

CONTEXTUALISING URBAN LIVEABILITY IN BANGKOK, THAILAND

Pilot Project Summary Report



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Suggested citation: Alderton A, Nitvimol K, Laidlaw J, Ryan E, Davern M, Butterworth I, Badland H. (2018). Contextualising urban liveability in Bangkok, Thailand: Pilot project summary report. RMIT University: Melbourne.

Funding and acknowledgements: We would like to acknowledge and thank the Bangkok Metropolitan Administration Liveability Working Group for their input throughout this pilot project. This project was funded by the VicHealth Sustainable Grants Partnership Round. Hannah Badland is supported by a RMIT University Vice Chancellor’s Senior Research Fellowship and the 2018 Australasian Health Promotion Association Thinker in Residence. Images were sourced from Pexels.com and Pixabay.com.

ISBN: 978-0-6483390-0-7

EXECUTIVE SUMMARY

Creating 'liveable' cities, and how best to measure and monitor progress towards this goal, have become priorities for various sectors, including those tasked with improving population health and reducing health inequities. The UN Sustainable Development Goals (SDGs) provide an overarching global framework for enabling and delivering more sustainable urban development. Key challenges to achieving the SDGs are that cities exist in many different contexts, and accordingly, there are likely other, and / or different prioritisation of liveability attributes in low-to-middle income countries (LMICs) that may differ from high income countries.

The aims of this pilot project were to: 1) conceptualise urban liveability within the Bangkok, Thailand context; 2) identify alignment or divergence from other existing urban liveability tools; and 3) identify potential data sources and indicators for use within a Pilot Bangkok Liveability Framework.

In partnership with the Bangkok Metropolitan Administration (BMA), the UN Global Compact – Cities Programme, and the Victorian Department of Health and Human Services, we sought to accomplish the following objectives:

- Develop a definition of urban liveability suitable for use in the Bangkok context, and potentially other LMICs;
- Establish a BMA Liveability Working Group;
- Identify and prioritise potential liveability indicators and spatial data sources for inclusion in a Pilot Bangkok Liveability Framework aligned to the SDGs and other existing liveability tools;
- Explore core issues for BMA to populate and operationalise the Pilot Bangkok Liveability Indicator Framework.

Findings from a workshop held in 2017 with the BMA and a review of international liveability literature informed the draft list of potential liveability indicators. The BMA Liveability Working Group led the selection of indicators for relevance in the Bangkok context, and these were further reviewed and prioritised by key informants from the BMA. The priority list of indicators, alongside potential spatial data sources and data custodians, formed the Pilot Bangkok Liveability Framework.

This pilot project conceptualised urban liveability in the context of a city in a LMIC (Bangkok, Thailand), with potential scalability to other cities. The Framework provides a practical tool for measuring and monitoring liveability in Bangkok with close alignment to the SDGs and the social determinants of health. Project findings suggest that future work should leverage opportunities for local capacity building in spatial data expertise and evidence-based urban governance in Bangkok. This will enable better monitoring of liveability achievements over time as well as better health and wellbeing outcomes derived through action on the social determinants of health.

THE URBAN LIVEABILITY AGENDA AND EVIDENCE BASE

Creating 'liveable' cities, and how best to measure and monitor progress towards these have become priorities for various sectors, including those tasked with improving population health and reducing inequities (1). **Half of the world's population lives in cities**, and an estimated two-thirds of people will be living in urban settlements by 2050 (2). This puts enormous pressure on diverse sectors including government, private sector, and civil society to create cities and neighbourhoods that are resilient, sustainable, inclusive, equitable, economically productive, and support good health and wellbeing (2). The urban liveability agenda provides a timely mechanism for re-establishing the interdependence of urban planning, place, and population health that was evident in the 19th century (3). By holistically connecting health and place under the umbrella of urban liveability it allows for better understanding of **potential 'upstream' intervention points** for effective integrated urban policy making.

The UN Sustainable Development Goals (SDGs) provide an overarching global framework for enabling and delivering more sustainable urban development (4). The SDGs define the scope for the 2030 Agenda for Sustainable Development internationally, and have been signed by all 193 UN member states. The creation of liveable cities responds directly to SDG Goal 11 to 'make cities inclusive, safe, resilient, and sustainable'; SDG Goal 3 to 'ensure healthy lives and promote well-being for all at all ages'; and SDG Goal 17 to 'revitalise the global partnership for sustainable development'. Further, the New Urban Agenda, as part of the SDG remit, is aimed at government, non-government, and the private sector to establish key

commitments for sustainable and equitable urban development over the next two decades (4).

Coupled with the increasing availability of fine-grained spatial data and software, a body of interdisciplinary research has emerged over the last decade that purposively seeks to capture and measure components of liveability within cities, such as walkability, and investigate and establish associations with health and wellbeing (5-8). While the magnitude of association varies by built environment exposure and health behaviour or outcome considered (8), this body of evidence has led to major public health organisations advocating the importance of the built environment and urban liveability in shaping population health outcomes (3, 9, 10, 11).

Internationally, the challenges of increasing urbanisation and population growth present a number of opportunities and risks. A failure to design more liveable cities will risk exacerbating current trends such as climate change, the rising burden of non-communicable diseases, and widening health inequities (8). For example, availability and accessibility of public transport can reduce car dependence and encourage more active forms of transport, including walking. Lack of



investment in adequate public transport infrastructure reinforces car dependence, resulting in increased localised air and traffic pollution. At the same time, car dependence promotes a more sedentary lifestyle, which is associated with a range of non-communicable diseases including obesity and cardiovascular disease (12-14). Further, access to public transport is a social determinant of health which plays a role in perpetuating health and social inequities (15). Therefore, a failure to provide adequate access to public transport across urban areas will contribute to poorer outcomes and perpetuate – or potentially widen – health inequities (8). Indeed, liveability is closely aligned with the concept of social determinants of health (16) and promoting liveability across urban areas can help narrow health inequities through action on the ‘upstream’ social determinants (8, 17). Consequently, urban liveability offers many co-benefits with potential to address multiple SDGs while promoting health and wellbeing.

Reconceptualising urban liveability for a low-to-middle income country context

Given that urbanisation acceleration is fastest in cities within low-to-middle income countries (LMICs) (2), creating liveable cities in these settings is an urgent global priority. However, there is limited guidance about what constitutes a liveable city or neighbourhood from a LMIC perspective (18, 19). In the Australian context, liveable cities have been conceptualised as *'safe, attractive, socially cohesive and inclusive, and environmentally sustainable, with affordable and diverse housing linked to employment, education, public open space, local shops, health and community services, and leisure and cultural opportunities, via convenient public transport, walking, and cycling infrastructure'* (20). However, there is a need to go beyond this Australian-centric definition to understand priority liveability attributes from a LMIC perspective.

One key challenge for urban planners and policymakers to achieve the SDGs is that cities exist in many different contexts, and accordingly, there are likely other, and / or different prioritisation of, liveability attributes in LMICs that differ to high income countries (21). For example, residents in LMICs may live in informal settlements, and / or have limited access to clean drinking water and sanitation (8). These likely impact the liveability of a city, yet existing definitions of urban liveability have predominantly emerged from high-income country contexts and do not adequately capture these nuances (16). Thus, there is a need to contextualise liveability from a LMIC perspective so that actions to enhance urban liveability are responsive to the diverse contexts and aspirations of cities. Once urban liveability is (re)conceptualised, there is a further need to consider what data are available in LMICs and the scale at which these data can be applied for monitoring progress towards greater liveability for all.

Opportunities for reciprocal learning

By re-conceptualising liveability for diverse contexts, an opportunity exists to create communities of practice around urban liveability that promote reciprocal learning. Cities in high- and low-income country contexts face similar broad challenges as a result of population growth, urbanisation, and climate change; therefore, conceptualising liveability in a LMIC sets the foundation for future collaborations and two-way knowledge sharing between cities.



PILOT PROJECT SCOPE AND AIMS

The aims of this pilot project were to: 1) conceptualise urban liveability within the Bangkok, Thailand context; 2) identify alignment to or divergence from other existing urban liveability tools; and 3) identify potential data sources and indicators for use within a Pilot Bangkok Liveability Framework.

This project sought to accomplish the following objectives in partnership with the: Bangkok Metropolitan Administration (BMA); UN Global Compact – Cities Programme; and Victorian Department of Health and Human Services:

- Develop a definition of urban liveability suitable for use in the Bangkok context, and potentially other LMICs;
- Establish a BMA Liveability Working Group
- Identify and prioritise potential liveability indicators aligned to the SDGs and spatial data sources for inclusion in a Pilot Bangkok Liveability Framework;
- Explore core issues necessary for the BMA to populate and operationalise the Bangkok Pilot Liveability Indicator Framework.

The project was executed in several stages as presented in Figure 1, and was purposefully designed as an iterative process to maximise opportunities for BMA input.

The pilot project was structured in several stages to ensure that the Pilot Bangkok Liveability Framework included indicators that **were relevant to Bangkok’s context and reflected the BMA’s strategic priorities**. These stages included:

- 1) BMA identification of pressing urban issues at the Urban Liveability and Resilience Program (run by the UN Global Compact – Cities Programme in 2017, and used as foundation material to inform this pilot project);
- 2) a desktop rapid review of liveability literature specific to LMICs and alignment with existing urban liveability tools;
- 3) establishment and collaboration with BMA Liveability Working Group;
- 4) indicator review and prioritization by key BMA informants, and
- 5) identification of potential spatial data sources to populate the indicators and inform the Bangkok Pilot Liveability Framework.

Each stage is discussed in greater detail in the following sections.



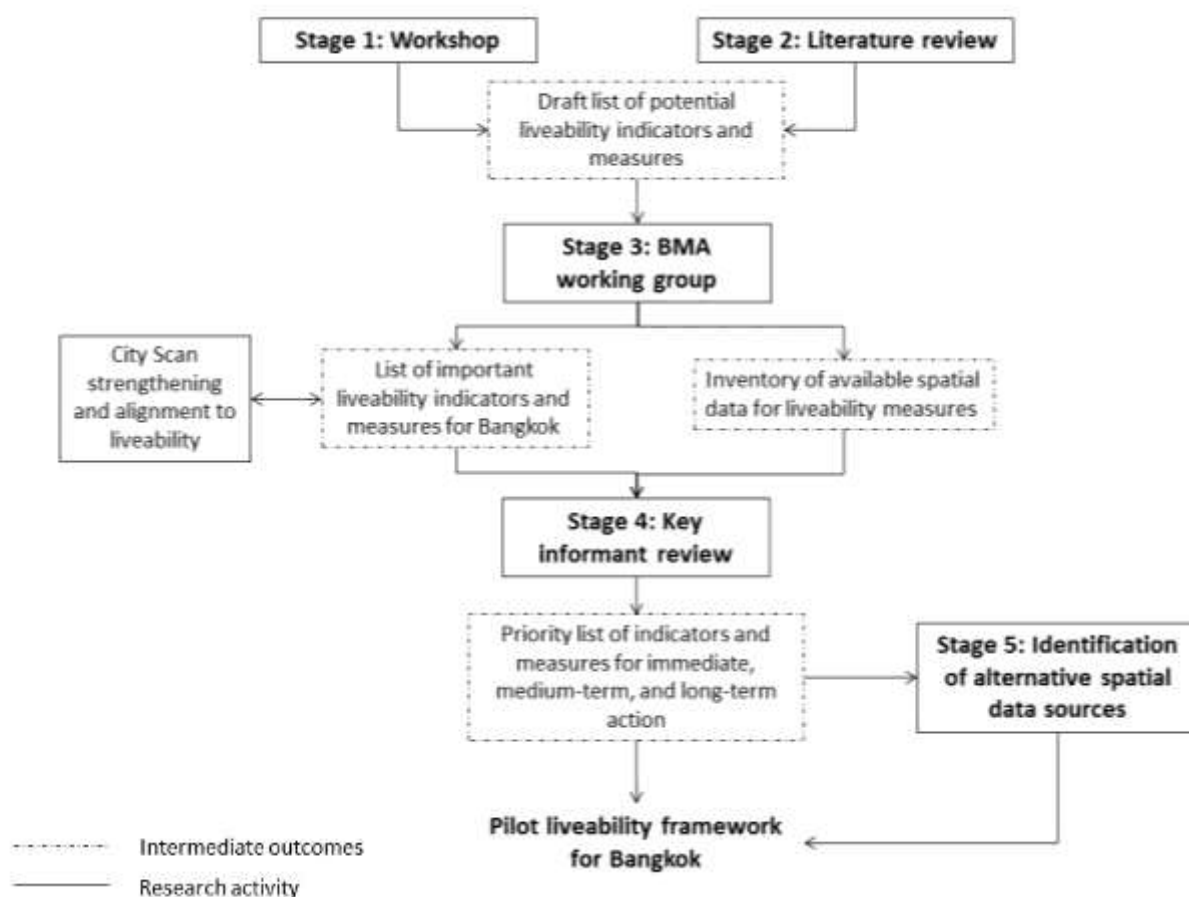


Figure 1. Stages of the pilot project.

Stage 1: Urban Liveability Workshop

Findings from the Urban Liveability Workshop formed the foundation for the conceptualisation of liveability in Bangkok's context. In May 2017, a key group of technical leaders from the BMA participated in the Urban Liveability and Resilience Program, a capacity development and training program run by the UN Global Compact – Cities Programme in Melbourne, Victoria. This included participating in liveability and resilience workshops led by the Cities Programme's urban scholars (CIs Badland, Davern, and Butterworth). CIs Badland and Davern facilitated an Urban Liveability Workshop, seeking to answer the question, 'What does liveability look like for Bangkok?' (22). In this workshop BMA technical leaders provided insight about how urban liveability may differ in Bangkok compared with

Australia, as well as Bangkok's strategic areas for action. Key themes from the workshop revealed strong motives around the SDGs and promoting health and wellbeing for the residents of Bangkok. Findings from the workshop also revealed commonalities with the Australian urban liveability definition, as well as some key differences. While the general domains of liveability were similar in the Bangkok and the Australian contexts, the specific indicators and measures for housing differed. For example, housing was an important domain in both the Australian and Bangkok liveability frameworks. For Australia, a major concern is housing stock affordability. However, for Bangkok, indicators and measures for housing needed to capture pressing issues around informal housing and the impact of flooding on informal housing settlements. The workshop findings also revealed some new indicators of liveability

specific to Bangkok's context. For example, BMA participants emphasised the importance of access to temples and cultural opportunities as a core element of social infrastructure in Bangkok, whereas cultural and religious opportunities were not regarded as being as important in the Australian context. Together, the themes discussed by BMA participants in the Urban Liveability Workshop provided the foundations for the pilot project.

Stage 2: Rapid literature review

A rapid review of international urban liveability literature was undertaken to identify key considerations that may be applicable in a LMIC context. This included themes identified in Stage 1, as well as additional LMIC context considerations. For example, while drinking water quality was not a salient theme in the Urban Liveability Workshop, the international literature highlighted equitable access to high quality, safe drinking water as a key determinant of liveability and health and wellbeing in LMICs (4, 23-25). The additional considerations identified in the literature review and the workshop findings were used to create a draft list of urban liveability indicators for the **BMA's consideration**. This captured key domains of urban liveability for

Bangkok, as well as specific indicators and potential measures that could be used to monitor progress. For example, *transport* was identified as a key domain of liveability for Bangkok, both in the Urban Liveability Workshop and in the literature. Within the transport domain, *vehicles per kilometre of city roads* was a specific indicator that has been used to measure and monitor car congestion in an urban setting (26).

The urban liveability indicators identified for Bangkok through the Urban Liveability Workshop and the rapid review were then mapped against existing urban liveability tools, being the: SDGs (see Appendix A for more detail) (4), the UN CityScan tool (27), and the Healthy Liveable Cities Group Liveability Index, which was developed as part of the NHMRC Centre of Research Excellence in Healthy Liveable Communities (see Table 1). These three tools served as benchmarks, as they were identified as being comprehensive markers of liveability that captured the social determinants of health across different contexts. As illustrated in Table 1, findings from this stage indicated strong alignment between the Bangkok Urban Liveability indicators and other urban liveability tools.



Table 1. Alignment of Bangkok liveability indicators to SDG and liveability tools. NB: Indicators are not listed in any particular order.

^The liveability indicators for Bangkok were identified through the Urban Liveability Workshop and/or international liveability literature.

*Indicator was not a salient theme of the Urban Liveability Workshop, but was identified as an important aspect of liveability in the international literature.

† Paper under development.

Urban Liveability Indicators for Bangkok's Context [^]	SDGs & Relevant International Standards	UN Global Compact: CityScan (27)		RMIT Healthy Liveable Cities Group: Pilot Melbourne Liveability Index [†]	
		Critical Area	Subcategory	Domain	Indicator
Water quality/pollution*	SDGs 3, 6, 9, 11, 12, 14	City Sustainability	Water resource management		
High quality air	SDGs 3, 7, 11, 12, 13 World Health Organization air quality targets	City Sustainability	Environmental sustainability	Air quality	Air pollution
Greater tree coverage to provide shade	SDGs 3, 11, 13, 15 <i>From 2011 GHD report for City of Melbourne: target of 30% of city as tree canopy.</i>	City Sustainability	Climate change mitigation		
No flooding	SDGs 1, 3, 9, 11, 13	City Sustainability	Climate change impacts and adaptation		
Safe drinking water*	SDGs 3, 6, 9, 11, 12 World Health Organization drinking water quality targets	City Sustainability	Water resource management		
Zero waste	SDGs 9, 11, 12	City Sustainability	Waste		
Sewerage*	SDGs 3, 6, 9, 11, 12	City Sustainability	Waste		
Access to fuel*	SDGs 7, 9, 11	City Sustainability	Energy		

Table 1 continued.

Urban Liveability Indicators for Bangkok's Context [^]	SDGs & Relevant International Standards	UN Global Compact: CityScan (27)		RMIT Healthy Liveable Cities Group: Pilot Melbourne Liveability Index [†]	
		Critical Area	Subcategory	Domain	Indicator
Quality food	SDGs 2, 3	City Development	Food Security	Food environment	Healthy food ratio; proximity to supermarkets
Sense of community	SDGs 11	City Development	Social inclusion; Community and culture		
Housing affordability	SDGs 11	City Development	Housing and shelter	Housing	Affordable housing
Local employment opportunities	SDGs 1, 4, 8, 9, 10, 11	City Development	Employment	Employment	Live and work in same SA3
Job security	SDGs 1, 4, 8, 9, 10	City Development	Employment		
Work/life balance	SDGs 1, 4, 8, 10	City Development	Labour Rights		
Opportunity to earn a fair wage	SDGs 1, 4, 8, 9, 10	City Development	Employment		
Mass transit availability; connected public transport networks; increased provision of transit-oriented developments	SDGs 3, 11, 13	City Sustainability	Mobility	Transport	Proximal access to public transport
Reduced/no car congestion	SDGs 11	City Sustainability	Mobility		
Areas for passive recreation and physical activity	SDGs 3, 11, 13, 15	City Sustainability; City Development	Climate change mitigation; Community and culture	Public open space	Size of public open spaces; distance to public open spaces

Table 1 continued.

Urban Liveability Indicators for Bangkok's Context [^]	SDGs & Relevant International Standards	UN Global Compact: CityScan (27)		RMIT Healthy Liveable Cities Group: Pilot Melbourne Liveability Index [†]	
		Critical Area	Subcategory	Domain	Indicator
Green space, pocket parks	SDGs 3, 11, 13, 15	City Sustainability; City Development	Climate change mitigation; Community and culture	Public open space	Size of public open spaces; distance to public open spaces
Access to temples, museums, music and other cultural events that provide opportunities for people to come together; Multi-purpose local community centres	SDGs 11	City Development	Community and culture	Social infrastructure	Culture and leisure (cinema/theatres, museums, art galleries, libraries, community centres)
A safe environment	SDGs 10, 11, 16	City Development	Public safety		
High quality education and schools	SDGs 4, 8	City Development	Education	Social infrastructure	Education (state primary schools, state secondary schools)
Healthy population: both physically and mentally healthy	SDGs 2, 3, 10, 11	City Development	Health and wellbeing	Social infrastructure	Access to health and social services
A high level of local amenity (neighbourhood access to services and employment)	SDGs 8, 9, 11	City Development	Access to employment	Social infrastructure; employment	All (education, sport and recreation, culture and leisure, early years, community centres, health and social services); live and work in same SA3



Stage 3: BMA Liveability Working Group and spatial data inventory

BMA Liveability Working Group

Scholars from the UN Global Compact – Cities Programme and RMIT University worked with key informants in Bangkok to coordinate and establish a BMA Liveability Working Group. This working group comprised BMA technical leaders, including several who had participated in the UN Global Compact – Cities Programme Urban Liveability and Resilience Program. One of the tasks for the BMA Liveability Working Group was to review the liveability indicators presented in Table 1 to ensure the indicators and measures were relevant to the context of Bangkok. The BMA Liveability Working Group also took an informal inventory of spatial data sources that could potentially be used to measure and monitor liveability in Bangkok.

Core issues for measuring liveability

The BMA Liveability Working Group identified core spatial data issues for populating the Pilot Bangkok Liveability Framework. Limited

spatial data at the district-level were available in Bangkok, and most data were only available at the city-level. Utilising district-level data allows for measurement and monitoring of liveability attributes *within* an urban area to identify disparities in access to and availability of crucial infrastructure (e.g. public transport) which perpetuate health inequities (16). The lack of district-level data for many liveability indicators currently presents a challenge in monitoring progress towards greater urban liveability in Bangkok.

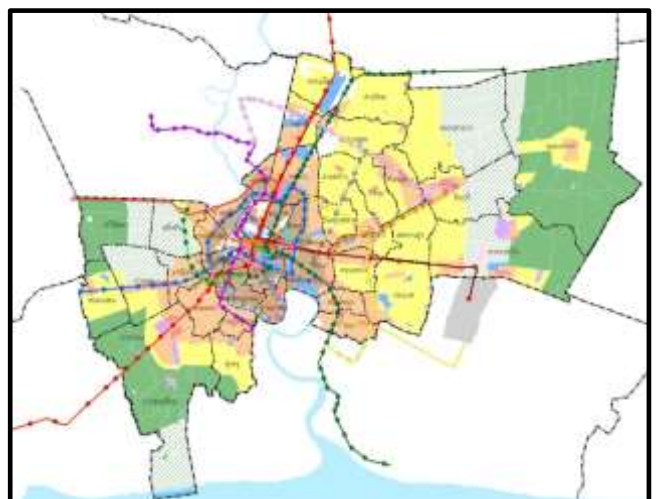


Figure 1

CityScan strengthening and alignment to concepts of liveability

As recipient of the 2017 Fulbright Alumni Initiative Grant, CI Butterworth led a work program in tandem with this project to explore opportunities for establishing the University of California, Berkeley as the first North American hub for delivering the UN Global Compact – Cities Programme. This included an examination of the alignment between the UN Global Compact – Cities Programme’s CityScan diagnostic tool (27) and concepts of urban resilience and liveability. This analysis revealed key areas of alignment between liveability and CityScan indicators, as well as opportunities for further strengthening of the CityScan, offering significant value to cities around the world through the UN Global Compact – Cities Programme (paper under development).

Stage 4: Key informant review

The list of liveability indicators and measures identified in Stage 3 was further refined by key BMA informants in order to: 1) prioritise liveability indicators and measures for immediate, medium-term, and long-term action by the BMA; 2) identify priority measures for each indicator that best captured liveability in Bangkok, taking into account available data sources (where known); and 3) identify data custodians for the

priority measures (where known).

The process of prioritising liveability indicators for immediate, medium-term, and long-term action by the BMA (Aim 1) took into account two main criteria. First, the level of importance of each indicator (as determined by the BMA Liveability Working Group) was considered. Second, key informants considered the feasibility of measuring each indicator with existing data sources and the timeframes within which these data would become available. Table 2 shows the Pilot Bangkok Liveability Framework resulting from the key informant review and supporting literature. The Pilot Bangkok Liveability Framework (Table 2) provides a structure for measuring and monitoring liveability in Bangkok that can be implemented by the BMA immediately, pending appropriate data acquisition. It is suggested that measurement of the full suite of liveability indicators (i.e. including those prioritised for medium- and long-term action) is gradually introduced as additional data and resources are sourced.

The key informant review also identified areas for future capacity building within the BMA, including issues around data custodianship and utilising open source data. These issues are discussed in further detail the Recommendations for Action section.



Table 2: Pilot Bangkok Liveability Framework. Priority indicators of liveability for immediate, medium-, and long-term action.

NB: Within each category (immediate, medium-term, and long-term), indicators are not listed in any particular order. All indicators in this table were first identified by the BMA working group as relevant to Bangkok's context, then reviewed by BMA key informants for prioritisation into immediate, medium-term, and long-term action. Prioritisation was based on indicator importance for the BMA and the timeframes within which data would become available.

*Indicator was not a salient theme of the Urban Liveability Workshop, but was identified as an important aspect of liveability in the international literature.

Indicators for <i>immediate</i> action		
Indicator	Most useful measure	Data custodian (if known)
Crime (24-26, 28-31)	Criminal cases per 100,000 persons	Central Information Technology Centre Royal Thai Police Data National Statistical Office
Tree coverage (30, 32)	Number of green areas	Department of Environment (BMA)
Air quality (24, 26, 30, 33, 34)	Nitrogen dioxide in the air (ppm) Dust/suspended particles in the air – micrograms/m ³	Department of Environment (BMA)
Water quality* (24, 31, 33, 34)	Number of canal water quality testing points showing dissolved oxygen content of ≥ 2.0 mL/L	Department of Drainage and Sewerage (BMA)
Flooding	Number of floods per year	Department of Drainage and Sewerage (BMA)
Access to temples (24, 25)	Number of temples per district area	District Office (BMA)
Access to schools (25, 31, 35)	Number of schools per 1,000 residents (N.B: both primary and secondary schools)	District Office (BMA) Department of education (BMA) Ministry of Education
Waste management (25, 26, 32-34)	Average volume (kg) per household of non-recyclable garbage	Department of Environment (BMA) District Office (BMA)
Indicators for <i>medium-term</i> action		
Indicator	Most useful measure	Data custodian (if known)
Sense of community (28-30)	Ratio of community population to district population	District Office (BMA) Department of Social Development (BMA) Strategy and Evaluation Department (BMA)
Job security	Unemployment rate	Ministry of Labour The Revenue Department National Statistical Office

Table 2 continued.

Income (25, 26)	Average monthly household income	The Revenue Department National Statistical Office
Education (25, 26)	Percentage of residents with a primary school education	Census
Health (25, 26, 31)	Average life expectancy Number of cases of mental and behavioural disorders	WHO (2016) Health Department (BMA)
Local employment (25)	Percentage of residents living and working in the same district	District Office (BMA)
Quality food	Percentage of samples of food that is in accordance with health and hygiene standards	Health Department (BMA)
Traffic congestion (26)	Number of vehicles per kilometre of city roads	Traffic and Transport Department (BMA) Department of Land Transport (BKK)
Sewerage* (23, 26, 33)	Percentage of population with sewerage at their dwelling	Department of Drainage and sewerage (BMA) District Office (BMA)

Indicators for *long-term* action

Indicator	Most useful measure	Data custodian (if known)
Areas for passive recreation and physical activity (24-26, 28, 31, 32, 36)	Percentage of residents living \leq 400 m of public open space Percentage of residents living \leq 400 m of a large park ($>$ 1.5 hectares) Percentage of residents living \leq 400 m of local park	District Office (BMA) Department of Environment (BMA)
Public transport (25, 26, 31, 32, 36)	Percentage of residents living \leq 400 m of a local bus stop Percentage of residents living \leq 800 m of train station	Traffic and Transport Department (BMA) District Office (BMA)
Housing affordability (25, 26)	Percentage of land being used for informal housing	National Housing Authority Department of Lands District Office (BMA)
Work/Life balance	Number of hours of working per day and per week Number of hours per week engaged in leisure activities	Ministry of Labour Ministry of Social development and Human Security Culture Sport and Tourism Department
Access to community centres (25)	Percentage of residents living \leq 400 m of community centre	District Office (BMA) Department of City Planning (BMA)
Neighbourhood amenity (25, 32, 35, 36)	Percentage of residents living near locally-defined ' social infrastructure ' (37)	District Office (BMA) Department of City Planning (BMA)
Drinking water quality* (23-26)	Percentage of population with piped water	Health Department (BMA)
Access to liquefied petroleum gas* (25)	Liquefied petroleum gas connections per household	Ministry of Energy

Stage 5: Identification of potential spatial data sources

Where possible, district-level data (or data measured in units smaller than city-level) were identified and incorporated into the framework. The purpose of this was to enable better monitoring of progress in a way that captures differences and disparities in access to key infrastructure *within* the city of Bangkok, as well as monitoring precinct-level developments. However, it should be noted that it presently remains challenging to identify data at scales smaller than the city-level. Where no spatial data were available in Bangkok for a given indicator, alternative potential spatial data sources were identified for inclusion in the Pilot Bangkok Liveability Framework.

Pilot project outputs

The pilot project resulted in several outputs:

- Development of the Bangkok Pilot Urban Liveability Framework to roadmap the Bangkok Urban Liveability Agenda
- Establishment of a BMA Liveability Working Group, which if the larger partnership project is funded, will continue to inform and oversee this work
- Presentation of the pilot project as a case study at the UN 2018 World Urban Forum, Kuala Lumpur
- Submission to the *Parliament of Australia Inquiry into the United Nations Sustainable Development Goals*
- A manuscript is under development summarising this pilot project as a case study. Its anticipated publication will be in an international peer-reviewed journal.



RECOMMENDATIONS FOR ACTION

Creating, populating, and implementing the Pilot Bangkok Liveability Framework

This pilot project revealed commitments in Bangkok to urban liveability, the social determinants of health, and the SDGs. Further, this pilot project identified a willingness to use spatial data and areas for future capacity building in Bangkok. Partnership between urban scholars in Australia and the BMA laid the foundations for future capacity building within the BMA and ongoing collaboration to advance this work. Key areas for capacity building include:

- **Spatial data expertise:** sourcing spatial data, including open source data; maintaining spatial databases; advancing a deeper understanding of the complexities of identifying data custodians and effectively utilising urban liveability indicators
- **Evidence-based urban governance:** using fine-grained data to drive urban policymaking

Further, core issues in populating the liveability indicators included a lack of immediately usable spatial data in units smaller than a city (e.g. district-level data). Open source data, as well as expertise in sourcing and applying open source data, could enable the immediate measurement of liveability indicators at units smaller than city-level. This would allow for the direct monitoring of disparities in access to key infrastructure (e.g. public transport) within Bangkok. Consequently, we recommend developing accessibility systems that enable the ongoing use of open source, fine-grained data in order to better monitor the social determinants of health within Bangkok. Specifically, we recommend the development of an open source data portal that hosts relevant indicators, which in turn can be accessed and leveraged to build long-term



spatial data expertise and capacity in Bangkok and cities in other LMICs.

To strengthen this work, we also recommend engagement with a wider range of stakeholders, including civil society, non-government organisations, and advocacy groups to further contextualise urban liveability in Bangkok for a range of end-users.

Opportunities for other cities

This pilot project represents a significant milestone in the development of an evidence base for urban liveability in LMICs. We recommend the adjustment of the Pilot Bangkok Liveability Framework to cities in other LMICs, keeping front of mind how local priorities for urban liveability, data sources, and technical expertise likely vary across different contexts. It is imperative that liveability frameworks are developed with local input, and are ground-tested with various stakeholders through ongoing indicator development, data sourcing, and capacity building. This enables urban liveability frameworks to reflect the strategic priorities **and lived experiences specific to a city's** context, and increases the likelihood of translation into policy and practice.

Further, this pilot project revealed substantial opportunities for future knowledge sharing and reciprocal learning between cities in various contexts. We recommend establishing communities of practice that engage diverse cities to collaboratively tackle the substantial urban challenges of the 21st century.

CONCLUSION

This pilot project conceptualised urban liveability in the context of a LMIC, with potential for adjustment to other cities. The Pilot Bangkok Liveability Framework provides a future agenda and map for measuring and monitoring liveability in Bangkok with close alignment to the SDGs and social determinants of health. Future work should leverage opportunities for local capacity building in spatial data expertise and evidence-based urban governance in Bangkok. This will enable better monitoring of progress towards achieving greater liveability and better health and wellbeing for all through action on the social determinants of health.

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APPENDIX

Appendix A: Sustainable Development Goals

The 2030 Agenda for Sustainable Development includes the following 17 Sustainable Development Goals (SDGs) (4):

1. No poverty
2. Zero hunger
3. Good health and wellbeing
4. Quality education
5. Gender equality
6. Clean water and sanitation
7. Affordable and clean energy
8. Decent work and economic growth
9. Industry, innovation and infrastructure
10. Reduced inequalities
11. Sustainable cities and communities
12. Responsible consumption and production
13. Climate action
14. Life below water
15. Life on land
16. Peace, justice and strong institutions
17. Partnerships for the goals

For specific SDG targets, see: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

Appendix B: BMA technical leaders participating in the Urban Liveability Workshop

BMA delegates at the Urban Liveability Workshop included senior members of the BMA. Delegates represented the following departments:

- Strategy and Evaluation Department; divisions included:
 - Public Health and Environment Strategy
 - Human Resource and Social Strategy
 - Administrative Strategy
 - Infrastructural Strategy
 - Economic and Financial Strategy
 - Computer System Control
 - Computer System Service
 - Secretarial
- Health Department
- Fire and Rescue Department
- Culture, Sports and Tourism Department
- Drainage and Sewerage Department
- City Planning Department
- Public Works Department
- Environment Department
- Finance Department
- Bangkok Metropolitan Administration Civil Service Commission
- Rockefeller 100 Resilient Cities Chief Resilience Officer for Bangkok

Appendix C: Authors' contributions to this pilot project

Author	Role
Amanda Alderton	Day-to-day project management; led the rapid review of international liveability literature; lead authored the report and manuscript.
Kornsupha Nitvimol	Contributed to project conception and design; coordinated the BMA Working Group; BMA key informant.
Julia Laidlaw	Coordinated UN Global Compact – Cities Programme's Urban Liveability and Resilience Program ; contributed to project conception and design; liaison between BMA and research team.
Elizabeth Ryan	Led the UN Global Compact – Cities Programme's Urban Liveability and Resilience Program ; contributed to project conception and design.
Melanie Davern	Co-led the Contextualising Urban Liveability Workshop; contributed to project conception and design; spatial data expertise.
Iain Butterworth	Contributed to project conception and design; led examination of CityScan alignment with urban liveability; led an Urban Liveability and Resilience Workshop.
Hannah Badland	Overall project lead; co-led the Contextualising Urban Liveability Workshop; provided urban liveability tool expertise.