

The Need for Guidelines: The Rationale Underlying the Bellagio Principles for Assessment

R. Anthony Hodge and Peter Hardi

The debate regarding what might be a broadly accepted way of measuring, monitoring, and assessing progress to sustainable development has deep roots. Some suggest that the issue is none other than the age old question “What is the good life?” evoked by the ancient Greeks.

The modern era of assessing progress began in the late 1940s when systems of national accounts and the annual calculation of gross domestic (or national) product (GDP or GNP) were introduced. These measures were designed to allow national governments to track the flow of goods and services in the economy through a calculation of national income. In time, the ease by which the simple numbers could be communicated, their usage in many countries, and the appeal of comparative assessment led to the popularization of GDP/GNP as an indicator of the overall well-being of a given nation.

Over the past half-century, many have spoken out against this practice. In 1987, the World Commission on Environment and Development (the Brundtland Commission) added its voice to the appeal for new ways of measuring progress that would go beyond economic signals and capture a fuller sense of human and ecological well-being. This lay at the heart of the idea of sustainable development and its recognition that a shift in the nature of human activities was required if life for future generations was to be as rich as that found currently. In 1992, The Earth Summit in Rio de Janeiro, Brazil, echoed this same message in Agenda 21.

A full decade has now passed since the Brundtland Commission voiced its call for sustainable development. Today, communities, governments, businesses, international agencies, and non-government organizations are increasingly concerned with establishing a means to monitor performance and to assess progress toward sustainable development. As the new millennium approaches, individuals and organizations take stock of conditions and consider future implications of present activities.

There is a clear link to “results-based management” and associated reporting, whether the scale be a local project, a corporate enterprise, or a large political jurisdiction. Faced with growing demands that expenditures of increas-

ingly limited resources be both well directed and monitored in terms of success, decision-makers are actively pursuing systems for ensuring accountability.

Although many have offered lists of indicators that would supplement the GDP in an overall assessment of progress, consensus has not emerged. Many question whether or not a common list is even possible, given the wide variety of natural conditions and the differences in values apparent from place-to-place.

In response to the need for improved indicators, the International Institute for Sustainable Development (IISD) sought and received support from the Rockefeller Foundation to bring together an international group of measurement practitioners and researchers from five continents to review progress to date and to synthesize insights from practical ongoing efforts. The meeting took place in November, 1996 at the Rockefeller Foundation's Study and Conference Center in Bellagio, Italy.

Rather than debating the choice of ideal indicators of sustainable development, the discussion that ensued was oriented to a more basic level. Overarching principles were sought that would provide a link between theory and practice. This paper provides a summary of the ideas underlying the "Bellagio Principles for Assessment" that ultimately emerged.

Such principles are a pragmatic expression of core values. They serve as practical guidelines for the whole of the assessment process from system design and identification of indicators, through field measurement and compilation, to interpretation and communication of the result. With broad acceptance, it is expected that a common foundation will emerge, even though details of system design and indicator choice might vary greatly in any given application.

The guidelines are interrelated and should be applied as a complete set. They are intended for use in starting and improving assessment activities of community groups, non-government organizations, corporations, national and sub-national governments, and international institutions.

Basic Notions

In general terms, the idea of sustainability is the persistence of certain necessary and desired characteristics of people, their communities and organizations, and the surrounding ecosystem over a very long period of time (indefinitely). Achieving progress toward sustainability thus implies maintaining and preferably improving, both human and ecosystem well-being, not one at the expense of the other. The idea expresses the interdependence between people and the surrounding world.

Development means to expand or realize the potentialities of, bring gradually to a fuller, greater, or better state. It has both qualitative and quantitative characteristics and is to be differentiated from growth which applies to a quantitative increase in physical dimensions.

Sustainable development is not a “fixed state of harmony.” Rather, it is an ongoing process of evolution in which people take actions leading to development that meets their current needs without compromising the ability of future generations to meet their own needs. Conversely, actions that reduce the ability of future generations to meet their own needs should be avoided.

The ideas presented in the above paragraphs are not complicated. They say that certain features of the world need preserving and improvement if life (for people, plants, and animals) is to endure. Further, they reinforce the concept of sustainable development as value-based. Thus the design of a sustainable world — the choice and degree to which “certain features” are to be sustained — will depend on the operating set of values, values which will shift over time and will vary within communities and from place to place.

Achieving progress toward sustainable development is clearly a matter of social choice, choice on the part of individuals and families, of communities, of the many organizations of civil society, and of government. Because it involves choice, change is only possible with the broad involvement of the general public and decision-makers in government and across civil society. And because of the need for this involvement, care must continually be taken to ensure that substantive conceptual and technical issues are considered within the context of the delicate value-driven processes of real, day-to-day decision-making. In this way, new insights can effectively be fed to decision-makers and conversely, the processes of assessment and decision-making can enhance technical and public inquiry. The process is a two-way street.

In summary, sustainable development commits us to considering the long-term and to recognizing our place within the ecosystem. It encourages a continuing reflection on the implications of human activity. It provides a new perspective from which to see the world. It is a perspective that forces the bridging of many ideas and disciplines (contemporary and traditional) that have previously remained disparate. Those using this perspective, including the Brundtland Commission and participants at the Earth Summit among many others, have come to the conclusion that the current nature of human activity is inadequate for meeting current needs and is seriously undermining opportunities for future generations.

The Bellagio Principles for Assessment serve to focus the perspective described above. They are offered in the belief that seeing differently is the first step to doing differently.

Current Approaches to Assessing Progress toward Sustainable Development

A number of approaches to assessing progress toward sustainable development are currently being developed and tested. In most cases, the emphasis is on choosing appropriate measures for the task and in organizing them in a meaningful way. A dominant concern is to effectively communicate the result to the general public, as well as to decision-makers in civil society and in government.

The organizing frameworks that emerge are inevitably hierarchical — extending from broad categories of data and information to detailed measures. Developing and using a clear conceptual framework for guiding the assessment process is very important. With a conceptual framework in place, indicators emerge more naturally, and can be adjusted to the needs of a given locale or set of decision-makers.

An effective framework accomplishes two important goals: first, it helps determine priorities in the choice of indicators; and second, it triggers the identification of indicators which may be more important in the future. Knowing what is not being emphasized is as important as knowing what is. In an analogous way, a lack of data for some indicators can be an important signal in itself. In this way, the effective framework serves as a check template to be revisited from time-to-time in a test of current priorities. This reflection cultivates an anticipatory capacity.

Any framework that is chosen reflects some sort of conceptual model against which the real world can be set. Five groups of models appear to be emerging as influential in assessing progress toward sustainable development. These include: (1) models with roots in economics; (2) stress and stress-response models; (3) multiple capital models; (4) various forms of the three-part or theme “social, economic, environment” model; and (5) the linked human-ecosystem well-being model. The first two of these are considered partial system models. The latter three are full system models that try to capture all aspects of the system, including people and the environment.

The frameworks, the categories of data and information that are included, and the choice of specific measures, all reflect the values, biases, interests, and insights of their designers. Sometimes these are explicit in the form

of sets of principles that guide the application of a given framework and set of indicators, sometimes they are not expressed at all. In addition, value-driven principles are often developed as part of strategic planning exercises linked to such interests as sustainable communities, healthy communities, sustainable or environmentally sustainable economic development, human centered development, corporate sustainability, and so forth.

The various initiatives and interests noted above represent a tremendous pool of experience and insight from which to draw. In this work, an attempt has been made to use this base of understanding to inform deliberations in such a way that common ground is identified.

The Bellagio Principles for Assessment

Any assessment of change needs a frame of reference to identify if change has taken place and to set a context for judging whether that change is good or bad. While it is not necessary to know an exact end point, an essential condition for assessment is to establish a desirable direction for change. For example, moving towards fewer people in a state of poverty and starvation, a lower level of infant mortality, more supplies of clean and abundant water, improved air quality, less discharge of toxic contaminants to the environment, less soil erosion, fewer fisheries in crises, etc. all signal directions that would be consistent with progress toward sustainable development. All of these changes, provided that they are enduring, indicate an improvement in human and ecosystem well-being.

In any given community and ecosystem, it is essential to articulate a vision for the future. This step reflects the values of the community or region, and therefore must build from a process that includes the spectrum of different constituent groups. Goals can then be articulated that formally express the trends and provide the basis for the entire assessment, including the selection of indicators. The vision and goals together provide the starting point of any assessment.

Principle 1: Guiding Vision and Goals

Assessment of progress toward sustainable development should:

- be guided by a clear vision of sustainable development and goals that define that vision

The concept of sustainable development links people with the surrounding world. Assessing progress toward sustainable development thus implies

that information must be gathered about people, and about the surrounding world. Such an approach is closely linked to ideas that have emerged within systems theory.

A core element of that approach is the idea of the “whole” system which can co-evolve successfully in a changing environment. Such systems are characterized by: (1) emergent properties which are critical for understanding the whole but may have little or no meaning in terms of constituent parts; (2) a hierarchical structure in which systems are nested within other systems; and (3) processes of communication, feedback, and control that allow adjustment and adaptation in the face of stress.

Conceptual models are used to link components to the “whole” and identify controls and feedback loops. In order to assess the state or performance of the constituent parts, controls, feedback loops, and the whole system, indicators or performance measures are needed.

The power of a whole system approach derives from a realization that some system properties are not evident from simply looking independently at the parts. Most importantly, the overall well-being of a system cannot be tested by independent analysis of the parts. And similarly, taking action to adjust the system can only be effective if the integrated set of factors influencing the system (such as stress imposed on the ecosystem by human activity) is considered.

These ideas serve to set very broad boundaries for defining the content of what should be included in assessing progress toward sustainable development. For example, environmental concerns have historically focused on pollution and generation of chemical stress (the emissions and discharges) that lie at its root. Physical and biological stresses (for example, habitat destruction, introduction of exotic species) have received less attention. Similarly, groundwater concerns have often received little attention compared to air quality and surface water concerns. And plant and insect life rarely figure in environmental assessments while the more visible birds and large mammals (often those subject to hunting) do. From a systems or holistic perspective, these emphases make little sense.

Obviously, there are many cause/effect relationships we are only beginning to recognize and understand. The only hope for gaining cause/effect insight is to chip away at understanding the different system components and their relationships, both to each other and to the whole. In turn, this observation underlines the need to assume a learning and reflective stance. A given interpretation of an indicator set or a particular system assessment should be considered as part of a learning exercise, never an end in itself. New data and information leading to a new interpretation

of state and trends does not imply that the former interpretation was wrong but rather that society has learned its way to a more complete insight.

Maintaining a perspective on the “whole” system also facilitates development of a capacity to “anticipate and prevent” rather than having to retrospectively “react and cure.” It is by looking at characteristics of the whole system that early warning signals can be identified so that action to prevent crises can be taken.

Principle 2: Holistic Perspective

Assessment of progress toward sustainability should:

- include review of the whole system as well as its parts
- consider the well-being of social, ecological, and economic sub-systems, their state as well as the direction and rate of change of that state, of their constituent parts, and the interaction between parts
- consider both positive and negative consequences of human and ecological systems, in monetary and non-monetary terms

Several important aspects of assessment fall from taking a holistic perspective. It demands a consideration of people and the surrounding ecosystem and both positive and negative implications of human activity. In assessing human activity in this manner, the full life cycle needs consideration along with the full costs borne not only by people but also by ecosystems. This is a major challenge because many of the factors that require consideration are not amenable to measurement in economic terms. Thus, both monetary and non-monetary forms of valuation must be used.

Further, the distribution of costs and benefits is often as important as their absolute magnitude. For example, total wealth generated can be very great and figures describing wealth generated per capita can appear very strong. However, if the costs of generating benefits are borne by others, the system is unjust and unstable. From an assessment perspective, such a review of equity and disparity implies that data and information are generated that allow comparisons to be made among sub-populations. For example, comparisons might be based on gender, age, ethnicity, socio-economic status, health status, or living location (such as urban or rural).

Principle 3: Essential Elements

Assessment of progress toward sustainable development should:

- consider equity and disparity within the current population and between present and future generations, dealing with such concerns as resource use, over-consumption and poverty, human rights, and access to services, as appropriate
- consider the ecological conditions on which life depends
- consider economic development and other, non-market activities that contribute to human/social well-being.

Taking a holistic perspective also means adopting a time horizon that spans both human and ecosystem time scales. The human-ecosystem time discrepancy is one of the most significant challenges to be overcome in bringing the ideas of sustainable development from theory to practice in contemporary decision-making. Use of ecosystem-based time horizons that extend decades, centuries and beyond, push economic analyses and current systems of law beyond their present capacity.

However, a central theme of sustainable development is care for future as well as present generations and care for ecosystems as well as for people. Application does not mean that a vast data set is required. Comprehensive economic, societal, and health data sets, however, only extend back about 40 years in the most developed countries; for environmental data it extends to about half that. Thus a long-term, multigenerational time horizon is needed. It means that long-term (decades to centuries) implications are considered and anticipated. Techniques for intergenerational assessment need to be developed. As data sets grow through the next century, a greater degree of assurance may evolve.

As with the time dimension, sustainable development demands a shift in spatial perspective. The nature of human activities are now such that activities undertaken at one location can have implications for people and ecosystems located far away. This is particularly the case because of:

- international trade activities that rapidly shift costs and benefits from one part of the world to another;
- international aid activities that work to ameliorate conditions in one part of the world by shifting benefits from another;
- emissions of contaminants to air that have a capacity for long-range transport or that in fact alter the nature of the outer atmosphere to cause global-scale change;

- discharge of contaminants and debris to the marine environment with a capacity for long-range transport;
- generation of environmental stress (for example through habitat destruction, introduction of exotic species, and pollution) that effects ecosystem, species, or genetic diversity with global implications.

In order that full costs be accounted for and implications integrated into decision-making, the physical boundary for a given project area or of a target jurisdiction should be set to include the full extent of affected ecosystems.

Principle 4: Adequate Scope

Assessment of progress toward sustainable development should:

- adopt a time horizon that spans both human and ecosystem time scales to ensure that the needs of future generations are addressed while responding to current short-term decision-making requirements
- define the space of study large enough to include not only local but also long distance impacts on people and ecosystems
- build on historic and current conditions to anticipate future conditions — where we want to go, where we could go

Taking adequate scope to the extreme would imply development of an assessment that is beyond the possibility of implementation. The intent of this principle is to broaden the perspective, and keeping the analysis manageable. Technically, it is not possible to compile everything about everything, and decisions can not wait for decades of further research. Rather, a conceptual approach must be taken that recognizes the limits to current understanding. In order to improve the assessment process, the following has to be clearly seen:

- the cause/effect linkages between human activity, the generation of benefits to and stresses on people and the ecosystem, and the resulting human and ecological conditions should be better understood;
- more effort is needed to ensuring a degree of transparency in assessing conditions and the changes that are evident. As a result, the capacity to learn from past mistakes and transmit that learning forward would be enhanced;
- both the strength of measurement techniques and the availability of data need to be made more even across the system;

- even when data are available, a comparative mechanism such as an established target or threshold, to enable assessment should be more readily available;
- even when point-in-time data are available, time series, which are adequate to generate well-based trend analyses, are more frequently needed;
- more adequate analytic techniques (physical and numerical) should be applied, particularly when dealing with the integrated effects of multiple factors and in considering future conditions;
- a more interdisciplinary approach and an integrated perspective are necessary to bridge the gap among disciplines.

There are very real limits to human, financial, and time resources: we do not have the luxury of stopping and waiting until full understanding exists. In short, focus is inevitable and needed.

Principle 5: Practical Focus

Assessment of progress toward sustainable development should be based on:

- an explicit set of categories or an organizing framework that links vision and goals to indicators and assessment criteria
- a limited number of key issues for analysis
- a limited number of indicators or indicator combinations to provide a clear signal of progress
- standardizing measurement wherever possible to permit comparisons
- comparing indicator values to targets, reference values, ranges, thresholds, or directions of trends, as appropriate

A number of factors underlie a need for special treatment of the processes that are undertaken in completion of an assessment of progress toward sustainable development. These include:

- the magnitude of the issues being faced and the resulting need to engage a broad spectrum of society in identifying problems and designing and implementing related solutions;
- the value-based nature of the concepts of sustainable development and sustainability and the need to recognize the diverse and changing nature of values held across society;

- the limits to our understanding of the system that requires consideration and the need to bring as many disciplinary perspectives to bear as possible;
- the importance of effectively linking to the needs of decision-makers;
- the need to maximize learning opportunities.

As a result, it is essential that processes of assessment are open and broadly accessible. To generate the credibility needed to contribute to decision-makers as well as maximize learning opportunities now and in the future, assessments must describe the rationale for judgments, identify the assumptions that are made and the uncertainties that arise. Uncertainty may be the most significant factor undermining good decision-making or the spark to creative surprise. It is an inevitable part of decision-making and should be an explicit consideration in interpreting data and information and in communicating the results.

Principle 6: Openness

Assessment of progress toward sustainable development should:

- make the methods and data that are used accessible to all
- make explicit all judgments, assumptions, and uncertainties in data and interpretations

Communication is central to any assessment process. The issues are complex, the words are not precise (for example in English, the words environment, criteria, and social are used differently by different disciplines), and the entire process is normative. If these concerns are to be minimized, and work is to stand peer and public scrutiny, and the results are to effect decision-making, the assessment process and indicator design must be transparent, fully documented and clearly communicated.

To engage a broad spectrum of society and feed insights to the public and decision-makers, the assessment as well as the process used in its development must be built around effective communication. This implies that the structure and expression of ideas is simple in form.

Cultural differences also exist within any society: different groups of decision-makers can be differently characterized in terms of values, motivation, and needs for supporting data and information. Thus corporate culture can be differentiated from bureaucratic culture which in turn is different from the culture of academics and so forth. The culture of decision-making of families is different again than all of the above. And yet each of these sub-cultures has an important role to play in achieving progress toward

sustainable development. An effectively designed system with nested indicators will be sensitive to the differences for two reasons: (1) to minimize costs by identifying common needs; and (2) to ensure results that can contribute to decision-making.

Principle 7: Effective Communication

Assessment of progress toward sustainable development should:

- be designed to address the needs of the audience and set of users
- draw from indicators and other tools that are stimulating and serve to engage decision-makers
- aim, from the outset, for simplicity of structure and use of clear and plain language

The need for broad participation in assessment processes, in particular by decision-makers themselves, requires emphasis. Without such participation and the identification of concerns, design and implementation of solutions becomes more difficult. Given the scale and complexity of some of the issues, resolution is beyond the capacity of a single sector.

Further, without broad participation, it is impossible to reflect the diverse and changing nature of values held across society, and chosen courses of action will respond to the short term needs of a particular interest group rather than being founded in the aspirations of a cross-section of society. The inevitable result is short-term responses that preclude long-term human and ecological needs that are central to sustainable development.

The need to involve all key stakeholders in decision-making is fundamental to sustainable development. It is driven by the realization that the range of stakeholders must assume responsibility for and participate in resolution of the many human and ecological problems now before us. Involving them in decision-making processes governing conditions that affect them, they will be more likely to assume responsibility and act.

This requirement opens the door to sensitive cultural issues because the nature of participation in decision-making varies between cultures and political jurisdictions. The intent of this principle, however, is to increase the transparency of decision-making, not to judge as right or wrong different decision-making cultures.

The assessment process merges “values expertise” with “technical expertise” through a broadly participatory reflective process that can address and take creative advantage of the inevitable tensions. A linked, “bottom-up, top-down” assessment process is therefore essential to ensure that a

range of values receive fair consideration; that participants recognize the role that they play in creation of the problem in the first place; and to facilitate early ownership of problem solutions that emerge.

Principle 8. Broad Participation

Assessment of progress toward sustainable development should:

- obtain broad representation of key grass-roots, professional, technical, and social groups, including youth, women, and indigenous people — to ensure recognition of diverse and changing values
- ensure the participation of decision-makers to secure a firm link to adopted policies and resulting action

Developing a Continuing Capacity for Assessing Progress

Undertaking a single assessment of conditions is better than none at all, but should be considered only a small step in a continuing learning process. Trends identified in an initial assessment and the conclusions that result require testing over time to develop confidence and ensure credibility. Furthermore, it is only through such continual assessment that the success of corrective measures taken by business, government and across civil society can be evaluated and modified as appropriate.

Thus, the need for continuity is two-fold. First, there is a strategic need for monitoring the success of actions taken over time and results-oriented management.

Second, there is a substantive need to enhance our knowledge base. Human society exists as part of a dynamic system, much of which is ill-understood. Assessing progress toward sustainable development must deal with that system in a high degree of uncertainty. Continual assessment reveals new insights and identifies other unknowns to be explained.

Principle 9: Ongoing Assessment

Assessment of progress toward sustainable development should:

- develop a capacity for repeated measurement to determine trends
- be iterative, adaptive, and responsive to change and uncertainty because systems are complex and change frequently

- adjust goals, frameworks, and indicators as new insights are gained
- promote development of collective learning and feedback to decision-makers

To be established and cultivated over time, the assessment capacity described above requires some degree of continuing resources. Data and information must be collected over time, synthesized, and communicated. Resources must be committed and effort made to support the development of local capacity to participate throughout the assessment process. Thus, an institutional home must be found and supported on a continual basis. Without that support, a capacity for assessment will not evolve.

Perhaps, the best means to ensure adequate capacity for assessment is adopting a commitment to sustainable development that institutionalizes assessment and reporting on progress. The approach is similar to that taken for existing financial reporting. Such actions ensure that the necessary resources are allocated to make assessment an ongoing activity. A business may adopt a corporate policy and develop a strategic plan to achieve targets and goals. A community may implement a variety of regulations and incentives to undertake assessments.

The ability to undertake assessment requires a commitment of resources. The Bellagio Principles for Assessment recognize and address the need for restructuring organizations, changing roles and responsibilities, creating information management systems, auditing, reporting and communication strategies and other activities, including professional development and training, that create the internal support for conducting assessments.

Principle 10: Institutional Capacity

Assessment of progress toward sustainable development should be assured by:

- clearly assigning responsibility and providing ongoing support in the decision-making process
- providing institutional capacity for data collection, maintenance, and documentation
- supporting development of local assessment capacity