PILOT PROJECT
TO TEST POTENTIAL TARGETS AND INDICATORS
FOR THE URBAN SUSTAINABLE DEVELOPMENT GOAL 11

FINAL REPORT

David Simon

Helen Arfvidsson

07-07-2015

CONTENTS

ACKNOWLEDGEMENTS

This project would not have been possible without the additional financial support to augment Mistra Urban Futures' existing funds from Mistra, the Swedish Foundation for Strategic Environmental Research, and Sida, the Swedish International Development Co-operation Agency, which is gratefully acknowledged. Similarly, the active engagement and collaboration by the Indian Institute for Human Settlements (IIHS) in Bangalore and by Mistra Urban Futures' Local Interaction Platforms in Gothenburg, Greater Manchester, Cape Town and Kisumu were essential for the success of the research. Details of the team membership appear in the City Profiles and Research Teams section of this report.

EXECUTIVE SUMMARY

The evidence collected during this pilot project has demonstrated unequivocally the importance of having undertaken live testing of the draft targets and indicators for Goal 11, the urban SDG, in a set of diverse secondary and intermediate cities. Despite the vast experience in different fields of the Campaign membership and UN system statisticians, the extensive and detailed work of the Campaign has hitherto been undertaken in isolation from the daily pressures and realities of urban local authorities and other agencies that will be required to collect, compute and report on the indicators.

Compared with world or megacities, for instance, the five cities which formed the testbeds for this study, namely Bangalore, Cape Town, Gothenburg, Greater Manchester, and Kisumu, constitute a reasonably representative sample of the multitude of urban areas worldwide that will be faced with the new challenges of annual urban SDG reporting from 2016. The precise extent of such responsibilities will vary by country in terms of how national reporting agencies allocate roles but the specifically urban focus of most of the indicators makes some urban involvement inescapable. Indeed, this is part of the novelty and added value of Goal 11.

Table E1 below summarises our findings by indicator.

Three of the indicators, namely 11.3.2 on the existence of urban and regional development plans, the secondary indicator for 11.3 on legislation that promotes participatory mechanisms, and 11.B.1 on implementing risk reduction and resilience strategies, are straightforward to report on, requiring each urban area simply to give a yes/no answer to the existence of strategies or legislation, which the national reporting agency will then collate and report to the UN as a percentage of urban areas. However, although indicators with such a structure are easy to compare across cities, for the local authorities themselves, they are considered to add little or no value to ongoing planning processes. All five cities emphasise how these indicators should preferably move beyond their current tick-box format in order to provide relevance for each respective city.

If the urban SDG is to prove to be a useful tool to encourage local and national authorities alike to make positive investments in the various components of urban sustainability transitions as its proponents and developers intend, then it is vital that it should prove widely relevant, acceptable and practicable. Failure to meet these criteria will impose an undue and resented burden on the generally overstretched and under-resourced local authorities in most parts of the world. Reporting will therefore become piecemeal or irregular, data will be fabricated to suit perceived political advantages, or compliance with reporting obligations will become the principal objective rather than utilising the reporting as a stimulus to promote positive change towards urban sustainability.

Accordingly, key objectives of this project have been to examine the extent to which the required data already exist in accessible forms in the five cities and could thus be reported straightforwardly; which variables could be obtained or computed with relative ease and hence impose only a small new burden; and which were unavailable without purposive primary data collection exercises.

In assessing the draft targets and indicators, the ten characteristics or features identified by the SDSN were utilised, namely that the indicators should be limited in number, simple and single-variable, frequently monitored, in line with international standards, draw on well-established sources, disaggregated, universal, outcome-focused, forward-looking, and used as a proxy for broader issues of sustainable development.

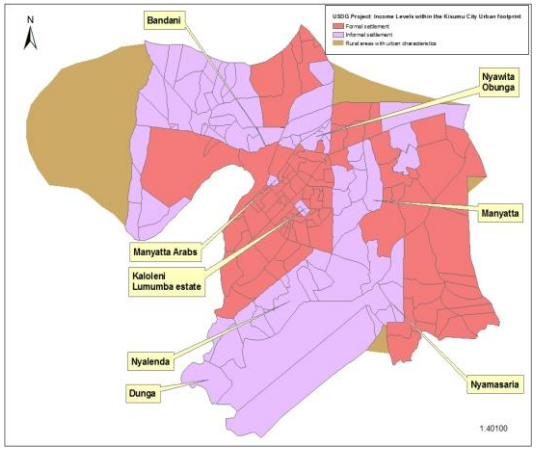
In terms of the actual findings, it is noteworthy that not one draft indicator was regarded as both important or relevant and easy to report on in terms of data availability. Even indicator 11.1.1, on the extent of slum/informal housing prevalence, and which is a carry-over from the MDGs, received diverse

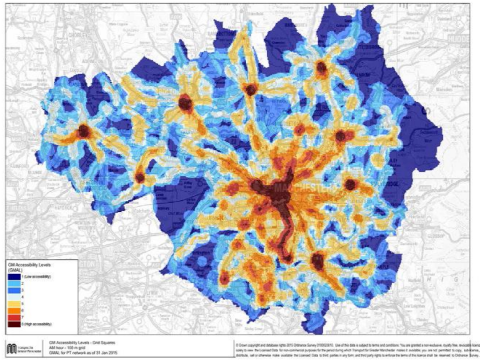
responses. Since the targets and indicators are supposed to be forward-looking and setting the agenda for the next 15 years, the overall consensus of the local authorities participating in this study suggests that for these to become useful and implemented at a city level, they must be relevant for local policy-makers. For this to be possible, they cannot be too few and general in scope and range. This finding illustrates the obvious dilemma in striking a balance between reducing the number of indicators and increasing the policy relevance. For these proposed indicators to become relevant at the local level and used to track broader developments of sustainable urban development they accordingly need to be aligned with already existing frameworks. Without this level of integration, it is assumed that the relevance of the indicators will diminish at the local authority level as they will become a burden in addition to existing reporting practices.

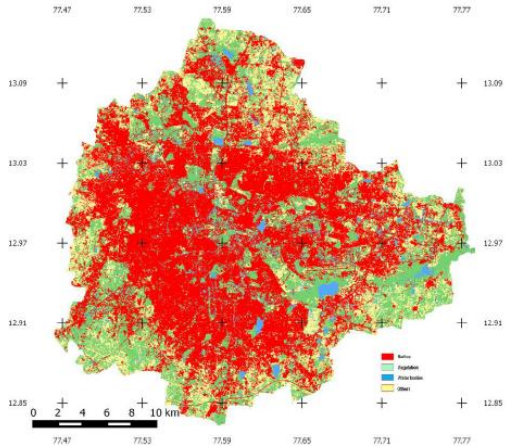
In terms of universality, common international standards and coherence of reporting mechanisms, our findings illustrate great gaps and concerns. The principle of universality has been difficult to achieve in the pilot study due to a range of definitional issues as well as discrepancies between local realities, varying practices of data collection and local definitions used, which, taken together, greatly complicate cross-city comparison. This points at the difficulties involved in finding a balance between universal and locally appropriate definitions, and how the desired outcome of comparable and disaggregate data does not necessarily match the sensitivity of and need for local priorities and contexts. In other words, there is a clear discrepancy between the call for international standards on the one hand, and local realities on the other, which is not easily bridged.

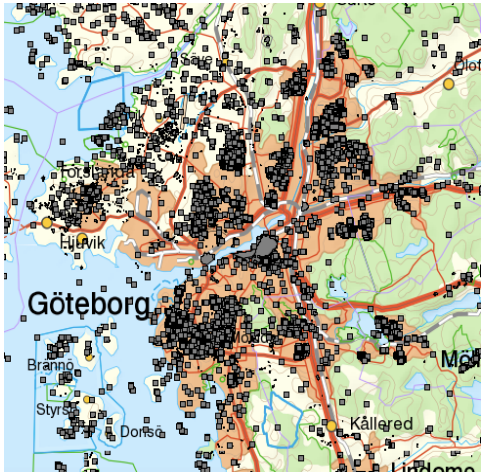
Data availability is unevenly distributed across and within the cities and the indicators. However, this distribution does not simply sit along a dichotomous division between the global North and South. Although there are trends to be found between Bangalore, Cape Town and Kisumu on the one hand, and Greater Manchester and Gothenburg on the other, these divisions are far from clear-cut. In terms of access to and capacity needed to assess geospatial data, the local authorities in primarily Bangalore, Cape Town and Kisumu have less institutional capacity overall. However, there are also other challenges when using geospatial data, such as additional field verification and checking, that are common to all cities. Furthermore, since the unit of urban agglomeration is not widely used by the local authorities, it has proven very difficult to collect data on this level throughout. It has also not always been possible to merge or aggregate data collected from various sources, including from public and private actors. These issues of both aggregating and disaggregating data are significant across all five cities.

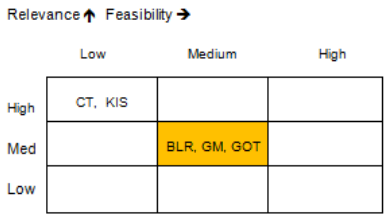
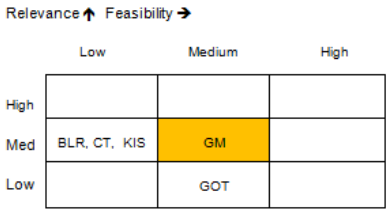
Finally this has been a quintessentially multi-faceted project, with many co-benefits beyond the immediate purpose. For the participating urban local authorities, the project proved both interesting and valuable in helping them to understand what USDG reporting will require and to gain some experience that should assist them in this process from next year. For the local platforms within Mistra Urban Futures, the project has provided experience in working from the local to the global in a focused and intense way, building new research partnerships and sharing local lessons in a comparative framework that will benefit the MUF work programme in Phase 2, starting in 2016.

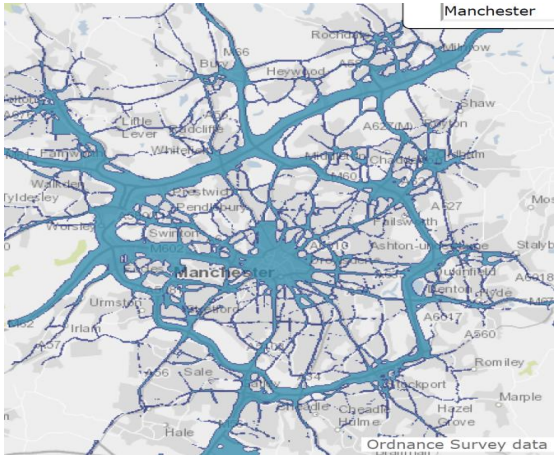
Target / Indicator	Data Availability / Relevance	Recommendations
11.1 Housing *By 2030, ensure access for all to adequate, safe and affordable housing and basic services, including the upgrading of slums*	The target on housing is considered highly relevant across all five cities, but with the proposed global reach of the SDGs, it is nevertheless unclear why the focus rests on slums and informal settlements.	Since the focus of the target is on adequate, safe and affordable housing, it is proposed that the focus on slums and informal settlements is replaced by 'inadequate housing' to become more relevant across all cities.
11.1.1 *Percentage of urban population living in slums or informal settlements* Relevance ↑ Feasibility → Low / Medium / High High: GM / CT / BLR, KIS Med: / GOT / Low: / /	This indicator is considered complicated as all cities have struggled to provide reliable data. The reason is connected to definitional problems and the lack of comparability across the five cities. Bangalore, Cape Town and Kisumu all use different definitions of informal settlements which complicate comparison. Also, the data produced are collected infrequently and are based primarily on projections and estimations in the years between the censuses. In Greater Manchester and Gothenburg a distinct focus on informal settlements is deemed problematic since the concept is not used and is of little value there.	The single most important adjustment that would make this indicator more relevant to all cities would be to replace informal settlements with inadequate housing, which would then include access to basic services, tenure security and quality of housing. Informal settlements In Kisumu 
11.1.2 *Proportion of population that spends more than 30% of its income on accommodation* Relevance ↑ Feasibility → Low / Medium / High High: GM / BLR, CT, KIS / Med: / GOT / Low: / /	The relevance of the indicator is generally high, as it is considered useful for planning purposes. There are however overall concerns raised about the assumed straightforward relationship between income and accommodation costs, as well as the quality and underreporting of self-assessed income data which in turn risks overestimating the indicator.	Our recommendations to strengthen the indicators include: to add disaggregation by income quintile; to change the unit of analysis to household rather than population; and to question the need for annual reporting since it is considered too costly and not necessarily relevant.

11.2 Transport *By 2030, provide access to safe, affordable, energy efficient and accessible transport systems for all people and goods, improving road safety and expanding public and non-motorized transport, with attention to the needs of those in vulnerable situations*	The target on transport is regarded as fundamental to achieve sustainable development. Still, several concerns have been raised in the five cities since the proposed indicators are deemed to be insufficiently aligned with the target and do not adequately measure access and safety. There is also a concern about how the indicators favour formal means of public transportation and hence perpetuate a dichotomous understanding of formal and informal transportation modes.	Although the two main indicators are considered feasible, they are not necessarily the most useful ones. The main recommendation is instead to replace them with a more outcome-focused indicator on commuter time and/or the ratio between using private and public transportation.
11.2.1 *Percentage of people living within 0.5 km of public transit [running at least every 20 minutes] in cities with more than 500,000 inhabitants* Relevance ↑ Feasibility → Low / Medium / High High: CT, GM Med: GOT Low: KIS, BLR	This indicator is feasible to collect data on, but not deemed the most relevant indicator to measure the target since it does not take into account the outcome of the services provided. None of the cities has the data readily available. The distance unit is relatively easy to measure across the five cities, whereas the frequency unit has proved much more difficult to produce reliable data for.  Access to public transport in Greater Manchester	Our overall recommendation is to replace the indicator with a travel time-related indicator since neither demand nor waiting time is considered. If the indicator is still to be included, a couple of improvements are needed: state that distance of 500m is supposed to be how the "crow flies" for reasons of comparison; the frequency unit should preferably be omitted, but if included, it should be explicitly defined what days and hours to measure the frequency; clearly state if informal public transportation such as minibuses and tuk-tuks should be included; establish if the relevant geographical unit is the metropolitan area or the entire commuting zone; and lastly, annual reporting is not considered relevant since there will only be small variations from year to year.
11.2.2 *Km of high capacity (BRT, light rail, metro) public transport per person for cities with more than 500,000 inhabitants* Relevance ↑ Feasibility → Low / Medium / High High: CT Med: BLR Low: KIS, GOT, GM	For the cities with high capacity public transport, there is good data availability. However, the relevance of the indicator is not agreed upon among the five cities since it only measures the available infrastructure rather than the actual use of the services. Also, concerns are raised over how high capacity public transportation may be unequally distributed across the respective cities and hence not reflect the focus on access and those in vulnerable situations as formulated in the target.	The main recommendation is to replace the indicator with a focus on travel time. If the indicator remains, it needs better clarifications on what and how to measure and preferably smaller units such as per 100 000 people.

11.3 Land Use *By 2030, achieve more equitable and efficient land use through participatory urban and regional planning and management*	The target on more equitable and efficient land use is not reflected in the proposed indicators and there is a general consensus among the cities in favour of an alternative indicator to reflect better the spatial inequalities and more equitable land use.	
11.3.1 *Ratio of land consumption rate to population growth rate at comparable scale* Relevance ↑ Feasibility → Low / Medium / High High: KIS Med: CT, BLR, GOT Low: GM	Consensus on this indicator suggests how it does not reflect the target since average density does not address spatio-temporal variations in density. Greater Manchester goes as far as to describe the indicator as a blunt instrument that is meaningless for planning purposes. Conversely, Kisumu considers the indicator very valuable to show how land consumption is increasing in the city, but agrees that it does not reflect the target of equitable and efficient land use.	The main recommendation is to find a more suitable indicator to account for variations in density and land use. If the indicator is still to be included the exact definitions and calculations need refinement, reporting should not be annual but rather every fourth year, and the ratio should be illustrated in the form of a graph to show the relationship over time and visualised with a map of the built-up area.  Land use Bangalore
11.3.2 *Cities with more than 100,000 inhabitants that implement urban and regional development plans integrating population projections and resource needs* Relevance ↑ Feasibility → Low / Medium / High High: BLR, GM Med: GOT, KIS Low: CT	In each of the five cities a version of such plans exists, but the consensus is that the mere existence does neither reflect how well it is being implemented nor the quality of these plans. The overall recommendation is to reformulate the indicator away from a tick-box exercise to include a focus on how these plans are being implemented.	The main recommendation for the indicator is to move beyond a simple yes or no answer and for it to be linked either to the five UN-Habitat principles for sustainable city planning or more explicitly to the International Guidelines on Urban and Territorial Planning, also developed by UN-Habitat (2014).

11.4 Cultural and Natural Heritage *Strengthen cities' efforts to protect and promote cultural and natural heritage*	The target is considered highly relevant but the indicators are deemed either irrelevant or too complex and thus need to be reworked. The lack of rationale and definitions provided for this target has resulted in each city struggling with the proposed indicators 11.4.1 and 11.4.2 since they are considered very difficult to define and measure.	The dual focus on cultural and natural heritage should be separated. This target should focus exclusively on cultural heritage, a focus on accessibility and impact should be added, and intangible cultural practices should be taken into consideration. As for the focus on natural heritage, the proposed indicator on biodiversity in target 11.6, the much-too-complex Singapore City Index, should be reworked to encompass such aspects.
11.4.1 *Percentage of budget provided for maintaining cultural and natural heritage* Relevance ↑ Feasibility → Low / Medium / High High: GM, KIS Med: GOT Low: BLR, CT	There is very poor data availability for this indicator. The budget posts for both cultural and natural heritage are difficult to combine. Concerns are also raised that an emphasis on budget does not reflect access and participation numbers.	Our main recommendations include separating cultural and natural heritage; to find a more suitable indicator to measure access to cultural heritage rather than its maintenance; and to reframe the focus on natural heritage into a biodiversity indicator that is less complex than the Singapore index.
11.4.2 *Percentage of urban area and percentage of historical and cultural sites accorded protected status* Relevance ↑ Feasibility → Low / Medium / High High: GM Med: GOT, KIS Low: CT, BLR	This indicator needs to be reformulated since it actually comprises two indicators in one, the first being the percentage of urban area accorded protected status and the second being the percentage of historical and cultural sites accorded protected status. If the indicator is slightly reformulated, it would be considered moderately relevant. Although Gothenburg stresses that the work needed for identifying, mapping and geospatially registering these sites should not be underestimated, the city considers these practices to be very valuable while Kisumu suggests that by reporting on this indicator, the process of identifying and documenting historically and culturally significant sites in the city will be prompted.	There are three recommendations for improvement of this indicator: a reformulation of the indicator to avoid there being two indicators in one; to explicitly distinguish between different levels of protection; and to focus on the number of sites rather than a percentage out of the total urban area.  Cultural sites in Gothenburg

11.5 Disaster and Risk Prevention *By 2030, significantly reduce the social, health, economic and ecological risks and impacts of disasters, environmental change and disease outbreaks by better designing and managing cities, protecting people in vulnerable situations*	Since there is no overall definition provided, each city has chosen to focus on disasters and natural hazards that are appropriate to their respective local contexts. Overall, there is poor data availability for the indicators as it is generally deemed difficult to collect reliable and robust data on disasters. The relevance of the target is, however, considered high as there is a great need for systematically collected, comparable and robust data on disasters.	To close the data gaps, the coherence of the recording processes needs to be improved and harmonized.
11.5.1 *Number of people killed, injured, displaced, evacuated, relocated or otherwise affected by disasters* 	There is poor to partial data availability for this indicator and although the indicator is considered to have moderate to high relevance, the several concerns raised touch on definitional problems, lack of comparability and the difficulties involved in delimiting the data collected to urban vulnerabilities. The indicator is seen by the five cities as a complementary indicator which needs to be combined with another indicator on either property damage or economic loss in order to better reflect the target.	Several recommendations have been suggested to make this indicator stronger. First and foremost, there is a need for a clear rationale and standardisation to collect better data on specific urban vulnerabilities. To provide a format for reporting is also crucial and for this to be linked to international databases and standards of reporting. Better definitions are needed in relation to the level of injury and what qualifies as displacement and relocation. There is also a common call for fewer categories to be included in the indicator.
11.5.2 *Number of housing units damaged and destroyed* 	There is poor to partial data availability for this indicator, on which it is deemed difficult to collect robust and reliable data, due to the multiple sources involved. The overall relevance of the indicator is considered low to moderate and, as with indicator 11.5.1, this indicator is not considered sufficient on its own, but rather as a complement.	The main recommendations stress how 'damaged' needs to be defined clearly for purposes of comparison, as well as the need for a data coordinator and/or partnerships with academic institutions to ensure more reliable data reporting.

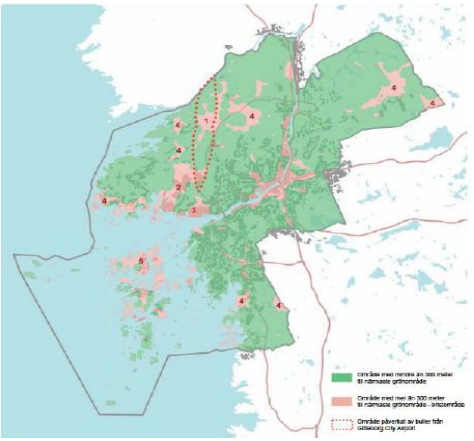
11.6 Environmental Impact *By 2030, reduce the adverse environmental impacts of cities, paying special attention to biodiversity loss, air quality, construction materials, and waste management*	The target is deemed important, yet data availability is very unevenly distributed across the five cities. Although Greater Manchester and Gothenburg consider the indicators to be relevant, they still add little value to what is already monitored in respective city.	Two general concerns need more explicit addressing: the political nature of waste management, and hence the risk of data manipulation, as well as the problematic distinction between public/municipal and private/informal waste management.
11.6.1 *Percentage of urban solid waste regularly collected and recycled (disaggregated by e-waste and non-e-waste)* Relevance ↑ Feasibility → Low / Medium / High High: GM / CT, KIS / Med: / BLR, GOT / Low: / /	There is moderate data availability on waste collection, but overall very poor data on electronic waste. Since there are multiple actors involved in waste collection, ranging from municipal to private and/or informal collectors, the reporting structures differ greatly which complicates comparison. The political nature of waste management is also highlighted as a major concern by Bangalore and Kisumu.	The overall recommendation is to include a waste per capita indicator in order to illustrate the overall picture of waste production. If the indicator will not be replaced, there is a need to include commercial and hazardous waste alongside the disaggregation of e-waste. There is also a great need to improve the data collection and monitoring for e-waste since this is significantly under-reported and to include the amounts of e-waste being exported and/or illegally dumped. Finally, there needs to be clarity on how to better include and integrate data on private and informal waste management.
11.6.2 *Level of ambient particulate matter (PM10 and PM2.5)* Relevance ↑ Feasibility → Low / Medium / High High: / CT, GM / BLR, GOT Med: KIS / / Low: / /	The data availability on this indicator is unevenly distributed across the five cities, ranging from no availability at all in Kisumu, to data updated on an hourly basis in Gothenburg. There is a call for more harmonised methods of data collection and reporting. In terms of relevance, the indicator is deemed important to measure, but not necessarily on its own. It is agreed across the five cities that measuring particulate matter should not be the only indicator on environmental impact since it would not sufficiently reflect the target as the importance of waste management would then be lost.	Our two main recommendations are better definitions on which particle size class to report on and the specific methodology to use, and potentially to consider alternative air pollutants to be included in the indicator rather than PM2.5.  Air pollution in Greater Manchester

<table>
<tr>
<td>11.7 Public Space

By 2030, provide, maintain, and encourage access to safe, inclusive and multipurpose public space</td>
<td>As the importance of availability of and accessibility to public space is stressed by all five cities, the relevance of the target is considered high. Still, its quality needs more attention, not simply its existence.</td>
<td>Not all cities include streets in their respective notion of public space and to do this, improved data availability and developed GIS capacity are required as well as a more clearly defined rationale. The target also needs to be more explicitly related to target 11.3 on land use.</td>
</tr>
<tr>
<td>11.7.1

Area of public space as a proportion of total city space
Relevance ↑ Feasibility →
<table><tr><td></td><td>Low</td><td>Medium</td><td>High</td></tr><tr><td>High</td><td>GM</td><td>BLR, CT, GOT, KIS</td><td></td></tr><tr><td>Med</td><td></td><td></td><td></td></tr><tr><td>Low</td><td></td><td></td><td></td></tr></table></td>
<td>This indicator is considered highly relevant, but there are significant difficulties when comparing the data due to varying definitions and abilities to provide detailed geospatial information. Bangalore, Cape Town and Kisumu all provide a percentage for this indicator, but the definitions and methods used differ which affects the level of comparison possible. In Greater Manchester and Gothenburg there are no data readily available, but both cities consider it possible to report on the indicator if a clear definition is provided.</td>
<td>Our recommendations for this indicator include: to change the unit ‘city space’ to a more appropriate geographical unit, and to address the need for more coherence in the use of definitions for the sake of comparability.</td>
</tr>
<tr>
<td>11.7.2

Proportion of residents within 0.5 km of accessible green and public space
Relevance ↑ Feasibility →
<table><tr><td></td><td>Low</td><td>Medium</td><td>High</td></tr><tr><td>High</td><td></td><td></td><td>GOT</td></tr><tr><td>Med</td><td>KIS</td><td>BLR, CT</td><td>GM</td></tr><tr><td>Low</td><td></td><td></td><td></td></tr></table></td>
<td>This indicator is approached in different ways by the five cities and its feasibility varies greatly. It is only Gothenburg that provides data that come close to what the indicator asks for. The indicator is nevertheless considered to have moderate to high in relevance across all cities.</td>
<td>There are a number of recommendations to make the indicator stronger. The formulation of ‘green and public space’ is unclear and should be reformulated as ‘green public space’. A rationale needs to be provided to justify the choice of distance as 0.5 km. Also ‘access to’ needs to be more clearly defined and the unit ‘proportion of residents’ needs to be changed to households.

 
Accessible green space in Gothenburg</td>
</tr>
</table>

INTRODUCTION

As part of the UN post-2015 development agenda, the Sustainable Development Goals (SDGs) will be replacing the Millennium Development Goals (MDGs) from 2016 to 2030. Whereas the MDGs have been focused on tackling poverty in poorer countries, the 17 proposed SDGs will be applicable to all countries in recognition that transitioning to more sustainable development globally in an interdependent world requires commitments and substantive changes to the status quo by each country, regardless of its current state of economic and social development. The final set of goals, with their respective targets and indicators, will be announced by the UN Secretary-General at the General Assembly at the end of September 2015.

A global Campaign for an Urban SDG, in which Mistra Urban Futures is a partner, has been working towards securing a standalone urban goal. The Sustainable Development Solutions Network (SDSN) (http://unsdsn.org/), as the body assisting the UN Secretary-General to develop the SDGs, together with Campaign members, including UN-Habitat, the World Urban Campaign, Local Governments for Sustainability (ICLEI), United Councils and Local Governments (UCLG), Communitas and the Indian Institute for Human Settlements (IIHS) have together with the Compact of Mayors worked to achieve this in recognition of the crucial importance and strategic influence of cities in promoting sustainable development. At the UN Open Working Group session in June 2014, in which the 17 draft SDGs were confirmed, a standalone urban goal was included as Goal 11: "To Make Cities and Human Settlements inclusive, safe, resilient and sustainable". Symbolically this is highly significant since it embeds the important of urban areas within the flagship UN sustainable development agenda, the first time that sub-national units have featured in this way.

In August 2014, Mistra Urban Futures co-funded an international workshop for the Urban SDG Campaign at Royal Holloway, University of London that redefined the draft content of the anticipated Goal 11. As the process continued, the importance of testing the draft targets and indicators on the ground in a sample of cities became increasingly apparent, and David Simon the new Director of Mistra Urban Futures (MUF), proposed and raised additional funds from Mistra, the Swedish Foundation for Strategic Environmental Research, and Sida, the Swedish International Development Co-operation Agency, to undertake such a project, the outcomes of which are reported here.

In view of its unique architecture of four trans-disciplinary Local Interaction Platforms in Gothenburg, Greater Manchester, Cape Town and Kisumu, MUF is uniquely well placed to undertake this work on a short timescale because of the established partnerships between researchers in universities, local authorities and other relevant agencies in each city – the very institutions that will be required to collect, collate and report on the urban SDG indicators to their respective national reporting authorities. Through our USDG partner, the IIHS, Bangalore was brought in to provide a larger comparator city and include Asia within the pilot project.

These five cities also provide a remarkably representative sample of the diversity of urban contexts and conditions around the world, being secondary or intermediate cities in their respective national urban systems, located in both the global South and North, yet possessing very different local authority institutional capacities, experiencing diverse levels of poverty, un- and underemployment, economic diversity and dynamism or stagnation, and social and environmental conditions. Hence, the rationale for the project has been that if the draft Goal 11 targets and indicators are perceived as relevant and can be demonstrated to be practicable – or we know what modifications are needed to make them thus – in these cities, then the prospects of Goal 11 becoming a useful tool for national and urban local authorities will be greatly enhanced.

For the SDGs to become effective policy tools for ensuring and monitoring sustainable development, reliable and robust data at comparable scales are crucial. The UN Secretary General's Independent Expert Advisory Group (IEAG) are calling for a data revolution in which statistical systems must be

strengthened at local, national and international levels and new means of collecting data of high quality and coverage are promoted. The Mistra Urban Futures' pilot study has aimed to engage with this proposed data revolution by exploring the existing potentials and deficiencies in data availability and reporting for each target and indicator of the proposed Goal 11.

This final report highlights patterns in data measurability and constraints across the five case studies as well as addresses the data gaps and additional work necessary in order to establish a comparative and disaggregated nature of the proposed targets and indicators. The pilot study, which ran from March-May 2015, is based on the targets and indicators from the Bangalore Outcome Document (Urban SDG Campaign 2015), reflecting the Urban SDG Campaign workshop held in January 2015 and the UN Statistical Commission report from March 6, 2015 (UNSC 2015). These were the most recent and complete set available at the inception of the project. The different sets of proposed indicators are compared in Appendix 1.

Each indicator has been evaluated in relation to three categories: data availability and feasibility; relevance of the proposed indicator; and recommendations for improvement. For the majority of the indicators an additional matrix visually illustrates the findings. The matrix is an assessment of the relevance and feasibility for the indicator set based on the above mentioned UN Statistical Commission report (UNSC 2015). The vertical arrow indicates relevance, while the horizontal arrow indicates feasibility. For each city Bangalore (BLR), Cape Town (CT), Greater Manchester (GM), Gothenburg (GOT) and Kisumu (KIS), the relevance and feasibility of each indicator has been ranked in the matrix on a scale of 1-3, representing low, medium and high respectively. The unweighted average is highlighted in green (high), yellow (medium), or red (low).

The principal findings were fed directly into the Urban SDG Campaign process through presentation and discussion at the Campaign workshop held at Mistra Urban Futures in Gothenburg, 8-10th June, 2015. The impact of the empirical evidence was substantial, triggering strong interest and providing a 'reality check' to its work. The importance of the live testing of the draft targets and indicators was universally appreciated and the Campaign leadership committed to ensuring as much uptake as possible of the findings in the final modifications to the variables and requirements for the indicators over the remaining window. This report constitutes the definitive statement of the results and hence vehicle for such uptake. It has been produced in a format designed to facilitate this task. It commences with a brief profile of each participating city and research team, followed by the general findings and thereafter a detailed account of the findings for each target and indicator.

CITY PROFILES AND RESEARCH TEAMS

Five cities across three continents have participated in this pilot study. They are of varying sizes and contexts, but share the characteristic of being the second or third sized in each respective country and are thus representative of intermediate cities with varying conditions and capacities. Below is a brief introduction to each city and their engagement in the pilot study.

BANGALORE

Bangalore is the capital of the Indian state of Karnataka. With its population of approximately 8.5 million, the Bruhat Bangalore Mahanagare Palike (BBMP, Greater Bangalore Municipal Corporation) is the third most populous metropolitan area in India. The city is located in southern India, at a height of over 900 m above sea level, and has a long history of manufacturing, particularly in regards to the textile industry. Over the last few decades, the city has grown into a global centre for information technology and has become known as the "Silicon Valley of India". However, the development and rapid growth of the city has not been equally or sustainably distributed. The city is confronted with significant concerns centring among others on multi-dimensional poverty, water scarcity, damage to natural habitats including wetlands, growing pollution, and significant congestion problems.

The Indian Institute for Human Settlements (IIHS) has conducted the pilot testing in Bangalore with the facilitation of the Director of the centre, Aromar Revi, and the lead researcher of the project, Garima Jain. The research team additionally included: Amir Bazaz, Geetika Anand, Ravi Chopra, Priyadarshini Shetty, Andaleeb Rehman, and Arindam Jana. The IIHS is also part of the Sustainable Cities Initiative which has compared key indicators across: Accra, Bangalore, Durban, Istanbul, New York, Rio de Janeiro.

CAPE TOWN[1]

Cape Town is the oldest city in South Africa, with the second-largest urban population in the country. It is also the legislative capital of South Africa and the administrative and economic hub of the Western Cape. It is one of the most-visited tourist destinations on the African continent. The population of the metropolitan area of Cape Town grew by 46% from 1996 to 2011 when it had 3.7 million inhabitants. The legacy of apartheid still takes the shape of geographical expression of inequalities and a substantial proportion of new households in the city take the form of informal shelter, either in informal settlements or backyard dwellings. This trend of rapid urban growth is expected to continue for the foreseeable future, with the city's total population anticipated to reach approximately 4.4 million by 2030 (City of Cape Town 2014). The factors combined create significant challenges for the city's infrastructure and administrative processes.

[1] Photo by Bruce Sutherland, City of Cape Town. All other photos by Helen Arfvidsson.

Zarina Patel, at the African Centre for Cities (ACC), which hosts the Mistra Urban Futures local platform in Cape Town, appointed Palmer Development Group (PDG) to conduct the research for this pilot study. Nishendra Moodley from PDG led the Cape Town pilot in close collaboration with Carol Wright, Manager of Development Information & GIS Department and her staff at the City of Cape Town. An introductory as well as a concluding workshop were jointly held to respectively set up and validate the pilot study, as well as working sessions in between in which also the ACC participated.

GOTHENBURG

Situated on the west coast of Sweden, Gothenburg is the second largest city in Sweden with a population of approximately 540,000 people, and lies at the heart of a metropolitan area of closer to a million people. The city is historically a centre of trade and shipping and the port of Gothenburg is the largest port in the Nordic countries. Apart from trade, also manufacturing and industry has played a significant role in the city's growth and development with major companies such as Volvo, SKF and Ericsson originating in Gothenburg. Over the last couple of decades, the city has however undergone a shift from industrial production to high-tech, knowledge-based and service industries. This development is not necessarily equally distributed and the city is struggling with growing socio-economic disparities.

The Gothenburg pilot study was lead by the researcher Stina Hansson, from University of Gothenburg, as well as with input from the lead researcher Helen Arfvidsson. Numerous local authority officials were engaged with to explore the measurability and relevance of the different indicators. A concluding workshop was held at Mistra Urban Futures with representatives from the city of Gothenburg and the Gothenburg Region Association of Local Authorities (GR) to discuss the findings and relevance of the pilot study.

GREATER MANCHESTER

Greater Manchester, with a population of 2.7 million across ten boroughs, is the second most populous urban region in the UK and consists of a mix of high-density urban areas, suburbs, semi-rural and rural areas. The region is a product of concentric urbanisation and industrialisation dating from the nineteenth century when it was the global centre of the cotton industry. Today, it has the fastest growing population in the UK which provides both opportunities and challenges, including an ageing population and stark concentrations of unemployment (AGMA 2013). In 2011, the Greater Manchester Combined Authority (GMCA) was established as a strategic city-region authority for Greater Manchester with responsibilities to include economic development, regeneration and transportation. A further devolution of power is set to take place in 2017, with the first election of a Mayor of Greater Manchester.

Beth Perry and Alex Wharton at the SURF Centre, University of Salford, have coordinated the pilot study in Greater Manchester and integrated it with the Mistra Urban Futures' Greater Manchester Local Interaction Platform. Quantum Strategy and Technology was appointed to conduct the research, data

collection and analysis. Louise Marix Evans and Gill Fenna led a workshop with GM stakeholders from local authorities and AGMA to agree GM priorities for the pilot; and engaged with individual local authorities and pan-GM organisations on the data collection, feasibility and relevance.

KISUMU

Kisumu, on the north-eastern shore of Lake Victoria, is the third largest city in Kenya and one of the fastest growing cities in the country with a population of approximately 460,000. It is surrounded by fertile plains, mid-sized mountains and plateaus providing a range of conditions for agriculture. The area has long been a hub for trade in agricultural goods, fish and manufacturing products. At the beginning of the twentieth century, Kisumu developed into a railway terminus and strategic port dedicated to serve freight and passenger traffic within the region, as well as to Mombasa and Nairobi. The city became the leading commercial, industrial, communication and administrative centre in the Lake Victoria basin. Kisumu remains an important trading post, even though its standing in the region has been declining since the late 1970s with the collapse of the East African Community. Current challenges that affect the City of Kisumu include rapid population growth, high population density, water scarcity and falling food production. In addition, the city is struggling with environmental problems as a result of Lake Victoria being highly polluted, the wetlands along the shores being encroached, and widespread logging causing soil erosion.

The local research team in Kisumu comprises the City Manager, Doris Ombara, who has been assisted by Dr Michael Oloko, Jaramogi Oginga Odinga University of Science and Technology (JOOUST), and Dr Charles Nyambuga, Maseno University. The pilot study was integrated into the Mistra Urban Futures' Kisumu Local Interaction Platform by its Director, Prof Stephen Agong (JOOUST).

GUIDING PRINCIPLES AND GENERAL FINDINGS

The complexities involved in developing a set of targets and indicators for the SDGs, that are to be universal and applicable to all countries, are well illustrated through this pilot study. Finding or formulating indicators that both sufficiently reflect the targets as well as are comparable across a diverse range of settings is no easy task. The general findings from this pilot study point at these complexities and those of integrating the targets and indicators into already existing practices of policy making. This section gives a brief introduction to the overall patterns and lessons that have emerged through this project. This is then followed by a more detailed discussion relating the data availability, feasibility and relevance of each proposed indicator.

With the aim of contributing to the ongoing discussion about the proposed set of targets and indicators, this section is framed in response to the report, *Indicators and a Monitoring Framework for the Sustainable Development Goals: Launching a data revolution for the SDGs* by the UN affiliated Sustainable Development Solutions Network (SDSN 2015). In the report, the SDSN proposes a set of 10 principles or criteria for the SDG indicators, informed by lessons from the MDGs, comments from NSOs, as well as principles laid out in various reports including the IEAG (2014) report on the proposed "Data Revolution". These principles will help structure the following discussion on the general findings from our pilot study.

SDSN suggests that "a first critical step in launching a data revolution for development must be to ensure that all countries and the international community are well equipped to monitor them with robust indicators, so they can serve their dual purpose as management tool and report card" (SDSN 2015:21). Our findings will show that there is still a long way left to reach this first step.

1. Limited in number and globally harmonized

The first principle calls for a set number of 100 indicators across the 17 targets and in addition a set of complementary national indicators.[2]

The SDG indicators will not simply describe current conditions, but also set the agenda for the next 15 years and help identify problems and goals of sustainable development. The indicators are thus not simply technical and scientific, but constitutive in the sense that they will help us provide direction; tell us where we are and point at our desired progress. In order to measure urban sustainable development with the help of Goal 11, a too limited set of indicators will not be sufficient. It is an obvious dilemma to strike a balance between reducing the number of indicators and increasing the policy relevance. The overall positive engagement in this pilot study from the local authorities involved shows that they are generally keen to include a set of SDG indicators into their already existing frameworks, but only as long as they are deemed relevant and of value to the monitoring and development of respective city. With a set of too few and too general indicators, it is assumed the relevance of the indicators will diminish at the local level.

2. Simple, single-variable indicators with straightforward policy implications

The second principle suggests that the indicators need to be simple to compile, easy to interpret and communicate and must have clear policy implications.

[2] The idea of restricting all 17 Goals to a total of 100 indicators was short-lived and abandoned again in subsequent SDSN reports.

Our findings suggest that the balance between the indicators being simple and single-variable on the one hand, and the associated policy implications on the other, is far from being as straightforward as desired. The data for the proposed indicators are unevenly distributed and vary considerably between the cities and each target. These findings reflect lessons learned from the MDGs and as a recent report states, despite considerable achievement of the MDGs in terms of strengthening statistical systems and bringing stakeholders together to eradicate poverty, the agenda remains unfinished and challenges remain (UN 2014). Data gaps, data quality, compliance with methodological standards, and non-availability of disaggregated data are among the major challenges identified and these are all more or less present in our pilot study.

The unevenly distributed data are, however, not aligned with a dichotomous division between developed and developing countries, or global North and South. Although there are trends to be found between Bangalore, Cape Town and Kisumu on the one hand, and Greater Manchester and Gothenburg on the other, these divisions are far from clear-cut.

The findings also point at how the targets and indicators are not always aligned and are at times considered difficult to operationalise. There is, accordingly, a danger of measuring what is measurable rather than what is actually relevant. This is evident in most of the targets, but in particular in 11.1 on slums and informal settlements, 11.4 on cultural heritage, 11.5 on disaster and risk prevention, and 11.7 on public space.

Although the proposed Goal 11 cannot be implemented in isolation from the other proposed SDGs, one of the main difficulties with this goal is that there are no standardised metrics for measuring the huge and complex domain of urban development in which local and national governments are only one of many actors alongside the private sector and citizens (ICSU 2015). A major concern has, therefore, been how to ensure meaningful translation into policy and planning. Greater Manchester, for instance, suggests that linking data and intelligence is critical, hence making numbers matter, but with a diversity of stakeholders and contexts it is not always straightforward to do so. In addition, Bangalore and Kisumu point at how there is a lack of co-ordination as well as a reluctance to share data between various local authority departments, and between the local and national levels, as well as between public and private actors. One of the reasons suggested is that performance and evaluation are tied to numerical targets and there is accordingly a risk of manipulating these numbers to look better.

For the IEAG's proposed Post-2015 "Data Revolution" of achieving better, faster and more accessible data, to become a reality, the policy implications cannot be underestimated. Besides the significant efforts required to fill the data gaps and to invest in capacity to collect and analyse the data, there is also a need to enhance the policy relevance for local authorities. For instance, all cities agree that indicators consisting of tick-box exercises, such as in targets 11.3 and 11.B, are not very relevant for planning and policy making. Such indicators are perhaps easy to compare across cities, but for individual cities they add little or no value to ongoing planning processes. The straightforward relationship between simple, single-variable indicators and policy relevance is accordingly challenged by our pilot study.

3. Allow for high frequency (annual) monitoring

The third principle emphasises how timeliness is crucial for data to be a useful management and policy tool and that, in order to align with national planning and budgetary processes, SDG monitoring should operate on an annual cycle.

This call for annual reporting is not entirely supported across the five cities. This frequency is both questioned and promoted depending on the indicator. Data required for several of the indicators are currently not produced on an annual basis. This is particularly the case for data collected through household surveys. In some cases, for instance in Gothenburg, a national general household survey is conducted every fourth year and to change this to annual reporting will be both costly and not deemed

relevant by Statistics Sweden (SCB). In addition it is considered to be putting too much strain on the willingness to participate if conducted annually, a problem that is growing in scale. This is the case for indicator 11.1.2 on income spent on accommodation, and the secondary indicator 11.2 on income spent on transportation.

For indicators based primarily on population data from national censuses conducted every 10 years, there is an additional concern about the reliability of the estimates in the intervening years. For the indicators 11.1.1 on informal settlements, 11.2.1 on distance to public transit, 11.3.1 on the land-use ratio, and 11.7.1 on public space, the general assumption is that data will not necessarily change significantly on an annual basis and less frequent reporting is recommended. Any increased reporting frequency on these indicators is seen as a potential burden, rather than adding value to planning and policy-making processes.

4. Consensus-based, in line with international standards and information already collected by national and environmental-economic information systems

The fourth principle suggests how the indicators should be based on international standards, recommendations, and best practices to facilitate international comparison.

This principle is very much in line with the general findings from the pilot study. It is clear that the relevance and feasibility of the proposed indicators are in part dependent on being aligned with existing international standards in order to be compatible with global benchmarks and to facilitate the comparison of data across cities. Nevertheless, such standards are far from always provided and the recommendations for each indicator often call for the harmonisation and standardisation to be more explicit.

5. Constructed from well-established data sources

This fifth principle highlights how the indicators should draw on well-established sources of public and private data, and be consistent in order to enable measurement over time.

This principle is crucial to ensure that data collection is both transparent and accountable. The SDSN report suggests how monitoring the SDGs will require many different types of data which together will set in motion the proposed data revolution. These include official statistics derived from surveys, administrative data and other methods, but they also need to be complemented by unofficial data and other performance metrics, including business metrics, polling data, geo-referenced information among others (SDSN 2015:22). However, the findings from this pilot study have shown how drawing on well-established sources is not necessarily straightforward for several reasons.

First, there are not always well-established sources as several of the case studies highlight. The data are unevenly distributed and there are limited capacity to engage with non-traditional data, beyond censuses and surveys. Local authorities, particularly but not exclusively in Bangalore, Cape Town and Kisumu, do not always have ready access to and the capacity needed to prepare and analyse new GIS data sets. For this reason there is a question of institutional capacity to operationalise several of the indicators, but there are also other challenges when using geospatial data. Distinguishing between, for instance, built-up and non-built up land use, water bodies and rural areas can be relatively straightforward, although quite time-consuming and requires a trained eye. Distinguishing between sub-classes, however, can be more complicated and cannot always be reliably ascertained from image interpretation and requires field verification and checking (UN-Habitat 2015). The interpretation of the satellite images accordingly need field verifications to improve data accuracy and these are for obvious reasons resource-intensive and not always a priority, which in turn challenges the reliability and robustness of the data produced both at local, national and global levels.

Second, it is not always possible to merge data collected from various sources, including from public and private actors. As suggested by the poor data availability on target 11.5, which includes a multiplicity of sources such as insurance companies, it is not always possible to merge the different data sets. Greater Manchester also highlights how fragmentation between public and private providers complicates data collection and points at the risk of data becoming increasingly privatised and limited in access and applicability.

Third, the focus on well-established sources also in part contradicts the desired focus on openly sourced data. There is therefore a trade-off between drawing from existing statistical frameworks and the need for new and improved data sources. The UN Statistical Commission stresses the urgent need for investments to enhance national statistical capacity in order to measure progress towards the post-2015 development agenda at national, regional and global levels and to enable national statistical offices to play a leading and co-ordinating role in this process (UNSC 2015). The SDSN (2015) report similarly highlights the crucial role of NSOs in the potential success of the data revolution, but also emphasises how the growing role of civil society organisations and businesses offer unprecedented opportunities for using new types of complementary metrics and data.

This trade-off is demonstrated in our pilot study as the need for reliable data often stands in contrast to challenging existing frameworks and modes of collection. The data collected for this pilot study primarily draw on already existing censuses, surveys and other administrative data. However, these sources frequently draw a firm distinction between formal and informal sectors, such as in relation to the targets on housing, transportation and waste management, which in turn perpetuate a dichotomous relationship between the two. This trade-off and its relationship to data on informal practices therefore require substantial work and attention so as not to reiterate a binary approach.

Fourth, both Gothenburg and Kisumu highlight the need for better checks and balances for the data produced. Kisumu emphasises the need for strengthening accountability and monitoring practices in relation to data collected on for instance waste management, whereas Gothenburg suggests using pedigree scores to evaluate the quality of the data collected for the target on disasters.

6. Disaggregated

The sixth principle states that reference should be made to indicators that lend themselves to disaggregation in order to track inequalities in SDG achievement.

A number of concerns are raised in this pilot study in relation to the feasibility of disaggregation. The most crucial is connected to the uncertainty of reporting levels and geographical units to be used. The units used for the indicators do not always specify what the geographical area should be and several different spatial units are used across the proposed indicator sets, including “urban area”, “total city space” and “urban agglomeration”. The unit of urban agglomeration has long been proposed by UN-Habitat (e.g. UN-Habitat 2012)) as the standard area of reference since it deals with the problem of varying definitions of cities across the globe. For the sake of comparison, it is the built-up area comprising the city centre and the suburbs forming a continuous settlement which should be included in this unit. This could be either smaller or larger than the administrative boundaries of the city in question.

In part using the unit of urban agglomeration deals with the contextual sensitivities around what constitutes a city, with the blurred line or continuum between urban, peri-urban and rural, and how municipal boundaries do not necessarily align with the built-up area of cities. Still, it has proven very difficult to collect and compare data across municipal boundaries in this study. There are also concerns about the difficulties involved in aggregating certain data on this unit. The unit of urban agglomeration is not widely used by local authorities and it has been very difficult to collect data on this level. Instead

the data have been collected at different levels according to already existing administrative divisions and since these differ between the cities, the comparability of the data collected is often compromised.

Although certain geospatial data can easily be made available for the unit of urban agglomeration, it is frequently a challenge to match this with, for instance, census-based population data which are not readily available at this level without access to detailed GIS capacity and expertise. In this pilot study, very few reliable data have therefore been collected for the unit of urban agglomeration and issues of both aggregating and disaggregating data are significant across all cities.

7. Universal

The seventh principle suggests the indicators should be applicable at the global, regional, national, and local levels. It is also stressed that the ability of indicators to be localized is particularly important to encourage active implementation of the agenda within sub-national levels of government, such as cities.

This principle of universality has been difficult to abide by in the pilot study due to a range of definitional issues as well as discrepancies between local realities, varying practices of data collection and local definitions used, which taken together greatly complicate cross-city comparison. In one of several reports on how to localise the targets and indicators, it is proposed that data constraints are more pronounced at the sub-national level than at the national level (UCLG 2014:9). The standalone urban Goal 11 is therefore expected to mobilise and empower local and regional authorities and other urban actors through local ownership (UCLG 2014:7). However, the significance of this local ownership is unclear and at times problematic since the relationships between NSOs and local authorities are not always aligned and frictionless. This is particularly emphasised in both Bangalore and Kisumu. Goal 11 is therefore thought to face substantial political and operational challenges due to conflicts of interest, but also since the level of reporting will be hard to identify and coordinate across multiple scales of government (ICSU 2015:55).

Although Goal 11 requires multi-sectoral, multi-scale and multi-actor involvement, it has been made apparent in our pilot study that local authorities need to be directly involved in the implementation and reporting processes for the targets and indicators to have real impact on policy-making. Still, this is far from straightforward due to a wide variety of challenges and capacities of cities to do so. These include but are not limited to frequent top-down reporting practices, limited survey samples, and the lack of local coordination, capacities and funds.

8. Mainly outcome-focused

This eighth principle suggests that indicators are to track outcomes rather than means. Yet the choice between input and outcome measures must be handled pragmatically. In some cases, input metrics can play a critical role in driving and tracking the changes needed for sustainable development.

Similar to this principle, there is agreement between the cities that outcome-focused indicators are to be prioritised and preferred. However, this is not always the case and several of the indicators are critiqued for not being outcome-focused, particularly the indicators for target 11.2 and 11.4 as described in more detail in the following section.

9. Science-based and forward-looking

The ninth principle states that since the SDGs are expected to cover a 15-year period, the indicators must be designed in such a way to account for these changing global dynamics and to anticipate future changes.

The evidence from this study fully supports the importance of this principle. The indicators not considered outcome-focused are also deemed not necessarily future-oriented. For instance, they measure the existence of infrastructure for target 11.2 and budget allocation for target 11.4, rather than the use of and accessibility to these different aspects by different social groups. Also, for several of the indicators, the rationale provided needs to be more explicit, stating the scientific evidence supporting specific units measuring, for instance, the distance of 0.5 km to public transit in indicator 11.2.1 and to green and public space in 11.7.2.

10. A proxy for broader issues or conditions

This tenth and last principle emphasises how a single indicator cannot measure every aspect of a complex issue and should thus be used to track broader concepts.

As already suggested in relation to the first principle, the overall consensus of the local authorities participating in this study suggests that for these targets and indicators to become useful, integrated and implemented at a local urban level, they need to be made relevant for local policy-making and implementation. For this to be possible, they cannot be too few and general in scope and range. One way for these proposed indicators to become more relevant and be used to track broader developments is for them to be integrated into already existing frameworks as complements and additional tools. Without this level of integration, it is argued they will rather be a reporting burden than helpful in the transitioning to more sustainable urban development.

Images from Bangalore (Helen Arfvidsson, May 2015)

11.1 HOUSING

By 2030, ensure access for all to adequate, safe and affordable housing and basic services, including the upgrading of slums

The target on housing is considered highly relevant across all five cities, but with the proposed global reach of the SDGs (as opposed to the low/middle income country focus of the MDGs, from which this indicator originates), it is nevertheless unclear why the focus rests on slums and informal settlements. **Given that new forms of poverty, vulnerability and marginalisation attached to rapid urbanisation are not exclusively present in informal settlements or even slums (a term that is widely regarded as pejorative), indicator 11.1.1 would become more inclusive, relevant and comparable across the globe if slightly reformulated. Since the focus of the target is on adequate, safe and affordable housing, it is proposed that the focus on slums and informal settlements is replaced by 'inadequate housing'.** The notion of inadequate housing would, in turn, address access to basic services, security of tenure, overcrowding and quality of housing, but without singling out slums and informal settlements in a dichotomous rendering of cities. As a range of alternatives explored for indicators 11.1.1 will illustrate, security of tenure and overcrowding are of high relevance in cities such as Greater Manchester and Gothenburg despite the lack of informal settlements as defined by UN-Habitat.

11.1.1

Percentage of urban population living in slums or informal settlements

This indicator is considered complicated as all cities have struggled to provide reliable data. The reason is connected to definitional problems and the lack of comparability across the five cities. Bangalore, Cape Town and Kisumu all use different definitions of informal settlements which complicate comparison. Also, the data produced are collected infrequently and are based primarily on

Relevance ↑ Feasibility →

	Low	Medium	High
High	GM	CT	BLR, KIS
Med		GOT	
Low			

projections and estimations in the years between the censuses. In Greater Manchester and Gothenburg a distinct focus on informal settlements is deemed problematic since the concept is not used and is of little value there. Still, all cities emphasise the relevance of the indicator and the need to focus on adequate, safe and affordable housing as the target states, and thus recommend the focus on informal settlements to be replaced by 'inadequate housing'. This reformulation would make the indicator relevant and comparable across all cities, as the matrix suggests.

DATA AVAILABILITY / FEASIBILITY

Bangalore, Cape Town and Kisumu have all provided a percentage for this indicator. In Bangalore, 8.4% of the population live in informal settlements according to data from the 2011 Census of India. In Cape Town, an estimated 10.1% lived in informal settlements in 2013, excluding informal backyard dwellings. In Kisumu, the percentage calculated for this pilot study is 64% based on the population of the urban agglomeration, hence excluding the more rural areas of the city.

The data collected for this indicator nevertheless remain unreliable in all three cities. The cities share a common concern about the UN-Habitat definition of informal settlements not being applicable, in part since it is not widely used in each respective national census. The definition focuses on the following five deprivations: access to water; access to sanitation; security of tenure; durability of housing; and sufficient living area. Kisumu describes the concern most bluntly in that if they would use all five deprivations, most of the city would be considered a slum. Kisumu has furthermore struggled with difficulties in accessing updated population statistics from the Kenyan National Bureau of Statistics (KNBS), as well as updated satellite images of the city's built-up areas, in the latter of which the IIHS and the Bangalore team ended up assisting Kisumu.

Bangalore similarly highlights how the national Indian definition of slums and informal settlements does not comply with the UN-Habitat version and how this, in turn, is a very politically charged issue. The definition used in the census will most probably not change. The proposed solution is instead to put an asterisk next to the indicator and accordingly allow for locally appropriate versions. However, this obviously raises questions of the comparable nature of the indicator if all cities use differing definitions. It points at how the desired outcome of comparable and disaggregate data does not necessarily match the sensitivity of and need for local priorities and contexts. In other words, there is a clear discrepancy between the call for international standards on the one hand, and local realities on the other, which is not easily bridged.

Cape Town raises further concerns over the accuracy of South African national census data and struggles with the need to convert the data from the unit of dwellings to that of population. If reported on annually, they indicate that the data would primarily be estimations and projections in the intercensal years and hence not necessarily very reliable. This draws attention to the difficulty in striking a balance between the call for frequent reporting, as a response to the infrequent MDG reporting, and the quality and level of disaggregation of the data collected. Cape Town also points to how what is meant by "urban population" needs to be defined better; whether this is the population within the administrative boundaries or the urban agglomeration.

In Greater Manchester, the concept of slum is not considered relevant and in Gothenburg, the term informal settlements is primarily used in relation to so-called EU migrants, but this group is too small and too mobile to be of significance for international comparison. Instead, the two cities have explored alternative indicators based on security of tenure, overcrowding and tenure type.

In relation to security of tenure, Greater Manchester describes that as a result of how rent control was removed in the 1990s, there was a steep rise in so called "Assured Shorthold Tenancies" within the expanding private rental sector. These are 6-12 month contracts with no right to remain and a constant fear of eviction. In the UK, these temporary contracts are the most common cause of homelessness. The

proportion of homeless in Greater Manchester is 0.02% of the population which for this indicator is statistically insignificant. Similarly in Gothenburg, data on homelessness only reflect a fraction of the actual problem of security of tenure. 0.14% of the population are homeless, but this figure only accounts those who have been in contact with the authorities. A more relevant indicator in Gothenburg would instead be the number of evictions across different parts of the city.

When it comes to overcrowding, there are yet again definitional problems since neither the British nor Swedish definition is similar to that of UN-Habitat. In the UK, 4.5% of the entire population in 2011 lived in overcrowded households, but the data are currently not available at the level of Greater Manchester. In Sweden, an annual national household survey measures overcrowding according to two different norms. The first defines two persons per room, with the living room excluded, as overcrowded and the figure for 2013 for this norm on a national level was 4.1%. The second norm defines more than one person per room as overcrowded and the respective figure for this was 17%. The unit used in these two norms is per household rather than people living in overcrowded households. Data collection at a city level would be possible but is considered very costly. In Gothenburg, an indicator on overcrowding is considered relevant, but to produce reliable data at a detailed enough level is deemed very difficult. At the Gothenburg Property Management Department (*Fastighetskontoret*), a call to reintroduce the national census – which was abolished a few years ago – was made to improve data collection in terms of housing.

In addition, Gothenburg has explored the usefulness of the UN-Habitat Global Urban Indicator on "Tenure types"[3] as an overall indicator to describe the housing situation and has found it possible to produce data on this. By using this as an alternative indicator, the relationship between access to private and public housing could potentially be established. In Greater Manchester the data could possibly be produced, but it is believed to be costly. In Cape Town, the indicator was positively received as it could potentially help with developing overall housing strategies. Still, concerns were raised over difficulties in accessing detailed and reliable data. Bangalore, on the contrary, dismissed this as an alternative indicator as it is deemed too complicated and impossible to measure objectively.

RELEVANCE

The single most important adjustment that would make this indicator more relevant to all cities would be to replace informal settlements with inadequate housing, which would then include access to basic services, tenure security and quality of housing. Overall the cities agree that a focus on adequate housing is crucial for sustainable development to be achieved and that this target draws attention to shortcomings and inequalities. However, it can only have the potential to influence policy-making and resource allocation in all cities as a revised indicator that does not single out slums in a dichotomous manner.

RECOMMENDATIONS

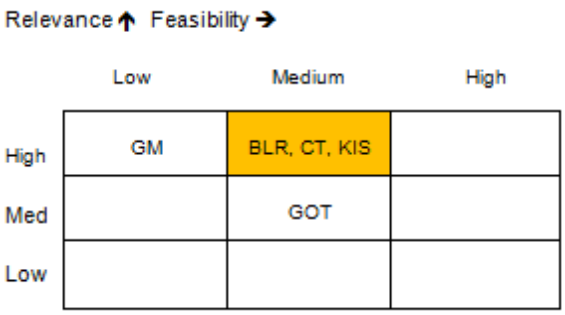
The main recommendation derived from this pilot study is therefore to reformulate the indicator to focus on inadequate housing rather than informal settlements in order for the indicator to have a global reach. If the indicator nonetheless remains as it is currently formulated, the main suggestion is to use the term 'informal settlement' exclusively and not "slum" due to its derogatory connotations. There is also a need for definition clarity, improved quality of data collection and a call for less frequent reporting for the indicator to become more feasible.

[3] http://ww2.unhabitat.org/programmes/guo/guo_guide.asp#ind1

11.1.2

Proportion of population that spends more than 30% of its income on accommodation

There is moderate data availability for this indicator. All cities, apart from Kisumu, are or will be able to collect data from national household surveys. However, there are concerns about data constraints in relation to these household surveys due to lack of annual frequency and limited sample sizes. In Kisumu, the data were collected through a field survey of limited reach and scope. **The relevance of the indicator is generally high, as it is considered useful for planning purposes, with the exception of Gothenburg where it is thought to be of little value to the city and too costly to produce on an annual basis. There are also overall concerns raised about the assumed straightforward relationship between income and accommodation costs, as well as the quality and underreporting of self-assessed income data which in turn risks overestimating the indicator.**



DATA AVAILABILITY / FEASIBILITY

In Bangalore, data are not readily available, but are calculated as an average based on a limited sample survey. Partial data can be extracted from the National Sample Survey Organisation (NSSO), but for the feasibility to increase the survey question needs to be reformulated and the sample size increased. The feasibility is hence contingent on the ability to alter the sampling design and survey size on a national level.

In Cape Town, data are currently not collected on an annual basis. However, Statistics South Africa (Stats SA) will in the near future produce statistically significant results on an annual basis in their General Household Survey. The data will then be available at a city level with the possibility of annual reporting. The reporting unit is nevertheless stressed to be changed to household since it is difficult to convert data on income, which is usually measured at household level, to the level of population.

In Greater Manchester, the required data are only available at a national level through the Family Resource Survey conducted by the UK Office for National Statistics (ONS). There are great costs involved in extending the scope of the survey to be able to report on a city level as well as on an annual basis. The same holds true for Gothenburg. Currently the data are only available every fourth year, by household and at a regional level. Statistics Sweden (SCB) would, however, be able to produce the information required, albeit at a significant cost. There are also concerns raised that annual reporting would place unnecessary strain on the willingness to participate in household surveys and **the recommendation is therefore to not report annually on this indicator since the figures reported will be relatively stable over time.**

In Kisumu, the data required for the indicator were produced through a field survey conducted for this specific pilot study. The findings from the survey suggest that 37% of the population spend more than 30% on accommodation. When the findings are broken down into income quintiles, nobody in the highest bracket spends more than 30%, while in the lowest bracket 44% of the inhabitants spend more than 30%. There are, however, some limitations in terms of scope and range of the survey as its sample size remained limited. Kisumu suggests data for this indicator could possibly be collected annually through a similar survey, but the feasibility of such an endeavour is dependent on resources and local priorities.

RELEVANCE

The indicator is overall considered relevant for planning purposes and to measure the affordability of housing, particularly in Cape Town and Kisumu. In Greater Manchester, the indicator could potentially support standardisation of data gathering across the region. There are still concerns highlighted that the indicator does not fully measure the access to affordable housing since the relationship between income and accommodations costs is not necessarily straightforward. In Cape Town, for instance, there is a complex housing payment and rental environment, including some non payment or payment in kind. This is also the case in Kisumu, where the relationship between informal settlements and income is far from clear-cut. Bangalore also stresses the need to include costs of basic services. For the indicator to become more relevant, all cities agree that it should be disaggregated by income quintile.

RECOMMENDATIONS

Our recommendations to strengthen the indicators include: to add disaggregation by income quintile; to change the unit of analysis to household rather than population; and to question the need for annual reporting since it is considered too costly and not necessarily relevant. There is also a need to better explain the complex relationship between income and accommodation costs in the rationale provided for the indicator.

Images from Gothenburg and Bangalore (Helen Arfvidsson, May 2015)

11.2 TRANSPORT

By 2030, provide access to safe, affordable, energy efficient and accessible transport systems for all people and goods, improving road safety and expanding public and non-motorized transport, with attention to the needs of those in vulnerable situations

The target on transport is regarded as fundamental to achieve sustainable development. However, several concerns have been raised in the five cities since the proposed indicators are deemed to be insufficiently aligned with the target and do not adequately measure access and safety. There is also a concern about how the indicators favour formal means of public transportation and hence perpetuate a dichotomous understanding of formal and informal transportation modes. This has been apparent especially with respect to Kisumu. Other limitations include how energy efficient vehicles and goods distribution are not at all addressed by the indicators.

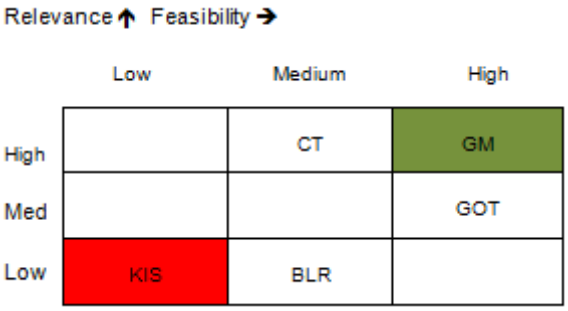
Although the two main indicators are considered feasible, they are not necessarily the most useful ones. The main recommendation is instead to replace them with a more outcome-focused indicator on commuter time and/or the ratio between using private and public transportation. The reasons behind this suggestion include how travel time is often seen as a better measure of overall city efficiency since it addresses the actual use of the services rather than simply the existence of the infrastructure. Kisumu stresses how an indicator measuring the average travel time between home and work would better encompass the status of the roads, the congestion and the waiting-time involved. In Gothenburg, it is instead the travel time ratio between using private and public transportation that would be the most crucial indicator to include.

11.2.1

Percentage of people living within 0.5 km of public transit [running at least every 20 minutes] in cities with more than 500,000 inhabitants

This indicator is feasible to collect data on, but not deemed the most relevant indicator to measure the target since it does not take into account the outcome of the services provided. None of the cities has

the data readily available. The distance unit is relatively easy to measure across the five cities, whereas the frequency unit has proved much more difficult to produce reliable data for. Only Gothenburg is currently able to produce the detailed information required for the indicator as formulated, while Greater Manchester uses a more in-depth index on 'Accessibility Level' that includes walking access time, average waiting time and service reliability. Kisumu draws attention to the lack of formal and scheduled public transportation in the city and calls for more clarity on how to account for its privately/informally run public transportation system, what modes of transport to include, and how to measure the frequency aspect without access to timetables.



DATA AVAILABILITY / FEASIBILITY

Current data availability is poor since none of the cities has the data readily available, but the feasibility nonetheless varies from low to high. In relation to the distance unit of 0.5 km, this is considered relatively easy to assess through geospatial data. The factor that affects the feasibility of measuring this unit is the access to GIS equipment, software and expertise which varies greatly between the cities. In Kisumu, the lack of access to updated satellite images and GIS expertise makes it difficult to report annually.

The calculations made for the distance unit in Bangalore and Kisumu are based on rough estimations since there is no detailed information available on the locations of the public transit stops. In some cases, these change on an ad-hoc, demand-driven basis and it is difficult to keep the data updated. In Bangalore the calculation is also based on the assumption of the population being evenly distributed around the transit points. With these limitations in mind, 42% of the population in Bangalore live within 0.5 km of public transit. In Kisumu, the major transport routes were identified, digitized and buffered against the population (see Figure 1). Based on these estimations, 55% of the population have access to public transportation, which in the case of Kisumu includes tuk-tuks (tricycles), matatus (minibuses), piki-piki (motorbike) and bicycle taxis.

In Cape Town, the calculations made by Transport for Cape Town differ from Kisumu since only formal and scheduled public transportation was included and consequently not privately and/or informally run minibus services. Based on this differentiation, 83% of the population have access to public transportation within 0.5 km distance. All three cites use the distance unit as the 'crow flies', rather than the actual walking distance with physical barriers included, due to limitations in conducting geospatial data verification.

The frequency unit of 20 minutes is overall considered much more difficult to include. It has not been possible at all to collect reliable data on this unit in Bangalore, Cape Town and Kisumu. In Gothenburg, the detailed data required can be produced by the national agency *Trafikanalys* at a city level by running timetable data through the TRACC software. Although the data can be reported on annually, there will only be small variations and this is considered neither realistic nor relevant. Transport for Greater Manchester uses a slightly different measurement/index in order to provide a more in depth analysis on accessibility. The index includes walking access time, service availability (average waiting time) and service reliability. Based on these calculations, 63% of the population in Greater Manchester have mid- to high-level accessibility to public transportation (see Figure 1).

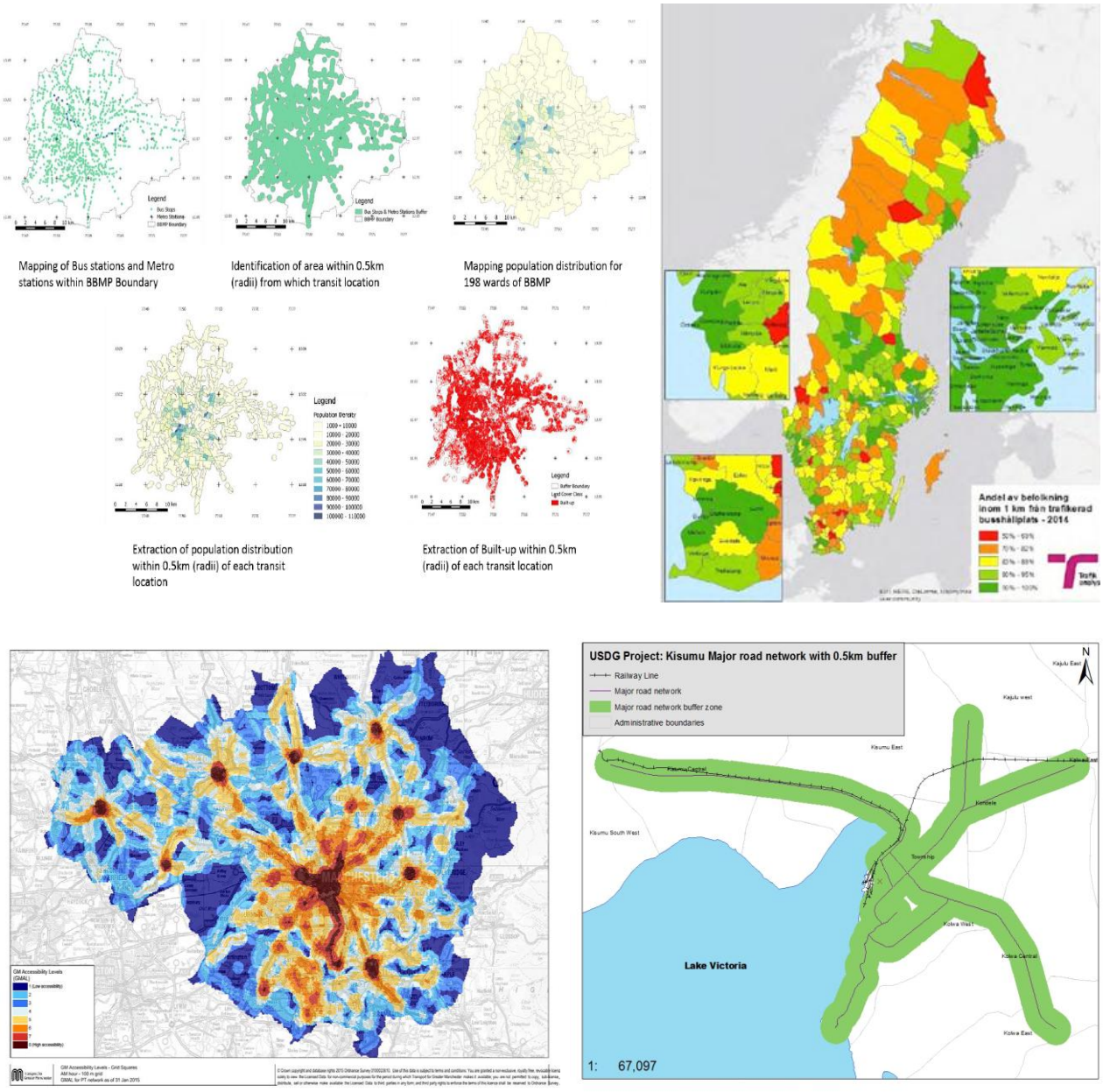


Figure 1: Data availability and visualisation for indicator 11.2.1 in Bangalore (top left), Gothenburg (top right), Greater Manchester (bottom left) and Kisumu (bottom right).

RELEVANCE

The indicator is considered to have an input focus rather than output focus since it centres on the proximity to public transportation rather than the actual demand or time spent travelling. Bangalore, Cape Town and Kisumu all question the usefulness of the 20-minute frequency unit and suggest it should be removed since it does not necessarily reflect variations in demand. Gothenburg suggests the need for a 'whole journey' approach with a focus on the entire trip; from doorstep to destination, while Greater Manchester doubt that the city would measure the actual indicator but simply provide data on their existing index. Both Gothenburg and Greater Manchester describe how the indicator would bring little value to the respective cities, since there is already a detailed focus on accessibility in place.

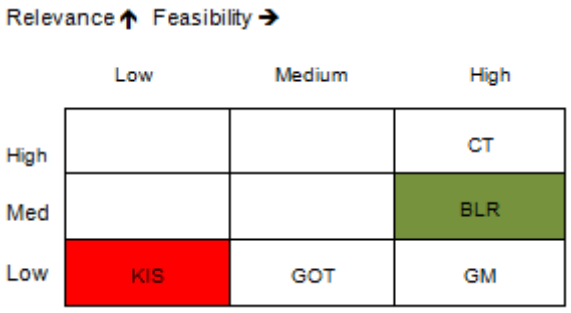
RECOMMENDATIONS

Our overall recommendation is to replace the indicator with a travel time-related indicator since neither demand nor waiting time is considered. If the indicator is still to be included, a couple of improvements are needed. The first is to state that distance of 500m is supposed to be how the "crow flies" for reasons of comparison. Second, the frequency unit should preferably be omitted, but if included, it should be explicitly defined what days and hours to measure the frequency; peak, off-peak or an estimated average. Third, clearly state if informal public transportation such as minibuses and tuk-tuks should be included. Forth, establish if the relevant geographical unit is the metropolitan area or the entire commuting zone. Lastly, annual reporting is not considered relevant since there will only be small variations from year to year.

11.2.2

Km of high capacity (BRT, light rail, metro) public transport per person for cities with more than 500,000 inhabitants

For the cities with high capacity public transport, there is good data availability. However, the relevance of the indicator is not agreed upon among the five cities since it only measures the available infrastructure rather than the actual use of the services. Also, concerns are raised over how high capacity public transportation may be unequally distributed across the respective cities and hence not reflect the focus on access and those in vulnerable situations as formulated in the target.



DATA AVAILABILITY / FEASIBILITY

There is generally good data availability in Bangalore, Cape Town, Greater Manchester and Gothenburg, while there are no data available in Kisumu due to the lack of high capacity public transport in the city. The data are generally collected from the local authority transport departments or regional agencies responsible for public transportation. It is, however, unclear which geographical unit to use. Gothenburg suggests the commuting zone as the most appropriate unit, but this choice would nevertheless complicate the comparison in terms of population data.

In Bangalore, there are 42.3 km of metro line, but only 50% is currently operational. In Cape Town, the data are readily accessible and available annually. There are 31.4 km of BRT and 220 km of rail. These are centreline measurements for the network length. When adding the population data, which are estimates, there is 0.00000083 km BRT per person and 0.00000058 km rail/person. Cape Town suggests that smaller reporting units are more appropriate, for instance per 100 000 population. Also, there may be weaknesses in the use of centreline kilometres, as dual lines may be used in some areas, and sub-lines (feeder network) may be included which will then increase the line length. A better definition is therefore called for to clarify whether it is the centreline or line-km which should be used, as this may affect the indicator dramatically. With such a definition in place, this indicator is feasible to report on.

In Greater Manchester there are 96 km of tracks which means 0.00004 km per person and in Gothenburg 80 km of tram tracks or 0.00015 km per person. However, the data in Gothenburg are

partial since *Västtrafik*, the agency responsible for public transportation in the western part of Sweden, does not have a clear definition of what is included in high capacity public transport. Once such a definition is in place, more reliable data can easily be produced.

RELEVANCE

The relevance of the indicator is not agreed upon among the five cities. In Cape Town it is considered useful and partially so in Greater Manchester, but insignificant in Kisumu and Gothenburg. Gothenburg argues that it is too technocratic to measure infrastructure and not actual traffic or passenger use since high capacity transport might be concentrated in few geographic areas and hence unevenly distributed.

RECOMMENDATIONS

The main recommendation is to replace the indicator with a focus on travel time. If the indicator remains, it needs better clarifications on what and how to measure and preferably smaller units such as per 100 000 people.

11.2 Secondary

Share of trips by walking, by bicycling, and by public transport

There is moderate data availability for this secondary indicator, but comparisons are difficult to make across the cities due to different ways of measuring. For the indicator to become more useful and reliable for international comparison, the methods used need to be better defined and harmonised.

DATA AVAILABILITY / FEASIBILITY

In Cape Town it is possible to provide data on this indicator, but it is currently only measured every five years through a cordon survey. The modal split for 2012 estimates cycling 0.2%; walking 4%; public transport 32%; and private/other 64%. The data are for all day travel in both directions on a typical working day, but there are limitations in how the count estimations of persons per vehicle are conducted. It is further considered too costly to report on this indicator annually and the City of Cape Town sees five-year reporting as adequate to understand trends. From 2015, the national General Household Survey will provide data on modal split that can be disaggregated to the city scale, but this combines bicycles and motorcycles.

With data derived from Transport for Greater Manchester's 2013 Travel Diary Survey, the share of trips by walking, bicycling and public transport is 40%, of which 28.6% is by walking and 1.7% bicycling. The TfGM Travel Diaries are collected on an annual continuous rolling basis through face to face interviews which are based on random stratified sampling methods. TfGM currently has three years' worth of data using this methodology.

In Gothenburg, modal split data are produced both nationally and by the local authorities. *Trafikanalys*, the national agency for monitoring transport patterns, conducts annual modal split surveys, but using distance travelled rather than number of trips. Data are also collected regionally and locally through different surveys. In Gothenburg there are both fixed and temporary measuring stations for collecting data on bicycle use, but the data are generally considered weak and unreliable. All these surveys use different ways of measuring, making comparison very difficult. For better coherence, the indicator

needs to specify what is being measured in terms of the length or number of trips, what type of trips, as well as the exact method to use in order to increase comparability.

RELEVANCE

In Cape Town, the indicator is considered useful, particularly for the transport authority and spatial planning, but concerns are raised about how it does not take into account travel time and multi-modality. In Gothenburg, the indicator is considered highly relevant since it relates to both national and local goals of increasing the share of trips by public transportation, walking and bicycling. Still, the lack of comparability poses a great disadvantage and for the indicator to become useful internationally, the methods used need to be harmonised. Perhaps this will require parallel measurements using old and new methods simultaneously in order to guarantee reporting continuity, as suggested by Gothenburg.

RECOMMENDATIONS

Several clarifications are required for this indicator to become more useful for comparison: detailed information on what and how to measure the indicator; provide rationale for choosing either kilometres or number of trips; define the type of trip measured, only work-related or all trips made; link to international standards developed by Digimove, Eurostats or UNECE.

11.2 Secondary

Share of income spent by urban households on transport (by income quintile)

There is poor to moderate data availability for this indicator. The data are generally collected through national household surveys with limited scope and reach at the city level. Cape Town also questions the reliability of self-reported income in these surveys as well as highlights the need to differentiate between costs associated with public and private transportation.

DATA AVAILABILITY / FEASIBILITY

In Cape Town, the data are currently not available, but may be so in the future. In the 2015 national General Household Survey the data can potentially be collected but this requires a request to Statistics South Africa to include this particular indicator. Similarly in Greater Manchester, data on the indicator are not readily available, but for an administrative cost, the indicator could potentially be included in the TfGM Travel Diary Survey.

In Gothenburg, data are available on a national level through the National Household Survey conducted every fourth year by Statistics Sweden. The share of total spending on transport in 2009 was 13.3% at the national level. More detailed data can be produced, but at a significant cost and annual reporting is considered to be of little value.

In Kisumu, data were collected through a field survey conducted specifically for this pilot project. The survey suggests that the part of the population with the highest income spends the most on transport. The reason behind this is assumed to be connected to the higher proportion of private vehicles. In the lowest income areas, the cheapest means of transportation, including bicycles, piki-pikis and tuk-tuks, are being used which lowers the transportation costs.

RELEVANCE

For the indicator to become more relevant, it needs to be reformulated to focus on the affordability of public transportation systems. Particularly in Kisumu, costs were found to be the main determinant for choice of transport mode in lower income areas, while in higher income areas, comfort was equally important. This is consistent with the worldwide evidence from transport behavioural research. Kisumu also stresses how people from the lower-income areas generally spend more time commuting due to traffic congestion and long waiting times. This indicator can therefore be useful to bolster arguments for accessible and affordable public transportation, particularly in lower income areas. Also Cape Town and Gothenburg stress this argument, while Greater Manchester suggests the indicator might miss how people from lower income areas may walk or cycle since they cannot afford to take public transportation.

RECOMMENDATIONS

Our findings propose that the indicator should be reformulated to focus on the cost of public transportation or alternatively on the average cost of different modes of transport. Without this distinction, the indicator is considered to be too vaguely defined and of little value.

Images from Gothenburg and Kisumu (Helen Arfvidsson, March 2011 and April 2015)

11.3 LAND USE

By 2030, achieve more equitable and efficient land use through participatory urban and regional planning and management

The target on more equitable and efficient land use is not reflected in the proposed indicators and there is a general consensus among the cities in favour of an alternative indicator to reflect better the spatial inequalities and more equitable land use. Based on a rationale of the compact city and urban densification, the proposed indicator 11.3.1 does not necessarily measure mixed land use and articulated densities and it is proposed that this indicator is reconsidered.

11.3.1

Ratio of land consumption rate to population growth rate at comparable scale

Consensus on this indicator suggests how it does not reflect the target since average density does not address spatio-temporal variations in density. Greater Manchester goes as far as to describe the indicator as a blunt instrument that is meaningless for planning purposes. Conversely, Kisumu considers the indicator very valuable to show how land consumption is increasing in the city, but agrees that it does not reflect the target of equitable and efficient land use. Overall concerns include the access to updated geospatial data and as a result, the limited capacity to report on the indicator annually.

Relevance ↑ Feasibility →

	Low	Medium	High
High		KIS	
Med	CT	BLR	GOT
Low	GM		

DATA AVAILABILITY / FEASIBILITY

Bangalore, Gothenburg and Kisumu have all collected data on the unit of urban agglomeration, but only Gothenburg managed to illustrate a ratio which was based on the population of the built-up area, while the other two cities used the population data of the entire cities. This was further complicated in Bangalore since the existing population data are not comparable over time as the administrative boundaries of the city have recently expanded. In Cape Town and Greater Manchester, no data were readily available on the unit of urban agglomeration. These findings reflect how the population data do not easily align with the unit of urban agglomeration since it is frequently collected and reported on in relation to administrative boundaries.

To calculate the ratio, Kisumu used two satellite images, from 2003 and 2011 respectively (see Figure 2). They calculated the land consumption rate of the built-up area to be 5.9% and used an estimated average growth rate of 2.1%. The ratio between land consumption and population growth was then calculated to be 2.81 which indicates that the built-up area in Kisumu is increasing much faster than the population growth rate. Despite limitations with these calculations, Kisumu stresses the usefulness for the local authorities to visualise and acknowledge this relationship.

In Gothenburg, the built-up area is defined as an area with at least 200 inhabitants and no more than 200 metre distance between the buildings. This definition is shared among the Nordic countries, but differs from international standards. The data are produced every fifth year and it is not considered relevant to measure this indicator annually due to substantial costs and since the time interval is deemed too short. National reporting by Statistics Sweden is suggested since the built-up area crosses administrative boundaries.

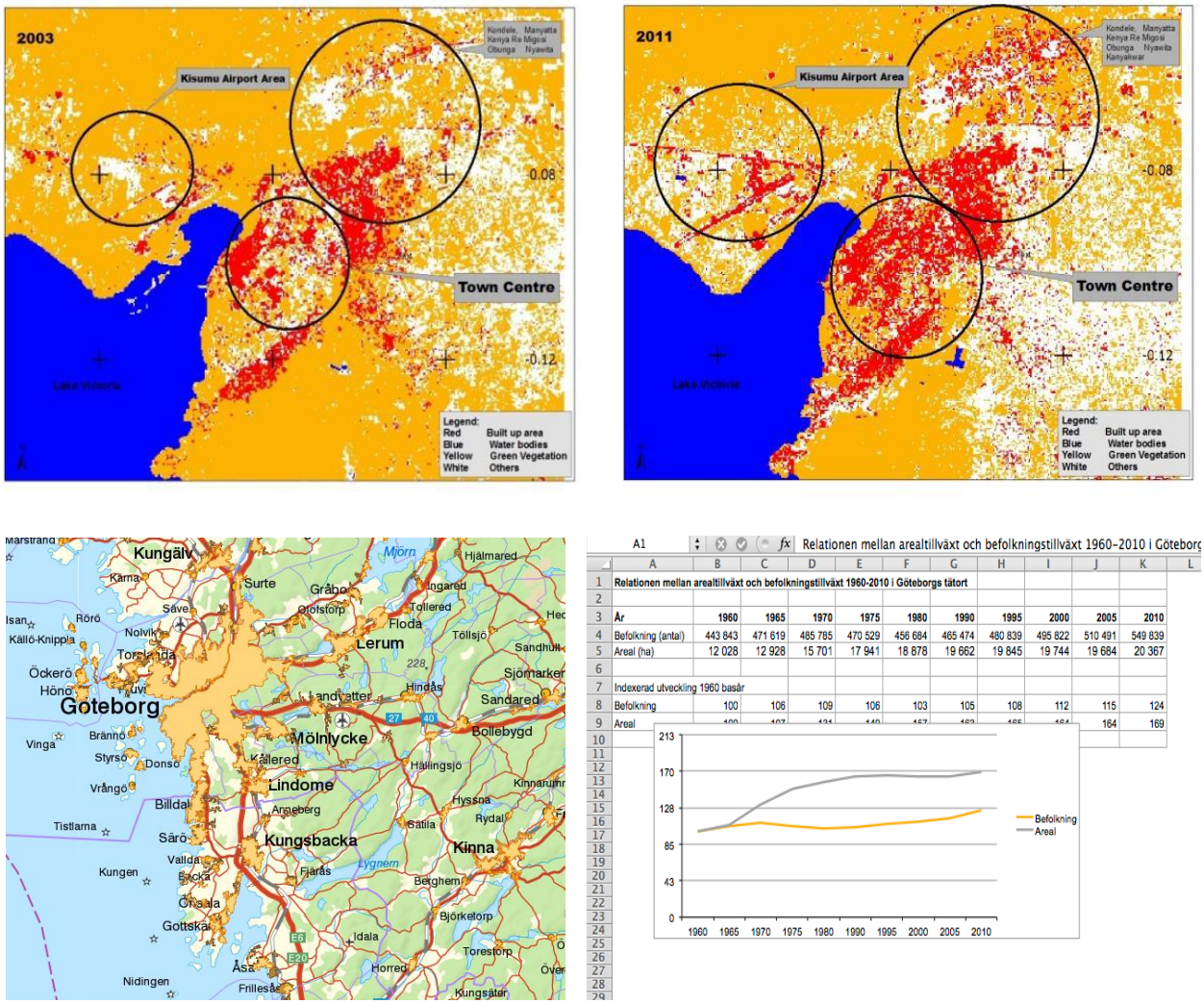
Bangalore and Kisumu draw attention to the lack of GIS expertise within their local authorities, while the City of Cape Town has good GIS capacity, but highlights challenges related to data availability, and the type and volume of analysis required. Cape Town has a defined 'urban edge' within the municipal boundary which is used for planning and related purposes. For the indicator to become more feasible, enhanced GIS equipment and assessment capacity are required, but also additional financing for regular monitoring. Details on the exact way to calculate the ratio, including the standard unit of urban agglomeration, also need to be better specified.

RELEVANCE

There is disagreement over the relevance of this indicator, from meaningless to potentially useful if better defined. Bangalore highlights the importance of the indicator for cities without regulated planning practices, which are either growing or shrinking uncontrollably. Still, all cities agree that an alternative indicator that better measures the variation of density within cities would be more useful. In Gothenburg such an alternative would include a ratio of what is being built within and outside of transit zones in order to identify access to public transportation as well as unsustainable patterns of sprawl at a regional level. Also Greater Manchester stresses that for a city-region in which planning practices are already heavily regulated, it would be more useful to draw attention to more detailed developments rather than a much generalised ratio that does not account for fragmentations within the built-up area.

RECOMMENDATIONS

The overall recommendation is to find a more suitable indicator to account for variations in density and land use. However, if the indicator is to be included the exact definitions and calculations need refinement, reporting should not necessarily be annual but rather every fourth year, and the ratio should be illustrated in the form of a graph to show the relationship over time as well as visualised through a map of the built-up area (see Figure 2).



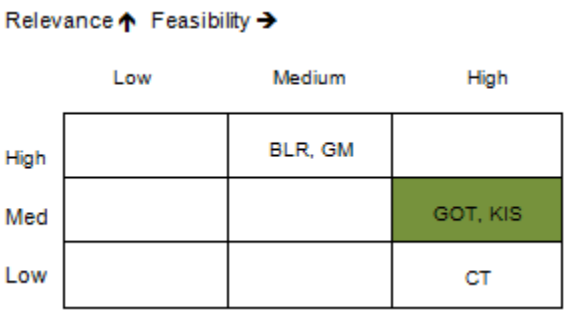
Relationen mellan arealtillväxt och befolkningstillväxt 1960-2010 i Göteborgs tätort										
År	1960	1965	1970	1975	1980	1990	1995	2000	2005	2010
Befolkning (antal)	443 843	471 619	485 785	470 529	456 684	465 474	480 839	495 822	510 491	549 839
Areal (ha)	12 028	12 928	15 701	17 941	18 878	19 662	19 845	19 744	19 684	20 367
Indexerad utveckling 1960 basår										
Befolkning	100	106	109	106	103	105	108	112	115	124
Areal									164	169

Figure 2: Maps of the built-up area of Kisumu, 2003 and 2011 (top) and the built-up area of Gothenburg including a graph indicating the ratio between land-use and population growth (bottom).

11.3.2

Cities with more than 100,000 inhabitants that implement urban and regional development plans integrating population projections and resource needs

In each of the five cities a version of such plans exists, but the consensus is that the mere existence does neither reflect how well it is being implemented nor the quality of these plans. The overall recommendation is to reformulate the indicator away from a tick-box exercise to include a focus on how these plans are being implemented.



DATA AVAILABILITY / FEASIBILITY

Although such plans exist, each city questions what is being meant by 'resource needs' and 'level of implementation'. For instance, the Kisumu City Development Strategy for 2004-2009 were developed together with UN-Habitat and has been the basis for planning strategies since. Still, there are limitations and constraints to realising these strategies. In this regard, the extent of implementation is accordingly unclear and the indicator does not sufficiently address this.

RELEVANCE

The five cities consider the indicator to be relevant overall, but only if it is reformulated away from its current tick-box format. To do this, Bangalore suggests adding a focus on how well the plans are being implemented as well as how well the plans are integrated with other interventions. Cape Town only sees the relevance of the indicator in relation to international comparison since all South African cities already have long-term development plans in place. Gothenburg prefers a shift in focus away from projection governed planning to purpose governed planning. This would then better take into consideration changing resource needs and flexible urban planning mechanisms and could for instance be based on the five principles for sustainable city planning as developed by UN-Habitat[4]. In Kisumu, there is a call for the indicator to focus on sustainable implementation, to evaluate the involvement of different stakeholders, and to provide good practice examples.

RECOMMENDATIONS

The main recommendation for the indicator is to move beyond a simple yes or no answer and for it to be linked either to the five UN-Habitat principles for sustainable city planning or more explicitly to the International Guidelines on Urban and Territorial Planning, also developed by UN-Habitat (2014).

[4] http://unhabitat.org/a-new-strategy-of-sustainable-neighbourhood-planning-five-principles/

11.3 Secondary

Proportion of cities with legislation that promotes participatory mechanisms related to urban planning and local decision-making that ensure a fair representation of the urban population, including slum dwellers and informal workers

This indicator is generally considered superficial since there is no definition provided about the level or type of participation required. Even if such legislation exists, this does not guarantee that meaningful participation will necessarily be reflected or achieved. The indicator needs to be reformulated away from a yes or no answer in order to become more relevant.

DATA AVAILABILITY / FEASIBILITY

Legislation promoting participatory mechanisms related to urban planning exists in one form or another in all cities through national and/or local acts. Although these ensure consultation or the right to appeal, each city emphasises how this does not mean that meaningful participation actually takes place. Greater Manchester stresses how local plans and neighbourhood planning regulations encourage participation, but do not effectively engage with all sections of society and do not ensure fair representation of informal workers. Also Cape Town highlights this latter part of the indicator as problematic since there is very little information on who actually participates and it would be very difficult and costly to produce this kind of information. Only Gothenburg has provided an alternative approach based on the method of 'citizen dialogue', which aims to create a variety of channels to participate including e-governance, and how it has been implemented throughout the local authorities.

RELEVANCE

The relevance of the indicator as it is currently formulated is low since it is considered too superficial and does not distinguish between top-down or meaningful participation, as expressed by Cape Town. There is also a risk that the indicator can easily be manipulated and exaggerated in its current format.

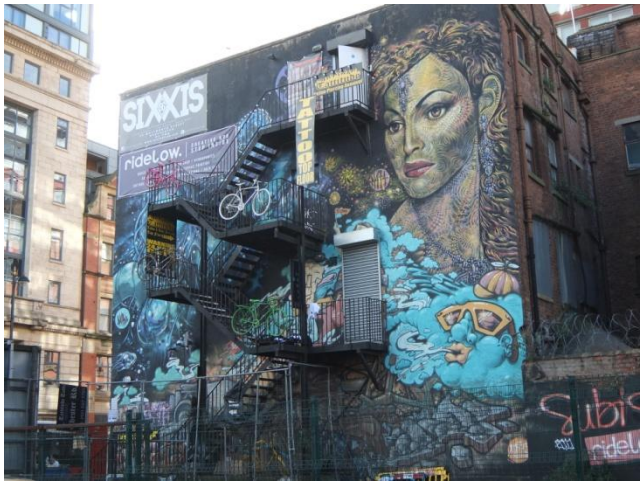
RECOMMENDATIONS

For the indicator to become more relevant, it is necessary to better define what kind of participation is required, but also efforts to avoid the indicator becoming a tick-box exercise. There is also a need to explain why it is relevant to single out slum dwellers in a global indicator and how this will be achieved.

11.3 National

Number of street intersections per square km

Only Bangalore, Cape Town and Kisumu engaged with this indicator. None of the cities has readily available data due to lack of geospatial information on streets and because streets and pedestrian paths in informal areas are not necessarily mapped in existing GIS datasets. While Cape Town considers the indicator potentially useful for international comparison, Kisumu does not consider it relevant as currently formulated. For the indicator to become more relevant it needs more rationale and clarifications on which streets to include and whether they need to be paved or not.



Images from Bangalore and Manchester (Helen Arfvidsson, May and March 2015)

11.4 CULTURAL AND NATURAL HERITAGE

Strengthen cities' efforts to protect and promote cultural and natural heritage

The target is considered highly relevant but the indicators are deemed either irrelevant or too complex and thus need to be reworked. The lack of rationale and definitions provided for this target has resulted in each city struggling with the proposed indicators 11.4.1 and 11.4.2 since they are considered very difficult to define and measure. The dual focus on cultural and natural heritage should also be separated. This target should focus exclusively on cultural heritage, a focus on accessibility and impact should be added, and intangible cultural practices should be taken into consideration. Only then can the target be useful as a tool to influence sustainable urban planning and development. An alternative indicator, as suggested by Gothenburg, could include the presence of cultural impact assessment strategies with an accompanied checklist to define what would be required for such an indicator. As for the focus on natural heritage, the proposed indicator on biodiversity in target 11.6, the much-too-complex Singapore City Index, should be reworked to encompass such aspects.

11.4.1

Percentage of budget provided for maintaining cultural and natural heritage

There is very poor data availability for this indicator. All cities agree that the indicator should address cultural heritage only, rather than both, since these budget posts are not necessarily relevant to combine. Concerns are also raised that an emphasis on budget does not reflect access and participation numbers. It is instead recommended that the indicator should be replaced by a more outcome-focused indicator to better measure how cultural heritage is actually being used and accessed, rather than simply maintained. If the indicator nonetheless is included, detailed delimitations are required of what budget posts are supposed to be included and a rationale stating the importance of this particular indicator would be crucial.

Relevance ↑ Feasibility →

	Low	Medium	High
High	GM, KIS		
Med	GOT		
Low	BLR, CT		

DATA AVAILABILITY / FEASIBILITY

None of the cities apart from Kisumu was able to present a figure on the percentage of budget provided for maintaining cultural and natural heritage, and the figure of 3.8% presented by the local authorities in Kisumu could not be verified. These difficulties point at several limitations of the proposed indicator. The first include the multiplicity of budget posts at varying local, regional and national levels that need to be merged. The second is the uncertainty about how to include funds from private sector trusts and charities. The third points at how the combination of cultural and natural heritage is not reflected in the local budgets of the five cities and are therefore difficult to combine. The fourth suggests that it is very difficult to draw out appropriate budget posts without salaries and overheads, as expressed by Cape Town. The fifth, presented by Bangalore, stresses that most expenditure allocated for culture in the city is made on an ad-hoc or as per needs basis and not easily translated into an annually reported budget percentage.

RELEVANCE

All cities stress the importance of the target along with the need to separate cultural and natural heritage since combining the two is of little use and relevance for the local authorities. The poor data availability also illustrates how difficult it is to codify cultural heritage into a budget percentage and to distinguish which budget posts to include due to multi-level spending on culture. The indicator as it is formulated is therefore not considered relevant and should be replaced by a more outcome-focused indicator in order to better address participation levels and access. This could, for instance, be measured by citizen-based surveys to include alternative means of data collection, as suggested by Greater Manchester. A focus on intangible aspects of cultural heritage is also stressed by Gothenburg, as there is a gradual change towards more people-centred, functional approaches as well as more purposeful preservation and sustainable use (Loulanski 2006: 207).

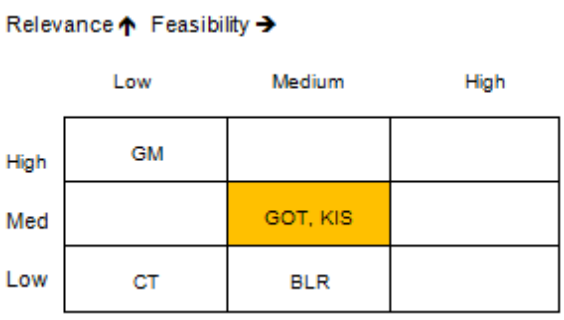
RECOMMENDATIONS

Our main recommendations include separating cultural and natural heritage; to find a more suitable indicator to measure access to cultural heritage rather than its maintenance; and to reframe the focus on natural heritage into a biodiversity indicator that is less complex than the Singapore index. If the level of investment is still of interest, Greater Manchester suggests a more relevant focus would be to address the balance between public and private spending on culture in order to include the importance of private and/or charitable funders.

11.4.2

Percentage of urban area and percentage of historical and cultural sites accorded protected status

This indicator needs to be reformulated since it actually comprises two indicators in one, the first being the percentage of urban area accorded protected status and the second being the percentage of historical and cultural sites accorded protected status. For the second part, the findings show that all historical and cultural sites are accorded some sort of protected status when declared as such, so the figure would be 100% if the indicator does not distinguish better between different



levels of protection. It is recommended that the indicator should be reformulated to reflect the number of sites rather than a percentage of urban area since this formulation is unclear and of little relevance for policy-making.

DATA AVAILABILITY / FEASIBILITY

The method of data collection for this indicator has varied between the cities. Bangalore and Kisumu have attempted to identify and map significant cultural sites. In Bangalore, 14 sites were identified and mapped, which together account for 0.9% of the built-up area of the city in 2011, while in Kisumu it proved difficult to provide a comprehensive list of such sites. Greater Manchester and Gothenburg presented already existing maps of cultural heritage in respective city (see Figure 3), while in Cape Town no data for this indicator were readily available mainly due to the fact that Cape Town does area based conservation and does not use 'sites' as the unit.

The comparability between how these sites are identified is questionable since there are no definitions provided and each city uses their own interpretations. Gothenburg accordingly suggests that there is a need to find a balance between already existing local categories and international standards by agencies such as UNESCO. There also seems to be agreement that since cultural heritage is reported on multiple levels, including local, regional and national, the regional or national levels might be the most appropriate reporting agencies. In Bangalore this would, for example, be the Archaeological Survey of India and in Gothenburg, the Swedish National Heritage Board.

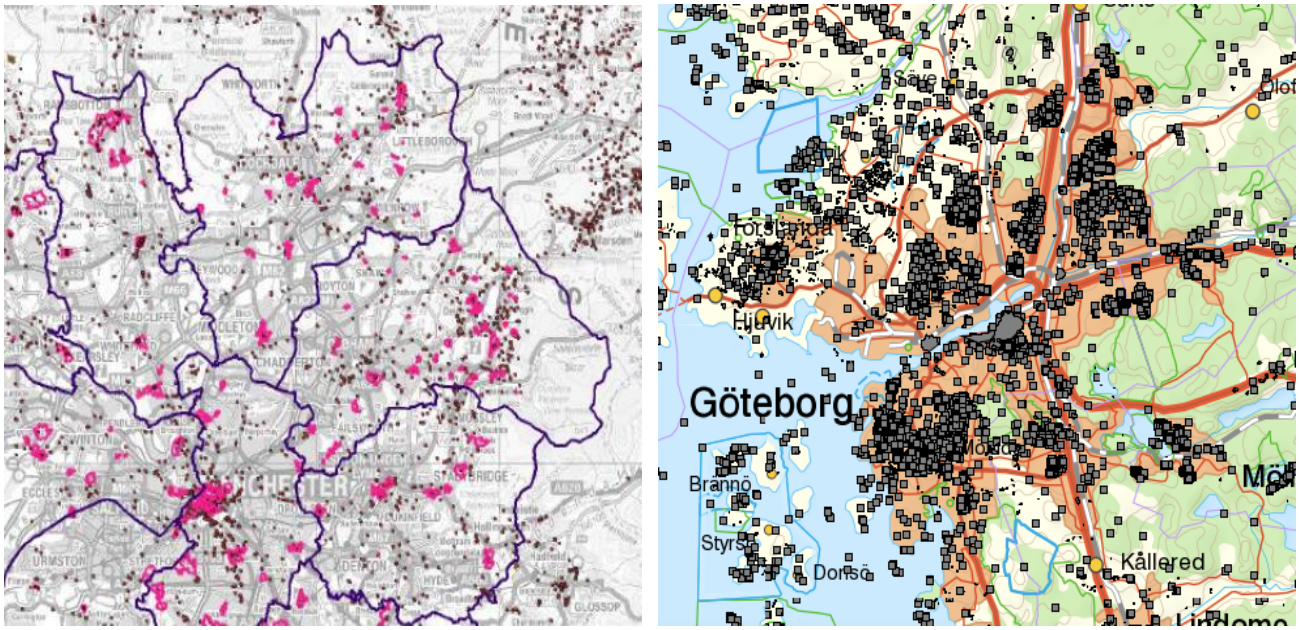


Figure 3: Maps of cultural heritage sites in Greater Manchester (left) and Gothenburg (right).

RELEVANCE

If the indicator is slightly reformulated, it would be considered moderately relevant. Although Gothenburg stresses that the work needed for identifying, mapping and geospatially registering these sites should not be underestimated, the city considers these practices to be very valuable. Kisumu suggests that by reporting on this indicator, the process of identifying and documenting historically and

culturally significant sites in the city will be prompted. Since there is no current list of such sites in Kisumu, no protection is provided. The indicator could therefore potentially help with prioritising and protecting the city's cultural heritage. Still, for it to be useful, the indicator should rather report on the number of sites rather than a percentage of the urban area since this will be more relevant to compare over time and across cities.

RECOMMENDATIONS

There are three recommendations for improvement of this indicator. The first includes a reformulation of the indicator to avoid there being two indicators in one. The second is to provide clear definitions of what protected status entails and to explicitly distinguish between different levels of protection. The last is to focus on the number of sites rather than a percentage out of the total urban area.

11.4 Secondary

Number of public libraries per 100.000 people

This indicator is suggested to be moderately useful in Cape Town, whereas Greater Manchester asks how it connects to the target of protecting and promoting cultural and natural heritage. Both Greater Manchester and Gothenburg highlight how the indicator is potentially relevant as a safeguard against budget cuts and rationalisations, whereas Kisumu suggests how it is currently formulated, the indicator does not reflect access. Our main recommendation is to include both permanent and mobile libraries in the definition.

11.5 DISASTER AND RISK PREVENTION

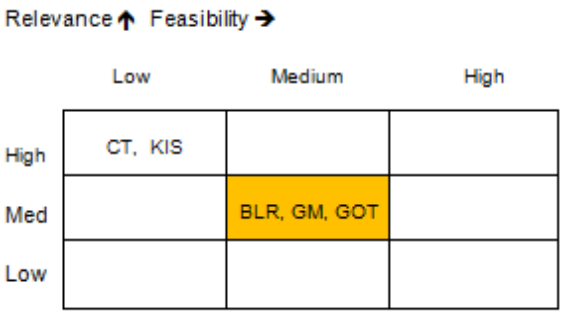
By 2030, significantly reduce the social, health, economic and ecological risks and impacts of disasters, environmental change and disease outbreaks by better designing and managing cities, protecting people in vulnerable situations

Since there is no overall definition provided, each city has chosen to focus on disasters and natural hazards that are appropriate to their respective local contexts. Overall, there is poor data availability for the indicators as it is generally deemed difficult to collect reliable and robust data on disasters. One reason for this is the diverse reporting strategies in place which poses challenges to aggregating data from various sources. Another reason concerns definitional issues, including the lack of coherent definitions and threshold values across the cities. In the UK, for instance, the term disaster is not used, but instead "emergency". Also, Gothenburg highlights how event-based reporting complicates a clear focus on urban vulnerabilities and losses. **The relevance of the target is, however, considered high as there is a great need for systematically collected, comparable and robust data on disasters. To close the data gaps, the coherence of the recording processes needs to be improved and harmonized.**

11.5.1

Number of people killed, injured, displaced, evacuated, relocated or otherwise affected by disasters

There is poor to partial data availability for this indicator and although the indicator is considered to have moderate to high relevance, the several concerns raised touch on definitional problems, lack of comparability and the difficulties involved in delimiting the data collected to urban vulnerabilities. The indicator is seen by the five cities as a complementary indicator which needs to be combined with another indicator on either property damage or economic loss in order to better reflect the target.



DATA AVAILABILITY / FEASIBILITY

In each city, different disasters or events are reported on in various ways. This makes comparison very difficult and points at the crucial need for better coherence and harmonisation of data collection. In Bangalore and Kisumu there are no data recorded on disasters and no real institutional capacity to do so either, while in Cape Town and Gothenburg there is partial reporting on selected events. In Cape Town partial data exist on floods and fires in informal settlements, but due to the lack of reliable and robust data readily available, Cape Town raises a number of concerns related to the indicator. The first includes a hesitation about the use of the term 'disaster' since it needs to be officially declared. The second concerns the issue of double counting when it comes to different events. The third points to the number of categories involved in the indicators and the difficulties of including, as well as distinguishing, between all of these.

In Gothenburg, data are collected by the Swedish Civil Contingencies Agency (MSB) for specific events which is stored in an online natural disaster loss database, the so-called *naturolycksdatabasen*.

However, it is not always possible to disaggregate the event-based data to a specific geographical area and the data produced are considered generally weak. In Greater Manchester, it is not considered relevant to report on this indicator due to the low level of risk, but if necessary, the capability to report exists. To increase the feasibility of the indicator, Bangalore and Kisumu suggest that partnerships need to be established with a variety of actors, including health personnel and the police.

RELEVANCE

The relevance of this indicator is considered relatively high since risks are exacerbated due to rapid urbanisation and sprawl of informal settlements. Gothenburg considers the indicator particularly significant since vulnerable groups are generally at a greater risk of losing their lives. Due to the poor data quality there is a common call for better data to be produced. There is, however, agreement that not only disasters should be included, but also slow-occurring events such as water scarcity. This gets close to the distinction in climate change science between extreme events and slow-onset environmental changes. The indicator also needs very detailed definitions of disasters and threshold values to be internationally comparable.

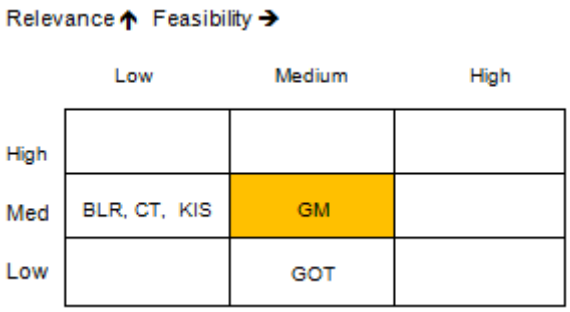
RECOMMENDATIONS

Several recommendations have been suggested to make this indicator stronger. First and foremost, there is a need for a clear rationale and standardisation to collect better data on specific urban vulnerabilities. To provide a format for reporting is also crucial and for this to be linked to international databases and standards of reporting. Better definitions are needed in relation to the level of injury and what qualifies as displacement and relocation. There is also a common call for fewer categories to be included in the indicator.

11.5.2

Number of housing units damaged and destroyed

There is poor to partial data availability for this indicator, on which it is deemed difficult to collect robust and reliable data, due to the multiple sources involved. It is also unclear what the scales of damaged and destroyed entail, as well as difficult to delimit the existing data to a specific urban area since most disasters are not geographically limited. The overall relevance of the indicator is considered low to moderate and, as with indicator 11.5.1, this indicator is not considered sufficient on its own, but rather as a complement.



DATA AVAILABILITY / FEASIBILITY

In Bangalore and Kisumu no data are currently collected for housing damage. In Cape Town there is partial data available in relation to informal settlements, but the problem of how to define 'damaged' is stressed as complicating the feasibility of the indicator. In Gothenburg there is also partial data availability for specific events, but these are reported on per event rather than based on a geographical area, so it is proven difficult to single out the number of housing units in the urban area.

RELEVANCE

The relevance of the indicator is considered low to moderate across the cities as it is seen as reactive rather than proactive. Bangalore, Cape Town and Kisumu consider the indicator to be moderately relevant as it could help with risk and disaster planning, whereas Greater Manchester considers it useful from a comparative perspective, but for the local authorities it is not very relevant due to the very low likelihood of disaster. In Gothenburg the indicator is considered less relevant than 11.5.1 since it poses several challenges to collect and compare the appropriate data. Gothenburg rather suggests how interruptions to infrastructure service provision could be a more relevant indicator for the city since indirect damages might be more crucial than direct ones. This could be reported as minutes of interruption of certain services or key transport routes.

For the proposed indicator to become more feasible and relevant, Gothenburg suggests a data coordinator being required to ensure the data collected is robust and reliable. Bangalore similarly calls for partnerships with academic institutions to regularly monitor and record appropriate data.

RECOMMENDATIONS

The main recommendations stress how 'damaged' needs to be defined clearly for purposes of comparison, as well as the need for a data coordinator and/or partnerships with academic institutions to ensure more reliable data reporting.

11.5 Secondary

Economic losses related to GDP caused by disasters

It is very difficult to collect data on economic losses since there are multiple sources, including insurance and reinsurance companies, required to collaborate. The indicator also lacks detailed definitions and needs to be reworked to become stronger. The relevance of the indicator is considered low to moderate as it is generally considered too difficult to report on.

DATA AVAILABILITY / FEASIBILITY

Cape Town formally estimates the loss of infrastructure due to disasters on a selected project basis and not on a regular basis and it is deemed unrealistic to conduct economic loss studies annually. Disaster reporting is event-based and carried out after declared disasters which do not necessarily take place on an annual basis. In Greater Manchester there have been no declared emergencies since the 1950s and the indicator is therefore not considered relevant to report on. In Gothenburg there are partial data available, but the quality is questionable since there are multiple sources used and merged. Data are collected from regional and municipal authorities, insurance companies and the media. The municipal insurance company, *Göta Lejon*, produces partial data on locally owned properties etc, but these are usually rough estimations. In Kisumu it is considered very difficult to measure and report on this indicator in a reliable manner.

RELEVANCE

The relevance ranges from low to moderate. In Cape Town the indicator is considered to add very little value to the city if not focused on infrastructural loss and its financial costs, while in Gothenburg it

would potentially be valuable if made more practicable and comparable. The municipal insurance company, *Göta Lejon*, is for instance, in the process of linking disaster loss data to GIS in order to improve preventative work. Linking the data with GIS could therefore add value to the indicator.

RECOMMENDATIONS

For the indicator to become more relevant it needs to be made more feasible through coherent and comparable reporting mechanisms. These need to be linked to international standards and databases, and preferably to existing GIS datasets.

11.5 Secondary

Proportion of population living in high-risk zones

The data available for this indicator are partial at best since there are no clear definitions provided for what is considered a high-risk zone, but the indicator is still considered relevant for targeting risk reduction and management.

DATA AVAILABILITY / FEASIBILITY

In Bangalore, there are no readily available data on general high-risk areas, but 134 locations have been identified as being low-lying and prone to floods. Water scarcity is also considered a high risk in Bangalore, but this issue remains undocumented. In Cape Town, it is not feasible to report on the indicator in its current form since data availability is too partial. Cape Town could possibly report on the proportion of the population living in informal settlements and in high risk of fire and flooding. The most likely natural disaster in Greater Manchester is flooding and there are flood risk maps readily available which are used for management plans and flood warning systems. Greater Manchester nonetheless points at how 'high-risk' implies that the rest of the population is also at risk which is considered to be a problematic formulation. Both Cape Town and Greater Manchester draw attention to the possibility of double-counting when calculating the indicator as a proportion of the population. In Gothenburg there are no clear distinctions for what is considered high-risk zones and in Kisumu there are no data available, but major risks identified include floods, drought, fire, collapse of buildings and disease outbreak.

RELEVANCE

There is value in knowing which areas are at higher risk of disasters for the purpose of risk reduction, according to Cape Town and Kisumu. Greater Manchester, however, challenges what is included in the term and asks whether high-risk areas include areas with high risk yet being well managed; are cumulative risks and/or emerging risks to be included; and is the focus supposed to be on high impact or high likelihood.

RECOMMENDATIONS

With more clarification of what a high-risk zone entails, the indicator could potentially be useful for the five cities. However, mapping of the high-risk areas would be of more relevance than providing the data as a proportion of the population.

Images from Kisumu (Helen Arfvidsson, April 2015)

11.6 ENVIRONMENTAL IMPACT

By 2030, reduce the adverse environmental impacts of cities, paying special attention to biodiversity loss, air quality, construction materials, and waste management

The target is deemed important, yet data availability is very unevenly distributed across the five cities. Although Greater Manchester and Gothenburg consider the indicators to be relevant, they still add little value to what is already monitored in respective city. Two general concerns highlighted are the political nature of waste management, and hence the risk of data manipulation, as well as the problematic distinction between public/municipal and private/informal waste management.

11.6.1

Percentage of urban solid waste regularly collected and recycled (disaggregated by e-waste and non-e-waste)

There is moderate data availability on waste collection, but overall very poor data on electronic waste. Since there are multiple actors involved in waste collection, ranging from municipal to private and/or informal collectors, the reporting structures differ greatly which complicates comparison. The political nature of waste management is also highlighted as a major concern by Bangalore and Kisumu, including the risk of data manipulation, and there is thus a crucial need for better and more reliable data on waste management called for. **There is agreement between the cities that this indicator needs to be complemented by a waste per capita indicator to account for the total amount of waste generated in order to track the overall efforts to minimise waste.** Without this additional indicator, the data on waste management will be greatly misleading.

Relevance ↑ Feasibility →

	Low	Medium	High
High	GM	CT, KIS	
Med		BLR, GOT	
Low			

DATA AVAILABILITY / FEASIBILITY

The indicator has four parts to it: percentage of collected waste, recycled waste, e-waste, and non-e-waste. This complicates the reporting on the indicator and it should be reformulated. All cities struggle to provide reliable figures on electronic waste. In Bangalore, Cape Town and Kisumu there are no data available at all, whereas the data reported on in Greater Manchester and Gothenburg are greatly underestimated and not considered reliable. In Greater Manchester, for instance, much of the electronic white goods are collected either by waste charities or retail take-backs which are not necessarily reported on.

In terms of waste collected, the data collected are frequently fragmented and incomplete. In Bangalore, it is estimated that between 80 and 100% of all waste is collected. However, it is very difficult to assess the quality of the collection and there are no data specifically on how much of the waste is being recycled since this is usually done by private and informal actors.

In Cape Town, there are 775 734 consumer units in the city which receive regular solid waste removal services, and there are 1 068 572 households in the city, the indicator result is therefore 72.6%. The data are audited data for the 2013/14 year. There is however an important point to note here, the difference between consumer units and households. The numerator consists of consumer units and informal dwellings receiving solid waste removal services, and the denominator is household numbers, which are different units. The consumer unit might be more than one household putting their waste together for collection. This in turn complicates the reliability of the data and risks undermining the indicator's value. Cape Town calls for more clarity on which unit to report on. Also, most recycling in Cape Town is privately managed and it is difficult to include reliable data on these practices. The indicator as it is currently formulated does not measure the reduction strategies of reduce and reuse.

In Greater Manchester, the definition of 'urban waste' is an issue since local authorities collect data for 'municipal waste' or 'waste from households'. Also the inclusion of 'collected' is problematic since there are various collection routes for recycling of household waste. These include bring-sites for households to either drop off large quantities of waste or recyclable items such as glass, plastic, metals etc. This non-collected waste is still considered well managed. Given these clarifications, 77% of the waste in Greater Manchester is collected and well-managed, while 20% is not collected, but still well-managed, and 3% considered neither collected nor well-managed. The latter category includes illegally dumped waste, so called fly-tipping.

In Sweden, each municipality is obliged to have a waste plan for collection and management of household waste. For commercial packaging, electronic products, batteries etc, the producers of such products are responsible. *Avfall Sverige*, the Swedish Waste Management and Recycling Association, is responsible for data collection on waste collection and management. In Gothenburg, it is estimated that 99.5% of all household waste is collected, but this is an assumption rather than an exact measure. 33% of the waste collected in Gothenburg is recycled. However, it is unclear what counts as recycling. In Gothenburg, 60% of the waste is incinerated for electricity generation, which in turn produces ash, which is considered the worst kind of recycling.

In Kisumu, waste collection by the municipality is estimated at 20% and by private actors at about 15%, which leaves 65% not collected by either. There figures are based on official dump site records, but their reliability are questioned since there is a tendency of waste data being manipulated to serve the interest of particular groups rather than the residents.

RELEVANCE

The indicator is considered relevant since waste management is connected to a range of urban governance questions. Still, there are several concerns raised including the lack of reliable data; the lack

of including non-household waste such as construction debris, medical waste, or other hazardous waste; and the need to better integrate informal collection into the indicator. On the latter point, Bangalore describes how collection is mostly municipal, whereas recycling is mostly private and informal. There is accordingly a risk that the data collected will be distorted if there is not more clarity on how to include informal waste practices since these are frequently ignored by local authorities.

Greater Manchester considers the indicator useful to help monitor e-waste but also highlights the need to include non-household waste since the data on construction waste and private collection need improvement. In Gothenburg, the proposed indicator is considered to add nothing to what is already reported on. More useful instead would be an indicator measuring the efforts of decreasing the total amount of waste. Still, a prioritised focus on electronic waste is welcomed since a recent report highlights how e-waste is a rapidly growing waste stream which is very difficult to manage (UNU 2015). Although current data on e-waste are not possible to access in Cape Town, this is still considered useful and relevant. Both Greater Manchester and Gothenburg also draw attention to the issue of e-waste being exported and/or illegally dumped.

In Kisumu there is a lack of enforcement and awareness of waste collection and waste reduction. Reuse and recycling in the city mainly focus on plastic bottles. This indicator could potentially help put more pressure on the city's waste management strategies. However, the indicator should be modified for cities like Kisumu and for instance include how private/informal waste collection is supported by local authorities.

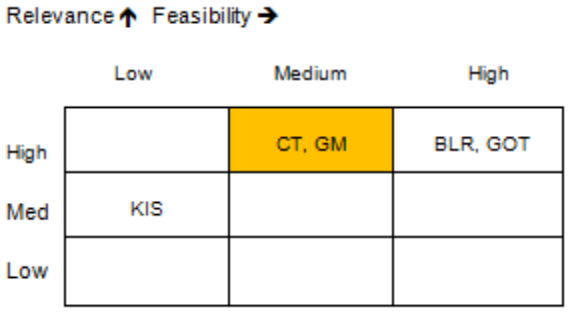
RECOMMENDATIONS

The overall recommendation is to include a waste per capita indicator in order to illustrate the overall picture of waste management. If the indicator will not be replaced, there is a need to include commercial and hazardous waste alongside the disaggregation of e-waste. There is also a great need to improve the data collection and monitoring for e-waste since this is significantly under-reported and to include the amounts of e-waste being exported and/or illegally dumped. Finally, there needs to be clarity on how to better include and integrate data on private and informal waste management.

11.6.2

Level of ambient particulate matter (PM10 and PM2.5)

The data availability on this indicator is unevenly distributed across the five cities, ranging from no availability at all in Kisumu, to data updated on an hourly basis in Gothenburg. The indicator is, however, considered unclearly formulated as the 'level of' needs to be defined better. It is also unclear what level of particulate matter (PM) is to be included, whether it is street/roadside level, background level or urban industrial level; a daily or seasonal mean or average; and data from all measuring stations or a selected few. There is, accordingly, a call for more harmonised methods of data collection and reporting. In terms of relevance, the indicator is deemed important to measure, but not necessarily on its own. It is agreed across the five cities that measuring particulate matter should not be the only indicator on environmental impact since it would not sufficiently reflect the target as the importance of waste management would then be lost.



DATA AVAILABILITY / FEASIBILITY

In Bangalore and Cape Town, only the levels of PM10 are currently being measured and there are accordingly no data available on PM2.5. In Bangalore, the 2011 annual average reported by the Central Pollution Control Board is 94 microgram per cubic metre (μg/m^3). A national system has been recently been set up to measure PM2.5 which will in the next few years include the city of Bangalore.

In Cape Town, the Department of Environmental Health collects and reports on air quality daily values. A mean of these values over the year gives some information, however possibly uneven. In 2013, the value was 24.6 based on daily measures from 6 sites. Measuring PM10 is therefore considered both feasible and useful for the City of Cape Town, while PM2.5 could be potentially useful, but currently not feasible. Cape Town calls for a better definition of the methodology as reporting on the number of exceedances of a certain standard is regarded by the city as a preferable measure and is how the city reports on air quality against the South African National Ambient Air Quality Standards.

In Greater Manchester, the Department for Environment, Food and Rural Affairs (Defra) produces annual modelled data for population-weighted annual mean concentrations of PM2.5 for each local authority area. This is calibrated from data collected from a network of automatic and non-automatic monitoring stations across the country. By approximating Local Authority boundaries to a 1km by 1km grid, and using census population data, population weighted background PM2.5 concentrations for each Local Authority are calculated. Concentrations of anthropogenic (human-made), rather than total, PM2.5 are used as the basis for this calculation. Using this method, the Fine Particulate Matter (PM2.5) concentration of Greater Manchester in 2012 was 10.69 μg/m^3. Similar calculations can be made for PM10, but are currently not produced by Defra. There are currently 12 automatic stations in Greater Manchester to monitor PM10 and three to monitor PM2.5.

In Gothenburg data on PM10 and PM2.5 are recorded on an hourly basis and reported on the municipal website. On May 11, 2015, the PM10 levels were 14.2 μg/m^3 and for PM2.5, 9.6 μg/m^3 (see Figure 4). Both urban background and particular streets are measured at three fixed stations in the city in combination with mobile stations. Yearly average levels are estimated for each of these stations. Similar to Cape Town, Gothenburg argues that to achieve international comparability, more detailed instructions on how and what to calculate are crucial, as well as capacity-building to harmonise these calculations.

In Kisumu, there are no data available and no measuring stations due to the lack of relevant equipment and expertise. The local authorities in Kisumu are currently not keen to report on this indicator since it is believed to be costly to set up and report on annually.

RELEVANCE

The health aspects of air quality are highlighted as a growing concern and the indicator is accordingly considered relevant across all cities, but with Kisumu showing some hesitation due to the costs involved. There is, nevertheless, disagreement on the relevance of including PM2.5. Cape Town suggests that PM10 is sufficient for the purposes of understanding the city's air quality, while Bangalore suggests including sulphur oxide and nitrogen oxide instead of PM2.5 since these are on the rise in the city, while Gothenburg stresses nitrogen dioxide as potentially more relevant.

RECOMMENDATIONS

Our two main recommendations are better definitions on which particle size class to report on and the specific methodology to use, and potentially to consider alternative air pollutants to be included in the indicator rather than PM2.5.

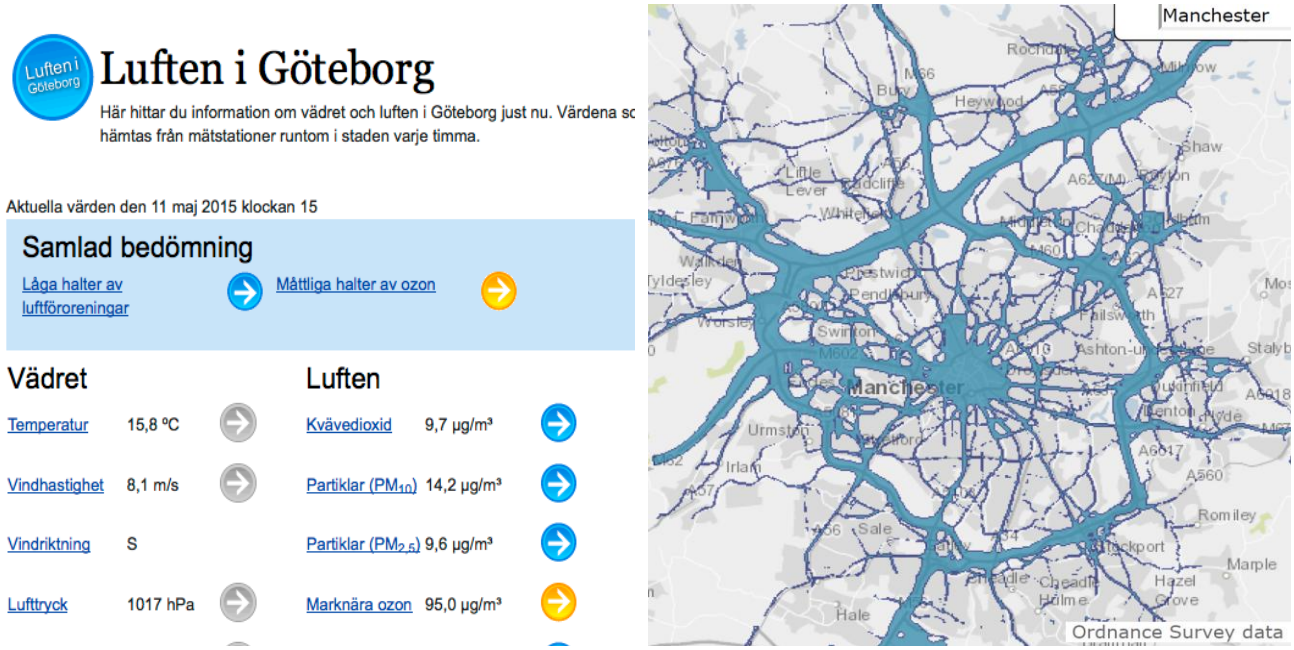


Figure 4: Air quality from Gothenburg municipal website (left) and from Greater Manchester (right).

11.6 Secondary

GHG emissions tons/capita

This indicator is not engaged with in depth. Cape Town and Kisumu report that GHG emissions are not currently measured there. In Greater Manchester, CO_2 emissions can be reported at a local authority level, but not other GHGs, while in Gothenburg, the data are readily available and measured through the Air Quality Programme. The relevance of this indicator is, however, questioned. Greater Manchester most clearly states that it is very unlikely that GHG data would be collected at local authority level.

11.6 Secondary

Percentage of wastewater flows treated to national standards

Only Cape Town and Kisumu engage with this indicator. Cape Town suggests that using the definition provided means it is impossible to report on the indicator or the percentage will constantly be 100 since the total volume of wastewater is impossible to measure and what is collected is always treated. The only water that is not treated in Cape Town is spillages or overruns, but this amount is very difficult to estimate. The indicator is therefore considered poorly specified and defined. In Kisumu, a more useful indicator would be addressing sewage system connectivity since this is a challenge in the city given its large extent of unplanned settlements. This alternative indicator would help demonstrate which areas of the city are already covered and draw attention to areas using pit latrines or septic tanks.

11.6 National

City biodiversity index (Singapore index)

Only Cape Town and Gothenburg briefly engage with this indicator. Cape Town suggests that some of the 23 indicators in the Singapore index are useful for the city due to the city having one of the highest floral diversity in the world. Overall, the index is nevertheless considered too complex and costly to be feasible to report on as an indicator. Also in Gothenburg, where there is only partial availability through local and regional inventories of species and natural areas, the indicator is considered too complicated and resource demanding. Recommendations include how an inventory is preferred to an index and above all that the indicator is explicitly linked with the focus on natural heritage in target 11.4.

Images from Cape Town (Helen Arfvidsson, April 2015)

11.7 PUBLIC SPACE

By 2030, provide, maintain, and encourage access to safe, inclusive and multipurpose public space

The proposed indicators are thought to reflect the target well, but there are a number of definitional issues to resolve throughout. There is also ambiguity in terms of distinguishing between the units 'public space', 'green space', and 'green and public space'. Varying local definitions of public space are used in the five cities, which complicates the comparability of the findings. **As the importance of availability of and accessibility to public space is stressed by all five cities, the relevance of the target is considered high. Still, its quality needs more attention, not simply its existence. Not all cities include streets in their respective notion of public space.** Although a UN-Habitat (2013) report focusing on streets as public space stresses the need to integrate the multi-functionality of streets, this requires improved data availability and developed GIS capacity on the one hand, and a more clearly defined rationale on the other. **The target also needs to be more explicitly related to target 11.3 on land use.**

11.7.1

Area of public space as a proportion of total city space

This indicator is considered highly relevant, but there are significant difficulties when comparing the data due to varying definitions and abilities to provide detailed geospatial information. There are concerns raised about the provided definition of public space and the inclusion of streets. It is also unclear what the unit 'city space' means and whether this refers to the administrative boundaries or the unit of urban agglomeration. Bangalore, Cape Town and Kisumu all provide a percentage for this indicator, but the definitions and methods used differ which affects the level of comparison possible. In Greater Manchester and Gothenburg there are no data readily available, but both cities consider it possible to report on the indicator if a clear definition is provided.

Relevance ↑ Feasibility →

	Low	Medium	High
High	GM	BLR, CT, GOT, KIS	
Med			
Low			

DATA AVAILABILITY / FEASIBILITY

In Bangalore, a satellite image from 2011 with a 30m resolution was used to visualise that 50.2% of the total city space is public and green space. This includes all open space, vegetation and water bodies. With this course level of resolution, it is not possible to distinguish between publicly accessible open space or simply open space which then renders the figure problematic. With this resolution it is also not possible to extract roads as per the definition, for which a higher resolution image and a digitized road dataset would be required. For this to be feasible, substantial GIS capacities are required as well as field verification.

The City of Cape Town has defined public space as municipally owned land which is fenced off and has equipment on it, including parks, but not cemeteries. As per this definition, 20.72% of the city is public space. However, this definition is different from the one proposed for the indicator and does not enable straightforward international comparison.

In Greater Manchester and Gothenburg, no data as per the given definition are available. With the existing GIS datasets this indicator would, however, be possible to report on in both cities as long as there is a clear definition on what to include and resources contributed towards layering and processing the data required.

In Kisumu, the data for this indicator had to be estimated since there were no readily available data on public space. In this study it was estimated that 7% of the total city is public space. In order for this indicator to be reported on annually, more detailed satellite images and GIS capacities are crucial.

RELEVANCE

This indicator is considered relevant in all cities as it can be used as a planning tool to monitor trends and as a comparison across cities. Nevertheless, more harmonised definitions are needed for the indicator to be useful as comparison. There are concerns expressed by Bangalore, Cape Town and Greater Manchester about the relevance of including streets in the definition.

Gothenburg in addition finds it problematic that the use of or access to public space is not included in the indicator and calls for a differentiation of public space according to accessibility. This connects to how in Sweden there are two types or definitions of public space. The first, *allmän plats*, is regulated according to the Planning and Building Act and may be a street, park or square. The purpose of the space is shared needs as it should be accessible and not closed off. The second, *offentlig plats*, is a broader concept. It includes *allmän plats*, but also indoor spaces with private owners to which the public have access during opening hours such as shopping malls. For the indicator to be considered relevant in Gothenburg, it needs clarification on whether these indoor "semi-public" spaces are to be included. Also, Gothenburg sees annual reporting to be of less value since the time span is too short for substantial changes to occur.

The relevance to Kisumu includes identifying public space with the aim of protecting it from becoming overtly or covertly privatized.

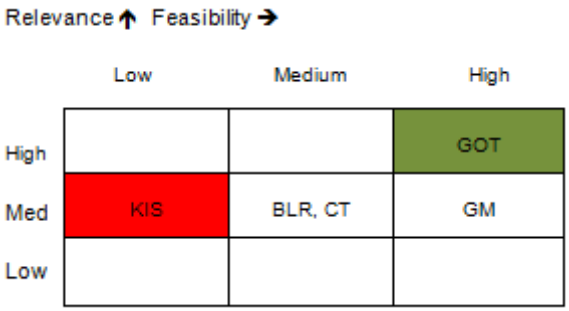
RECOMMENDATIONS

Our recommendations for this indicator include: to change the unit 'city space' to a more appropriate geographical unit, and to address the need for more coherence in the use of definitions for the sake of comparability.

11.7.2

Proportion of residents within 0.5 km of accessible green and public space

This indicator is approached in different ways by the five cities and its feasibility varies greatly. It is only Gothenburg that provides data that come close to what the indicator asks for, whereas in Bangalore, Cape Town and Kisumu it is not currently feasible to report on the access aspect of the indicator due to the lack of updated GIS datasets. The indicator is nevertheless considered to have moderate to high in relevance across all cities.



DATA AVAILABILITY / FEASIBILITY

In Bangalore, Cape Town and Kisumu, detailed GIS datasets for accessible green and public space are unavailable. In Bangalore, partial data exist based on calculations and estimations. In order to produce more detailed and reliable data, a process of digitising geospatial data is required which is costly and resource intense. Without additional resources, the feasibility to do so is considered very low. In Cape Town, this process of digitisation is underway and more precise data will be available when the existing GIS data sets are updated to include parks and public spaces. Cape Town suggests the use of proportion of households to be the appropriate unit to measure rather than residents in order to align with available population data. Also, the City defines green space as proclaimed nature reserves and national parks and perpetuity stewardship agreements. In Kisumu, the city's green space was identified and mapped for this pilot study but without the calculations of residents within 0.5 km access (see Figure 5). To be able to do so, a more sophisticated analysis of the data is necessary, as well as more clarity on what is meant by accessibility. It is unclear if, for instance, pay-for-entry botanical gardens are considered publically accessible and recreation areas with specific opening hours.

In Greater Manchester, geospatial data exist, as demonstrated by the mapping of Greater Manchester Green Infrastructure Assets (see Figure 5), but the data are currently not extracted as per the indicator. To be able to report on the indicator, additional funding is required. In Gothenburg, several different units of measurements are used in relation to distance to accessible green and public space. Statistics Sweden (SCB) produces data on 300 metre accessibility (rather than 500m) and the size of the green space to be at least 0.5 hectares. These categories are considered relevant for general public health and the accessibility of children according to the Swedish National Board of Housing, Building and Planning (*Boverket*). The satellite images used have a resolution of 10 metres and private and/or non-accessible green space is isolated.

Similarly, in the Green Strategy produced by the City of Gothenburg, the same distance unit of 300 metres is used, but the minimum size of the green space is smaller, at 0.2 hectares. The data produced of areas lacking accessible green space are visualised on a map, rather than as a percentage (see Figure 5). Access is defined as there being no major barriers to access, such as large roads or significant height differences. The data produced for the Green Strategy are not produced annually, and although this is considered possible, it is too costly and not deemed relevant since the yearly changes to green structures are deemed too small. Also the unit of 300 metres can be changed to 500 metres, but this is not regarded as a useful distance unit for Gothenburg and hence as an unnecessary reporting burden.

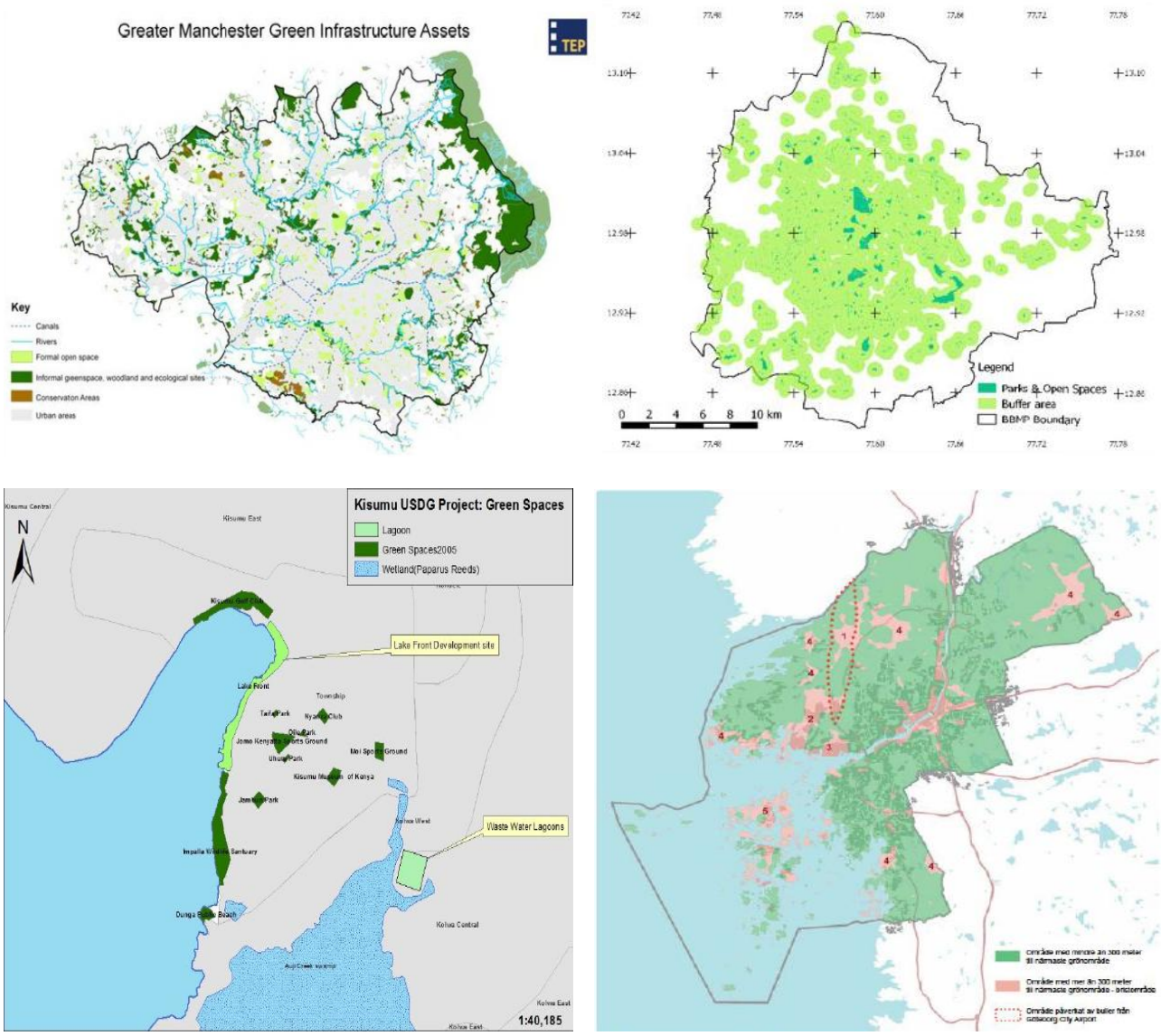


Figure 5: Maps of green space in Manchester (top left), Bangalore (top right), Kisumu (bottom left) and Gothenburg (bottom right).

RELEVANCE

In Bangalore, this indicator is considered relevant since the city has somewhat of a flipped ratio of green space, where the city centre has more green space than the peripheries. This is in part a result of the city's colonial heritage with protected military sites in the city centre. There is also a worrying trend of planting invasive species in the former wetlands around the city in order to dry out the land. In the short run, this indicates an abundance of green space, but in the long run the aim is to build on these formerly biodiverse areas. The quality of green space is therefore crucial to include when analysing the data collected for the indicator. Cape Town considers the indicator relevant as the health aspects of green space are stressed and how important it is for the quality of life in the city, as well as being a good indicator for liveability and integration. In Gothenburg, the indicator is considered highly relevant, particularly in planning processes related to strategies of densification when different conflicts of interest present themselves.

RECOMMENDATIONS

There are a number of recommendations to make the indicator stronger. The formulation of 'green and public space' is unclear and should be reformulated as 'green public space'. A rationale needs to be provided to justify the choice of distance as 0.5 km. Also 'access to' needs to be more clearly defined. Cape Town in addition suggests that the unit 'proportion of residents' is changed to households.

11.7 Secondary

Proportion of total public space in a city that is assigned to support livelihoods of the poor

This indicator is not generally engaged with. Cape Town and Kisumu nonetheless raise concerns about what is meant by 'livelihoods of the poor'. This needs clarification. In Cape Town, the indicator is considered very difficult to measure since when land use is determined, it is not specified whether it is for the livelihoods of the poor or not. Although the indicator is intended to measure a very important aspect of the role of street trading in public space, it is considered to be too difficult to report on as currently formulated.

11.7 Secondary

Number of reported crimes (homicide, injures, and theft rate) committed annually in urban areas, per 100.000 population

Only Cape Town and Kisumu engaged with this indicator and they find the indicator feasible to report on. Overall the two cities agree that it would be useful to harmonize the reporting on crime. Still, a number of concerns were raised. First, urban boundaries and police precinct do not often coincide so the geographical reporting unit might differ between cities. Also, all crime statistics are to be treated with suspicion since these are frequently underreported. Cape Town in addition raises concerns around the range of crime types included in the one indicator, for example the range is from petty theft to murder. It is possibly better to focus on one crime type rather than include petty theft in the same category as murder.

11.A NATIONAL URBAN POLICY FRAMEWORK

Prepare and implement a national urban and human settlements policy framework

The proposed indicators for this target are covered under indicators 11.3.1 and 11.3.2. These indicators, along with those for targets 11.B and 11.C, are proposed to be reported at the national level since they are about the national support to the local level, but may require individual city compliance.

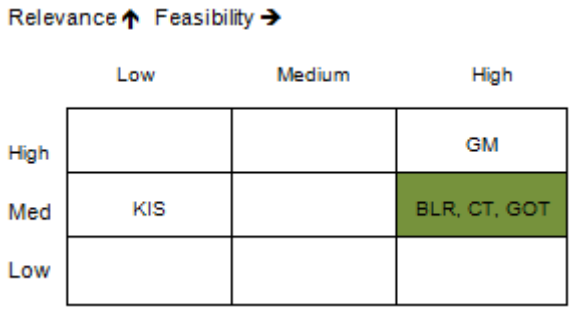
11.B RISK, DISASTER AND RESILIENCE FRAMEWORK

By 2020, increase by x% the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, develop and implement in line with the forthcoming Hyogo Framework holistic disaster risk management at all levels

11.B.1

Percentage of cities with more than 100,000 inhabitants that are implementing risk reduction and resilience strategies informed by accepted international frameworks

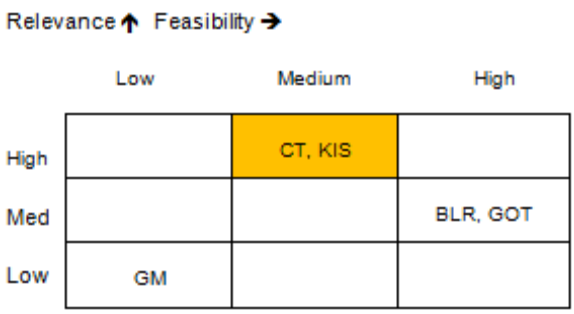
In Bangalore and Kisumu there are currently no such strategies, whereas in Cape Town and Greater Manchester their respective risk and resilience frameworks are developed in line with international standards. The cities agree that the indicator needs to move beyond a tick-box format in order to account for meaningful implementation and the actual use and quality of such strategies. Greater Manchester and Gothenburg draw attention to their participation in the Making Cities Resilient Campaign, with Cape Town indicating it was nominated in 2013 for the role of Model City Status. Greater Manchester and Bangalore participate in the Rockefeller Foundation's 100 Resilient Cities Initiative, with Cape Town qualifying for participation. These are emphasised as examples of meaningful participation and collaboration enhancing policy-making practices.



11.B.2

Population density measured over continuous urban footprint

This indicator is not engaged with apart from in Cape Town, where the need for a better density indicator than 11.3.1 is stressed despite concerns about how to define and measure density effectively. There is a lack of capacity to single out the built-up area highlighted by Cape Town and hence the indicator could possibly be relevant to enhance capacity-building. The other cities did not provide more details besides the matrix.



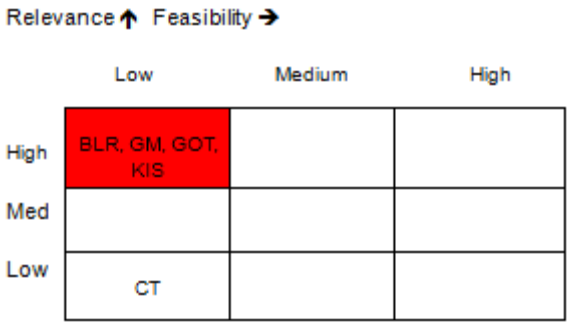
11.C FINANCIAL SUPPORT

Support national, regional and local governments through financial and technical assistance to strengthen revenue streams, regulatory and institutional capacity

11.C.1

Percentage of financial support that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings

The indicator is not engaged with in detail and no data are readily available. Bangalore points out how it is very difficult to identify the proposed percentage. There is no separate budget post for retrofitting and it is generally difficult to assess the allocation of financial support to sustainability within the building sector. In Bangalore, only 7 buildings are certified as energy efficient out of 625 projects submitted for evaluation. In Cape Town, the indicator is considered poorly constructed, with no clear definition or rationale. Each City of Cape Town department contributes part of its budget to retrofit its own buildings, yet it is difficult to merge these budget posts. The indicator is therefore not very useful there. For the indicator to become more feasible, it should be reformulated to address the standard of the buildings rather than financial support. An alternative indicator could be the number of resource-efficient buildings out of the total number of buildings.



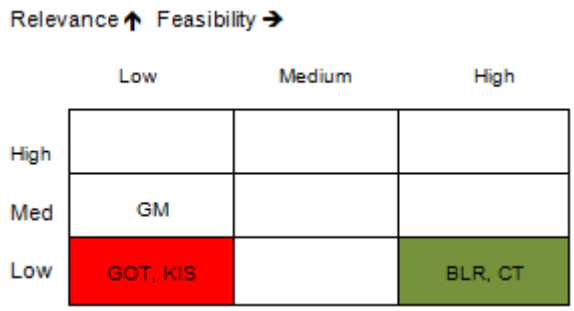
11.C.2

Sub-national government revenues and expenditures as a percentage of general government revenues and expenditures, including for buildings; own revenue collection (source revenue) as a percentage age of total city revenue

This indicator is felt to have low relevance across all cities. Only Bangalore, Cape Town and Kisumu explore it further. In Bangalore, the data have been calculated without adjusting for city expansion. For 2011, the revenue was 13% and the expenditure 11.8%.

Cape Town interprets this as a national indicator and calculated this based on national data. The indicator is calculated to be the sub-national budgets (income = expenditure = budget) as a percentage of total (national + sub-national) budgets. Against this understanding of budgets split between South Africa's three spheres, the following was calculated: national = 43%; provincial = 33%; and local = 24%. Sub-national expenditure for South Africa has been calculated to be 57%.

In Kisumu, the municipal revenue collection is 85% of the total county-level collection. The indicator as formulated is not very useful for the city and Kisumu proposes it should instead be divided into two separate entities; recurrent expenditure and development.



CONCLUSIONS

The evidence collected during this pilot project has demonstrated unequivocally the importance of having undertaken live testing of the draft targets and indicators for Goal 11, the urban SDG, in a set of diverse secondary and intermediate cities. Despite the vast experience in different fields of the Campaign membership and UN system statisticians, the extensive and detailed work of the Campaign has hitherto been undertaken in isolation from the daily pressures and realities of urban local authorities and other agencies that will be required to collect, compute and report on the indicators.

Compared with world or megacities, for instance, the five cities which formed the testbeds for this study, namely Bangalore, Cape Town, Gothenburg, Greater Manchester, and Kisumu, constitute a reasonably representative sample of the multitude of urban areas worldwide that will be faced with the new challenges of annual urban SDG reporting from 2016. The precise extent of such responsibilities will vary by country in terms of how national reporting agencies allocate roles but the specifically urban focus of most of the indicators makes some urban involvement inescapable. Indeed, this is part of the novelty and added value of Goal 11.

Three of the indicators, namely 11.3.2 on the existence of urban and regional development plans, the secondary indicator for 11.3 on legislation that promotes participatory mechanisms, and 11.B.1 on implementing risk reduction and resilience strategies, are straightforward to report on, requiring each urban area simply to give a yes/no answer to the existence of strategies or legislation, which the national reporting agency will then collate and report to the UN as a percentage of urban areas. However, although indicators with such a structure are easy to compare across cities, for the local authorities themselves, they are considered to add little or no value to ongoing planning processes. All five cities emphasise how these indicators should preferably move beyond their current tick-box format in order to provide relevance for each respective city.

If the urban SDG is to prove to be a useful tool to encourage local and national authorities alike to make positive investments in the various components of urban sustainability transitions as its proponents and developers intend, then it is vital that it should prove widely relevant, acceptable and practicable. Failure to meet these criteria will impose an undue and resented burden on the generally overstretched and under-resourced local authorities in most parts of the world. Reporting will therefore become piecemeal or irregular, data will be fabricated to suit perceived political advantages, or compliance with reporting obligations will become the principal objective rather than utilising the reporting as a stimulus to promote positive change towards urban sustainability.

Accordingly, key objectives of this project have been to examine the extent to which the required data already exist in accessible forms in the five cities and could thus be reported straightforwardly; which variables could be obtained or computed with relative ease and hence impose only a small new burden; and which were unavailable without purposive primary data collection exercises. In the last-mentioned case, some exploratory empirical experiments were conducted, especially in Kisumu, to gauge the complexity and likely cost of new data collection and hence how practicable it might be. One possible strategy that might be considered once the SDGs have been finalised might be to institute targeted capacity building/development projects in identified countries to enable urban local authorities there to undertake the required annual reporting, not as an end in itself but as an enabling mechanism to facilitate the intended objectives of the urban SDG.

In assessing the draft targets and indicators, the ten characteristics or features identified by the SDSN were utilised, namely that the indicators should be limited in number, simple and single-variable, frequently monitored, in line with international standards, draw on well-established sources, disaggregated, universal, outcome-focused, forward-looking, and used as a proxy for broader issues of sustainable development.

In terms of the actual findings, it is noteworthy that not one draft indicator was regarded as both important or relevant and easy to report on in terms of data availability. Even indicator 11.1.1, on the extent of slum/informal housing prevalence, and which is a carry-over from the MDGs, received diverse responses. The two cities in the global North, namely Gothenburg and Greater Manchester, could provide a variety of data but saw no relevance in using either the terms slums or informal settlements. To them, attention to tenure types, overcrowding or security of tenure would be far more useful, particularly since it would highlight the conditions facing the poorest groups, often social or immigrant minorities. In Kisumu, the use of the UN-Habitat definition would mean virtually the entire city being classified as experiencing slum conditions, which would be neither accurate nor useful. The single most important adjustment to make this indicator more relevant to all cities would be to replace informal settlements with the term inadequate housing. This would in turn have the potential to influence policy-making and resource allocation to adequate and affordable housing in all five cities without singling out slums.

Since the targets and indicators are supposed to be forward-looking and setting the agenda for the next 15 years, the overall consensus of the local authorities participating in this study suggests that for these to become useful and implemented at a city level, they must be relevant for local policy-makers. For this to be possible, they cannot be too few and general in scope and range. This finding illustrates the obvious dilemma in striking a balance between reducing the number of indicators and increasing the policy relevance. For these proposed indicators to become relevant at the local level and used to track broader developments of sustainable urban development they accordingly need to be aligned with already existing frameworks. Without this level of integration, it is assumed that the relevance of the indicators will diminish at the local authority level as they will become a burden in addition to existing reporting practices.

Our findings show how the proposed call for annual reporting is not entirely supported across the five cities. The value of annual reporting is instead both questioned and promoted, depending on the indicator. Data required for several of the indicators are currently not produced on an annual basis. For indicators primarily based on population data from national censuses conducted every 10 years, there is a concern about the reliability of the estimates in the years in between. For indicators 11.1.1 on informal settlements, 11.2.1 on distance to public transit, 11.3.1 on the land-use ratio, and 11.7.1 on public space, the general assumption is that data will not necessarily change significantly on an annual basis and less frequent reporting is therefore recommended. Additional reporting on these indicators is rather seen as a potential burden, rather than add value to planning and policy-making processes. This draws attention to the difficulty in striking a balance between the call for frequent reporting, as a response to the infrequent MDG reporting, and the quality and level of disaggregation of the data collected.

In terms of universality, common international standards and coherence of reporting mechanisms, our findings illustrate great gaps and concerns. The principle of universality has been difficult to achieve in the pilot study due to a range of definitional issues as well as discrepancies between local realities, varying practices of data collection and local definitions used, which, taken together, greatly complicate cross-city comparison. Particularly for targets 11.4 and 11.5, there are calls for better linkages with international standards to close the data gaps, while for target 11.1 the suggestion is rather to allow for locally appropriate definitions. This points at the difficulties involved in finding a balance between universal and locally appropriate definitions, and how the desired outcome of comparable and disaggregate data does not necessarily match the sensitivity of and need for local priorities and contexts. In other words, there is a clear discrepancy between the call for international standards on the one hand, and local realities on the other, which is not easily bridged.

When it comes to using well-established sources and for the data collection to be transparent and accountable, our findings also raise a number of concerns. Data availability is unevenly distributed across and within the cities and the indicators. However, this distribution does not simply sit along a

dichotomous division between the global North and South. Although there are trends to be found between Bangalore, Cape Town and Kisumu on the one hand, and Greater Manchester and Gothenburg on the other, these divisions are far from clear-cut. In terms of access to and capacity needed to assess geospatial data, the local authorities in primarily Bangalore and Kisumu have less institutional capacity overall. The City of Cape Town has less capacity needed to undertake large new geospatial data or analysis processes related to new or refined indicators since the current focus is on geospatial analysis for service delivery. However, there are also other challenges in terms of assessing geospatial data, such as additional field verification and checking, that are common to all cities. Furthermore, since the unit of urban agglomeration is not widely used by the local authorities, it has proven very difficult to collect data on this level throughout. It has also not always been possible to merge or aggregate data collected from various sources, including from public and private actors. These issues of both aggregating and disaggregating data are significant across all five cities.

Finally it must be highlighted that this has been a quintessentially multi-faceted project, with many co-benefits beyond the immediate purpose. For the participating urban local authorities, the project proved both interesting and valuable in helping them to understand what USDG reporting will require and to gain some experience that should assist them in this process from next year. In Kisumu, which is still finding its feet following the major local government restructuring three years ago and as a result of which it lost some experienced personnel, financial resources and even data records, the City Manager embraced the project as an opportunity to take stock of what exists, what data collection is now redundant and what important data are not yet being collected, and to build some capacity among current planning staff.

In Cape Town, the study team leader is simultaneously undertaking a review and rationalisation for the South African National Treasury of the very extensive and complex set of indicators of various origins on which large cities are required to report. This project therefore proved valuable to that exercise and to the City of Cape Town in terms of being able to assess, build and refine the City's urban development and related indicators constituting the urban SDG as part of the rationalisation. This should have obvious benefits to all South African urban local authorities in terms of maximising the 'fit' between USDG reporting and that to be required by the National Treasury in future within a context of streamlined and more purposive indicator collection and reporting.

Greater Manchester is just embarking on a major restructuring of local authorities through the establishment of a metropolitan assembly to be led by a directly elected mayor on the London model. The introduction of devolution may see Greater Manchester considering what data it collects and reports; in this case, the pilot study may provide some pertinent insights. Finally for the local platforms within Mistra Urban Futures, the project has provided experience in working from the local to the global in a focused and intense way, building new research partnerships and sharing local lessons in a comparative framework that will benefit the MUF work programme in Phase 2, starting in 2016.

REFERENCES

AGMA (2013) *Greater Manchester Strategy 2013-2020: Stronger Together*. http://www.agma.gov.uk/cms_media/files/gm_strategy_stronger_together_full_report2.pdf

City of Cape Town (2014) *Integrated Annual Report 2013/2014*. https://www.capetown.gov.za/en/IDP/Documents/2013_14AnnReport.pdf

ICSU (2015) *Review of Targets for the Sustainable Development Goals: The Science Perspective*. http://www.icsu.org/publications/reports-and-reviews/review-of-targets-for-the-sustainable-development-goals-the-science-perspective-2015/SDG-Report.pdf

IEAG (2014) *A World That Counts: Mobilising the Data Revolution for Sustainable Development*. http://www.undatarevolution.org/wp-content/uploads/2014/11/A-World-That-Counts.pdf

Loulanski, Tolina (2006) "Revising the Concept of Cultural Heritage: The Argument for a Functional Approach", *International Journal of Cultural Property*, Volume 13, Issue 2, pp 2007-233.

Millennium Initiative Cities (2014) *Kisumu Final Report*. http://mci.ei.columbia.edu/files/2014/11/Kisumu-Final-Report_November-20141.pdf

SDSN (2015) *Indicators and a Monitoring Framework for the Sustainable Development Goals: Launching a data revolution for the SDGs*. May 15. http://unsdsn.org/wp-content/uploads/2015/05/150612-FINAL-SDSN-Indicator-Report1.pdf

UCLG (2014) *How to Localize Targets and Indicators for the Post-2015 Agenda*. http://www.uclg.org/sites/default/files/localization_targets_indicator_web.pdf

UN-Habitat (2012) *State of the World's Cities 2012-13*. Nairobi: UN-Habitat.

UN-Habitat (2013) Streets as Public Spaces and Drivers of Urban Prosperity. http://unhabitat.org/streets-as-public-spaces-and-drivers-of-urban-prosperity/

UN-Habitat (2014) *International Guidelines on Urban and Territorial Planning (IG-UTP)*. http://unhabitat.org/development-of-international-guidelines-on-urban-and-territorial-planning/

UN-Habitat (2015) *Understanding Urbanisation. Monitoring urban dynamics in a fragile and resource-constrained context*. http://unhabitat.org/understanding-urbanisation-monitoring-urban-dynamics-in-a-fragile-and-resource-constrained-context-discussion-paper-9/

United Nations (2014) *The Millennium Development Goals Report 2014*. http://www.un.org/millenniumgoals/2014%20MDG%20report/MDG%202014%20English%20web.pdf

UNSC (2015) *Technical report by the Bureau of the United Nations Statistical Commission (UNSC) on the process of the development of an indicator framework for the goals and targets of the post-2015 development agenda*. March 6. https://sustainabledevelopment.un.org/content/documents/6754Technical%20report%20of%20the%20UNSC%20Bureau%20(final).pdf

UNU (2015) *The Global e-waste Monitor 2014*.
http://i.unu.edu/media/ias.unu.edu-en/news/7916/Global-E-waste-Monitor-2014-small.pdf

Urban SDG Campaign (2015) *Second Urban Sustainable Development Goal Campaign Consultation on Targets and Indicators: Bangalore Outcome Document*. January 12-14.
http://urbansdg.org/wp-content/uploads/2015/02/Urban_SDG_Campaign_Bangalore_Outcome_Document_2015.pdf

APPENDICES

Appendix 1 – Comparison of Indicator Sets fro Goal 11

Appendix 2 – Bangalore Final USDG Report

Appendix 3 – Cape Town Final USDG Report

Appendix 4 – Gothenburg Final USDG Report

Appendix 5 – Greater Manchester Final USDG Report

Appendix 6 – Kisumu Final USDG Report