360 Thinking in Local Governance Advances Sustainability, Economic Prosperity, and Equity

Lori DiPrete Brown, UW-Madison

https://doi.org/10.1093/acrefore/9780190625979.013.831

Published online: 19 July 2023

Summary

Local governance is a key focal point for achieving the United Nations Sustainable Development Goals (SDGs). National and global initiatives encourage SDG governance by promoting the overall SDG framework, targets, and indicators and by providing data, rankings, and visualization about the performance of nations, states, and selected cities. Soon after the SDGs were adopted in 2015, efforts turned toward localization—that is, a focus on local governance as the engine for progress and innovation, which engendered many efforts to develop indicators to measure sustainability. In addition to this emphasis on measurement strategies, the use of the SDGs as a holistic and integrated framework that is essential for improvement, implementation, and innovation began to emerge. Despite challenges to SDG-based local governance, promising strategies that exemplify "SDG 360 Thinking" have emerged. These approaches reflect practical insights related to political incentives, local relevance, and simplicity or feasibility. They address key aspects of the planning and implementation cycle and echo evidence-based approaches deriving from systems thinking and implementation science. SDG 360 Thinking uses a holistic systematic approach to focus on identification of co-benefits; reduction of harm, waste, and error; and equity trade-offs. The clarity of purpose, systematic approach, and revelatory power of SDG 360 Thinking, combined with a practical, inclusive, and robust economics, offer the promise to enable local governments to realize the potential of the SDGs.

Keywords: Sustainable Development Goals, local governance, systems thinking, implementation science, sustainability, new economics, urban governance

Subjects: Environmental, Agricultural, and Natural Resources Economics

Introduction

The United Nations' (UN) 17 Sustainable Development Goals (SDGs) describe how the global community can foster well-being by eliminating poverty and hunger, providing education and health care, and fostering human thriving while at the same time caring for the earth for future generations. (United Nations, n.d.). As articulated in "Transforming Our World: The 2030 Agenda for Sustainable Development" (United Nations Department of Economic and Social Affairs, 2016), the SDGs are guiding change throughout the world. Although rooted in international development efforts oriented toward low-income countries, the SDG movement has had success in establishing itself as relevant in the Global North, including the United States. Furthermore, there is a developing consensus about the importance of the localization of the SDGs—that is, SDG-based planning and action by local governments—for success in achieving the goals. Increasingly, cities and towns throughout the United States are espousing the SDGs in visions,

missions, plans, and reporting. Unfortunately, even when there is clarity and consensus about the SDGs, their explicit use in implementation and governance has been slow. In 2022, after nearly half of the 2015–2030 term of the SDGs had passed, only a handful of cities had adopted voluntary reporting or explicitly included the SDGs in their city plans. Furthermore, there is not yet evidence that such governmental actions have an impact on sustainability outcomes (Biermann et al., 2022).

This lack of proof of direct causation of impact should be interpreted with caution because it reflects limitations in the scale of experimentation; the investment and limitations of the evaluation efforts themselves; and, importantly, the inherent nature of causation in complex systems, which includes multidirectional flows and feedback loops that may defy validation with a hypothesis-testing methodology and may need to rely on expert opinion, the experience of citizens, and processual measures of change related to implementation, such as clarity and acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration, and sustainability (Proctor et al., 2011).

From the outset, the broad, beautiful, and complex vision of the UN SDGs was viewed with suspicion regarding its practicality and actionability, with claims that the SDGs were too numerous and not well-focused (Selin, 2015) or were garbled, confusing, and difficult to measure (Easterly, 2015). Despite a proliferation of indicators, and campaigns to promote the SDGs, efforts to evaluate the impact of the SDGs have been inconclusive (Biermann et al., 2022).

Despite these cautions, there are many reasons to nurture rather than abandon the uncertain nascent movement for SDG-based local governance. Perhaps the most important one is the fact that the SDG agenda is supported by 193 countries. The effort has been a long and continuous one, dating back to the 1987 “Our Common Future” report (Brundtland et al., 1987), or arguably dating even further back to the Alma Ata Declaration (World Health Organization, 1978). The direct predecessor of the SDGs, the 2000 Millennium Declaration and related goals, achieved considerable progress in low- and middle-income countries, but it did not speak to disparities in well-being in high-income settings and did not adequately address cross-border responsibilities and injustices in relation to climate change.

By the time the Millennium Development Goals period was coming to a close, there was an awareness of gaps in the agenda and the need for integration of efforts toward the goals and also a movement toward health in all policies (DiPrete Brown, 2018a, 2018b). The consultations that led to the SDG agenda were among the most participatory in history, including 27 eminent global leaders, civil society organizations, and chief executive officers, along with interviews of hundreds of thousands of citizens from throughout the world (UN, 2013). The long-standing, bold, and imperfect movement toward sustainable development will continue to shape national and local governance throughout the world. The establishment of the SDGs as a lingua franca in U.S. local governance could be truly transformative, facilitating clarity, coordination, and a framework for shared learning across settings.

Progress Related to SDGs and Local Governance

Progress toward the global SDGs is being facilitated in selected communities throughout the United States by organizations such as the Sustainable Development Solutions Network (SDSN; Lynch et al., 2019). SDG frameworks for action and related metrics have been developed by a number of international agencies, universities, think tanks, and advocacy groups. Furthermore, there are increasing numbers of indicators, indexes, rankings, and approaches to measurement, making local assessment and tracking of progress toward the SDGs feasible. Research and action are underway to improve ecosystems, public health, education, and access to goods and services, and to create a better world for current and future generations. Organized efforts to promote the SDGs are underway by organizations such as SDSN, C40, ICLEI, EPIC-N, and Compact of Mayors, in addition to convenings of university presidents and others. These efforts, however, are not enough; no state or city in the United States is currently on track to achieve sustainable development (Lynch et al., 2021). Therefore, it is necessary to take stock of the incentives and barriers to adoption and develop related strategies.

Barriers to Adoptions of SDGs for Local Governance

To move forward, many more cities must incorporate the SDGs into how they frame local challenges. The SDGs must become a central part of the entire process of governance, including identifying and understanding local challenges and priorities, citizen engagement, planning, implementation, and assessment, in an iterative cycle. In addition to the benefits of this common framework for better governance and a more engaged citizenry within a city, it creates a useful framework for collaboration among cities, enabling the sharing of experiences, solutions, and innovations through existing networks.

The Right City-Level Data

One frequently named barrier to implementing the SDGs is the lack of city-level data that enable municipal leaders to know how they are doing, to set goals, and to measure progress in many localities. Efforts by organizations such as SDSN to create scorecards and rankings for the largest 100 cities or municipalities, and related voluntary local reporting efforts, effectively show a high-level overview of progress but are limited to nationally comparable and publicly available data (Lynch & Sachs, 2021). However, the majority of the data are based on Metropolitan Services Areas, rather than city limits, requiring the cities and towns located within these areas to make complex adjustments for the data to be used for governance purposes with ease. Furthermore, the level of effort needed for SDSN to develop scores and rankings for more than 200 additional cities with populations greater than 100,000 represents a capacity barrier. Even if this profiling could be done precisely and rapidly, another strategy is needed to address smaller communities. As much as 60% of the U.S. population lives in municipalities of less than 50,000, and there are more than 14,000 municipalities with populations less than 5,000 (Toukabri & Medina, 2020). For all these reasons, SDG governance that begins with systematic assessment and a scorecard represents just one starting point for SDG governance. For many local governments, beginning

with monitoring can be a bottleneck or burdensome first step, and it points to the need for alternative entry points to SDG governance (e.g., the "crosswalking" of city plans) for cities and towns, so that they can begin more easily, and then smoothly transition to monitoring and reporting functions.

Ironically, the problem of not enough data for local governance coexists with its opposite—(too) many different initiatives that measure sustainability occur without coordination. In an effort to begin to address this challenge, a systematic review documented 67 different measurement initiatives for urban sustainability, examined 2,847 indicators, identified the most frequently used indicators, and explored linkages with the SDGs (Merino et al., 2020). A National Academies of Sciences, Engineering, and Medicine (NASEM, 2016) meta-review, *Pathways to Urban Sustainability*, further explored the triple bottom line of economic, environmental, and social metrics. The report underscored the importance of institutional and governance indicators and characterized the available metrics as both overwhelming and containing serious gaps. In addition to cautioning against assuming that the most common indicators are the most important, the report recommended employing mapping and visualization tools, as well as information and communication technologies, social media, and big data, to understand and assess urban sustainability; it also highlighted potential benefits associated with large quantities of time-series, high-resolution, and near instantaneous measurements (Kraak et al., 2021; Lynch et al., 2019; NASEM, 2016).

Political Viability

A second barrier to the implementation and scale-up of SDG governance with a near singular focus on the assessment of performance and rankings as an entry point relates to political viability. Introducing rankings and scorecards, with the hope that local government officials will take notice and embrace them as priorities, can successfully attract early adopters and like-minded leaders who are already engaged with sustainable development. Without individualized outreach, however, many mayors and local government officials will remain unaware of the rankings or their position within them. Furthermore, for all but top-ranked cities, there is a disincentive for elected officials to draw attention to areas where their city is not doing well comparatively. Although rankings reflect long-term trends, contextual factors, and impacts related to societal dynamics beyond those that are directly caused by government policy, mayors will generally view lower ratings as reflecting negatively on their performance and constituting a political risk. Win–win pathways for introducing SDG-based governance must be introduced to complement the current rankings and scorecard approach.

Establishing Relevance of the UN Global Agenda in Cities and Towns

A third challenge relates to the genesis of the SDG agenda as a global movement and the false perception that it does not address pressing local priorities and challenges for U.S. cities and towns. Although the role of the UN and the importance of a global agenda may be a positive association and incentive to act in some cities, a different rationale and communication strategy are needed in localities that are less globally connected in terms of their culture, mobility, or

economy. In such places, a concerted strategy to communicate the triple bottom line of sustainable development, with benefits related to the local economy, the local environment, and social equity and local needs, must be made from the outset. This recommends a theory of change that begins with activities that establish relevance and effectiveness in relation to local places and local challenges before they can make the connection to global interconnections and well-being. Currently, a strategy to communicate and proceed differently, based on these kinds of place-based factors, has not been pursued systemically in the effort to promote the SDGs in U.S. cities.

Overall Citizen Disengagement

The barriers mentioned previously are exacerbated by the overall trend of decreased citizen engagement in public life and reduced trust in government and societal institutions. Increased partisanship and a growing political and cultural divide between rural and urban populations further magnify the tensions.

Despite these barriers, SDG-based governance has the potential to make progress toward environmental sustainability, economic prosperity, and social equity in U.S. cities and communities. Before presenting some specific strategies and approaches, it is useful to review the call for sustainable development; how it has evolved; and what it means for governance, practice, and citizenship.

The Perception that the SDGs Are Too Complex to Be Actionable

Sustainable development began as a holistic and aspirational concept. Since the UN's 1987 "Our Common Future" report, sustainable development has been understood as an approach to development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland et al., 1987, p. 15). In subsequent decades, attempts have been made to make this broad mandate more specific and actionable, including efforts such as the UN Framework Convention on Climate Change (Sands, 1992), the Millennium Development Goals Assembly, U. G. (2000), and other more focused agreements.

In 2009, the U.S. Environmental Protection Agency defined sustainability more specifically, asserting that everything that is needed for human survival and well-being depends, either directly or indirectly, on the natural environment. Therefore, to pursue sustainability is "to create and maintain conditions under which humans and nature can exist in productive harmony and that permit fulfilling the social, economic, and other requirements of present and future generations" (Hess et al., 2014).

By the time the SDGs were adopted in 2015, sustainability had come to be understood as a multidimensional concept with interactions and intersections among "three pillars" that shape the human experience: the environment, social equity, and economics (Emas, 2015). For the environmental science professions, and by extensions those who engage in governance and steerage efforts, environmental sustainability practice is defined as

> meeting the resource and services needs of current and future generations without compromising the health of the ecosystems that provide them . . . and more specifically, as a condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity.
>
> (Morelli, 2011, p. 5)

This definition not only provides desired outcomes for human and planetary well-being (meeting human needs without compromising supporting ecosystems) but also establishes some critical principles and mindsets (balance, resilience, and interconnectedness) that provide guidance about how to proceed. Furthermore, it contains an ecological imperative (preserving biodiversity) while at the same time espousing an aspirational challenge (sustain regenerative capacity). Most important, this definition moves from considering the environment, social equity, and economics as three equal and interdependent spheres. Instead, the environmental elements, the biosphere itself, the land, and the water are foundational. They form the floor upon which society is built, and society in turn is the foundation upon which the economy is built. This way of conceptualizing sustainability has implications for sustainable development and governance at all levels, recommending long-term planning; multisector coordination; and, regarding economic analysis, the fullest possible accounting of value including both positive and negative externalities.

Despite the elegance of these definitions, the idea of sustainable development still seems too complex and difficult to measure, resulting in another barrier to local government adoption. Thus, there is a need for approaches that use the SDGs explicitly, systematically, and locally to help operationalize these holistic and interrelated intentions so that they can be applied effectively and efficiently in local governance.

Five Ways to Advance the Sustainable Development Goals in Local Governance and Beyond

Although the pace and scale of Sustainable Development Goals (SDGs) implementation are slower than desirable, and it seems that the glass is half empty, the progress to date can and perhaps should be seen as a glass half full, and efforts to address disincentives intensified. The SDGs can be understood as a consensus framework and set of goals. They indicate *what* people want to be as a society, expressed as an end state. To achieve broader adoption of the SDGs and realize positive impacts, guidance about *how* to achieve local implementation is needed. The response to a glass half full should be to fill it rather than to empty it.

SDG 360 Thinking and the related promising practices and examples presented here provide the needed guidance, outlining approaches that address barriers and fill the glass. They are drawn from reflection on practice, examples from a diverse array of scholars and practitioners, insights from the systems sciences, and lessons from implementation research (Bauer et al., 2015;

Damschroder et al., 2022). They respond to the call for convergence science related to the study of urban systems (Ramaswami et al., 2018) and the application of implementation science to urban sustainability (Hering, 2018).

SDG 360 Thinking is as an iterative approach to advancing the tripartite goals of sustainable development—environmental care, economic prosperity, and social equity—by using the SDGs and their related core values, goals, and indicators as a starting point for local governance and as a framework for coordination, cooperation, and collaboration in regional, national, and global efforts. Key mindsets or skills include perspective-taking, interdisciplinary fluency, the capacity for place-based study, and rapid adaptation to complex and dynamic systems. These approaches and mindsets enable local effectiveness, optimization, and multiscalar and multisector coordination. Their application over time can build capacity for collective governance, develop social cohesion, and increase interest in and capacity for active citizenship that is directed toward betterment of local communities and engagement for global prosperity as well.

SDG 360 Thinking offers a powerful way to engage with communities and create incentives to advance sustainable development. The process may be initiated by local government, community leaders, the private sector, the civil society sector, or universities that serve as anchor institutions which can support local governance with critical resources and expertise for this kind of transformation.

Here, five SDG 360 approaches that have emerged from practice are highlighted (Table 1). These are not offered as a finite list. Rather, it should be assumed that these are merely a promising beginning, with additional strategies already emerging or forthcoming.

Table 1. Emergent Strategies for SDG 360 Thinking

Emergent SDG 360 Thinking: Five Ways to Advance Sustainable Development in Local Governance
1. Explain the SDGs With Local Examples and Global Context
2. Crosswalk the SDGs with city plans
3. Assist with voluntary local review
4. Conduct SDG 360 analysis
5. Center equity and inclusion

One strategy is to explain the SDG agenda using stories and examples that are local and place-based in order to establish relevance, urgency, and consensus. A second approach is to crosswalk the SDGs with city plans to acknowledge what is already being done and then build on that foundation to expand efforts and explore new directions. This is a critical alternative entry point that does not require extensive data at the outset and avoids some of the political issues related to ranking. Third, local governance units can carry out self-assessment and voluntary local reporting to determine priorities and foster transparency and accountability to encourage periodic voluntary local reporting in communities. Fourth, SDG 360 analysis can be carried out to

highlight co-benefits and maximization strategies to error-proof and improve current plans and to identify trade-offs that need to be resolved with a democratic participatory process. This approach breaks down the perceived complexity into manageable and logical steps so that concrete action can be taken. The fifth and essential practice is to center equity inclusion to engage citizens, improve well-being for all, and include the perspectives and leadership of those who have been marginalized and those who have experienced systemic injustice.

These strategies address identified barriers and echo key aspects of planning and implementation cycles (define a problem or aim, make a plan, develop measures for assessment, and develop strategies to implement and improve cyclically, all the while ensuring inclusive participation) and are offered as promising starting points that can allow local governments, as well as a range of other actors from the private sector and civil society, to jump start their own efforts to advance sustainable development. They are presented in a logical order in terms of cognitive complexity of the strategy, but in practice they can be used in any order, together and iteratively to create a range of entry points for cities and local governments to introduce and use the SDGs as a framework for priority setting, planning, and action.

Explain the SDGs With Local Examples and Global Context

To residents of U.S. cities and communities, especially rural dwellers, the United Nations (UN) agenda can seem irrelevant, distant, and even antithetical to the idea of local governance and local autonomy. Locally contextualizing the SDGs can establish relevance, urgency, and consensus related to sustainable development and what it means locally. Furthermore, it can foster local to global understandings and a more systemic understanding of challenges and possible solutions.

In California, the City of Los Angeles began a process of adopting and localizing the SDGs in 2018 and engaged in community–university partnerships with five universities to accelerate this effort (Rankmore, 2020). Among these champions of localization were students at Occidental College, where there is an exemplary effort to apply the SDGs in Los Angeles. In a project titled "Just Transition in Los Angeles: Ensuring Equity During Decarbonization," student researchers analyzed the situation in Los Angeles and prepared a visual graphic that makes connections to SDGs 8 (economic growth), 11 (sustainable cities), and 13 (climate action). The work establishes the relevance and breadth of the SDGs, as it describes a local challenge (Blumenfeld et al., 2021).

In Baltimore, Maryland, the SDGs were localized with extensive participation by communities that used the SDGs as a starting point to develop a selected group of goals and indicators (Edquist & Iyer, 2017). For example, they reviewed the UN SDG goals and targets related to ending poverty (SDG 1) and then chose to focus on four locally relevant indicators for which reliable data were available or could be easily collected—the percentage of children living in poverty, the Distressed Communities Index, liquid asset poverty, and a snapshot measure related to people living without housing (Iyer et al., 2016).

Localization efforts need not be limited to a specific site or city. A discussion of water quality in Flint, Michigan, related it to the SDGs and cited additional examples at multiple sites to make the case that the United States faces an important challenge in relation to water quality, and related innovations can have benefits in local places throughout the world (Thompson, 2020).

In addition to university engagement, kindergarten through grade 12 educational partnership or social media educational campaigns outside of formal education settings can also tell local stories related to the SDGs and focus on local places, unique natural resources, and local histories.

Crosswalk the SDGs With City Plans

A second way to advance SDG-based governance is to use the SDG framework and goals to engage with new or existing city plans. A crosswalk of a city plan reviews goals and objectives and relates them to the SDGs. It is essentially a matrix analysis that identifies what is already being done in alignment with the SDGs and then notes gaps and opportunities and makes recommendations. A clear visual representation of the alignment between existing plans and the SDGs is a critical component of this analysis. The UN has made standardized and color-coded SDG logos, icons, and graphics available to facilitate this work (UN, 2020).

The "Taking a Deeper Look in Pittsburgh" series is an example of a crosswalk approach in relation to individual SDGs (Penn State Center Pittsburgh, 2021). The discussion of SDG 1 (no poverty) begins with a discussion of global poverty; localizes to Pittsburgh, Pennsylvania; and goes on to discuss gender and racial disparities. The report then discusses Pittsburgh's plans to address poverty—mentioning the Pittsburgh Neighborhood Project and related education and advocacy.

The State of Hawai'i has also used a crosswalk of the SDGs in relation to state plans. There are several efforts underway—the State Planning Act, the Hawaii 2050 Plan, and the Aloha + Challenge. The State of Hawaii Office of Planning and Sustainable Development (n.d.) summarized the coherence and complementarity of these plans visually by using the SDGs as a reference point and preparing a matrix that related the SDGs to the other three plans. This kind of crosswalk or matrix analysis communicates clearly that Hawaii is in fact working on the SDGs and moving forward, and that creates momentum to do more, address gaps, and continue to be bolder and explicit about advancing the SDGs.

In New York City, a city plan was already in place when leaders met to commit to the SDGs. This did not impede SDG adoption. Instead, New York City leaders prepared a crosswalk of the SDGs with city plan and moved forward based on the synergies and alignment (The NYC Mayor's Office for International Affairs, 2016). In fact, New York City went on to play a leadership role in the movement by leading cities to support the SDGs and increase accountability by carrying out Voluntary Local Reviews.

A further example, which also illustrates the value of community–university engagement, involves a group of University of Wisconsin–Madison students paired with a city leader from Madison. The students conducted a crosswalk exercise to link existing city plans to the SDGs

(Figure 1). The resultant report can be considered a preliminary analysis to identify the many existing interconnections and the possibilities to develop synergies further. Although Madison ranked fifth in a a Sustainable Development Solutions Network (SDSN) ranking (Lynch et al., 2019) and has a strong focus on sustainability and climate action, the SDGs were not explicitly referenced in the Imagine Madison Comprehensive Plan (City of Madison, 2021). Students presented the SDGs on one axis and the core components of the Imagine Madison Comprehensive Plan on the other. The results are affirming of leadership and citizen efforts because many affinities are noted, yet immediately one can also see areas for additional action. Despite no explicit mention of the SDGs, the analysis showed Madison to be well positioned to provide national leadership, experiment boldly, and learn from other cities.

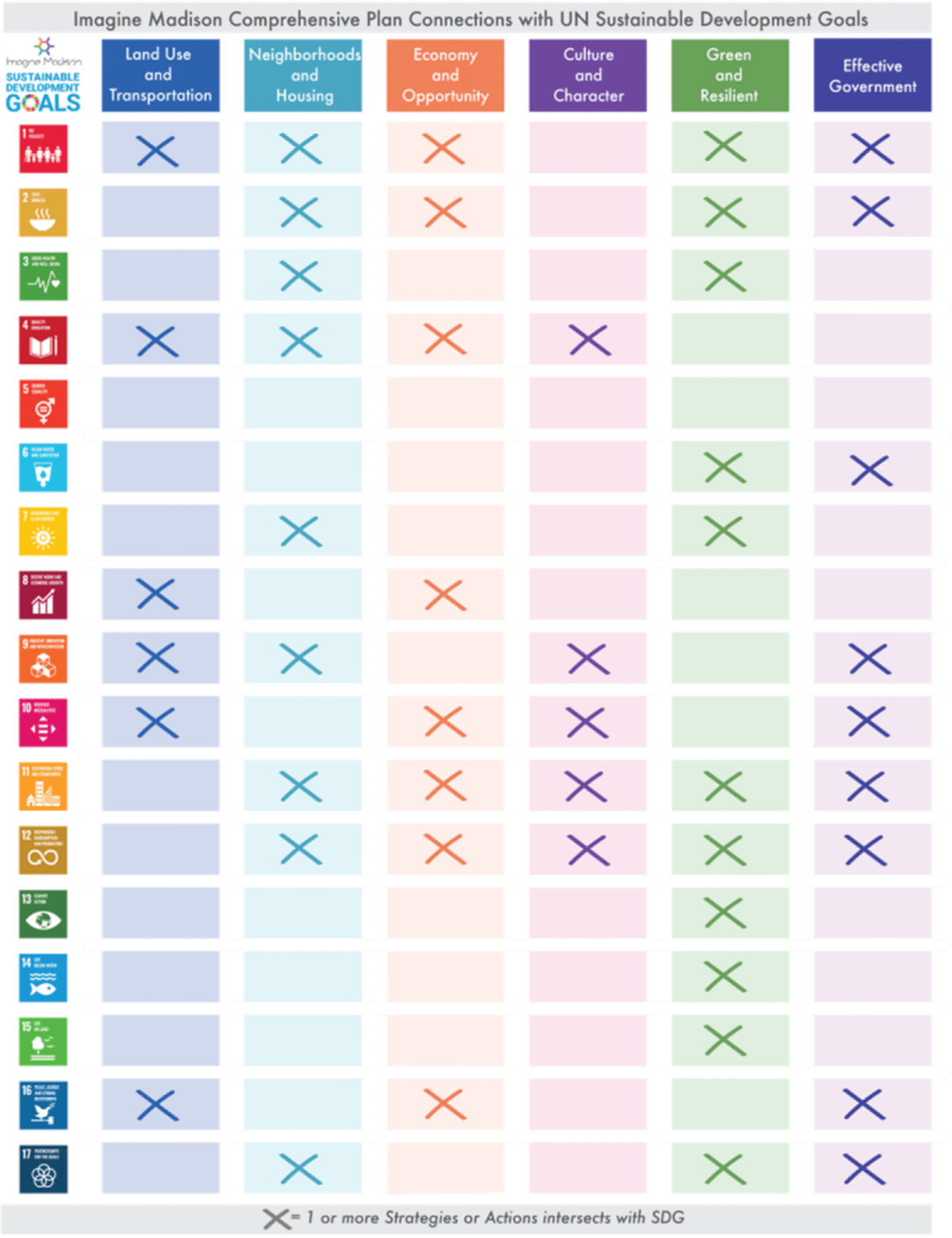

Figure 1. A preliminary crosswalk analysis of the SDGs with imagine Madison comprehensive plan (Madison, Wisconsin).

Source: Course assignment by University of Wisconsin (UW)–Madison students Lilly Scott, Grace Klein, Isaiah Mullens, and Maia Murphey. City Lead: Kara Kratowicz, City of Madison Performance Excellence Specialist. Course Instructor: Lori DiPrete Brown, Civil Society and Community Studies 460 Leadership for the Social Good, School of Human Ecology, UW–Madison.

Assist With Voluntary Local Reviews

A Voluntary Local Review is a reporting effort that provides data about how cities are doing in relation to the SDGs (United Nations Department of Economic and Social Affairs, n.d.). This is an often recommended way to begin SDG-based governance because it can help citizens and city leaders identify where they are starting from, determine priorities, and foster a culture of transparency in relation to sustainable development. Furthermore, because a number of cities participate in this voluntary effort, it creates a culture of accountability and enables the SDGs, which are nonbinding, to have more power and impact.

New York City has been an important leader in this movement—one of the first in the world to do a Voluntary Local Review. The city has used the SDGs as a common language to discuss local sustainable development. It focused on five SDGs in New York City: 4, quality education; 8, decent work and economic growth; 10, reduced inequalities; 13, climate action; and 16, peace, justice, and strong institutions (City of New York, n.d.). Other U.S. cities that have carried out voluntary local reports include Orlando, Florida (City of Orlando, n.d.); Los Angeles (City of Los Angeles, n.d.); Baltimore; San Jose, California; and Pittsburgh (Marshall et al., 2020). In general, when cities have done a voluntary local report or an SDG strategic planning effort, they have decided to focus on three or four SDGs that are priorities, rather than working with all the SDGs.

In addition to these leading cities that have carried out Voluntary Local Reviews, this trend is supported by resource development about how to carry them out (Deininger et al., 2019). Further city networks have also engaged with localization of the SDGs. For example, ICLEI, a network of local governments for sustainability, has developed a report about 15 pathways to localize the SDGs and is gathering case studies from throughout the world (Morrow, 2019). Similarly, the United Cities and Local Governments (UCLG) encourages use of the SDGs by local governments and has prepared an adapted and simplified list of targets that are most relevant at the local level (UCLG, 2016).

The emerging trend of performing Voluntary Local Reviews is promising, and it can be enhanced by using additional SDG 360 Thinking strategies. Especially where there is hesitancy to commit to the VLR process, use of one of the other strategies can move leaders and communities toward action in a more gradual way.

Conduct SDG 360 Analysis

SDG 360 analysis is an emergent systems science approach to sustainability that uses the SDG goals, targets, and indicators as a starting point to systematically study a specific challenge or policy through a holistic lens that includes human, ecosystem, and planetary survival and well-being. The approach is referred to as emergent because rather than resulting from a methods

development effort, the analytical approach arises from observations and synthesis from work in different settings, which have in common the use of a circular presentation of the SDGs; the centering of a topic or focus; identification of interconnections between SDGs, with annotations related to the SDG targets; and visual models that convey the interconnectedness with target-level specificity.

SDG 360 analysis can provide the foundation for a robust community-engaged process. The 17 goals that comprise the SDGs inspire citizen engagement by appealing to moral consensus and core values about the social good. Because they specify desired states and overlap, the targets enable action in response to complicated and complex challenges. SDG 360 analysis supports change that is iterative and incremental, as well as de novo design processes or systemic efforts to retrofit or redesign.

A stepwise SDG 360 analysis process, based on examples of SDG 360 analysis, highlights co-benefits and maximization strategies, helps error-proof and improve implementation plans, and identifies trade-offs to be resolved with a democratic process. Templates for standardized graphics and visualizations make it easier to implement and replicate this analysis. These examples, methods, and templates are conceptually and practically aligned with environmental economic analyses that aim to capture all-factor value and externalities.

Examples of SDG 360 Analysis

Each of the 17 SDGs has 5–10 subtargets or subgoals that are more specific. Overall, there are 169 subtargets (United Nations, 2020). SDG 360 analysis generally works at the target level and focuses on revealing connections, interactions, and feedback loops that have implications for action. For example, SDG 11, sustainable cities and communities, has 10 targets. It includes things such as safe and affordable basic service, accessible transportation, and participatory urban planning. Other SDG 11 targets include preservation of culture and natural heritage, resilience to disaster, and reduced environmental impacts in areas outside of city limits. Breaking down the idea of an overall sustainable community into these complementary and often nonsubstitutable social goods can inform and improve collective efforts to deal with multifaceted urban challenges.

The 2016 UN Conference on Housing and Urban and Sustainable Urban Development (Habitat III) provides a good example of emergent SDG 360 analysis (Figure 2; Consortium for Sustainable Urbanization, 2016; UN Habitat, n.d.). The centerpiece for this critical meeting about cities is a model that centers SDG 11 (sustainable cities and communities) and relates it to 8 of the other SDGs (1, no poverty; 3, good health; 5, gender equality; 6, water and sanitation; 9, infrastructure; 10, reduced inequalities; 12, sustainable consumption; and 16, peace, justice, and strong institutions). It goes on to use the SDG 11 targets, and a few from other SDGs, to express the interconnections. For example, SDG 11 targets 11.1, 11.2, and 11.5—upgrading slums, transport systems, and reducing death and disease with a focus on the poor, respectively—all relate to reducing poverty. Targets 11.2 and 11.7 about the accessibility of public transport and public spaces, respectively, are related to SDG 5 on gender equality. The graphic representation

identifies connections between subtargets of one SDG with other SDGs. That is one way of formulating an SDG 360 wheel that gives people a way to work toward focused action with a holistic approach.

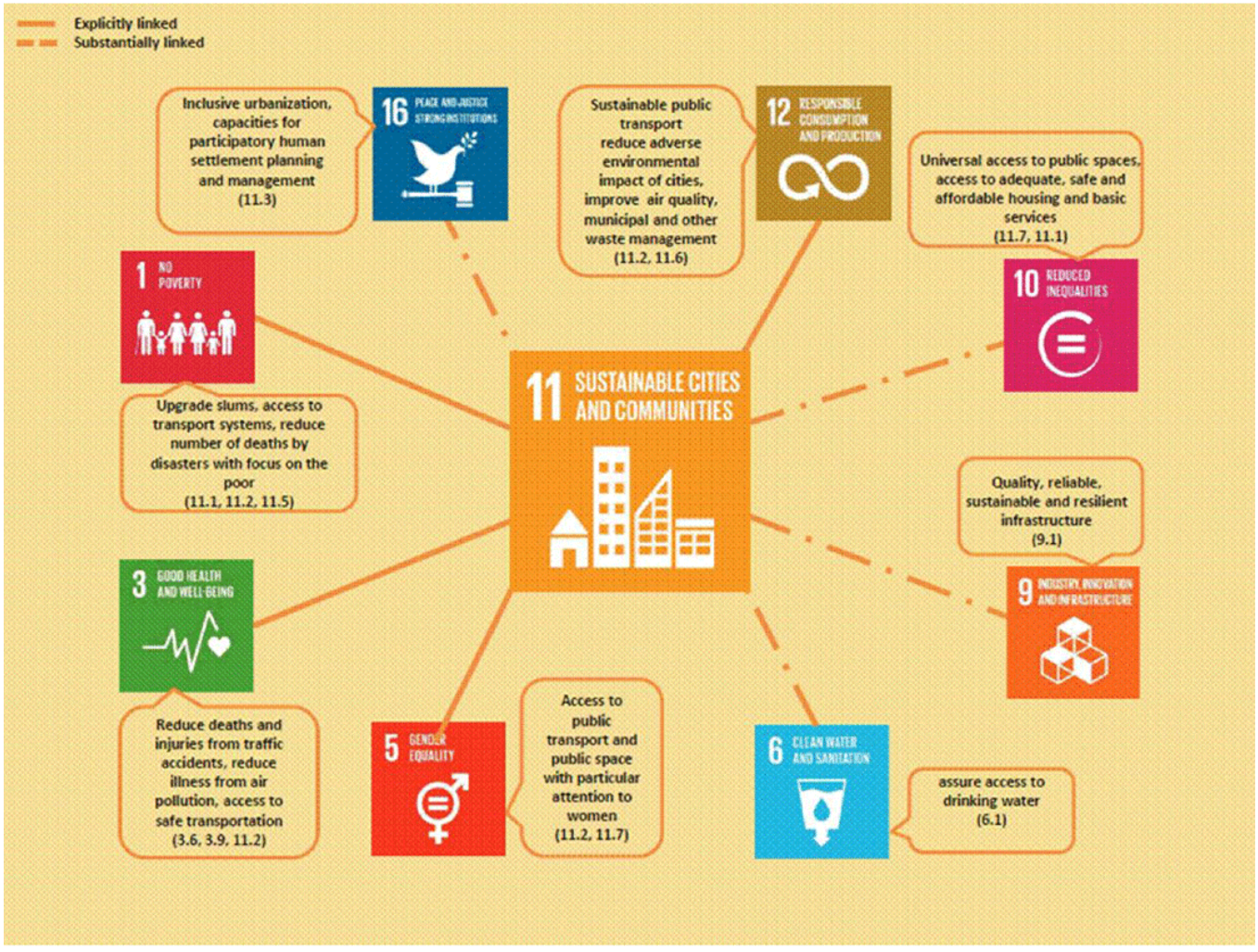

Figure 2. SDG 360 analysis: UN habitat.

Source: United Nations (2016).

A similar and more systematic approach was used by Ramirez-Rubio et al. (2019) to develop and model a "health in all policies" approach to urban health (Figure 3). In this example, Ramirez-Rubio et al. centered urban health, a more specific topic (although still very broad), rather than a particular SDG and noted all targets that were related to it. The analysis identified more than 50 targets, as well as four additional topics, that related the SDGs to urban health. This broad and inclusive mapping effectively lays the groundwork for priority setting, planning, and innovation.

Figure 3. SDG 360 analysis: Urban health.

Source: Ramirez-Rubio et al. (2019).

The World Bank Group's Sustainable Mobility presents a similar holistic analysis of transportation in relation to the own goals of universal access, efficiency, safety, and green mobility (Figure 4). The analysis identified 2 SDG targets that directly address transportation (access to public transport and road traffic fatalities) and another 15 targets that relate to the transportation in critical but indirect ways. The critical elements were then represented in a wheel that related sustainably mobility goals, the SDGs, and the targets. Rather than making

things simple when they are in fact complex, the analysis took something complex and made it clear, made the interconnections comprehensible, providing the foundation for policy development and implementation (Vandycke & Viegas, 2022).

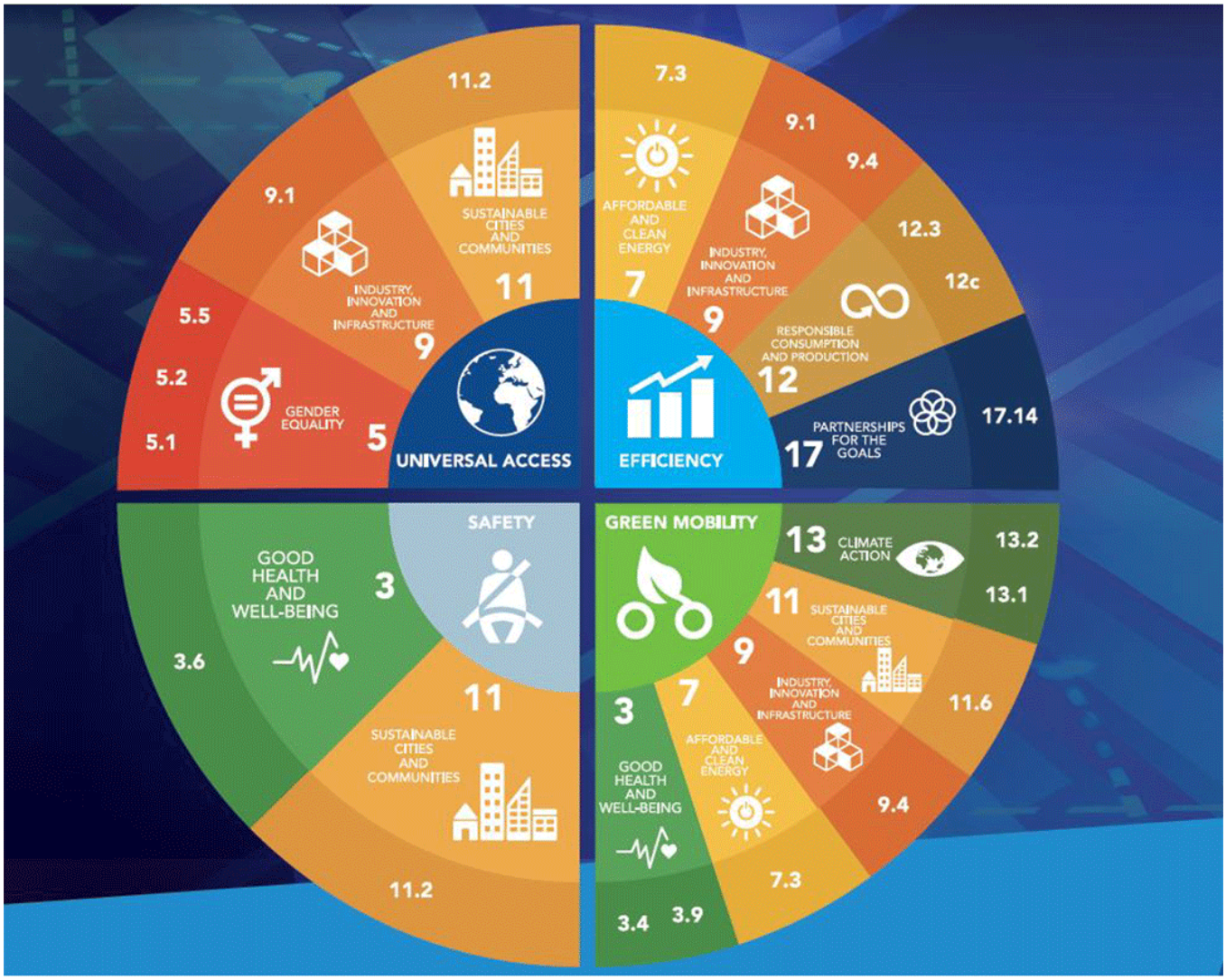

Figure 4. SDG 360 analysis: Sustainable mobility for all.

Source: Sustainable Mobility for All (n.d.) and Vandycke and Viegas (2022).

The Food and Agriculture Organization used a wheel-like visual graphic to map critical issues in relation to each of the SDGs (Figure 5). Rather than focusing on targets, the model relates the overall topic of food and agriculture to each SDG. For example, SDG 8 (decent work and economic growth) is related to the agriculture sector, indicating that agricultural growth in low-income economies can reduce poverty by half. In relation to SDG 1 (no poverty), it is noted that almost 80% of poor people live in rural areas, underscoring their proximity to the food and agriculture sector. In relation to SDG 12 (responsible production and consumption), it is noted that one-third of the food produced is lost or wasted. This model was also used by other actors in the sector (Food for Action Alliance, 2021). So again, this SDG 360 approach enables mapping, and

visualization balances the need for breadth with the need to explore specific linkages. In this example, the case is made that food and agriculture efforts have broad effects, beyond food and nutrition, for sustainable development.

Figure 5. SDG 360 analysis: Food and agriculture.

Source: Food Action Alliance (2021) and Food and Agriculture Organization of the United Nations. Reproduced with permission.

SDG 360 Analysis

Clear and systematic guidance for SDG 360 analysis that enables a revelatory and holistic review based on the SDGs can provide an incentive for local governments to engage in the process. The identification of co-benefits, unintended harms, and trade-offs creates both momentum and strategic guidance for advocacy and action. The approach is aligned with and informed by systems thinking and implementation science methods, which each, in different ways, provide guidance about how to advance the SDG agenda.

Systems thinking can be characterized as a scientific methodology that holistically examines systems to determine how different parts of them interact to produce the complex phenomena that can often be missed or misunderstood with more traditional linear analysis. Systems thinking is valuable for addressing topics such as health and well-being because it makes relationships explicit and offers the possibility of iterative alignment or correction of mental models with science-based observations (Peters, 2014). A simple four-part rubric for systems thinking (Cabrera et al., 2015) includes making distinctions between elements of a system (identity and other), describing systems (parts to whole), characterizing relationships (actions and reactions), and considering multiple perspectives (perceiving and being perceived). Although a range of sophisticated tools might be employed in systems thinking, these core functions frame the practice.

Scholars have adapted systems thinking principles to the SDGs, specifically focusing on perspective-taking, relationships, change-making skills, and iterative design principles (Reynolds et al., 2018). A review of efforts to implement the SDGs in 26 countries recognized positive progress in initial planning efforts but noted that "key gaps remain in terms of the assessment of interlinkages, trade-offs and synergies between targets. Gaps are also clearly evident in the adoption of systems thinking and integrated analytical approaches and models" (Allen et al., 2018, p. 1453).

Implementation science can help close the gap between research and practice and, in the case of sustainable development, the chasm between the goals that are set and the actual performance according to SDG indicators. Employed frequently in the health sciences to "promote the systematic uptake of research findings and other evidence-based practices into routine practice," (Bauer et al., 2015, p. 1) key features of implementation science include both formative and summative evaluation, an explicit theory of change, and iterative or cyclical action that balances the need for context-specific adaptation with fidelity (Bauer et al., 2015). Although implementation science has not been extensively applied outside of service domains such as health and education, environmental scholars posit that the structured approach, attention to context, and the rigorous assessment of processes are promising approaches for adoption and call for mapping and methods review to accelerate development of implementation science for the environment (Hering, 2018), and experimental approaches are emerging (Sustainable Development Goals Help Desk, n.d.).

This provisory method for SDG 360 analysis is designed to complement rather than supplant organizational or governmental processes that are already in place in relation to assessment, planning, design, implementation, and evaluation. It has been presented for preliminary review and comment by the SDSN, the Research Association of Minority Professors, and the EPIC Network. It has also been used in classroom instruction at the University of Wisconsin and as a framework for two ongoing research efforts—a multicity study of Complete Streets transportation policy (McAndrews et al., 2022) and a review of the potential uses and benefits of industrial hemp in Wisconsin and beyond (University of Wisconsin–Madison Global Health Institute, 2022). Overall, these pilot efforts have indicated that SDG 360 analysis provides clarity and revelatory insights for specialists and generalists alike.

The SDG 360 analysis is carried out in nine steps that occur in three phases (Table 2). The first phase inventories the UN SDG goals and targets (UN, 2020), or those adapted for use by local governments (Morrow, 2019; UCLG, 2016), to determine which SDGs and targets are the most important. The second phase prompts analysis and insight about the work—its strengths, how it can be improved, and the identification of trade-offs. The third phase focuses on possibilities for creative collective action and governance based on these insights. This collective work fosters the active participatory citizenship that is essential for realization of the SDGs.

Table 2. Key Steps in SDG 360 Analysis

Phase 1: Take a full 360 look at the SDG goals and targets with focus topic in mind. 1. Which is the central SDG most critical for what you are doing? Which targets are critical? How might they be adapted for the local context? 2. What two or three other SDGs would form the *critical cluster* to address this topic? Which targets are critical? How might they be adapted? 3. Now review the targets from the other SDGs not initially chosen. Choose no more than five additional targets that should be included (again considering adaptation).
Phase 2: Now use these targets to gain insights about your work. 1. List revealed synergies and co-benefits that have become explicit. How can you use this information in design, advocacy, or implementation? 2. Identify unintended negative consequences. How can the designs and plans be modified to error-proof or improve your work? 3. Identify unavoidable trade-offs and disadvantages and their equity implications. This information can be used to support democratic and transparent decision-making that includes balancing compensatory action. This can build the public trust for bolder action in later iterations.
Phase 3: Determine next steps. 1. Consider how you might implement more effectively or design, improve, or innovate better systems in response to what you have learned. 2.

What are the critical sectors and who are the stakeholders who must work together? What local knowledge, assets, values, and creativity should be engaged?

3. Continue to use SDG 360 Thinking as you carry out a plan and implement ongoing cyclical action.

Source: DiPrete Brown (2022).

SDG 360 Analysis: The Importance of Visualization

Although SDG 360 analysis is revelatory, the resultant number of indicators and issues can still seem unwieldy. However, this kind of detail is needed to capture complex problems. Rather than focusing on simplification in a linear way (fewer targets), the SDG 360 analysis approach achieves clarity from a focus on clear visualizations that make the information manageable and allow those working for change to converge and diverge from big picture perspectives to details with ease.

This template for a wheel visualization uses SDG logos and icons and is derived from examples of SDG 360 Thinking (Figure 6). The template closely aligns with the key steps of SDG 360 analysis and enables representation of the critical cluster of SDGs; key targets; preliminary analysis of benefits, harms, and trade-offs; and a preliminary analysis of implications for change-making.

Figure 6. A template for SDG 360 analysis: Wheel visualization of interconnections for multisector analysis, planning, and implementation.

Source: Instructional material prepared by author Lori DiPrete Brown and Shiqi Shen, Department of Civil Society and Community Studies, School of Human Ecology, University of Wisconsin–Madison.

An additional option or alternative to the wheel visualization is the branch analysis (Figure 7). This model can be easier to construct in a group or workshop setting and can be a preliminary step toward the construction of a complete wheel. The template is conducive to collective analysis and iteration. It allows for indication of critical SDGs, as well as targets, with ample room for notes, images, or other information that might be useful.

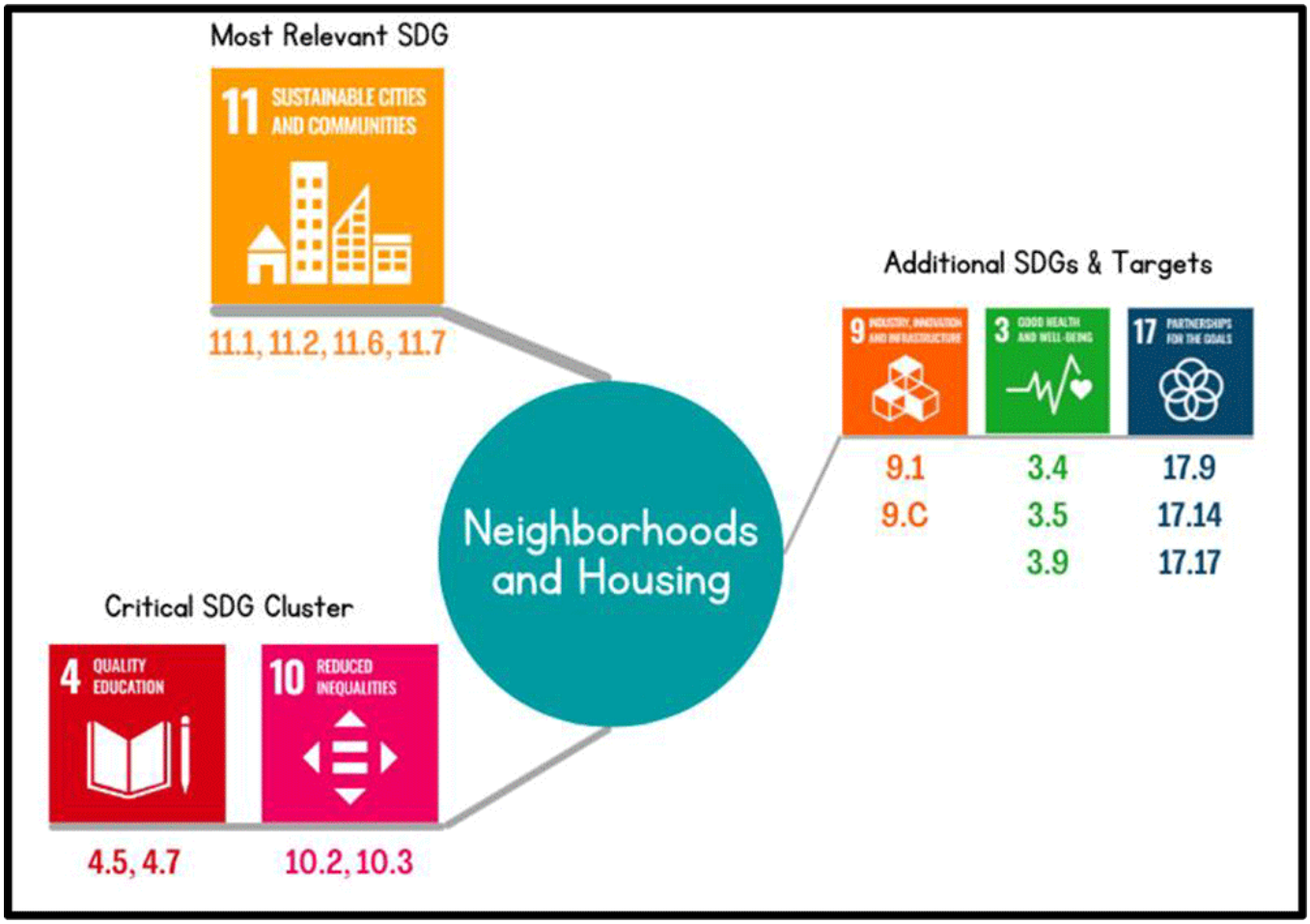

Figure 7. SDG 360 analysis branch visualization: Neighborhoods and housing.

Source: Adapted by Shiqi Shen from research conducted by University of Wisconsin students Daniel Bautista, Grace Klein, Sabrina Kuhn, Isaiah Mullens, Maia Murphey, Hannah Reynolds, Brittany (Bee) Robbins, Lilly Scott, and Steven Tollios. City Lead: Kara Kratowicz, City of Madison Performance Excellence Specialist. Course Instructor: Lori DiPrete Brown, Civil Society and Community Studies 500 Leadership for the Social Good.

In summary, SDG 360 analysis is emerging as a practice that is useful and feasible for technical experts, city leaders, citizens, and other stakeholders because it reveals interconnected causes and effects in a comprehensive way, using the SDG framework. It can be employed in a stepwise process to identify co-benefits and synergies, error-proof and improve plans before implementation of any kind, and make trade-offs explicit so that strategies for distributing costs and benefits fairly can be devised. Thus, in addition to allowing systematic analysis of interconnections, SDG 360 analysis begins the process of centering equity and supporting local economic analysis.

Center Equity and Inclusion

Centering equity and inclusion is critical for achieving sustainable development and is included here as a type of SDG 360 Thinking. Disaggregation of data, equity-sensitive indicators, and mixed methods approaches are essential for this work. The SDGs themselves also offer guidance on equity and inclusion in SDG 5 (gender equality) and SDG 10 (reduced inequalities), as well as selected targets related to other SDGs such as eradicate poverty for all people everywhere (1.1) and provide safe transport to all, with special attention to the needs of those in vulnerable situations, such as women, children, persons with disabilities, and older persons (11.2). Environmental justice principles encourage attention to equity in governance by focusing on processes as well as outcomes. Furthermore, critical inquiry tools can be used to center the lived experiences of marginalized groups and inform policy and practice. Two such tools are the HEADS UP framework for critical literacy (Andreotti, 2012) and a three-dimensional (3-D) model that integrates rights, gender analysis, and Indigenous knowledge (DiPrete Brown et al., 2020). Finally, dialogue strategies and prompts can be used to foster shared learning among community members, technical experts, and those with knowledge grounded in their identity, culture, and relationship to place.

Disaggregation of Data and Equity-Sensitive Indicators and Mixed Methods

One important strategy for measuring social impact and equity is to ensure that routinely collected data about overall sustainability outcomes can be disaggregated according to demographic and geographic classifications. The UN guidance on sustainability indicators recommends that indicators be disaggregated, where relevant, by income, sex, age, race, ethnicity, migratory status, disability status, geographic location, or other characteristics in accordance with the Fundamental Principles of Official Statistics (United Nations General Assembly, 2017).

Although disaggregation of data is critical for centering equity and inclusion, it is only the beginning. Truly centering equity might also require different targets or indicators. Specifically, equity-oriented metrics can also be useful, including the Gini coefficient and Palma ratio (Cobham et al., 2013), which measure income and economic disparity, respectively; the Dissimilarity Index and others measures of racial segregation (Royuela & Vargas, 2010); and the disability-adjusted life year, which can measure health disparities across populations and conditions and cumulative environmental impacts (Solomon et al., 2016). In addition, gender analysis (Warren, 2007) and related approaches that focus on roles, assets, decision-making power, discrimination, needs and wants, and contextual factors can inform governance strategies by capturing and accommodating the varying lived experiences of women and other historically marginalized populations.

Environmental Justice Principles and Practices

Environmental justice is defined by the U.S. Environmental Protection Agency (EPA, 2021) as a state in which people have equal protection from environmental hazards as well as access to environmental benefits, regardless of income, race, and other characteristics. To advance toward

environmental equity, it is necessary to make overall improvements in sustainability and at the same time decrease existing disparities. Environmental justice aims to increase equity in this way, through "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies" (Environmental Protection Agency, 2021). In order to realize SDG governance with environmental justice, processes such as fair treatment and meaningful involvement can be assessed with interviews, surveys of public opinion and preferences, narrative and historical information, and case studies.

SDG 10: Reduced Inequalities and SDG 5: Gender Equality

SDG 10 aims to reduce inequality within and among countries. It includes 10 targets and subtargets, such as income growth for the poor, policy frameworks that eliminate discrimination, and support equality and diverse political participation. There is also attention to fiscal policy, wages, and the role of regulation. The international elements of SDG 10 address both the representation of low-income countries and strengthening of global economic institutions (10.6) and, importantly, policies and practices that facilitate safe and responsible migration and mobility of people (United Nations Department of Economic and Social Affairs, 2016).

SDG 5 aims to achieve gender equality and empower all women and girls. Despite the SDG 10 focus on reduction of inequalities, challenges to gender equality and related empowerment were deemed to warrant attention in an additional SDG. SDG 5 includes nine targets and subtargets, addressing abuses related to discrimination, violence, and exploitation of all kinds; harmful cultural practices; access to health care; and elimination of forced marriage. It also addresses challenges related to equal pay, childcare, other forms of unpaid care, access to sexual and reproductive health and rights, financial agency, political participation, and leadership (United Nations Department of Economic and Social Affairs, 2016). SDG 5 reflects a broad global consensus but does not include all topics and does not explicitly address the ways that intersectionality can present even more challenges for women of color, women living with disabilities, people with nonbinary gender identities, and others, who have a right to have their dignity and full humanity reflected in society.

All the other SDGs contain at least one reference to equity within or across nations. The nature of the SDGs, which are expressed as goals and outcomes rather than intervention or implementation strategies, requires that local governance efforts employ processes that embody equity by fostering inclusion; perspective-taking by all; and strong representation of vulnerable and historically marginalized groups.

Critical Inquiry

Critical inquiry focuses on analysis and reflection about power structures, cultural assumptions, and system dynamics. It derives much of its insight from power analysis and perspective-taking. These practices can make governance and collective action more inclusive, insightful, and innovative.

The HEADS UP model (Andreotti, 2012) offers a critical literacy framework that can be employed in SDG 360 Thinking. The framework presents notions of hegemony, ethnocentrism, ahistoricism, depoliticization, a superior or "savior" mindset, the problem of apparently uncomplicated solutions, and paternalism. Exploring these ideas collectively can foster authentic civic discourse so that effective change can be realized. This type of analysis can provide insight and truth-telling in relation to equity. Although the concepts are complex, they can be translated into useful simple questions, modeled after those of Our Bodhi Project (Our Beloved Team, n.d.), that can accompany SDG 360 Thinking: What is the history behind the challenges faced? What are some different perspectives on what can and should happen? How are local government and residents complicit in these problems? What resources internal to the community are used for strength, resilience, and healing?

Another model for critical inquiry focuses on the "three-legged stool" of sustainability and proposes a 3-D analysis that enables more intentional integration of human rights, attention to gender analysis, and inclusion of local and Indigenous knowledge (DiPrete Brown et al., 2020). Based in international development case studies, this research offers critical questions that can serve as a starting point to more robust and rigorous equity perspectives. For example, What human rights are relevant? Were there infringements? If so, was relief provided? Or, regarding gender, Are there gender roles or factors to consider? How are responsibilities, hardships, and benefits distributed? Regarding Indigenous knowledge, local governance efforts might explore which Indigenous communities have relationships to the land, currently and historically. Also, when creating policy and implementation plans, one might consider strategies to identify, safeguard, and promote cultural knowledge and to explore meaningful restorative action with the community.

These approaches to equity and inclusion are just a few examples of approaches that foster full participation and work synergistically with the other SDG 360 Thinking approaches described.

Conclusion

The Sustainable Development Goals (SDGs) describe holistic and radically egalitarian goals for human thriving and care of the earth and all life forms. SDGs 360 Thinking strategies operationalize the SDGs and incentivize their uses, which in turn make it possible for local governments to perceive reality more completely, develop alternatives for action, and make choices in community. In recent decades, economists have developed more holistic and complete ways of understanding the nature of capital; devised novel ways to measure all-factor value and productivity; and allowed these new valuations to frame considerations related to externalities, public goods, as well as geographic and temporal scale (Evison & Bickersteth, 2020a, 2020b). All of these advances can support SDG 360 Thinking and together offer both a science-based approach to human development and an invitation to full and active citizenship for residents of cities and towns so that they may contribute to local and global sustainable development, at a time when it is truly needed.

Acknowledgments

The author acknowledges University of Wisconsin (UW)–Madison Human Ecology doctoral student Shiqi Shen, Professor Yongheng Deng, and Dr. Gavin Luter for their collaboration and Professor Joel Rogers for his review of this article. Valuable contributions also came from Kara Kratowicz of the City of Madison, Caroline Fox of the Sustainable Development Solutions Network, and the program managers of the EPIC Network. Financial support was provided by UW–Madison's School of Human Ecology, the UniverCity Alliance, and the UW–Madison Global Health Institute.

Links to Digital Materials

DiPrete Brown, L. (2022, March 2). *SDG 360 thinking from classroom to community: 5 Ways to advance the sustainable development goals* <https://www.youtube.com/watch?v=EJ4gT8ZeKhc>. EPIC-Network [Video file]. YouTube.

Sustainable Development Goals Help Desk. (n.d.). *Sustainability outlook tool: Ten steps toward integration using the systems thinking approach* <https://sdghelpdesk.unescap.org/sustainability-outlook-tool>.

United Nations. (n.d.). *Take action for the sustainable development goals* <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>.

United Nations. (2020, May). *Sustainable development goals—Guidelines for the use of the SDG logo including the color wheel, and 17 icons* <https://www.un.org/sustainabledevelopment/wp-content/uploads/2019/01/SDG_Guidelines_AUG_2019_Final.pdf>.

Further Reading

United Nations. (2020). *Global indicator framework for the sustainable development goals and targets of the 2030 agenda for sustainable development* <https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf>.

References

Allen, C., Metternicht, G., & Wiedmann, T. (2018). Initial progress in implementing the Sustainable Development Goals (SDGs): A review of evidence from countries. *Sustainability Science*, *13*(5), 1453–1467.

Andreotti, V. (2012). Editor's preface, "HEADS UP." *Critical Literacy: Theories and Practices*, 6(1), 1–3.

Assembly, U. G. (2000). *United Nations millennium declaration*. United Nations General Assembly, 156.

Bauer, M. S., Damschroder, L., Hagedorn, H., Smith, J., & Kilbourne, A. M. (2015). An introduction to implementation science for the non-specialist. *BMC Psychology*, *3*(1), 1–12.

Biermann, F., Hickmann, T., Sénit, C.-A., Beisheim, M., Bernstein, S., Chasek, P., Grob, L., Kim, R. E., Kotzé, L. J., Nilsson, M., Ordóñez Llanos, A., Okereke, C., Pradhan, P., Raven, R., Sun, Y., Vijge, M. J., van Vuuren, D., & Wicke, B. (2022).

Scientific evidence on the political impact of the Sustainable Development Goals <https://doi.org/10.1038/s41893-022-00909-5>. *Nature Sustainability*, *5*, 795–800.

Blumenfeld, M., Bohen, S., Jackson, B., Serrano, L., Wasson, E., & Cha, M. (2021). *Just transition in Los Angeles: Ensuring equity during decarbonization* <https://www.oxy.edu/sites/default/files/assets/UEP/Comps/2021/2021_blumenfeld_bohen_jackson_serrano_wasson.pdf>. Occidental College.

Brundtland, G. H., Khalid, M., Agnelli, S., Al-Athel, S., & Chidzero, B. J. N. Y. (1987). *Report of the World Council for Economic Development: Our common future*. United Nations.

Cabrera, D., Cabrera, L., & Powers, E. (2015). A unifying theory of systems thinking with psychosocial applications. *Systems Research and Behavioral Science*, *32*(5), 534–545.

City of Los Angeles. (n.d.). *Los Angeles Sustainable Development Goals* <https://sdg.lamayor.org/>.

City of Madison, Wisconsin. (2021). *2021 progress update: City of Madison comprehensive plan* <https://www.imaginemadisonwi.com/sites/imaginemadisonwi.com/files/document/pdf/Progress%20Update%202021_Final.pdf>.

City of New York. (n.d.). *OneNYC 2050: Building a strong and fair city* <https://onenyc.cityofnewyork.us/>.

City of Orlando. (n.d.). *Office of Sustainability & Resilience*.

Cobham, A., Sumner, A., Cornia, A., Dercon, S., Engberg-pedersen, L., Evans, M., Lea, N., Lustig, N., Manning, R., Milanovic, B., Molina, N., Neubourg, C. D., & Palma, G. (2013). *Putting the Gini back in the bottle? "The Palma" as a policy-relevant measure of inequality*. King's College London.

Consortium for Sustainable Urbanization. (2016, December 15). **The new urban agenda and the future of cities: Turning words into actions* <https://habitat3.org/the-new-urban-agenda/>.

Damschroder, L. J., Reardon, C. M., Opra Widerquist, M. A., & Lowery, J. (2022). Conceptualizing outcomes for use with the Consolidated Framework for Implementation Research (CFIR): The CFIR Outcomes Addendum. *Implementation Science*, *17*(1), 1–10.

Deininger, N., Lu, Y., Griess, J., Santamaria, R., Mendelson, A. S., Brown, K., & Pipa, T. (2019). *Cities taking the lead on the sustainable development goals*. Carnegie Mellon University.

DiPrete Brown, L. (2018a). Global health policy and the sustainable development goals. In L. DiPrete Brown (Ed.), *Foundations for global health practice* (pp. 71–82). Wiley.

DiPrete Brown, L. (2018b). What is global health? In L. DiPrete Brown (Ed.), *Foundations for global health practice* (pp. 27–56). Wiley.

DiPrete Brown, L. (2022, March 2). *SDG 360 Thinking from classroom to community: 5 ways to advance the sustainable development goals* <https://www.youtube.com/watch?v=EJ4gT8ZeKhc>. EPIC-Network [Video file]. YouTube.

DiPrete Brown, L., Atapattu, S., Stull, V. J., Calderón, C. I., Huambachano, M., Houénou, M. J. P., Snider, A., & Monzón, A. (2020). From a three-legged stool to a three-dimensional world: Integrating rights, gender and Indigenous knowledge into sustainability practice and law <https://doi.org/10.3390/su12229521>. *Sustainability*, *12*(22), 9521.

Easterly, W. (2015). The SDGs should stand for senseless, dreamy, garbled. *Foreign Policy*, *28*, 1–5.

Edquist, M., & Iyer, S. D. (2017, December 20). *Localizing the UN Sustainable Development Goals in Baltimore: Next steps towards implementation* <https://www.unsdsn.org/news/2017/12/20/localizing-sdgs-in-baltimore-next-steps>. Sustainable Development Solutions Network.

Emas, R. (2015). *Brief for GSDR 2015–The concept of sustainable development: Definition and defining principles* <https://sustainabledevelopment.un.org/content/documents/5839GSDR%202015_SD_concept_definiton_rev.pdf>. United Nations.

Evison, W., & Bickersteth, S. (2020a). A new economics for planetary health. In S. Myers & H. Frumkin (Eds.), *Planetary health: Protecting nature to protect ourselves* (pp. 387–423). Island Press.

Evison, W., & Bickersteth, S. (2020b). The business of planetary health: From economic theory to policy and practice. In S. Myers & H. Frumkin (Eds.), *Planetary health: Protecting nature to protect ourselves* (pp. 425–449). Island Press.

Food Action Alliance. (2021). *Food Action Alliance: A leadership agenda for multi-stakeholder collaboration to transform food systems* <https://foodsystems.community/wp-content/uploads/2021/09/Food-Action-Alliance-Report-Sept-2021-623684b1f7b76924a945c65f80a246ad.pdf>.

Hering, J. G. (2018). Implementation science for the environment. *Environmental Science & Technology*, *52*(10), 5555–5560.

Hess, J. J., Schramm, P. J., & Luber, G. (2014). Public health and climate change adaptation at the federal level: one agency's response to Executive Order 13514. *American Journal of Public Health*, 104(3), e22–e30.

Iyer, S., Howland, A., Ruckstuhl, S., Sheehan, I., Samuelson, L., & Bowman, L. (2016). *Baltimore's sustainable future: Localizing the UN Sustainable Development Goals, strategies and indicators*. University of Baltimore.

Kraak, M. J., Roth, R. E., Ricker, B., Kagawa, A., & Le Sourd, G. (2021). *Mapping for a sustainable world* <https://digitallibrary.un.org/record/3898826?ln=en>. United Nations.

Lynch, A., Bond, H., & Sachs, J. (2021). *In the red: The US failure to deliver on a promise of racial inequality* <https://www.sdgindex.org/reports/in-the-red-the-us-failure-to-deliver-on-a-promise-of-racial-equality/>. SDSN.

Lynch, A., LoPresti, A., & Fox, C. (2019). *The 2019 US cities sustainable development report* <https://www.sustainabledevelopment.report/reports/2019-us-cities-sustainable-development-report/>. SDSN.

Lynch, A., & Sachs, J. (2021). *The United States sustainable development report 2021* <https://www.sdgindex.org/reports/united-states-sustainable-development-report-2021/>. SDSN.

Marshall, L., Armiento M., Blackhurst, M., Briem, C., Croft, T., Ervin, G., Mertenstein, H., Montesano, G., Papa, C., Pollin, R., & Rajakone, E. (2020). *Marshall plan for middle America roadmap* <https://www.sustainablebusiness.pitt.edu/research/marshall-plan-middle-america>. University of Pittsburgh Center for Sustainable Business.

McAndrews, C., Schneider, R., Rao, A., DiPrete Brown, L., Kohn, G., Purisc, H., Yang, Y., Ross, C., Zhan, Y., Hu, I., Ragoobar, S., Soukieh, S., Schmitz, A., Elliott, F., & Pittner, J. (2022, August). *Gender analysis concepts and practices for complete streets*. Center for Transportation, Equity, Decision, and Dollars.

Merino, A., Halla, P., Superti, V., Boesch, A., & Binder, C. R. (2020). Indicators for urban sustainability: Key lessons from a systematic analysis of 67 measurement initiatives. *Ecological Indicators*, *119*, 106879.

Morelli, J. (2011). Environmental sustainability: A definition for environmental professionals <https://doi.org/10.14448/jes.01.0002>. *Journal of Environmental Sustainability*, *1*(1), Article 2.

Morrow, R. (2019, December 9). *New guidance document presents towns and cities with 15 pathways to localise the SDGs* <https://www.local2030.org/story/view/322>. Local2030.

National Academies of Sciences, Engineering, and Medicine. (2016). *Pathways to urban sustainability: Challenges and opportunities for the United States*. National Academies Press.

Our Beloved Team. (n.d.). *Our Bodhi project*.

Penn State Center Pittsburgh. (2021, February 16). *Exploring the UN sustainable development goals—Goal 1: No poverty* <https://pittsburgh.center.psu.edu/news/exploring-the-un-sustainable-development-goals-1-no-poverty/>.

Peters, D. H. (2014). The application of systems thinking in health: Why use systems thinking? *Health Research Policy and Systems*, *12*(1), 1–6.

Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., Griffey, R., & Hensley, M. (2011). Outcomes for implementation research: Conceptual distinctions, measurement challenges, and research agenda <https://doi.org/10.1007/s10488-010-0319-7>. *Administration and Policy in Mental Health*, *38*(2), 65–76.

Ramaswami, A., Bettencourt, L., Clarens, A., Das, S., Fitzgerald, G., Irwin, E., Pataki, D., Pincetl, S., Seto, K., Waddell, P., Nichols, L., & Tabory, S. (2018). *Sustainable urban systems: Articulating a long-term convergence research agenda*. National Science Foundation.

Ramirez-Rubio, O., Daher, C., Fanjul, G., Gascon, M., Mueller, N., Pajín, L., Plasencia, A., Rojas-Rueda, D., Thondoo, M., & Nieuwenhuijsen, M. J. (2019). Urban health: An example of a "health in all policies" approach in the context of SDGs implementation <https://doi.org/10.1186/s12992-019-0529-z>. *Globalization and Health*, 15(1), 87.

Rankmore, S. (2020). *City–university partnerships in implementing the UN sustainable development goals at a local level* <https://www.Open.library.ubc.ca>.

Reynolds, M., Blackmore, C., Ison, R., Shah, R., & Wedlock, E. (2018). The role of systems thinking in the practice of implementing sustainable development goals. In W. L. Filho (Ed.), *Handbook of sustainability science and research* (pp. 677–698). Springer.

Royuela, V., & Vargas, M. (2010). *Residential segregation: A literature review* (Working Paper No. 7). Universidad Diego Portales.

Sands, P. (1992). The United Nations framework convention on climate change. *Review of European Comparative & International Environmental Law*, 1, 270.

Selin, H. (2015, September 25). The risk of UN's Sustainable Development Goals: Too many goals, too little focus. *The Conversation*.

Solomon, G. M., Morello-Frosch, R., Zeise, L., & Faust, J. B. (2016). Cumulative environmental impacts: Science and policy to protect communities. *Annual Review of Public Health*, *37*, 83–96.

State of Hawai'i Office of Planning and Sustainable Development. (n.d.). *Sustainable development goals* <https://planning.hawaii.gov/sustainability/sustainable-development-goals/>.

Sustainable Development Goals Help Desk. (n.d.). *Sustainability outlook tool: Ten steps towards integration using the systems thinking approach* <https://sdghelpdesk.unescap.org/sustainability-outlook-tool>.

Sustainable Mobility for All. (n.d.). *Implementing the SDGs* <https://www.sum4all.org/implementing-sdgs>.

The NYC Mayor's Office for International Affairs. (2016). *Global vision|Urban action: A city with global goals* <https://www1.nyc.gov/assets/international/downloads/pdf/ACityWithGlobalGoals_merged%20Part%20I%20and%20II_spreads.pdf>.

Thompson, K. (2020, October 7). *Evaluating SDG6: Flint, michigan and where the US stands on water quality* <https://medium.com/una-nca-snapshots/evaluating-sdg-6-flint-michigan-and-where-the-us-stands-on-water-quality-f8d9d3ea59aa>. UNA-NCA Snapshots.

Toukabri, A., & Medina, L. (2020). *Latest city and town population estimates of the decade show three-fourths of the nation's incorporated places have fewer than 5,000 people* <https://www.census.gov/library/stories/2020/05/america-a-nation-of-small-towns.html> (pp. 145–219). U.S. Census Bureau.

United Cities and Local Governments. (2016). *The Sustainable Development Goals: What local governments need to know*.

United Nations. (n.d.). *Sustainable development goals* <https://planning.hawaii.gov/sustainability/sustainable-development-goals/>.

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*.

United Nations. (2016). *The new urban agenda and the future of cities: Turning worlds into actions*. UN Habitat III.

United Nations. (2020, May). *Sustainable development goals—Guidelines for the use of the SDG logo including the color wheel, and 17 icons* <https://www.un.org/sustainabledevelopment/wp-content/uploads/2019/01/SDG_Guidelines_AUG_2019_Final.pdf>.

United Nations Department of Economic and Social Affairs. (n.d.). *Voluntary local reviews* <https://sdgs.un.org/topics/voluntary-local-reviews>.

United Nations Department of Economic and Social Affairs. (2016). *Transforming our world: The 2030 agenda for sustainable development*.

United Nations General Assembly. (2017). *Work of the Statistical Commission pertaining to the 2030 agenda for sustainable development* (A/RES/71/313).

University of Wisconsin–Madison Global Health Institute. (2022, June 23). *New GHI report examines hemp and UN sustainable development goals* <https://ghi.wisc.edu/new-ghi-report-examines-hemp-and-un-sustainable-development-goals/>. University of Wisconsin.

U.S. Environmental Protection Agency. (2021, September 22). *Learn about environmental justice* <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>.

Vandycke, N., & Viegas, J. M. (2022). *Defining the playing field: The global tracking framework* <https://doi.org/10.1007/978-3-031-08961-9_9>. In *Sustainable mobility in a fast-changing world: From Concept to Action*(pp. 83–99). Springer International.

Warren, H. (2007). Using gender-analysis frameworks: Theoretical and practical reflections. *Gender & Development*, *15*(2), 187–198.

World Health Organization. (1978). *Declaration of Alma-Ata* (No. WHO/EURO: 1978-3938-43697-61471).

Related Articles

The Extent of Future Damages From Climate Change

Climate Change and Coastal Vulnerability