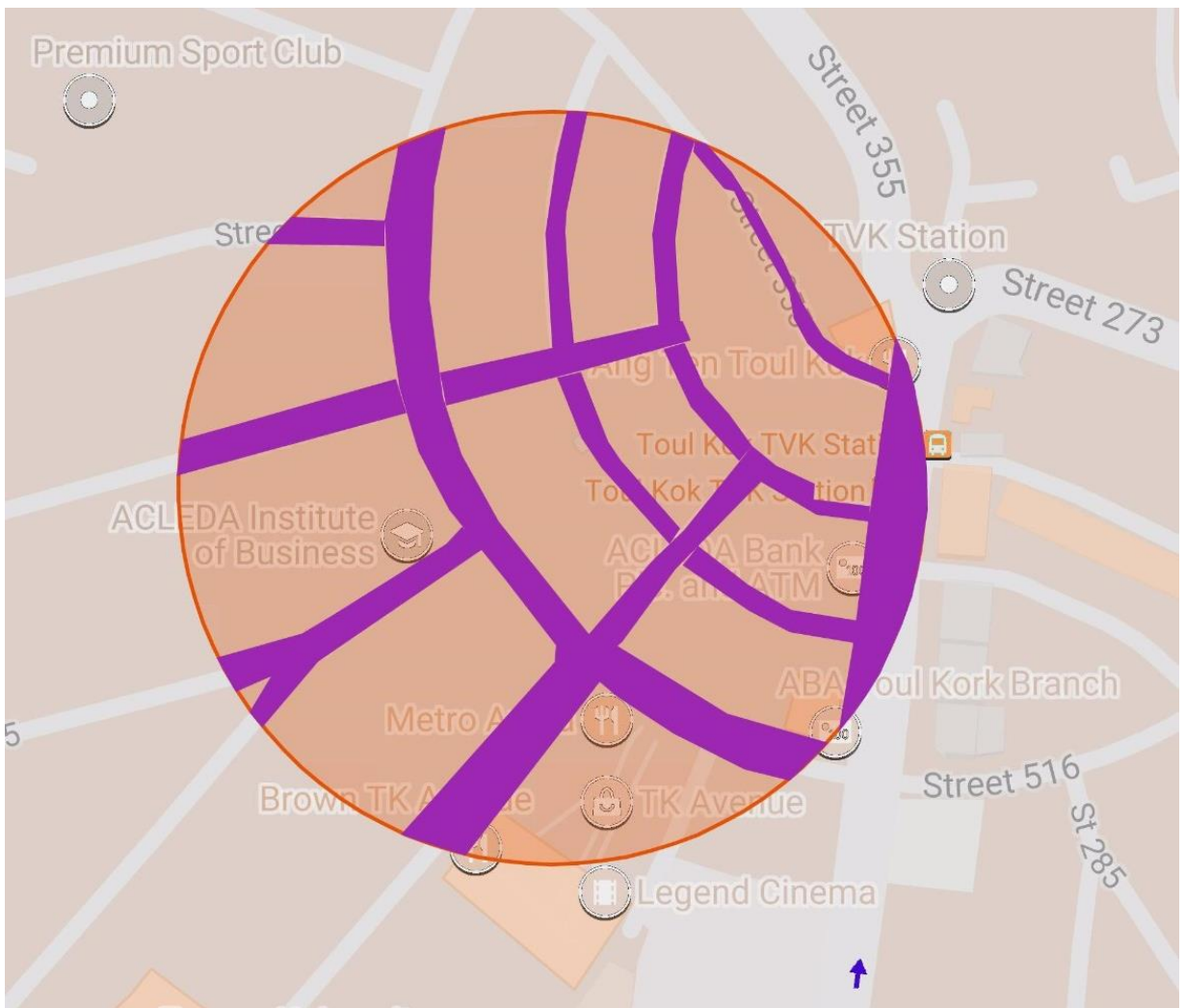

PUBLIC STREETS AND SIDEWALKS

FACTS AND FIGURES #36

The road to a more inclusive city

Streets and sidewalks allow access and movement to the citizens of Phnom Penh. Both are important drivers of economic growth, health and accessibility within a city. Under the Sustainable Development Goals, Indicator 11.7.1 provides a mechanism to assess the road, sidewalk and open space available for citizen use. This research applies this indicator to Phnom Penh.



KEY FINDINGS

1. Phnom Penh has a total public space percentage of 16.36%, with streets/sidewalks accounting for 14.26%, and open public spaces accounting for only 2.10%. Phnom Penh's inner khans should be aiming for the UN recommended ratio of 45%¹ public space and are currently well below this.
2. In Southeast Asia, Phnom Penh (16.48%) is ranked marginally above Bangkok (15.9%) and Manila (15.2%) for street/sidewalk space and significantly below Singapore (21.6%).
3. Urban poor communities have a much lower percentage of total public space (10.6%), indicating that land use in poorer communities may negatively affect the health of residents of these communities through lack of spaces to exercise.
4. Housing projects (boreys/gate communities), whose residents are typically middle to high income earners, have a much higher percentage of total public space (24.7%). This demonstrates the different amount of public space available to different groups based on location and wealth.
5. The inner khans have a much higher percentage of public space (21.49%) than the outer khans (10.75%), which suggests that lack of planning is greatly affecting the public space of the outer khans. Inner khans typically follow formal land use plans, such as those adopted during the French colonial period.

KEY TERMS

Public space: refers to all types of public space; inclusive of open public space, streets, sidewalks, alleyways, and bridges that are man-made and freely accessible. Does not include closed public spaces (indoors/controlled entry) such as libraries, museums etc.

Open public space: refers to public spaces that are open in their nature (not roofed or gated) and are easily accessible to the public; excludes sidewalks, streets, closed public spaces, and other areas based on the definition outlined in Facts & Figures #35: Public Spaces (STT:2018).

Streets and sidewalks: refers to streets and the areas immediately adjacent to the streets that are not on private property and are, or could be, available for use by pedestrians alongside the street.

¹ UN-HABITAT, 'Metadata Goal 11' (2016).

Gated communities/boreys: refers to housing projects that are separated from other communities through control of access either by walls or gates. Some boreys are publicly accessible and others are not.

Urban poor communities: refers to communities that were identified through the 2017 Phnom Penh Survey (STT:2018) that have ten or more families living in houses which lack one or more of the following criteria: Durable housing of a permanent nature that protects against extreme climate conditions; Sufficient living space, which means not more than three people sharing the same room; Easy access to safe water, in sufficient amounts, and at an affordable price; Access to adequate sanitation in the form of a private or public shared toilet by a reasonable number of people; Security of tenure that prevents forced evictions.

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1. INTRODUCTION

The objective of this report is to provide publicly available information on street and sidewalk space, thereby informing the discussion on public space in Phnom Penh, and to provide key insights into the inclusivity of the city based on the findings.

Under the Sustainable Development Goals (SDGs), SDG 11 outlines the need to '[m]ake cities and human settlements inclusive, safe, resilient and sustainable'. Inclusive cities can be understood as those cities in which all residents feel equally able to participate without hindrance due to political, racial, gender or socio-economic background.

In order to achieve this, Target 11.7 (*provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities*) has been employed to indicate partial achievement of the overall goal. This report will also develop further ideas and arguments presented in Facts & Figures #35: Public Space, to gain a deeper understanding by including streets and sidewalks into the public space discourse as previously discussed.

Streets and sidewalks are important public spaces providing access to the city that helps to increase inclusivity. Benefits, such as a space for exercise,

artistic expression, protest, democratic participation, and improved access, all help to improve a city's inclusivity. Many of these benefits have already been documented in the open public spaces of Phnom Penh². Streets, including sidewalks, as drivers of economic and social development is well-established in development literature³ and this can be seen in some areas of Phnom Penh, where roads serve as multi-purpose public spaces. In addition to operating as areas for transport, roads can be multi-use spaces, allowing children to play soccer, markets and street vendors to participate in the economy, or as areas for democratic participation, such as through a march or protest.

In contrast to a recent report by the Cambodian Center for Human Rights⁴ (CCHR), which recommended that SDG 11 was not a priority goal for Cambodia, this report argues that SDG 11 is of the utmost importance for creating a more equitable and inclusive society. Public spaces can help to achieve other SDGs, such as SDG 3, which focuses on 'good health and wellbeing' through the provision of easily accessible areas to exercise and by creating a more walkable city.

Public spaces are also important for human rights. The right to freedom of expression, assembly, movement, and free information often depend on the

² Sahmakum Teang Tnaut (STT), 'Facts & Figures #35: Public Spaces' (2018).

³ UN-HABITAT, 'Streets as public spaces and drivers of urban prosperity' (2013).

⁴ CCHR, 'Analysis of Cambodia's Preparedness for the Implementation of Sustainable Development Goals' (2015).

unwritten and under-recognised right to physical public spaces⁵.

This research will show that the areas of the city that require priority in improved access to public spaces are the more impoverished areas of Phnom Penh, typically urban poor communities, and argues that these areas require improved access to public spaces in order to increase the inclusivity of the city.

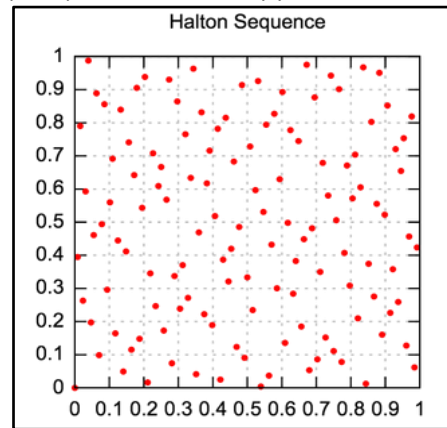
2. METHODOLOGY

This report utilizes (as closely as possible) the indicator methodology outlined by UN-HABITAT⁶ for indicator 11.7.1 of the Sustainable Development Goals. Indicator 11.7.1 measures the 'average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities'. Under this indicator, the percentage of total public space (open public spaces, streets and sidewalks) in Phnom Penh is calculated based on sample circles. This data is then used to determine the sufficiency of public space within a city and can be compared to other cities.

In order to calculate the percentage of public space within the built-up area of cities, the following methodology was applied.

1. Generate the Halton sequence across the city on a grid of 10km/10km. Sample area circles are placed on the points generated by the sequence and are 0.1km² in total area.⁷

The Halton sequence allows for the spacing of semi-randomised data points. This means that the researchers were unable to effect where circles were placed, but the sequence ensures a more equal spreading of data points across a range than randomised data point placements will likely yield.



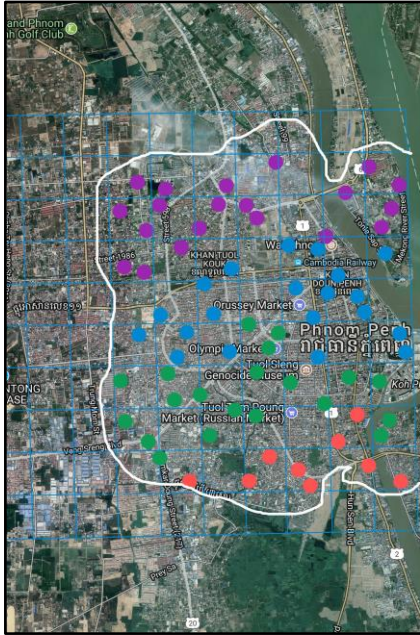
2. Eliminate any circles that are outside the 'built-up' area of the city.

31 circles were deleted as they were found to be outside the 'built-up' area of Phnom Penh, which left 69 circles to review as seen in the image below (the white line is the built-up area of the city as determined by the researchers).

⁵ Parkinson, J. 'Democracy and public space: the physical sites of democratic performance'. Oxford University Press (2012).

⁶ UN-HABITAT, 'Metadata Goal 11' (2016).

⁷ Technical issues meant that the circles used for this research were 0.098km² instead of 0.1km² circles.



3. Map the streets/sidewalks within each circle and calculate their total area.

Mapping was conducted using Google satellite imagery and the Google My Maps program. Streets and sidewalks were checked using Google street view or through ground checks where possible.

4. Map the public spaces (other than streets/sidewalks) and calculate their total area.

Open public spaces (other than streets/sidewalks) were mapped previously⁸ and the data was transferred over to this research.

5. Map the space that is river or lake and calculate the total area, then subtract this area from the total surface area of an individual circle within which it resides.

Rivers and lakes were discounted from the individual circles in which they were found to

⁸ Sahmakum Teang Tnaut (STT), 'Facts & Figures #35: Public Spaces' (2018).

improve the accuracy of the report as they represent areas that cannot be used to create public spaces.

6. Apply the following formula to all circles:

Proportion of total public space =

$$\frac{\text{total surface of open public space} + \text{total surface of land allocated to streets/sidewalks}}{\text{total surface of built up area of the urban agglomeration}}$$

This then allows a % of public space to be calculated that can be used as an indicator⁹.

Additional methodology includes observational analysis and a desk review.

3. LIMITATIONS

The following limitations are noted:

1. Google satellite imagery may not be fully accurate (particularly for small alleyways in urban poor communities). As such, the figures presented are estimates.
2. Without official government documentation, it is not possible to determine, with accuracy, the extent to which streets are public. Ground checks have confirmed some areas of private property (and as such have been removed

⁹ For a more detailed explanation of the methodology please see the UN-HABITAT document titled 'Metadata Goal 11' (2016).

from this research) but this information is limited.

3. Other limitations as outlined within the UN-HABITAT document titled 'Metadata Goal 11' (2016) for the methodology under this indicator.
4. The proportion of total public space for Phnom Penh is an indicator of space. It does not provide any indication as to the quality or accessibility of said space.

4. FINDINGS

Lack of public space

Table 1 outlines the total percentages of public space uncovered by this research. Phnom Penh should be aiming for a total public space percentage of 45% for the inner khans¹⁰ and closer to 35% for the outer khans based on the internationally accepted standards¹¹. The total percentage of 16.36% is well below the generally accepted minimum standard.

Table 1: Public space breakdown

Breakdown	%
Public space in Phnom Penh (streets, sidewalks and open spaces)	16.36
Open public space	2.10
Street and sidewalk space	14.26

The 2.10% of open space (referring to public space that is open and neither

street nor sidewalk) is extremely poor given the standard recommendation of 15%¹². A possible result of the 2001 Land Law is that open public space is under threat of being turned into private spaces. This is the result of the law failing to adequately account for public use or opinion when reclassifying land from 'state public land' to 'state private land'¹³. In addition, of the open public space in Phnom Penh, Chamkarmon, Daun Penh and Prampi Makara account for over 71% of all open public spaces in the city, meaning residents from other areas of the city are vastly under-resourced in this regard and indicating that more public space should be developed in the other khans¹⁴. Improved public transport to open public spaces should be considered to boost their accessibility for outer khan residents.

Table 2: Public space totals within Phnom Penh

Public space totals	%
Outer khan total public space (34 circles)	10.75
Inner khan total public space (35 circles)	21.49
Outer khan street/sidewalks	10.75
Inner khan streets/sidewalks	17.19
Outer khan open public space	0.00
Inner khan total open public space	4.3
City core streets/sidewalks (16 circles)	16.48

¹⁰ UN-HABITAT, 'Metadata Goal 11' (2016)

¹¹ Ibid.

¹² Ibid.

¹³ See STT's 'Facts & Figures #35: Public Space' (2018)

¹⁴ Ibid (footnote 11).

Table 2 illustrates the disparity between public space percentages in the inner and outer khans. Inner khan public space is much more likely to have been professionally planned, especially during the French colonial period, and this has resulted in higher percentages. The outer khan's poor public space percentages are the result of urban sprawl, which is likely a result of an extremely high migration to Phnom Penh that resulted in an average population growth of 8% per annum in 2014 caused in some part by the city doubling its population in 12 years between 1996 - 2008¹⁵. These numbers are an early warning sign of the expected public space percentages that result from urban sprawl and unplanned expansion.

The following images represent the scope of urban sprawl between 2003 – 2013.



Phnom Penh 2003 satellite image (Open Development Cambodia 2018).



Phnom Penh 2013 satellite image (Open Development Cambodia 2018).

Table 3: Comparison of street/sidewalk (worldwide).¹⁶

City-core	%
New York (USA)	36
Barcelona (Spain)	33
Paris (France)	29.7
Sydney (Australia)	25.7
Phnom Penh (Cambodia)	16.48
Dhaka (Bangladesh)	8
Yerevan (Armenia)	6.1

Table 4: Comparison of street/sidewalk (Southeast Asia).¹⁷

City-core	%
Singapore (Singapore)	21.6
Phnom Penh (Cambodia)	16.48
Bangkok (Thailand)	15.9
Manila (Philippines)	15.2

In comparison with other cities, Phnom Penh does not rank too far behind its Southeast Asian neighbours for which

¹⁵ Ministry of Planning - Cambodian Government 'Migration in Cambodia' (2012).

¹⁶ UN-HABITAT, 'Streets as public spaces and drivers of urban prosperity' (2013).

¹⁷ Ibid (footnote 10.).

data is available, but ranks well below international cities such as Barcelona, Paris and New York. These comparisons provide a backdrop for further understanding of public space within cities across the world, but without a more in-depth review of the findings the numbers present very little other than a literal top-down view of the city's space.

Inaccessibility of sidewalks

The indicator used for this research is limited in its capacity to provide a clear picture of inclusive and accessible green and public spaces. Walkability within the city cannot be accurately portrayed from the figures presented in Table 1 alone. Public sidewalks exist within Phnom Penh, sporadically, but they are rarely accessible due to (1) the high number of cars and motorbikes occupying them, (2) street vending and private use by owners of the property nearby and (3) road design.

Problems (1) and (2) can be linked to a misunderstanding, general ignorance, or lack of knowledge of the laws regarding parking on or occupying the sidewalks¹⁸. However, there is also a lack of parking spaces for cars within the city. Recent projects are providing parking spaces and this may help to open up sidewalk areas, but greater attention to enforcing the law and improving urban design is also required to open up Phnom Penh's sidewalks.

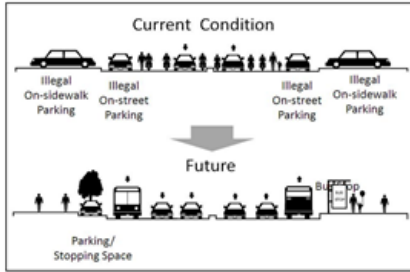
Problem (2) is also an issue that has been observed in open public spaces and requires further research. The use of public spaces by private citizens to engage in the economy should not be discouraged unless it impacts upon the well-being of public spaces or the well-being that is created by the public spaces. In this case, the well-being that could be achieved through access to sidewalks is unrealised as the obstruction of sidewalks by private citizens strains their accessibility and renders them unusable at times. However, street vendors should not be discouraged from using public space without undertaking further participatory research on the impacts that this may have to street vendors and without mitigation strategies developed. Street vendors are often poor internal migrants¹⁹ and should be considered a legitimate part of the economy.

Problem (3) is that many streets lack properly designed sidewalks or have been designed without sidewalks. Design of streets has often meant that areas for pedestrians don't exist and this requires more accountability in planning and more inclusion of walkability principles within planning design. This image (below) presents the recommendations of an expert on Cambodia during a group meeting held by the UN in 2016²⁰.

¹⁸ Cambodian Government, 'Law on the Road' (2014). - This law states that sidewalks cannot be parked across or on by motor vehicles. The law does not define what the sidewalk is.

¹⁹ Kusakabe, K. 'On the borders of legality'. International Labor Office (2006).

²⁰ United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) - located at: www.unescap.org/sites/default/files/Country%20Report_Cambodia_SUT1.pdf (2016).



As such, the difference between Phnom Penh, (in which many sidewalks are purely aesthetic and better described as car parks), and Bangkok is likely to be much larger than 1.6 percentage points in terms of walkability.

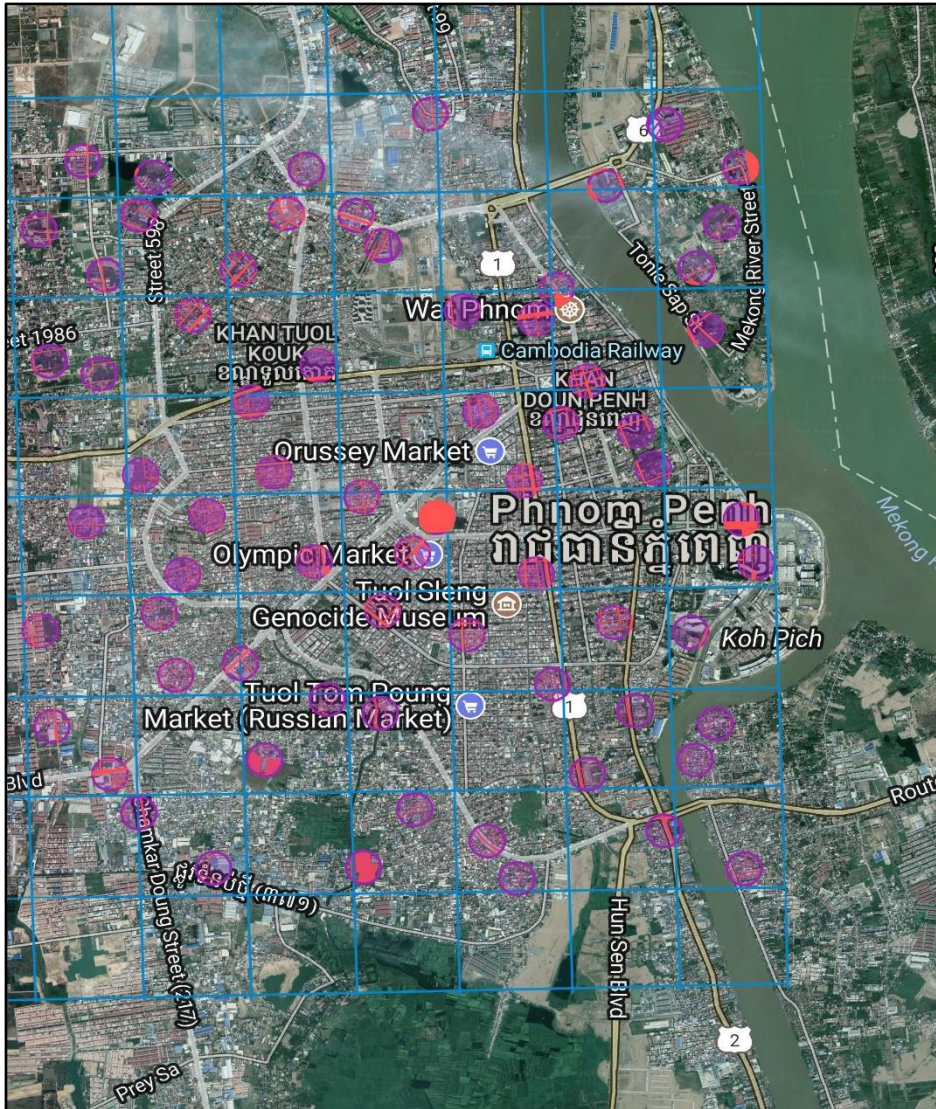
Re-thinking the design and use of streets to achieve better public space access for pedestrians is key to creating a more inclusive city.



A sidewalk in Phnom Penh (STT 2018).

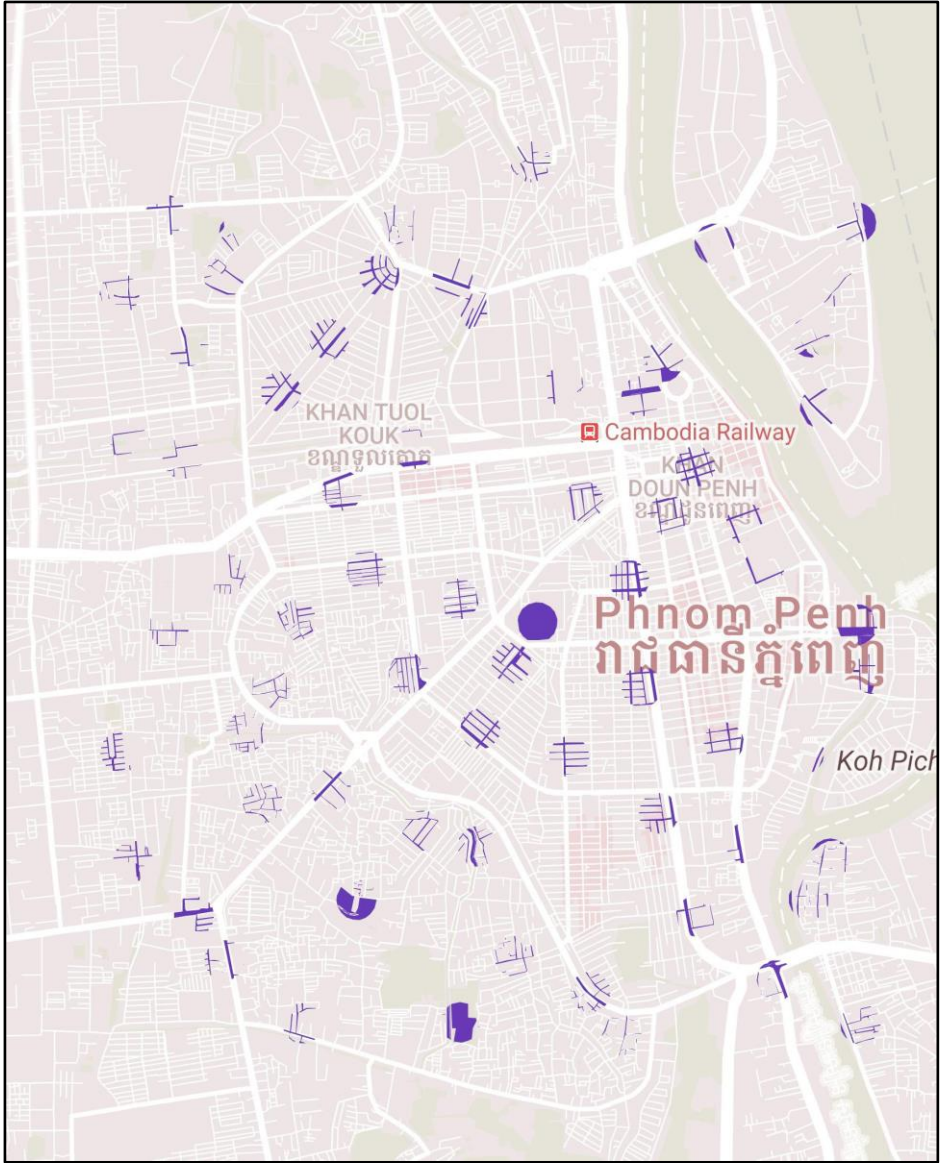
Design documents, such as the one above, often do not incorporate street vendors and this needs greater attention to ensure vendors are not impacted upon unjustly. So far, the government has done a reasonably good job of protecting street vendors and this should be commended, however, there are recent instances of vendors being removed from public spaces²¹ and more clarity on government policy is required in this area.

²¹<https://www.phnompenhpost.com/national/unhappy-hour-bars-other-vendors-cleared-phnom-penhs-wat-botum-park>



Map 1: Halton sequence applied to Phnom Penh City.

69 circles (area=0.098km² per circle) placed using Halton sequence over a 10km x 10km grid. Orange areas are streets, sidewalks, open public spaces and deleted spaces (either rivers or lakes).



Map 2: Halton sequence results


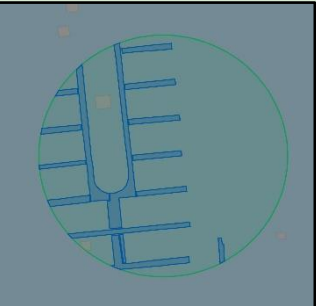
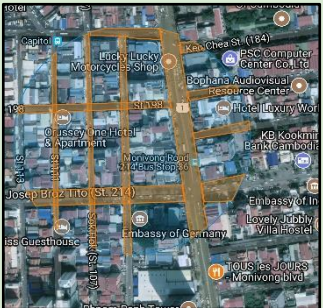
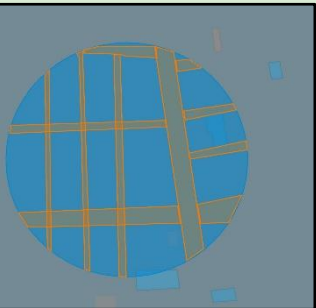
Detected roads, walkways, public spaces and 'deleted spaces'.

Land use and public space divide between different groups

A wide variety of land uses appeared after analysis of the 69 circles. Table 5 illustrates and describes the different classifications of land uses in Phnom Penh borrowing some of these from the Lincoln Institute of Land Policy, NYU and UN-Habitat Urban Expansion Program.²²

Table 5: Land use classification patterns

(based on land dedicated to streets, sidewalks and open public space).

Land use classification	Satellite imagery	Street outline map
<p><u>Gated communities/private projects</u></p> <p>Gated communities, referred to as ‘boreys’ in Khmer and occasionally called ‘satellite cities’, are a type of land use characterised by their uniform design, walled perimeters and, almost always, gated entry points with security personnel. In addition to being clean and orderly they also have the highest percentage of street/sidewalk space in the city. Gated communities often have exclusive ‘public land’ (only accessible to the residents of the community). There are estimated to be over 300 gated communities within Phnom Penh²³. Gated communities are formally planned, mostly lived in by middle to high income earners, and are a recent addition to the city (typically built within the last 10 years).</p>		
<p><u>Formal use</u></p> <p>Formal use is characterised by clearly defined ‘blocks’ or plots of land which are developed and have high-rise buildings, consist of larger plots of land and some uniformity. Formal use makes up a large percentage of land within the city-core. Formal use is the result of French colonial design plans and the legacy of French planning.</p>		

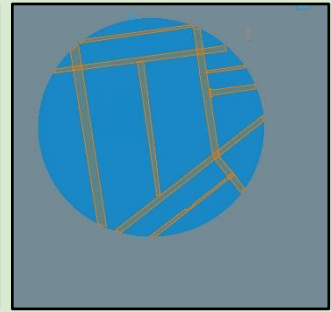
²² Atlas et al, ‘Atlas of Urban Expansion’, Lincoln Institute of Land Policy (2012).

²³ Estimates from STT’s research database; it is likely the number is even higher.

Informal use

Informal use is similar to formal use but is less uniform, with less development, and with a higher percentage of smaller streets and alleys than boulevards and large streets. Informal use combined with formal use

land accounts for the majority of land in Phnom Penh's city core. Informal use is partially the result of the legacy of French planning during the colonial era.



Atomistic/Urban poor

Atomistic land use (inhabited by urban poor communities) are identified as areas with small houses, small streets, unclear demarcations for plots and poorly planned layouts. These communities often have many hidden

streets that are too small to identify through satellite imagery. Urban poor communities rarely have public space and roads tend to be of poor quality in, often made of dirt, and are made worse by flooding and rain, which can leave them in an unusable state afterwards. Atomistic land use has little planning and is sometimes the result of unplanned and unregulated internal migration.



Peri-urban/scattered development within the built-up city

Peri-urban use is usually found on the fringes of cities, instead of within the built-up area. It is unclear what land is being developed and what land is in dormant use, but the existence of peri-urban land use within the built-up area of the city likely indicates rapid urban growth due to signs of unused land plots becoming surrounded by built-up areas. Peri-urban land use has the lowest percentage for public space and is likely haphazardly planned.

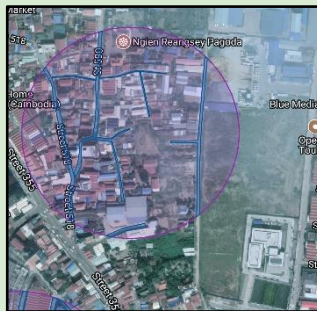
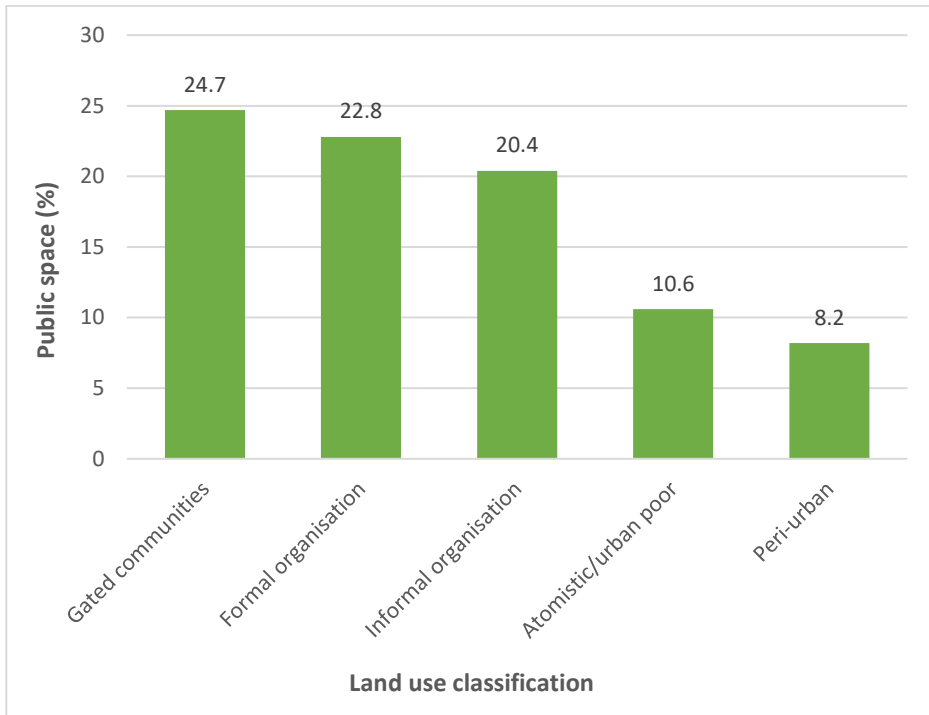


Figure 1. Public space % and land use classification



As is demonstrated in graph 1, gated communities have the highest public space percentages, whereas peri-urban and urban poor communities have much lower percentages of public space. This is likely due to two main factors: (1) planning is significantly more formalised in the areas of higher public space percentages (especially gated communities), and (2) the lack of government support in areas outside of the inner khans for open public spaces is very little.

By classifying land by its use, the different patterns that emerge begin to paint a picture of the city that allows the reader to see how different groups are able to access public spaces. The relationship between land use patterns and public space indicates the need for greater amounts of public space in urban poor and peri-urban communities.

Case Study: Putting up walls



Map 3 (left) and **Map 4** (right) of Borey Peng Huoth The Star Natural (outline in orange) and Prek Takong Mouy (outline in purple).

On Boeung Tompun lake's borders, Borey Peng Huoth - The Star Natural, and Prek Takong Mouy sit side-by-side, separated only by a tall concrete wall. Apart from the location, the two communities share almost nothing in common. Borey Peng Huoth has been built following the gated community/housing project land use pattern, whereas Prek Takong Mouy is a combination of urban poor and peri-urban land use. In part this is because Borey Peng Huoth has recently been established, undergoing planning and driven by the private sector during the housing boom that Phnom Penh is currently experiencing. In contrast, residents of Prek Takong Mouy trace their claims to land back to the 1960s and 1990s mostly as aquatic farmers and migrants after the Khmer rouge era.

Borey Peng Huoth typifies a gated community, with clearly demarcated plots of land, large houses, trees, paved streets, sidewalks and open public space all of which accounts for a staggering 38.06%²⁴ of the total land area within the walls.

Over the wall, Prek Takong Mouy is more typical of an urban poor community, with small houses surrounding a dirt road that contributes marginally to the 7.41%²⁵ of the

²⁴ STT generated data for this case study using the formula under 6. of methodology but instead of using sample circles the entirety of the communities boundaries were used for total area calculations.

²⁵ Ibid (footnote 14).

total public space within the community. Prek Takong Muoy does have the natural beauty and publicly accessible space of the Boeung Tompun lake at its doorstep, but the lake is slowly being in-filled with sand, and sewerage drains running directly into the lake from a canal in the north-east make it unsafe to use for swimming. Aquatic farms are visible on the lake in map 5 and another gated community is planned to the east where sand has already been piled-up and streets marked.

Residents in Borey Peng Huoth can enjoy 5 different open public spaces, including a pool, a gym, two parks and gardens, without leaving their community. Across the wall, residents of Prek Takong Muoy have no open public space and are 5.5 kilometres away from the closest publicly accessible park.



Public space within Borey Peng Huoth and the wall that divides the two communities (STT 2018).

There are at least 277 communities similar to Prek Takong Muoy, which is defined as urban poor under STT's latest Phnom Penh Survey²⁶. Most are located far away from open public spaces and as the data in graph 1 indicates, they likely have poor public space percentages.

There are also hundreds more communities like Borey Peng Huoth, most of which restrict access through the use of walls, guards and gates. These communities help to raise the average total public space percentages of Phnom Penh, but, without allowing access to outside residents and the general public, they do not increase the inclusivity of the city. As a key purpose of SDG 11 is inclusivity within cities, it is questionable whether boreys have any place in an inclusive city.

²⁶ STT, '2017 Phnom Penh Survey' (2018).

CONCLUSION

Public spaces provide places for exercise, expression, areas for relaxation, socialisation, organisation and access, as well as other benefits to the general public, but especially to the poor and marginalised who are much more likely to lack or not be able to afford access to these benefits. This study has demonstrated the following points:

1. Phnom Penh does not have enough public space under UN-Habitat's indicator 11.7.1 and minimum standards, especially for open public spaces.
2. Phnom Penh's public space benefits its residents unequally, with gated communities having much higher percentages of public space than other groups.
3. Urban poor/peri-urban communities are severely lacking public space.

The evidence provided from the research paints a picture of a city that is not inclusive and does not benefit citizens equally.

RECOMMENDATIONS

Municipality of Phnom Penh

1. Develop and adhere strictly to city plans that optimize public space percentages, are participatory, and are transparent.
2. Improve existing space: In order to do this, parking areas will need to

be provided and these parking areas should be used to generate revenue for other public space projects.

- i. Walkability principles should be considered and adhered to (as much as possible) in future planning and this report recommends prioritising walkability over private transport to encourage a greener and healthier lifestyle for citizens of Phnom Penh. In addition, bicycle lanes should be painted on main streets.
 - ii. Improve current sidewalk design to encourage utilisation for use by all citizens.
3. Achieving SDG 11 through inclusivity: Public space development should be prioritised in urban poor and peri-urban communities to ensure that street and sidewalk space is improved for those that lack it the most.
 4. Prohibit the development of gated communities and focus on development of areas that bring communities closer together.
 5. Make clear the process, definitions and requirements for the provision of sidewalks and car parking spaces and ensure they are abided by and enforced under the Road Law of 2014.

NGO, civil society and researchers

6. Public transport should be researched further to better inform policy and increase

accessibility and mobility within the city.

7. Street vendors and private sellers operating on public space should be researched further, using

participatory methodology, to inform policy and possible implications of removing or limiting selling in the informal economy.



A street that doubles as a market near Wat Phnom (STT 2018).



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