



The urban sustainable development goal: Indicators, complexity and the politics of measuring cities



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ABSTRACT

As part of the post-2015 United Nations sustainable development agenda, the world has its first urban sustainable development goal (USDG) “to make cities and human settlements inclusive, safe, resilient and sustainable”. This paper provides an overview of the USDG and explores some of the difficulties around using this goal as a tool for improving cities. We argue that challenges emerge around selecting the indicators in the first place and also around the practical use of these indicators once selected. Three main practical problems of indicator use include 1) the poor availability of standardized, open and comparable data 2) the lack of strong data collection institutions at the city scale to support monitoring for the USDG and 3) “localization” - the uptake and context specific application of the goal by diverse actors in widely different cities. Adding to the complexity, the USDG conversation is taking place at the same time as the proliferation of a bewildering array of indicator systems at different scales. Prompted by technological change, debates on the “data revolution” and “smart city” also have direct bearing on the USDG. We argue that despite these many complexities and challenges, the USDG framework has the potential to encourage and guide needed reforms in our cities but only if anchored in local institutions and initiatives informed by open, inclusive and contextually sensitive data collection and monitoring.

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1. Introduction

More than two thirds of the world's population is likely to reside in urban areas by 2050, adding another 2.5 billion people to today's 4 billion urban residents (United Nations, 2014a). Meeting the basic needs of swelling urban populations while ensuring the integrity of critical ecosystems, addressing climate change and promoting economic productivity and social inclusion is one of the major challenges of our time. Cities, as voracious consumers of energy and producers of waste, including the bulk of the world's greenhouse gas emissions, are seen as critically important loci of numerous, complex inter-linked sustainability, development, and planning problems.

Increasingly, cities are also being conceptualized less as problems and more as “drivers of sustainable development” and global environmental change (Fitzgerald, 2010; Hoornweg, Sugar, & Trejos Gomez, 2011; Parnell, 2016). Urban areas can sustain densities that support

efficient service provision, energy and land-use (Fitzgerald, 2010) and through recycling, green technologies and smart land-use and transportation planning, can alter their “urban metabolisms” to become leaner and greener, radically reducing waste (Ferrao & Fernandez, 2013; Troy, 2012). Cities with lean circular metabolisms can minimize inputs, maximize renewables and recycling and hence reduce ecological footprints (Rogers, 1997). Cities with diverse populations, subcultures and networks of interactions are also recognized as incubators for innovations that can help address our current challenges (Johnson, 2010; Hoornweg et al., 2011). Overall, a new global recognition exists that cities are where critical battles for sustainable human development are to be waged, battles with impacts far beyond cities themselves.

To a large extent, this growing recognition of the importance of cities is a product of a successful global campaign by a network of civil society, cities and the United Nations, a campaign that recently culminated in a New Urban Agenda (Habitat III, 2016) and a specifically Urban Sustainable Development Goal (USDG) as part of the United Nations 2030 Agenda for Sustainable Development. The goal is to “make cities and human settlements inclusive, safe, resilient and sustainable” and includes a series of 11 targets, each with politically negotiated indicators. This USDG conversation is taking place at the

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same time as the “data revolution” and ever expanding conversations and debates about leveraging technology, big data and citizen science for “smart” cities and improved urban planning (Goodspeed, 2015; Greenfield, 2013; Townsend, 2013, 2015). The discussion about USDG indicators most directly raises critical questions around data and data collection systems at the city scale, linking directly into this technology and data or “smart city” conversation. In addition, a plethora of actors with varied agendas has already developed many different urban indicators focused on different aspects and categories of cities (Moreno Pires, Fidélis, & Ramos, 2014; Huang, Wu, & Yan, 2015; Shen, Jorge Ochoa, Shah, & Zhang, 2011). USDG proponents must thus navigate a complex environment where an “urban indicator industry” and the related “smart city” and data industry are already in place (Herzi & Hasan, 2004; Hollands, 2008).

In this paper, we provide a brief background and overview of the history of the USDG and explore some of the emerging debates around urban indicators. We contextualize current concerns around the USDG within a wider historical and political conversation around the “data revolution”, complexity and indicators for measuring the city. From this perspective, we argue the USDG as a tool for improving cities and their broader impacts faces a number of challenges. These include 1) dilemmas around defining the indicators in the first place and 2) dilemmas around the practice of using indicators. Three main practical problems around indicator use include 1) the poor availability of standardized, open and comparable data 2) the lack of strong data collection institutions at the city scale to support monitoring for the USDG and 3) “localization” -the uptake and application of the goal by diverse actors in widely different cities with specific local contexts.

2. From the Millennium Development Goals to an Urban Sustainable Development Goal

At the turn of the century, UN Member States fashioned a development agenda around eight Millennium Development Goals (MDGs). These included 1) eradicating extreme poverty and hunger, 2) achieving universal primary education, 3) promoting gender equality and empowering women, 4) reducing maternal and child mortality, 5) improving maternal health, 6) combating HIV/AIDS, malaria and other diseases and 7) ensuring environmental sustainability all within a context of 8) a ‘global partnership for development’. While the MDGs had urban dimensions, cities were by and large neglected. Only target 11 of MDG 7 to “ensure environmental sustainability” had a specifically urban dimension: “achieving by 2020 a significant improvement in the lives of at least 100 million slum dwellers”. A task force on improving the lives of slum dwellers argued for recognizing the poor as active agents, improving urban governance, promoting local pro-poor policies, investing resources to make this happen and empowering local action, all as means to achieving target 11 (Garau, Sclar, & Carolini, 2005).

The MDGs were used as tools to advocate for improved services for the urban poor. However, problems emerged with both the framework and implementation (Fehling, Nelson, & Venkatapuram, 2013). First, despite the task force recommendations, the urban poor were rarely involved in the interventions designed to assist them, and their voices were often absent at local government levels where action was needed the most (Hasan, Patel, & Satterthwaite, 2005). Local governments themselves were seen to be missing from the MDG process and, regardless, often did not have the resources or capacity to implement changes on the ground needed to achieve the MDGs. The overall idea of a global partnership for development was also seen as too top down, patronizing (Hasan et al., 2005) even a “tyranny of experts” (Easterly, 2013, 2015).

Secondly, the indicators for urban poverty were highly problematic, systematically underestimating the scale and depth of poverty in higher cost cities (Satterthwaite, 2003). Problems existed with the

typical tools for social, spatial and statistical analysis when measuring cities with high levels of informality, poverty and slum formation (You, 2007, 216). Thirdly, economic, social and environmental aspects were not integrated into the MDGs (United Nations, 2013). Fourthly, MDG monitoring and review did not even begin until five years after the goals were adopted and even then, data often lagged by three or more years (UN, 2014a, 2014b). In addition, measurements were tracked at a national level and further aggregated to regional scales, making city-level comparisons difficult. Overall, available data sources and MDG monitoring were of poor quality (Flood, 1997), little disaggregation was done, and problematic assumptions were often made.

Some MDG targets may have been reached, although not necessarily through MDG targeted interventions (Fukuda-Parr, 2014). The UN claims that “the proportion of urban population living in slums in the developing regions fell from approximately 39.4 per cent in 2000 to 29.7 per cent in 2014” and more than 320 million people gained access to either improved water, improved sanitation, durable housing or less crowded housing conditions (United Nations, 2015). However, the kinds of indicators used for the MDGs as well as the lack of monitoring mechanisms around their measurement and analysis has led to concerns, and without safeguards, statistical manipulation may have in fact created a false image of success (Hickel, 2016; Fukuda-Parr, 2014). Currently, absolute numbers of urban residents living in slums continue to grow, partly due to accelerating urbanization, population growth and the lack of appropriate land and housing policies. Over 880 million urban residents are estimated to live in slum conditions today, compared to 792 million reported in 2000 and 689 million in 1990 (United Nations, 2015).

After more than two years of intergovernmental negotiations with extensive civil society input, those constructing the post-2015 development agenda sought to directly address the failures and correct shortcomings of the MDGs. Further, urbanization became a key focus of concern in the reflections on the next round of goals, often as a crosscutting element of almost every sustainable development concern (United Nations, 2013). However, a global urban campaign advocated strongly for a stand-alone goal for urban areas and human settlements. The argument was that such a goal would help increase policy attention and awareness of urban challenges, giving cities more visibility for advocacy and funding purposes (Lucci, 2014).

Recognizing the critical role of governance challenges that characterize urban areas including high levels of informality, proponents of a stand alone urban goal argued it could also help coordinate and focus different actors' efforts (Lucci, 2014; Sustainable Development Solutions Network, 2013). Global organizations including UN-Habitat, Cities Alliance, the Sustainable Development Solutions Network, the Communitas Coalition, ICLEI, UCLG and 400+ partners and local and regional government supporters, mobilized and launched a massive and ultimately successful Campaign for the USDG. In September 2015 when the 2030 Agenda for Sustainable Development was adopted, the initial part of the campaign was won, and the USDG became one of seventeen Sustainable Development Goals (SDGs).

In an insightful analysis Parnell (2016) points to five major ways in which the SDGs are different from the MDGs. First, the goals are universal- applying to every place not just “poor” countries. Second, the economic, social and environmental dimensions of sustainable development are explicit, and more integrated together with a strong recognition- driven in part by concerns with climate change- about ecological limits and planetary boundaries. Third, recognition exists of the need to leverage innovation in technology to create better sources and monitoring of data at different scales. Fourth, global development is explicitly linked to global finance. Finally, the USDG itself is new and “path breaking”, because it “concedes that, in an urban world, cities can be pathways to sustainable development”

(Parnell, 2016 citing Citiscope, 2014; SDSN, 2013). These differences are summarized in Table 1.

The new global development focus on cities also comes with a new set of targets that reach far beyond the typical focus on housing and slum upgrading to include safe, affordable, accessible and sustainable transport, participatory and integrated planning, green and public spaces, improved air quality and waste management, climate resiliency and natural disaster risk reduction (See Table 2). These targets draw urban planning, design and architecture into the heart of the development enterprise in an unprecedented way, raising the question of how the USDG and its targets and indicators will integrate into and help improve existing urban process, policy and planning in very diverse cities across the globe.

For each target there is also an evolving indicator framework led by the UN Statistical Commission. Indicators are placed into three categories depending on how available data seems to be (Table 3). Overall, the process of developing a “robust and high quality indicator framework” is often portrayed as an ongoing and ever evolving “technical process that will require time and refinements over this time” (United Nations, 2015). However, this indicator selection process is more than just a technical process. Indicators emerge from negotiations over what will be measured, by whom and how, making it a political process as well.

3. Challenges facing the USDG

The USDG framework is a new tool for mobilization. It can help to access resources and influence for improving cities in ways embodied by the goal and its targets. By leveraging these targets along with measurements and data to show the state of progress, diverse urban networks can argue for different kinds of investments and actions at a local level such as better transport or public green spaces. Urban planners, policymakers or civil society activists who wish to use this new tool within their advocacy efforts, however, are likely to face a number of inter-related challenges.

4. Indicator selection

To begin, cities are complex, with their own metabolisms- patterns of activities, consumption and waste and ecological footprints beyond

Table 1
MDGs and SDGs compared.

MDGs	SDGs
2000–2015	2015–2030
8 goals, 18 targets, 48 indicators ^a	17 goals, 169 targets, 230 indicators
Focused on “poor” nations	Universal, global
Data lagging and spotty. Mostly surveys, census.	Data still lagging but exploration of new sources - “data revolution” incl. open data, geospatial data, citizen scientists, etc.
Voluntary, non-binding	Voluntary, non-binding
No comprehensive monitoring or analysis of MDG spending (mostly government budgets and Official Development Assistance)	Linked to global financing framework from the beginning (Addis Ababa Action Agenda) although funding mechanisms and monitoring system still vague.
Primary focus was eradicating poverty	Explicit focus on holistic sustainable development including environmental goals
MDG 7 Target 11 refers to improving the lives of at least 100 million slum dwellers	Stand – alone UrbanSDG Goal 11 – cities recognized as “pathways to sustainable development”, more expansive role for urban planning, design and architecture
Local governments absent from formal process	Local governments still absent with no formal role but more involved in advocacy
Excluded people, top-down	Calls for inclusion, participatory processes

^a Changed over the period and eventually reached 60 indicators.

Table 2
Targets and sample urban SDG campaign current indicators for the USDG.

11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums
Indicator 11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing
11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
Indicator 11.2.1 Proportion of the population that has convenient access to public transport, disaggregated by age group, sex and persons with disabilities
11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
Indicator 11.3.1 Ratio of land consumption rate to population growth rate
Indicator 11.3.2 * Proportion of cities with direct participation structure of civil society in urban planning and management which operate regularly and democratically
11.4 Strengthen efforts to protect and safeguard the world’s cultural and natural heritage
Indicator 11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)
11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
Indicator 11.5.1 Number of deaths, missing persons and persons affected by disaster per 100,000 people.
11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
Indicator 11.6.1 Percentage of urban solid waste regularly collected and with adequate final discharge with regard to total waste generated by the city
Indicator 11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (populated weighted)
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities
Indicator 11.7.1 The average share of the built up area of cities that is open public space for public use for all, disaggregated by age group, sex, and persons with disabilities.
Indicator 11.7.2 Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months
11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning
Indicator 11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city.
11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans toward inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels
Indicator 11.b.1 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030.
Indicator 11.b.2. Number of countries with national and local disaster risk reduction strategies.
11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials
Indicator 11.c.1. Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials

Sources: UN Adopted Targets set in global agreement “Transforming Our World” (2015). UN Statistical Commission Report of the Inter-Agency and Expert Group on Sustainable Development Goal Indicators (March 2016). Indicators with a * are still under consideration.

Table 3
Indicator categories.

Tier 1	Methodology and data available
Tier 2	Methodology exists but data not widely available
Tier 3	Methodology in development

their boundaries. Social, political, economic and cultural elements of cities interact and react with a city's spatiality and built environment. Any set of indicators will thus necessarily seem rigid and unable to fully reflect urban complexity, and the many scales on which city impacts are felt (Holden, 2013). Despite this constraint, indicator systems have proliferated, because they serve multiple purposes.

Indicators can play a scientific role in furthering our understanding of cities, a conceptual role by shaping debates and dialogue and political roles by legitimizing or delegitimizing policy options within tactical struggles, often by inserting new kinds of data into policy (De Sherbinin, Reuben, Levy, & Johnson, 2013). Indicators are multi-use; they can become part of "assessing and benchmarking conditions and trends across space and time, monitoring progress toward goals and targets, informing planning and decision-making, raising awareness, encouraging political and behavioral changes, promoting public participation, and improving communication (Holden, 2006; Moreno Pires et al., 2014).

The USDG framework thus enters a complex world where many indicators and indicator frameworks already exist and serve different purposes and agendas (Table 4). No clear consensus exists on methodology or standards for these various systems of indicators in part because they are embedded in politics and serve different purposes besides a scientific one (Moreno Pires et al., 2014). Within this context of competing indicator systems, the USDG has the advantage of emerging from a consensus of member states to the UN but will still be one system among many. In an attempt to address this overlap issue, UN-Habitat is promoting its City Prosperity Index as a kind of consensus tool within the SDG Monitoring Framework noting that all targets and indicators of the USDG are integrated into it (UN-Habitat et al., 2016). Whether the City Prosperity Index will be adopted in this way remains to be seen.

Within the global urban campaign, recognition exists that whatever the indicator system adopted at a city scale, it needs to be "relevant, acceptable and practicable" for "generally overstretched and under-resourced local authorities in most parts of the world" (Simon & Arfvidsson, 2015). Indeed, even in places like the United Kingdom, the use of indicators at a subnational level faces many challenges (Wong, 2006). The rule of thumb being used for the SDG network is that indicators must follow the "SMART" criteria that is be specific, measurable, ambitious, realistic, and time bound (Hak, Janouskova, & Moldan, 2016).

With this in mind, a team led by David Simon set out to test a set of proposed indicators for the USDG in five very diverse cities (Bangalore, Cape Town, Gothenburg, Greater Manchester and Kisumu) in order to provide feedback for the USDG framework (Simon & Arfvidsson, 2015). They discovered that all cities struggled to access adequate

Table 4
Samples of some existing indicators.

<ul style="list-style-type: none"> • Global Cities Index, AT Kearney • Green City Index, Siemens • Cities of Opportunity, Price Waterhouse Coopers • World's Most Global Cities, Bloomberg • Sustainability Index, McKinsey • World's Most Livable Cities, Economist Intelligence Unit • City Prosperity Index. State of the World's Cities. UN Habitat. • Climate Action in MegaCities, C40 • Ecological Footprint, Global Footprint Network • Sprawl Index, SustainLane, Most Creative Cities, Infrastructure Report Card, • Canadian Sustainability Index • Singapore City Biodiversity Index
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data, and all proposed changes to make the USDG indicators more locally relevant (Simon & Arfvidsson, 2015). Another study conducted by Yale University using Delhi and Atlanta as test cases found unsurprisingly "data variability and lack of comparable methods hinders implementation of the Urban SDG on a global scale" (Boyer, Brodie, Sperling, Stokes, & Zomer, 2015). However, this study also notes that, "ultimately, the SDGs are a political process and the current push to select 100 indicators to measure and monitor sustainable development arbitrarily confines the integration of science" (Boyer et al., 2015).

Overall, an incompatibility exists between what is useful at the practical level of city politics and administration, and what is useful for the scientific goal of better characterization and understanding of the complexity of cities. In the end, it will be the process of city politics that will determine whether any indicators or broader science get integrated into planning and urban action. This, of course, does not preclude using indicators for more scientific study of the city and other purposes. However, it is clear that we cannot expect the indicators that are ultimately selected for the USDG to necessarily do everything. Hence, selecting and modifying indicators to make the most practical, political progress is critical, and this raises a set of questions around localization and data (Simon & Arfvidsson, 2015).

5. Localization

While national governments of UN member states have set the USDG, the goal and its targets will need to be realized at the urban/city scale. The USDG thus raises the question of the relationship-and coordination- between cities and other subnational as well as national governments in relation to implementation of the goals and monitoring. As cities are often in complex and often contentious relationships with higher levels of government, how the USDG will filter through these layers of politics to be adopted in some locally appropriate form is a key issue.

The uptake of the goal and the indicators at any level will depend on how powerfully the urban campaign and local advocates can communicate, collaborate and gain allies who find the new framework useful enough within their city struggles to use it. Thus, the campaign would need to stretch its networks further into cities globally to communicate the goal and its targets without displacing or disrupting local movements for change which have their own framings and strategies. The interpretation of these targets and indicators as guidance and "proxies" for wider and more complex concerns helps to make local adaptation and adoption more likely (Simon & Arfvidsson, 2015).

Overall, these indicators should not crowd out other local measures of change but compliment and strengthen them, especially because each indicator is extremely limited. For example, the proposed indicator for target 2 "to provide access to safe, affordable, accessible and sustainable transport systems..." is "proportion of people within convenient distance of public transport" disaggregated by vulnerable group. This gives you an idea of proximity but not affordability, service quality, safety or even physical access for vulnerable groups such as the disabled. In other words proximity is not access (You, 2007). The indicators will need to be understood as guides for evaluation not definitive measures of progress on complex issues such as access in the city. Thus, we need to continue to refine contextually sensitive approaches and analysis to address the specific conditions of the urban poor and other vulnerable groups in varied cities (Fukuda-Parr, 2014; Satterthwaite, 2003; You, 2007).

For those cities that have pre-existing plans with local goals and targets, localization becomes an issue of reconciliation and integration or simple validation. For example, the current plan OneNYC details New York City's long-term sustainable development strategy centered on its own visions, goals, initiatives and indicators. The plan was negotiated through a multi-stakeholder process within more than 70 public agencies all of which occurred prior to the urban SDG. Even so, many of NYC's goals and targets mesh well with the UrbanSDG and even surpass the

new global goal and targets (See Table 5). For example, OneNYC not only pledges that some share of its population will have convenient access to public transit but that a full 90% of all New Yorkers will have access to at least 200,000 jobs within a 45 minute transit trip (NYC Mayor's Office of Sustainability, 2015).

The mayor of New York along with many others pledged support to the Urban Sustainable Development Goal. The goal is useful in raising the profile of cities in the global arena and mobilizing resources. In cities more dependent on global development flows that are likely to realign with the goal, we can imagine a similar reconciliation and adoption of the USDG within planning. Indeed, policymakers tend to pay attention to indicators that are linked to budget allocations (Wong, 2006), and this can also create openings for local advocacy (Fukuda-Parr, 2014).

6. Missing good, comparable data for cities

Poor urban data availability in many cities, especially in Africa and Asia where 90% of urban growth is expected to happen by 2050 (United Nations, 2014a, 2014b) is another challenge. For example, in many cities high levels of informality mean that many processes and dynamics are missing from household surveys that form the basis of national statistics. A danger also exists that indicators valorize formality and exclude the informality that dominates in many cities, generating skewed data. For example, in many cities in Africa or Asia part or most of the transport system is somewhat informal and unmapped (Klopp, Williams, Waiganjo, Orwa, & White, 2015; Williams, Waiganjo, White, Orwa, & Klopp, 2015). This means even directly measuring whether populations are within a convenient distance of public transit would be a challenge. In addition, if access to only what is considered formal transport is measured, existing access to public transport and how it could be improved might be missed altogether or marginalized. Finally, in some cases, data does in fact exist but is inaccessible because scarce data are a valuable resource and often informally commoditized and embedded in a power dynamics that mitigates against open data and sharing (Williams, Marcello, & Klopp, 2014; Westfall & de Villa, 2001; Simon & Arfvidsson, 2015). Like for the MDGs, adequate data is likely to be an ongoing problem for the SDGs.

7. Data collection capabilities and the “data revolution”/smart city conversation

Much of traditional data collection has been located at the national level within statistical agencies. The focus is on household surveys which are often costly of uneven quality, and often exclude the vulnerable and hardest to reach. This means that much of the capacity for data gathering is in these national Statistical Commissions or Bureaus, which

Table 5
Comparing the USDG and OneNYC.

USDG 11	OneNYC Goal 3	OneNYC Initiative
SDG 11: Make cities inclusive, safe, resilient and sustainable. Target 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums Indicator 11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing	New Yorkers will have access to affordable, high-quality housing coupled with robust infrastructure and neighborhood services.	Create and preserve 200,000 affordable housing units over ten years to alleviate New Yorkers' rent burden... Support efforts by the private market to produce 160,000 additional new units of housing over ten years to accommodate a growing population.

have varying capacities (Paris21, 2015). Further, such national statistics are prone to political manipulation as well (Wong, 2006).

To address this issue of missing or poor data and data collection capacities, a focus has emerged on the “data revolution” linked to the spread of new technologies and the rise of new forms of data including “big data” (United Nations, 2013). Some argue for harnessing this revolution to support improved national statistical capabilities (Paris21, 2015) and others suggest that to get uniformity of data, we need to add in improved remote sensing techniques, but this too has limitations as to what can be measured (Boyer et al., 2015). However, none of these more top down, technical approaches address the concerns around monitoring and accountability that emerged with the MDGs (Hickel, 2016; Fukuda-Parr, 2014).

As a counter-balance, a focus is emerging on opening up and encouraging more decentralized, local data collection at the city level in part through the rapid expansion of the smartphone and various kinds of sensors and computing capabilities. However, this focus on the “smart city” is highly contentious. Key questions arise around privacy, who will use and control data and technology and how (Wiig and Wylly, 2016). As Townsend writes whether this data and technology will be used to improve urban life “depends on “who controls the new systems and determines what knowledge they produce, who has access to the data, who interprets them, and of course, what they are used to achieve” (Townsend, 2013, 2015).

To the extent that efforts to collect data for the USDG supports innovative data collection with citizen participation as well as open data as part of an inclusive and transparent public discussion about planning and policy, this will be a step forward. The Digital Matatus project in Nairobi which helps gather open transport data useful for the target on transportation is one such positive example (Klopp et al., 2015; Williams et al., 2015) However, urban data collection by consulting firms and large corporations tend to be less transparent and open and also do not build local capacity but rather often create dependency (Townsend, 2013). Thus, the data revolution and the smart city movement offer the potential to produce data for the USDG in new ways, but whether it will do so in a manner that enhances citizen engagement, accountability and monitoring will depend on the ongoing struggle around who will get measure the city and how (Wiig and Wylly, 2016).

8. Conclusion

Despite the challenges, the USDG is an achievement in terms of bringing global attention to the critical importance of cities for humanity and its future. Questions of planning and urban policy, including the smart city debate over measuring the city, are now at the center of a complex global development enterprise and dialogue. One way that the complexity of this endeavor has been addressed so far appears to be via deliberate vagueness in the indicator framework. Another related approach is to develop caveats around the simplification and reductionism of the framework, characterizing the framework as a “proxy” and policy tool, a way to simplify critical issues for the purposes of clarity and activism.

This may not make for very scientific accounting of our cities' progress. As Boyer et al. note “target vagueness and data constraints leave performance indicators open for interpretation exacerbating existing tensions between universal and appropriate local implementation” (Boyer et al., 2015). However, an intrinsic tradeoff exists between universal goals and adapting and interpreting the framework to make it useful at city, regional and national levels in actual politically driven planning and policy processes. In the end, it will be in local urban spaces where meaning and interpretations of the framework will be created and used in critical local struggles and politics around improving cities.

Overall, then, we might pragmatically embrace and highlight the conceptual and policy elements of the USDG, its targets and indicators while striving to make them work as best they can for cities in locally appropriate ways. If this framework helps spur on action, finance, and

valuable, open and inclusive data collection in support of improved cities, then it will have an important, positive, albeit not always perfectly quantifiable, impact on cities, regions and our planetary future.

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