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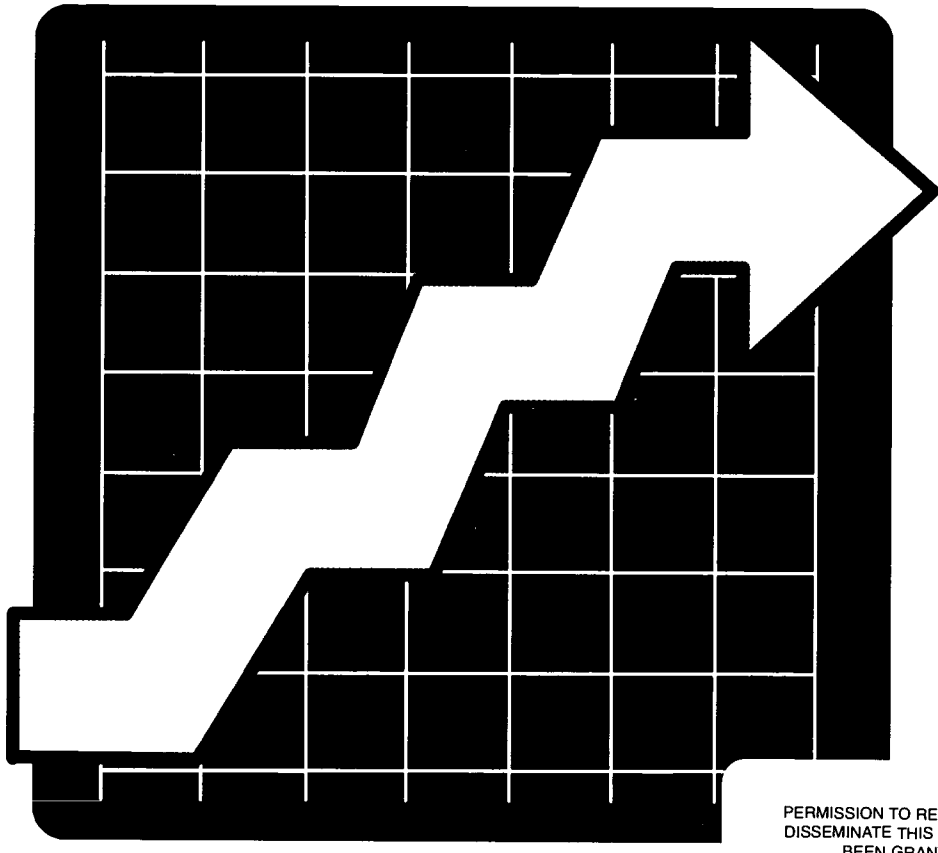
ABSTRACT

Many communities are trying to build sustainable societies, melding the wisdom of nature with culture, by undertaking various projects and initiatives. Although many projects may contribute to community sustainability, it is difficult to know which are most urgent or will be most effective. The purpose of this document is to introduce the concept of indicators of community sustainability as well as show how indicators can be used to measure progress toward community sustainability action plan goals, educate residents, and mobilize community members to join in community sustainability efforts. Since publication of the first edition of this booklet in 1995, the use of indicators to gauge progress toward sustainability has become widespread. This second edition revisits one of the United States' original indicator monitoring projects in Seattle, Washington, discusses the procedures used for developing a set of indicators for specific communities, outlines various types of indicators used, and shows how they are related to goal-setting processes. One section explains how to communicate indicator findings to the community. Appendices feature community sustainability principles, sample indicators, suggested indicator documentation, a glossary, and a resource list of publications and websites. (PVD)

Monitoring Community Sustainability



Environments For Life
Conservation Issues Forum Series

Izaak Walton League of America
Sustainability Education Project
September 1998

Monitoring Community Sustainability

Environments For Life Conservation Issues Forum Series

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The Sustainability Education Project is a conservation initiative working to bring the impacts of human population growth, economic development and natural resource consumption into balance with the limits of nature for the benefit of current and future generations.

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For more information about the Sustainability Education Project or additional copies of this publication, write to the Izaak Walton League of America, 707 Conservation Lane, Gaithersburg, Md. 20878-2983; call (301) 548-0150; fax to (301) 548-0149; e-mail sustain@iwla.org; or visit our World Wide Web site at http://www.iwla.org.

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Introduction

"Building a sustainable society does not mean reverting to a primitive existence," wrote Daniel D. Chiras, author of the 1992 book "Lessons from Nature." "The challenge is to find a new synthesis that melds the wisdom of nature with human institutions and technologies and lifestyles."

All across the nation, communities are becoming involved in the effort to find this new synthesis. They've undertaken projects to recycle wastes, improve energy efficiency and restore and conserve natural landscapes. Although these activities individually or collectively don't ensure community sustainability, together they can help move it toward that goal.

Community sustainability is cultivated in places where local residents pursue environmental stewardship, economic security, civic democracy and social justice as complementary goals. According to Sustainable Seattle, one of the original community sustainability initiatives in the United States, these efforts are fundamental to a community's ability to provide "long-term cultural, economic and environmental health and vitality."

citizen participation

Community sustainability initiatives strive to balance environmental, social and economic issues in all decision-making activities. With urban forests, for example, communities must consider the ability of trees to absorb carbon from the air and their role in restoring beauty, economic value and recreational opportunities to city settings. Similarly, when addressing concerns about child health, communities must consider children's access to affordable medical care and proper nutrition and the potential impact of pollutants and environmental toxins.

Although many projects may contribute to community sustainability, it's difficult to know which are most urgent or will be most effective. To address this problem, Seattle, Wash., and other communities nationwide have initiated efforts to measure and guide community sustainability by using indicators.

The purpose of this publication is to introduce indicators and show how they can be used to measure progress toward community sustainability action plan goals, to educate other residents and to mobilize additional community members to join in community sustainability efforts.

A fundamental question regarding the use of indicators is whether they should precede efforts to build a communitywide sustainability initiative or whether they only should be developed through a communitywide

process. Both approaches are valid and serve distinctly different yet complementary purposes.

Indicator monitoring projects that precede communitywide visioning and planning processes serve an important educational purpose. Although a set of indicators developed by a small group of concerned residents may represent only the interests and experiences of a noninclusive cross-section of the community, their measurement and subsequent reporting may help generate communitywide interest in sustainability initiatives. Preliminary indicator reports may reveal data previously unknown by residents and decision-makers.

Indicator monitoring projects that follow communitywide visioning and planning processes benefit from broad participation. Through communitywide participation, the indicator monitoring process benefits from the community members' combined experience and their first-hand knowledge about their community. Inclusive participation also creates a sense of ownership in the monitoring process and builds a sense of responsibility to address challenges and issues revealed by the results.

This publication is the fourth in the Environments for Life, Conservation Issues Forum Series. It is intended to provide information and guidance for conservationists and community leaders who would like to educate other community members about sustainability and the benefits of building a communitywide process to address sustainability issues.

When the Izaak Walton League of America first published "Monitoring Sustainability in Your Community" in 1995, it was one of the first publications of its kind. It surveyed fledgling indicator monitoring projects across the United States and attempted to distill a set of guidelines that could be used to develop and measure a set of indicators that would help communities determine whether their efforts were moving them toward their sustainability goals. Since that time, the use of indicators to gauge progress toward sustainability has become widespread, and many excellent publications have been written about developing and using indicators.

Whereas "Monitoring Sustainability in Your Community" attempted to provide a basic template for building a set of indicators, this second edition revisits one of the United States' original indicator monitoring projects and provides basic information about indicators. It also gives a few examples of indicators, shows how they are related to goal-setting processes, and recommends print and electronic media resources to guide your efforts to monitor community sustainability.

Other publications in the series include three workshop guides — "Coming To Terms With Sustainability," "Community Voices for

Sustainability" and "Pathways to Community Sustainability" — and a set of case studies titled "Four Stories." For information about these and other League publications, contact the Izaak Walton League of America, Sustainability Education Project, 707 Conservation Lane, Gaithersburg, Md. 20878-2983; call (301) 548-0150; fax (301) 548-0149; e-mail sustain@iwla.org; or visit our World Wide Web site at http://www.iwla.org.

Monitoring Seattle's Sustainability

A compact city of just over half a million people, Seattle, Wash., is located on a narrow strip of land dividing the salt water of Puget Sound from the fresh water of Lake Washington. With water on two sides, and firm political boundaries to the north and south, the city has reached its physical limits to growth in a geographic sense. But in other senses, the city continues to grow. Its population, which has fluctuated modestly over the past few decades, is climbing back slowly toward its historical high. As the political center of Washington's King County, and the main trading port for the region that stretches from Vancouver, British Columbia, to Eugene, Ore., Seattle also is growing in terms of its political and economic influence.

As a result of its reputation for economic vitality, social tolerance, political innovation, civic engagement and environmental stewardship, Seattle often ranks near the top of lists of "most livable" cities. In recent years, Seattle also has emerged as one of the United States' best models of sustainable development — a concept that the city has embraced for planning purposes and even has written into law.

Although the city's current course of development may or may not prove to promote sustainability over the long term, the city is taking steps to further enhance its quality of life and to monitor the sustainability of its current activities.

Many of the city's most successful sustainability initiatives are grassroots efforts. Among these is the work of the nonprofit organization Sustainable Seattle.

Since its first meeting in 1990, Sustainable Seattle's goal has been "to enable and inspire people . . . to transform the values of sustainability into actions that will move Seattle, the region and the planet toward long-term cultural, economic and environmental health and vitality."

As a key step toward achieving this goal, a task team of 15 people drafted

a list of data points for monitoring the environmental, social and economic health of the community. Building on this preliminary work, a civic panel of more than 150 citizens was convened in December 1992. The group proposed 99 data points and grouped them into 10 topic areas. After technical review, 40 of these data points were selected.

water consumption

Sustainable Seattle called these data points "indicators," and they're the hub of the group's sustainability efforts. They are "a way of seeing the 'big picture' by looking at a smaller piece of it," according to the organization. "They tell us which direction a system is going: up or down, forward or backward, getting better or worse, or staying the same." Good indicators, according to the group, "are bellwether tests of sustainability, can be understood and accepted by the community, have interest and appeal for use by local media, and are statistically measurable."

Later in 1993, Sustainable Seattle produced "The Sustainable Seattle 1993 Indicators of Sustainable Community: A Report to Citizens on Long-Term Trends in Our Community." It reported on the first 20 of 40 indicators under development. The report was among the first of its kind.

Of the 20 indicators measured, only four indicated progress was being made toward sustainability. These indicators measured air quality, water consumption, employment concentration and library and community center use. The majority of the indicators revealed no progress toward sustainability. This information, Sustainable Seattle hoped, would stimulate action by local media, help shape decisions about land use and economic development, and help individuals better understand their impact and role in advancing sustainability.

Recently, Sustainable Seattle published its third indicator report, "1998 Indicators of Sustainable Community." This most recent document reports on all 40 indicators selected in 1992.

The new report is a mixed bag of improving, declining and static trends. It shows that Seattle has made some progress, but that it is far from realizing its community sustainability goals. Improvements in 1998 were seen in the areas of air quality, water consumption, pollution prevention, energy use per dollar of income, employment concentration, unemployment, volunteer involvement in schools, equity in justice, voter participation, public participation in the arts and gardening activity. Among those areas where the city has much work ahead to reverse negative trends are solid waste generation and recycling, local farm production, vehicle miles traveled and fuel consumption, renewable and nonrenewable energy use, distribution of personal income, health care expenditures, work required to meet basic needs and childhood poverty.

Sustainable development, like democracy, is an ideal toward which a society must continually strive. Communities must assess whether they are moving progressively in the right direction or marching rapidly in the wrong one and make adjustments as necessary. Seattle citizens have affirmed time and again their commitment to environmental stewardship, social equity and economic opportunity and security — the core goals of sustainable development.

Yet, as the Sustainable Seattle indicators show, Seattle still is moving generally in the wrong direction. Investment in education, the redesign of economic incentives that encourage undesirable trends, the promotion of environmental development that enhances environmental quality and social equity, and the spread of grassroots sustainability initiatives will be key factors in moving Seattle in the right direction. The group's next report will be produced in 2000.

Adapted from the President's Council on Sustainable Development's "Sustainable Communities Task Force Report," 1996.

For more information write to Sustainable Seattle, 514 Minor Ave. North, Seattle, Wash. 98109; call (206) 622-3522; fax (206) 622-3611; e-mail sustea@halcyon.com; or visit the World Wide Web site at http://www.scn.org/sustainable/.

Getting Started

The development of a set of indicators must be preceded by the establishment of a set of goals, based on elements that define fundamental principles of sustainability for a specific community. Indicators are tools that can help identify when progress toward a community sustainability goal has been achieved. Indicators also may help identify specific environmental, social, political or economic factors affecting community sustainability goals.

In the 1996 report, "Sustainable America: A New Consensus," the President's Council on Sustainable Development (PCSD) outlined 10 principles for sustainable development and indicators of progress for each. Principles in the areas of health and environment, economic prosperity, equity, conservation of nature, stewardship, sustainable communities, civic engagement, population, international responsibility and education were recommended. The principles were not intended to be mandates for specific actions or policies, but rather fundamental principles of sustainable development.

Within each of these broad principles of sustainable development, specific measurable indicators of progress were suggested. For example, the first principle recommended ensuring that every person enjoy the benefits of clean air, clean water and a healthy environment at home, work and play. Four indicators of progress were proposed: decreasing the number of people living in areas that fail to meet air quality standards, decreasing the number of people whose drinking water fails to meet national safe drinking water standards, reducing the releases of toxic substances that contribute to human exposure to toxic materials, and decreasing the incidences of disease and death that result from exposure to environmental toxins.

In the 1998 workshop guide, "Pathways to Community Sustainability," the Izaak Walton League of America presented five principles of community sustainability that were based on the work of the PCSD (Appendix A). The workshop exercises guide participants through the process of identifying elements that define each of the principles for their community. These defining elements provide a context for developing goals. Goals are measurable outcomes that promote or enhance a defining element. An indicator specifies the data selected to measure the goal's outcome(s). Examples of these are provided in Appendix B of this booklet.

The process of developing and measuring a set of indicators can be accomplished by a group of volunteers representing government agencies, businesses, organizations and individuals. This group should include people who participated in the process of developing the defining elements, but may also include people who have expertise in data collection, survey design, statistical analysis, communications or other fields that will enhance the monitoring and reporting process. Once defining elements have been established and a working group has been formed, the group is ready to build an indicator project. The nonprofit organizations Redefining Progress and Sustainable Seattle, in partnership with Tyler Norris Associates, recommend these steps:

- "Review existing models, indicators and data.
- Draft a set of proposed indicators.
- Convene a participatory selection process.
- Perform a technical review.
- Research the data.
- Publish and promote the report.
- Update the report regularly."

clean air

As they suggest, begin by reviewing the work of other communities that have established indicator projects. Indicator projects are relatively new and no communities have perfected the measurement or use of indicator data. However, new projects may benefit from the successes and difficulties other communities have experienced.

Next, draft a preliminary set of indicators based on the defining elements. As many as 100 or more indicators may be proposed at this stage. Refer to the characteristics of indicators on page 10, as well as the examples in Appendix B, when developing this proposed set of indicators.

When this is complete, the group should review and revise the draft indicators and select a number of these for further consideration. Indicator projects may be strengthened by their limited selection of 20 to 40 indicators. These should be chosen carefully, based on their ability to measure progress clearly, their relevance to the community and their combined impact.

This limited set of indicators should be examined by a technical review team. The team should include local professionals with expertise in data collection, statistics and communication.

From here, individuals or small groups of individuals may be assigned the tasks of research, data collection and documentation. Documentation is necessary to improve reliability among data collectors from year to year (Appendix C).

wetland productivity

After the data is collected it should be compiled in a report and promoted. This is the most important part of the indicator project. It is addressed in greater detail in the "Communicating Indicator Findings" section of this publication (pages 11 - 12).

A community event at which the reporting process takes place is a way to inform community members about ways of improving their quality of life and to recruit their participation. It can educate media representatives about monitoring efforts and the importance of the linkages among the indicators. The event can encourage policymakers to consider the environmental and social impacts of their decisions — impacts that often are not included in traditional economic measurements.

Finally, the indicator report should be viewed as a work in progress, rather than a process that ends with the report's release. The report should be updated regularly and data collected in subsequent months and years can be used to demonstrate trends contributing to or moving away from community sustainability.

For more information about developing and measuring indicators, the League recommends "The Community Indicators Handbook," by Redefining Progress, Sustainable Seattle and Tyler Norris Associates, 1997. For ordering information write to Redefining Progress, One Kearny Street, Fourth Floor, San Francisco, Calif. 94108; call (800)896-2100; or visit the World Wide Web site at http://www.rprogress.org.

Community Sustainability Monitoring

"We find that the familiar measurements like 'gross national product,' 'unemployment,' 'prime lending rate' and 'number of housing starts' give only a limited and distorted view that often does not reflect our experience of how the world really is. The Valdez oil spill, for example, resulted in an increase in gross national product despite the devastation wrought upon the regional ecology and economy."

— The Olympia (Wash.) Report

Every community is complex, consisting of many different systems — environmental, social, political and economic — all interacting with each other.

These complex interactions affect a community's ability to achieve its sustainability goals. Knowing when progress toward sustainability goals is being made and identifying the forces influencing goal attainment are central to community sustainability initiatives.

To measure progress toward sustainability goals with a minimum of time, money and labor, communities are using indicators. These are "bits of information that reflect the status of large systems," according to Sustainable Seattle. "They are a way of seeing the 'big picture' by looking at a smaller piece of it. They tell us which direction a system is going: up or down, forward or backward, getting better or worse or staying the same."

A set of indicators includes a wide range of information. For example, under a Portland, Ore., sustainability plan, there are indicators measuring everything from the percentage of the population that performs volunteer work to gasoline consumption per person.

There are several different kinds of indicators. Some can be measured directly by using official sources, such as government data. Others are

based on physical measurements citizens must perform themselves, such as data collected in stream monitoring programs. Still other indicators can be measured only through community surveys.

Different cities describe their indicators in different ways. For example, Portland and Multnomah counties in Oregon have assembled a checklist of their indicators' important characteristics:

1) **Results**. Where possible, indicators should measure results (for example, adult literacy rates) rather than efforts (such as the amount of money spent on literacy education). Results more accurately measure achievement than does data about programs and expenditures. By focusing on and keeping track of results, the community learns what works and adjusts its programs accordingly.

2) **Comparability**. Communities should be able to compare their indicators with one another. This requires using standard measurements and making data easy to understand.

renewable energy use

3) **Long-range reliability**. Indicators should be reliable for up to two decades or more. This is a typical time frame for strategic planning.

4) **Accessibility**. Indicator data should be relatively easy to gather and analyze at regular intervals (a year, two years, five years).

5) **Documentation**. Indicators should come from reliable sources, such as official records or commissioned research. It is helpful to add endnotes or footnotes to indicators to give readers additional information and measurement criteria.

The Urban Consortium Energy Task Force suggests you ask the following questions as you contact organizations or governmental agencies for information:

- Why does the group or agency collect the information?
- Who are the people who collect the information?
- Do they use direct measurements, make projections based on samples, or rely on forms or reports sent in by others?
- Is this information available in published reports?
- How accurate is this information?
- How long has the group or agency collected the information?
- How often is the data collected?
- Will the same information-gathering methods be used in the future?

An outline for suggested documentation is found in Appendix C of this booklet.

Communicating Indicator Findings

After you have chosen and researched good indicators and obtained scientifically sound and statistically accurate data, the next critical step is communicating your findings to all sectors of your community.

Indicators are a critical education tool for community sustainability initiatives. The key to a successful indicators monitoring project is effective marketing of the project's findings. This requires a carefully designed communication plan.

Communication plans should be developed by those involved in the indicator monitoring process, as well as community members with expertise in marketing, writing, graphic design and education. If people involved do not have these skills, it is necessary to recruit volunteers with these skills or, if possible, hire paid consultants. With this depth of expertise among the members of the planning group, the creation of communication strategies that effectively address the interests and concerns of diverse community members will be facilitated and simplified.

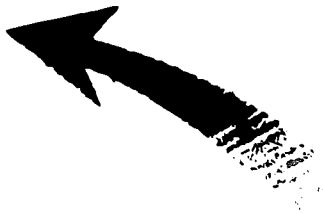
It is likely that most indicator projects will use a range of communication tools to reach varied audiences within their communities. Communication tools likely will include both print and nonprint media.

Print media is perhaps most commonly used, and a comprehensive written report will likely form the basis for all other communication efforts. Written indicators reports generally contain background information about the indicators monitoring project, a description of indicator findings and other information about the community.

The section that provides background should describe the process the community has used to develop and research the indicators project, as well as definitions of key concepts. "Community sustainability" and "indicators" are among the most important terms to explain.

The section about indicator findings should describe each indicator and its data point. If the indicators project has been done before, trends or changes in the data point should be noted. Many reports also include recommendations for action that may move the indicator data point in a desired direction in the future. Recommendations for action may be directed at government agencies and policy-makers, business developers, educational or nonprofit institutions, or individuals.

In addition to this core information, many indicator reports contain supplemental information about the community. For example, some reports include community success stories. These profiles of individuals



or organizations provide an opportunity to highlight contributions community members are making to sustainability initiatives. Reports also may contain a glossary and directory of community resources and services that will help policy makers, businesses, organizations and individuals participate in sustainability initiatives.

Careful attention should be given to the format and design of the report. If the report is printed, it should utilize recycled, nontoxic and recyclable materials, be produced using the most environmentally benign technologies and to the extent possible by locally owned, environmentally and socially responsible businesses. The indicator report is a community product and this should be reflected in its design and production.

Once the main indicator report has been completed, other print media projects that present the information in different formats may be developed. First among these may be a brief summary of the indicators project's findings. This is sometimes called an executive summary and this condensed version of the report provides an easy-to-read, one- or two-page synopsis of the full report.

The brief summary may be used to write opinion editorials or press releases for local print media sources. These may include newspapers, regional interest magazines and local organizations' newsletters.

By combining even more concise information and dynamic graphics, some communications plans also call for "report cards" and posters. Report cards utilize simple graphics and text to illustrate the project's findings or trends in the indicator data. Often, these report cards are included in the main report as a graphic overview of the project. Posters may be used to highlight specific parts of the report that have the potential to spark interest and promote involvement in community sustainability efforts.

Nonprint media reporting tools may include electronic media, television and personal presentations. Many community sustainability and indicators projects use the Internet to communicate with community members and people across the globe. Although some projects develop their own World Wide Web homepages, others post their information on websites hosted by schools, government agencies, nonprofit organizations or businesses. In addition to the Internet, many areas are served by local community access cable television channels and local network television stations. Many of these provide a range of opportunities to be guests on news and talk show programs. Finally, there are often many opportunities to speak to community and business groups, organizations, government agencies and schools. A 20- to 30-minute presentation with carefully chosen visual aids provides an effective way to communicate the results of an indicators monitoring project.

Conclusion

Imagine living in a place where clustered groups of comfortable and affordable houses are surrounded by groves of trees, meadows of native grasses, and wetland-fringed waterways. It is a place where residents — working together — have created a plan for the future that provides meaningful job opportunities and an innovative educational system. Imagine having the option of walking, biking or using efficient and inexpensive public transportation to get to nearby work or shopping areas. Think about the benefits of being able to select locally produced foods for your family or purchasing goods and services from businesses owned and operated by your neighbors.

These are the visions of a hopeful future that are inspiring communities to pursue sustainability. Although these visions often are disrupted by the harsh realities of communities wracked by violence, unemployment, social unrest or environmental destruction, they are the foundations for new strategies to secure our futures.

"While we are well aware of the urgency of the environmental crisis of our planet," wrote one community sustainability advocate in Olympia, Wash., "we believe the necessary changes will not be motivated by fear and despair but by hope and faith."

Although indicators monitoring projects may highlight seemingly overwhelming problems, they must be viewed as tools to gauge progress rather than failure. Indicators projects' findings must be reported in ways that motivate communities to take action.

Indicators monitoring projects that are not supported by community-based action strategies likely will not be able to report improvements in subsequent years. Recognizing deficiencies and opportunities are fundamental to the development of effective action strategies. But mobilizing the community to take action is far more critical and challenging.

We hope that indicators monitoring and reporting help you and your community in your efforts to promote sustainability.

Appendix A: Community Sustainability Principles

These community sustainability principles are taken from "Pathways to Community Sustainability," written by Benedict Hren and available from the Izaak Walton League of America.

I. Community sustainability requires social equity and community empowerment.

This means that community members are knowledgeable about how their communities work and that they participate — together with policy-makers, businesses, organizations and other community members — in open and democratic decision-making processes that promote long-term economic, environmental and social well-being. Community members all have equal opportunities to achieve lives of quality and dignity.

II. Community sustainability requires integrated land use designs and transportation systems.

This means that policy-makers, businesses, organizations and individuals involved in the design and revitalization of communities seek local and regional cooperation to reduce sprawl, preserve open space and historic resources, protect remaining natural ecosystems, restore degraded ecosystems, use land and infrastructure efficiently, increase mixed-use and mixed-income development, improve energy-use efficiency, eliminate pollution, enhance communication technologies and improve access to jobs, services and recreation.

III. Community sustainability requires a literate and well-trained workforce and a vibrant economy.

This means that all people achieve full literacy and have opportunities for continuing education and training for jobs; that all people have access to meaningful employment opportunities; and that policy-makers, businesses, organizations and individuals promote economic development that enhances and preserves the natural environment and community culture.

IV. Community sustainability requires environmentally sound technologies.

This means that policy-makers, businesses, organizations and individuals promote the development, use and transfer of appropriate and environmentally sound technologies for economic and human development. Technologies must improve efficiency and eliminate pollutants associated with energy production and use, transportation, manufacturing, information transfer, construction, agriculture and natural resource management.

V. Community sustainability requires safe and healthy places for everyone to live, work and play.

This means that policy-makers, businesses, organizations and individuals work to ensure that all people live without fear of personal violence; that everyone has access to safe and affordable food, water, shelter, health care and fuel; and that all environments in which people live, work and play are safe, clean and pleasant.

Appendix B: Sample Indicators

Note: This appendix is for groups that pursue an indicator monitoring project as a follow-up to exercises in the League's "Pathways to Community Sustainability" workshop guide.

The culminating activity in the League's workshop guide, "Pathways to Community Sustainability," asks participants to identify elements of community life that define sustainability in their community. These defining elements serve as objectives for which a series of goals may be developed. A goal indicates a desired state or level toward which a community believes it should work. Indicators that measure progress toward these goals can then be developed. Note that a goal is measurable and an indicator is a data point that provides some form of measurement.

Several goals may be developed for each defining element, and several indicators may be developed for each goal. For purposes of simplicity, one possible goal has been listed for each (possible) defining element and one possible indicator has been listed for each goal.

Example One: Possible Defining Element
The community's population is stabilized at a level that optimizes economic stability, facilitates civic participation and ensures environmental protection.

Possible Goal
Stabilize population growth.

Possible Indicator
Total population (with annual growth rate).

Reasons for selection
A community with a rapidly growing population may experience high unemployment, while a community with a declining population may not be able to provide enough workers to support certain economic activities. As communities grow, representative democracy may becomes less representative, with elected officials making decisions on behalf of larger and often more diverse constituencies. Every part of the environment — water, air, soil structure and fertility, and wildlife habitat — is impacted by growing numbers of people and their activities. Population growth has fueled urban and suburban sprawl, destroying large areas of natural space needed to maintain the land's carrying capacity and to provide vital resources such as clean air, water and food to human and wildlife populations.

How to measure
Official population measurements for 1970, 1980 and 1990 can be obtained from U.S. Census Bureau publications, which are available in most large libraries. Various municipal or county agencies likely will have estimated population numbers and growth rates for the years in between. The Population Reference Bureau, a nonprofit group located in Washington, D.C., also maintains a wide range of population information. The bureau may be contacted at 1875 Connecticut Ave., NW, Suite 520, Washington, D.C. 20009-5728; by calling (202) 483-1100; or by visiting their World Wide Web site at www.prb.org/prb/.

Example Two: Possible Defining Element
Civic democracy is encouraged and all citizens have meaningful, decision-making opportunities.

Possible Goal
Increase the number of people voting in elections.

Possible Indicator
Percent of population 18 and older voting in elections.

Reasons for selection
Voter turnout measures the extent to which people can and do participate in the democratic process.

In a community that promotes sustainability, all citizens should desire and have the opportunity to participate fully in decisions about the way their community is governed. Consistently high voter turnout rates indicate that citizens actively are engaged in the democratic process. A low or decreasing turnout can indicate public cynicism, disenfranchised segments of society or a government out of touch with voters.

How to measure
Collect data about elections that are relevant to community issues and are not influenced significantly by factors beyond the community's control (the national economy or international issues, for example). Data can be obtained from the board of elections in your community. If you do not have such a board, contact the information desk at your local library for further assistance.

Example Three: Possible Defining Element
Balanced and adequate information about community issues is provided and accessible to everyone.

Possible Goal
Provide formal environmental education for every student in kindergarten through 12th grade.

Possible Indicator
Percent of students receiving formal environmental education in public elementary and secondary schools.

Reasons for selection
Formal environmental education helps prepare students to make difficult decisions about their lifestyles. It also prepares them to understand the relationships among environmental, social and economic issues, environmental laws and the importance of electing political candidates who share their environmental views. Environmental education may further motivate students to participate in environmental and conservation organizations and to pursue professional careers in environmental fields. An environmentally literate society is better prepared to make the long-term decisions about community issues that sustainability requires.

How to measure
Your local school board will have this information. It probably will be categorized under science education.

Example Four: Possible Defining Element
Businesses, industries, institutions and residents aim to eliminate waste and emissions.

Possible Goal
Decrease the per capita mass of solid waste landfilled or incinerated.

Possible Indicator
Pounds of solid waste landfilled or incinerated per capita per year.

Reasons for selection
We landfill or incinerate what we cannot or will not efficiently recycle or reuse. Many landfilled materials represent potential resource stocks for certain industrial and manufacturing processes. Once landfilled they are not likely to be recovered.

Landfills ultimately are hazardous to the environment. They can vent dangerous gases into the air and leak pollutants into the water table, contaminating adjacent soil and nearby waterways.

Although heat produced by incinerators may generate electrical energy, the remaining ash contains toxic materials and disposing of it is difficult. Burning solid waste, like other forms of energy generation that burn fossil fuels, also emits a large volume of carbon dioxide and alters levels of natural atmospheric gases.

How to Measure
Call your local environmental protection office or department. Also, county or municipal-level offices of waste management have this data.

Example Five: Possible Defining Element
The community is not dependent on nonrenewable natural resources and uses renewable resources at rates at which they naturally are replenished.

Possible Goal
Increase the per capita use of renewable natural resources used to generate electricity.

Possible Indicator
Electricity consumption from nonrenewable sources per capita per year.

Reasons for selection
Fossil fuels — coal and oil — represent nonrenewable, one-time supplies of energy. Since the Industrial Revolution — and increasingly in recent years — we've used these resources at very high levels and without regard for future generations' energy needs.

Extracting, transporting, refining and burning fossil fuels causes many of our most serious environmental problems. The use of these nonrenewable resources contaminates the environment with pollutants such as carbon monoxide, sulfur dioxide and mercury and other heavy metals. Burning fossil fuels also releases carbon dioxide and other gases that could alter the Earth's climate.

Community sustainability requires that we decrease our percentage of nonrenewable energy supply in favor of sustainable energy supplies such as solar, wind power and some hydroelectric designs.

How to measure
Contact your local power company for information about per capita consumption of electricity generated from nonrenewable sources.

Appendix C: Suggested Indicator Documentation

Use this form, or a similar form of your design, to document your indicator research.

Defining Element*:

Goal:**

Indicator*:**

Data source
Organization/Agency:

Contact name:

Phone number:

Data collection method
- ❑ Direct measurement
- ❑ Projections based on samples
- ❑ Forms or reports sent in by others

Data details
Is this data available in published reports? Title(s)?

How accurate is this data?

How long has the organization or agency collected the data?

How often is the data collected?

Data point

*Instructions for developing "defining elements" are presented in "Pathways to Community Sustainability," written by Benedict Hren and available from the Izaak Walton League of America.
**Goals are measurable outcomes that promote or enhance a defining element.
***An indicator specifies the data selected to measure the goal's outcome(s).

forest conservation

Glossary

civic democracy: the practice of democracy at the municipal level where an active and engaged citizenry is the primary source of political power.

community sustainability: the goal of a system of development cultivated in places where people pursue environmental stewardship, economic security, civic democracy, and social justice as complementary goals. Whereas sustainable development initiatives generally work to change government policies, community sustainability focuses on a community's residents as the agents of change. The promotion of community sustainability is a local, cultural process. This means that the ideas for promoting community sustainability come from residents with diverse backgrounds who know and interact with each other and their local environment every day, not from outsiders.

community sustainability indicators: measurement systems, designed and used by communities, that gauge progress toward community sustainability goals. Indicators are a special kind of data that use specific data points to indicate the status of larger systems at work in the community. For instance, an indicator that measures the pounds of solid waste a community sends to a landfill also conveys information about the status of people's purchasing patterns, the community's waste policies, the health of the area's soil and waterways, and regional air pollution.

communitywide process: organized decision-making systems that involve people who represent all of a community's diverse interests.

data: information organized for analysis and used as a basis for decision-making.

direct measurement: numerical data based on a physical dimensions, quantity or capacity.

goal: a numerically measurable statement of purpose toward which an objective is directed.

indicator: a data point or measurement that suggests certain environmental, economic or social conditions.

monitor: the act of observing, measuring and reporting features of environmental, economic and social systems.

objective: a desired outcome for which to strive.

projection: numerical data that indicates an anticipated course of action based on mathematical models and statistics.

reliability: a quality of data measurement that ensures that repeated measurement of the same feature yields the same data point or one that is not statistically different.

social justice: the act of making decisions that have just and equitable social consequences.

statistical analysis: a study that includes the collection, organization and interpretation of numerical data.

stewardship: responsibility for the integrated management of environmental, economic and social systems.

survey: data collected to provide a comprehensive examination.

time-series data: data collected consistently and at regular intervals over a period of time.

validity: a quality of data interpretation that ensures that conclusions are correctly inferred or deduced from a premise.

visioning: the act of imagining and describing something that may occur.

voter turnout

Resources

Publications

Aalfs, Mark; AtKisson, Alan; Besleme, Kate; Conlin, Richard; Hatcher, Lee; Mullin, Megan; Norris, Tyler; Palmer, Kara; Rixford, Craig and VanGenderen, Heidi , "The Community Indicators Handbook," Redefining Progress, San Francisco, Calif., 1997.

Andrews, James, "Going by the Numbers: Using Indicators to Know Where You've Been and Where You're Going," Planning, 1996.

Bauer, Rebecca; Baker, Bryan and Johnson, Kirk, "Sustainable Community Checklist," Northwest Policy Center, Seattle, Wash., 1996.

Craig, Dorothy, ed., "State of the Community: South Puget Sound," Sustainable Community Roundtable, Olympia, Wash., 1996.

Freshley, Craig; Burd, Deb and Olson, David, "Indicators of Sustainable Development: Franklin County 1998," Western Mountains Alliance and Sustain Western Maine, Farmington, Maine, 1998.

Hart, Maureen, "Evaluating Indicators: A Checklist for Communities," Wingspread Journal, Volume 19, Issue 2, Spring 1997.

Hart, Maureen, "Guide to Sustainable Community Indicators," Atlantic Center for the Environment, North Andover, Mass., 1996.

The Hawaii Community Services Council, "Ke Ala Hoku: Critical Indicators Report 1996," The Hawaii Community Services Council, Honolulu, Hawaii, 1996.

Hren, Benedict, "Pathways to Community Sustainability," Izaak Walton League of America, Gaithersburg, Md., 1998.

Kline, Elizabeth, "Sustainable Community Indicators," Consortium for Regional Sustainability, Medford, Mass., 1995.

President's Council on Sustainable Development, "Sustainable America: A New Consensus," President's Council on Sustainable Development, Washington, D.C., 1996.

President's Council on Sustainable Development, "Sustainable Communities: Task Force Report," President's Council on Sustainable Development, Washington, D.C., 1996.

Urban Institute, "Democratizing Information: First Year Report of the National Neighborhood Indicators Project," Urban Institute, Washington, D.C., 1996.

Selected World Wide Web Sites

American Chamber of Commerce Executives: Community Indicator Survey Results — a site that provides information about a 1997 study that surveyed nearly 150 community indicator projects around the United States.
http://www.acce.org/ac.indsurv.html

Center for Excellence for Sustainable Development: Indicators in Action — a site that provides information about U.S. neighborhoods, cities and states that have developed and implemented indicators monitoring projects.
http://webdevvh6.nrel.gov/measuring/meaction.htm

City of Santa Monica Environmental Programs Division: Sustainability Indicators — a site that provides an electronic media example of a community sustainability indicators report.
http://pen.ci.santa-monica.ca.us/environment/policy/indicat3.htm

Compendium of Sustainable Development Indicator Initiatives and Publications — a site that provides information, compiled by the International Institute for Sustainable Development, Environment Canada, Redefining Progress and World Bank, about sustainable development indicators projects being carried out at the international, national and state levels.
http://iisd1.iisd.ca/measure/compindex.asp

Hart Environmental Data — the homepage of consultant Maureen Hart, who works with communities to develop and measure indicators of sustainability.
http://www.subjectmatters.com/indicators/

Millennium Institute: Internet Resources on Indicators — a site that provides links to other Internet sites about indicators.
http://www.igc.apc.org/millennium/links/inds.html

President's Council on Sustainable Development — the World Wide Web site for the president-appointed council that provides information and recommendations about ways to promote sustainable development in the United States.
http://www.whitehouse.gov/PCSD/

Redefining Progress: CINet Directory — a searchable database of more than 150 community indicator projects from around the United States.
http://www.rprogress.org/cinet/cinet_dblink.html

Rescue Mission: Sustainability Indicators Project — a non-profit organization with a youth-driven sustainability indicators project.
http://www.shs.net/rescue/Rescue/indicator%20project/project.htm

The State Web Locator — a site that provides direct links to the World Wide Web sites of state level departments and agencies.
http://www.law.vill.edu/State-Agency/index.html

Statistical Resources of the United States — a site that provides direct links to federal agencies' statistical information.
http://www.lib.memphis.edu/gpo/statis1.htm

Sustainable Seattle — World Wide Web site for the nonprofit organization Sustainable Seattle
http://www.scn.org/sustainable/

United States Environmental Protection Agency: Green Communities — a site that provides information about selecting, using and reporting indicators.
http://www.epa.gov/region03/greenkit/

University of Michigan Documents Center — a site that links to local, state and federal government information, including statistical information.
http://www.lib.umich.edu/libhome/Documents.center/indexnew.html

University of Wisconsin-Extension/Cooperative Extension 1998 Indicators of Community Sustainability — a site that provides information, specifically for extension educators working with communities, about a set of concise and practical indicators. The indicators are designed as qualitative measures around which participatory planning activities can be conducted.
http://www.uwex.edu/ces/ag/sus/html/indicators.html

Willapa Indicators for a Sustainable Community — a site that provides an electronic media example of a community sustainability indicators report.
http://www.willapabay.org/~alliance/wisc/wisc.htm

Publications 1998

Community Sustainability: A Mini-Curriculum for Grades 9-12

This 68-page mini-curriculum provides students with information about sustainability and tells how citizens, businesses and governments are working to achieve sustainability at the community level. The publication also focuses on environmental action skills students need to participate in the emerging community sustainability movement. 1996.

$2 Qty: _____

Coming To Terms With Sustainability

The workshop guide provides directions for conducting a community-based discussion about the concepts of sustainability and sustainable development. 1997.

$2 Qty: _____

Community Voices for Sustainability

The workshop guide provides directions for conducting a community-based discussion about citizen participation and processes for building an inclusive community sustainability initiative. 1998.

$2 Qty: _____

Pathways to Community Sustainability

The workshop guide provides directions for identifying existing and desirable community characteristics that promote sustainability. 1998.

$2 Qty: _____

Monitoring Community Sustainability

The workshop guide provides directions for identifying and measuring indicators that reflect a community's progress toward goals that promote sustainability. 1998.

$2 Qty: _____

Four Stories

This collection of case studies chronicles four communities' innovative and inspiring efforts to promote sustainability. 1998.

$2 Qty: _____

Community Sustainability Collection

This notebook-bound collection includes all four community sustainability workshop guides, the case studies publication and the CD-ROM "This Place Called Home: Tools for Sustainable Communities." A $40 value. 1998.

$25 Qty: _____

Report of Fall 1997 Community Sustainability Workshops

The report describes workshops conducted in Ames, Iowa and Mahtomedi, Minn. 1998.

$2 Qty: _____

Report of San Pedro/Peninsula Community Sustainability Workshop

The report describes a workshop conducted in San Pedro, Calif. 1998.

$2 Qty: _____

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