



Chapter 8: Indicators for Measuring Urban Sustainability and Resilience

David Gómez-Álvarez and Eduardo López-Moreno with Edgardo Bilsky, Karina Blanco Ochoa, and Efrén Osorio Lara

8.1 Introduction

Due to the unprecedented growth and emergence of urban areas around the world, urbanization is one of the most significant trends of the twenty-first century. By 2030, 60 percent of the world's population is expected to live in cities, and by 2050, nearly 70 percent (UN-Habitat 2015). The acceleration of the urban phenomenon poses unexpected and motley challenges for contemporary societies, which are in need of new metrics to measure the dimensions circumscribing today's urbanization.

Urban indicators offer an overall snapshot of the city in order to determine intra-urban variations and areas that require greater attention from policy-makers. In terms of policy use and analysis, urban indicators play a key role in creating good policies for three main reasons: first, they highlight relevant issues that should be considered throughout the design and implementation of public policies; second, they are effective tools for policy-makers to set concrete targets for urban policies (OECD 2000); and third, they can help to assess the performance of the policies implemented by local, regional, and national authorities.

New metrics require a shift in the conceptualization and understanding of city progress, moving well beyond traditional economic metrics towards more comprehensive and holistic perspectives that position both human and environmental well-being at their cores. The shortcomings and inadequacies of conventional economic indicators as development standards reveal that urban well-being can no longer be equated with economic progress. Thus, a paradigmatic transformation that moves away from this traditional perspective towards new measurements of development becomes fundamental.

This chapter addresses the importance and value of urban indicators and their contribution to the design of better informed, sound policies. It briefly

reviews the evolution of different developments in measuring and understanding cities, demonstrating that models based on classical economics have been insufficient. The New Urban Agenda, the Paris Agreement, and the 2030 Development Agenda – embodied in the urban Sustainable Development Goal (SDG) 11 (see Chapters 7 and 9) – require the introduction of new and innovative sets of indicators. We must use such tools in analyzing current urbanization patterns through multidimensional approaches to improve the difficult task of managing cities and to refine policy-making in accordance with the SDGs. This work seeks to demonstrate the value of urban data as an essential tool for the formulation of better informed policies at local, national, and international levels. Such data provide useful information that allows for strategic decision-making oriented towards the mitigation of both direct and indirect consequences of urbanization in diverse contexts and city sectors.

The next section presents the evolution of measurement tools, emphasizing the main characteristics and contributions of each generation of indicators. Thereafter, the chapter provides a discussion of the importance of local and regional government empowerment for meeting the 2030 Development Agenda and concludes by emphasizing the need for greater efforts to design better measurement instruments to fill the gaps in existing sets of urban indicators.

8.2 The Need for Urban Indicators

In many parts of the world, urban phenomena and processes of urbanization remain poorly documented, understood, and measured. Many cities around the world are suffering from inadequate urban data, leading to an information crisis that is undermining their capacity to develop effective urban policies (Muhammad 2001). Too often, the existing data that cities have are not adequately detailed, documented, or harmonized, or are not available and accessible for critical issues relating to urban growth and development.

Further, numerous cities lack a sustained or systematic appraisal of urban problems, such as loss of public space, environmental impact, and land consumption. Due to the inadequacy of existing measurement tools along with urban data deficiencies in these cities, there is little internal appreciation of what their own policies and programs are achieving (Muhammad 2001). This impedes appropriate monitoring and assessment, as well as an accurate formulation of public policies. Even in countries with a strong monitoring culture and data collection practices, the development of a coherent and reliable set of indicators for urban areas is not a simple task (Wong 2006).

The arrival of the 2030 Development Agenda, along with the SDGs, marks a turning point with great potential to fill the urban data vacuum in the upcoming

years. According to the monitoring framework proposed by the “Urban SDG,” embodied in SDG 11, which calls on us to “make cities and human settlements inclusive, safe, resilient and sustainable,” accurate urban data and metrics enable cities to make decisions about the best policies and means to track urban progress, while also documenting a city’s performance in terms of policy outcomes and achievements (UN-Habitat 2015). The assessment and monitoring of the effects of urban dynamics are frequently used as tools in urban planning for guaranteeing a more sustainable development path. Therefore, a monitoring framework oriented towards improving the difficult task of administering and managing cities in accordance with the 2030 Development Agenda is a fundamental precondition to meeting the SDG targets.

Furthermore, according to the Organisation for Economic Co-operation and Development, or OECD, “Indicators are needed to monitor and evaluate the impact of compact city policies. They will make it possible to benchmark progress and establish future goals. In particular, internationally comparable indicators can help policy makers analyze their policy performance from a wider perspective and improve their policy actions” (OECD 2012: 80). In this regard, urban indicators are crucial tools for providing objective evidence of prevailing conditions and changes over time (Muhammad 2001) associated with complex urban phenomena, yet they must also be able to evolve as the world becomes more urbanized. It will become increasingly important to develop a greater amount of meaningful urban indicators that aim for a broader depiction of urban dynamics.

8.3 The Evolution of Measuring and Monitoring Cities: What Has Been Done?

To date, there have been several attempts to measure a city’s progress towards sustainable urban development. Diverse actors and stakeholders working at different scales have immersed themselves in the difficult task of defining a set of indicators covering the totality of the urban picture in order to assess the state of urban development across nations. However, due to the increasing need to measure a broader conception of human and societal well-being, both global and local efforts to develop urban indicators have moved beyond economic growth as a metric for progress towards a comprehensive and integral understanding of human and ecological welfare. This has meant a change from a national income accounting system to a more localized and people-centered approach (Wong 2014).

The initial attempts to measure and assess urban development through standardized metrics were carried out by supranational organizations such as

the World Bank, the UN, and the OECD, among others. They focused on developing isolated and sectoral indicators that would monitor and collect information from the national level, leading to an incomplete depiction of urban dynamics. More recently, national efforts through domestic statistical agencies have also collected data at the national and subnational levels within certain countries. Both public and private subnational and local efforts have also collected data in a decentralized fashion, which, under certain circumstances, could be more reliable.

In the context of the Post-2015 Development Agenda, former UN Secretary General Ban Ki-moon pointed out that we need to “look beyond the confines of economic growth that have dominated development policy and agendas for many years” (UN-Habitat 2013: iii). Current urban indicators should “examine how cities can generate and equitably distribute the benefits and opportunities associated with prosperity, ensuring economic well-being, social cohesion, environmental sustainability, and a better quality of life in general” (ibid.). In addition, the OECD has emphasized that “the measurement of sustainable development requires drawing together indicators from the three dimensions of sustainable development, the economy, the environment and society. The two primary aims are to form a coherent picture of sustainable development trends and to provide information that is relevant to policy questions” (OECD 2000: 7).

In this spirit, during the 2016 World Economic Forum in Davos, the leaders of international organizations and institutions that have traditionally relied on economic metrics to measure development argued that GDP is not a good way to assess national economic health and that a new measure is urgently required which better assesses the dynamics that have emerged as a result of urbanization processes. (Thomson 2016). This echoes longstanding critiques by social activists, progressive economists, and some international agencies. The current GDP-based approach emerged as the result of a long process of empirical and conceptual evolution, which began early in the twentieth century when Simon Kuznets introduced GDP in the 1930s. Since then, the design and the development of concepts, metrics, and monitoring frameworks have been a constant around the world.

After analyzing the main urban indicators, one can distinguish three main generations in their evolution over time. These generations attempt to quantify a greater number of urban dynamics components in order to better measure and understand complex urban phenomena, each conceived from diverse contexts, frameworks, and international consensus regarding the conceptualization of development. The first generation is based on classical economic indicators as a metric for city progress; the second generation is characterized by the use and design of thematic indicators based on a broader understanding of development,

which is embodied in the Millennium Development Goals, or MDGs; the third generation corresponds to the current set of indicators that address more holistically and comprehensively the new conceptualization of city prosperity contained in the 2030 Development Agenda and the SDGs (Figure 8.1).

It is important to emphasize that their evolution through successive generations does not mean that indicators from the first and second generations are now useless, obsolete, or invalid due to their antiquity. What this evolution demonstrates is ongoing progress in the increasing complexity and improvement of urban indicators to offer a broader approach to urban dynamics. Indeed, first-generation indicators continue to be used in different contexts, not least as updates to long time series, and demand remains for some data used in them. Not all are amenable to incorporation into newer generation indicators, but having some basic data is preferable to none. In Sections 8.3–8.5, we will explain in further detail each generation of indicators and their respective main characteristics. We will also provide some examples of urban indicators that best illustrate each generation.

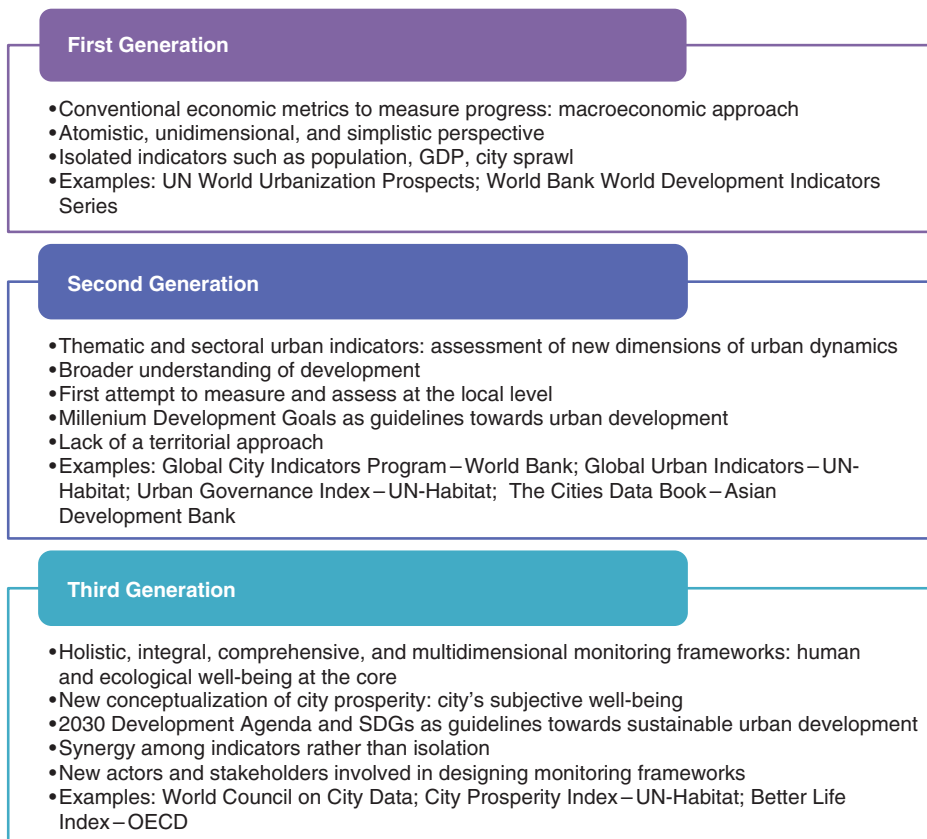


Figure 8.1 The evolution of urban indicators

8.4 First Generation of Urban Indicators

Over most of the past century, our understanding of city dynamics was very limited, due in part to data sparseness and deficiencies. The main indicators to measure progress and development were economic metrics with a macro-perspective, which only addressed three main dimensions of the city: the economic dimension, through GDP; the demographic dimension, through population count; and the size dimension, through city sprawl. In this manner, people measured cities using isolated indicators that reflected only a small piece of the city puzzle. Even basic attempts to understand urban dynamics through population size are problematic, in part because of the diverse institutions carrying them out. Urban indicators that emerged within this first generation illustrate the urban reality with an atomistic, unidimensional, and simplistic approach. Because these indicators were based on economics, they were not useful for explaining subjective urban issues such as well-being in terms of quality of life. Furthermore, the monitoring frameworks of this generation lack local contextualization. They have a generic and objective quantitative nature, and they serve only for comparative exercises.

The first attempt to develop urban indicator sets by a supranational organization occurred during the 1960s when the World Bank launched the first World Development Indicators Series, which aimed to monitor city achievements by the international development goals of that time (Wong 2006, 2014). These series continue to be published annually, with each year's report focusing on a specific aspect of development (World Bank 2016) to reflect development's increasing breadth and complexity.

8.5 Second Generation of Urban Indicators

The arrival of the new millennium marked a watershed moment in assessing cities. As the world became increasingly urbanized and global challenges more complex – or, at least, were becoming recognized as such – the year 2000 provided a unique opportunity to reverse the unsustainable evolution of cities. Great enthusiasm and optimism surrounded the introduction of the MDGs, a suite of eight goals that established measurable, universally agreed-upon objectives oriented towards the achievement of progress in “developing countries” in areas such as income, poverty, access to improved sources of water, primary school enrollment, and child mortality (UNDP 2016).

However, the arrival of the second generation of urban indicators in 1992, the year when *Agenda 21* was launched at the United Nations Conference on

Environment and Development, or UNCED (see Chapter 7), preceded the MDG innovation. Authors of the Agenda stressed that as “the need for information arises at all levels, from that of senior decision-makers at the national and international levels to the grass-roots and individual levels” (UN 1992), it is crucial to bridge data gaps and improve information availability in order to ensure better decision-making based on increasingly sound information. As a result, the sectoralization of indicator sets, linked to the narrowing of aims to target specific policy questions (OECD 2000), and the application of greater attention to local dimension of cities became the most visible trends among the second generation of urban indicators. These trends necessitated a shift from the conventional macroeconomic perspective towards a broader approach to urban dynamics that included new dimensions, themes, and methods to measure and assess city performance.

During this period, people realized that cities could no longer be measured and understood as the sum of income, population, and city sprawl; the accelerated urbanization phenomenon required the introduction of new dimensions into the city equation in order to obtain a broader picture of urban dynamics. Thus, the indicator sets that emerged paid greater attention to human and ecological well-being. Some examples of international urban indicator sets that clearly illustrate the main characteristics and the approach of this generation are *The Global City Indicators Program*, designed by the World Bank; *The Cities Data Book*, developed by the Asian Development Bank; and *Global Urban Indicators* and *Urban Governance Index*, both created by UN-Habitat (Box 8.1).

Box 8.1 International urban indicator sets of the second generation

Source: OECD (2012: 85–86), citing OECD (2011), “Urban Environmental Indicators for Green Cities: A Tentative Indicator Set,” paper presented to the Working Party on Environmental Information, internal working document.

The Global City Indicators Program (GCIP) is a decentralized, city-led initiative that enables cities to measure, report on, and improve their performance and quality of life, facilitate capacity building, and share best practices through an easy-to-use web portal. The GCIP aims to help cities monitor performance and quality of life by providing a framework to facilitate consistent and comparative collection of city indicators. The GCIP also aims to enhance city government accountability to the public and has a strong focus on the performance of cities’ public services, including those for water supply, wastewater, and solid waste. The World Bank initiated the GCIP in 2008 and is now run by the Global City Indicators Facility, based at the University of Toronto, which oversees the development of indicators and

Box 8.1 (cont)

helps cities to join the program. As of 2015, 255 cities across 82 countries were participating in the program, up from some 125 just four years earlier.

The **Cities Data Book (CDB)** is a comprehensive set of urban indicators formulated in 2001 by the Asian Development Bank to improve urban management and performance measurement. The broad categories of the environment-related indicators are the same as those found in other indicator sets (water, wastewater, solid waste, noise, and so forth), but the CDB's indicators go into greater detail on specific concerns addressed by this institution (for example, the wide range of methods of sewage disposal in Asian cities).

The **Global Urban Indicators (GUI)** database was established to monitor progress on the implementation of the UN-Habitat Agenda. The database covers 236 cities across the globe, including those from the OECD countries. As a whole, however, the indicators focus strongly on the concerns of cities in developing countries. In 1996 and 2001, the program produced two main databases, GUI Databases I and II, containing data for 1993 and 1998, respectively; these were presented at the Habitat II and Istanbul +5 conferences. The next Global Urban Indicators database (III) will continue to address the key Habitat Agenda issues, with a specific focus on the MDGs and, particularly, Target 11 on the improvement of slum dwellings. Altogether, there are 42 key and complementary indicators in the GUI dataset in total.

Websites:

GCIP: www.cityindicators.org/Default.aspx

CDB: www.adb.org/publications/urban-indicators-managing-cities

GUI: <http://unhabitat.org/books/global-urban-indicators-database/>

8.6 Third Generation of Urban Indicators

Since the 2030 Development Agenda launched in September 2015, a strong commitment to achieving a more holistic form of urban prosperity and development emerged among the majority of nations around the world (Wong 2014). A shift in the paradigms of development, subjective well-being, and city prosperity towards a broader, multidimensional understanding of these aspects led to the arrival of a third generation of urban indicators. The publication of the *State of the World's Cities 2012/2013: Prosperity of Cities* (UN-Habitat

2013) marked an inflection point between the second and third generations. It triggered significant discussion among the international community that translated into the introduction of a new, multidimensional conceptualization of city prosperity, materialized in the City Prosperity Index, or CPI.

The conception of the CPI comes with a strong assertion of the vitality and transformative dynamics of cities, and thus their importance in what is now the urban age (UN-Habitat 2013, cited in Wong 2014), for new types of cities that achieve a sustainable path of development. In this regard, SDG 11 recognizes urbanization as a transformative force for development which, if effectively steered and deployed, can help the world to overcome many of its major global challenges (UN-Habitat 2015). City prosperity is currently understood in terms of a more integrated and holistic approach than in the past, which seeks to promote collective well-being, public goods, and overcoming the dangers posed to cities in a context of rapid urbanization. The CPI estimates prosperity through different interlinked dimensions: productivity, infrastructure development, quality of life, equity and social inclusiveness, environmental sustainability, and governance. Arriving at a third generation of urban indicators such as the CPI meant

a fresh approach to prosperity, one that is holistic and integrated and which is essential for the promotion of a collective well-being and fulfillment of all. This new approach does not only respond to the crises by providing safeguards against new risks, but it also helps cities to steer the world towards economically, socially, politically and environmentally prosperous urban futures. (Clos, quoted in UN-Habitat 2013: iv)

The introduction of a third generation of urban indicators also meant the emergence and immersion of new actors and stakeholders in the difficult task of designing and developing innovative, holistic, and integral sets of indicators to measure and assess urban dynamics. Such diversification of actors implied a fundamental change in the structure of the conventional architecture of the global monitoring framework of our century (see Box 8.2). An example that clearly illustrates the emergence of this trend is the appearance of the World Council on City Data (WCCD) an independent international organization that hosts a network of innovative cities committed to improving services and quality of life using open-city data. It also provides a consistent and comprehensive platform for standardized urban metrics (WCCD 2016). Currently, the WCCD offers a new set of 100 urban indicators that comprise 17 dimensions of urban dynamics based on the first international standard on city data, ISO 37120.

The recent adoption of the Social Progress Index at the local level among some cities around the world is another example that clearly demonstrates the diversification of sources of urban data as well as the broadening of the

Box 8.2 The experience of Jalisco in designing comprehensive urban dictators

MIDE Jalisco (MIDE stands for “to measure” in Spanish) is a comprehensive monitoring system of the Jalisco State Government, Mexico, that includes over 300 indicators of results and performance; this allows citizens to follow the state’s evolution in real time. Through MIDE Jalisco, the press, academics, decision-makers, and the general public have access to all of the indicators as open-source data. MIDE Jalisco is being unfolded into different subsystems, both sectoral and territorial, to monitor specific policy and geographic areas in depth. MIDE Guadalajara Metropolitana is an initiative to create the first subsystem designed for the city level, powered by Jalisco State Government together with the nine metropolitan municipalities that comprise Guadalajara Metropolitan Area, with the technical support of UN-Habitat and the WCCD. MIDE Guadalajara Metropolitana will be the first urban and metropolitan indicators platform in Mexico and Latin America to integrate the latest generation of indicators.

dimensions measured during the current generation of urban indicators. The Social Progress Index is a framework designed to measure the diverse elements of social progress, to document progress, and to encourage interventions to enhance human well-being (Social Progress Index 2015).

8.7 Towards a Fourth Generation of Urban Indicators

Despite efforts to measure and assess urban dynamics through more holistic indicators, our understanding of cities is still limited in four different ways: most reports tend to have partial global geographical coverage of specific regions; many tend to focus on measurement at the national level; they often provide a small depiction of a particular aspect of urban dynamics (Wong 2014); and most lack a territorial, “geo-localized” approach.

Although we have witnessed huge progress in the development of urban data, as of 2017, there is no single set of indicators or monitoring frameworks that covers the full range of issues included in the broad agenda of urban dynamics. In fact, despite progress in many Western countries, even the economic output of cities remains elusive, as data collection for this information is lacking in most countries. These limits to our current measurement tools affect our ability to assess trade-offs among alternative policy choices accurately (OECD 2000). For this reason, the increasing necessity of relying on more robust, coherent,

and flexible frameworks of indicators to analyze the performance of cities has been placed at the core of the global agenda. The current version of the CPI is a useful starting point (Sands 2014), but it is not enough. For instance, even though the CPI theoretically accepts the importance of governance, there is no clear definition of what CPI means with regards to urban and land governance, or how to measure it. The prevailing limitations of currently available sets of urban indicators remind us that we need to keep moving forward towards a fourth generation. As Wong says, “There are still significant knowledge gaps in the framing and operationalization of prosperity” (2014).

A fourth generation of urban indicators should provide a broader, people-centered approach; alongside the existing monitoring frameworks, this generation of indicators should also include a strong territorial dimension into city analysis as a key factor that could enhance the accuracy in estimating urban governance. This means the adoption of a more localized approach of development at the city level, in order to provide a more contextualized interpretation of urban dynamics.

8.8 What We Have Learned from Monitoring Cities

A significant lesson we have learned is that most governments and stakeholders involved in the design of monitoring frameworks for urban dynamics adopt a citywide approach by finding synergies among indicators. The implementation of “isolated targets without a comprehensive approach to the city may undermine the very basic principle of sustainability” (UN-Habitat 2015: 5). Given that cities are immensely diverse, measuring accurately and, even more so, using data comparatively in the contexts of global indicators and indices, is extremely difficult. The challenges – and burdens – of data collection and reporting are also greater in smaller cities and towns than in their larger counterparts. Therefore, urban indicators need to be scale- and context-sensitive to accommodate smaller urban areas, not just large cities and metropolises.

Experience has shown us the importance of paying special attention to the local level, which is closest to the population. Local governments and administrations are “essential institutional building blocks ... mechanisms, and process, through which public goods and services are delivered to citizens and through which citizens can articulate their interests and needs, mediate their differences, and exercise their rights and obligations” (UNDP 2009: 5). Thus, building and strengthening institutional capabilities at international, national, and local levels are crucial requirements for contemporary societies. Meeting these needs should be addressed with greater impetus since “decentralized governance, carefully planned, effectively implemented and

appropriate managed, can lead to significant improvement in the welfare of people at the local level, the cumulative effect of which can lead to enhanced human development” (UNDP 2004: 2).

In the context of the 2030 Development Agenda, cities and metropolises play a key role since urbanization and city growth have been recognized internationally as transformative forces for development. Thus, the empowerment of local and regional authorities becomes essential for meeting SDG 11. The implementation of the urban SDG should lead to greater coordination among national and local stakeholders, providing higher levels of participation for local authorities in the difficult task of collecting, analyzing, and validating data and information for better urban governance.

8.9 Localizing the 2030 Development Agenda: The Empowerment of Local and Regional Governments¹

Alongside communities and private sector actors, the essential role that local and regional governments (LRGs) play in delivering the 2030 Development Agenda has been recognized during a number of official events throughout the recent transition from the MDGs to the SDGs. It has been noted on several occasions that the achievement of the SDGs depends heavily on coordination among local governments and other stakeholders involved; global challenges have to be met with local responses (Wong 2014; Simon et al. 2016). The localization of the 2030 Development Agenda should not be seen solely as a technical agenda of implementation at the local level, but also as a political agenda that empowers local actors and puts decision-making, data production, and analysis and solutions provision at levels closer to the citizens. This would imply not only gathering different types of data, but also doing things differently, providing diverse sets of competences and resources to different actors and administrations.

This agenda is most clearly embodied in SDG 11, which is local by design – that is, meant to be embraced and delivered by subnational urban governments. The inclusion of an explicitly urban goal in the SDGs is an important achievement and is a testament to the successful advocacy, throughout 2013–2014 of, among others, the Global Taskforce of Local and Regional Governments and its partners, which is a coordination mechanism bringing together the major international networks of local governments to undertake joint advocacy

¹ The following note is extracted and slightly modified from Global Taskforce (2014). See also Lucci (2015).

relating to international policy processes.² As argued during the *#Urban SDG Campaign*, an urban goal should mobilize and empower LRGs and urban actors, contribute to integrating the different dimensions of sustainable development (economic, social, environmental) and the spatial design of cities, strengthening the linkages between urban and rural areas, and transforming urban challenges into opportunities. However, SDG 11 does not take a holistic approach to urban development. Key urban concerns, including local governance, are not addressed, while other key urban responsibilities are partially included under other goals.

More generally, to be achievable, a majority of the goals and targets will need strong involvement of LRGs in both urban and rural areas (see Simon et al. 2016). This is why it is important to discuss what we mean by “localization.” Localizing the 2030 Development Agenda often refers to at least two dimensions: 1) the definition and implementation of the targets and indicators at the local level and 2) the monitoring and evaluation process.

With respect to the first dimension, it is obvious that subnational governments have responsibilities (either direct responsibilities or those shared with central government or in partnership with other stakeholders) for achieving targets and service provision in the majority of the areas related to the SDGs (Cities Alliance 2015; González et al. 2011; UCLG 2014). The scope of subnational governments’ work is clearly linked to alleviating poverty; securing nutrition; ensuring health and education; promoting gender equality; managing water, sanitation, urban planning, public transport, waste, and energy resources; promoting local economic development and decent jobs; fighting climate change; and increasing communities’ resilience.

However, localizing the Post-2015 Agenda can also refer to monitoring progress at the subnational level (irrespective of whether LRGs have competency in that specific area). This can help to assess inequalities within countries and support better decision-making and resource allocation at all levels, as well as enabling local communities and civil society organizations to hold their governments accountable. In this spirit, the UN’s Inter-Agency and Expert Group (IAEG) reports out of the UN made suggestions for geographical disaggregation of data for most outcome-based targets (United Nations 2013). This should include, for example, urban/rural and regional breakdowns and, where possible disaggregation at lower levels, such as municipalities, urban agglomerations, or marginal areas, such as slums.

² The **Global Taskforce of Local and Regional Governments** is a coordination mechanism set up in 2013 at the initiative of UCLG President and Mayor of Istanbul Kadir Topbaş. It brings together the major international networks of local governments (22) to undertake joint advocacy relating to international policy processes, particularly the climate change agenda, the Sustainable Development Goals and Habitat III. See www.gtf2016.org/

These two approaches to localization are complementary. Ideally, subnational governments should define a specific subset of goals and targets where they have direct responsibilities and set up the level of indicators, contributing to their delivery and achievement. But this will also require stronger coordination and partnership between different levels of government, as is required for effective, multilevel governance. National governments should encourage local authorities to identify and adopt concrete commitments that might help to achieve the SDGs. When it comes to monitoring progress at subnational levels, local and regional governments could focus on monitoring for vulnerable areas and communities. They could even focus on the gaps in performance within their respective areas of jurisdiction – for example, in slums versus in the local average – to clearly identify spatial inequalities. However, data constraints are generally more pronounced at local levels than at the national level. In many cases, where data are based on survey information, it is difficult to disaggregate indicators beyond rural/urban and regional breakdowns. It is particularly difficult to have adequate source data for vulnerable populations (such as slum dwellers). This has obvious resource and capacity implications in terms of data collection, and would require the support of national statistics offices.

There is consensus that local and regional governments should play a crucial role in implementing and monitoring most of Agenda 2030. Localizing the SDGs means providing adequate targets and indicators to measure their impact at the territorial level, and proposing strategies and tools to facilitate the efficient involvement of LRGs in the implementation process. However, besides the need to improve mechanisms to obtain reliable local data, the implementation process needs strong and empowered local and regional governments. Thus, processes oriented to facilitate enabling environments for LRGs should be prioritized. Supporting decentralization processes, both political and fiscal, through strengthening institutional and operational capacities to deliver basic services and sound public policies; developing new forms of governance that enable multilevel partnerships; and insisting on multi-stakeholder approaches, are important conditions for allowing the localization of the development agenda.

8.10 Conclusions

Our analysis demonstrates that as the world moves into the urban age, new challenges and opportunities regarding the current monitoring frameworks for cities have emerged (UN-Habitat 2013). For instance, urban indicators offer a useful tool that contributes in several ways to mitigating the negative

effects of urbanization on contemporary societies. We have also demonstrated the evolution of attempts to develop better urban indicators and monitoring frameworks. The elastic nature of the main characteristics and sets of indicators that comprise each generation illustrates that urban indicators have evolved in parallel with conceptualizations of development, well-being, and prosperity. Empirical evidence over the years has demonstrated that classical economic metrics are insufficient standards with which to measure and understand current urban dynamics.

However, we have not yet reached the finishing line; at present, we are undergoing a transitional process towards a fourth generation of more comprehensive and holistic sets of urban indicators in which several stakeholders are involved. The emerging monitoring frameworks do somehow respond to the urgent need to fill the urban information vacuum through a broader and multidimensional understanding of city prosperity. Yet, important limitations still prevail among such attempts to measure and understand urban dynamics. Cities need to keep moving forward in the difficult task of designing better measurement instruments. In the context of increasing urbanization, it is crucial to incur the costs of developing such measurement instruments as an investment in better understanding cities, and hence becoming capable of mitigating the problems and challenges that harm our planet. In this regard, the development of better and new urban indicators should be at the core of the urban agenda. This effort must include a focus on how data to support such indicators will be collected to build global datasets and by whom – city networks, researchers, or others – particularly in light of shifting political realities or other barriers that might complicate such efforts, thereby creating gaps in the process.

Building and strengthening institutional capabilities of cities is also an essential task that must be addressed in every single society. Local and regional authorities have a central role to play in meeting the 2030 Development Agenda and in “contributing to national and global recovery” (Ban Ki-moon, quoted in UN-Habitat 2013: iii). A fourth generation of more people-centered and territorialized indicators will provide the necessary means to creating better-informed policies and designing sound development plans for the future.

References

Cities Alliance, 2015. *Sustainable Development Goals and Habitat III: Opportunities for a Successful New Urban Agenda*. Discussion Paper No. 3. www.citiesalliance.org/sites/citiesalliance.org/files/Opportunities%20for%20the%20New%20Urban%20Agenda.pdf.

- Global Taskforce, 2014. *How to Localize Targets and Indicators of the Post-2015 Agenda*, November 14, www.uclg.org/sites/default/files/localisation_targets_indicator_web.pdf.
- González, A., Donnelly, A., Jones, M., Klostermann, J., Groot, A., and Breil, M. 2011. Community of Practice Approach to Developing Urban Sustainability Indicators. *Journal of Environmental Assessment Policy and Management* 13 (4): 591–617.
- Lucci, P. 2015. *Localising' the Post-2015 Agenda: What Does It Mean in Practice?* ODI, January. www.odi.org/publications/8992-localising-post-2015-agenda-does-mean-practice.
- Muhammad, Z.B. 2001, Development of Urban Indicators: A Malaysian Initiative, in J. J. Pereira, and I. Komoo (eds.) *Geoindicators for Sustainable Development*. Kuala Lumpur: Institute for Environment and Development: Universiti Kebangsaan Malaysia, pp. 17–32.
- OECD, 2012. *Compact City Policies: A Comparative Assessment*, OECD Green Growth Studies, OECD Green Growth Studies. Paris: OECD Publishing.
- OECD, 2000. *Frameworks to Measure Sustainable Development*. Paris: OECD Publishing.
- Sands, G. 2014. Measuring the Prosperity of Cities. *Habitat International*, 45 (1): 1–2.
- Social Progress Index. 2015. *Social Progress Index 2015*. www.socialprogressimperative.org/data/spi.
- Simon, D., Arfvidsson, H., Anand, G., Bazaaz, A., Fenna, G., and K., Foster, et al. 2016. Developing and Testing the Urban Sustainable Development Goal's Targets and Indicators – A Five-City Study. *Environment and Urbanization* 28: 49–63.
- Thomson S., 2016. GDP a Poor Measure of Progress, say Davos Economists, *World Economic Forum*, last modified January 23, www.weforum.org/agenda/2016/01/gdp
- UCLG, 2014. *Basic Services for All in an Urbanizing World*, 3rd Global Report on Local Democracy and Decentralization. Oxon; New York: Routledge.
- UNDP, 2016. *A New Sustainable Development Agenda*, www.undp.org/content/undp/en/home/sdgooverview.html
- UNDP, 2009. *A User's Guide to Measuring Local Governance*. Oslo, Norway: UNDP Oslo Governance Center.
- UNDP, 2004. *Decentralized Governance for Development: A Combined Practice Note on Decentralization, Local Governance and Urban/Rural Development*, www.undp.org/content/dam/aplaws/publication/en/publications/democratic-governance/dg-publications-for-website/decentralised-governance-for-development-a-combined-practice-note-on-decentralisation-local-governance-and-urban-rural-development/DLGUD_PN_English.pdf.
- UN-Habitat, 2015. *Sustainable Cities and Communities: SDG GOAL 11 Monitoring Framework*. New York: UN-Habitat.
- UN-Habitat, 2013. *State of the World's Cities 2012/2013 Prosperity of Cities*. Nairobi: United Nations Human Settlements Programme.
- United Nations, 2013, *A New Global Partnership: Eradicate Poverty and Transform Economies Through Sustainable Development. The Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda*, New York: United Nations Publications. www.un.org/sg/management/pdf/HLP_P2015_Report.pdf.

- WCCD, 2016. *World Council on City Data*, www.dataforcities.org/
- Wong, C. 2014. A Framework for 'City Prosperity Index': Linking Indicators, Analysis and Policy. *Habitat International*, 45: 3-9.
- Wong, C. 2006. *Quantitative Indicators for Urban and Regional Planning: The Interplay of Policy and Methods*. London: Routledge.
- World Bank, 2016. *World Development Reports: Digital Dividends*, Washington, DC: International Bank for Reconstruction and Development/The World Bank. www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2016/01/13/090224b08405ea05/2_0/Rendered/PDF/World0developm0000digital0dividends.pdf.