developments (Chen and Jim 2006; Ng and Xu 2000) serves as green space’s constant threat. This scarcity of urban green space has aroused considerable dissatisfaction, as in the case of Guangzhou, which can be attributed to “cramped living and working conditions” and “rising expectations of a relatively prosperous city” (Jim and Chen 2006:345). Amidst growing worries of the aggravation of “city disease” (*chengshi bing*), a local neologism for the ensemble of unfavourable urban living conditions (e.g. pollution and congestion) undermining physical and mental health, people have become more concerned and vocal about safeguarding their green refuges.

Responding to the shortage, a group of planners from Guangdong’s Department of Housing and Urban-Rural Development (GDHURD) and several leading planning institutes in the PRD proposed in 2009 the idea to widely develop greenways in the region. They learnt about greenways from the personal experience of one of their veteran peers on American greenways, and their research on the regeneration of Ruhr Region, Germany, in which greenways have played a role (Interviews, Guangdong Provincial Planners, June 2013 and November 2015). This idea of greenway making represents a radical departure from the conventional urban green space planning, which focuses on building a hierarchy of parks of different sizes evenly distributed across the city. This idea was quickly accepted by Wang Yang, then leading Guangdong as provincial party secretary, who was eager to improve the region’s competitiveness, including environmental amenities. The materialisation of this idea was the PRDGP, an extended system of greenways threading across urban and rural areas. As the project’s master plan defines:

Greenway is a form of linear green open space. It is usually established along natural and man-made corridors, such as rivers, valleys, mountain ridges and landscaped roads. It contains recreational trails which can be accessed by walkers and cyclists. It connects major parks, nature reserves, scenic spots, heritage, and urban and rural settlements. (GDHURD 2014:250)

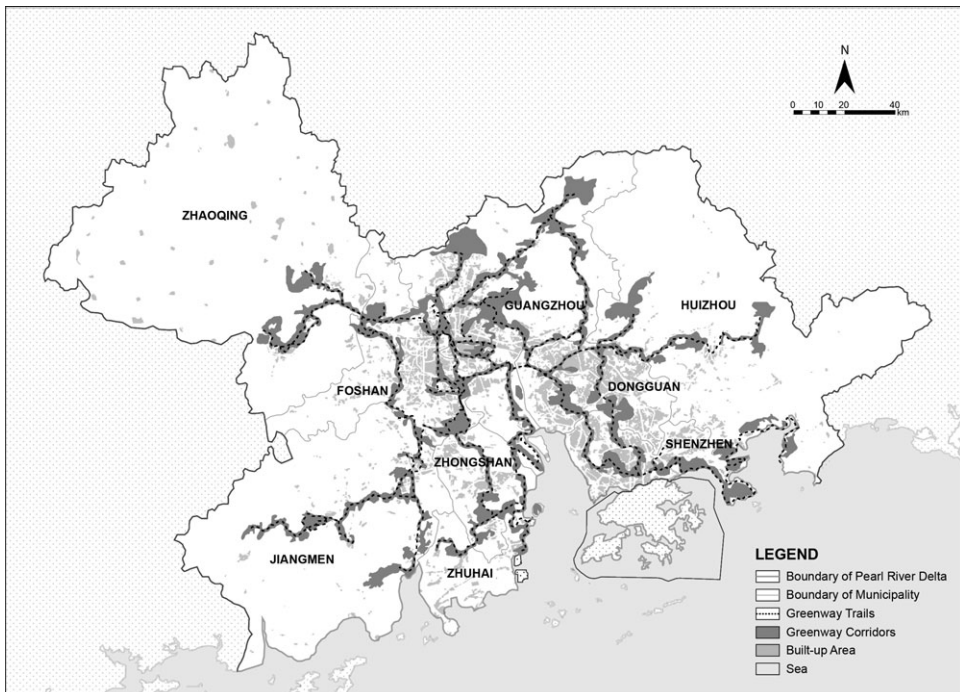
As corridors of green with trails, greenways encompass a wide variety of ecological components, both natural and man-made. They range from newly planted lines of trees and flower beds, to large swathes of existing agricultural fields and forests, as well as water-based features like rivers and reservoirs. Depending on the ecological features they include, greenways vary significantly in their width, from a few metres in urban areas to over a hundred metres in rural areas. Except public facilities (e.g. visitor’s facilities, known locally as “courier stations” [*yizhan*]) and small-scale recreational functions, no new construction is allowed within

greenways to protect their ecological components and reduce disturbance to nature.

The PRDGP has been implemented in a hierarchical manner since 2010. The provincial government steered the wheel during the launching years (2010–2012) by planning a set of “backbone” regional greenways (Figure 1). It has also issued guidelines on planning and designing greenways, and monitored municipal progress in greenway making. Responsibilities of delivering the regional greenways rest with the municipal governments, which also need to plan and develop their own local greenways. These responsibilities have often been further decentralised to sub-municipal (i.e. district, county and town) governments.<sup>2</sup> While most work on regional greenways was completed by 2012, municipal governments are still adding more local greenways to cover more amenity resources and reach more people.

## Negotiating Space for Green(ways) in the Pearl River Delta

We argue that the PRDGP demonstrates what we argue as a land-centred politics of urban sustainability in China. The project’s conception and implementation represent politically realistic adaptations to the three foregoing landed interests—municipal governments, rural villages and real estate developers—to sustain urbanites’ needs of green space. First, rather than proposing more urban parks, planners advocated greenway development as a new remedy for urban green



**Figure 1:** The PRDGP’s plan on regional greenways, 2010 (adapted from GDHURD 2014:273)



space deficit because it does not consume the land quota required for municipal land development. Second, in securing land use rights for developing rural greenways, local governments have operated on the premise of minimising conflicts with village collectives and villagers, who own and use rural land respectively. Third, by enrolling real estate developers into the greenway project, local governments expand their greenways with less resource burden, whilst facilitating the developers to capture increases in property value due to greenways as green amenities. We now examine each of them in turn, and introduce pertinent exceptions and problems as they set in.

### ***Municipal Land Quota: A Driving Constraint for Greenway Development***

As introduced earlier, municipal governments in China are constrained by an annual quota on converting rural land for urban development. For higher GDP, many governments used to break the quota by unscrupulous means. However, the scope for manipulation is narrowing because the MLR and its sub-national subsidiaries can now draw on remote sensing technologies to monitor land use changes conveniently (Xiao 2014). Some municipal leaders instead focus on making the most out of their land quota, and pursuing regeneration to optimise use of their existing stock of urban land.

Although the land quota system helps hold back encroachment on the rural environment, it unintentionally intensifies spatial competition between nature and the economy within urban areas. Under China's planning protocols, urban green space, such as urban parks and street side green space, is treated in the same way as residential, industrial and infrastructure land uses as a category of "urban construction land use" (*chengshi jianshe yongdi*). Expanding urban green space therefore consumes a municipality's land quota. Since municipal governments usually have fewer land quotas than they want for growing their economy, the sense of trade-off between making room for green space and development opportunities is exacerbated. This leads to the former's demise in actual land allocation.

In the PRD, when planners proposed the PRDGP, they were keenly aware of the preference of most, if not all, municipal governments to use their land for economic development. As they learnt from their previous failure in regulating local expansion, it is very difficult to overthrow the expansion-based municipal formula of economic success (Interviews, Guangdong Provincial Planners, June 2013 and November 2015). The demand for urban green space can hardly be met if it clashes head on with the precept of growth. Moreover, even if a municipal government is willing to build more urban parks through urban expansion, it could achieve little with the limited amount of land quota in its hands (Ma 2012:73). Consequently, when the planners searched for a fix to urban green space shortage, working around the issue of land quota emerged as one of their key criteria. Reflecting this concern, the provincial master plan of the PRDGP suggests that "construction land for [greenway] paths can be integrated with agricultural, water

resources, tourism, ecological and other land uses *to avoid consuming local construction land quota as far as possible*" (GDHURD 2014:315, emphasis added).

In this regard, with nominal land requirement, greenway is an appealing strategy of green space provision to the PRD. In terms of morphology, the idea of developing linear rather than outspreading green space struck the advocates of the PRDGP. Some of them have praised greenway as a means to put the "residuals" (*bian jiao liao*) of urban development into environmentally productive uses (Hu 2011). These "residuals" include elongated strips of urban land left abandoned because they are too narrow or unsafe to be intensively developed. A common example is land on urban riverbanks, where existing planning regulations rule out erection of permanent structures due to flood risks. Under the PRDGP, footpaths and cycleways are paved on such land, only to be closed when flooding occurs. They form attractive corridors for natural respites with the adjacent rivers, many of which have been cleaned up and restored under municipal efforts prior to or along with the PRDGP's implementation.

Speaking of environmental amenities like rivers, greenways are often not developed from scratch, but are about "showcasing resources we already have" (Interview, Planner in Dongguan, August 2015). The focus of greenway making is on unleashing the recreational potential of existing biophysical features produced or preserved for other purposes. This idea to multi-functionalise nature represents another opportunity to save land (quota). In urban areas, this has prompted the relaunch of greenbelts established as noise barriers or urban expansion buffers into greenways by inserting footpaths and exercising facilities within them (Figure 2). What is more important, however, is the idea's implementation in rural areas to physically open up, and thereby reframe, extensive agricultural and natural landscapes as recreational resources of urban dwellers. Rural greenways are developed through constructing new trails or repaving existing road networks to provide legible, accessible routes to working farmland, fishponds, forests and other rural ecological features. As the PRDGP envisions, urban dwellers would turn to these rural greenways for green space in the countryside. Since rural greenways are connected to their urban counterparts, urbanites can walk or cycle all the way from their home to rural areas. They are also connected to highways running across the countryside so people can take public transport or drive from urban areas to visit them. Meanwhile, with the launch of the PRDGP, the provincial government mandated that all greenway trails should be recognised as *jigenglu* (Hu 2011); literally "paths for mechanised agriculture". But also referring to rural roads in general, *jigenglu* is a form of "permitted development" (to borrow the British planning terminology) on rural land. Given their *jigenglu* designation, greenway trails can then be disentangled from land quota requirements.

### ***Rural Land Use Rights: Challenges to Nailing Greenways Down***

Piggybacking the abundant green amenities in rural areas, the PRDGP can circumvent the issue of land quota in addressing urban green space shortage. However, this approach has posed municipal governments and their subordinates with another land question—that of rural land use rights. Stretching greenways across



**Figure 2:** Examples of greenways in the PRD—an urban greenway in Shenzhen converted from a greenbelt (top) and a rural greenway in Guangzhou running along fishponds (bottom) (photos by the authors). [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

rural areas legally requires the green light of rural village collectives owning the land parcels concerned, and practically the consent of villagers currently using them. That being said, the PRDGP was put forward with much optimism. As a member of the planning team suggested, the PRDGP is feasible because greenways bear economic potential linked to recreational development:

Through greenways, some recreational and tourism activities can be introduced into them [rural green space]. In the process of protection, we can introduce at low density some economic activities, such as *nongjiale* [agro-tourism] in rural villages and courier stations. Alongside protection, localities can utilise these good ecological resources to achieve benefits in economic development, while ecological resources are protected at the same time. (Interview, Guangdong Provincial Planners, June 2013)

In reality, there is a great deal of public enthusiasm for the PRDGP in rural areas. Many village collectives and their villagers are convinced that greenways can pull urban visitors into their villages to “bring alive” (*panhuo*) the income-generating potential of local assets. They appreciate the new opportunity to leverage open fields, farmhouses and other mundane parts of their living environment as agro-tourism attractions to earn a better living. Apart from providing land for greenway trails, some collectives mobilise their villagers to pool their cultivated plots to create extended flower fields as a new attraction. Nonetheless, there is also resentment over what has to be given up for greenways. Some villagers do

not want their plots reclaimed for creating greenway trails even if it entails a compensatory rent from the government. Moreover, attempts to align greenways with existing *jigenglu* are disputed for their compromise on local vehicular accessibility. Since greenway trails are for walking and cycling only, building them through adaptation of *jigenglu* inconveniences villagers who need to drive for their work or businesses.

During the early days of the PRDGP, political pressures aggravated the challenges posed by rural land use rights. Envisioning it as one of his landmark endeavours in Guangdong, Wang Yang made the PRDGP a first-order political mission every administrative unit in the PRD must accomplish. When he launched the project in January 2010, he decreed that all regional greenways must be “basically in place within one year [*yinian jiben jiancheng*]” (GDHURD 2014:3). Local leaders risked losing their jobs for not delivering the planned greenways within their jurisdictions (Interview, Guangdong Provincial Planner, November 2015). By “basically in place”, Wang meant that trails had to be paved and necessary greening work completed. The latter for example includes planting more trees and undergrowth for landscape and ecological enhancement. In fact, due to climatic reasons, officials actually had less than a year to deliver greenways. Wang acknowledged this issue in a field visit in February 2010 focusing on local progress in greenway making:

Greenway is a work characterised by seasonality. I am coming to give a push ... to make everyone catch up with the season, to accelerate commencement, to accelerate construction. Otherwise, dragging on to May or June, half of the year is almost gone; more importantly, by then it would be the rainy season, construction and tree planting would become problematic, and the time and quality of greenway construction would not be guaranteed. (GDHURD 2014:3)

Local officials therefore could not drag on with tedious negotiations for rural land use rights, or risk delaying construction and landscaping work. In pinning down the greenways, they were compelled to make the easy calls first. The actual alignment of greenways therefore does not necessarily conform to plans prepared to maximise coverage of areas with good vegetation cover and high ecological value. Instead, it sometimes has to follow where land was more readily available.

To obtain land use rights for greenway development, local governments commonly opt for renting rural land rather than expropriating it. This is because the latter is not only a costlier option, but also a more complicated one, involving a labyrinth of administrative procedures enforced by the central government to check against rural land exploitation. The rental arrangement takes the form of a “positive easement” (Little 1990:193), covering the strip of land on which greenway trails and, where required, public facilities for greenway users are built. For the primarily vegetated strips that form a greenway’s buffer part, they have been left to continue with their current uses—usually agriculture and low-density settlements—so long as they do not pose a threat to the environment. Nevertheless, in a town we visited in Dongguan, the town government opted for expropriating much of the land within its greenway corridors. It has not leased the expropriated buffer strips back to the villagers even for agriculture, for fear that they would not abide by the lease to keep

them undeveloped. It has taken on direct responsibility to maintain the vegetative cover of greenways (Interview, Town Official in Dongguan, May 2016).

As a first approximation, these two different arrangements on land use rights for greenways reflect the geographically contingent balance between economic and environmental interests as perceived by local policymakers. Our interviews suggest that, among other things, officials' preference to minimise interference with existing land ownership—to rent the land or to let it be in its status quo, rather than to expropriate it—stems from an optimism about tourism-related incentives to protect greenways. This might be particularly true for villages in deep rural areas, which are either richly endowed with natural and agricultural attractions, or too remote to attract alternative forms of economic development, including real estate operations. In contrast, as in Dongguan, doubts of some officials about local people's environmental awareness have prompted greenway-related land expropriation (Interview, Dongguan Municipal Official, May 2016). Since Dongguan has been a famous destination of industrial investment after China's economic reforms, its villages have economically relied on rental income from their factory buildings and housing for migrant workers (Xue and Wu 2015). This trend is well noted by local officials, one of whom had complained that "it is so hard to expropriate land from Dongguan residents, who have a strong view on land economy [i.e. land-based economic development], for greenway construction!" (Li 2011). Land expropriation seems reasonable as a means to uproot any land economy ambition from greenways to protect them. Moreover, this approach may also be encouraged by officials' pressure to maintain greenways properly, given that provincial and municipal governments closely monitored local performance in greenway development during the PRDGP's launching years.<sup>3</sup>

### ***Real Estate: Symbiotic or Antagonistic with Greenways?***

Contrasting increasingly well documented cases of "green growth machines" (Gould and Lewis 2017), planners did not conceive the PRDGP to mobilise greenways for promoting specific real estate ventures (Interviews, Guangdong Provincial Planners, July 2015 and November 2015). The provincial government does not have such an intention either, as reflected by its concern for the total length, rather than the specific locations, of greenways developed by municipal governments. However, this does not mean that planners and the provincial officials have been unaware of the positive contribution of greenways to land and property value. Instead, in a video they produced for Wang Yang to promote the PRDGP to local officials, planners drew on evidence from their American and German role models to highlight greenway's power in valorising land and property.<sup>4</sup> This is certainly music to local leaders' ears because, like finding land, the duty of financing the PRDGP also falls upon them. Given an average cost as high as CNY (Chinese Yuan) 1.2 million/km, greenway development was no small budgetary burden to local governments.<sup>5</sup> This fiscal strain was particularly severe during the launch years, as each city was establishing hundreds of kilometres of greenways on an annual basis. Our interviews suggest that local governments have paid off the majority of the costs of greenway making in their territories. Nonetheless, encouraged by the



provincial government (GDHURD 2014:315), local governments have also put forward the policy of “enlisting to build and maintain” (*rengjian renyang*) to enrol material support from the society to the greenway project.

A key source of private contribution is real estate developers, who participate in greenway development in two ways. On one hand, many real estate developers have spontaneously offered to play a more direct role in greenway development. Where a greenway is planned to run in proximity to their developments, these developers would donate the funds required for its creation. Depending on the amount involved, the government may honour the sponsorship with the naming right of the greenway concerned or its courier station. Alternatively, where such a greenway is not planned, developers might ask the local government for permission to extend an existing greenway across public land to its development, out of its own pocket. Ownership of the land accommodating such an extension remains with the government, and the public is free to use the additional greenway. An official pointed out two reasons for the enthusiasm of developers (Interview, Zhuhai Municipal Official, June 2016). First, for developers providing little green space in their developments, they have invested in greenways to draw residents out of their home turf and divert residents’ attention from the inadequacy of private green space. Second, and more importantly, developers have been quick to recognise that they can sell their residential units at a premium derived from the amenities and reputations associated with greenways in a green-deprived PRD. As a study conducted by Sun Yat-Sen University (2013:9) reported, for a number of developments actively promoted with reference to their proximity to greenways, their residential units were able to sell for an additional CNY 1000/m<sup>2</sup> or more than before.

On the other hand, as a less common case, the contribution of real estate developers arises as a form of development obligation. It is nothing new in China for local governments to ask developers to contribute to public infrastructure (notably roads) in return for a cheaper land lease. However, as the PRDGP was launched without prior notice, the obligation for greenway development was sometimes introduced only after the lease was signed. One example is in sub-municipal unit A,<sup>6</sup> where the provincial government planned a greenway within a land parcel already leased for a residential development commanding good scenery. Although the sub-municipal government could have diverted the greenway to a nearby village, it gave up the option because of the large amount of time and money potentially required to gain villagers’ approval. Instead, noting that the development had not obtained approval for its overall construction site plan to break the ground, unit A’s officials approached the developer and “advised” it to “be cooperative” (*peihe*) to the greenway initiative. They required the developer to build and maintain a greenway in the form of a landscaped path cutting across its residential development and permitting unrestricted public access. According to our informant, the developer did not argue against unit A’s government over the obligation, given the “common sense” in China to acknowledge the significance of the “government’s will” (*zhengfu yizhi*). As the informant explained, “even if the land [use right] is now yours, it does not mean that you can build in whatever ways you want”.

Based on our discussion so far, the PRDGP has brought municipal governments and real estate developers together again, but no longer just about land



development. The developers' participation in greenway making enables municipal governments to achieve urban environmental improvement (and a political task) with a smaller fiscal burden. Meanwhile, the developers themselves also benefit from earning a good reputation for their environmental commitment, and a higher value of their residential development. In this way, land development promotes expansion rather than, as in previous years, encroachment of green space. Yet it is doubtful whether this accidental "green growth machine" can also be win-win in the long term. The first concern is with the accessibility of greenways in private residential developments. Echoing the first author's observation in the field, some online sources have complained about closure of a number of these greenways.<sup>7</sup> Given a lack of knowledge about local management arrangements, we cannot comment on the legitimacy of these closures. However, we wish to highlight that the ramification of such closures is more than the loss of access to the closed section only—it also prevents the greenway route, of which the closed section forms part, to serve as an uninterrupted path of travel. These closures should be avoided so as not to discourage the use of other parts of the greenway system. Another concern is about privately funded "face lifting" of greenways. As a planner revealed, some real estate developers insisted on repaving greenway trails running around their developments so they can have a consistent grandeur (Interview, Planner in Shenzhen, July 2016). In one instance, it involved repaving an asphalt trail with marble tiles. The planner was critical of this manoeuvre of "bringing the standard too high" to meet the spirit of greenway to keep people close to nature. Moreover, these upgraded greenways risk deteriorating rapidly when local governments do not have the budget to maintain their lavishness. These two problems reflect a steep learning curve for planners and officials in the PRD to foster mutually beneficial collaboration between development and environmental interests. In the future, they have to better anticipate and manage both the expectation and impacts of the real estate developers in their contribution.

## Conclusion

Thanks to a combination of national interventions, activisms, and demands from global interurban competition, environmental issues have gained considerable traction in Chinese cities. This has necessitated inquiries for urban China to devote more attention to the interplay of urban entrepreneurialism and environmentalism or, as we have called it, the politics of urban sustainability. To study this politics, this paper takes inspiration from the theoretical perspective of UPE, which stresses that instances of transformation of nature in and around the city and the urban politics at play are mutually implicative. It interrogates the intriguingly rapid development of greenways, a relatively new form of green space in China, under the PRDGP with a focus on its political underpinnings.

The unfolding of the PRDGP demonstrates that the politics of urban sustainability in China has a key land dimension, defined by tensions between the ingrained aspirations of landed interests and the surging demand of urbanites for green space. To begin with, the problem of urban green space shortage, which necessitated the PRDGP, was attributable to land-centred urbanisation steered by

municipal governments. The imperative of municipal governments to run their budget on land development revenues has marginalised the agenda of providing adequate urban green space. Subsequently, the introduction of the PRDGP has been adaptive to three groups of landed interests, namely, municipal governments, rural villages, and real estate developers. This is to make progress on the shortage within existing power geometries in land politics. First, planners adopted the idea of greenway development for it can offer urbanites more green space without consuming the limited land quota commanded by municipal governments for urban development. This has led to the new endeavours on greening residual urban land and opening up existing green infrastructure in urban and rural areas for recreational uses. Second, to create rural greenways, local governments have sought to negotiate away problems in securing rural land use rights from village collectives and villagers, who do not necessarily agree with greenway development. Under the provincial pressure for prompt delivery of regional greenways, local officials have often diverted greenways to wherever land use rights could be secured earlier. Unless perceiving a high risk in conservation failure, they have also opted for land renting over expropriation as a cheaper and less controversial way to nail greenways down. Third, local governments have expanded their greenway system by harnessing the material support of real estate developers, who are keen to capture a green premium in their developments. This involves welcoming non-state contributions, or in some cases imposing development obligations. However, some of the greenways where these developers have played a part in their development have suffered problems with access and maintenance.

Our study corroborates both of the basic tenets of UPE (Swyngedouw et al. 2002:125) we identified at the beginning of this paper. First, the emergence of greenways in the PRD affirms that urban processes are predicated upon metabolic transformation. Embodied in the region's greenways is the rupturing of a functional dichotomy between urban and rural green space in China's planning system to promote urban liveability. Contrasting the conventional practice to meet urbanites' demand for green space within the urbanised core, the PRDGP has cast a wider "net", as greenways, to enrol and repurpose rural green space for recreational ends.<sup>8</sup> Each greenway in effect performs as a path to advance the metabolic frontier of the PRD's fast growing urban centres into their rural hinterlands. Second, echoing the argument that environmental changes are embedded in a city's historical socio-political context, the driving factors of greenway development are not as new as the idea itself to the PRD cities. Notwithstanding the newly broadened spatial scope of urban recreation planning which greenways reflect, the growing political salience of the environment has yet to undermine existing processes and regulatory structures of urban development in a fundamental manner. Prevailing land interests have continued to condition the institution of greenways as a fix to the PRD's urban green space shortage, from why greenways were favoured to how and where they have been nailed down. By extension, we may speak of land as a useful entry point for a "situated UPE" (Lawhon et al. 2014) of Chinese cities, underscoring how land regulations (e.g. municipal land quota), institutions (e.g.

rural land tenure) and coalitions (e.g. between the state and real estate developers) play a key part in both driving and constraining urbanisation of nature in China.

Apparent changes in urban metabolism are often underlain by the imperative of reproducing more subtle societal continuities in the urbanisation process. For a more nuanced theory of the politics of urban sustainability in China, our study points to the need for greater rapprochement between research interests in new attempts to green Chinese cities and established insights on China's urbanisation process, one stream of which is that on land politics. It is by acknowledging the dialectics of the environment with entrenched vectors of development that we can better understand why China's urban economy–environment relations have evolved along specific trajectories, and given rise to new biophysical forms like greenways.

## Acknowledgements

The research reported in this paper was supported by a Hong Kong Research Grant (HK 01/16) from the Royal Geographical Society (with IBC), and two grants from the British Academy (SG163119) and UK Economic and Social Research Council (ESRC) (ES/P003435/1), to which we are much indebted. We are also grateful to the support of the journal's editorial team and the constructive comments from three anonymous referees.

## Endnotes

<sup>1</sup> For an overview of the PRD's development history, see Chan and Yao (2010).

<sup>2</sup> For ease of discussion, we refer to municipal and sub-municipal governments collectively as local governments.

<sup>3</sup> That being said, there are also officials in other municipalities who rule out land expropriation to "avoid screwing up [greenway development as] a socially beneficial project" with conflicts over compensation (Interview, Planner in Shenzhen, August 2016).

<sup>4</sup> On evidence of how greenways boosted property value, see Lindsey and Nguyen (2004) and Nicholls and Crompton (2005).

<sup>5</sup> This figure was given by Lin Musheng, then Guangdong's deputy governor (Fang 2011). It should be acknowledged that actual costs of a greenway, including those relating to the construction of trails and facilities and environmental enhancement, vary significantly with its type and location. For example, one source indicated that the average cost of Guangzhou's greenways was CNY 508,000/km only, since the municipality's environmental clean-up campaign offers readily available "green foundation" (Xin 2011).

<sup>6</sup> For anonymity, the original place name is not disclosed.

<sup>7</sup> See for example a cyclist-blogger's petition to Huizhou's authorities: [http://blog.sina.com.cn/s/blog\\_4d8426ad010185ks.htm](http://blog.sina.com.cn/s/blog_4d8426ad010185ks.htm) (last accessed 4 December 2016).

<sup>8</sup> We thank one of the referees for inspiring us on this point.

## References

- Bulkeley H and Betsill M (2005) Rethinking sustainable cities: Multilevel governance and the "urban" politics of climate change. *Environmental Politics* 14(1):42–63
- Caprotti F (2014) Eco-urbanism and the eco-city, or, Denying the right to the city? *Antipode* 46(5):1285–1303
- Chan R C K and Yao S (2010) New trends in urban and regional governance in the Pearl River Delta region. *Asian Geographer* 27(1/2):127–143
- Chang I-C C, Leitner H and Sheppard E (2016) A green leap forward? Eco-state restructuring and the Tianjin-Bin Hai Eco-City model. *Regional Studies* 50(6):929–943
- Chen W Y and Hu F Z Y (2015) Producing nature for public: Land-based urbanization and provision of public green spaces in China. *Applied Geography* 58:32–40

- Chen W Y and Jim C Y (2006) Valuation of nature: Economic contribution of periurban protected areas in Guangzhou Baiyun Mountain Scenic Area. In C Y Jim and R Corlett (eds) *Sustainable Management of Protected Areas for Future Generations* (pp 59–75). Gland: World Conservation Union
- Classens M (2015) The nature of urban gardens: Toward a political ecology of urban agriculture. *Agriculture and Human Values* 32(2):229–239
- Crompton J L (2007) The role of the proximate principle in the emergence of urban parks in the United Kingdom and in the United States. *Leisure Studies* 26(2):213–234
- Desfor G and Keil R (2004) *Nature and the City: Making Environmental Policy in Toronto and Los Angeles*. Tucson: University of Arizona Press
- Economy E (2013) The environment. In C Odgen (ed) *Handbook of China's Governance and Domestic Politics* (pp 199–209). New York: Routledge
- Fang K (2011) How to develop 2,000 kilometres of greenway network in a year? Opening up “green channel” for greenway. *Southern Weekly* 11 January. <http://www.infzm.com/content/54760> (last accessed 11 July 2016)
- Flint J and Raco M (2012) Towards a new politics of urban sustainability. In J Flint and M Raco (eds) *The Future of Sustainable Cities: Critical Reflections* (pp 243–251). Bristol: Policy Press
- Gandy M (2012) Queer ecology: Nature, sexuality, and heterotopic alliances. *Environment and Planning D: Society and Space* 30(4):727–747
- GDHURD (Guangdong Department of Housing and Urban-Rural Development) (2014) *Memoir of Guangdong Greenway Network Planning and Construction*. Beijing: China Architecture and Building Press
- GDUPI (2014) “Development of the Pearl River Delta.” Guangdong Urban and Rural Planning and Design Institute. <http://www.gdupi.com/prd2014/productshow.asp?id=102> (last accessed 22 June 2017)
- GDUPI (2015) “Conserved and Consolidated Use of Land and Development Intensity Control in the Pearl River Delta.” Guangdong Urban and Rural Planning and Design Institute. <http://www.gdupi.com/prd2014/productshow.asp?id=127> (last accessed 4 September 2016)
- Gould K A and Lewis T L (2017) *Green Gentrification: Urban Sustainability and the Struggle for Environmental Justice*. Abingdon: Routledge
- Grove K (2009) Rethinking the nature of urban environmental politics: Security, subjectivity, and the non-human. *Geoforum* 40(2):207–216
- Heynen N (2006) Green urban political ecologies: Toward a better understanding of inner-city environmental change. *Environment and Planning A* 38(3):499–516
- Heynen N (2014) Urban political ecology I: The urban century. *Progress in Human Geography* 38(4):598–604
- Heynen N, Perkins H A and Roy P (2006) The political ecology of uneven urban green space: The impact of political economy on race and ethnicity in producing environmental inequality in Milwaukee. *Urban Affairs Review* 42(1):3–25
- Hodson M and Marvin S (2007) Understanding the role of the national exemplar in constructing “strategic glurbanization”. *International Journal of Urban and Regional Research* 31(2):303–325
- Holifield R (2009) Actor-network theory as a critical approach to environmental justice: A case against synthesis with urban political ecology. *Antipode* 41(4):637–658
- Hsing Y (2010) *The Great Urban Transformation: Politics of Land and Property in China*. Oxford: Oxford University Press
- Hu X (2011) Greenway network slows Guangdong down. *China Economic Weekly* 2011 (16):22–30
- Jim C Y and Chen W Y (2006) Perception and attitude of residents toward urban green spaces in Guangzhou (China). *Environmental Management* 38(3):338–349
- Kaika M (2005) *City of Flows: Modernity, Nature, and the City*. New York: Routledge
- Lawhon M, Ernstson H and Silver J (2014) Provincializing urban political ecology: Towards a situated UPE through African urbanism. *Antipode* 46(2):497–516
- Li M (2011) Wanjiang greenway led to a property economy boom along its way. *Southern Metropolis Daily* 11 January. [http://dg.fzg360.com/news/gfgs/2011-01/7316290732769\\_2.html](http://dg.fzg360.com/news/gfgs/2011-01/7316290732769_2.html) (last accessed 30 June 2017)

- Lin G C S (2007) Reproducing spaces of Chinese urbanisation: New city-based and land-centred urban transformation. *Urban Studies* 44(9):1827–1855
- Lin G C S, Li X, Yang F F and Hu F Z (2015) Strategizing urbanism in the era of neoliberalization: State power reshuffling, land development, and municipal finance in urbanizing China. *Urban Studies* 52(11):1962–1982
- Lindsey G and Nguyen D B L (2004) Use of greenway trails in Indiana. *Journal of Urban Planning and Development* 130(4):213–217
- Little C E (1990) *Greenways for America*. Baltimore: Johns Hopkins University Press
- Loftus A (2012) *Everyday Environmentalism: Creating an Urban Political Ecology*. Minneapolis: University of Minnesota Press
- Ma X (2012) The development and innovation of greenways in Guangdong. *Landscape Architecture* 2012(3):71–76
- Millington N (2015) From urban scar to “park in the sky”: Terrain vague, urban design, and the remaking of New York City’s High Line Park. *Environment and Planning A* 47(11):2324–2338
- Ng M K and Xu J (2000) Development control in post-reform China: The case of Liuhua Lake Park, Guangzhou. *Cities* 17(6):409–418
- Nicholls S and Crompton J L (2005) The impact of greenways on property values: Evidence from Austin, Texas. *Journal of Leisure Research* 37(3):321–341
- Patrick D J (2014) The matter of displacement: A queer urban ecology of New York City’s High Line. *Social and Cultural Geography* 15(8):920–941
- Pow C P and Neo H (2013) Seeing red over green: Contesting urban sustainabilities in China. *Urban Studies* 50(11):2256–2274
- Ran R (2013) Perverse incentive structure and policy implementation gap in China’s local environmental politics. *Journal of Environmental Policy and Planning* 15(1):17–39
- Robbins P and Sharp J (2003) The lawn-chemical economy and its discontents. *Antipode* 35(5):955–979
- Sevilla-Buitrago A (2017) Gramsci and Foucault in Central Park: Environmental hegemonies, pedagogical spaces, and integral state formations. *Environment and Planning D: Society and Space* 35(1):165–183
- Smith N (2006) Nature as accumulation strategy. In L Panitch and C Leys (eds) *Socialist Register 2007: Coming to Terms with Nature* (pp 16–36). London: Merlin
- Sun Yat-Sen University (2013) “Pearl River Delta Greenway Network Comprehensive Benefit Assessment.” Unpublished report
- Swyngedouw E (1996) The city as a hybrid: On nature, society, and cyborg urbanization. *Capitalism Nature Socialism* 7(2):65–80
- Swyngedouw E (2004) *Social Power and the Urbanization of Water: Flows of Power*. New York: Oxford University Press
- Swyngedouw E and Heynen N (2003) Urban political ecology, justice, and the politics of scale. *Antipode* 35(5):898–918
- Swyngedouw E, Kaika M and Castro E (2002) Urban water: A political-ecology perspective. *Built Environment* 28(2):124–137
- Wu F (2015) *Planning for Growth: Urban and Regional Planning in China*. New York: Routledge
- Xiao Y (2014) “Making Land Fly: The Institutionalization of China’s Land Quota Markets and its Implications for Urbanization, Property Rights, and Intergovernmental Politics.” Unpublished PhD thesis, Massachusetts Institute of Technology
- Xin J (2011) Deputy major Su Zequn: Guangzhou’s greenway development does not involve large-scale demolition and construction. *21st Century Business Herald* 7 January. <http://city.sina.com.cn/focus/t/2011-01-07/101112634.html> 14/10/16 (last accessed 21 October 2016)
- Xu J (2017) Bargaining for nature: Treating the environment in China’s urban planning practice. *Urban Geography* 38(5):687–707
- Xu J and Chung C K L (2014) “Environment” as an evolving concept in China’s urban planning system. *International Development Planning Review* 36(4):391–412
- Xue D and Wu F (2015) Failing entrepreneurial governance: From economic crisis to fiscal crisis in the city of Dongguan, China. *Cities* 43:10–17