REGIONAL ENVIRONMENTAL PERFORMANCE AND SUSTAINABILITY: A REVIEW AND ASSESSMENT OF INDICATOR PROJECTS

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1.0 INTRODUCTION

Regions and cities in the United States and around the world are developing new tools and strategies for linking the environment to economic development. For much of the past, it was assumed that environmental progress and economic development were at odds. The environment was viewed as a source of raw materials and energy and a place to dispose of industrial wastes. Often, it was thought that environmental progress generated costs which came at the expense of wealth generation, industrial expansion, and jobs.

But, today, the environment is increasingly seen as a key element of economic development. Innovative cities and regions are forging new strategies for integrating environmental assets into their economic development agendas by targeting environmental technology firms, supporting efforts to implement advanced pollution prevention technology in industry, positioning firms to tap into rapidly growing green markets, and improving their quality of life through investments in their environmental amenities or natural capital. Across the world, many regions have sought to unify their economic development, social, and environmental agendas under the rubric, "sustainable development."

To both help motivate and monitor their ongoing efforts, regions are developing new measures, indicators and benchmarking systems - referred to as environmental/sustainability indicators - to chart their progress toward joint economic, social, and environmental goals. Regions across the United States have aggressively sought to develop these environmental performance and sustainability indicators. Such indicator projects are a growth industry. More than 150 indicator projects were identified across the United States, 35 of which were notable projects in large regions.

This report examines leading regional efforts around the United States to develop environmental or sustainable development strategies, focusing on regional projects on environmental performance/sustainable indicators.

- What are leading regions doing to integrate environmental and economic development agendas?
- What is the state-of-the-art in regional environmental/ sustainability indicators?
- Who is behind these efforts?
- What sorts of resources are required?
- What are regions trying to measure and why?
- How do these indicator projects fit into larger environmental and regional economic development strategies?
- What can we learn?

To answer these questions, the study focused on two specific issues.

1. Technical assessment of environmental/sustainability indicators: The project collected detailed technical information and provided an assessment of the types and quality of environmental/sustainability indicators used by cities and regions.

2. Benchmarking the role of indicators in regional strategy: The project examined the way that indicator projects fit into broader regional environmental and economic development strategies. The following regions were examined in greater detail: Chattanooga, TN; Cleveland, OH; Detroit, MI; Sierra Nevada, CA; and St. Louis, MO.

The study led to five key conclusions.

- Environmental/sustainability indicator projects (ESIs) differ dramatically across regions in terms of their leadership, organizational structure, and processes, as well as in the categories and types of indicators that are developed.

- There is little apparent consistency in the focus of ESIs or in types of indicators that are employed. Hundreds of individual indicators were identified in just the 35 leading environmental indicator projects. Indicator projects make little effort to generate measures which are useful for either historical time series analysis or inter-regional benchmarking comparisons.

- Indicator projects are designed for various ends. In many regions, indicators are used as tools for community organizing or community awareness. In such circumstances, indicator projects are often divorced from broader regional development and/or environmental agendas. A smaller number of regions have made explicit efforts to integrate indicator efforts into broader regional development and environmental strategies.

- Taken alone, indicators play at best a limited role in placing environmental and sustainability considerations on the agenda of regional policy makers and economic developers.

- The most successful regional efforts are those which embed indicator projects within broader strategies for economic and environmental revitalization. Chattanooga, Tennessee for example made environmental revitalization and sustainability the centerpiece of its regional economic strategy; indicators are used to assess progress toward regional goals. Sierra Nevada also developed an innovative and sophisticated indicators system that is linked directly to regional development goals. It does so by evaluating the region's ability to effectively utilize its various sources of capital, from financial and human capital to social and natural capital. Phoenix developed a set of perceptual indicators to identify issues of greatest importance to citizens and voters.

Based on these findings, the report project offers five key recommendations to regions that are currently engaged in, or considering, indicator projects.

- ✓ Regions should focus their efforts on a smaller number of key **value-added** indicators. Indicator efforts are currently too broad and unfocused. The number of indicators can and should be reduced. Specifically, regions are advised to focus attention on a more limited number of indicators that measure key trends. Indicator projects can also benefit from combining statistics comparing regional performance with measures of citizens' perceptions on key issues. Greater effort should be placed on developing environmental and sustainability performance indicators that are comparative and available on time series data.

- ✓ Regions should integrate environmental/sustainability indicators with other, ongoing regional efforts to benchmark economic and demographic trends. Too frequently environmental and sustainability indicator projects are stand-alone efforts with little influence on regional economic benchmarking. This limits their utility and effectiveness in influencing regional programs and policies. Getting just a few value-added environmental/sustainability indicators on the agenda of regional economic benchmarking and competitiveness efforts is likely to be of greater value than developing lists of hundreds of specialized sustainability measures which stand outside the regional development agenda.

- ✓ Indicators must be tied to broad regional development and environmental visions and goals. ESIs frequently are seen as an end-in-themselves, operating as isolated special interest projects outside the framework of regional economic development agendas. To be effective, indicator efforts must be tied to the regional vision and strategies, integrated with key regional organizations, and used to objectively track regional progress toward those goals. Indicator projects must be seamlessly integrated into broader regional environmental and economic development goals.

- ✓ Community participation is a critical dimension of an effective regional effort. To be successful, regions must cultivate participation, support, and buy-in from key community stakeholder groups and from residents in general. To do so, ESI projects require sufficient commitment of resources in the form of time, people, and money. Indicators should reflect the needs and concerns of the community and its residents. To do so, indicator projects should include indicators of resident perceptions and priorities.

- ✓ Indicators are technical tools and should be used as such. Indicators cannot substitute for a well-defined regional vision and strategy; they are technical measurement tools best suited for monitoring and evaluating performance toward clearly defined goals. Regional organizations should concentrate their efforts on developing and establishing consensus around these broad visions and goals. They should be provided with competent technical support to develop measurements and continuously track performance toward those goals.

BOX 1: SUSTAINABILITY AS ECONOMIC STRATEGY: CHATTANOOGA

Chattanooga, Tennessee has made environmental performance and sustainability the centerpiece of its regional strategy and is frequently referred to as The Sustainable City. It is often said that the region's economic development agenda IS sustainability.

The city was named tenth most "enlightened" cities for being a "sustainable blue collar town," (Urban Quality Indicators, Summer 1997), and was highlighted as one of the best places to live by Partners for Livable Places in 1986 and 1994. Once a dirty city with miles of contaminated riverfront, the region has sought to eliminate pollution and redevelop its riverfront as a recreation area, including the world's largest freshwater aquarium. The public transit system utilizes electric buses to reduce air pollution and congestion. Plus, the buses are produced locally, opening up export markets for regional businesses and creating jobs.

The region is building a high-speed rail corridor to downtown Atlanta, which will result in a 45 minute commute. Coupled with improvements in the local environment and quality of life, this will spur further revitalization in the emerging "Chatlanta" metropolitan corridor.

Chattanooga does not see indicators as an end-in-themselves. Rather the region has developed indicators in line with, and as a complement to, the broader regional development agenda. Chattanooga began with a process for developing a vision and strategy for regional development based around the environment, environmental technology and industry, quality of life and sustainable development. It then developed indicators to track and monitor progress toward those goals.

The region has undertaken several indicator projects. The first by the River Valley Partners emphasized economic vitality. A second project, "Life in Hamilton County" focused on quality of life and was accomplished by the Metro Council, (an economic development organization). A third indicator project is now being undertaken by the Chattanooga Institute for Sustainability, which is housed under the same umbrella as the Chattanooga Chamber of Commerce. This project is a broad effort involving local agencies and a Federal Government Environmental team that is working on a "southern assessment" of the natural resources in the Southern Appalachian region.

Chattanooga also emphasizes community involvement and participation. A representative of the Chattanooga Institute stressed the significance of effective community participation. The region has developed various mechanisms, including its innovative Futurescape visioning process involving the use of videos to elicit citizen preferences for land use, and to encourage participation. There is a minimum of between two and five public forums on any emerging regional issues. The region has invested heavily in community participation to cultivate both understanding and buy-in by local citizens. Doing so has required considerable resources, including the use of trained facilitators to manage the community involvement process. Citizens involved in the various public processes over the last decade have taken those skills back to their own boardrooms, committees and meetings. According to the leaders of Chattanooga's effort, a new culture of public involvement has emerged to give continued life to the region's efforts at using the environment as a mechanism for achieving both competitive advantage and an improved quality of life.

2.0 STUDY METHODOLOGY

The project was organized around two objectives:

(1) technical assessment of regional environmental/sustainability indicators, and
(2) benchmarking the role of indicators in regional economic and environmental strategies.

TECHNICAL ASSESSMENT OF ENVIRONMENTAL/SUSTAINABILITY INDICATORS:

The first objective of the project was to provide a technical assessment of environmental/sustainability indicators used by cities and regions across the United States, and to make recommendations on the type of indicators that should be developed. This part of the project reviewed indicators used in 35 significant indicator projects across the United States [a full listing of projects is provided in Appendix 1]. The focus here was on the quality and reliability of the indicators used. The list of projects was compiled through extensive contacts with national organizations, bibliographic and internet searches, and a snowball sample[1] developed through ongoing contacts with representatives of regional indicators projects. The indicator projects are of various types, with indicators ranging from environmental performance, quality of life, community health, natural amenities, and equity issues [as noted in Appendix 1]. This phase of the project also reviewed leading studies and evaluations of regional indicator projects, including a survey study of 150 indicator projects by Redefining Progress[2], academic articles, trade journal articles, and doctoral dissertations on the subject. From this information a detailed listing or matrix of leading indicators used in several projects was compiled [see Appendix 2] which groups indicators according to the categories employed by the Presidents' Council on Sustainable Development].

BENCHMARKING THE ROLE OF INDICATORS IN REGIONAL STRATEGY:

The second objective of the project was to assess how ESI projects fit into the broader context of regional development and environmental agendas. This part of the project compiled detailed case studies of indicator efforts in six benchmark regions. Benchmark regions were identified through a combination of environmental leadership, quality and reputation of the indicator project, and economic and demographic characteristics (including comparability to the Pittsburgh region - the client region for this study). A mix of different types of regions was sought: regions with leading indicator projects, older industrial regions, and younger fast-growing regions. The following benchmark regions were selected for case study.

ENVIRONMENTAL LEADER: Chattanooga, Tennessee is recognized nationally and internationally as a leading environmental region. It has made the environment and sustainability the centerpiece of its economic development agenda [see Box 1: Sustainability as Economic Strategy].

[1] A "snowball sample" is a sample that is compiled by building contacts one after another through the recommendations of earlier contacts.

[2] Redefining Progress is a San Francisco based organization that specializes in community indicators projects, including ESIs.

INNOVATIVE INDICATOR PROJECT: The Sierra Nevada region of California has developed an innovative system for environmental performance indicators. The region has also tied environmental goals closely to its economic agenda. The Sierra Nevada Wealth Index views the environment as constituting "natural capital" alongside other forms of regional capital such as financial, human and social capital [See Box 2: Investing in Natural Capital].

INDICATOR PROJECTS IN OLDER INDUSTRIAL REGIONS: Three older industrial regions were selected: Detroit, Cleveland and St. Louis. Cleveland has linked its environmental indicators to both its regional competitiveness strategy and an ongoing comprehensive effort to benchmark and monitor regional economic performance in comparison to other regions. St. Louis has also tied environmental indicators to its competitiveness agenda and a broader regional benchmarking effort [See Box 3: Integrating Environmental and Economic Benchmarks]. Detroit has developed a comprehensive indicators system linked to efforts of the President's Council on Sustainable Development (PCSD) [see Box 4: Linking to the Sustainability Movement].

YOUNGER, FAST-GROWING REGION: Phoenix has developed an innovative indicator project focussed on quality of life to deal with problems of growth management and environmental problems associated with significant increases and rapid economic development [See Box 5: Emphasis on Quality of Life].

The case studies of benchmark regions are based upon a review of reports and archival documents and interviews with representatives of indicator projects, environmental agencies and groups, economic development bodies, municipal, county and regional officials, and other relevant contacts. Interviews were conducted in all benchmarking regions [see Appendix for complete list of interviews].

3.0 TECHNICAL ASSESSMENT OF REGIONAL ENVIRONMENTAL INDICATORS

Regions across the United States have aggressively sought to develop environmental/sustainability indicators. Such indicator projects are a growth industry. More than 150 indicator projects were identified across the United States, 35 of which were notable projects in large regions.

3.1 OVERVIEW OF INDICATORS

The first part of the study provided a technical assessment of ESIs currently in use in cities and regions across the United States. [Appendix 2 provides a detailed list of the hundreds of individual indicators that were culled from a review of thirteen regional indicator projects.] For convenience sake, indicators are grouped under a 10 category scheme originally outlined by the President's Council for Sustainable Development, including:

- Health and the Environment
- Economic Prosperity
- Equity
- Conservation of Nature
- Stewardship
- Sustainable Communities
- Civic Engagement
- Population
- International Responsibility
- Education

There was little apparent consistency in the focus of ESI projects or in types of indicators that are employed. Indicator projects made seemingly little effort to develop standard or consistent measures which are comparable to other regions or on a historical basis. A particular problem was the use of one-of-a-kind indicators. Many regions developed localized indicators of importance to the local community, for example, salmon runs in Washington, or number of community gardens. While such indicators provide some useful information on regional conditions for a given point in time, they do not enable systematic and valid comparisons across regions or on the basis of historical time series. However, one benefit of using such indicators is that they tend to relate more to the specific concerns of citizens and thus engage the citizenry more effectively. If unique, non-comparative indicators are deemed important to regional goals and objectives it is advisable to develop stable and consistent sources for tracking progress on these indicators.

Furthermore, regional ESI efforts by and large fail to distinguish among various types of indicators. It is useful and important to distinguish among outcome, intermediate, and process indicators.

Outcome indicators track regional performance in key outcomes and objectives. These are perhaps the most important type of indicator, because they enable assessment and

monitoring of trends in key environmental outcomes such as air or water quality, hazardous wastes, conservation, and land use patterns.

Process indicators track and monitor regional performance in key processes, typically government processes, such as environmental regulations, regulatory compliance, and the efficacy of service delivery.

Intermediate outcome indicators assess and monitor regional performance in key areas which tend to effect environmental outcomes, but which are not direct predictors of such outcomes. Intermediate outcome indicators include measures of investment in environmental assets, environmental awards received, patents on environmental technologies, and/or other efforts taken toward the goal of environmental improvement which may result in such improvements over time.

To remedy these problems, regions should focus their efforts on a smaller number of key value-added indicators. Indicator efforts are currently too broad and unfocused. The number of indicators can and should be reduced. Specifically, regions are advised to focus attention on a more limited number of indicators that measure key trends. Furthermore, greater effort should be placed into developing environmental performance indicators that are comparative and available on a time series. Economic indicators provide a good example of value-added indicators. There are many different potential measures of regional economic performance. However, there are a handful of important, value-added indicators that are currently used to assess regional economic trends, such as: regional output, regional employment or employment growth, population growth, regional unemployment, and regional value added. While these indicators do not cover the entire waterfront of regional economic performance, they provide substantial insight into key dimensions and trends in the regional economy. Many of these value-added technical indicators are available for metropolitan regions in the Cleveland "Rating the Region" report. Regions that would like to embark upon indicator projects will find this report a good place to begin.

Table 1 provides a list of value-added technical indicators for environment and sustainability where valid comparative, inter-regional data are currently available. Thus, inter-regional comparison or benchmarking is possible currently for major MSAs using this data. These indicators provide the basis for developing valid, comparative regional environmental/sustainability assessment.

TABLE 1: VALUE-ADDED TECHNICAL INDICATORS FOR ENVIRONMENT & SUSTAINABILITY

HEALTH AND THE ENVIRONMENT	
• Air Quality: number of days the PSI is in the unhealthful range; average annual level of PM-10 (man-made suspended particles) • Death by disease	• Land contamination: pounds of toxic chemicals released in the ground per capita; National priorities list sites per 1,000 sq. miles • Infant mortality rate • Water Quality: % of pollutants removed from wastewater
ECONOMIC PROSPERITY	
• Change of number of business establishments • High technology business establishments • Income: per capita income • Innovation: patents awarded per one million residents • Labor force participation rate • Output/productivity: gross metropolitan product p/ worker	• Percent firms in each sector compared to nat'l ave • Research & Development: R&D expenditure per capita • Unemployment: unemployment rate • Value-added: annual value of shipments per manufacturing employee
EQUITY	
• Crime disparity: central city/suburban crime • Environmental disparity: central city/suburban environmental releases • Fiscal disparity: central city/suburban tax rates • Gender disparity: income differential by gender • Health disparity: central city/suburban infant mortality	• Income disparity: central city as percent of suburban income per capita • Income inequality: ratio of top 20% of incomes to bottom 20% • Poverty rate: percent of pop below poverty line • Racial diversity: income differential by race • Residential segregation index
CONSERVATION OF NATURE	
• Conservation: land area under conservation; conservation spending per capita; public expenditures on parks and open space • Density: persons per square mile	• Natural capital: investments in natural resource conservation • Open space: open space per capita • Park capacity: total metro park acres per 1,000 population; park to land availability ratio
STEWARDSHIP	
• Business practices: companies with ISO 14000 certification • Civic: Foundation spending on environmental programs per 1,000 population	• Env. business practices: companies with pollution prevention/environmental management systems • Government: public env. spending per capita • Residents: percent of population participating in recycling programs
SUSTAINABLE COMMUNITIES	
• Affordability: cost of living index; housing affordability (median family income as percent of median home value) • Fiscal capacity: percent of revenue from local sources • Per capita: resource use (electricity, gas, and water) • Safety: crime rate; central city crime rate	• Property values: change in residential property values by neighborhood • Public debt: public debt per capita • Recycling: percent of consumption which is recycled • Sprawl: change in regional household density
CIVIC ENGAGEMENT	
• Citizen participation: citizen participation in public decision-making and priority setting; number of referendum votes in local elections	• Charitable giving: per capita United Way donations • Public participation: percent registered voters: voter participation • Social capital: participation in civic groups and associations
POPULATION	
• Change in households and household size • Disparity: ratio of population change central city/suburban	• Population change: by demographic group; racial/ethnic group; due to in- and out- migration; births and deaths • Single parent households
INTERNATIONAL RESPONSIBILITY	
• Foundation/charitable giving to international programs/initiatives • International trade: value of regional merchandise exports; environmental exports	• Participation in international trade missions, exchange programs and international initiatives • Popular awareness of international issues • Share of population composed of foreign nationals
EDUCATION	
• College enrollment rate: percent of eligible demographic cohort attending university/college • Educational disparity: central city/suburban educational attainment • High school completion rate (drop-out rate)	• Level of educational attainment (overall and by demographic group) • Per capita education expenditures • Percent of population with four year college degree, with high-school diploma • Student-teacher ratio

(Source: various indicator projects, including Cleveland's "Rating the Region" report)
(Note: Data for many of these indicators are available in "Rating the Region:" [1997])

3.2 TECHNICAL ISSUES IN BENCHMARK REGIONS

Indicator projects in the six benchmark regions were among the most advanced and innovative in the nation. These projects provide useful lessons and examples for the development of technical indicator efforts.

Sierra Nevada developed an innovative and powerful framework for environmental/sustainability indicators [See Box 2: Investing in Natural Capital]. Most regional indicator projects compiled simple lists of indicators, providing little in the way of a framework or system for understanding the role or significance of various indicators. The Sierra Nevada "Wealth Index" provides a well- developed and well-thought-out framework for understanding indicators and their interrelationships. It categorizes indicators into various forms of capital: financial capital, social capital and natural capital. This provides a powerful mechanism for seeing environmental assets as a form of capital to be invested in, for connecting environmental assets and investments to broader regional growth strategies, and a language for communicating the importance of environmental issues to regional business leaders.

Projects in two regions - Cleveland and St. Louis - integrated regional environmental and/or sustainability indicators with broader regional benchmarking efforts designed to compare regional economic performance to the performance of other regions [see Box 3: Integrating Environmental and Economic Benchmarks]. The Cleveland report, entitled "Rating the Region" compared the performance of the Cleveland MSA to that of some 13 other MSA's on environmental and land use issues as well as economic, demographic and quality of life factors. The Cleveland report included key measures of environmental performance (e.g. air and water quality and of land-use patterns (e.g. sprawl related density) in its economic benchmark report.

Phoenix developed an innovative system to identify “perceptual” indicators to compare the region’s performance in terms of available benchmarking statisitics to citizens’ perceptions of key issues [see Box 5.1: Example Indicator Set: “What Matters in Greater Phoenix”]. This helped identify issues which were of greatest importance to Phoenix residents. In many cases, there were differences between what residents perceived and the reality reflected in regional statistics.

BOX 2: INVESTING IN NATURAL CAPITAL: SIERRA NEVADA, CALIFORNIA

The Sierra Nevada region is noted for its innovative approach to environmental revitalization and for its innovative use of indicators. The region's development strategy emphasizes environmental amenities and preservation of natural resources. And, it has developed an indicators system which supports and leverages these efforts. Its indicator effort emphasizes investment in natural capital as a key asset for the future.

The Sierra Nevada region spans 400 miles of unbroken mountain range and is comprised of 21 counties along eastern California and part of Nevada. It benefits from extensive natural resources that are major tourist destinations. Sierra Nevada is a fast growth region, its population has almost tripled during the last 25 years, and is projected to continue growing at a faster rate than California.

The Sierra Nevada's economic development strategy is based upon natural amenities and a quality of life that can attract a highly mobile workforce which can live virtually anywhere. The strategy views environmental assets, as an economic development tool that can be used to lure high-technology, high-value-added businesses and quality knowledge workers.

The region's strategy explicitly identifies the environment as a source of capital to be invested in - natural capital. The region has identified a new concept of wealth that views wealth generation coming not only from the accumulation of monetary capital, but other types of capital as well, specifically social and natural or environmental capital.

The Sierra Nevada Business Council has developed its innovative Wealth Index to track progress along these various forms of capital, noting that neglect of social capital, such as a failure to provide first-rate education or to reduce poverty, means many fewer opportunities for businesses and residents to use financial assets. Deteriorating natural assets, such as polluted streams, degraded forests, or lost farmlands, reduce property values, drive away new businesses, and undermine the quality of life for current residents. Low financial capital, such as insufficient diversification or high unemployment, leads to social instability and a vulnerability to economic cycles. (Sierra Nevada Wealth Index, 1997)

Leading this strategy is the Sierra Nevada Business Council (SBC). Founded in 1994, in response to the destruction of environmental amenities as a result of rapid population growth, the Business Council is an association of over 450 large and small member businesses focusing on the economic and environmental health of region. The Council conducts research, policy analysis, public education, and leadership development activities.

In September 1995, the Sierra Nevada Business Council used a survey research firm to conduct both a 1,000 person voter survey and a companion survey of member businesses for their priorities and concerns for regional development. The majority (82 percent) of member businesses identified quality of life (including access to wildlands and natural beauty of the landscape) as one of the most significant reasons for locating in the region.

The results of these surveys formed the basis for the "Sierra Nevada Wealth Index," a highly innovative system of 42 indicators of social, natural and financial capital. Next, the region embarked upon a review of the general plans of six counties based upon the wealth index, including a review of best practices around the nation. This led to the award-winning planning document called, "Planning for Prosperity: Building Successful Communities in the Sierra Nevada" which defined the agenda for regional planning and growth in the region. The Business Council is currently producing on a new document, "Investing for Prosperity" to guide major regional investment decisions, as well as revising and updating the Wealth Index.

The process is already producing results. The region is experiencing an in-migration of Silicon Valley high-tech companies largely due to the quality of life factors required to attract highly mobile knowledge workers.

Benchmark regions noted a wide range of technical issues in indicator identification, development and analysis. Key issues revolved around the unavailability of key data and a lack of available research and documentation on reliable indicators. Virtually every benchmark region indicated that data gathering was time consuming and expensive. They also noted a lack of expertise to engage in indicator development and construction. The Sierra Nevada project explicitly noted problems in data gathering and data assembly: "We gathered data from multiple counties; data is collected with different boundaries" (Sierra Nevada Wealth Index). Other regions noted the utility of providing competent technical staff and outside consultants to support community groups in identifying and developing indicators.

BOX 2.1: EXCERPTS FROM SIERRA NEVADA'S "WEALTH INDEX" REGARDING THEIR CONCEPT OF WEALTH AND HOW THE WEALTH INDEX SHOULD BE USED:

WHAT IS WEALTH?

"Wealth is not just monetary worth but the different types of capital that, taken together, make up the real riches of a region… To understand the economy of the Sierra Nevada, it is important to understand and assess three types of wealth: 1) social or human capital; 2) natural or natural resource capital; and 3) financial capital. Each must be conserved and increased if the Sierra Nevada economy is to be prosperous, stable and sustainable."

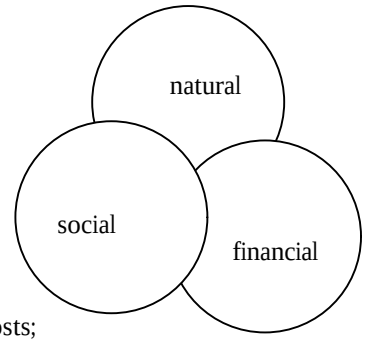
"Each form of capital supports the economy; the diminishment of any one will tend to devalue each of the others. Neglect of social capital, such as a failure to provide first-rate education or to reduce poverty, means many fewer opportunities for businesses and residents to use financial assets. Deteriorating natural assets…. reduce property values, drive away new businesses, and undermine the quality of life for current residents. Low financial capital…. leads to social instability and a vulnerability to economic cycles."

"By understanding and tracking all three forms of capital – social, natural, and financial- the Sierra Nevada Wealth Index presents a more integrated, accurate, and useful portrait of our region's economy."

HOW TO USE THE SIERRA NEVADA WEALTH INDEX

"The Sierra Nevada Wealth Index gives public servants and private citizens throughout the region a powerful tool for decision making. The Capital Investment Diagram pictured below demonstrates the relationship between social, natural, and financial capital. While some public and private investment decisions increase only one form of capital, and actually diminish the other forms of capital, decision-makers can gain the most benefit by making investments that increase or conserve at least two forms of capital while not diminishing the third."

CAPITAL INVESTMENT DIAGRAM



" For example: if a business owner decides to locate a commercial building on an underutilized lot at the center of town, instead of on agricultural lands outside of town, he or she:

- builds financial capital by reducing public and private service costs;
- builds social capital by reducing commute times and enhancing the social vitality of the community; and
- maintains natural capital by not reducing the size and productivity of the working agricultural landscape."

4.0 BENCHMARKING THE ROLE OF INDICATORS IN REGIONAL STRATEGY

The second part of the project focused on the role played by environmental/sustainability indicator projects in broader regional environmental and economic development strategies. It examined the organization of indicator projects, leadership, ties to business and political communities, community participation, stakeholder involvement, dissemination strategies, and linkages to broader regional development and environmental agendas.

4.1 OVERVIEW OF REGIONAL ENVIRONMENTAL INDICATOR PROJECTS

Two recent studies provide useful overviews of the issues and activities of regional environmental/ sustainability efforts.

A recent study by the U.S. Office of the International Council for Local Environmental Initiatives identified 22 communities as "sustainability pioneers", including Chattanooga, Tennessee [one of the benchmark regions examined here]. The study identified four dimensions for a sustainability pioneer (see, Urban Quality Indicators, Spring 1998):

- ✓ substantial involvement by local government,
- ✓ significant community participation and stakeholder involvement,
- ✓ a comprehensive and integrated approach to environmental, economic and social issues, and
- ✓ a long-term program for sustainability, including specific goals, implementation measures, monitoring and evaluation (e.g., audits, indicators, targets).

A 1998 study by Redefining Progress, a San Francisco based organization specializing in environmental/sustainability indicators, surveyed some 150 community indicator projects in the United States (Besleme, 1998) and led to the following key conclusions:

- A wide range of stakeholders were involved with indicator projects, including government agencies (72% of projects), academic institutions (62%), businesses or business groups (62%), private citizens (58%), environmental groups (50%), social service agencies (46%), foundations (30%), youth (18%), and other groups (16%).

- Projects varied in terms of the scale and extent of their coverage, with a relatively even breakdown of projects by city (33%), county (25%), region (24%), or state (22%), and a smaller percentage of projects operating at the neighborhood level (8%).

- Roughly half (49%) of all projects were initiated by non-governmental organizations, with another 35% initiated by local governments.

- Funding came from several sources: primarily by government agencies (66%), followed by foundations (34%), with a relatively small amount of funding coming from volunteers (5%).

- Projects were concerned with four primary issues: quality of life (41%), and sustainability (37%), followed by community health (10%), and benchmarking of service delivery (12%).

BOX 3.1: INTEGRATING ENVIRONMENTAL AND ECONOMIC BENCHMARKS: CLEVELAND

Cleveland has developed a regional benchmarking process and system, Rating the Region, which is part of a broad regional effort on economic competitiveness. The Rating the Region report compares Cleveland's performance to 13 other regions on key measures of economic, demographic, and environmental performance. It is arguably the best benchmarking report of its type, providing detailed comparative information on more than 100 key indicators. It stands not only as a model for technical indicator projects, but provides a wealth of data that can be used now to assess the position of the 14 benchmark regions included in the report.

Over the last forty years, the City of Cleveland lost nearly half of its population to its suburbs and other regions. To cope with this, Cleveland embarked on an aggressive economic revitalization agenda, led by Cleveland Tomorrow, which centers around the revitalization of manufacturing, downtown revitalization, brownfield remediation, and regional tourism.

The Rating the Region project compares the performance of the Cleveland region to other regions on key measures of economic, demographic, environment indicators. The first project report identified 89 indicators, and the expanded 1997 report identified 114 indicators in categories such as economic performance, infrastructure, a strong labor force, education, community, government, health, environment, and amenities.

The Rating the Region project was funded with roughly $200,000 by BP America, East Ohio Gas Company, the Cleveland Foundation, and The George Gund Foundation. The first report took two years to complete, with the bulk of the work revolving around development and selection. The second report took significantly less time, eight months, to complete. A preview report in the form of a magazine insert was distributed in the magazine "Northern Ohio Live" before the release of the second report. The local media has covered these events. In addition, Eco-City Cleveland has developed an email magazine to disseminate information and get public feedback.

The Rating the Region report was based upon a process for community participation and public involvement. Indicators were selected by a 30-member committee composed of public, private sector, non-profit, and community representatives. The process included dozens of community meetings and a telephone survey of 750 residents. While the mayor's office was not a formal member of the committee, public sector representatives from the public safety and economic development departments were directly involved in the process. Multiple committee and subcommittee meetings were held, in addition to a day-long seminar designed to obtain public comment and feedback on the indicators and measurement issues. A significant challenge was obtaining comparative data for many of the indicators advocated by community groups.

There were several benefits to this community process. First and foremost, it built ties between community leadership and business and political leadership. Second, it developed buy-in for the indicators and measurements used. Third, it created a process for assessing regional performance toward key goals. A representative of the Citizens' League Research Institute, which produces the Rating the Region report, noted that collaboration was particularly valuable as an educational tool; he noted that the process could not have moved forward without it. Collaboration and involvement helped to produce buy-in and understanding, which were critical to surmounting political challenges. He also stressed the importance of spending time up front on the planning and obtaining buy-in on key issues, including the types of measurements used. This ensured productive conflicts that led to better decisions rather than damaging conflicts that spill-over into the public debate or devolve into blaming or scapegoating. In addition, outreach presentations were made to key agencies and groups. This served to eradicate preconceived notions and bring the participants together. Presentations on each report were also given to a group of community leaders, "Leadership Cleveland," to develop deeper understanding and buy-in on the project.

As a result of this project, the Chamber of Commerce has reevaluated its strategic plan to include a greater focus on work-force preparedness. However, the biggest impact was getting environmental issues on the agenda of regional competitiveness and in providing a technical resource to evaluate regional progress toward stated goals.

BOX 3.2: INTEGRATING ENVIRONMENTAL AND ECONOMIC BENCHMARKS: ST. LOUIS

Like Cleveland, St. Louis has integrated environmental indicators within a broader regional benchmarking project. The regional indicator effort, "Where We Stand" is a comparative benchmarking project similar to Cleveland's which compares the performance of the St. Louis region to other regions on key economic, demographic, and quality of life issues.

Referred to as the "Gateway Region," St. Louis was confronted with the challenges of restoring regional competitiveness, improving its environment and quality of life, stemming the outmigration of young, educated talent, and of overcoming long-standing problems associated with governmental fragmentation and deep-seated political rivalries between neighborhoods and agencies.

The St. Louis effort has emphasized developing a regional perspective on key issues and helping to overcome political and jurisdictional rivalries. Rivalries between neighborhoods, political jurisdictions, and agencies only serve to weaken the region as a whole and therefore make little sense. They believe that the "chain is only as strong as its weakest link," therefore all aspects of the community must be nurtured. It has also focused on people as the region's most valuable and enduring asset.

The process began in 1992 under the auspices of the East-West Gateway Coordinating Council, a regional planning organization with federal and private funding and a good relationship with the city and Chamber of Commerce. The Council undertook a citizen survey entitled, "How we see it" of some 600 adults and 2,200 students from urban, suburban and rural areas to identify the most important issues facing people in the region. The survey elicited their views on major issues facing the region, the organizations they thought were effectively dealing with key problems, major concerns affecting themselves or their families in the near future, and whether or not they expected to stay in the region.

Also, in 1992, the region undertook a major benchmarking effort, leading to the report, "Where We Stand." The project focused on three main issue areas:

- "How is the Gateway Region really performing in comparison to those metropolitan centers with whom we compete for people and jobs?
- Is the Gateway Region making the strategic decisions that must be made to be a successful, competitive, and attractive community in the 1990's and beyond? And,
- Is the Gateway Region providing its children and youth with the skills and the motivation to carry the region to a successful future?" ("Where We Stand", 1997).

To answer these questions, the project compared St. Louis with 35 other regions on 7 key dimensions: population dynamics, regional economic vitality, leadership and governance, individual and family well-being, education, crime and urban form, and quality of life. A process was developed for indicator identification and 29 people from various sectors served on the selection committee. The initial report generated considerable regional dialogue and a second "Where We Stand" report was completed in 1996. The project, funded by the Danforth Foundation, involves a wide range of stakeholders, and is updated every two years. The project used various mechanisms to disseminate its findings and obtain community support. A partnership was struck with a local business journal to highlight and report on one key indicator per issue.

The main challenges faced by the project revolved around data collection, particularly difficulties in obtaining relevant environmental data. The project felt it was overly dependent upon national census data to make valid regional comparisons. Lack of availability of data on many issues of importance to the region was an issue as well. To address this issue, future assessments will include the development of new data and information on relevant issues through community surveys and other means.

- The primary objectives were to improve public information and knowledge of issues (64%), inform policy decisions (61%), and evaluate government performance (32%).

- Dissemination took place through various mechanisms: published reports (46%), local newspaper coverage (40%), participation in conferences (30%), internet sites (34%), informational forums (26%), and broadcast media (25%).

4.2 KEY ISSUES IN BENCHMARK REGIONS

The second part of the project was primarily based on detailed case studies of six benchmark regions: Chattanooga, Tennessee; Sierra Nevada, California; Detroit, Michigan; Cleveland, Ohio; St. Louis, Missouri; and Phoenix, Arizona. A wide range of reports and archival documents were reviewed for each of the benchmark regions and interviews were conducted with representatives associated with regional indicator initiative as well as with officials involved in economic development and environmental policy in the benchmark regions.

The benchmarking analysis identified two critical dimensions of regional projects:

(1) developing close ties to regional leadership and economic development agendas, and
(2) developing mechanisms to ensure extensive and effective community participation.

4.21 ESTABLISHING TIES TO REGIONAL AGENDAS AND LEADERSHIP

The most successful regions made efforts to integrate environmental/sustainability indicators with key regional economic development agendas and to build enduring ties to business and political leadership.

Indicator projects in the benchmark regions were designed for various ends. Frequently, indicator projects began as community organizing or community awareness efforts. In these cases, indicator projects were divorced from broader regional development and/or environmental agendas. In extreme cases, indicator projects operated as isolated "special interest" projects outside the framework of regional economic development agendas.

Effective indicator projects quickly matured into efforts aimed at addressing broad regional issues such as economic development, regional competitiveness and quality-of-life (i.e. sustainable development campaigns). In these cases, organizations associated with indicator projects and environmental issues made explicit efforts to integrate indicator efforts into broader regional development and environmental strategies. Chattanooga, for example, made environmental revitalization and sustainability the centerpiece of its regional economic strategy, developing an indicator project later to assess progress toward regional goals. Sierra Nevada developed its innovative Wealth Index expressly in light of, and to further, clearly defined regional development goals.

Effective indicator projects also developed close ties to regional business and political leadership. In both Chattanooga and Sierra Nevada, leading business organizations, including the Chambers of Commerce were involved in, and continue to work closely with, the indicator project and with organizations spearheading environmental/ sustainability efforts.

In Detroit, key leadership was brought into the indicator process. The vehicle for doing this was participation in the upcoming summit of the President's Council on Sustainable Development [PCSD] in May 1999, which placed environmental and sustainability issues on the agenda of leading business and political groups [see Box 4: Linking to the Sustainability Movement]. Initially, the indicator project - the Sustainable Renaissance Project- grew up on its own. Even during its earliest phases, however, ties to leading political and business organizations were sought. Representatives from the Chamber of Commerce and governmental groups were invited to meetings and both formal and informal lines of communication were established. Later, the organization of leading CEO's, "Detroit Renaissance" - and key corporations such as General Motors - were involved in the planning effort for the national summit.

BOX 4: LINKING TO THE SUSTAINABILITY MOVEMENT: DETROIT

Detroit has developed a environmental/sustainability indicator project which is linked to the goals of the President's Council on Sustainable Development.

An old industrial city, Detroit faces a litany of environmental and economic problems associated with the transformation of mass production industry - from a declining inner-city to serious pollution and brownfield remediation issues. The region has turned to sustainability as part of its broader strategy to regain competitiveness.

In 1994, the City of Detroit/Wayne County Roundtable on Sustainable Development was formed to address sustainability issues. It is composed of representatives from business, neighborhood groups, environmental groups, lending institutions, government agencies and charitable and religious groups, and seeks to encourage consensus around sustainability issues. The effort gave rise to the Sustainable Renaissance Project, a community indicators project aimed at establishing a "baseline" of information depicting the region's progress towards sustainability, and subsequently identifying gaps and barriers that need to be addressed to move forward. The project focuses on the economy, environment, and quality of life as part of a wider strategy to encourage regional competitiveness. One of the many objectives of the project is to assist local governments (City and County) with evaluating and prioritizing future development projects.

The first phase of the project is to define indicators in the 10 topical areas identified by the PCSD using a public process, followed by a second phase that will evaluate development projects in light of those indicators and priorities. The project has a core team led by local governments, General Motors and major banks. A concerted effort is being made to ensure as much sector diversity on the committees as possible. An environmental business consulting group is being used to provide technical support for indicator development.

Detroit has sought to use sustainability as a way improve its image and generate national visibility by linking its activities to ongoing efforts of the President's Council on Sustainable Development. Detroit will host the National Sustainability Summit during May of 1999 sponsored by the President's Council. The Summit Committee is composed of government, business and community representatives, including "Detroit Renaissance," the region's CEO-led economic development body and the Detroit Chamber of Commerce. It is developing its indicators project as a national model, tied to the ten-category framework of the President's Council on Sustainable Development. In addition, local governments have played a lead role in the Joint Center for Sustainable Communities, a joint effort of the U.S. Conference of Mayors and the National Association of Counties to work with federal agencies, the President's Council on Sustainable Development, and local elected officials to promote and encourage sustainability with advice, financial support, and other forms of technical assistance. This demonstrates the commitment and interest that the Detroit's local government has in sustainability in not only Detroit, but the nation as well.

In order for indicator projects to be useful, they must eventually effect changes in policies and practices of agencies, institutions, and individuals. While most indicator efforts were able to spark discussions, few were actually able effect changes in policies and practices. Two projects, however, stand out on this dimension.

The Sierra Nevada project had a significant impact on land use policies. The project identified 10 guiding land-use principles from the community responses. It then published a guidebook, "Planning for Prosperity," comparing these principles to the general plans of six counties. One county is already is revising its plan and another is establishing a campaign for preservation of open space [See Box 2: Investing in Natural Capital].

Chattanooga developed its indicator project specifically to track progress toward well-defined environmental and economic development goals [see Box 1 Sustainability as Economic Strategy]. The region established its indicator program only after these goals were well-established, and utilizes indicators to track and monitor progress toward regional objectives.

4.22 COMMUNITY INVOLVEMENT AND PARTICIPATION

A second, equally critical issue, revolved around ensuring effective community involvement and participation. A key issue for all of the benchmark regions was developing mechanisms to obtain a balance between involving regional leadership and ensuring that community groups are both involved and have a stake in the process. The ESIs found that obtaining buy-in from the community was essential to the long-run success of indicator efforts.

St. Louis embarked upon its project in 1992 by administering a survey, “As We See It” to 600 adults and 2200 students from urban, suburban and rural areas to obtain a wide variety of perspectives. Detroit employed a carefully thought out matrix organizational structure to involve representatives of all community groups and organizations in its committee process.

Chattanooga developed an innovative and inclusive process called “Vision 2000”. As early as 1984, some 1,700 citizens came together to identify 40 goals, developing a so-called "Commitment Portfolio" for the region. The goals stressed economic revitalization through environmental progress and sustainability - to rebuild the Chattanooga economy around environmental renewal and environmental industry while improving the quality of life for all residents. Ten years later, 85 percent of “Vision 2000's” 40 goals were accomplished, with a reported 2,000 projects, generating 1,381 permanent jobs, 7,300 temporary construction jobs, and $793 million in new investment predominantly from private sector. In 1993, the city revisited this agenda with “Re Vision 2000” in which 3,000 people participated to develop a renewed vision for economic development, employment, education and the environment.

In 1996, an even more innovative community planning process, “Futurescape” was launched. The process revolved around a “visual preference survey” that was conducted through the use of a video tape to elicit community perceptions about land use development in and around Chattanooga. The process involved more than 100 community meetings. Further, the video aired on the local cable channel and was made available for rent at video stores. More than 2,500 citizens viewed the tape and rated various types of development. The results of the survey indicated that residents value the natural environment, pedestrian-friendly streets, public transit, and interesting architecture, and these values were then incorporated into long-range

plans and regulations designed to reflect resident preferences. As a result of these efforts, Chattanooga now enjoys a "public process culture" that positively influences the way matters are addressed in that region.

Phoenix developed its indicator system in part to measure citizen perceptions of the region's position on key issues [see, Box 5: Emphasis on Quality of Life]. For example, the regional report lists resident perceptions of population growth along with the actual statistics on change in population compared to nine MSAs. This enabled a fact-based discussion to ensue, particularly in areas where perceptions differ from reality. Since most people make decisions, especially migration decisions, based on what they perceive to be true, discovering that there is a difference between reality and perception is valuable information indeed.

BOX 5: EMPHASIS ON QUALITY OF LIFE: PHOENIX

Phoenix, Arizona is a fast growing region which is experiencing problems associated with rapid population growth, sprawl, and pollution. Its indicator effort emphasizes improving the quality of life for residents and businesses.

The major impetus for the project came from the business community and civic leadership, including the Greater Phoenix Economic Council, Phoenix Chamber of Commerce, the Arizona Republic, and major corporations like Honeywell, Motorola, DMB Associates, which were concerned about the impact of rapid growth on quality of life. In 1996, these groups engaged Arizona State University's Morrison Institute for Public Policy to conduct an annual assessment of the quality of life in 1996. The first assessment took place in 1997. It began with a survey of some 1,000 citizens designed to prioritize quality of life issues. This was followed by interviews, focus groups, public meetings, and a region-wide telephone survey. Community, citizen, and religious groups were also actively involved. The focus groups drew upon the expertise and energy of more than 90 business, government and civic leaders, and were used to determine a wide range of possible indicators of quality of life. During this process, experts were used to provide technical input on indicators; for example, education officials developed initial indicators on educational performance. This was then reviewed and revised by the larger group. Over 300 indicators were collected and prioritized, and then taken to the public for input through the public meetings and the telephone survey noted above. Roughly, 1,200 people from all sectors of the community participated in the project.

The project report, entitled, "What Matters in Greater Phoenix" focuses on regional and personal perceptions of quality of life. It provides a range of regional statistics on key issues related to quality of life. But, it combines them with the perceptions of the region's people, drawn from surveys and interviews [see page 22 for an example]. The report places the statistical assessment in the context of resident perceptions about the region. This is a powerful tool for conveying information on regional issues and trends.

The project has helped to initiate a dialogue on key quality of life issues. According to the manager of the project, there have been numerous newspaper articles, presentations and subsequent meetings on key issues identified by the project. He added, however, that while the project has raised the level of discussion, it has not yet resulted in concrete policy actions. He cautioned that indicators do not equate to a strategic plan and that policy changes and action does not happen automatically as a result of an indicator report. In order for this to occur, he noted, it takes government agencies and business leadership that is willing to develop action plans, implement them, and then monitor and benchmark their effectiveness. He also noted that residents care deeply about quality of life issues, and tend to expect positive change to happen quickly.

Benchmark regions used a variety of strategies to disseminate their results. Virtually all benchmark regions published reports. Some regions developed booklet size newspaper inserts or published reports in newspaper format. Others created internet sites to post information

and updates. Still others developed innovative mechanisms for making information both more user friendly and more widely available. The St. Louis project developed a partnership with a local business journal to cover a new indicator every week. Also, Truckee Meadows (though not a benchmark region) developed an "adopt an indicator" program to encourage community involvement. The adoption packet includes suggestions that the business community, nonprofits and individuals can take to help meet the goals set by the community for each indicator. For example, an individual adopting the "Open Space indicator" can donate land or money for that purpose, plant a tree, or any one of a list of other activities (Urban Quality Indicators, Summer 1997)

BOX 5.1: EXAMPLE INDICATOR SET : "WHAT MATTERS IN GREATER PHOENIX"

5.0 CONCLUSIONS AND RECOMMENDATIONS

This report has examined regional environmental/sustainability indicator projects, focusing on: (1) technical issues involved with environmental/sustainability indicators, and (2) the ways that indicator projects fit into broader regional environmental and economic development strategies.

The study findings can be summarized in terms of five key points.

- Environmental/sustainability indicator projects differ dramatically across regions in terms of their leadership, organizational structure, and processes, as well as in the categories and types of indicators that are developed.

- There is little apparent consistency in the focus of environmental indicator projects or in types of indicators that are employed. Hundreds of individual indicators were identified in just the 35 leading environmental indicator projects. Indicator projects make little effort to generate measures which are useful for either historical time series analysis or inter-regional benchmarking comparisons.

- Indicator projects are designed for various ends. In many regions, indicators are used as tools for community organizing or community awareness. In such circumstances, indicator projects are often divorced from broader regional development and/or environmental agendas. A smaller number of regions have made explicit efforts to integrate indicator efforts into broader regional development and environmental strategies.

- Taken alone, indicators play at best a limited role in placing environmental considerations on the agenda of regional policy makers and economic developers.

- The most successful regional efforts are those which embed indicator projects within broader strategies for economic and environmental revitalization. Chattanooga, Tennessee for example made environmental revitalization and sustainability the centerpiece of its regional economic strategy; indicators are used to assess progress toward regional goals. Sierra Nevada developed an innovative and sophisticated indicators system that is linked directly to regional development goals. It does so by evaluating the region's ability to effectively utilize its various sources of capital, from financial and human capital to social and natural capital. Phoenix developed a set of perceptual indicators to identify issues of greatest importance to citizens and voters.

Based on these findings, the study offers five key recommendations to regions that are currently engaged in, or considering, indicator projects.

- ✓ Regions should focus their efforts on a smaller number of key **value-added** indicators. Indicator efforts are currently too broad and unfocused. The number of indicators can and should be reduced. Specifically, regions are advised to focus attention on a more limited number of indicators that measure key trends. Indicator projects can also benefit from combining statistics comparing regional performance with measures of citizens' perceptions on key issues. Greater effort should be placed into developing environmental and sustainability performance indicators that are comparative and available on time series data.

- ✓ Regions should integrate environmental and sustainability indicators with other, ongoing regional efforts to benchmark economic and demographic trends. Too frequently environmental and sustainability indicator projects are stand-alone efforts with little influence on regional economic benchmarking. This limits their utility and effectiveness in influencing regional programs and policies. Getting just a few value-added environmental/sustainability indicators on the agenda of regional economic benchmarking and competitiveness efforts is likely to be of greater value than developing list of hundreds of specialized sustainability measures which stand outside the regional development agenda.

- ✓ Indicators must be tied to broad regional development and environmental visions and goals. Environmental indicator projects frequently are seen as an end-in-themselves, operating as isolated special interest projects outside the framework of regional economic development agendas. To be effective indicator efforts must be tied to the regional vision and strategies, integrated with key regional organizations, and used to objectively track regional progress toward those goals. Indicator projects must be seamlessly integrated into broader regional environmental and economic development goals.

- ✓ Community participation is a critical dimension of an effective regional effort. To be successful, regions must cultivate participation, support and buy-in from key community stakeholder groups and from residents in general. ESI projects require sufficient commitment of resources in the form of time, people and money. Indicators should reflect the needs and concerns of the community and its residents. To do so, indicator projects should include indicators of resident perceptions and priorities.

- ✓ Indicators are technical tools and should be used as such. Indicators cannot substitute for a well-defined regional vision and strategy; they are technical "measurement" tools best suited for monitoring and evaluating performance toward clearly defined goals. Regional organizations should concentrate their efforts on developing and establishing consensus around these broad visions and goals. They should be provided with competent technical support to develop measurements and continuously track performance toward those goals.

APPENDICES

i. Project by region
ii. Comparable indicators[Σ]
iii. Comparable indicators by project[Σ]

[Σ] Indicators are grouped by categories determined by the PCSD (President's Council on Sustainable Development).

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[Σ] Note: other project reports were reviewed but were not focus regions

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