UN Sustainable Development Goals Target 11: Urban Indicators Pilot

City of Cape Town Pilot Report

Second Draft Report

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Contact Details

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Contents

1 Introduction

The Sustainable Development Goals that succeed the Millenium Development Goals have been agreed upon together with a set of targets stated within these 17 goals. For the first time there is an explicit urban goal, Goal 11: *To Make Cities and Human Settlements inclusive, safe, resilient and sustainable*.

One of the more recent developments regarding Goal 11 of the SDGs, has been the Bangalore workshop (January 2015), where a set of indicators were proposed. The primary and secondary indicators proposed at the Bangalore workshop have been tested in this pilot study, as well as some indicator proposed earlier in the process of developing Goal 11.

Research was to be conducted to test these indicators in five secondary-scale cities: Kisumu, Bangalore, Manchester, Gothenburg and Cape Town. The research was to be completed to feed into a report to the USDG campaign and workshop to be held in June in Gothenburg. It is understood that this workshop will revise or confirm the current indicators, based on amongst others, the reality test of piloting them.

This report represents the report for the City of Cape Town pilot. The report is structured as follows:

- A methodology that highlights the team utilised and process followed
- A section highlighting synergies with other processes
- Findings with regards to each indicator
- Problems and challenges faced
- Lessons learnt in this process
- Conclusions

2 Methodology

Mistra Urban Futures appointed African Centre for Cities (ACC), who utilised PDG to conduct this research.

2.1 Research Team

2.1.1 ACC Team

This project was overseen by Dr Zarina Patel of the ACC who provided guidance to the process.

2.1.2 PDG Team

The lead researcher was Nishendra Moodley from PDG. He was supported by two researchers: Brendon van Niekerk & Kevin Foster.

2.1.3 City of Cape Town Team

While initially the City of Cape Town (CCT) officials were to be respondents in the research, a core group's contribution was so significant and central that they should be regarded as co-producers of the research.

Carol Wright, Manager: Development Information in the Development Information & GIS Department led the core team from the City of Cape Town, that included Natasha Primo, Ameen Benjamin and Phozisa Cabane.

2.2   Process

2.2.1   Development of an Assessment Framework

Each indicator was tested against four parameters through engagement with City officials. The parameters are:

Data Availability	Measurability	Utility	Custodianship
Does regular data exist?	Systems needed?	Is this indicator useful?	Who will comment?
At city scale at least?	Indicator Modifications?	For whom?	Who will provide data?
Last financial year?			
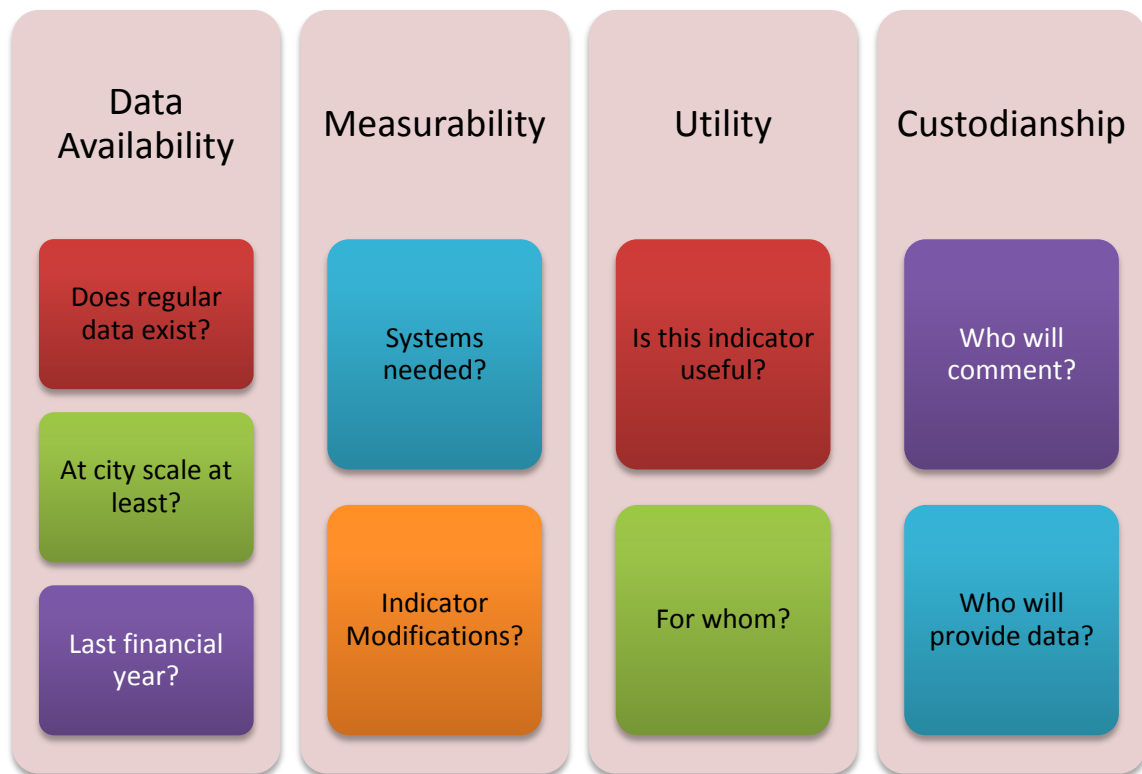
Figure 1: Initial Assessment Framework

1. Data availability – Does regular data exist, is it at least at the city scale? Is it available in the last financial year?
2. Measurability – What systems are need? Are any modifications to the indicator required?
3. Utility – Is this indicator useful? For whom is this indicator useful?
4. Custodianship – Who will comment of this data? Who will provide this data?

Later in this study the assessment framework was simplified to report on the two dimensions of feasibility and usefulness. Furthermore, in the anlaytical phase, the assessment framework was augmented to allow each indicator to be positioned along a results chain of municipal activities, inputs, outputs, outcomes or impact, to determine the nature of the indicator.

It was decided that the pilot would operate institutionally through the city administration, while complementing engagements with national departments and agencies. The city administration was relied upon to incorprate data and information that that might reside amongst business or civil society.

2.2.2   Compilation of Indicator Specification and Data Collection Formats

The PDG team devised an indicator specification format, to deconstruct and specify the indicators, focusing on the primary and secondary indicators for Goal 11. This is a spreadsheet tool, into which we have also built a format for capturing and commenting on data.

2.2.3   Mobilisation of City

In consultation with Carol Wright, a formal letter was written by the ACC to the City of Cape Town Manager on 18 March 2015 requesting that he support this process and delegate responsibilities to Carol to co-ordinate within the City. The letter also identified key officials that also need to be part of the process. This delegation process was expedited from all sides and approved on the same day. The support of the City Manager was important for this process.

2.2.4   Initial Meeting with City of Cape Town

PDG engaged closely with CCT to identify internal City stakeholders and set up an introductory workshop for the 27th March. This happened on the planned date and attracted many of the officials intended to be part of the process.

This was a useful process for formulating an initial response on each indicator, assigning responsibility for further comment and charting out the overall process for this research.

The process was well received by attending officials, with caution raised about the business of the fourth quarter of the municipal financial year.

2.2.5   Follow-up engagement by City officials

The core team of City officials undertook engagements with respective functional officials to obtain input on the feasibility and usefulness of the indicators. This was due in part to a request by functional and line officials to deal primarily with City officials in this process. This allowed the City line officials and CCT research team to consider the indicators and reflect on these in the context of the City's own indicator processes and indicator work. The pilot was able to add value in itself and to CCT and its processes.

2.2.6   Additional Research

During this time PDG had been conducting additional research by cross-referencing with other local indicator programmes.

PDG engaged with a range of national government departments that have similar reporting requirements for cities:

- National Treasury
- Department of Co-operative Governance and Traditional Affairs (COGTA)
- South African Cities Network[1]

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[1] The South African Cities' Network is a network of South African cities and partners that encourages the exchange of information, experience and best practices on urban development and city management. It is a non-profit and voluntary organisation. Eight of South Africa's nine largest cities are its members. The City of Cape Town is not currently a member.

- South African Local Government Association

There was also an important engagement with Stats SA and the custodians for relevant survey instruments.

2.2.7 Detailed work session

A detailed two-day work session was held with City officials, the PDG team and Helen Arfviddson, the lead international researcher from Mistra Urban Futures. This allowed for detailed workshopping of indicators with city officials to engage with each indicator in detail and to develop and discuss understanding of each indicator, in preparing for the at data collection phase.

2.2.8 Data Collection

The core team of City officials thereafter attempted to collect data from within the City administration by again engaging bilaterally with functional units. This was collected in a spreadsheet format developed by PDG to document the data sources and data quality of reported information.

PDG attempted data collection from extra-municipal sources.

2.2.9 Report Writing

Using information gathered from the workshops, the data and commentary provided from the core team of officials and additional data obtained from other sources, PDG has compiled this report.

2.2.10 Validation

The report was circulated to City officials for their comment and validation at a workshop on the 25 May 2015. The comments of City officials on the first draft in the validation workshop have been incorporated into this final report.

2.2.11 Finalisation

This report has been finalised for circulation on 29 May 2015.

3 Synergies with other processes

3.1 City Support Programme

The City Support Programme (CSP) of South African National Treasury Department is currently conducting two important processes that align and impact on the urban SDG indicators. The first is to develop a set of outcome indicators for the built environment functions of cities in South Africa. With regard to this, it has developed outcome indicators under four key themes: Well-Governed Cities, Productive Cities, Inclusive Cities and Sustainable Cities. The second process is to rationalise and reform the reporting burden placed on local government and in particular cities. This work is premised on the fact that city reporting is poorly co-ordinated, duplicative, fragmented and burdensome and resource consuming with more than 3000 data requirements needing to be reported to national government annually. The second part of this problem statement is that reporting has been unstrategic and has focused on inputs and activities at the expense of strategically focussing on outputs, outcomes and impact.

This rationalisation project has taken stock of current reporting requirements made of cities. This is calculated to involve in the region of 3000 data elements reported to national government annually from each city.

The following have been identified to have a significant overlap with the SDG Goal 11 set:

- Department of Rural Development and Land Reform's Spatial Integration Indicators, which have been developed in concept but not yet put into practice.
- The South African Cities Network (SACN) set of indicators that have been developed for its State of the Cities Reporting using the urban networks agenda.

The rationalisation process is critical for the SDG process as the SDG indicators, once formalised and adopted will need to be institutionalised in the integrated set. It is thus important that the process of rationalising current indicators takes stock of and sees value in the emerging SDG indicators, in particular the Goal 11 Urban Indicators.

3.2   ISO 37120

The ISO 37120 city indicators have been established to measure service delivery and the quality of life in cities globally, arising from the Global City Indicators Facility. The ISO 37120 indicator set covers the following aspects of the city; economy, education, energy, environment, recreation, safety, shelter, solid waste, telecommunications, innovation, finance, fire and emergency response, governance, health, transportation, urban planning, wastewater and water and sanitation. ISO 37120 indicators can be used to produce standardised results, and therefore international comparison and competition between cities. There are 100 indicators in the ISO 37120 set.

There is a very significant overlap in emphasis between the ISO 37120 set and that of the SDGs in emphasis. While some are standard city management indicators, others reflect a strong change agenda and are coherent with the SDGs. The advantage of these indicators is that they appear to have been developed with active involvement of City officials evidenced in their crafting. The disadvantage is that these indicators appear to be proprietary, requiring purchase and subscription and do not appear freely available.

4   Findings and Analysis

Each of the Goal 11 Urban Indicators will be summarised and analysed in this section, as well as an analysis of whether the indicators are applicable to the target in which they are located.

Alternative or additional indicators are proposed where applicable, primarily from the ISO 37120 indicator set, or from the South African National Treasury's set of City Support Programme indicators, to give an indication of what applicable existing international standard indicator may exist for the respective targets and what is already being measured.

4.1   Urban SDG Target: 1

By 2030, ensure access for all to adequate, safe and affordable housing and basic services, and upgrade slums.

4.1.1 Indicator: Percentage of urban population living in slums or informal settlements

Reference number	11.1.1		
Definition	A slum household is a household that lacks any one of the following five elements: • Access to improved water (access to sufficient amount of water for family use, at an affordable price, available to household members without being subject to extreme effort) • Access to improved sanitation (access to an excreta disposal system, either in the form of a private toilet or a public toilet shared with a reasonable number of people) • Security of tenure (evidence of documentation to prove secure tenure status or de facto or perceived protection from evictions) • Durability of housing (permanent and adequate structure in non-hazardous location) • Sufficient living area (not more than two people sharing the same room)		
Rationale	This indicator measures the percentage of the urban population living in slums or informal settlements, as defined by UN-Habitat.		
Reporting scale	City Reporting		
Indicator Formula	(Number of urban households living in urban slums or informal settlements) / (Number of urban households) *100%		
Data Element 1	Number of urban residents	Source	Census
Data Element 2	Total number of urban residents who live in an area defined as a slum	Source	Census

Feasibility

To collect this data with a high level of accuracy on a yearly basis would be complex and the resources which would be used to do this would be costly. There is a national census which is conducted every 10 years which collects this information via a door to door site visit, and a 5 yearly community survey which collects this information at a statistically relevant level, although the accuracy of the last iteration of the community survey was heavily disputed owing to methodological flaws.

Usefulness

The City regards this indicator as very useful for planning for most City departments, as the prevalence of informal settlements in a city often indicates the overall needs and strain that is placed on City resources and infrastructure.

Actual Performance

An estimated 10.12% of the population lived in informal settlements (excluding informal backyard dwellings) in 2013 in Cape Town. The total population figure is taken from the 2013 StatsSA midyear estimate, and the number of urban residents living in informal settlements is from the City's own calculation using the Solid Waste Department's door count and average household size data.

Overall analysis of indicator

It is possible to get an estimate of the percentage of the population living in informal settlements. The most readily available figures are the census figures, the most recent of these are the Census 2011. In South Africa the Census is conducted every ten years. Mid-year population estimates are produced based on Stats SA surveys and could be used, but these are regarded by some to decrease in accuracy in the time between censuses. The total population used would also be the population of the whole metropolitan municipality, not just the urban elements.

The alternative method would be to use a door count in informal settlements used as part of the Solid Waste collection function. This dwelling count would require the use of average household size (assuming one household per dwelling) figures from the census to calculate estimated population. The data available, however, is only for informal dwellings in informal settlements and not informal dwellings in backyards[2] of other dwellings, which is a common occurrence in Cape Town and South Africa.

The City exclusively uses the term "informal settlement".

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.1.2 Indicator: Proportion of population that spends more than 30% of its income on accommodation (Secondary)

Reference number	11.1.a		
Definition	This is the monthly cost of accommodation and includes and mortgage payments or monthly repayments towards place of primary residence		
Rationale	Access to affordable housing is an important aspect of overall poverty		
Reporting scale	City Reporting		
Indicator Formula	(Total number of households who spend more than 30% of income on accommodation) / (Total households)*100%		
Data Element 1	Total number of people who spend more than 30% on accommodation	Source	Administrative and household survey data
Data Element 2	Total population	Source	Census

Feasibility

This indicator is currently not feasible for the City to collect to collect on a yearly basis. The General Household Survey (GHS), conducted annually by Stats SA is the

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[2] Stats SA surveys distinguish between households in informal dwellings in informal settlements and households in informal dwellings in the backyards of formal residential areas. The City of Cape Town Solid Waste Door Count only covers households in informal dwellings in informal settlements.

best tool to use to collect this type of information, and the next iteration of it is to be conducted in 2015. Previously the GHS sample size only allowed for statistically significant results as at provincial scale at the lowest level. However after much campaigning over the last decade, some of which credit can be taken by the authors of this document we are pleased to announce that the GHS from 2015 will produce statistically significant results at city scale and will do so for all municipalities in future years, according to Statistics SA.

It will thus be possible to generate this indicator from 2016 onwards, however, analysis on previous iterations of this survey suggests there are complexities to this data including accuracy of self-reported income data, and the large number of households not paying rent or mortgages.

Usefulness

Most departments in the City of Cape Town would find this indicator useful for planning purposes, particularly Spatial Planning and Urban Development, Transport for Cape Town and Human Settlements.

Actual Performance

This indicator was not measured.

Overall analysis of indicator

This indicator is an important indicator for the comprehensive understanding of the access to affordable housing, although is not an easy indicator to measure and does not fully encompass the affordability of housing, as there is a proliferation of housing which is not paid for in Cape Town, either because it is accessed free of charge (potentially illegal settlements), or because it has already been fully paid for. This indicator will not differentiate between the two ends of the affordable housing access spectrum. Self-reported income data is also often understated, which will overestimate this indicator. Housing indicators should have the same unit of analysis. For the City of Cape Town the most appropriate unit is households or dwellings, as income is measured at a household level, and the subsequent estimation of dwelling unit size to population may be inaccurate and alter the results.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.1.3   Comments on sufficiency of the indicator suite

Indicator 11.1.1 is a primary indicator which estimates the proportion of the population living in 'slums', which, as defined by UN-HABITAT, represents population which is not adequately housed. Indicator 11.1.a is a secondary indicator which measures the 'access' component of the target, as it measures the affordability of the housing. As stated previously though, this indicator does not fully encompass the full situational analysis of 'access', because if housing is too expensive, free (illegal) housing will be acquired and this indicator would measure this as a positive thing.

The two indicators also do not investigate whether informal settlements are being upgraded, as year on year trends will not take account of in-migration to these areas.

The indicators should also measure income by household, as population income measurements are not intuitive and appropriate.

Other indicators to consider

An alternative indicator to consider is tenure status, which would be available through census data and which the City has identified as something that would be useful. Using tenure status, the conditions under which the right to occupy a dwelling or land, as a measure of access and affordability of housing would eliminate the uncertainty surrounding the payment for housing, and is a very relevant indicator in the developing world. In South Africa the Census 2011 measured this distinguishing between dwellings that are rented, occupied rent-free, owned but not yet paid off, owned and fully paid off and other (including rent free accommodation and illegal occupation).

Two indicators from the ISO 37120 set could be used in this target:

- Number of homeless per 100 000 population (supporting indicator)
- Percentage of households that exist without registered legal titles (supporting indicator)

4.2 Urban SDG Target: 2

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.

4.2.1 Indicator: Percentage of people within 0.5 km of public transit running at least every 20 minutes (Primary)

Reference number	11.2.1		
Definition	Public transportation is defined as a shared passenger transport service that is available to the general public. It includes buses, trolleys, trams, trains, subways, and ferries. It excludes taxis, car pools, and hired buses, which are not shared by strangers without prior arrangement.		
Rationale	This indicator measures access to reliable public transportation, using a proxy of percentage of population within 0.5 kilometres of public transit running at least every 20 minutes.		
Reporting scale	City Reporting		
Indicator Formula	(Number of residential dwellings within 0.5km of public transport running every 20 minutes or less)*(population per respective dwelling in target area) / (total city population)*100%		
Data Element 1	Data on location of public transport stops in city	Source	GIS System
Data Element 2	Dwelling units within 500m of public transport stops	Source	GIS System
Data Element 3	Number of residents per dwellings unit	Source	Census/household survey

Feasibility

This indicator is not feasible to collect as per its current definition. Data for access to all public transport running every 20 minutes is not available.

Usefulness

The objectives of public transport are to provide adequate, safe and scheduled public transport. It is a demand driven service which does not necessarily have to be scheduled less than 20 minutes apart as there may be insufficient demand at that frequency. Reporting on this indicator as it is currently defined is not appropriate to measure the target.

Actual Performance

Transport for Cape Town (TCT) (the City of Cape Town's transport authority) has stated that this figure is 83% of all formal and informal dwellings are within 500m of stops for all formal scheduled public transport. This was done using a spatial query in the GIS and is for the year 2014, based on dwelling data from the City of Cape Town Property Valuations Roll and a the Solid Waste informal settlements door count.

Overall analysis of indicator

The City recognizes the potential usefulness of this indicator but in its current form it is neither wholly measurable nor useful. The City argues that it would be more useful to useful to track population within 500m of scheduled public transport. People or population is the correct unit of analysis for transport planning information, however this would have to be estimated based on average household sizes and the set of indicators needs to be consistent with the use of people or population. The City of Cape Town has used dwellings for this report, rather than population. Further, 500m will be "as the crow flies" based on GIS mapping that the City does.

A significant proportion of the Cape Town population use minibus taxis, a privatised form of cheap and unscheduled public transport. The city would be unable to include minibus taxi data for the indicator, although as the indicator is defined it does not include this transport mode.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.2.2   Indicator: Share of trips by walking, by bicycling, and by public transport (Secondary)

Reference number	11.2.a
Definition	The modal split by walking, cycling and public transport will not add up to 100%, and the remained is made up of private vehicular transport.
Rationale	A city which is more reliant on public and non-motorised transport indicates a more transformed, safe and equitable public transport system and city. The modal split will indicate reliance on public and non-motorised transport and indicates a transformed city
Reporting scale	City Reporting

Indicator Formula	Proportion of trips made by walking: Proportion of trips made by cycling: Proportion of trips made by Public Transport		
Data Element 1	Proportion of trips made by walking	Source	Transport survey/ Administrative data
Data Element 2	Proportion of trips made by cycling	Source	Transport survey/ Administrative data
Data Element 3	Proportion of trips made by public transport	Source	Transport survey/ Administrative data

Feasibility

It is possible for the City to provide data for this indicator, but the data is only measured every five years. It is not feasible to collect this data every year as it requires a large scale survey. 5 yearly investigations are adequate to understand the trends which are occurring in the city.

Usefulness

This indicator is useful for a variety of departments within the City, particularly the transport authority and the spatial planning unit. Spatial planning will be interested in this metric as they are trying to promote a mixed use land arrangement and densification which are conducive to public transport and non-motorised transport use.

Actual Performance

Proportion of trips by mode in Cape Town

0%
4%
32%
64%

■ Cycling ■ Walking ■ Public transport ■ Private and other
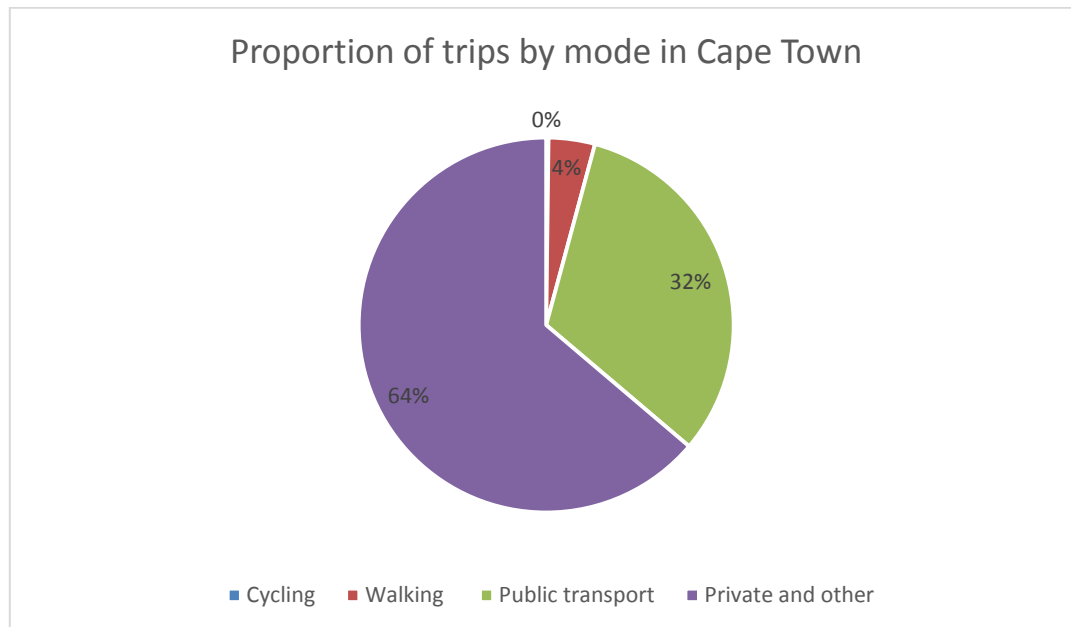
The graph above illustrates the modal split in Cape Town in 2012, and shows the very high dependence on the 'private vehicular and other' travel model. The data is from 2012 cordon surveys, for all travel, in both directions, on a typical working day.

Overall analysis of indicator

There are some weaknesses in the way this indicator is measured in Cape Town and this is acknowledged by the City. There is a lack of monitoring of surveys and of count estimations of persons in vehicles. The City also records the share of trips by private cars, metered taxis and heavy vehicles. The data elements for this are referenced. There are several concerns which are raised by the City with this indicator, in that it does not take into account travel times and multi-modal trips. The City of Cape Town has struggled to include rail based public transport trips in this indicator, although this was ultimately achieved, due to the reporting convention that road based trips will be measured separately to non-road based trips.

GHS from 2015 will now provide an annual source at city scale and will be conducted annually. However, it currently combines cycling and motorcycles, which is something that can be undone in future years.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.2.3 Indicator: Share of income spent by urban households on transport (by income quintile) (Secondary)

Reference number	11.2.b		
Definition	The proportion of income spent on public transport each month. The income quintiles are the income band broken down into 20% groupings, and it is the average spent on public transport in these bands.		
Rationale	The relative proportions of monthly income spent on income indicates the relative affordability and equality of the public transport system, as well as reliance on public transport.		
Reporting scale	City Reporting		
Indicator Formula	(Average monthly income spent on public transport) / (total monthly income) *100% [done per income quintile]		
Data Element 1	Average monthly income spent on public transport [per income quintile]	**Source**	Transport survey/ Administrative data
Data Element 2	Average monthly income [per income quintile]	**Source**	Transport survey/ Administrative data

Feasibility

The indication from the city is that this is an indicator which is not feasible to collect themselves, as it would be very expensive to collect the data. When the General Household Survey is statistically significant at the city level in 2015, then the data will be collected in a top down national process, which is more suited to this type of data collection. The question was last included in the GHS in 2013 and will need to be advocated to be re-included.

Usefulness

This would be a useful indicator to the City, but would need to be defined better. This indicator specifically states that this is for public transport only, and therefore excludes the cost of private vehicular travel, thus it may not be adequately designed and defined.

There are again problems surrounding the self-reporting of income, which may again overstate this indicator.

Actual Performance

The data for this indicator is not currently available, but may be available in the near future.

Overall analysis of indicator

This is a difficult indicator for the City to calculate and will be subject to weaknesses in the income data, although there is definite value in the indicator. In Cape Town, it is often the lower income population group that relies on public transport, and this, when correlated with the results of this indicator, may help to design better fare structures for public transport, and help to bolster arguments about accessibility to transport, particularly for the urban poor.

Stats SA will need to be requested to answer this indicator in the GHS for future years.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.2.4 Indicator: km of high capacity (BRT, light rail, metro) public transport per person for cities with more than 500,000 inhabitants (Additional)

Reference number	11.2.1x		
Definition	The length of a network is taken to be the entire operable route length, per line kilometre.		
Rationale	The larger the length of network per person, it is assumed that the more accessible and more efficient the network is		
Reporting scale	City Reporting		
Indicator Formula	(km of high capacity (BRT, light rail, metro) public transport) / (total population)		
Data Element 1	Length of operable BRT, light rail or metro system (line km)	**Source**	GIS System/ Transport database
Data Element 2	Total population	**Source**	Census/household survey

Feasibility

This data is readily accessible and available annually. It is made up of centreline measurements for network length, which are referenced, and population data, which are estimates.

Usefulness

The city regards this as a useful indicator, although it does not necessarily fully encompass geographic access to the network, and the high capacity public transport lines may be concentrated in few geographic areas.

Actual Performance

BRT: 8.3×10^{-6} km/person

Light Rail Transit: 0.0km/person (the City of Cape Town does not have a LRT network)

Rail: 58×10^{-6} km/person

This data is centreline data. There is 31.4 km of BRT and 220km of rail. This is a calculated based on 2014 CCT Development Information and GIS Department midyear population estimates, which are slightly different to the StatSA 2013 mid-year population estimated. It therefore must be noted that the population figure used in this calculation is slightly different to that used in other contexts, but this has been justified by the City, who stated that 'these figures are used in different contexts.' Further investigation into these contexts are required.

Overall analysis of indicator

This is an easily available indicator, with the only limitations being how reliable the population data is and how the roads and rail are measured. For rail and road the centreline kilometres are used, calculated used ArcGIS. There may be weaknesses in the use of centreline kilometres, as dual lines may be used in some areas, and sub-lines (the feeder network) may be included which will increase the line length. Better definition of the indicator will clarify whether or not the centre line, or line-km should be used, as this may affect the indicator dramatically.

BRT route length where the buses travel in mixed traffic is included in this indicator, but it is not known whether or not the indicator specifies dedicated lanes or not.

This indicator does well to indicate whether a city has a BRT system, an LRT system or a rail system, although the units make it unwieldy, and smaller units (per 100 000 population) are more appropriate.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.2.5 Comments on sufficiency of the indicator suite

These indicators do not adequately measure the target of a "safe, affordable, accessible and sustainable transport system". No mention of safety (or perceptions of safety) is included in the indicator suite, as well as the sustainability of the public transport system, as well as it being unknown whether this is financial or environmental sustainability.

One aspect of a public transport system which is not being measured is travel time. Travel time is a good indicator to measure as it is often used as a proxy for spatial

transformation and is often seen as a better measure of overall city efficiency than the modal split.

The disaggregation of the indicators will attempt to address the equality of public transport, particularly with reference to women, children, persons with disabilities and elder persons, although the level of disaggregation required is not always possible, particularly with regard to distance from stops. In addition, scholar transport is a provincial function and not able to be measured as part of this indicator.

Other indicators to consider

There are a multitude of indicators available which would adequately address this target. Here are some indicators from the ISO 37120 set which could be used as alternative indicators:

- Kilometres of high capacity public transport system per 100 000 population (core indicator)
- Kilometres of light passenger public transport system per 100 000 population (core indicator)
- Number of personal automobiles per capita (core indicator)
- Percentage of commuters using travel mode to work other than a personal vehicle (supporting indicator)
- Kilometres of bicycle paths and lanes per 100 000 population (supporting indicator)

The City Support Program also has some indicators which may be used in this target:

- Total kilometres of dedicated walkways and cycle paths as a percentage (in relation) to the length of roads
- Number of road traffic fatalities per annum
- Number of accidents involving cyclists and pedestrians city-wide
- Average travel time between home and work during peak

4.3   Urban SDG Target: 3

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

4.3.1   Indicator: Ratio of land consumption rate to population growth rate at comparable scale (Primary)

Reference number	11.3.1
Definition	Previously unused land would be located within or outside the urban edge, and was previously open space, agricultural land or rural, undeveloped land which has since become developed.
Rationale	Cities need efficiency gains from agglomeration. Agglomeration provides the compactness, concentration and connectivity that leads to prosperity and sustainability. As a measure of land-use efficiency, this indicator benchmarks and monitors the relationship between land consumption and population growth.

Reporting scale	City Reporting		
Indicator Formula	(City area growth rate) / (population growth rate)		
Data Element 1	Growth rate of urbanised land in city boundary	Source	GIS System
Data Element 2	Population growth rate	Source	Census

Feasibility

In its current definition this data is not readily available and land use information would have to be compiled from various sources. The City of Cape Town has stated that they could use ratio of vacant land reduced on a yearly basis, in terms of the valuation roll, but would regard this as a crude measure.

The reference date for growth would also be required. Population change would be the same annual population estimates as per previous indicators, primarily calculated from StatsSA mid-year estimates.

Usefulness

The City regards this indicator as moderately useful if it can be defined and measured appropriately. It could potentially indicate whether this city is densifying or whether the city is losing density by occupying a larger area.

It would be useful for planners, decision makers, researchers and the public and private sectors.

Actual Performance

This indicator has not been measured.

Overall analysis of indicator

This indicator is considered to be potentially useful, but would be very generic as it is defined here. The City agrees that the change in the urban edge is the correct approach to 'urban area' to measure, where the urban edge is the line drawn around an urban area as a growth boundary, marking the transition between rural and urban land use. The City argues, though, that it won't change substantially annually, and therefore won't be worth reporting on annually. A concern which was raised is that with population estimates altering annually, and the total urban area covered only being measured every 3-5 years, the indicator may not be able to provide a trend which is meaningful as the data elements are not measured concurrently. Further this indicator won't account for the use of vacant or unused land within the urban edge.

The measurement of this indicator is difficult, as there are satellite images taken of the city every 3-5 years but these take one and a half years to process, and the land use system is not completely accurate, so it is difficult to establish movement of the urban edge. The use of the entire municipal area is nonsensical, as it is unlikely to change.

One potential stumbling block that arose was the definition of 'consumption'. If land was used for urban agriculture, but was converted into residential or commercial zoning, would this be considered consumption, or would the land being used for urban agriculture already be 'consumed?' Due to this, a proposal was made to

consider changes in land use or 'air rights' as a better measure of land use efficiency, where 'air rights' refers to the right to build in or use the empty space above a property, the granting of air rights increases I the intensity of the use of a given piece of land. This could possibly be measured through the number of land use applications approved or air right applications approved.

The first year's reporting on this indicator will not be a useful measure, as there will be no base to measure from, so this may only be able to be reported on from the second year onwards (if this information is required, and can be measured, yearly).

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.3.2 Indicator: 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. (Secondary)

Reference number	11.3.a		
Definition	Participatory urban planning involves formal and scheduled community meetings to discuss urban planning issues, from which measures are taken by the authority to address the issues which arise at these meetings.		
Rationale	The city's compliance with participatory urban planning legislation ensures that the community's participation occurs and their rights are heard in a formal process		
Reporting scale	National Reporting with City Input		
Indicator Formula	Does the city comply with participatory legislation? [Y/N]		
Data Element 1	Does the city comply with urban planning participatory legislation [Y/N]	**Source**	Administrative data

Feasibility

This is a national level indicator that the city can report on. It is regarded as a superficial indicator, as the presence of legislation does not necessarily mean that that there are participatory mechanisms that are effective and implemented correctly. Further not all national departmental regulations will mandate a participatory process.

Usefulness

The City does not regard this as a useful indicator.

Actual Performance

This indicator is considered to be a simple indicator to measure, with the City affirming that it does have such legislation in 2015.

pdg

Overall analysis of indicator

This is a national level indicator, which cities report on to the national authority overseeing the SDG process whether such legislation exists. It may be useful for cross country comparison but is not useful to the cities themselves. In Cape Town, in theory, some participatory mechanisms are in place, such as consultation on the Integrated Development Plan, which is a legislated process, but it is a top-down process and it is not universally accepted that this constituted meaningful 'participation.' This is national legislation, at a city level there are different planning requirements, some of which require participation. There is also very little information available on who participates, and whether or not they live in informal settlements or are informal workers, and would require significant resource to begin to gather this data, which is particularly unappealing for the city as particular value is not seen in this indicator.

Conclusion

This indicator was determined to be feasible but not useful for the City of Cape Town.

4.3.3 Indicator: (National) Number of street intersections per square kilometre (Additional)

Reference number	11.3.1x		
Definition	An intersection is where two streets meet one another		
Rationale	This indicators has been found to be a good measurement of street density, street safety and public space		
Reporting scale	City Reporting		
Indicator Formula	(Number of street intersections in city) / (total city area)		
Data Element 1	Total number of street intersection	**Source**	GIS System
Data Element 2	Total area of the city (km^2)	**Source**	GIS System

Feasibility

The city does not currently have a source for the number of intersections, nor data available for the built up area of the city, only the size of jurisdictional area of the City of Cape Town Municipality. If the SDG process were to be reported on by the City, then a number of indicators would require the total built up area of the City, which could be calculated from satellite images or the land use map of the City. Streets or pedestrian paths in informal areas are not necessarily mapped by the GIS, and may therefore be difficult to report on.

Usefulness

This could be a useful internationally comparable measure of the walkability of the city, but for the city's own reporting it may not be useful.

Actual Performance

This indicator has not been measured, however, this may be a result of just not knowing who at the City has this information or how to address the query in the GIS.

Overall analysis of indicator

Better definition of 'street' intersections is required for this indicator to be accurately measured. Is this vehicular only or does it include lower levels of streets? Pedestrian streets are often not plotted on a GIS and are therefore not able to be measured. Informal vehicular streets may also not be able to be measured if they are not in the GIS.

The City suggested that the intersections should be differentiated by intersection type, such as roundabout, signalised, give way, 4 way stop, freeway interchange and other intersection types, as these all have their own impacts on the walkability and public space of the city as mentioned in the rationale of the indicator.

The total area of the City in the denominator will be the built up area of the City.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.3.4 Indicator: (National) Presence of urban building codes stipulating either the use of local materials and/or new energy efficient technologies or with incentives for the same (Additional)

Reference number	11.3.2x		
Definition	Not made explicit		
Rationale	Not made explicit		
Reporting scale	National Reporting		
Indicator Formula	Are there building codes stipulating either the use of local materials and/or new energy efficient technologies or with incentives for the same?		
Data Element 1	Presence of urban building codes stipulating either the use of local materials and/or new energy efficient technologies or with incentives for the same [Y/N]	**Source**	Administrative data

Feasibility

This is a feasible indicator for the city to report however the composite nature of the indicator including local materials, new energy efficient technologies complicates the indicator. The complexity of the indicator could be removed by disaggregating the required information.

Usefulness

The City does not regard this indicator as useful unless there is a means of testing implementation of the building codes, as the presence of these building codes without enforcement is not relevant.

pdg

Actual Performance

This indicator is a cross cutting one, as it encompasses national building codes and municipal bylaws, if any exist. Due to this, the indicator was not reported on.

Overall analysis of indicator

This indicator does not adequately address the implementation of any national or municipal building codes. As mentioned previously, the usefulness of an indicator which states whether or not a system or law exists is meaningless unless the implementation thereof is measured in some way. This indicator is seen as a simple check box indicator and is of little value to the City.

Conclusion

This indicator was determined to be feasible but not useful for the City of Cape Town

4.3.5   Indicator: Cities with more than 100,000 inhabitants that implement urban and regional development plans integrating population projections and resource needs (Additional)

Reference number	11.3.3x		
Definition	Unknown		
Rationale	Unknown		
Reporting scale	National Reporting with City Input		
Indicator Formula	Presence and implementation of urban and regional development plans integrating population projections and resource needs		
Data Element 1	Presence and implementation of urban and regional development plans integrating population projections and resource needs [Y/N]	Source	Administrative data

Feasibility

This is a feasible indicator, which the city can report on to the national authority who is coordinating the SDG process. It is a very simple to measure check box indicator.

Usefulness

The City regards the regional development plans as useful for their own planning purposes, as well as for politicians the public.

Actual Performance

The City reports that it does have urban and regional development plans integrating population projections and resource needs, which is under the custodianship of the Spatial Planning and Urban Development Department in 2015 and is done per sector.

Overall analysis of indicator

This indicator is a weak indicator in the South African metropolitan context, as all metropolitan cities will have a long term development plan which takes resource constraints into consideration. This indicator may be more applicable in comparing the cities of different countries against one another, and not for the City's own reporting, although this is a very easy indicator to report on.

The way the indicator is stated, with the '100 000' people as the cut off for a long term development plan will mean that the national authority which is coordinating the SDG process will need to approach all cities with 100 000 people to establish whether or not there is such a plan in place. This will be a very burdensome and most likely unnecessary process. It may be more appropriate to state the indicator as; "whether there is legislation that is implemented which states that cities should have long term development plans taking resource needs into consideration in place."

Conclusion

This indicator was determined to be feasible but not useful for the City of Cape Town.

4.3.6 Comments on sufficiency of the indicator suite

Target 3 is largely concerned with the ability of the City to plan for urbanisation in a sustainable way, and then manage the urbanisation process when it occurs. The indicators which are intended to measure this target go some way to measure the target, yet fall short of encompassing the full intricacies of the urbanisation process. The target is attempting to summarise a very complex process into a set of indicators, and this is not easy. There is only one primary indicator in this Target, which is not adequate to measure the target fully.

Other indicators to consider

As this target is primarily concerned with urban planning, there are two indicators which are from ISO 37120 which could be of relevance in this target:

- Green area (hectares) per 100 000 population (core indicator)
- Area/size of informal settlements as a percentage of city area (supporting indicator)

Due to the difficulties in measuring some of the indicators above, there are two indicators which have been suggested from the CSP to understand the City's plans:

- Land available or identified for development (for the built urban form) in hectares.
- Annual increase in urban built form in hectares/ annual increase in population.

Participatory planning mechanisms are inadequately covered by a check box approach to whether legislation exists. A more meaningful way to measure this would be through a survey approach to test resident perception of how participatory decision making in a city is. This could be included as a question in in a city satisfaction survey, which many city's conduct.

4.4   Urban SDG Target: 4

Strengthen cities efforts to protect and promote cultural and natural heritage

4.4.1 Indicator: Percentage of budget provided for maintaining cultural and natural heritage (Secondary)

Reference number	11.4.b		
Definition	Unknown		
Rationale	Unknown		
Reporting scale	City Reporting		
Indicator Formula	(Budget allocated for maintaining cultural and natural heritage) / (Total budget)		
Data Element 1	Budget allocated for maintaining cultural and natural heritage	**Source**	Municipal budget
Data Element 2	Total municipal budget	**Source**	Municipal budget

Feasibility

This could be a feasible indicator to track annually, but is dos depend on the exact specification of the indicator. The City has a department which specifically deals with cultural and natural heritage, so if this could be used as the entire budget then it is easy to measure this indicator, but if the specification is the entire budget which is related to cultural and natural heritage, then it is not as easy to measure this due to the involvement of numerous departments.

Usefulness

The city does not regard this is a useful indicator, it is a very small number that does not change very often and will not make a difference whether or not its monitored for the City's own purpose. The City realises the importance of tracking this figure when looking at international comparisons.

Actual Performance

The data is not currently available for this indicator.

Overall analysis of indicator

The City recognizes that this is an important area to monitor. Although the definition of the indicator is inadequate as it is presented here. The term 'maintaining is not intuitive when non-physical and physical items are spoken about together, so this would need better definition.

Culture, which is an element of the indicator, is difficult for the city to codify and identify and part of a budget, and therefore guidance around the definition of 'cultural heritage' would be required. South Africa has a Heritage Act, which would be the defining document in the South African context.

The use of the term 'natural heritage' may also require better specification, although it is assumed that this means anything which is natural, such as the flora and fauna of the municipality.

It may be necessary to disaggregate this indicator in order to separate 'culture' from 'heritage' as having both of the items together may not present the full

situation on the ground if there is uneven spending between the two. In addition, there are added complexities about the role of the different spheres of government which are involved in the preservation of national and cultural heritage. This is evident in the municipal jurisdiction of the City of Cape Town, where there is involvement by the national, provincial and local governmental spheres in this area.

Conclusion

This indicator was determined to be unfeasible and not useful for the City of Cape Town.

4.4.2 Indicator: Number of public libraries per 100,000 people (Secondary)

Reference number	11.4.a		
Definition	A public library is one which the public can access free of charge		
Rationale	The amount of libraries in the city is a proxy for a more culturally aware city		
Reporting scale	City Reporting		
Indicator Formula	(Number of public libraries) / (total population/100 000)		
Data Element 1	Number of libraries in the city	**Source**	Administrative data
Data Element 2	Total population	**Source**	Census

Feasibility

The City is able to report on this indicator, although there are different types of libraries which are included in the total number of libraries. This indicator is easier to report on if only municipal libraries are included, but there could be a situation where the provision of libraries is not a municipally run service e.g. provincial libraries.

Usefulness

This is a moderately useful indicator. The City regards it as a good start, but is concerned that it cannot differentiate for the nature of the library, as the size of the library, and its nature (permanent or mobile) will affect the number of people which can attend it, and the facilities that the library provides (book lending, study space, computer and internet access etc.).

Actual Performance

In the City of Cape Town there are 98 permanent libraries, 2 satellite libraries (which are not considered fully fledged libraries) as well as 3 mobile library services. This totals 103 libraries, leading there being **2.63 libraries per 100 000 people in the city.** This data was acquired from the Library and Information Services Department for the 2014 year.

Overall analysis of indicator

This is a potentially useful indicator, if defined as the City defines it. The standard functions of libraries should be defined and made explicit in the document, to

ensure that this is reported on consistently across the study cities. The Western Cape (the province in which Cape Town is located) uses area as a norm for measuring the appropriateness of libraries in an area, and where this is inadequate, the mobile libraries will move through the area on a schedule.

The indicator goes some way in creating education opportunities, as well as study space and potentially internet access, but does not necessarily safeguard the heritage of the area, although it is stated in the rationale that the presence of libraries is a proxy for a more culturally aware city.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.4.3 Indicator: Percentage of urban area and percentage of historical/cultural sites accorded protected status (Additional)

Reference number	11.4.1x		
Definition	A protected site is one which is added to the city's registry of protected and important historical sites		
Rationale	The preservation of natural/historical/cultural sites is important to the overall heritage of the city and will lead to a more culturally aware and integrated city		
Reporting scale	City Reporting		
Indicator Formula	(Number of historical/cultural sites declared as a protected site) / (Number of historical/cultural sites)*100%		
Data Element 1	Number of historical/cultural sites declared as a protected site	**Source**	Administrative data
Data Element 2	Number of historical/cultural sites	**Source**	Administrative data

Feasibility

This indicator is not feasible, due to a number of reasons. It is, in reality, two indicators (1) the urban area accorded protected status over the total urban area and (2) number of historical and cultural sites accorded protected status over the total numbered cultural and historical sites.

When a site is declared a place of historical or cultural significance, it automatically becomes protected, and therefore the value would constantly be a nominal 100%. In terms of natural heritage, it is unclear whether to include Cape Town's substantial national parks in the indicator as urban area. In addition, the area of the heritage sites is not measured.

Usefulness

The City does not regard these as useful indicators due to their definition.

Actual Performance

This indicator has not been measured as the City is unsure how to measure it.

Overall analysis of indicator

This indictor is not well conceived for two reasons. Firstly, it has two indicators in one indicator, as urban area and number of sites are different areas. Secondly, cultural sites are always protected in South African law, and are only officially recognised as culturally significant when they are declared as such.

There is definite value in understanding the cultural and natural heritage value of an area, and how much of this is being protected, but in the South African, and particularly Cape Town scenario, this indicator does not measure it.

Conclusion

This indicator was determined to be unfeasible and not useful for the City of Cape Town.

4.4.4 Comments on sufficiency of the indicator suite

The target is attempting to measure the City's attempts to maintain its cultural and natural heritage, and these indicators do not adequately address this. The measurement of budget spend as a proportion of total budget spend on maintaining cultural and natural heritage is an attempt to quantify the 'maintenance' of heritage, but is inadequately defined. In addition, there is spending by a number of departments on this what could be called 'natural and cultural heritage', so this would require fully understanding the definition of what is required, and a large scale collection exercise, as well as the appropriation of salaries and overheads which is not an easy undertaking. There are also multiple levels of government which are involved in one municipal jurisdiction, so understanding the role that each of the levels play, their expenditure, the number and area of the sites that they maintain and whether the sites are in line with the definitions are likely to be infinitively difficult tasks.

The indicators in this suite also do not address geographic accessibility to cultural and natural heritage for residents.

Libraries do address an aspect of cultural heritage, but are not a good measure of whether cultural heritage is being maintained.

In democracies it is difficult to cultural heritage is a difficult issues to address. In many cases the full diversity of cultural heritage is not protected by public institutions, only that which is inherited from pre-democratic governments.

Other indicators to consider

There are no IS0 37120 or CSP indicators that fit this target. However an appropriate approach to measuring whether cultural and natural heritage is adequately protected and promoted would be through a city residents' satisfaction survey. This could test the residents' perception of whether a city is addressing cultural and natural heritage, and would also indicate whether a city is protecting a diversity of cultural and national heritage.

4.5   Urban SDG Target: 5

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

4.5.1 Indicator: Percent of cities with more than 100,000 inhabitants that are implementing risk reduction and resilience strategies informed by accepted international frameworks (such as forthcoming Hyogo-2 Framework). (Primary)

Reference number	11.5.1		
Definition	A risk reduction and resilience framework is defined in Hyogo 2.		
Rationale	A measure of the disaster and climate preparedness of the city, to be updated in accordance with the new Hyogo framework		
Reporting scale	National Reporting with City Input		
Indicator Formula	(Number of cities with populations over 100 000 that are implementing risk reduction and resilience frameworks) / (total number of cities with population over 100 000)*100%		
Data Element 1	Presence of a risk reduction and resilience framework [Y/N]	**Source**	Administrative data

Feasibility

This is a national level indicator which the city will report in to the national authority who is responsible for the SDG process in South Africa. The city regards this as easy to measure, annually as a referenced piece of data. It is simply a yes or no question for the city.

Usefulness

The City does not think that this is a useful indicator, as the City is aware whether or not they have a risk reduction and resilience framework in place.

Actual Performance

This indicator was simple to measure, as the City has designed its risk and resilience framework in line with the South African Disaster Risk Management Framework which was developed in line with the Hyogo Framework for Action. It is under the custodianship of the Disaster Risk Management team and is updated annually. The City of Cape Town recognises, however that its approach to disaster risk management is more oriented to reaction to disaster than to reduction strategies.

Overall analysis of indicator

As an indicator this is only useful for city to city comparison but not for the cities themselves, although it is an easy to measure indicator so it is not burdensome to report on.

As with other national level indicators, this indicator is burdensome for the national coordinating body of the SDG process to report on, as all cities with more than 100 000 people in it will need to be approached to investigate whether there is a risk and resilience framework in place, and whether it is in line with Hyogo 2.

Conclusion

This indicator was determined to be feasible but not useful for the City of Cape Town.

4.5.2 Indicator: Economic losses related to GDP caused by disasters (Secondary)

Reference number	11.5.c		
Definition	Unknown		
Rationale	Unknown		
Reporting scale	City Reporting		
Indicator Formula	Total economic loss to the GDP by disasters in US$		
Data Element 1	Total economic loss to the GDP by disasters in US$	Source	Impact studies

Feasibility

This indicator is not feasible as studies into economic losses are not conducted into every disaster. Very detailed Post-Disaster Impact Assessments are usually carried out by Provincial DRM for certain declared disasters, which is usually outsourced and therefore depends on funding from National Treasury and Department of Public Works.

The City sometimes attempts to estimate the loss of infrastructure due to certain disasters, but this does not occur for all medium to high impact events.

Usefulness

This data would not be particularly useful to the city beyond the financial cost of the loss of infrastructure from disasters, although it would be useful for inter-city comparisons by and external agency.

Actual Performance

This indicator has not been measured.

Overall analysis of indicator

The indicator lacks detail, it would need to define disasters more clearly and identify whether they needed to be declared as disasters before their impact would be included. It also requires collating data from a number of different sources making it onerous to report on, for little value to the City. The declaration of a disaster requires a severe impact event, which is not often seen in South Africa.

The impact on the GDP would also need to be defined better, for example, whether or not this includes the indirect impacts of the disaster on the economy, and whether or not this economy is the national economy, or the Gross Value Add (GVA) of the municipality.

The CCT research team identified that the Economic Commission for Latin America and the Caribbean has a long-standing methodology for estimating the socio-economic effects of natural disasters and that it may be possible to draw and define indicators from this methodology.

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.5.3 Indicator: Proportion of population living in high-risk zones (Secondary)

Reference number	11.5.a		
Definition	A high risk area is one which is at risk of a climatic or non-climatic event, such as fire, flood, car accidents etc.		
Rationale	A high proportion of population living in a high risk area indicates there is likely to be a large loss of life and economic contribution should there be a disaster or accident.		
Reporting scale	City Reporting		
Indicator Formula	(Number of people living in high risk zones) / (total population)		
Data Element 1	Population living in a high risk area	**Source**	Cordon survey/GIS/Census
Data Element 2	Total population	**Source**	Census

Feasibility

This is not a feasible indicator for the City to report on in its current form. The City does not have the data available for the whole city area, the data is not currently in the right format to report on it in this way.

The City could currently report on the proportion of people living in informal settlement living in high risk of fire and flood as a proportion of the total number of people living in informal settlements.

Usefulness

The City regards this as a useful indicator as it would changes annually given new urban developments, and for targeting risk reduction programmes and future disaster risk management, spatial planning and infrastructure planning.

Actual Performance

This indicator cannot be measured in its current form as the data does not exist.

Overall analysis of indicator

This is a useful indicator but need greater clarification in terms of the definition of high risk and which risks should be considered, as there are over 70 risks which are recognised, yet the City only measure 4 risks actively, namely climate change and coastal zone hazards, earthquake zones, structural fire hazards (particularly in informal settlements) and water table rise (stormwater flooding). If this indicator was better defined, then the City would see the value in measuring it and potentially institute measures to report on it.

There is value in knowing the proportion of the City which is living in high risk areas, as it will better inform disaster risk management plans and may contribute to saving lives or property in the event of a disaster.

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.5.4 Indicator: Number of deaths, injuries, and displaced people caused by natural disasters annually per 100,000 population (Secondary)

Reference number	11.5.b		
Definition	A climate related event is one which is not man made, such as wild fire, flood, lightning strike etc.		
Rationale	The normalised number of deaths caused by natural disasters is a good measure of the climatic risk that an area is under.		
Reporting scale	City Reporting		
Indicator Formula	Number of deaths, injuries and displacements caused by natural disasters annually / 100 000		
Data Element 1	Number of deaths, injuries and displacements caused by natural disasters annually	Source	Impact studies

Feasibility

The City does not record this data on their own system, although it appears to be feasible to collect the data, although there are concerns about the definitions of the items listed in the indicator.

Usefulness

The City regards this as useful to measure the severity of disasters. It would be useful for the City's Disaster Risk Management and Social Development departments.

Actual Performance

This indicator was not reported on, primarily due to definitional issues around what constitutes a natural disaster, what level of injury would be classified in this indicator and what qualifies as displacement for this indicator.

There was also hesitation around the use of the word 'disaster' as this is a legislated term, and an event will need to be called an official disaster before the term can be used in a context such as this.

Overall analysis of indicator

The indicator is useful but requires need clearer definitions of the terms used. This in an important indicator for the City, as well as inter-city and country comparisons, whilst understanding the contexts of some cities and countries are different and they may be more or less prone to disasters.

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town

4.5.5 Indicator: Losses from natural disasters, by climate and non-climate- related events (in US$ and lives lost) (Additional)

Reference number	11.5.2x		
Definition	Unknown		
Rationale	Unknown		
Reporting scale	National Reporting		
Indicator Formula	Losses from natural disasters (units depend on disaggregation)		
Data Element 1	Losses from natural disasters (units depend on disaggregation)	**Source**	Administrative data/ damage studies

Feasibility

This indicator is not currently feasible for the City of Cape Town as it would be difficult to distinguish between which lives are lost through climate versus non-climate related events as these are not adequately defined. The City also does not have comprehensive data on the financial losses.

Usefulness

The City does not regard this as a useful indicator, as the aggregate loss measured in the previous indicator is more important than the disaggregated version presented here. The financial value of losses is not too important to the City.

Actual Performance

This indicator was not reported on as the City does not have the systems or the data to report on it.

Overall analysis of indicator

This indicator is similar to the indicator discussed above, economic losses from disasters and lives lost, injuries and displacement from natural disasters and suffers from similar data collection challenges and definitional issues. The City of Cape Town cannot currently report on it, but could in the future, if its elements are better defined, such as what constitutes a climate versus non-climate and what constitutes a natural disaster.

Disasters are often declared by National Government, so this may therefore be more appropriate as a nationally reported indicator.

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.5.6   Indicator: Number of housing units damaged and destroyed

Reference number	11.5.1x		
Definition	A housing unit is a house in which a family or group of people lives. A climate related event is one which is not man made, such as wild fire, flood, lightning strike etc.		
Rationale	The number of housing units affected by natural disasters is a measure of the city's susceptibility to natural disasters and climate change		
Reporting scale	City Reporting		
Indicator Formula	Number of housing units damaged and destroyed		
Data Element 1	Number of housing units damaged and destroyed	**Source**	Administrative data/Disaster risk management

Feasibility

This indicator may be possible to report on in the informal context, as the City is often very involved if there are disasters in informal areas. In formal areas when the City response team is called out, the data is not kept.

Better definition of the indicator is required, what constitutes damaged? What constitutes destroyed? Is this for natural events or man-made events or both, as this is only mentioned in the rationale and not the definition?

Usefulness

This indicator is moderately useful, although it depends on the definition used. It is most useful to look and trends to establish whether any measures that have been put in place are successful.

Actual Performance

This indicator was not reported on as there is no data available.

Overall analysis of indicator

This indicator is not well defined and it is therefore quite difficult to understand the rationale behind its use. The use of the terms both 'damaged and destroyed' in the same indicator is not intuitive, as the scale of damaged and destroyed are very different and should not be included in the same indicator.

With appropriate definition, this indicator could inform the City of whether disaster and damage reduction strategies that have been implemented are working or not, or whether safety education programs are having the desired result.

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town

4.5.7   Comments on sufficiency of the indicator suite

The target attempts to investigate whether the City is reducing the deaths, damage and economic repercussions of disasters, and this set of indicators provide a general overview of this, however, there is only one primary indicator in this target, which, alone, is far from adequate.

The measurement of economic impact is challenging, as it is not often measured, particularly for small scale disasters or other low impact events. The media will often report on estimations of the economic ramifications of an event, but it is unknown whether these are reliable figures or not.

The City of Cape Town views this target as a potential learning would like to understand from other cities what the best practises for reporting on disasters are. It also recommends that an incremental approach for city's that do not have sophisticated disaster reporting, using proxy indicators initially.

Alternative Indicators

This target primarily concerns the City's ability to plan for and manage disasters, so the ISO 37120 has an indicator set for Fire and Emergency Response, which could be considered in this target:

- Number of fire-fighters per 100 000 populations (core indicator)

- Number of fire related deaths per 100 000 population (core indicator)

- Number of natural disaster related deaths per 100 000 population (supporting indicator)

- Number of volunteer and part-time fire-fighters per 100 000 population (supporting indicator)

4.6   Urban SDG Target: 6

By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management

4.6.1   Indicator: Percentage of wastewater flows treated to national standards (Secondary)

Reference number	11.6.d
Definition	Broadly defined, wastewater is a combination of one or more of: domestic effluent consisting of blackwater (excreta, urine and faecal sludge) and greywater (kitchen and bathing wastewater); water from commercial establishments and institutions, including hospitals; industrial effluent, storm water and other urban run-off; agricultural, horticultural and aquaculture effluent, either dissolved or as suspended matter
Rationale	Lack of treatment of domestic and industrial wastewater presents a serious health and environmental hazard in many cities, particularly in developing countries where 80-90% of urban wastewater is untreated or insufficiently treated when discharged
Reporting scale	City Reporting
Indicator Formula	(Total treated effluent flows) / (total effluent flows)*100%

Data Element 1	Total treated effluent flows from all sources	Source	Administrative data from treatment works
Data Element 2	Total effluent from all sources	Source	Administrative data/ Spatial Planning

Feasibility

The specification and definition of this indicator means that it is unable to be reported on, unless it is a nominal 100%.

Usefulness

This indicator, as specified, is not useful.

Actual Performance

Treatment of effluent in Cape Town is all performed to Level 1 national standards, therefore this is a nominal 100%, unless there are spillages or overruns at the treatment works. The Water and Sanitation Department at the City of Cape Town.

Overall analysis of indicator

This indicator is poorly specified and defined. The volumes of wastewater which are generated from a variety of sources are not able to be measured, so their volume is unknown and therefore this indicator cannot be reported on. It is assumed that almost all wastewater (except from certain sanitation types and stormwater systems (which are discharged into rivers)) is collected into the formal sanitation system, where it is all treated to national standards.

The intention behind this indicator is useful, but it is not measurable in its current form. A more useful approach to the intention behind the indicator may be to test river water quality, as an outcome indicator.

Conclusion

This indicator was determined to be feasible but not useful for the City of Cape Town.

4.6.2   Indicator: GHG emissions tons/capita (Secondary)

Reference number	11.6.a		
Definition	The unit used is tonnes CO2 equivalents emitted, normalised per capita		
Rationale	The greenhouse gas emissions per capita is an important measure of the city's contribution to climate change		
Reporting scale	City Reporting		
Indicator Formula	(Total CO2 equivalent emissions (tonne CO2 eq)) / (total population)		
Data Element 1	Total CO2 equivalent emissions (tonne CO2 eq.)	Source	Empirical study
Data Element 2	Total population	Source	Census

Feasibility

This is not a feasible indicator for the City to measure as they do not currently measure it and the systems and studies are likely to be expensive to implement. Currently only the carbon footprint is measured.

Usefulness

The usefulness of the indicator is debateable, and methods are frequently changing, and therefore the comparison between studies is not very reliable.

Actual Performance

The City does not have the data and therefore cannot report on this indicator.

Overall analysis of indicator

This indicator is a useful indicator as it measures the impact of the city on the broader global environment, but for the City itself, it is not too useful.

Conclusion

This indicator was determined to be unfeasible and not useful for the City of Cape Town.

4.6.3 Indicator: Percentage of urban solid waste regularly collected and well managed (Primary)

Reference number	11.6.1		
Definition	Weekly curb side collection is the minimum acceptable standard.		
Rationale	The collection of waste is a good measure of the overall efficacy and cleanliness of the city.		
Reporting scale	City Reporting		
Indicator Formula	(Number of dwellings receiving weekly collection service) / (total dwellings)*100%		
Data Element 1	Number of consumer units receiving weekly solid waste collection	Source	Administrative data
Data Element 2	Total dwellings	Source	Census

Feasibility

The indicator needs to be defined better. Is this the % of households or % by volume or weight? It is assumed in this case to be the % of households, as this is a feasible indicator to collect, when the measure by volume is not

Usefulness

This is a useful indicator to track, as the City realises the importance of efficient solid waste management.

Actual Performance

There are 775 734 consumer units in the city which receive regular solid waste removal, and there are 1 068 572 households in the city, therefore the indicator result is 72.6%.

There is an important points 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 data is audited data for the 2013/14 year.

Overall analysis of indicator

This is a very important aspect of city efficiency, but there are limitations to this indicator. The first limitation is that this is only waste which enters the municipal stream, and not privately removed waste. Secondly, the units are different for the denominator and numerator of the formula. The numerator is consumer units, which may be more than one household, who will put their waste together for collection, and the denominator is households in the city. This will lead to underestimation of the indicator.

This is a common issue which has arisen, and the City has spent a lot of energy considering alternative indicators for their own reporting, but has yet to come up with anything that is robust.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.6.4 Indicator: Proportion of recycled waste from municipal waste (Secondary)

Reference number	11.6.b		
Definition	Recycled waste is waste which is reused in its current form, or broken down into another form for productive usage. E waste is electronic waste.		
Rationale	The recycling of waste is a good measure of the overall efficacy and cleanliness of the city.		
Reporting scale	City Reporting		
Indicator Formula	(Mass of waste recycled) / (total waste generated)		
Data Element 1	Total amount of waste recycled	**Source**	Administrative data
Data Element 2	Total waste generated	**Source**	Administrative data/Empirical studies

Feasibility

This indicator was specified in such a way that it is only to be reported on disaggregated by e-waste and non-e-waste, which is not feasible.

Usefulness

This indicator as specified is not useful, as the efficient collection of waste is not necessarily related to whether the waste is e-waste or not.

Actual Performance

The City was unable to report on this indicator due to the specified levels of disaggregation required.

Overall analysis of indicator

The efficient collection of waste is important for the local environmental impact and appearance of the city, as well as improving the standard of living for the residents of the city.

This is a useful indicator if it is defined as all waste, and not disaggregated as presented here. This will severely impact the number of cities which are able to report on this indicator.

Conclusion

This indicator was determined to be feasible but not useful for the City of Cape Town.

4.6.5 Indicator: Mean urban air pollution of particulate matter (PM10 and PM2.5) (Additional)

Reference number	11.6.1x		
Definition	The concentration of particles with a diameter equal to or greater than 2.5 microns (μ), which are usually produced from construction and mechanical activities		
Rationale	Rapid urbanization has resulted in increasing urban air pollution in major cities, especially in developing countries. It is estimated that over 1 million premature deaths can be attributed to urban ambient air pollution		
Reporting scale	City Reporting		
Indicator Formula	Mean urban air particulate matter smaller than 2.5 microns or smaller than 10 microns in the city of study		
Data Element 1	Mean urban air particulate matter greater than 2.5 microns in the city of study	**Source**	Pollution study/site measurements

Feasibility

The City does not measure PM 2.5, only PM10. Better definitions of 'mean' is required as air quality measurements are site specific.

Usefulness

There are numerous studies showing that PM 10 is the contributor to respiratory health issues, and not only PM 2.5, therefore the value lies in the measurement of PM 10 only especially as the measurement of PM 2.5 is more expensive.

Actual Performance

The daily mean value of the 6 sites across the city for measurements taken over the whole year is an AQI value of 24.6, which is classified as 'good'. This is audited data from 2013 from the Department of Environmental Health.

Overall analysis of indicator

The air quality of a city is very important to the overall health of the city residents, and it is therefore important that this is measured. The measurement of PM 10 is sufficient for the purposes of understanding the city's air quality. Reporting on the number of exceedances of a certain standard is, however, 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.

It is difficult to establish a mean air quality for the city, as there are many microclimatic zones within the city. In Cape Town there are measurement stations in the CBD and Khayelitsha which are likely to yield higher results than other measurement stations in the extensive national park within the city. There are also seasonal variances which may need to be taken into account when establishing the mean.

Conclusion

For PM10: This indicator was determined to be both feasible and useful for the City of Cape Town.

For PM2.5: This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.6.6   Indicator: City biodiversity index (Singapore index) (Additional)

Reference number	11.6.2x		
Definition	Unknown		
Rationale	Unknown		
Reporting scale	City Reporting		
Indicator Formula	Singapore biodiversity index score		
Data Element 1	City biodiversity index score	**Source**	Unknown

Feasibility

The Singapore index is a set of 23 indicators, which look at the full spectrum of biodiversity. The city does not collect enough information to be able to compile the full set of indicators, and it is not currently feasible to report on the Singapore index.

Usefulness

This indicator is potentially valuable, as there is important information within the Singapore index on flora and fauna, water quality, climate impact and budgetary

information, as well as institutional information such as capacity, participatory status and education of the public.

Actual Performance

This indicator was not reported on, as it consists of 23 sub-indicators which the City does not have all the necessary data for. It is also unknown which department would be the custodian of such an indicator as the sub-indicators are very diverse in nature.

Overall analysis of indicator

This indicator is a good indicator to measure the overall status of bio-diversity in the city. There is value for the City to report on it, and for the broader international community too as it is an indicator which is easily comparable.

The table below lists the 2 indicators:

Indicator number	City biodiversity (Singapore Index) indicators
1	Proportion of natural area in the city
2	Connectivity measures or ecological networks to counter fragmentation
3	Native biodiversity in built up areas (bird species)
4	Change in number of native species (vascular plants)
5	Change in number of native species (birds)
6	Change in number of native species (butterflies)
7	Change in number of native species (other)
8	Change in number of native species (other)
9	Proportion of protected natural areas
10	Proportion of invasive alien species
11	Regulation of quantity of water
12	Climate regulation: Carbon storage and cooling effect of vegetation
13	(Area of parks with natural areas and protected or secured natural areas)/1000 persons
14	Average number of formal education visits per child below 16 years to parks with natural areas or protected or secured natural areas per year
15	Budget allocated to biodiversity
16	Number of biodiversity projects implemented by the city annually
17	Policies, rules and regulations – existence of local biodiversity strategy and

Indicator number	City biodiversity (Singapore Index) indicators
	action plan
18	Number of essential biodiversity related functions the city uses
19	Number of city or local government agencies involved in inter-agency co-operation pertaining to biodiversity matters
20	Existence and state of formal or informal public consultation process pertaining to biodiversity related matters
21	Number of agencies/private companies/NGOs/academic institutions/international organisations with which the city is partnering in biodiversity activities, projects and programmes
22	Is biodiversity or nature awareness included in the school curriculum?
23	Number of outreach or public awareness events held in the city per year

Source: Convention on Biological Diversity, 2014

This set of indicators is a very comprehensive look into the biodiversity of the City, and would require vast amounts of effort to collect. There appears to be value in the collection of such indicators beyond the scope of the SDG process, and should therefore be considered by the City, particularly as Cape Town has one of the highest floral diversity of any city in the world.

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.6.7 Indicator: Fine particulate matter (PM 2,5 concentration) (Secondary)

Reference number	11.6.c		
Definition	The concentration of particles with a diameter less than 2.5 microns (μ), which are usually produced from industrial activity and motor cars.		
Rationale	Unknown		
Reporting scale	City Reporting		
Indicator Formula	Fine particulate matter (PM 2,5 concentration)		
Data Element 1	Fine particulate matter (PM 2,5 concentration)	Source	Pollution study

Feasibility

It is not feasible for this indicator to be reported on as there are no systems in place to record this data.

Usefulness

This indicator is not useful, as the measurement of PM 10 is adequate to understand the pollution concentration in the city.

Actual Performance

This indicator was not recorded as there is no system to do so.

Overall analysis of indicator

As stated previously, both PM 10 and PM 2.5 cause lung disease and respiratory problems, and therefore only PM 10 is measured. There are different characteristics between the two diameters of particles, but it is more cost efficient and appropriate in some contexts to just measure PM 10.

As with the indicator above, a better definition of mean will be required, particularly because these measurements are site specific, and there are seasonal variations.

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.6.8 Indicator: Percentage of urban solid waste regularly collected and recycled (Additional)

Reference number	11.6.3x		
Definition	Unknown		
Rationale	Unknown		
Reporting scale	City Reporting		
Indicator Formula	(urban solid waste regularly collected and recycled) / (total urban solid waste) * 100%		
Data Element 1	Urban solid waste regularly collected and recycled	**Source**	Administrative data
Data Element 2	Total urban solid waste	**Source**	Administrative data

Feasibility

This indicator, as with indicator 11.6.b, is required to be reported at the level of disaggregation by e-waste and non-e-waste which is not feasible as the City does not record this information.

Usefulness

This indicator is most useful at its disaggregated level.

Actual Performance

This indicator was not recorded, as there is no information as to whether the waste received or recycled is e-waste or regular waste.

Overall analysis of indicator

This indicator attempts to measure the level of recycling which occurs in the city from the municipal waste stream, but falls short of doing so. The recycling that is going to be measured with this indicator is only the recycling which occurs at landfill or source separation and collection. It will exclude separation at source and collection by private companies or individuals. This often occurs in South Africa, as recyclable waste can be sold to companies or other individuals.

This indicator would also fail to measure waste reduction strategies, as it only recognises the proportions of waste that is recyclable, and therefore does not fully show the strategies of many cities, which is 'reduce, reuse and recycle.'

It is recommended that the indicator should not be disaggregated, as this complicates the matter to an unnecessary degree.

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.6.9   Comments on sufficiency of the indicator suite

These indicators, when measured in conjunction with one another, address the main focus of the target, which is the measurement of the reduction of the per capita environmental impact of the cities. The first years measurements will form the base measurements, with the measurement in the reduction of impact done so from the following year.

In a developing country context, the primary concern of the City is the local environmental impact of the city, and there may therefore be a lack of data on the global impact of the city, such as the greenhouse gas emissions. The disaggregation of waste and wastewater sources is not possible.

There are several repeats between the secondary and additional indicators, which will need to be clarified, as well as the majority of the indicators need better specification.

Other indicators to consider

There are numerous alternative indicators in this target, as this deals with both the city micro- and macro-climate. They come from ISO 37120 and the City Support Program:

- ISO 37120 – Solid Waste
    - Percentage of city population with regular solid waste collection (Residential) (core indicator)
    - Total collected municipal waste per capita (core indicator)
    - Percentage of city's solid waste that is recycled (core indicator)
    - Percentage of the city's solid waste that is disposed of in a sanitary landfill (supporting indicator)
    - Percentage of the city's solid waste that is disposed of in an incinerator (supporting indicator)
    - Percentage of the city's solid waste that is burned openly (supporting indicator)

- o Percentage of city's waste that is disposed of in an open dump (supporting indicator)
  - o Percentage of the city's waste that is disposed of by other means (supporting indicator)
  - o Hazardous Waste Generation per capita (tonnes) (supporting indicator)
  - o Percentage of the city's hazardous waste that is recycled (supporting indicator)
- ISO 37120 – Environment

  - o Particulate matter (PM10) concentration (core indicators)
  - o Greenhouse gas emissions measured in tonnes per capita (core indicator)
  - o NO2 (nitrogen dioxide) concentration (supporting indicator)
  - o SO2 (Sulphur dioxide) concentration (Supporting indicator)
  - o O3 (Ozone) concentration (Supporting indicator)
  - o Noise pollution
- CSP – Resource efficiency
  - o Percentage of non-revenue water produced
  - o Non-revenue electricity as a percentage of electricity purchased
  - o Recycled waste as percentage of total waste that goes to landfill
  - o Annual Tonnage of waste per capita to landfill
  - o Kilowatt hours of electricity purchased as a percentage of GVA for single metro

4.7   Urban SDG Target: 7

By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, particularly for women and children, older persons and persons with disabilities.

4.7.1   Indicator: Area of public space as a proportion of total city space (Primary)

Reference number	11.7.1
Definition	Public space is area which any member of the public can access legally
Rationale	Having sufficient public space allows cities and regions to function efficiently and equitably. It provides the rights of way required for streets and infrastructure (and their connectivity) as well as the green space necessary for recreation and the provision of ecosystem services. At the same time, the positive Goals of public space are not limited to infrastructure development and environmental sustainability. Access to open public space not only improves quality of life but also constitutes a first step towards civic empowerment and greater access to institutional and political spaces.
Reporting scale	City Reporting

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Indicator Formula	(Area of public space in the city) / (total city area)*100%		
Data Element 1	Area of public space in the city	**Source**	GIS system/ satellite imagery
Data Element 2	Total city area	**Source**	GIS system/ satellite imagery

Feasibility

This indicator is feasible to report on as the GIS aggregates different types of land into 'public space'

Usefulness

This is a useful indicator, although it may be more useful if it was normalised to a per capita figure.

Actual Performance

The City has defined public space as "City owned land which is fenced off and has equipment on it, including parks (not cemeteries)." There are 50 637 hectares of public space in Cape Town (this includes 46 439 hectares of National Parks/Reserves).

The entire municipal area of Cape Town is 2 444 square kilometres, **therefore 20.72% of Cape Town is public space** as per the City's definition. This is referenced data from Environmental Resource Management and Parks Department for 2013.

Overall analysis of indicator

This indicator is good for city to city comparison, as public space is often synonymous with a more appealing city to live in. The City itself will not benefit greatly from this indicator.

Better definitions of the elements of the indicator would be required to ensure consistent reporting between cities, in Cape Town sports fields were excluded, as were cemeteries, and the significant national park was included. Streets and public spaces are open spaces as per the definitions of the UN, but it appears that the data is not available at this level. This will need to be clarified in future SDG iterations.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.7.2 Indicator: Area of public space designed to support the livelihoods of the poor as a proportion of total city space (Secondary)

Reference number	11.7.a		
Definition	Public space designed to support the livelihoods of the poor includes areas for skills transfer and education, stalls for the development of entrepreneurial activities, community halls etc.		
Rationale	Public space designed to support the livelihoods of the poor indicates the city's commitment to help the poor and low income communities of the city		
Reporting scale	City Reporting		
Indicator Formula	(Area of public space in the city designed to support the livelihoods of the poor) / (total city area)*100%		
Data Element 1	Area of public space in the city designed to support the livelihoods of the poor	Source	GIS system/ satellite imagery
Data Element 2	Total city area	Source	GIS system/ satellite imagery

Feasibility

This indicator is very difficult to measure, as the data is not readily available. When land is determined to be public space, it is not specified whether it is for the poor or not.

Usefulness

This indicator is not useful

Actual Performance

This indicator was not measured due to lack of information

Overall analysis of indicator

This indicator is not a good indicator, although it is attempting to measure a very important component of the city, whether or not land and trading areas are being provided for the poor. It is unlikely that this indicator could be reported on, even in developed countries.

Conclusion

This indicator was determined to be unfeasible and not useful for the City of Cape Town.

4.7.3 Indicator: Proportion of urban areas located fewer than 300m from an open public space (Secondary)

Reference number	11.7.b		
Definition	Public space is area which any member of the public can access legally		
Rationale	Urban area located close to open public space is more appealing and creates more integrated communities		
Reporting scale	City Reporting		
Indicator Formula	(Urban areas located fewer than 300m from an open public space) / (total area of the city)		
Data Element 1	Number of households located fewer than 300m form public open space	**Source**	GIS system/ satellite imagery
Data Element 2	Total city area	**Source**	GIS system/ satellite imagery

Feasibility

This indicator is not feasible to be reported on now.

Usefulness

This is a useful indicator to spatial planners, people involved in service delivery, economic development and social development.

Actual Performance

This indicator could not be measured as the GIS has not been updated to include the parks and public spaces.

Overall analysis of indicator

This is a poorly defined and specified indicator which, is attempting to highlight a very important component of the city. There are a number of problems with this indicator; firstly, it is less relevant what proportion of the urban area that is close to public space than the proportion of households that are close to an open area; secondly, the unit of 300m is very arbitrary where 500m is used as the conventional walkshed for public transport.

Conclusion

This indicator was determined to be feasible but not useful for the City of Cape Town.

4.7.4 Indicator: Number of reported crimes (homicide, injures, and theft rate) committed annually in urban areas, per 100,000 population (Secondary)

Reference number	11.7.c		
Definition	Crimes include the sum of all homicides, injuries due to criminal activities and theft		
Rationale	Normalised crime figures are a good comparator of the relative crime rates between different urban areas		
Reporting scale	National Reporting		
Indicator Formula	(Number of reported crimes (homicide, injures, and theft rate) committed annually in urban areas) / (100 000)		
Data Element 1	Number of reported crimes (homicide, injures, and theft rate) committed annually in urban areas	**Source**	Administrative data

Feasibility

This indicator is feasible to be reported on, but records are often delayed by a year and a half, and municipal boundaries and police precinct boundaries often do not coincide.

Usefulness

This is a useful indicator, although better definitions of theft would be required, as well as the time period (it is assumed to be a year).

Actual Performance

There were 219 496 homicides, injuries and thefts reported in Cape Town in 2013/14, thus there are **5 698 reported homicides, injuries and thefts per 100 000 people** in Cape Town annually (SAPS, 2013/14).

Overall analysis of indicator

All crime statistics are to be treated with suspicion as there is often underreporting of criminal events for a multitude of reasons. This indicator is a good measure of the overall safety of an area, although the mix of homicide and assault with theft may blur the results. Petty theft should not be reported in the same category as murder, perhaps this indicator should be disaggregated.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

4.7.5 Indicator: Proportion of residents within 0.5 km of accessible green and public space (Additional)

Reference number	11.7.1x		
Definition	Public green space is area which any member of the public can access legally and is vegetated		
Rationale	Urban area located close to open public space is more appealing and creates more integrated communities		
Reporting scale	City Reporting		
Indicator Formula	(Number of people living fewer than 500m from an open green space) / (total population of city)		
Data Element 1	Number of people living fewer than 500m from a public green space	**Source**	GIS system/ satellite imagery / Census
Data Element 2	Total population	**Source**	Census

Feasibility

This indicator is not currently feasible, although in the future it is likely to be feasible.

Usefulness

This is a useful indicator to spatial planners, people involved in service delivery, economic development and social development.

Actual Performance

This indicator could not be measured as the GIS has not been updated to include the parks and public spaces.

Overall analysis of indicator

There is overlap with indicator 11.7.b, although this indicator is not 500m and not 300m, and the space which is being investigated is green space instead of public space, however, in most cases this is going to yield similar results due to definitional issue around 'public' and 'green' space, particularly if street and pavement space is not able to be measured, as in Cape Town.

The units used in this indicator are not appropriate, as the best unit of measure is the proportion of households, as residents are not measured in this type of context.

This indicator is a good indicator if it is defined correctly, as open green space is a good measure of integrated communities and the liveability of the city.

Conclusion

This indicator was determined to be feasible but not useful for the City of Cape Town.

4.7.6   Indicator: Urban green space per capita (Secondary)

Reference number	11.7.d			
Definition	Unknown			
Rationale	Unknown			
Reporting scale	City Reporting			
Indicator Formula	(Total urban green space) / (total population)			
Data Element 1	Total urban green space	**Source**		GIS system/ satellite imagery
Data Element 2	Total population	**Source**		Census

Feasibility

This indicator is not currently feasible, although in the future it is likely to be feasible.

Usefulness

This is a useful indicator to spatial planners, people involved in service delivery, economic development and social development.

Actual Performance

This indicator could not be measured as the GIS has not been updated to include the parks and public spaces.

Overall analysis of indicator

This indicator is good to describe the amount of green space per capita in the city, and when used in conjunction with other 'access to green space' indicators it will show the full picture of public green space in the city.

The definition of publically accessible will need to be clarified, as well as green space, for instance, are pay-for-entry areas such as the botanical gardens publically accessible? Are sports fields that are open on weekends publically accessible?

Conclusion

This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.7.7   Comments on sufficiency of the indicator suite

This suite of indicators does well to address the target's attention on 'safe, inclusive and accessible green and public space.' There are numerous definitional issues around the terminology used, as 'green' and 'public' are often interchanged. The manner in which the UN describes the difference is that street and sidewalk space is deemed to be public space.

There is only one primary indicator in this indicator set which, alone, does not adequately measure the target.

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Other indicators

This target primarily involves the appropriate planning of urban settlements, and therefore the ISO 37120 indicators for urban planning and those relating to recreation are the most appropriate in this context:

- ISO 37120 – Urban Planning
    - Green area (hectares) per 100 000 population (core indicator)
    - Annual number of trees planted per 100 000 population (supporting indicator)
    - Area size of informal settlements as a percentage of city area (supporting indicator)
    - Jobs/housing ratio (supporting indicator)
- ISO 37120 – Recreation
    - Square meters of public indoor recreation space per capita (supporting indicator)
    - Square meters of public outdoor recreation space per capita (supporting indicator)

4.8   Urban SDG Target: a

Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

4.8.1   Indicator: Cities with more than 100,000 inhabitants that implement urban and regional development plans integrating population projections and resource needs (Additional)

This indicator was described in Section 4.3.5.

4.8.2   Indicator: Ratio of land consumption rate to population growth rate at comparable scale (Additional)

This indicator was described in Section 4.3.1

4.8.3   Indicator: Presence of a national urban and human settlements policy framework (Primary)

Reference number	11.a.1		
Definition	Unknown		
Rationale	Unknown		
Reporting scale	National Reporting		
Indicator Formula	Presence of a national urban and human settlements policy framework [Y/N]		
Data Element 1	Presence of a national urban and human settlements policy framework [Y/N]	Source	Administrative data

Feasibility

The city regards this as a feasible indicator given that it is a national indicator and that it is a yes or no answer, though it would be for national governments to report on. It would be annually reportable and a referenced piece of data.

Usefulness

While this is a measurable indicator it is not regards useful to the city, however it may be useful for international comparison.

Actual Performance

South Africa has a current National Housing Code in place, and therefore the answer is a yes. The custodian of this code is the national Department of Human Settlements.

Overall analysis of indicator

This is not a useful indicator for the City, nor particularly informative as an indicator at the national level. The main value lies in the international comparison of countries using this as the comparator.

The indicator lacks definition, making no mention of what the policy framework should contain or whether it is being implemented or not.

Conclusion

This indicator was determined to be feasible but not useful for the City of Cape Town.

Other indicators

There were no other indicators that are appropriate for this target

4.8.4   Comments on sufficiency of the indicator suite

These three indicators above are intended to address the economic, social and environmental interrelationships between urban, peri-urban and rural areas, and they go some way to do so. The content of the national urban and human settlements policy framework is the guiding document which should detail the city's growth strategies and the management thereof, and the indicator in this suite only indicates the presence of such a document, and not the implementation or contents thereof.

4.9   Urban SDG Target: b

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.

4.9.1   Indicator: Percent of cities with more than 100,000 inhabitants that are implementing risk reduction and resilience strategies informed by accepted international frameworks (such as forthcoming Hyogo-2 Framework) (Additional)

This indicator has been described in Section 0.

4.9.2 Indicator: Population density measured over continuous urban footprint (Additional)

Reference number	11.b.2x		
Definition	Urban area is area used for non-agricultural and non-recreational area and excludes public space		
Rationale	The average urban density of a city shows the area in the built up areas as opposed to the entire municipal jurisdiction		
Reporting scale	City Reporting		
Indicator Formula	(Total population) / (total urban area of city)		
Data Element 1	Total urban area	**Source**	GIS System
Data Element 2	Total population	**Source**	Census

Feasibility

As it is currently defined this is not a feasible indicator for the city, as the City cannot differentiate in their GIS between urban area and rural area.

City population would be the annual population estimates based on the Census. This is an annual estimate. The city does report on gross density which includes all land, roads and servitudes both used and unused, this would be an estimated figure. This is an annual estimate which is reported on, as presented in their actual performance below.

Usefulness

A density indicator for the continuous urban area is a very useful indicator, however, it is currently too complex for the city to measure.

Actual Performance

The city in unable to measure density for the continuous urban area, however its performance on gross density is:

3 918 830 (total population)/2 444 km^2 (gross area) =1603.5 people/km^2

This data was estimated data, acquired from the Department of Spatial Planning and Urban Development for the year 2014. The population figures are estimated figures from the 2013 midyear estimate, with an applied inflation factor.

Overall analysis of indicator

Density is a useful indicator and an important factor in the city's efficiency. Increased density, when it occurs in conjunction with high quality infrastructure provision, can lead to a city which can better manage its resources and gain efficiencies of scale from activities from services such as public transport.

The indicator also needs better definition, is urban area the built environment area, or is it the entire urban area, including open spaces? This measure of gross density

can be very useful once defined. Density measurement is a difficult measurement to make, and this indicator should be available in the future.

This indicator was determined to be unfeasible but useful for the City of Cape Town.

4.9.3 Sufficiency of indicators for target

This indicator set, while useful, is not sufficient for measurement of the target as it measures possible impact of policies rather than the presence and implementation of policy, which is what the target seek to achieve.

The measurement of the implementation of appropriate policies and procedures is a very complex item to measure, and is unlikely to be measured through a process like this.

Other indicators

Alternative indicators that could be used that address the target more directly could include whether the city has policies in place that address inclusion, resource efficiency, mitigation and adaptation to climate change and resilience to disasters.

No other indicators were found to be appropriate for this target

4.10 Urban SDG Target: c

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

4.10.1 Indicator: Percentage of financial support that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings (Additional)

Reference number	11.c.1x		
Definition	Energy efficient measures include light bulb retrofitting, energy efficient insulation, solar water geysers, passive design practices etc.		
Rationale	The municipality's support of energy efficient building will aid in the reduction of the municipality's carbon footprint and increase its sustainability.		
Reporting scale	National Reporting with City Input		
Indicator Formula	(Financial support aimed at supporting sustainable, resource efficient and resilient buildings) / (Total financial support)		
Data Element 1	Budget allocated to the support of energy efficient buildings	Source	Financial Statements
Data Element 2	Total budget	Source	Financial Statements

Feasibility

This is not currently feasible. The indicator is poorly constructed, with no clear definition of 'percentage of financial support', whether this is of the whole budget, or of support for construction and retrofitting buildings, or of special grants.

In the City of Cape Town each department is contributing a portion of their own budget to retrofit their own buildings. This expenditure is not recorded in a centralised database, and the City is therefore unable to report on this.

Usefulness

This indicator is not useful in its current conception.

Actual Performance

This indicator has not been measured.

Overall analysis of indicator

The indicator needs further clarity about the definition of 'sustainable, resilient and resource-efficient buildings'. Some elements of this are easier for the City to measure, such as energy efficiency, while other elements are more challenging, such as water and materials design. There are further difficulties in trying to mainstream into the total cost, the percentage of all project budgets spent on these activities.

In addition to these difficulties, there are numerous entities who are currently retrofitting their buildings, including the private sector. This expenditure would be impossible for the City to attain.

Conclusion

This indicator was determined to be unfeasible and not useful for the City of Cape Town.

4.10.2 Indicator: Sub-national government revenues and expenditures as a percentage of general government revenues and expenditures, including for buildings (Primary)

Reference number	11.c.1		
Definition	Sub national governments include the local authorities, and revenue and expenditure are any incoming or outgoing funds		
Rationale	The devolution of powers and revenue generating functions has generally led to a more empowered and active sub national government sphere		
Reporting scale	National Reporting		
Indicator Formula	(Sub national expenditure) / (national expenditure) *100%		
Data Element 1	Total sub national expenditure	**Source**	Financial Statements
Data Element 2	Total state expenditure	**Source**	Financial Statements

Feasibility

This is a feasible indicator which can be reported as an audited figure annually at national level.

Usefulness

This is a useful indicator to measure the strength of subnational government and their level of responsibility in their own context.

Actual Performance

There is a multitude of information required for this indicator, and as it is currently inadequately defined there, are assumptions made (see footnote):

Total municipal expenditure is estimated to be R336.3 billion in 2014/15, the provincial expenditure is R454 billion and the national budget is R1 135 billion. The provincial transfer from National is R439.7 billion and the transfer to Local Government is R89.1 billion.

The ratio of municipal expenditure to provincial expenditure to national expenditure is therefore 24:33:43 and thus the level of sub national government expenditure is 57%[3], (24%+33%).

These are the budgeted figures for the financial year 2014/15, with the local government data coming from the National Treasury's Local Government Database, and the national and provincial budgets coming from the National Government Budget Summary for 2014/15.

Overall analysis of indicator

This is a useful indicator for international comparison and for the strength of local governments. Finance follows function, which suggests that the higher the proportion of the national expenditure and revenue that is spent and received by lower government levels, suggests stronger and more independent local government, able to deliver more services.

This is a good indicator for understanding part of the target, in that it shows the strength of revenue streams of sub-national government, but says little about the regulatory and institutional capacity.

Conclusion

This indicator was determined to be both feasible and useful for the City of Cape Town.

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[3] It is assumed that the formula used to calculate the level of sub national government expenditure is: (Municipal expenditure) / ((Total national government expenditure less transfers) + (Total sub national government expenditure including transfer funding)) + (Provincial expenditure) / ((Total national government expenditure less transfers) + (Total sub national government expenditure including transfer funding))

4.10.3 Indicator: Percentage of consumption of food within urban areas that are produced and delivered in/from rural areas within the country (Additional)

Reference number	11.c.2x		
Definition	Food that is domestically produced shows that there is a healthy linkage between the domestic rural and urban areas.		
Rationale	An important measure of the linkages between rural and urban areas, and the health of their co-dependence vis-a-vis the national economy		
Reporting scale	National Reporting		
Indicator Formula	Percentage of consumption of food within urban areas that are produced and delivered in/from rural areas within the country		
Data Element 1	Total consumption of food in the city which is sourced from domestic rural sources	Source	-
Data Element 2	Total consumption of food in the city	Source	-

Feasibility

It is not feasible to report on this indicator, as the data, if it exists, will be located in multiple different sources, none of which is the City Administration. It is also unlikely that the national government has this information at the city level. The elements also need further definition around what is meant by "production in/from rural areas".

Usefulness

This is not a useful indicator for the city.

Actual Performance

Not measured.

Overall analysis of indicator

This is a poor indicator with data elements that are poorly defined and costly to measure, complex to measure and unlikely to be readily available. In addition to this, it is not useful and should therefore not be measured.

Conclusion

This indicator was determined to be unfeasible and not useful for the City of Cape Town.

4.10.4 Indicator: Domestic revenues allocated to sustainable development as percent of GNI (Additional)

Reference number	11.c.3x		
Definition	Unknown		
Rationale	Unknown		
Reporting scale	National Reporting		
Indicator Formula	(Domestic revenues allocated to sustainable development) / (GNI) *100%		
Data Element 1	Domestic revenues allocated to sustainable development	**Source**	-
Data Element 2	GNI	**Source**	-

Feasibility

This is not a feasible indicator. The South African Reserve Bank Estimate GNI (the SARB uses GNI interchangeably with GNP) annually but no records of what domestic revenues can be allocated to sustainable development. This is a national indicator.

Usefulness

This is not a useful indicator.

Actual Performance

This indicator was not measured, as there are challenging in identifying expenditure on sustainable development.

Overall analysis of indicator

This is a problematic indicator as revenue attributable to sustainable development is difficult to define. A standard definition of sustainable development in commercial activity would need to be accepted in order to develop comparable information. The link to the target is also indirect as GNI is not a direct indicator for revenue. The indicator provides no information about regulatory and institutional capacity. These revenues allocated to sustainable development are likely to be distributed between departments and not located in a centralised database, and therefore it would be difficult to reconcile the expenditure.

This indicator would be interesting to have for inter-city comparison, but the administrative and financial burden that would need to be overcome to report on this indicator does not make it worthwhile to report on.

Conclusion

This indicator was determined to be unfeasible and not useful for the City of Cape Town.

4.10.5 Comments of sufficiency of the indicator suite

The indicators are not sufficient to adequately measure progress against the target. The identified primary indicator "sub-national government revenues and

expenditures as a percentage of general government revenues and expenditures, including for buildings" is the best indicator of the set as it measures the strength of revenue streams to sub-national government, however it does not address institutional or regulatory capacity. The other indicators are not directly relevant to this target. An alternative means of looking at the strength of sub-national government would be to measure their own generated revenues as a proportion of their expenditure a mean to test the strength of their revenue streams.

Other indicators

The City of Cape Town has suggested the following as possible alternative indicators as measure of sustainability, resilience and resource efficiency of buildings:

- The percentage of homes without ceilings
- The percentage of homes in flood areas (or not)
- The number of homes with solar water heaters (CCT only has information from suppliers on CCT accreditation programme)

The South African Department of Energy does support energy efficiency in municipal buildings and infrastructure financially through its Energy Efficiency and Demand Side Management Programme. This expenditure could be reported on, although it is likely only a portion of the total budget spent on these measures.

The South African Cities Network has modelled the potential energy efficiency savings of municipal operations (building and facilities, street lighting, traffic lighting, bulk water supply and wastewater treatment, petrol and diesel use) in South Africa as compared to a baseline energy consumption figure for each city. Performance against this potential is a possible measure of resource efficient buildings (SEA, 2015).

There are no appropriate indicators from the City Support Program or the ISO 37120 set.

4.11   Overarching Analysis

The graph below depicts the feasibility and usefulness of the primary, secondary and additional indicator sets, *after the recommended changes* have been made to the indicators. From the graph it is evident that the primary indicators are generally feasible to measure with one needing refinement and two with little value. There are five secondary indicators that are ready (good to go), but a further four needing refinement. Three of the additional indicators are ready and a further six warrant refinement or systems before they can be measured. However the rest of the secondary and additional indicators should be reconsidered.
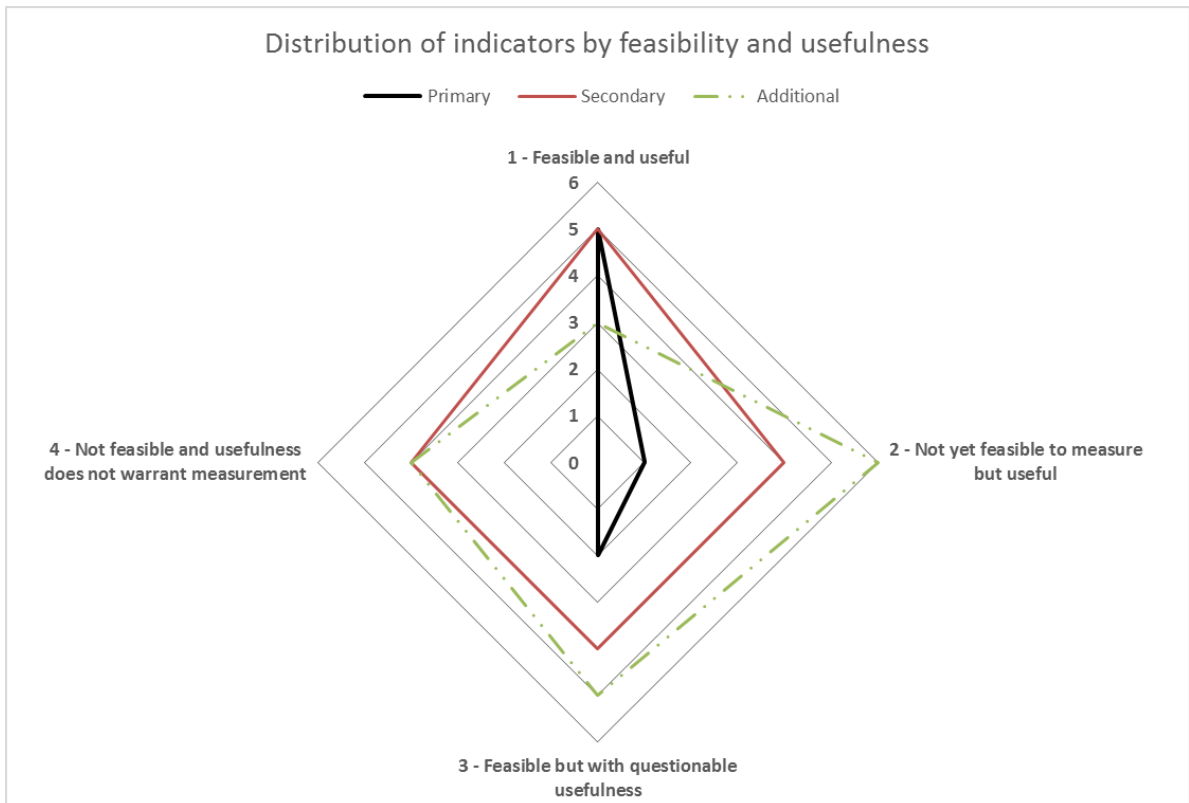
Figure 2: Overall analysis of feasibility and usefulness

5   Problems & Challenges faced

The problems faced can be tackled in three spheres:

5.1   Context of informality

The key contextual issue that constrains the easy application of indicators is that posed by informality. Informal settlements, informal public transport systems and population movements pose difficulty for, or limits on, the use of formal systems. New systems of observation and data collection are needed that sufficiently address informality.

5.2   Emerging Indicators

5.2.1   Clarity of Indicators

The indicators have needed greater clarification. Most importantly in terms of definitions and units.

There are numerous definitional issues which have arisen from the SDG indicators. It is understood that the definitions of the indicators are still in fledgling status, but there are a few important terms which are used that do not coincide with Cape Town, and most cities reporting standards:

- Dwellings, households and consumer units: The terms dwellings and households have generally been used interchangeably, but the definition of a consumer unit is very different. Dwellings are physically defined, households sociologically defined and consumer units, financially defined in terms of billing systems. A consumer unit is the unit measured for provision of services. For example, if water is provided to a group of households with one

water meter, then this would be a consumer unit. This makes the level of access to services difficult to measure when dividing the number of consumer units by households in a city.

- Green vs. public space: Public space has been defined as area that is publically accessible, and green space as vegetated public space, but this does not state whether pay-to access areas are publically accessible, as they may be infinitively expensive, and whether spaces that are only open at certain times are publically accessible.
- Wastewater: The definition of wastewater is influent water in the wastewater system, but there is no way of measuring this except at the entrance to a treatment works, hence losses in the wastewater system will always be unknown.
- Population income: The use of population income is a highly challenging item to report on, as only a portion of the population will earn an income. A far better unit of measure is household income, as the household is the unit of measurement for income.

These examples highlight the difficulty of working with indicator definitions that have not been tested with cities.

5.2.2   Sufficiency

The findings presented earlier already make the point that the targets in many cases are insufficiently measured using the suggested indicators. While it is desirable to have as few as possible indicators and that measurement is as simple as possible, the indicators need to be sufficient for measuring or providing a good enough proxy for the target.

5.2.3   Scale of Reporting

The findings highlighted earlier, also indicate a problem with the scale of reporting. In the set of indicators there are indicators that the city will be responsible for measuring and reporting, while there are also indicators that national government will be reporting about city compliance possibly with some input from the city and there are indicators that national government will report on its role in supporting cities. In engaging further with cities, it would be useful to package this appropriately.

5.2.4   Results frame

In contrasting the current set of SDG goal 11 indicators with a results-based framework for local government reflected in the schematic below, the focus of the SDG indicators becomes apparent.
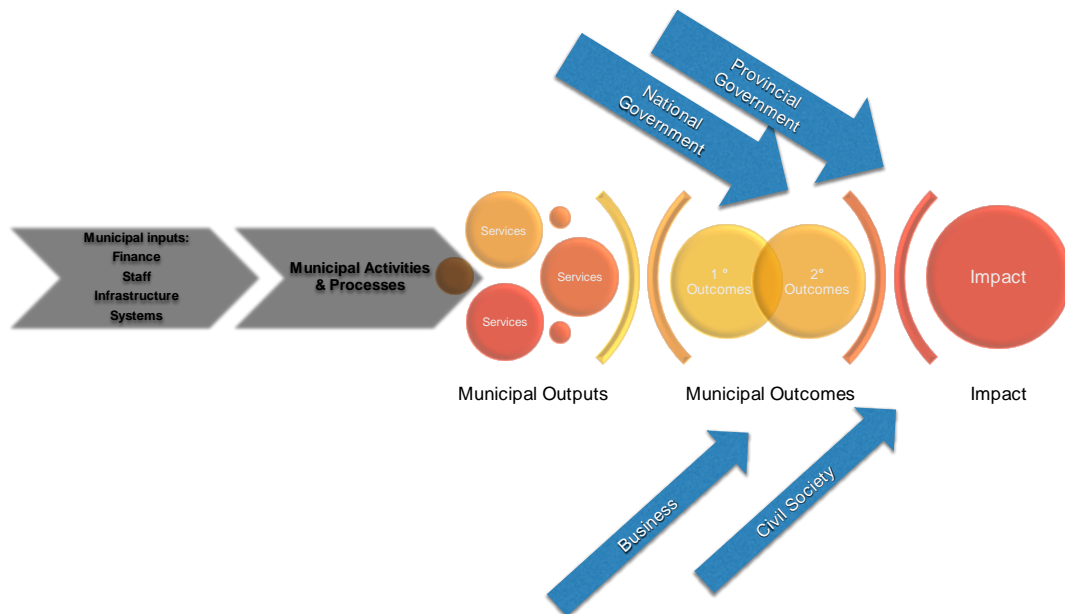
Figure 3: M&E Results Chain at City Scale

Positively, as expected for a set of SDG indicators, there is a focus on outcomes of city policy and performance. However this outcomes focus is inconsistent in the indicator set.
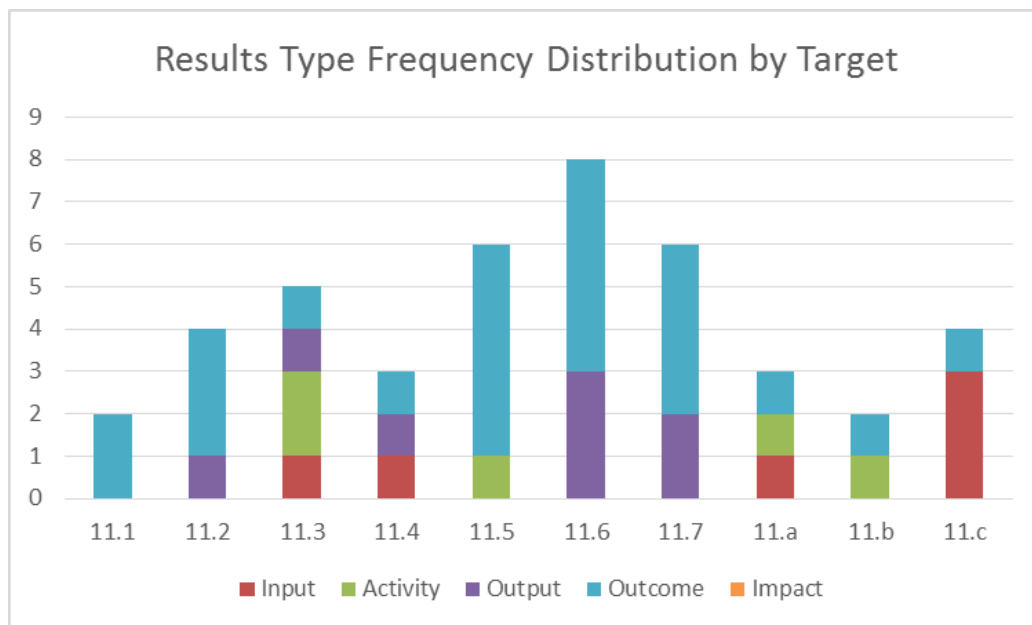

Figure 4: Results Typology of Indicators by Target

The graph above reflects a classification of each indicator on the results chain under their respective target, illustrating an emphasis on inputs and activities in particular for *Target 11.3 By 2030 enhance inclusive and sustainable urbanization and capacities for participatory, integrated and sustainable human settlement planning and management in all countries* and for *Target 11.c Support least developed countries, including through financial and technical assistance, for sustainable and resilient buildings utilizing local materials.*
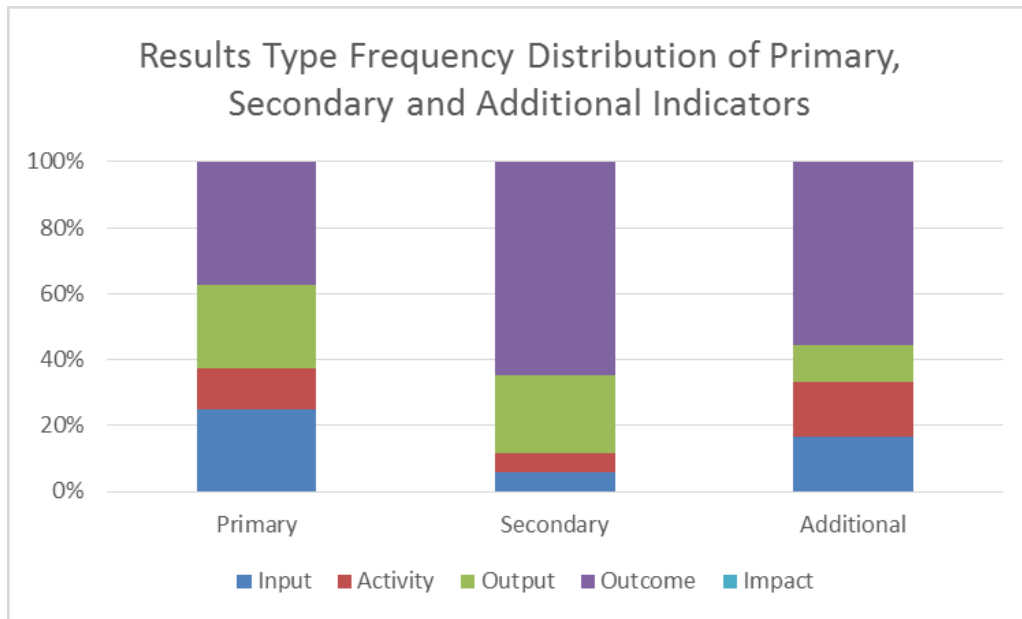
Figure 5: Results Typology of Indicators by Priority of Indicators

Similarly the graph above indicates that the primary set of indicators have a larger than expected reliance (3 out of 8 indicators) on inputs and activities this is similar for the additional set of indicators. The secondary set provide a focus on outcomes and outputs.

Even though most of the indicators overall can be located in the results chain as outcomes, or at least outputs, it can be argued that many are not far enough down the results chain. For example Indicator 11.6.b Proportion of recycled waste from municipal waste, is an outcome indicator. However recycling is not an end in itself, but arguably rather a strategy to minimise waste to landfill. Other strategies include waste reuse and overall waste reduction. All of these would contribute to minimising waste taken to landfill (either in volume or mass) per capita. This outcome is thus further down the results chain. Even further down the results chain will be landfill space utilised per capita.

As cities and countries are likely to adopt different strategies to achieve targets, universal indicators are most suitably linked to outcomes far down the results chain.

5.2.5   Domesticity vs Universality

A common theme that arises is whether the use of an indicator suits the domestic context and sufficiently articulates the domestic challenge, for example with regard to informal dwellings and land tenure or culture and heritage protection. CCT officials reminded us that cities located on coastal areas, with beaches and considerable nature reserves will have more complexity with certain indicators. They suggested a possible check for context specificity and how this is managed. While there is little doubt that each country and city should enrich their appreciation of the goals and targets through homegrown domestic indicators, some of which can be common and comparable in a secondary indicator dashboard, the core USDG indicators should however seek universal applicability.

5.3 The City System

5.3.1 Climate of over-reporting

The point was made earlier that the nascent national reporting and supervision system for local government has been compliance driven and duplicative, creating a system that is burdensome and reliant on over-reporting. Cities and most municipalities are resistant to new reporting processes, particularly where it is unclear how it will factor into regulatory reporting requirements and whether it will impact on personal performance contracting.

The City of Cape Town, arguably a well-functioning city in the South African context, is often utilised nationally as a best practice and a pilot. As such it faces it fair amount of exposure to pilot and research processes.

5.3.2 Championship

Despite this context, the core team of officials led by Carol Wright in the Development Information Unit have seen the value of this research process not only for the development of good SDG indicators, but for the City of Cape Town to play a formative contributory role to these based on its context, as well as the opportunity for the Development Information Unit to run a process such as this within the city. They have championed the process and contributed immensely to accessing perspectives, responses and data.

5.3.3 Indirect Access

Functional units in CCT have preferred to deal with the research team through the core group of officials. While direct contact between the researchers and functional resources was limited, through representation at key workshops, the core group conducted comprehensive engagements and provided feedback to the research team. More importantly this strengthened the institutional arrangements and capability within the City to undertake future work such as this and to continuously champion and build on this process and ground it in existing CCT processes.

5.3.4 Fragmented data

As in most other bureaucracies and large organisations, data will be held in different functional domains, not easily shared or integrated across the organisation. The core team, institutionally located in one of the arms of the City rather than in the nerve centre, have done a good job of accessing through networks and relationships, sets of data and responses from different functional areas, despite some competitiveness and protective behaviour from some functional units in the City regarding their data.

5.3.5 Effort

The effort put in by the core team of officials to complement the research team has been significant. The core team of officials estimates their input as follows:

- Preparation, engagement, follow up with Departments to provide data:

  3 senior staff facilitating: 22 hours

  Departments: 14 colleagues - data: 20 hours

- Collation, review and quality control:

1 staff member capturing & edits:	25 hours
1 reviewing & checking:	18 hours
Estimated total person hours	***85 hours***

The team has indicated that while resource intensive, this was a worthwhile process. They found this to be very detailed, quite technical work as there is a need to review definitions regularly and be accurate "to the letter". It was time consuming especially when accessing derived data and indicators. The resourcing estimates indicate that this would require more than one staff member, and most likely a team working on the process.

The researchers would agree that in establishment and at peak periods in the reporting cycle, concerted team effort will be required from a team of city officials. A team approach of complementary skills and functional exposure would be preferable to one official.

5.3.6   Systems

The core team at the City has noted the following points related to data availability in terms of their own systems:

Not all the data for the indicators as outlined is readily available. A challenge is that City level data is not always available, even less so at a local level or that the required data may not be available at the right time. City-wide data is more available. Local level data is much more complex.

The City's readily available data is mostly base data and service delivery focused, whilst these indicators speak to a "strategy" implementation.

The City's data has varying cycles and update points and is often retrospective.

From the researchers observations the City administration is still evolving its integrated data management capability which has yet to be warehoused in an integrated repository. Given the importance of data as an asset, this is likely to be a direction that the city moves towards in future years, in building a repository of development information.

5.4   The Supporting Systems

Research highlighted previously pointed to weaknesses in the national supervisory and statistical system supporting local government in South Africa. The national departments that supervise and support cities have a central role to play in co-ordinating information collection, data and knowledge generation, as do urban observatories and universities. There are significant efficiencies and improvements that can be made in how these roles are played. This will impact on the ability of the cities to provide data in consistent definitions and formats.

While there are useful statistical products developed by Statistics South Africa, the shortcomings in ability of this agency to meet the needs of the cities has been acknowledged. There have also been concerns with data quality associated with certain instruments. However the Census (10 year cycle), Community Survey (5 years in between Census), National Travel Survey (5 years), General Household

Survey (Annual) and soon to be introduced Population Survey (3 years) form a useful suite of instruments that must be transformed to be made useful for development monitoring and for city stakeholders in particular.

It is reassuring to note that, after significant advocacy over the last decade in some part by the researchers, the General Household Survey will now be conducted with a sample size statistically significant for city level results and Stats SA is open to improving the questionnaire to meet the needs of cities.

6 Lessons Learned

This was an intense and rich process resulting in significant learning for the research team and City officials. Some of the learning can be unpacked in the following components.

6.1 Indicator Framework Issues

Firstly there are lessons about the development and refinement of indicators. Definitions and specifications are important crafting issues for a consistent understanding of indicators.

It has been noted that indicator development processes such as these should ideally involve city officials and practitioners from the inception.

A conceptual indicator framework that sets out the intention of these indicators, the principles that underlie them and quality criteria for consideration as an indicator would be useful in these processes.

This indicator framework could also ensure the strategic positioning of the indicators in the results chain.

Similarly, such an indicator framework could put forward other principles for how this system of indicators would work e.g. principles of universality or domesticity, few or sufficient, how to use proxies.

The core team at the City of Cape Town has asked for:

- Focus on fewer indicators
- Focus on primary indicators
- Use of proxy indicators
- Improvement of definitions and specifications
- Quality criteria for indicators

Officials at CCT noted that despite the regular use of indicators amongst urban practitioners there is much room for imrpoving practioners understanding and crafting of indicators.

6.2 Institutional Arrangements

6.2.1 Co-ordination Internationally

It was noted in this process that as much as there can be better co-ordination in reporting nationally, international reporting could also be improved. Of note was the need for better alignment between the Global City Indicator Facility / ISO and

the USDG set. Many SA cities are already participating in the GCIF or are considering doing so.

6.2.2   Intergovernmental Alignment

Domestically, the need for reform and alignment in city reporting is further emphasised with the introduction of international reporting for cities. It will be important for domestic intergovernmental processes to adjust and align to this.

6.2.3   Dialogue with national agencies

National custodians of data need to be city partners in this exercise. Particularly agencies such as Stats SA have a mandate and a desire to play a meaningful and co-operative role in supporting cities. Stats SA is also likely to be the custodian of SDG reporting nationally. It is important for cities to influence Stats SA's and National Treasury instruments to ensure they are put to good use and work well for city governance.

6.2.4   Supporting Systems

In addition to the statistical systems that Stats SA provides other national platforms and international platforms have the potential of supporting cities to collect, manage, analyse and report data:

- Satellite-based GIS systems to monitor human settlement trends and contribute to urban observation

- Systems to facilitate large data management and reporting within city administrations, national systems and international systems

There are significant opportunities to co-ordinate these solutions at scale and national and international role-players have a significant contribution to make here.

6.2.5   Transversal Integrated Systems within the City

CCT officials identified the need for implementing transversal co-ordinated systems for data storage and analysis.

6.3   Pilot / Research Processes

6.3.1   Institutional Access

The process was useful in learning about institutional access. Firstly working through the City Manager's office was critical in mobilising immediate support. Secondly, engaging with the correct counterparts within the City to champion the process expedited the research process. The process certainly benefitted from the commitment of the core team of officials who engaged further with functional units and fed back to the research team.

6.3.2   Reciprocal Value

Research and data collection processes are more sustainable and developmental when there is reciprocal value for those who are the subjects of a pilot, research or data collection process. If that process is seen to be valuable, people will champion it. The value here was not only the global developmental value of contributing to successful and workable Urban SDG indicators but the opportunity to run this process in the city, learn from the indicator development process and some of the reporting and indicator specification tools provided by the researchers.

6.3.3   Knowledge sharing amongst cities

The core group of officials still see significant value in the continued sharing of knowledge across cities, both on development indicators, but also in particular content spaces where better systems are needed. CCT cited Disaster Risk Management as one such are from which it could benefit from engagement with other cities.

7   Conclusions

This has been an intense and rich learning process for all involved. Introducing the emerging set of urban SDG indicators to the City of Cape Town in order to conduct a contextual reality test of these indicators was a useful one. While there are limitations regarding the informal contect that characterises significant facets of the city, the type of data that the city has at its disposal and regularity with which it is able to access household and population data, the current limitations reflect more on the specification and definitions of current indicators, particularly those outside the primary set of indicators. The majority of primary indicators are measurable and valuable. With improved collaboration with Statistics South Africa these will be increasingly measurable. There is much that can be better refined in secondary set of indicators and to a smaller extent in the additional indicators.

While the most recent version of the SDG indicators has a monitoring framework there is still scope for agreement on an indicator framework that informs the final choice of what will hopefully be few indicators that sufficiently represent the targets. The City officials have shown a commitment to this process and will undoubtedly want to contribute to their further development over time. When implementation starts, both national and international organs have an important role in supporting cities with common systems that allow them to collect, analyse and report on data at different scales while integrating information within cities.

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