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Spatial Logic and the Distribution of Open and Green Public Spaces in Hanoi: Planning in a Dense and Rapidly Changing City

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ABSTRACT

Vietnam recently started to recognise the multiple benefits brought by open and green spaces to urban population and environment. In this paper, we analyse the provision of open and green spaces (parks, public gardens and lakeshores) in Hanoi. Using a model proposed by Talen (2010), we examine the spatial evolution of these spaces between 2000 and 2010, their level of proximity to residential units, and the extent to which their distribution matches social needs (defined in terms of population density). We find that while the absolute number and surface area of parks and public gardens has increased significantly in Hanoi, these new public spaces are mainly built on the city's newly urbanised periphery. As a result, in 2010, only 15% of Hanoi's residential blocks had access to a park or public garden within a reasonable walking (1000m) or biking distance (2500m). Moreover, the city's densest residential areas have only access to relatively small gardens and parks, resulting in overcrowding. Lakeshores, however, represent an opportunity to enhance access to open and green spaces in Hanoi due to their spatial distribution. We conclude by advocating for the integration of spatial measures of proximity and needs into Hanoi's public space planning policy framework.

近年来，越南人意识到室外绿地对城市人口和环境的多重益处。本文分析河内的室外绿地（公园、街心花园和湖岸）供给。我们通过Talen（2010）提供的模型考察2000年到2010年间这些空间的发展、它们与居住单元的距离，以及其分布是否满足了社会需求（以人口密度计）。研究发现河内公园和街心花园的数量和面积有了显著增加，但这些公共空间主要分布在城郊的新开发区。2010年河内仅有15%的居民区与公园或街心花园的距离在步行（1000米）或骑行（2500米）可达范围内。此外，城里居住人口最密集的地区因为拥挤，只有较小的街心花园和公园。不过河内湖泊密布，湖岸为增加室外绿地提供了可能。我们认为应提倡在河内公共空间规划政策框架中纳入考虑距离和需求的空间措施。

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proximity; social needs;
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1. Introduction

Vietnam is currently experiencing one of the most intensive urban transitions in the world. Over the next 15 years, the share of the country's total population living in places classified as urban is expected to move from about 30% to 45% (2011). This shift from a rural to a predominantly urban society is closely associated with socio-economic reforms instituted in the mid-1980s (*đổi mới*) that have

progressively liberalised the economy and loosened the state's grip on population movements and activities. The scope and speed of the urban changes spurred by the reforms is felt most intensively in large urban agglomerations. In Hanoi, on which this paper focuses, urban population growth and urban land expansion now reaches up to 3.9% per year (World Bank 2011). This hyper-rapid urbanisation and population growth pose an enormous challenge to meet new demands for urban infrastructures, services, land uses and environmental controls (Gubry 2010, Saksena *et al.* 2014). This includes, in particular, the provision of sufficient open and green spaces.

In this paper, we examine Hanoi's three main types of formally-planned open and green spaces (i.e. city parks and public gardens along with the shores of lakes and ponds).¹ In Hanoi, as in other urban agglomerations throughout Vietnam, the lack of accessible urban public parks is informally compensated by the extensive use of the sidewalk and street spaces (Drummond 2000, Thomas 2002). However, even the most regulated sidewalks of Hanoi cannot replace safe and accessible open and green public spaces for several reasons. A study on four parks and public gardens in Hanoi demonstrates intensive usages of public parks by a mix of organised groups and individuals who use these places throughout the day for physical exercises, relaxing and socialising (Le To Luong 2013). From a broader perspective, studies in different cities have shown that parks, squares, gardens and the like usually provide ecosystem services such as biodiversity enhancement, heat island and noise reduction and air pollution filtering (Alvey 2006, Cohen *et al.* 2014, Yu and Hien 2006). Moreover, parks and other open and green spaces have been shown to enhance the quality of life of urbanites by providing them with recreational space, contact with nature, and safe areas away from the street traffic. Parks further foster social inclusiveness and community participation in cities as well as offering social interaction opportunities (e.g. Chiesura 2004, Orum and Neal 2010). The planning policy framework and investments by municipal authorities play a key role in ensuring that and adequate provision of open and green spaces in cities, allowing residents to reap the various social and environmental benefits discussed above. These are areas that require urgent attention in Hanoi.

The shrinkage and deterioration of green and open spaces is not a novel phenomenon in the Vietnamese capital city. Some authors have traced the filling of urban lakes, for instance, as far back as the colonial era (e.g. Logan 2000). However, since the late 1990s, studies are reporting a marked acceleration of these processes. Duan and Shibayama (2009) found that between 1986 and 1996, the city's urban administrative territory lost 12% of its planted tree areas and 64.5% of its water surfaces. Pham Duc Uy and Nakagoshi (2007) reported that, between 1996 and 2003, green space areas in Hanoi's urban districts decreased at an average rate of 3% per year. A planning report produced in collaboration with the Japanese International Cooperation Agency (HAIDEP 2005) further indicated that existing green spaces in Hanoi were being encroached by various development projects and illegal constructions, and that the hygienic conditions of many of the city's lakes and ponds were deteriorating. More recently, a number of press articles have been raising serious concerns about parks being encroached by commercial activities (cafés, restaurants, car parking, etc.) (Thi 2012, Tran Huy Anh 2012). Lakeshores in Hanoi suffer from similar encroachment, making accessibility to this type of public spaces more difficult to citizens, as reported by the press (Lao Dong 2015, Nguoi Lao Dong 2015). All these problems point to the need to protect open and green public spaces and meet the demand of the population in Hanoi and call for a more efficient planning of these spaces.

To inform park planning, investment and design, Talen (2010) has recently argued that a robust evidence-based assessment of the distribution of green and open spaces would be useful. As mentioned above, the contribution which green and open public spaces make to urban livability depends in large part on their spatial distribution, as this has a direct effect on their accessibility levels and consequently the intensity of their usage (McCormack *et al.* 2010). While empirical measures of spatial distribution, and of accessibility in particular, are now widely used in Western contexts (e.g. Boone *et al.* 2009, La Rosa 2014), such measures have rarely been applied to developing Southeast Asian cities, such as Hanoi, despite the critical challenges with regard to public space planning facing these rapidly urbanising territories.

Our paper begins to close this gap by examining the spatial distribution of Hanoi's three main types of formally-planned open and green spaces (i.e. city parks, public gardens and the shores of lakes and ponds). We first analyse changes in the provision of these spaces during the intensive urbanisation period between 2000 and 2010. Then, building on Talen's (2010) proposition, we assess the distribution of open and green spaces in 2010 from a "spatial logic" standpoint. To this end, we assess the levels of proximity to public spaces of Hanoi's residential blocks as well as the extent to which the distribution of open and green spaces responds to social needs defined according to population densities.

Our analyses show that, at the city scale, the absolute number and surface area of parks and public gardens increased significantly between 2000 and 2010. However, most new spaces (and parks in particular) are located on the city's newly urbanised periphery, thus failing to respond to the acute need for open and green space of Hanoi's dense inner city. With regard to proximity levels, we find that accessibility to open and green spaces remains limited. Indeed, in 2010, only 15% of Hanoi's residential blocks had access to a park or public gardens within a reasonable walking (i.e. 1000 m) or biking (i.e. 2500 m) distance. Moreover, the city's densest residential areas (with the greatest needs for open and green spaces) are located near those gardens and parks serving the highest number of residential blocks—a situation which may lead to the overcrowding of these spaces.

The rest of this paper is organised as follows. Part II introduces the case of Hanoi by briefly reviewing recent trends in urbanisation, followed by a presentation and critique of the key changes in Vietnam's national public space policies since the early 2000s. Part III briefly reviews the literature on the measurement of public space distribution and describes the methods used in our study. Part IV presents our analyses and key findings. In the conclusion, we discuss the implications of our findings and reflect on the role of urban planning in fostering a better spatial distribution of open and green spaces for Hanoians. We also recommend using this approach in other urban contexts, i.e. rapidly changing countries and those facing privatisation of urban planning.

2. Hanoi's Urbanisation and the Evolution of Public Space Planning Policies in Vietnam

Hanoi is recognised as one of the most overcrowded cities in the world. At the time of the last national census, in 2009, the human density in Hanoi's urban districts ranged between 11,000 and 30,000 people/km², with several parts of the city even reaching much higher figures (see Figure 1). Such high human densities put enormous pressure on the city to provide common spaces allowing people to engage in social interactions, to exercise and to enjoy environments other than the exceptionally cramped quarters of their homes (Kurfürst 2012, Kürten 2008, Le To Luong 2013).

Since the early 2000s, Vietnamese authorities have started to acknowledge the importance of public spaces in the development of a sustainable and people-friendly city, as reflected in the recent evolution of the country's urban public space policy framework (Söderström and Geertman 2013). A public policy analysis conducted by the authors highlights three important changes in Vietnam's planning framework. Below, we review each change in turn and highlight shortcomings with regard notably to the integration of spatial accessibility concerns in this evolving public planning policy framework.

2.1. Recognition of the Need for Public Spaces and Positive Contributions to Cities

Recent policy changes acknowledge that the quality of life offered by cities depends on the provision of enough and adequate open and green spaces. Decree 38/2010/ND-CP, for instance, suggests that there is something like a "right to public space" in Vietnamese cities by stipulating that "all organizations and individuals living and operating permanently and temporarily in urban centres may enjoy urban space, landscape and architecture" (art. 4). The 2009 Urban Planning Law operationalises this orientation by requiring that construction plans for urban centres meet use demands for "parks, trees, water surfaces and other social infrastructure" (art. 6).

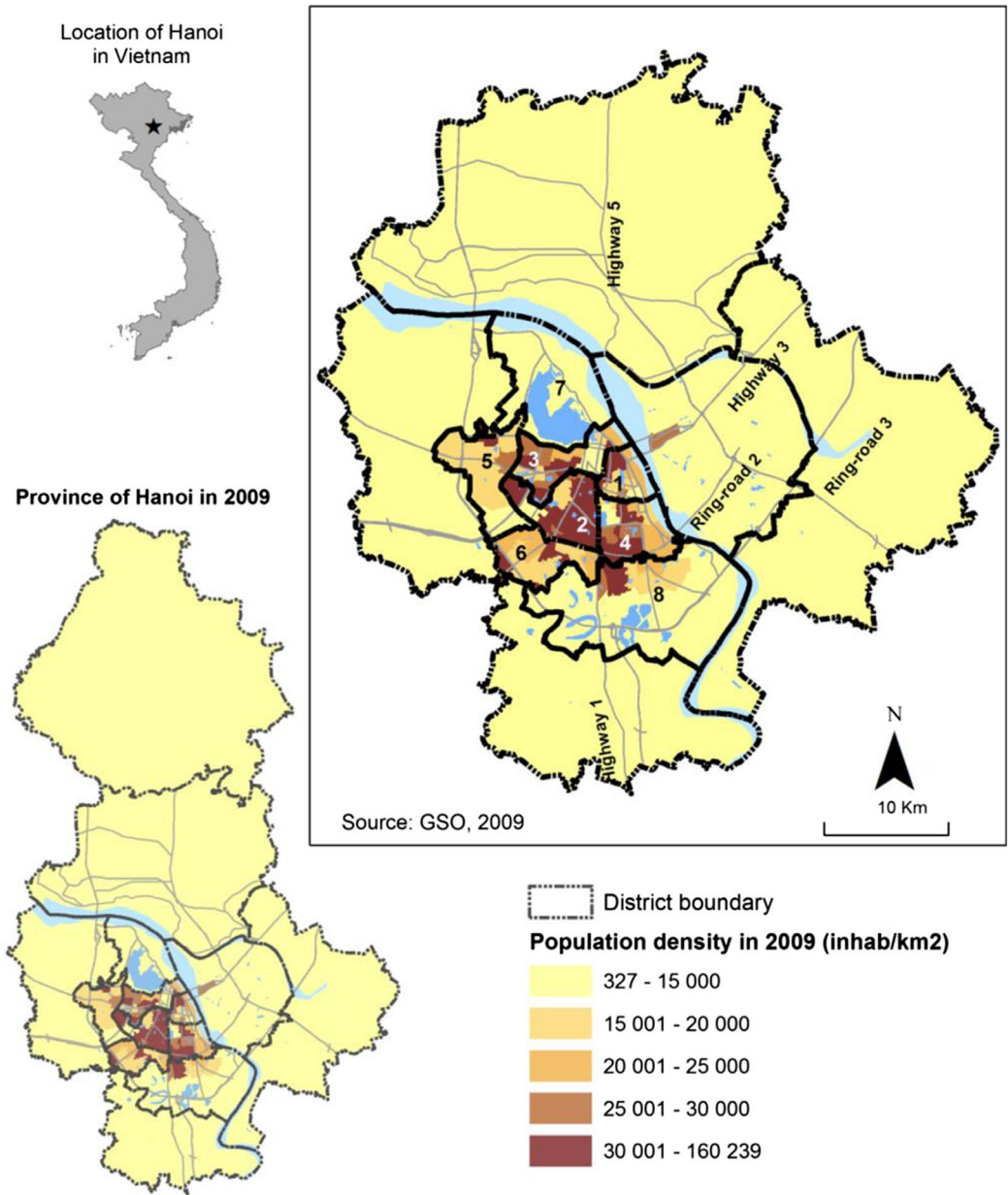


Figure 1. Population density by ward/commune of the study area in 2009 (urban districts are marked from 1 to 8).

Policies further recognise that Vietnamese urbanites need different types of public spaces. Illustrating this, the 2008 revision of the Vietnam Building Code stipulates rules to ensure that cities include both neighbourhood-level and city-level public spaces. Other policies go one step further in recognising the need to increase the presence of public spaces and greenery in cities. Decree 38/2010/ND-CP, for instance, encourages municipal administrations to “increase areas of greenery [...] and public space” in urban centres by “setting construction density limits and minimum ratios of greenery and land for public space” (art.9) as a way “to improve urban quality and environment” (ibid).

2.2. Enhancing the Spatial Quality of Public Spaces

Recent policy changes in Vietnam also indicate a rise in the attention paid to the spatial quality of public spaces. The most telling changes in the regard relates to the introduction of “urban design” in formal policies. This notion was first mentioned in the 2008 revision of the Vietnam Building Code, but was only really institutionalised after the passing of the 2009 Urban Planning Law.

The new law stipulates numerous urban design requirements for open, collective, and green spaces. This document also lists the following elements as the object of urban design: large squares, green spaces, water surfaces, open space areas, greenery space, and public gardens (art. 33.1–4). Innovative, urban design principles are also found in the Public-Use Greenery Planning in Urban Areas—Design Standards. This document encourages planners to conceive of public spaces in cities as a system wherein roadside greenery acts as “corridors” (*tuyến*) linking together public gardens and urban parks (art. 6.4).²

2.3. Tightening Management and Limiting Degradation and Encroachment

Finally, recent policies seek to better protect existing public spaces. The main innovation in this area is the clearer identification of which organisations are responsible for the management of public spaces, and the clear and specific definition of the roles and responsibilities of both managers and users (2009 Law on Urban Planning, art. 68.1, Decree 38/2010/ND-CP art.1, 22.3 and 23.2; Circular 19/2010/TT-BXD).

Other legislations define the responsibilities of urban residents with regard to urban space. Decree 38/2010/ND-CP, for instance, stipulates that “all organizations and individuals living and operating permanently and temporarily in urban centres [...] shall protect and preserve, and observe the law on exploitation and use of urban space, architecture and landscape” (art. 4.). This same decree states that “greenery in urban centres shall be grown, tended, maintained, protected, classified and arranged under planning and current regulations, standards, and laws” (art.12) and that “natural landscapes in urban centres shall be strictly protected and have their natural terrain characteristics preserved” (art. 13).

A second innovative provision to protect public spaces consists in policy measures aimed at putting a break on the physical degradation of these places and on encroachment by private and commercial functions. This orientation is, however, not as marked as the specification of responsibilities over management discussed earlier (2009 Law on Urban Planning art. 68.3 and 68.4; Circular 19/2010/TT-BXD).

2.4. Shortcomings of a Functionalist Planning Approach

The various changes discussed above are all indications that public space is beginning to receive more policy attention in Vietnam. In itself this is a positive development, but there are still many weak aspects to this process. Overall, the positive changes discussed above, still represent a rather timid policy response to what is needed, and it lacks sufficiently coercive measures to effectively enforce what it does require.

Most importantly, none of the above changes have genuinely altered Vietnam’s conventional planning approach. Influenced by Soviet Planning, this approach is founded on a highly functionalist and primarily two-dimensional conception of the city understood as an assemblage of “functional zones” (*khu chức năng*) which need to be furnished with infrastructure in order to work properly and efficiently. Illustrating the persistence of this normative and somewhat arithmetic approach, public space policies remain centred on the spatial distribution of two-dimensional surfaces and most are still based on quantitative targets (square metres per person, minimal surface areas, service radii, etc.) For instance, the Public-Use Greenery Planning in Urban Areas - Design Standards stipulates a target of 12–15 m² of “public use greenery land” per person in Hanoi (art. 5.1, Table 1), including 7–9 m² of “park greenery land,” 3–3.6 m² of “public garden-greenery land” and 1.7–2 m² of “street greenery land” (art. 5.5).

Table 1. Proximity levels to public spaces of residential blocks.

	Number of residential blocks in service areas	Percentage of residential blocks in service areas	Max number of residential blocks in a service area
<i>Public gardens</i>			
500 m	152	6.82	17
1000 m	373	16.73	26
2500 m	830	37.22	86
Outside of service areas	875	39.24	
<i>Parks</i>			
500 m	216	9.69	13
1000 m	431	19.33	29
2500 m	1064	47.71	110
Outside of service areas	519	23.27	
<i>Public gardens and parks</i>			
500 m	343	15.38	17
1000 m	586	26.28	26
2500 m	883	39.60	54
Outside of service areas	418	18.74	
<i>Lakeshores</i>			
500 m	541	24.26	12
1000 m	845	37.89	26
3000 m	842	37.76	39
Outside of service areas	2	0.09	

Total number of residential blocks: 2230.

Source: authors.

Three problems emerge from the persistence of a functionalist planning model. First, the ratios, quotas, and targets that guide the provision of public spaces in Vietnamese cities are established ahead of the planning process. Many of these numbers are set for political purposes and prove, in practice, to be impractical or unrealistic (Paddi and IMV 2014). For instance, Tran and Chi (2010, 70) indicate that most cities in Vietnam only meet between a third and half of the ratios of “public-use greenery” set by the Ministry of Construction. In many cases, attempts to meet the unrealistic targets set in policies lead to sub-optimal planning decisions (for example, trying to meet a quota of green space by designating large tracts of agricultural lands in periurban areas which are inaccessible and unusable for recreational or leisure activities as green space).

Second, planning policies in Vietnam continue, to this day, to pay much greater attention to technical matters than to social issues (Wilson 2009). Accordingly, providing cities with physical infrastructure is the main concern and occupies most of the space in policy texts. Another problem in policy documents, such as the 2009 Urban Planning Law, is that the provision, design, and management of public spaces are dealt with as an indistinct element of the wider “social infrastructure” category — a category which is so broad as to be almost completely useless in the decision-making processes related to planning. Finally, and most important in the context of this study: the planning approach used in Vietnam continues, to this day, to overlook issues related to the spatial distribution of open and green spaces across urban territories. This shortcoming leads to problematic spatial equity outcomes, as we will see in the following sections.

3. Spatial Distribution and Criteria of Spatial Logic: Analytic Framework and Methods

3.1. Types of Public Spaces Studied

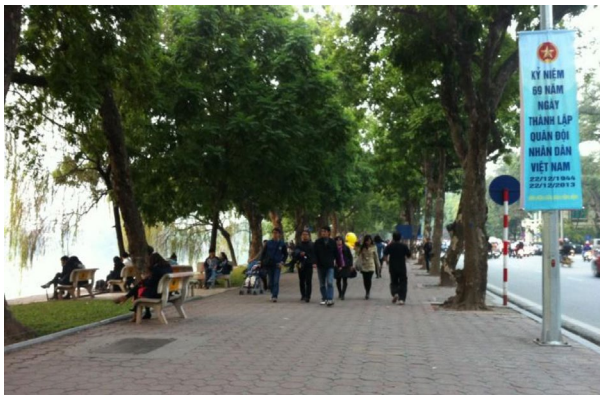
As discussed earlier, this study focuses on the most common formally-planned and publicly-managed open and green public spaces.³ In the context of Hanoi, this corresponds, for the most part, to parks, public gardens and lakeshores (see Figure 2). Public policies in Vietnam define the first two types of



Hoa Binh Park.



Hang Dau Public Garden.



Hoan Kiem Lakeshore.

Figure 2. Examples of the three types of open and green public spaces in Hanoi: (Photo credit: The ‘Youth-friendly public spaces in Hanoi’ project <http://www.hanoiyouthpublicspace.com/>).

public spaces as follows: Parks are “large green areas serving the goals of outdoor activities for the entertainment of urban residents, for mass cultural activities, contact with nature, and improvement of material and spiritual life;” and public gardens are defined as “green areas [of a few hectares or less] mainly for pedestrians to stroll and relax during short periods of use” (Public-Use Greenery Planning

in Urban Areas—Design Standards, art. 3.1) [our translation]. The shores of Hanoi's many urban lakes and ponds (hereafter “lakeshores”), although not always formally defined in planning policy documents (they are often included in the definition of “bodies of water,” were also included in this study. These spaces have long been used by local people for recreational and socialising purposes, making them de facto important public spaces.

3.2. Toward a “Spatial Logic” Approach: Analytic Framework

A spatial logic approach of park planning is based on a more comprehensive assessment of how open and green spaces in cities “are, or ought to be, geographically distributed” (Talen 2010, 476). Talen (ibid: 476) argues that, too often, urban public spaces and parks in particular are studied as “discrete spaces to be designed, as environmental resources that bring “nature” to the city, or as spaces with unique social and economic value” without taking into account their distribution throughout the urban landscape. To remedy this shortcoming, she proposes an evaluative approach wherein public spaces are assessed based on three socio-spatial distributional criteria:

- (i) “Proximity” or “access” refers to the degree to which the public space’s geographic location maximises its accessibility by foot by as many people possible. This criteria reflects a wide body of research on the physical and social dimensions of green and open spaces according to which there is a connection between having a park nearby, urban liveability, and well-being (see review in McCormack *et al.* 2010). Although access and accessibility are complex constructs with spatial, social and personal dimensions (Wang *et al.* 2015), in this study, we focused on physical and spatial accessibility as a first step in assessing accessibility.
- (ii) “Social needs” evaluates whether public spaces are equitably distributed throughout the city. According to Talen, open and green spaces should be more abundant in areas with higher population densities and lower incomes (she argues that these residential areas have less private outdoor space per housing units, and therefore greater need for outdoor public spaces); and
- (iii) “Diversity” assesses whether public spaces are located in areas that are sufficiently densely populated and functionally diverse to support their full usage (ibid: 475–483).

In this study, we did not retain the third criterion, i.e. “diversity.” This last criterion stems from the experience of North-American cities (and their mono-functionally zoned suburbs in particular), places which have long been characterised by very low population densities and limited land-use diversity. This contrasts with the situation observed in most Southeast Asian cities. Hanoi, for instance, boasts very high population densities and is characterised by a highly diversified and tightly-knit mix of urban functions. In residential neighbourhoods in particular, residential, commercial, office and service activities are interweaved, sometimes even in the same building (Barbosa *et al.* 2014, Storch *et al.* 2008). Achieving a sufficiently diversified mix of urban activities is rarely—if at all—an issue in Hanoi. Hence, while the diversity criterion sheds useful light on the spatial distribution of public spaces in low-density and spatially segregated North American cities, it is less relevant in densely populated and functionally mixed Southeast Asian cities.

As addressed in Section 2, the planning approach in Vietnam is still centred on quantitative targets of two-dimensional surfaces of open and green spaces, and overlooks issues related to the spatial distribution of the spaces across the city. In view of this problematic approach, the two first criteria proposed by Talen (2010) provide a useful analytical framework that holds the potential to revise and improve the current planning policies by pointing out where and how many public spaces are needed across Hanoi’s urban administrative territory. However, differences between the North American context where Talen’s analytical model was developed (characterised by sprawling urban territories, mostly low-densities and easily accessible reliable data) and the Vietnamese urban context (compact urban forms, mostly high-densities, and limited data) called for adaptation in the operationalisation of the model. In line with this, the next section describes the measures we privileged to assess the two chosen criteria in the specific context of Hanoi.

3.3. Data and Methods

Given the lack of official, up to date and reliable data on Hanoi's green and open public spaces, we used multiple sources of information to inventory the city's parks, public gardens and lakeshores and to document the evolution of their provision and spatial distribution over time. These sources include topographical maps, on-site surveys through fieldwork (conducted in 2013 and 2014), and Google Earth images from 2000 and 2010. To measure the spatial proximity and social needs of the three types of public spaces, we used a street network and population density map at the city block level.

This study relied on two main analytical strategies. First, we mapped the provision of parks, public gardens and bodies of water in 2000 and 2010 and analysed the spatial evolution of each type of public space in relation to urban population changes across the city's territory. This provides a comprehensive portrait of the open and green spaces in Hanoi and highlights trends in their provision. This evolution mapping covers all 14 districts of Hanoi's pre-2008 administrative territory,⁴ with the exception of the rural district of Soc Son to the north of the city, which had neither parks nor public gardens in 2010. Second, we proceeded with the "spatial logic" of public space distribution proposed by Talen (2010), focusing only on the most recent, 2010 situation and on the city's urban administrative districts (marked as 1 to 8 in Figure 1).⁵

3.3.1. Measuring Proximity and Spatial Accessibility

We assessed the proximity of Hanoi's parks, public gardens and lakeshores through indicators of spatial accessibility. Among the various measures used in studies of spatial accessibility (see La Rosa (2014) for a review), we adopted a "service area approach" which identifies the zones serviced by a given public space, at different travel distances. While this approach provides less sophisticated analyses than other more recent methods (e.g. La Rosa 2014), we selected it because we can quantify the number of residential units in the service areas around public spaces. This method has already been used in different urban contexts, for example in the metropolitan region of Baltimore (USA) (Boones *et al.* 2009) and in Santa Cruz, a rapidly urbanising Bolivian city (see Wendel *et al.* 2012). Moreover, the results it produces are easier for local officials to interpret, and facilitating advocacy and potential future action by the authorities.

We considered three distances around each type of open and green space studied: 500 m (distance to local public spaces recommended in Vietnamese policies), walking distance (1000 m) and biking distance (2500 m).⁶ Even though motorised two-wheelers (motorbikes) are the most common transport mode in Hanoi (Sanders *et al.* 2015), we followed Talen's proposition and focused on non-motorised and active transportation modes advocated by several public health organisations for their accessibility regardless of income, their low environmental impacts and their public health benefits (Edwards and Tsouros 2006).

For each type of public space, we created access points to get to the space. As parks in Hanoi are fenced in, we located their entrances using Google Earth and used these as entry points to these public spaces. As for bodies of water and public gardens (which are generally unfenced and accessible from anywhere on their perimeter), we created access points at every 10 m on the perimeter for gardens and at every 30 m on the perimeter for lakes (given that lakes are usually larger than gardens).

Spatial accessibility was computed using ArcGIS 10.3.1 (Network Analyst extension) as well as the street network of Hanoi taken from the topographical map. An example of a 500 m-zone surrounding a garden, based on the street network, is provided in Figure 3.

Finally, to examine the proximity of residential areas to open and green public spaces, we had to create a map of residential blocks. Residential blocks are defined here as city blocks that do not have the following functions: open and green spaces, public buildings and agricultural and industrial zones. To do so, we first created a map of city blocks for the urban administrative districts of Hanoi based on the street map. We then retained only residential blocks by excluding open and green spaces, public buildings and agricultural and industrial zones, using Google Earth images. This left us with a total of 2230 residential blocks (example in Figure 3). We then calculated the number of residential blocks

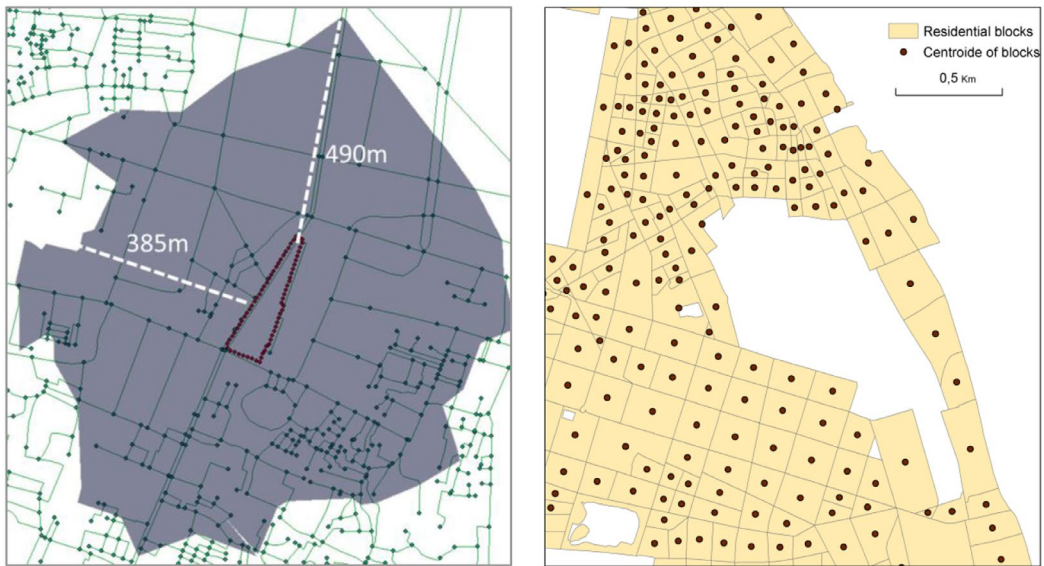


Figure 3. Calculated service area at 500 m around a public garden (left) and residential blocks and their centroid in the central district Hoan Kiem of Hanoi (right).

that are located within the service areas of each park, public garden and lakeshore (at 500, 1000 m and 2500 m).

3.3.2. Measuring Social Needs

Due to a lack of reliable and fine-scale data on income levels (along with other important variables such as gender, age, etc.), we narrowed down the assessment of “social needs” in Hanoi to residential densities. To localise areas that have higher needs for public spaces in Hanoi, we conducted two different analyses. We first identified areas that have high population densities (at the block level) but that lack one of the three types of public spaces. The population density of each commune/ward was assigned to the residential blocks belonging to the commune/ward, based on the assumption that residential blocks in the same commune/ward have the same density. Although this is not ideal, but given the lack of block-level census data in Vietnam, we had to opt for this assumption in order to obtain a more detailed picture of population density in residential blocks. Second, we identified public spaces having service areas that contained the largest amount of residential blocks. The two analyses allow us to see where public spaces are lacking and where existing public spaces might be threatened by overcrowding.

4. Results

4.1. Recent Changes in the Distribution of Hanoi’s Open and Green Spaces

Three main changes characterise the recent evolution of Hanoi’s open and green public spaces. First, eleven new public gardens were created between 2000 and 2010 (Figure 4). This represents nearly a threefold increase in the total area covered by these spaces in the city, from 8.58 ha to 22.11 ha. A few of these new public gardens are located in the four historic urban districts, for example the Văn Miếu public garden (marked in Figure 4). However, the majority of Hanoi’s new public gardens are located in newly urbanised areas, especially in the west and the south of the city, for example the Mỹ Đình and Đền Lừ public gardens (Figure 4).

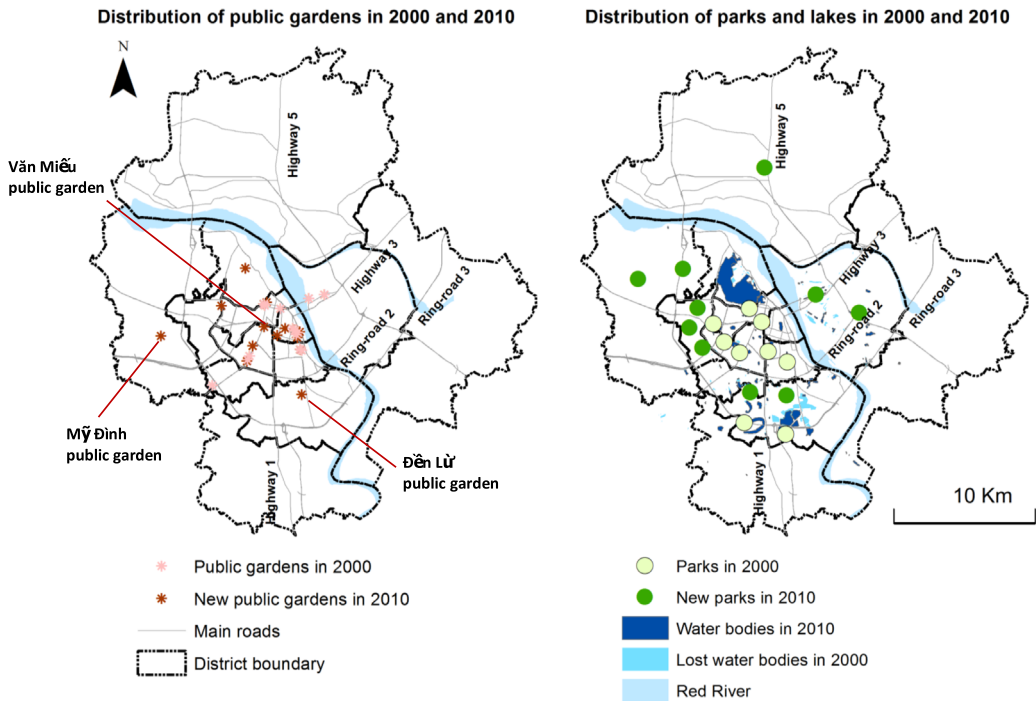


Figure 4. Evolution of public spaces between 2000 and 2010.

Second, a similar trend is also observed in overall area for parks (Figure 4). The number of parks in Hanoi nearly doubled between 2000 and 2010, with the addition of 10 new parks during the 2000s, raising the total park area from 227.93 ha in 2000 to 352.00 ha in 2010. This represents a remarkable 40% increase in park area in merely a decade. The vast majority of these new large public spaces are found in the new and peripheral urbanised areas. Some are located in new urban districts and some are sited even further from the city core.

Third, there is a dramatic loss of the surface area of bodies of water. According to our own calculation, it went from over 1211 ha in 2000 down to 1057 ha in 2010—representing a 15% decrease within just a decade. While several factors have contributed to this decrease, we noticed a reduction of surface area of big lakes and a marked disappearance of smaller ones, many of which were filled in and built upon during the 2000s. This has translated into a sharp decrease of the total number of bodies of water (lakes, ponds or marshes), namely 123 in 2010 compared to 224 in 2000 (see Figure 4 for the map of lakes).

When comparing with population growth, it is noteworthy that the population living in Hanoi's urban wards doubled during the 2000–2010 decade (an absolute growth of a little over 1 million people). The total area of public gardens per capita improved slightly, moving up from 0.08 m² to 0.10 m². However, the total area of parks per capita declined from 2.09 m² to 1.48 m². The city also witnessed a dramatic decrease in the area of bodies of water per capita (from over 11 m² to less than 5 m² per person).

4.2. Proximity to Hanoi's Open and Green Spaces in 2010

Proximity analyses show that a very minor portion of the city has access to public gardens or parks from a 500 m distance. For example, a small proportion of the residential blocks in Hanoi's urban administrative districts are located within the 500 m service area of a public garden (only 6.82%) or that

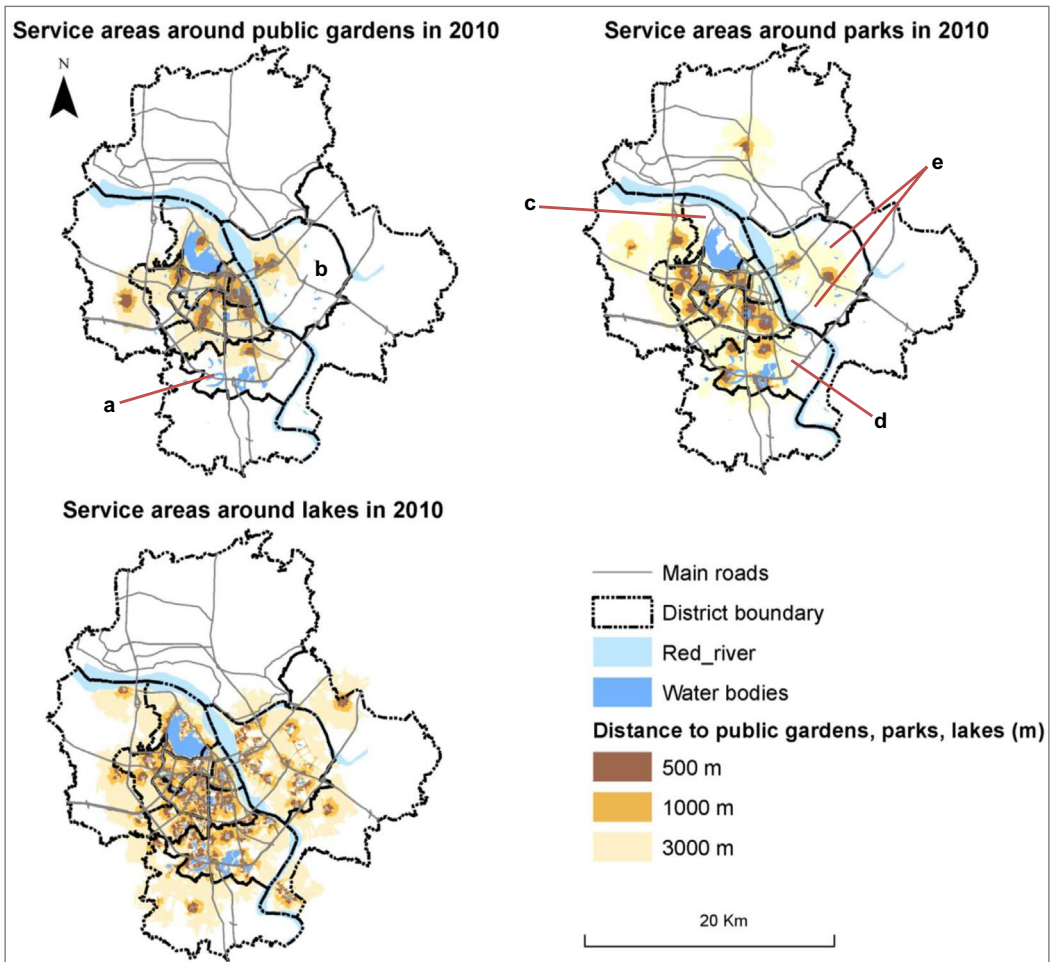


Figure 5. Service areas of the three types of public spaces in 2010.

of a park (9.69%) (Table 1). Altogether, only 343 urban residential blocks out of the 2230 surveyed (or 15.38%) have access to a park or a public garden located within 500 m from their place of residence.

When considering accessibility by foot, we find that only 16.73% of residential blocks are within the 1000 m service areas of public gardens, and 19.33% in the 1000 m service areas of parks. Spatial accessibility maps (Figure 5) show that these areas are found in the city centre, where Hanoi's public gardens are predominantly located. Altogether, this means that only about one out of four urban residential blocks in Hanoi is located at walking distance of both a park and a public garden, and mostly in the city centre.

The picture is slightly better for spatial accessibility at a distance of 2500 m (cycling distance), for which 37.22% of the residential blocks have access to public gardens or parks. Overall, the southern and western parts of Hanoi's urban administrative territory are well-served in this regard.

39.60% of the residential blocks are located more than 2500 m from a public garden, especially in the south-west of Hoàng Mai and in a large part of the Long Biên district (marked as a and b on Figure 5). 23.27% of the residential blocks have to travel further than 2500 m to access a park; these areas are concentrated in the north of the West Lake district, in the southern part of Hoàng Mai district and in the Long Biên district (marked as c to e on Figure 5). And overall, almost 18.74% of residential blocks do not have access to *both* a park and a public garden within the 2500 m threshold.

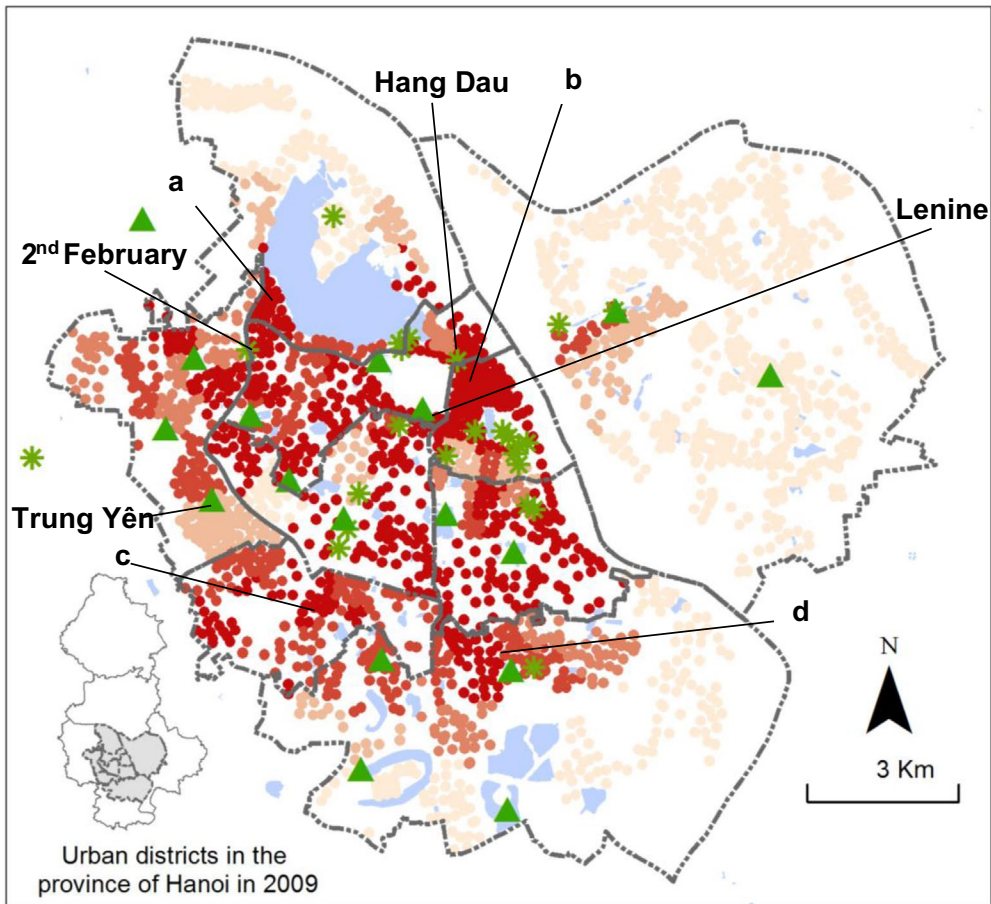


Figure 6. Locations of open and green spaces in relation with population density in the urban districts.

Interestingly, however, Hanoi residents have a much higher level of accessibility to lakeshores (Figure 5). A large portion of residential blocks in our study zone are located either within the 1000 m (38 = 7.89%) or 2500 m (37.76%) service area of a lake. These open spaces may well compensate for the scarcity of public gardens and parks in many parts of the city.



Figure 7. Urban form around the most potentially crowded gardens and parks.

4.3. Social Needs in Terms of Open and Green Public Spaces

If we compare the density of residential blocks with the presence of public gardens and parks, we observe that two main types of urban blocks lack green and open spaces. The first type concerns areas that have a very high population density but that have neither a park nor a public garden in their vicinity. As shown in Figure 6, this problem is particularly marked in the southern part of the West Lake district (a), in the Old Quarter (b), south of the Cầu Giấy and Đống Đa (c) districts and north of Hoàng Mai district (d).

Given the very high human densities and compact built fabric of these areas, creating more open and green public spaces there is a challenging task. If anything, these fully urbanised inner-core areas teach us the importance of reserving land for the construction of green and open spaces early on in the urban densification process. Yet, some of the other areas that lacked public spaces in 2010 (e.g. the zones north of the West Lake district and south of the Hoàng Mai and Long Biên districts) have only been urbanised recently and are not yet fully built up. Thus, efforts should be made to secure land for the construction of parks and public gardens now before it is bought up by developers or allocated otherwise.

The second type of urban areas in need of more green and open spaces is the one sited in the vicinity of parks and public gardens serving a very high numbers of residential blocks. Most of such spaces are found in the urban core of Hanoi and are characterised by very high population densities (albeit their good proximity to parks and public gardens). To give only two examples, the public garden Hàng Đậu, located right north of the Old Quarter and the 2nd February garden (in Cầu Giấy district) (marked on Figure 6 above), serve a total of 26 residential blocks each within a distance of 1000 m. The ability of these two small public spaces to serve the needs of people nearby is further hampered by the very high population densities of the area—averaging between 25,000 and 33,000 inhabitants/km². The garden that served the highest number of residential blocks in an accessible biking distance is Công Đoàn (in the Đống Đa district), having a density of over 40,000 inhabitants/km². All three cases

are located in areas of the inner city that have a very compact and dense built form (as illustrated in Figure 7). As mentioned earlier, these gardens are potentially overcrowded; yet, creating more open and green spaces in the urban core is very difficult given the density and coverage of the built fabric.

As for parks, Trung Yên Park (in the Cầu Giấy district) served the highest number of residential blocks within 500 m. This area had a high density of between 30,000 to 34,000 people/km², despite the fact that it was fairly new. Lenin Park served the highest number of residential blocks within 1000 m and 2500 m. Although there are non-residential areas in the north of the park, the surrounding environment is very dense (varying from over 30,000 people/km² to 60,000 people/km²). Furthermore, this park is small yet very popular among youth in Hanoi, as a result of which it is always overcrowded, especially at the end of the day.

In sum, our analysis of social needs in terms of public spaces shows that the areas that lack open and green spaces the most in Hanoi are predominantly located in the city's four central urban districts. However, parts in more newly urbanised districts in peripheral areas of the city also suffer from an under-provision of public spaces.

5. Conclusions

This study shows that a significant number of public gardens and parks were created in Hanoi during the intensive urbanisation period from 2000 to 2010. Nonetheless, the available surface of open and green space per capita in the capital city is still below the norms established by the government. Moreover, their geographic distribution across the city is not a function of spatial accessibility and social needs. Using a “spatial logic” approach proposed by Talen (2010), we have shown that spatial inequity problems result from the current inadequacies in the provision and distribution of parks and public spaces in Hanoi. More specifically, we quantified the number of residential blocks that do not have an adequate accessibility to the public spaces at 500 m, 1000 m (walking distance) and 2500 m (cycling distance). We identified areas that need more parks and public gardens by mapping: (i) low-accessibility areas at the three mentioned distances, (ii) areas that are densely populated but do not have parks and public gardens, and (iii) areas near overcrowded public spaces. These analyses show clear differences in the spatial distribution of open and green public spaces between the inner-core areas and the newer urbanised areas on the city's periphery—revealing urban planning strategies that have long been inadequate.

Hanoi's inner-core areas have the greatest need for parks and public gardens. However, given their high human density and compact built form, strategies to create new open and green public spaces in these areas need to remain flexible. For instance, any piece of idle land or former playgrounds in collective buildings could become formally planned by the government but managed by the local community. Such approach would, of course, require taking into account the ownership and management status of these places to ensure compatibility with local regulatory frameworks. In new and peripheral districts that have a low level of spatial accessibility to parks and public gardens, new public gardens and parks should be added as soon as possible before the built density gets too high. We also believe that Hanoi could draw greater use from the shores of its water bodies (urban lakes and ponds being well-distributed on the city's territory) to compensate for the shortage of parks and public gardens. This strategy, however, calls for strong measures to halt lake infilling and other types of encroachment of these open spaces.

Although the last few years have seen positive changes in public space policies in Vietnam (see Section 2 of this paper), planning lessons can be learned from the existent system of parks and public gardens in Hanoi. As shown in this study, since the opportunity to create parks and gardens in the inner-core areas of Hanoi was missed in the early planning stages, it is now very challenging to add new ones in the now densely built up districts. A two-dimension functional planning approach (using ratios) proves to have serious weaknesses, namely leading to the creation of parks in areas that are far away from residential units or where the need for such space is not particularly high. For example, in Hanoi's recent plan with regard to trees, parks, public gardens and water bodies (issued in 2014),

the city favours the construction of large parks in peripheral zones over rather small-sized but well distributed parks or public gardens in either the inner-core areas or the periphery. This strategy is far from ideal and is unlikely, in the mid- to long-term, to succeed in meeting the increasingly diversified needs of Hanoi's population. We hence urge all stakeholders to make efforts to integrate such analyses into urban planning schemes in Hanoi and to revise planning orientations so as to foster a public space system that is equitable, accessible and adapted to the social needs of a rapidly urbanising and densely populated city.

We have adapted Talen's model to the case of Hanoi, by computing the proximity to public spaces and the need of public spaces (in terms of population density). Findings from our study show that the spatial logic approach is helpful in providing quantitative and spatial strategies for identifying areas in need of more parks and gardens. Such approach is of interest to planners in other urban contexts of the Global South marked by high level of inequality and low accessibility to public spaces, for example in Latin America as discussed by Wendel *et al.* (2012). There, the approach discussed in this paper could help identify and prioritise areas where public spaces should first be developed. It could also provide evidence-based arguments to individuals and groups concerned with the equitable planning of public spaces, notably in Southeast Asian cities undergoing processes of privatisation of urban planning and public spaces (Hogan *et al.* 2012, Huynh 2015, Shatkin 2008).

Notes

1. The existing scholarship as long emphasised the blurry distinction between “public” and “private” spaces (e.g. Drummond 2000) in urban Vietnam. The literature also points out that the Western understanding of urban public spaces is a fairly recent notion in this context. While recognising the value of these discussions, the present paper is concerned with the situation of the open and green spaces of Hanoi in relation to extant planning policies. This explains our decision to focus our analysis on the two main administrative categories of open and green urban spaces in the Vietnamese planning policy framework: parks (*công viên*) and public gardens (*vườn hoa*).
2. Three recent decrees complement the orientation towards a greater spatial, visual, and aesthetic quality of urban public spaces by emphasising the need to maintain overall harmony (*hài hòa*) and elegance of streetscapes (Decree 38/2010/ND-CP, art.12.4), providing specific regulation aimed at protecting and improving the management of urban trees (Decree 64/ND-CP of 2010) along with guidelines for the public lighting of streets, parks, and squares (Decree 29/ND-CP of 2007).
3. While informal and natural spaces also provide environmental and social benefits to rapidly developing urban areas, in this study we consciously chose to focus on formally-designated public space for two reasons. First, these places have received comparatively limited research attention in Hanoi and second, they are central to a local public policy system in rapid transformation calling for better and more fine-grained data analysis.
4. In 2008, Hanoi annexed the province of Ha Tay along with a few districts belonging to neighbouring provinces of Vinh Phuc and Hoa Binh. This more than tripled the capital's total area (from 900 to 3300 km²) and doubled its population (from 2.6 to 6.4 million). Since most of this new territory is administratively rural, it was not taken into consideration in this study.
5. The six rural administrative districts located within the pre-2008 boundaries of Hanoi's province were not included in the analysis since, in 2010, these hardly had any urban amenities such as parks.
6. In the absence of data on Hanoians' travel and commuting behaviours, walking and biking distances were estimated as follows: (1) assuming that in a context characterised by heavy traffic and limited open and green spaces, Hanoians are willing to travel for 15 min to go to a public space; and (2) using travel speeds of 72–90 m/minute by foot and 10–14 km/hour by bicycle were reported for comparable Asian cities (Barter 2008, Chang *et al.* 2008, Leather *et al.* 2011, Tiwari and Jain 2008).

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References

- Anh, Tran Huy, 2012. 120 năm “cơn khát” công trình công cộng Hà Nội [Hanoi's 120-year long “thirst” for public works] [online]. Available from <http://kienviet.net/2012/05/04/120-nam-con-khat-cong-trinh-cong-cong-ha-noi/> [Accessed May 29th 2013]
- Alvey, A.A., 2006. Promoting and preserving biodiversity in the urban forest. *Urban forestry and urban greening*, 5 (4), 195–201. doi:10.1016/j.ufug.2006.09.003.
- Barbosa, E.R.d.Q., Fernandes, P.C.A., and Nguyen, T.T., 2014. Urban morphology in the south—spontaneous and induced form. *Global Development Network—working paper series “Urbanization and Development: Delving Deeper into the Nexus”*.
- Barter, P., 2008. The status of bicycles in Singapore. *Bicycling in Asia* [Online], 49–65. Available from <http://www.cleanairinstitute.org/cops/bd/file/tnm/25-bicycling-in-asia.pdf>
- Boone, C.G., Buckley, G.L., Grove, J.M., and Sister, C., 2009. Parks and people: an environmental justice inquiry in Baltimore, Maryland. *Annals of the association of American geographers*, 99 (4), 767–787.
- Chang, S.K.J., Chang, H.W., and Lee, Y.K., 2008. The status of cycling in Taiwan. *Bicycling in Asia* [Online], 27–48. Available from <http://www.cleanairinstitute.org/cops/bd/file/tnm/25-bicycling-in-asia.pdf>
- Chiesura, A., 2004. The role of urban parks for the sustainable city. *Landscape and urban planning*, 68, 129–138.
- Cohen, P., Potchter, O., and Schnell, I., 2014. A methodological approach to the environmental quantitative assessment of urban parks. *Applied geography*, 48, 87–101. doi:10.1016/j.apgeog.2014.01.006.
- Drummond, L.B.W., 2000. Street scenes: practices of public and private space in urban Vietnam. *Urban studies*, 37 (12), 2377–2391. doi:10.1080/00420980020002850.
- Dong, Lao. 11 June 2015. Lấn chiếm khuôn viên ven hồ để kinh doanh [Encroaching lakeshore to do commercial activities] [online]. *Laodong.com*. Available from: <http://laodong.com.vn/trang-ha-noi/lan-chiem-khuon-vien-ven-ho-de-kinh-doanh-340012.bld>
- Dong, Nguoi Lao. 21 May 2015. Hàng quán đua nhau vây hồ Tây, dân đi bộ dưới lòng đường [Shops competing on the Ho Tay lakeshore, people having to walk on the street] [online]. *nld.com.vn*. Available from: <http://nld.com.vn/thoi-su-trong-nuoc/hang-quan-dua-nhau-vay-ho-tay-dan-di-bo-duoi-long-duong-20151019223950647.htm>
- Duan, Ho Dinh and Shibayama, M., 2009. Studies on Hanoi urban transition in the late 20th century based on GIS/RS. *Southeast Asian studies*, 46 (4), 532–546.
- Edwards, P., and Tsouros, A., 2006. *Promoting physical activity and active living in urban environments – The role of local governments the solid facts*. Copenhagen: WHO Regional Office for Europe.
- Gubry, P. 2010. *The Vietnamese city in transition*. Singapore: Institute of Southeast Asian Studies.
- HAIDEP, 2005. *Hanoi urban environment fact book*. Hanoi: The Comprehensive Urban Development Programme in Hanoi Capital City.
- Hogan, T., et al., 2012. Asian urbanisms and the privatization of cities. *Cities*, 29, 59–63.
- Huynh, D., 2015. The misuse of urban planning in Ho Chi Minh City. *Habitat international*, 48, 11–19.
- Kurfürst, S. 2012. *Redefining public space in Hanoi: places, practices and meaning*. (Doctor), Passau: University of Passau.
- Kürten, S., 2008. The transformation of public space in Hanoi. *Asien*, 108, 67–79.
- La Rosa, D., 2014. Accessibility to greenspaces: GIS based indicators for sustainable planning in a dense urban context. *Ecological Indicators*, 42, 122–134. doi:10.1016/j.ecolind.2013.11.011.
- Le, To Luong. 2013. *Urban Green Areas—their functions under a changing lifestyle of local people, the example of Hanoi*. (Doctor). Greifswald: Ernst-Moritz-Arndt-Universität Greifswald.
- Leather, J., et al. 2011. Walkability and pedestrian facilities in Asian cities: state and issues. *ADB sustainable development working paper series* [Online], 78. Available from: <https://www.adb.org/publications/walkability-and-pedestrian-facilities-asian-cities-state-and-issues>
- Logan, W., 2000. *Hanoi biography of a city*. Sydney: University of New South Whales Press.
- McCormack, G.R., et al., 2010. Characteristics of urban parks associated with park use and physical activity: a review of qualitative research. *Health and place*, 16 (4), 712–726. doi:10.1016/j.healthplace.2010.03.003.
- Orum, A.M. and Neal, Z.P., 2010. *Common ground?: readings and reflections on public space*. New York, NY: Routledge.
- Pham Duc, Uy and Nakagoshi, N., 2007. Analyzing urban green space pattern and eco-network in Hanoi, Vietnam. *Landscape and ecological engineering*, 3 (2), 143–157.

- Saksena, S., *et al.*, 2014. Classifying and mapping the urban transition in Vietnam. *Applied geography*, 50, 80–89. doi:10.1016/j.apgeog.2014.02.010.
- Sanders, P., Zuidgeest, M., and Geurs, K., 2015. Liveable streets in Hanoi: a principal component analysis. *Habitat International*, 49, 547–558.
- Shatkin, G., 2008. The city and the bottom line: urban megaprojects and the privatization of planning in Southeast Asia. *Environment and planning A*, 40, 383–401. doi:10.1068/a38439.
- Söderström, O. and Geertman, S., 2013. Loose threads: the translocal making of public space policy in Hanoi. *Singapore journal of tropical geography*, 34 (2), 244–260.
- Storch, H., Ecrert, R., and Pfaffenbichler, P. 2008. *The compactness of urban areas in Vietnam. Sustainable urban development and local mobility nodes*. Paper presented at the REAL CORP 008 Proceedings/Tagungsband, Vienna.
- Talen, E., 2010. The spatial logic of parks. *Journal of Urban Design*, 15 (4), 473–491. doi:10.1080/13574809.2010.502335.
- Thomas, M., 2002. Out of control: emergent cultural landscapes and political change in urban Vietnam. *Urban Studies*, 39 (9), 1611–1624. doi:10.1080/00420980220151682.
- Thi, Do. June 11th, 2012. *Hà Nội: Vô tư “xẻ thịt” công viên* [Hanoi: “butchering” park land] [online]. *Dothi.net*. Available from: <http://dothi.net/doi-song-do-thi/19033/ha-noi-vo-tu-%E2%80%9Cxe-thit%E2%80%9D-cong-vien.htm>
- Tiwari, G., and Jain, H. 2008. Bicycles in urban India. *Bicycling in Asia* [online], 9–25. Available from: <http://www.cleanairinstitute.org/cops/bd/file/tnm/25-bicycling-in-asia.pdf>
- Tran, H. and Chi, P.K., 2010. GIS-based management of urban trees and green spaces in Vietnamese cities. Greener cities – international workshop. Hanoi, Vietnam National University and Hanoi University of Sciences.
- Wang, D., Brown, G. and Liu, Y., 2015. The physical and non-physical factors that influence perceived access to urban parks. *Landscape and Urban Planning*, 133, 53–66. doi:10.1016/j.landurbplan.2014.09.007.
- Wendel, H.E.W., Zarger, R.K. and Mihelcic, J.R., 2012. Accessibility and usability: green space preferences, perceptions, and barriers in a rapidly urbanizing city in Latin America. *Landscape and urban planning*, 107, 272–282.
- Wilson, H., 2009. Observations and suggestions regarding the proposed Hanoi capital construction masterplan to 2030 and vision to 2050. International symposium for the Hanoi capital construction master plan to 2030 and vision 2050, Hanoi: 63–79.
- World Bank. (2011). *Vietnam urbanization review: technical assistance report* [online], 263. Available from: <http://documents.worldbank.org/curated/en/2011/11/15817674/vietnam-urbanization-review-technical-assistance-report>
- Yu, C. and Hien, W.N., 2006. Thermal benefits of city parks. *Energy and buildings*, 38 (2), 105–120. doi:10.1016/j.enbuild.2005.04.003.