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Measuring U.S. Sustainable Development

Eugenie L. Birch

University of Pennsylvania

Abstract

In recent decades, such global institutions as the United Nations (U.N.) have promoted sustainable development, loosely defined as improving the human condition without compromising the ability of future generations to meet their needs. In its advocacy, the U.N. has called for the crafting of measures to benchmark current conditions and mark progress toward the overall goal. As national and subnational governments have undertaken these activities, they have also been involved in developing a wide range of monitoring tools, especially defining indicators reflective of their distinctive programs in this arena. The work of the Partnership for Sustainable Communities (PSC), an alliance between the U.S. Department of Housing and Urban Development, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency, founded in 2009, provides an example of this phenomenon. Working with researchers from the University of Pennsylvania Institute for Urban Research and funded by the Ford Foundation, the PSC has launched the Sustainable Communities Indicator Catalog described in this article.

Introduction

Public and private decisionmakers in the 21st century are fashioning sustainable development policies and programs in response to a variety of global concerns that include climate change, resource depletion, economic downturns, high levels of poverty, wasteful settlement and urbanization patterns, and a scarcity of adequate, affordable housing and basic services. They assume that human settlement activity has lasting effects on the well-being of individuals and society and understand that sustainable development is an ongoing process, not a “fixed state of harmony” (Hardi and Zdan, 1997: 9). In their choices of policies and programs, decisionmakers adhere to the so-called Brundtland Commission’s interpretation of sustainable development to improve the human condition to meet current needs without compromising the ability of future generations to meet their needs, an idea refined at the Rio Earth Summit in 1992 and further developed at the Rio +20 Conference in 2012. *The Future We Want*, the outcome document of the 2012 meeting, defined sustainable development as working for poverty eradication, changing unsustainable patterns of consumption and production, and promoting inclusive and equitable economic growth (U.N., 2012).

Notably, *The Future We Need* called for the formulation of sustainable development goals, targets, and indicators to be applied to all nations (U.N., 2012). This declaration would call for broadening and extending an earlier setup, the soon-to-expire Millennium Development Goals that applied to only the developing countries. Thereafter, the United Nations (U.N.) initiated a 3-year deliberative process to develop a post-2015 development framework of sustainable development goals, targets, and indicators to be presented for U.N. General Assembly approval in September 2015. By the early spring of 2015, U.N. member states had made much progress toward agreeing, in principle, to 17 goals with associated targets and were deeply involved in determining indicators that the U.N. Statistical Commission agreed to deliver by March 2016.

General Background on Sustainable Development

Over the years, much work has been done to strengthen the research, policy, practice, and subsequent evaluation of sustainable development. Many believe that progress has been sluggish, however, and attribute the slow adoption of the paradigm to political resistance, limited financial resources, and such technical issues as the absence of scientifically valid and credible indicator systems (Evans and Steven, 2011; UNCTAD, 2011).

Experts agree that “sustainable development is perhaps the most challenging policy concept ever developed” (Hak, Moldan, and Dahl, 2007: 2), noting that it receives support generally when characterized broadly as “not cheating your kids” (Bell and Morse, 2010: 5) but less agreement when it comes to putting it into operation with a working definition. Competing views emerge. Some hold that sustainable development “is like truth and justice,” ideas “not readily captured in precise definition,” because their meanings “can vary greatly from individual to individual and between societies” (Bell and Morse, 2010: 11), therefore preventing its implementation; others insist that despite its being a complex concept in which the interplay of various factors has a wide variety of outcomes, it is manageable. Others reference physical and social scientists who regularly deal with value-affected, complex systems by breaking them down to individual components, examining

how each component works, first, in isolation and, later, together (Bell and Morse, 2010). For this latter group, sustainable development can have clear, workable definitions; be implemented through congruent and coherent policy and programs; and be evaluated via transparent, evidence-based measures.

Until 2009, the United States had a spotty record in these matters; not only did it lack a national sustainable development agenda, but also it had no associated evaluation system. As a consequence, many municipalities, some states, several advocacy groups, and a number of private corporations undertook their own sustainable development programs and assessments. The lack of guidance, however, meant their conceptual framing and definitions ranged widely, with some emphasizing the environment (for example, Baltimore City Office of Sustainability, 2010, 2009; Siemens AG, 2012) and others giving weight to other factors (Birch, 2011; City of New York, 2011; Epstein, 2008; ICLEI, 2010, 2009).

The Partnership for Sustainable Communities

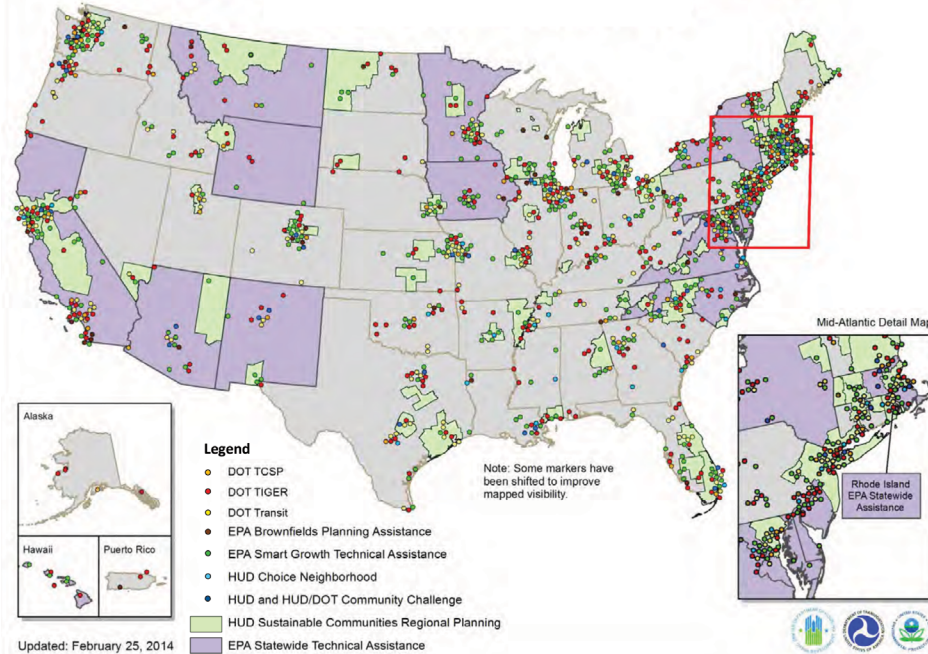
In 2009, the federal government acted to devise a national sustainable development agenda by forming the Partnership for Sustainable Communities (PSC), an innovative, interagency agreement among the U.S. Department of Housing and Urban Development (HUD), the U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA; PSC, 2014). The PSC defined its vision of sustainable development through iteration and the use of six Livability Principles for policy and program guidance (PSC, 2014).

The Livability Principles, with their call for improvements in the built environment, define sustainable communities as those that “give Americans more housing choices, make transportation systems more efficient and reliable, reinforce existing investments, protect the environment, and support vibrant and healthy neighborhoods that attract businesses and jobs” (PSC, 2014: inside cover). The principles call for providing more affordable housing, energy-efficient and less polluting transportation alternatives, and aid to strengthen existing communities. In effect, they favor dense, mixed-use settlement patterns underpinned by economic agglomeration, qualities that decades of research (and continuing research) by urban planners and economists show are key elements of sustainability and lend themselves to measurement and evaluation (Birch and Wachter, 2006; Boarnet et al., 2011; Ewing and Cervero, 2010; Ewing, Greenwald, and Zhang, 2011; Feiden and Hamin, 2011; Kahn, 2006). Although other agencies are engaged in sustainable development projects, PSC stands out for its clear framing of a specific, comprehensive, and operationalized sustainable development agenda.

To advance this work, the agencies publicized the work in digital and print media (for example, DOT dedicated a section of its website <http://www.dot.gov/livability/>) or created special offices (for example, EPA created the Office of Sustainable Communities [OSC]). Within 2 years, the effort became more tangible through the awarding of funding based on the Livability Principles, the issuing of publications and supporting research, and advances in communication (for example, creation of a dedicated website <http://www.sustainablecommunities.gov/>). Between 2009 and 2014, PSC agencies awarded grants valued at \$4.6 billion to more than 1,000 grantees (PSC, 2014). (See exhibit 1.)

Exhibit 1

Location of PSC Grantees



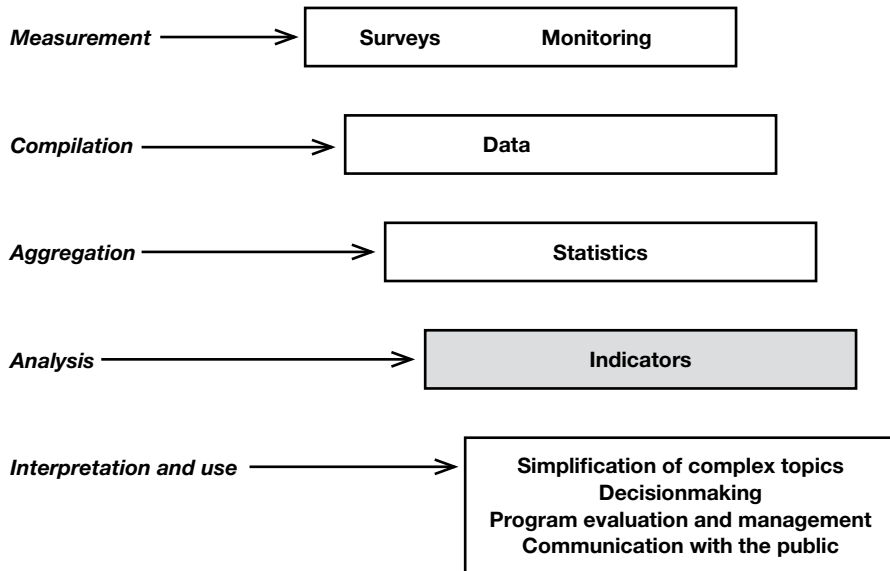
As of February 2014, the Partnership agencies have received more than 9,800 applications for assistance, requesting almost \$122 billion. The Partnership has been able to fund 1,066 projects in all 50 states, the District of Columbia, and Puerto Rico with approximately \$4.6 billion, representing just over 10 percent of applications.

DOT = U.S. Department of Transportation. EPA = U.S. Environmental Protection Agency. HUD = U.S. Department of Housing and Urban Development. PSC = Partnership for Sustainable Communities. TCSP = Transportation, Community, and System Preservation Program. TIGER = Transportation Investment Generating Economic Recovery.

Source: Reprinted from "Partnership for Sustainable Communities," <http://www.sustainablecommunities.gov/sites/sustainablecommunities.gov/files/docs/partnership-accomplishments-report-2014-reduced-size.pdf>

As originally conceived, however, PSC's approach had one weakness: it did not have an associated, easily employed mechanism for evaluation to benchmark and measure progress toward the desired settlement patterns. As is well known, public policy evaluation helps define and refine a common vision; encourages the creation and regular updating of information; underlines and reinforces progress or demonstrates weaknesses, failings, or false (null) hypotheses or assumptions of a given policy or program; and supports a wider public understanding of the enterprise under consideration (Hak, Moldan, and Dahl, 2007). Although many evaluation techniques exist (for example, quasirandomized studies, case studies, benchmarks, surveys, and questionnaires), the use of indicators has become the commonly accepted approach in assessing sustainable development (Bell and Morse, 2008; Hak, Moldan, and Dahl, 2007). Exhibit 2 illustrates the place of indicators in public policy; employed correctly, they perform the functions listed in the bottom box of the exhibit.

Over time, PSC agencies worked to remedy the evaluation gap. By 2014, they offered three important tools to help communities evaluate their programs: (1) the Location Affordability Index (<http://www.locationaffordability.info>) estimates the percentage of a family's income dedicated to

Exhibit 2**Place of Indicators in Public Policy**

Source: Adapted from Briggs (2003)

the combined costs of housing and transportation in a given location; (2) the Sustainable Communities Hot Report (http://thedataweb.rm.census.gov/TheDataWeb_HotReport2/EPA2/EPA_HomePage2.html), which integrates publicly accessible data by county on eight indicators (for example, mean travel time, housing costs of more than 30 percent of income, unemployment);¹ and (3) the Sustainable Communities Indicator Catalog (SCIC) (<http://www.sustainablecommunities.gov/indicators>), which is a searchable database of 31 core indicators that allows communities to select their own set, provides instructions for their calculations, and includes examples of places employing them.

Developing a U.S. Sustainable Communities Indicator Catalog

Thinking about developing a sustainable development indicator system for the United States had two sources. First, from its inception, the PSC has devoted attention to this topic (Argilagos, 2010). Second, exchanges at UN-HABITAT's World Urban Forum (WUF) 6 in Rio de Janeiro, Brazil (March 2010) stimulated interest at HUD on the topic. After WUF 6, HUD Deputy Assistant Secretary Ana Marie Argilagos, then Director, Office of International and Philanthropic Affairs, spearheaded a study group to explore the development of sustainable development indicators for

¹ The hotspot aggregates information from the American Community Survey; U.S. decennial censuses 1990, 2000, and 2010; the U.S. Department of Labor's Quarterly Census of Employment and Wages and State Occupational Projections; and the U.S. Census Bureau's Local Employment Dynamics.

the United States. The group, which met regularly through 2010 and 2011, posited that, for the most part, individual sustainability indicators existed, but group members needed to resolve the issue of how to select those that would be appropriate for the United States in the 21st century.

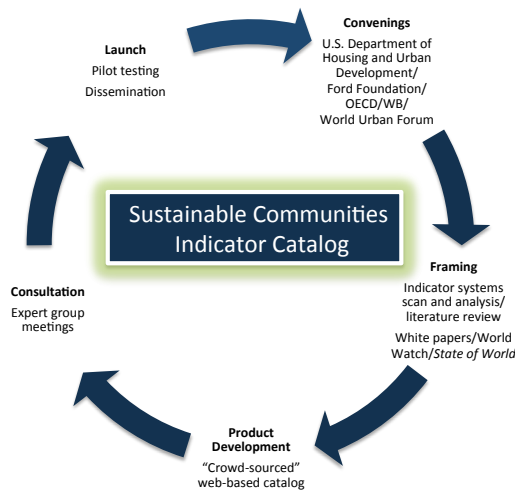
To this end, representatives from the American Planning Association and the University of Pennsylvania's Penn Institute for Urban Research (Penn IUR) volunteered to undertake preliminary research, an effort whose results are detailed by Birch and Lynch (2012), Lynch (2011a, 2011b, 2010), and Lynch et al. (2011) in several articles and presentations. In summary, Birch and Lynch (2012) reported the methodology and results of the researchers' inventory and analysis of representative indicator systems. It shows how they measured and evaluated individual indicators via several assessment tools (SMART [specific, measurable, accessible, replicable, timely], demand, pressure response, and multifactor versus single factor) and against two metrics: the traditional dimensions of sustainability (equity, economics, and environment) and later against the PSC's Livability Principles.

On the basis of this work, the Ford Foundation provided funding to the Penn IUR to undertake further development of an indicator system for use by the PSC. Working with PSC representatives, the Penn team devised and executed a five-step process to arrive at an appropriate evaluation system (exhibit 3).

Exhibit 3

Sustainable Development Indicator Process

Sustainable Communities Indicator Catalog Launch



OECD = Organisation for Economic Co-operation and Development. WB = World Bank.

Thus, in creating the SCIC, Penn IUR built on its research from previous years and consulted closely with representatives from PSC agencies, with Office of Sustainable Communities grantees, and with other stakeholders and experts. The researchers tested more than 100 indicator systems encompassing more than 400 indicators. In addition, the team developed 14 potential use cases to demonstrate the variety of users and their needs (exhibit 4). In March 2013, DOT hosted an expert workshop and, in May 2013, the Lincoln Institute of Land Policy held a second workshop for expert consultation. The Penn IUR team received additional feedback after presenting to professional associations in the United States and abroad, including the 2013 Federal Reserve Community Development Conference, the Organisation for Economic Co-operation and Development (OECD), the Urban Affairs Association, and others. It shared experiences with others developing indicator systems, including the OECD, which launched its *Better Life Index* in June 2014 and Arcadis's recently released Sustainable Cities Index (Arcadis, 2015; OECD, 2014).

In conjunction with this process, two critical decisions emerged that would drive the effort: first, the decision to use existing in-use indicators wherever possible; second, the decision to develop a flexible, searchable, web-based platform to offer wide choices to different types of communities. The decision to employ indicators that have already been used derived from two practical considerations. First, in-use indicators have a track record. Second, these in-use indicators are often (but not always) supported by scholarly research. Having the ability to refer to the reports or even other users of specific indicators enhances users' ability to tailor a system. The decision to make users' choice determine the choice of indicators from a limited list recognizes that different types of places, whether they are cities, counties, regions, or states, have varying goals in their pursuit of sustainability. Notably, this is the same approach being recommended by the high-level expert group, Sustainable Development Solutions Network, to the U.N. Statistical Commission for the indicators for soon-to-be-approved Sustainable Development Goals (Sustainable Development Solutions Network, 2015; U.N. ECOSOC, 2015).

Exhibit 4

A Use Case Example

Organization Type: Submunicipal Organization

User: Planner in a community-based Healthy Neighborhoods Coalition

Areas of Interest: Promoting biking and walking

Use Case:

The community planner for a Healthy Neighborhoods Coalition is developing a program to promote walking and biking as healthy, inexpensive, and sustainable modes of transportation. To that end, the planner is interested in measures that will provide a baseline and enable the organization to track bike and pedestrian travel and infrastructure in the future. The organization is relatively small, with a low technical capacity, and the planner has many other programs and responsibilities. Indicators need to be easy to understand and the data easy to collect at the neighborhood level.

The SCIC is fully operational and can be viewed on the PSC website (<http://www.sustainablecommunities.gov/>). Included are 11 tip sheets to assist users, the catalog, and links to communities in which the indicators are in use.

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Author

Eugenie L. Birch is the Nussdorf Professor of Urban Research in the Department of City and Regional Planning and Co-Director of the Penn Institute for Urban Research at the University of Pennsylvania.

References

- Arcadis. 2015. "Sustainable Cities Index." <http://sustainablecitiesindex.com>.
- Argilagos, Ana Marie. 2010. Personal communication (interview). Former Deputy Assistant Secretary, U.S. Department of Housing and Urban Development, Washington, DC.
- Baltimore City Office of Sustainability. 2010. *2010 Annual Sustainability Report*. Baltimore: Baltimore City Office of Sustainability.
- . 2009. *The Baltimore Sustainability Plan*. Baltimore: Baltimore City Office of Sustainability.
- Bell, Simon, and Stephen Morse. 2008. *Sustainability Indicators: Measuring the Immeasurable?* 2nd ed. London, United Kingdom: Earthscan.
- Birch, Eugenie, and Amy Lynch. 2012. "Measuring US Urban Sustainability." In *Moving to Sustainable Prosperity, State of the World 2012*, edited by Erik Assadourian and Michael Renner. Washington, DC: Island Press: 77–86.
- Birch, Eugenie, and Susan Wachter. 2006. *Growing Greener Cities: Urban Sustainability in the 21st Century*. Philadelphia: University of Pennsylvania Press.
- Boarnet, Marlon, Ann Forsyth, Kristen Day, and J. Michael Oakes. 2011. "The Street Level Built Environment and Physical Activity and Walking: Results of a Predictive Validity Study for the Irvine Minnesota Inventory," *Environment and Behavior* 43 (6): 735–775.
- Briggs, David. 2003. *Making a Difference: Indicators To Improve Children's Environmental Health*. Geneva, Switzerland: World Health Organization.
- City of New York. 2011. "Sustainability Indicators." In *A Greener, Greater New York, PlaNYC Update*. New York: Office of the Mayor: 178–179.

- Epstein, Mark J. 2008. *Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental, and Economic Impacts*. San Francisco: Berrett-Koehler Publishers.
- Evans, Alex, and David Steven. 2011. *Making Rio 2012 Work: Setting the Stage for Global Economic, Social and Ecological Renewal*. New York: New York University, Center for International Cooperation.
- Ewing, Ried, and Robert Cervero. 2010. "Travel and the Built Environment—A Meta-Analysis," *Journal of the American Planning Association* 76 (3): 265–294.
- Ewing, Reid, Michael Greenwald, and Ming Zhang. 2011. "Traffic Generated by Mixed-Use Developments—A Six-Region Study Using Consistent Built Environmental Measures," *Journal of Urban Planning and Development* 137 (3): 248–261.
- Feiden, Wayne, and Elisabeth Hamlin. 2011. *Assessing Sustainability: A Guide for Local Governments*. Chicago: APA Planning Advisory Service.
- Hak, Tomas, Bedrich Moldan, and Arthur Dahl, eds. 2007. *Sustainability Indicators: A Scientific Assessment*. Washington, DC: Island Press.
- Hardi, Peter, and Terrence Zdan. 1997. *Assessing Sustainable Development: Principles in Practice*. Winnipeg, Manitoba, Canada: International Institute for Sustainable Development; Organisation for Economic Co-operation and Development. <http://www.iisd.org/pdf/bellagio.pdf>.
- International Council for Local Environmental Initiatives (ICLEI). 2010. *Star Community Index: Sustainability Goals & Guiding Principles*. Washington, DC: International Council for Local Environmental Initiatives.
- . 2009. *U.S. Local Sustainability Plans and Climate Action Plans*. Washington, DC: International Council for Local Environmental Initiatives.
- Kahn, Matthew. 2006. *Green Cities: Urban Growth and the Environment*. Washington, DC: The Brookings Institution Press.
- Lynch, Amy. 2011a. Livability-SUDWG Integration Matrix, June 22.
- . 2011b. Annotated List of Indicator Systems. Reviewed July.
- . 2010. Minutes of the Sustainable Urban Development Working Group, August 26.
- Morel Journel, Christelle, Francois Duchene, Thierry Coanus, and Emmanuel Martinais. 2003. "Devising Local Sustainable Development Indicators: From Technical Issues to Bureaucratic Stakes. The Greater Lyons Experience," *Local Environment* 8 (6): 615–626.
- Organisation for Economic Co-operation and Development (OECD). 2014. *How's Life in Your Region? Measuring Regional and Local Well-Being for Policy Making*. Paris, France: Organisation for Economic Co-operation and Development.

Partnership for Sustainable Communities (PSC). 2014. *Five Years of Learning from Communities and Coordinating Federal Investments, Fifth Anniversary Report*. Washington, DC: Partnership for Sustainable Communities. <http://www.sustainablecommunities.gov/sites/sustainablecommunities.gov/files/docs/partnership-accomplishments-report-2014-reduced-size.pdf>.

———. 2010. *Partnership for Sustainable Communities. A Year of Progress for American Communities*. Washington, DC: U.S. Environmental Protection Agency.

Siemens AG. 2012. *The Green City Index: A Summary of the Green City Index Research Series*. Munich, Germany: Siemens AG. http://www.siemens.com/entry/cc/features/greencityindex_international/all/en/pdf/gci_report_summary.pdf.

Sustainable Development Solutions Network. 2015. *A Needs Assessment for SDG Monitoring and Statistical Capacity Development*. February 27. New York: Sustainable Development Solutions Network. <http://unsdsn.org/wp-content/uploads/2015/03/150228-Needs-Assessment-Working-Draft.pdf>.

United Nations (U.N.). 2012. *The Future We Want Outcome Document Adopted at Rio+20*. New York: United Nations. <http://www.un.org/en/sustainablefuture/>.

United Nations Conference on Trade and Development (UNCTAD). 2011. *The Road to Rio*. Geneva, Switzerland: United Nations Conference on Trade and Development.

United Nations Economic and Social Council (U.N. ECOSOC). 2015. *Report of the Friends of the Chair Group on Broader Measures of Progress*. E/CN.3/2015/2. New York: United Nations. <http://unstats.un.org/unsd/statcom/doc15/2015-2-BroaderMeasures-E.pdf>.