

# INFORMATION FOR DECISION MAKING IN SUSTAINABLE DEVELOPMENT

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## Summary

This essay combines current thinking on sustainability, strategic management and the public policy process to explore what kind of information on sustainability is available, how information is acquired, and how it can be used. The approach assumes that decision makers, advocates, and analysts will create new information and use existing sources to better understand current and future prospects for sustainability. In particular, the scientific and NGO communities generate a great deal of information, and a great deal of information is currently being gathered at the local level. We emphasize local efforts to gather information. This information gathering, however, must be driven by strategy, not merely by the relative ease of gathering some kinds of information over others. Using a strategic approach that links goals and opportunities can help drive information gathering in a way that the information gleaned can be useful to policy makers, particularly at the local level, where local action can have the greatest influence on policy and practice. We believe that these local efforts can be emulated at the regional, national or continental levels, and are useful examples of nascent but promising efforts to promote sustainability.

## 1. Introduction—Information in Policy and Decision Making

Current and reliable information is critical to the study of sustainable development and in the application of that information to practical problems. This essay combines current thinking on sustainability, strategic management and the public policy process to

explore the type of information available, how to acquire it, and how it can be used. The approach assumes that decision makers, advocates, and analysts will create new information and use existing sources to better understand current and future prospects for sustainability. With this in mind, we discuss the concept of sustainability indicators at some length. We consider “information” broadly, and we do not limit the discussion to quantitative data. Because a great deal of information is currently being gathered and collected at the local level, and because there appears to be greater freedom of action at the local level, we emphasize local efforts to gather information. We believe that these local efforts can be emulated at the regional, national or continental levels, and are useful examples of nascent but promising efforts to promote sustainability.

## **2. Information Gathering in the Public Policy Process**

The United States and Canada are advanced, information-rich industrial states characterized by relatively easy dissemination of and access to scientific and political information. Citizens and policy makers gain a considerable amount of background information through the mass communications media. Advanced communications networks allow advocates and policy makers to communicate easily with each other over long distances. With the rapid growth of the World Wide Web and the internet, citizens, interest groups, government officials at all levels, and journalists, to name a few, can readily access social, political, technical, scientific and ecological data. While these new information retrieval systems improve information availability, availability does not guarantee quality.

Although a flood of information exists, some of it is of dubious value, generated by individuals, groups, firms, or governments with interests in promoting their preferred policy outcomes. As Giandomenico Majone and Deborah Stone note, policy making in democracies is characterized by rhetoric and persuasion as much as it is by neutral, scientific analysis and the application of evidence to a problem. Even if all information were scientifically derived and highly reliable, comprehensive information gathering and analysis would be difficult and expensive. In the 1940s, economist Herbert Simon pioneered the term “bounded rationality” to suggest that, because of the inherent complexity of human problems, perfect rationality in decision making is impossible. Our decision making is bounded by constraints such as time, cost of information gathering, and the limits of human and mechanical data processing. Because of these constraints, we tend to make decisions incrementally, based on experience in light of recent information, rather than attempting to relearn issues repeatedly.

Complicating policy making in environmental policy is its foundation in science and technology, and changes in the culture of science and technology. From about 1940 to 1965, science and technology policy was characterized by widespread and unquestioning belief in the potential of scientific and technical achievement to overcome societal ills. Clearly, many of these achievements have been of considerable benefit. The rapid growth of the United States and Canadian economies and the prosperity of these nations are due in large part to scientific and technological advances. The availability of inexpensive energy, food, and transportation demonstrate how advances in science and technology have made these countries more prosperous. Indeed, a considerable number of citizens, advocates and policy makers point to the

technological successes of the twentieth century as evidence that future technological advances will help the world avoid grave environmental degradation. But recent technological disasters—oil spills, industrial accidents, public health damage, widespread pollution, and birth defects—have led to a growing skepticism of science and technology.

At the same time that skepticism of science and technology developed, the number of interest groups began to grow very rapidly in the United States and Canada. While popular attitudes toward “special interest groups” are often quite negative, it is important to realize that, regardless of this sentiment, interest groups are key institutional actors in policy making because they provide various actors with opportunities for participation. These groups tend to coalesce with like-minded groups to form what Paul Sabatier calls “advocacy coalitions.” The concept of advocacy coalitions leads to a better understanding of group politics and opportunities for getting involved in the process. In particular, it is crucial to note that groups are active consumers and producers of information *in pursuit of group goals*. Groups do not gather information in the same way that scientists gather data, because they are not seeking to test hypotheses. Rather, they are making arguments based on evidence to address what, in many cases, are what Majone calls “trans-scientific” questions. Such questions rely on, yet transcend, the ability of science to provide easy answers.

An important concept to policy making is the difference between *data* and *information*. A dictionary defines data as “facts or figures from which conclusions can be reached; information.” But not all data is *useful* as information. A database of thousands of climatic observations or responses to public opinion questionnaires is not, by itself, useful information. Its utility comes when someone analyzes that data so that the information derived can be used by competing policy interests, decision makers and citizens. A graph of population or temperature trends may be much more useful and descriptive than a table of raw numbers, because a graph can be used to summarize trends in data.

Data is often gathered for one purpose, but later put to use for another purpose when new problems or questions arise. Global warming research, for example, relies on trends gleaned from over 100 years of climate data that was gathered for weather forecasting and other purposes. It is often the case that data on a problem already exists, which makes additional data collection efforts unnecessary.

How can data be made more useful or informative? In simplest terms, we can compare data to understand trends, or we can describe the shape of a set of data to understand whether a phenomenon is equally distributed or is more randomly distributed. Most of the indicator information in this essay is trend data that assesses whether an indicator is changing over time. These indicators are converted and interpreted into information that citizens and decision makers can use to advance policy ideas.

Many people, including key decision makers, believe that the biggest problem with information is its bias—from the group collecting the data or from the methods used to collect it. But policy advocates do not use wildly distorted data. Indeed, many rely upon academic research or research sponsored by reputable funding organizations. The main

challenge is often choosing which information to use. Some prefer information that demonstrates a need for significant change in order to promote policies that would result in greater sustainability. Others use information to show that the status quo is compatible with sustainability and that few, if any, additional measures need to be taken to move toward sustainability.

In the end, information is only as good as the data it is based on, the methods used to analyze the data, and, to a great extent, the choices made about which types of information to use, how to display it, and how to interpret it. As we will show in the examples we review, there are considerable differences between groups in information gathering, interpreting and reporting. Interpretation is, to some extent, dictated by the nature and motivation of an organization.

### **3. Principles of Sustainability and Information Gathering**

The promotion of sustainability began as a global, transnational issue, but by the Rio conference in 1992 it was increasingly characterized as a local issue requiring local attention. Many scientists and policy makers argue that, by addressing local sustainability challenges, national and international benefits will accrue. The United States and Canadian governments recognize this principle. In the United States, a 1996 report of the President's Council on Sustainable Development (PCSD), *Sustainable America: A New Consensus for Prosperity, Opportunity and a Healthy Environment*, makes a considerable number of recommendations for pursuing sustainability at the sub-national level. Indeed, many communities were already actively working on quality of life issues that could be termed sustainable, and the PCSD report cites good examples of such local initiatives. The Canadian government, through its SDInfo web site, also emphasizes local activities to promote sustainability.

Many methods of achieving sustainability are better suited to the local level. Because the United States and Canada are federal systems, the considerable sharing or delegation of powers to the local level provides many opportunities for local innovation. Canadian environmental policy is more decentralized than that in the United States, and the provinces play a much more active role in policy formulation and implementation. In both the United States and Canada, the national governments act as standard setters. Actual implementation of policies to achieve environmental and social policy standards (many of which relate to sustainability) is left to state/provincial and local governments. Indeed, some states and provinces make and enforce more stringent policies than the federal governments, providing more opportunities for local initiative.

Regardless of where decisions are most appropriately made, the local level is where most decisions must ultimately meet the challenge of successful implementation. This is particularly challenging to local officials because of the often stark contrast between the economy and the environment. "Particularly at local government level, managers are grappling with the very real dilemma of delivering the levels of local economic growth promised by the politicians, while still protecting and sustaining the local environment and the quality of life that is so important to residents."

Because of this conflict, and because of the federal government's role in standard

setting, there may be a need for a national framework to assess and direct local sustainable development activities. Under international commitments, global sustainability efforts will be assessed globally. National governments, therefore, must gather and disseminate information on sustainability, and sub-national governments should use nationally created information resources to remain sensitive to national goals while addressing local needs. Ultimately, the constitutional division of powers between federal and state and provincial governments means the federal governments may only be able to financially induce, rather than legally compel adherence with national.

Efforts to promote sustainability are characterized by an orientation to the future. Promoting sustainability at the local level begins with an understanding of the current state of a community (ranging in size from the world community to a small village) and an expressed desire to make that community—at the very least—as healthy and prosperous for future generations as it is for the current generation. Because of this future orientation, baseline information is needed on current conditions, and data is needed to predict what the community is likely to look like in the future. Given the considerable degree of uncertainty in prediction, such future-oriented data may be difficult to gather and apply and may engender considerable division of opinion in a community. The challenge is to find information from a variety of sources so that skeptical audiences can assess multiple sources of information on. This should be more than a projection of data into the future. Rather, future impacts should also be revealed, such as species loss due to habitat destruction or increased air pollution due to traffic growth.

Sustainability's future orientation usually means that efforts are about *improvement* rather than maintenance of the status quo. Many current patterns of resource consumption in the United States and Canada are not sustainable. If those trends continue, land, water, raw materials, and other resources will shortchange future generations, as the Brundtland Report, Agenda 21 and other initiatives point out. (This is also another example of a substantive outcome of projecting current trends into the future).

This future orientation is especially challenging for all levels of government. As defined in the Brundtland report, sustainability has come to mean more than an issue of environmental protection or appropriate use of "resources." Over the years, the Brundtland definition has expanded to incorporate virtually every function of a community, from open space to reliable transportation. Even this recapitulation of "sustainability" is incomplete. Efforts in pursuit of sustainability often consider a wide range of environmental, social, economic, and political variables, ranging from voter participation rates to vehicle miles driven. Considering this wide range of concerns can lead to more comprehensive planning, but the cost of gathering the requisite information can be prohibitive. A challenge for any community, then, is to understand which indicators of sustainability are most important to understanding the status quo and to progressing toward desired goals.

Related to this comprehensiveness, although seemingly opposed to it, is the idea that efforts to enhance sustainability are pursued in small steps focusing on smaller, more easily understood elements of sustainability. This may be an entirely appropriate

method of advancing sustainability, as noted in our discussing of information gathering principles. But many would argue that this incremental process does not generate the positive gains needed to reverse the grave environmental and social threats faced by the world, such as rapid global warming or rain forest destruction.

Finally, it is important to note that demand for improved measures of and information about sustainability comes from the recognition that current measures, such as Gross Domestic Product (GDP), are inadequate indicators of national social, political, and economic strength. The challenge for policy makers is to find more appropriate measures for quality of life. Fortunately, new work in this area is revealing promising avenues for understanding.

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