For some, sustainability is merely a buzzword; for others, it is an essential driver of policy and personal decision making. Regardless of where one falls on this spectrum, sustainability has become central in many discussions of how to plan cities and regions, design housing and transportation systems, promote economic development, and foster an engaged community. Sustainable development was described initially by the United Nations World Commission on Environment and Development in 1987 as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”¹ Elaborating on this definition, sustainability is often depicted as a three-legged stool or triangle, emphasizing that environmental, economic, and social impacts are to be considered simultaneously. Beyond general definitions and visual images, one approach taken by communities, policy makers, and advocates to operationalize and communicate about sustainability is the use of sustainability indicator systems.

Sustainability indicators have been widely used in the United States and around the world to measure sustainability performance in a wide range of areas, such as transportation, education, crime, health, and natural resource protection. Early adopters in the United States include Santa Monica, California, and Olympia, Washington, both of which have been tracking indicators since the early 1990s. More recent indicator programs have been established in Boston, Seattle, and the Twin Cities. Two local indicator programs include the Minneapolis Sustainability Indicators, published annually in the Minneapolis Sustainability Report, and Twin Cities Compass, developed by the Wilder Foundation.² The first includes indicators related to a wide range of topics such as infant mortality, renewable-energy use, recycling, tree canopy, and affordable housing. Twin Cities Compass reports on indicators at the scale of the seven-county metropolitan region, addressing topics such as volunteerism, early-childhood screening, water quality, fear of crime, and household income spent on transportation.

Indicator systems such as these allow communities and organizations the

opportunity to break down the broad sustainability concept into measurable outcomes that can be tracked over time. Typically, indicators are measured on an annual basis or periodically as relevant data become available, such as with U.S. Census data, housing-price figures, or traffic-congestion estimates. Indicators allow for performance tracking in key sustainability areas, as well as providing an overall measure of progress toward meeting sustainability goals. Based on indicator-performance data, communities and organizations can make decisions about future planning, policy, and funding priorities. Indicators, which often use simple accessible measures, also help local governments communicate about sustainability to the general public.

In this article, I describe a recent effort undertaken jointly by the McKnight Foundation and the University of Minnesota to develop a sustainability-indicator system that would be meaningful for the Twin Cities region. This work was informed by ongoing efforts at the federal level and in other communities to translate sustainability into useful principles and indicators to guide policy and investments. Funding for the project was provided by a grant from the McKnight Foundation to the Center for Urban and Regional Affairs (CURA) and the Center for Transportation Studies (CTS).

**Promoting Sustainability in the Twin Cities Region**

Building on the broad base of practice around indicators and useful local, regional, and national examples described above, the McKnight Foundation engaged researchers at the University of Minnesota to develop a Framework for Measuring Sustainable Regional Development for the Twin Cities Region. Coordinated by CURA and CTS, the nine-member research team from CURA, CTS, and the Hubert H. Humphrey Institute of Public Affairs worked with regional leaders and stakeholders to develop a draft set of regional sustainability principles, indicators, measures, and data sources. This information was intended to serve as a framework for the McKnight Foundation to use in informing funding decisions. Indicators could facilitate tracking of the sustainability impact of the foundation and assist funded organizations in measuring and communicating the impacts of their work.

Beyond providing information for internal use within the McKnight Foundation organization, the effort to develop a set of regional sustainability indicators applicable to the Twin Cities was further motivated by external factors, notably the Obama administration’s effort to better align various policy areas, including housing, transportation, and the environment. The interagency Partnership for Sustainable Communities brought together 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). Guided by a set of livability principles (Table 1), this partnership is intended to coordinate federal investments in housing, transportation, and infrastructure to provide a vision for sustainable growth; redevelop underutilized sites; develop livability measures and tools; and foster joint research, data collection, and outreach.

A key initial outcome of the Partnership for Sustainable Communities was the development of a federal grant program related to regional sustainability planning, the Sustainable Communities Regional Planning Grant Program. To better position the Twin Cities region to compete for these funds and foster stakeholder engagement around regional sustainability, the McKnight Foundation initiated a process to further explore the HUD-DOT-EPA principles and begin to develop measures that could be used to track them in the Twin Cities region.

**Methodology**

Based on the interrelated goals of integrating sustainability into the McKnight Foundation organization and initiating a discussion about sustainability principles and indicators for the Twin Cities region, the research team organized an analysis and outreach effort. The team surveyed the sustainability indicators and measures used by other cities and regions and identified 11 major categories of indicators: public health, education, culture, social capital, economy, safety net, energy, environment, land use, transportation, and housing. After identifying and evaluating these indicator systems, the researchers determined best practices in terms of both the content and organization of sustainability-indicator systems. In terms of outreach, the researchers worked closely with an advisory committee of regional leaders.

---

**Table 1. HUD-DOT-EPA Livability Principles**

<table>
<thead>
<tr>
<th>1. Provide more transportation choices. Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, reduce greenhouse-gas emissions, and promote public health.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Promote equitable, affordable housing. Expand location- and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.</td>
</tr>
<tr>
<td>3. Enhance economic competitiveness. Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services, and other basic needs by workers, as well as expanded business access to markets.</td>
</tr>
<tr>
<td>4. Support existing communities. Target federal funding toward existing communities—through strategies like transit-oriented, mixed-use development and land recycling—to increase community revitalization and the efficiency of public-works investments and safeguard rural landscapes.</td>
</tr>
<tr>
<td>5. Coordinate and leverage federal policies and investment. Align federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices, such as locally generated renewable energy.</td>
</tr>
<tr>
<td>6. Value communities and neighborhoods. Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban, or suburban.</td>
</tr>
</tbody>
</table>

and experts. Broader outreach was also accomplished through a stakeholder focus group that brought together practitioners from a wide range of areas, including housing, transportation, design, health, private development, and the environment.

Because the goal was to develop a framework for measuring regional sustainability, rather than providing a specific set of indicators and measures, the research effort focused on producing three specific outcomes:

- principles for sustainable regional development in the Twin Cities;
- indicators to provide ongoing measurement of progress toward sustainable regional development; and
- potential measures and data sources for tracking indicator performance.

### A Framework for Measuring Sustainable Regional Development in the Twin Cities

After identifying the outcomes described above, the research team worked to integrate them into a Framework for Measuring Sustainable Regional Development for the Twin Cities Region. First, the research team modified the HUD-DOT-EPA principles to develop a set of principles for sustainable regional development specific to the Twin Cities (Table 2). Modifications were significantly informed by the stakeholder-outreach effort, as well as by the review of sustainability-indicator systems used in other communities and regions. The Twin Cities principles differed from those established by the HUD-DOT-EPA partnership in their more explicit emphasis on natural resources (through the addition of a specific principle related to resource protection) and the addition of language related to promoting positive fiscal impacts through economic development. The research team also expanded some of the principles for the Twin Cities region through the inclusion of additional details to better respond to issues of local and regional concern.

Next, the research team developed the indicators, measures, and data sources through the same process that they used to refine the sustainability principles specific to the Twin Cities region. The broad base of the researchers’ expertise allowed for consideration of detailed measures, informed by the most current research related to assessing key sustainability impacts. In addition to the availability of evidence to support the indicators, additional criteria used in selecting indicators included appropriateness for measurement at the regional scale, ability to provide a holistic view of the region’s sustainability, and a focus on outcomes rather than actions. In particular, the researchers sought indicators that bridged one or more principles, thus demonstrating integration across key sustainability principles.

For each indicator, research team members identified potential measures and data sources, then evaluated each measure and data source’s quality, reliability, and validity before agreeing to include them in the framework. Considerations included data source, data availability, software needed to display/report data (e.g., spreadsheet, geographic information systems, database), date and frequency of data collection, and scale of data (e.g., neighborhood, municipal, regional).

The final framework included 38 indicators, with each related to at least one of the six principles listed in Table 2, and with many of the indicators associated with multiple principles. Table 3 provides a sample of the indicators included in the framework.

### Next Steps

Following completion of the Framework for Measuring Sustainable Regional Development for the Twin Cities Region, the McKnight Foundation is continuing to review and refine the principles, indicators, measures, and data sources. The foundation is currently working with organizations that they fund and consultants from Smart Growth America to develop a final indicators program that can be used to guide future funding decisions and track the sustainability impacts of their work.

The McKnight Foundation was also a key collaborator and convener on the development of a proposal from the Twin Cities region for a Sustainable Communities Regional Planning Grant from the new federal HUD-DOT-EPA partnership. On October 14, HUD

---

**Table 2. Twin Cities Regional Livability Principles**

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Provide more transportation choices.</strong></td>
<td>Address carbon-reduction, air-quality, oil dependency, and public-health issues by developing safe, equitable, reliable, and economical transportation choices.</td>
</tr>
<tr>
<td>2. <strong>Protect natural resources.</strong></td>
<td>Protect land, water, atmosphere, and the interrelationships across the many natural resources they contain. Protect intact ecological and hydrological systems and ensure that our natural capital provides the energy, food, raw materials, waste absorption/filtering, and enjoyment critical to a vital economy and quality of life.</td>
</tr>
<tr>
<td>3. <strong>Promote equitable, affordable housing.</strong></td>
<td>Promote a full range of housing choices that accommodates changing conditions. Meet diverse needs by providing location and energy efficient housing choices for people of all ages, incomes, races, and ethnicities, thereby increasing accessibility and mobility and lowering the combined cost of housing and transportation.</td>
</tr>
<tr>
<td>4. <strong>Value communities and neighborhoods.</strong></td>
<td>Target government funding toward existing communities—through strategies such as transit oriented, mixed use development and land recycling—to increase community revitalization, promote walkable areas, increase public health, and improve the efficiency of public-works investments. Safeguard intact relationships between communities and neighborhoods and the natural resources, open space, and agricultural landscapes.</td>
</tr>
<tr>
<td>5. <strong>Enhance economic competitiveness and create positive fiscal impacts.</strong></td>
<td>Improve economic competitiveness and create net positive fiscal impacts through reliable and timely access to employment centers, educational opportunities, services, and other basic needs by workers, as well as expanded business access to markets.</td>
</tr>
<tr>
<td>6. <strong>Coordinate and leverage government policies and investment.</strong></td>
<td>Align government policies and funding to remove barriers to collaboration, to leverage funding, and to increase the accountability and effectiveness of all levels of government—local, regional, state, and federal—to plan for future growth.</td>
</tr>
</tbody>
</table>
Table 3. Sample Indicators, Measures, and Data Sources in the Framework for Measuring Sustainable Regional Development for the Twin Cities Region

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Measure</th>
<th>Data Source(s)</th>
</tr>
</thead>
</table>
| Access to Transit                              | Percentage of housing units within 0.25 (and 0.5) miles of transit stop/station (including local bus, express bus, and rail) | MetroGIS<sup>a</sup>  
U.S. Census Bureau  
Metropolitan Council |
|                                               | Percentage of housing units within 0.25 (and 0.5) miles of high-frequency transit stop/station (including local bus, express bus, and rail) | Maps for Twin Cities provided by htaindex.crt.org/  
Brooking Institution Metropolitan Policy Program<sup>b</sup>  
U.S. Census Bureau |
| Housing and Transportation Affordability Index | Percentage of annual household income spent on housing and transportation costs (by income, poverty status, etc.)  
Affordability index provided by Brookings Institute Report | Office of the State Auditor<sup>c</sup>  
Minnesota Department of Transportation<sup>d</sup> |
| Infrastructure Preservation                   | Percent of funding spent on maintenance of existing infrastructure versus construction of new infrastructure (e.g., highways, bridges) | MetroGIS<sup>a</sup> |
| Walkability                                    | A composite measure based on residential density, land-use mix, intersection density, and retail floor area ratio<sup>e</sup> | U.S. Census Bureau  
Brooking Institution Metropolitan Policy Program<sup>b</sup>  
U.S. Census Bureau  
Minnesota Board of Soil and Water Resources<sup>h</sup> |
| Carbon Footprint                               | Amount of carbon dioxide produced by electricity use, agriculture, waste management, fossil-fuel industry, and industrial nonfuel use processes, presented as regional total and by source | U.S. Energy Information Administration  
Minnesota Pollution Control Agency  
U.S. Department of Agriculture Forest Service  
Center for Climate Strategies<sup>i</sup> |
| Protection of Significant Ecological Areas    | Percentage and location of regionally significant ecological area (RSEA) acres under permanent protection (e.g., permanent easement, park) | RSEA: Minnesota Department of Natural Resources<sup>g</sup>  
Parks: Metropolitan Council, cities, counties  
Easements: Minnesota Land Trust, Minnesota Department of Natural Resources, Minnesota Board of Soil and Water Resources<sup>h</sup> |
| Groundwater                                    | Percentage of groundwater pollutants for which health-risk limits are exceeded annually (including, but not limited to, phosphorus, ammonia nitrogen, organic carbon, manganese, sulfate, bromide, chloride, boron, calcium, iron, magnesium, potassium, sodium, nitrate nitrogen, chloride, and volatile organic compounds) | Pollutants: Minnesota Pollution Control Agency  
Health-risk limits: Minnesota Department of Health |
| Exposure to Pollutants from Major Roadways     | Percentage of households (by income and tenure) and uses occupied by children (e.g., schools, daycare centers, and parks) within 500 meters of a major roadway | Roadway classifications: Minnesota Department of Transportation, Metropolitan Council  
Household income and tenure: U.S. Census Bureau  
Parks: Metropolitan Council, cities, counties  
School location: Admin Minnesota |
| Civic Engagement                               | Community Vitality Index: Measurement of social capital, economic potential, and community amenities to quantify relative potential of neighborhoods and geographic communities in a metropolitan region<sup>f</sup> | Metro Chicago Information Center<sup>l</sup>  
U.S. Census Bureau  
Office of the Minnesota Secretary of State  
MetroGIS<sup>a</sup>  
Minnesota Department of Employment and Economic Development  
Federal Financial Institutions Examination Council  
Commercial Business Database |

<sup>a</sup> MetroGIS, “MetroGIS Datafinder,” www.datafinder.org


<sup>c</sup> State of Minnesota Office of the State Auditor, “Minnesota City Budgets” (St. Paul: Office of the State Auditor, 2009); State of Minnesota Office of the State Auditor, “Minnesota County Budgets” (St. Paul: Office of the State Auditor, 2009).

<sup>d</sup> Minnesota Department of Transportation (MnDOT), Mn/DOT Metro District 20-Year Highway Investment Plan, 2009–2028 (St. Paul: MnDOT, 2009).


<sup>g</sup> Minnesota Department of Natural Resources (DNR), DNR Data Deli, deli.dnr.state.mn.us/.

<sup>h</sup> Minnesota Board of Water and Soil Resources (BWSR), “Easements,” www.bwsrc.state.mn.us/easements/rim/index.html.


<sup>j</sup> Metro Chicago Information Center, mcic3.mcicf.org/.
announced that the Twin Cities region had been awarded a 3-year, $5 million grant from the program. The goal of the grant is to help the Metropolitan Council and other regional stakeholders build on existing regional planning efforts to advance multimodal transportation choices with access to jobs and housing, transit- and pedestrian-friendly development, environmental preservation, and energy efficiency (see announcement below).

Carissa Schively Slotterback is assistant professor of urban and regional planning at the Hubert H. Humphrey Institute of Public Affairs, and served on the research team for this project. Her research examines stakeholder involvement and the use of information in planning decision-making processes, with a particular focus on collaborative planning and impact assessment. Among her current research projects is a study of regional sustainability planning processes.

The research team for this study included study co-chairs Edward Goetz, director of the Center for Urban and Regional Affairs, and Laurie McGinnis, director of the Center for Transportation Studies; researchers Jason Cao, Yingling Fan, and Carissa Schively Slotterback, assistant professors in the Humphrey Institute of Public Affairs; research manager Kaydee Kirk, Center for Urban and Regional Affairs; and graduate research assistants Jody Tableporter, Andrew Senn, and Jennifer Day, Humphrey Institute of Public Affairs. Funding for the project was provided by a grant from the McKnight Foundation to CURA and the Center for Transportation Studies.

To download a copy of the final report from this project, visit www.cura.umn.edu/publications/L2010-1.pdf.

Community Engagement and Evaluation for the Twin Cities Sustainable Communities Program

The Center for Urban and Regional Affairs (CURA) has been tapped to provide community engagement and evaluation for a $5 million federal grant that supports planning along the Twin Cities region’s growing network of transit corridors. The grant will help the Metropolitan Council and other stakeholders build on existing regional planning efforts to advance transit- and pedestrian-friendly development, provide access to jobs and housing, and promote environmental preservation and energy efficiency.

The Minnesota Center for Neighborhood Organizing (MCNO), a program of CURA, will provide leadership on engagement efforts. MCNO staff will work with the Alliance for Metropolitan Stability and Nexus Community Partners to lead a team that will collaborate with organizations, individuals, and government agencies to increase participation in regional planning by immigrant communities, communities of color, and low-income communities. Project partners will develop guidelines and recommendations designed to support the work of community members that will ensure access to the information and resources needed to become meaningfully involved in decision making about their own communities.

Edward Goetz, CURA director, and Laurie McGinnis, Center for Transportation Studies (CTS) director, will also form a data and evaluation team for the project that will work with the policy board and staff at the Metropolitan Council to devise measures of sustainable development, identify data sources, and conduct baseline studies that demonstrate the impact of sustainability planning in regional transit corridors.

Funding for the project, to be implemented in 2011–2013, was awarded by the U.S. Department of Housing and Urban Development to the Metropolitan Council on behalf of a regional consortium including Minnesota Housing, the Counties Transit Improvement Board, Hennepin and Ramsey Counties, the Cities of Minneapolis and St. Paul, and the McKnight Foundation, and with support from the Central Corridor Funders Collaborative and the Ford Foundation. The grant is one of the first initiatives to emerge from the Obama administration’s $100 million Partnership for Sustainable Communities, an interagency collaboration between the U.S. Department of Housing and Urban Development, U.S. Environmental Protection Agency, and U.S. Department of Transportation intended to coordinate federal housing, transportation, and other infrastructure investments to protect the environment, promote equitable development, and help to address the challenges of climate change. For more information about the initiative, visit www.epa.gov/smartgrowth/partnership/index.html.