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Grassroots Indicators for Sustainable Development

by Helen Hambly

A Kenyan farmer pulls a plant from the dry, cracked soil. Shaking away the soil, she examines the roots and predicts that the short rains will come soon, perhaps by month's end. In Bhutan, pastoralists alternate herds of yak and cattle between northern and southern pastures according to the seasonal flowering of a local shrub, a crucial practice for the regeneration of pasture and for the prevention of disease transmission between the two species. In northern Canada, aboriginal men and women discuss changes in the concentration of effluent in local rivers from pulp and paper processing. Their assessment of water quality is based on variations in the taste of fish.

All over the world, examples such as these can be found of local people using "grassroots indicators"; measures or signals of environmental quality and change formulated by individuals, households and communities, and derived from their local systems of observation, practice and indigenous knowledge. Since "the environment" is defined here in its widest sense to cross economic, social, cultural and ecological boundaries, grassroots indicators may be better gauges of well-being than traditional development indicators that are confined to sectors such as health, education or the economy. The central importance of grassroots indicators is as pieces of information that local people use to make decisions based on observed trends, or to judge how close they are to specific goals. They are instrumental in local monitoring of ecosystems, evaluating and predicting environmental change, as well as in decisions whether to work toward sustainable and equitable development.

First Nations Environmental Indicators

Canada's indigenous peoples, known as the First Nations, have a long, informal experience with grassroots indicators. Traditionally, they have depended upon renewable resources (agriculture, hunting and fishing) that they have managed sustainably for hundreds of years. Their livelihood and very existence has often been threatened by unsustainable development manifested in water pollution, deforestation, and declines in fish and wildlife. Now, First Nations suggest they are lacking structured, formal analysis of these environmental changes to enable communities to assess the damage done, identify their causes and slow down or reverse harmful trends.

Henry Lickers of the Mohawk Council of Akwesasne in Ontario is the lead investigator of the IDRC-supported project "First Nations Environmental Knowledge and Approaches to Natural Resources." He argues that environmental indicators can significantly improve a community's analysis and evaluation of local change. Environmental indicators can help preserve existing First Nations knowledge of sustainable resource use and, most importantly, strengthen traditional rights, including a decisive role for First Nations in formulating local resource management policies.

Interestingly, for First Nations people, indicators of environmental decline simultaneously uncover links to social violence and declining health standards. At an IDRC Grassroots Indicators Workshop, held in

Ottawa in late 1993, Henry Lickers provided a unique example of such a grassroots indicator: changes in the number of women who preserve food as a measure of domestic and social security. Women preserve fruits, vegetables, meat and fish when they feel assured of social and domestic stability. Lickers defined domestic stability in terms of lack of domestic violence and addictive behaviour as well as economic well-being.

Indigenous Knowledge and Innovations

The Society for Research and Initiatives for Sustainable Technologies (SRISTI), an IDRC-supported NGO in Ahmedabad, India, documents indigenous innovations and exchanges information through its network and newsletter known as "Honey Bee." This network draws its operating principles from the behaviour of the honey bee: just as the bee collects pollen without making the flower poorer, knowledge should be shared without depriving its owners. The network also encourages a cross-fertilization of ideas among innovators.

For SRISTI Chairperson Anil Gupta, environmental indicators are intrinsic to systems of indigenous knowledge and technological innovation. Local land users have rigorously explored and tested environmental indicators through generations of adaptation. The key for research in this subject area is, therefore, to compare and test Western scientific concepts against grassroots indicators to "add value" to local knowledge.

One example of how SRISTI is tackling this objective is to study the taxonomic basis of indigenous knowledge systems. Local ecological classification systems, from cloud formation to soil type, are compared to formal scientific taxonomies. This work is not only important in identifying and potentially using grassroots indicators, but also in restoring appreciation for the richness and values of local culture. Bringing this awareness to research agendas in universities, development programs, and extension services is SRISTI's next challenge.

Moving Grassroots Indicators into the Mainstream

Clearly, the challenge of integrating grassroots indicators into decision making is two-fold: how to make them more acceptable within current decision-making processes and how to make these processes more receptive to grassroots indicators. These twin challenges are the foundation of a special IDRC activity that supports research to evaluate the potential for identifying and utilizing grassroots indicators.

Currently, there exists little published material directly relevant to grassroots indicators. The most impressive material is "grey literature," consisting mainly of research proposals. Almost nothing exists on how grassroots indicators may actually feed into national environmental planning and policy design or reporting systems.

Given this information vacuum, two outcomes of IDRC's 1993 workshop on grassroots indicators are particularly important: the formation of the Grassroots Indicators Network (GRIN) and the drafting of a Protocol for Research and Networking Activities on Grassroots Indicators. In essence, the protocol states that research on grassroots indicators should be controlled by local communities, should address needs and priorities identified by communities themselves, and research results should first be shared with the source individual or community before any wider diffusion occurs.

In the follow-up to the workshop, two key subject areas were proposed for IDRC support: early signals of ecosystem stress or change; and community adaptation to environmental change. Already, relevant project activities have been identified. Some are specifically related to grassroots indicators, such as "Community Resource Mapping for Policy Analysis in the Central American Hillsides," a collaborative project between the *Escuela Agricola Panamericana de Zamorano* in Honduras and the International Food Policy Research Institute. Other projects have a sub-component on grassroots indicators, such as the Ugandan Fisheries Research Institute's "Lake Victoria and Nile Basin Management Research Project."

Beyond these two examples, IDRC, in cooperation with the Grassroots Indicators Network, is ready to support a range of activities in order to stimulate ideas and documentation on grassroots indicators as well as determine their usefulness for policy and decision making.

Linking Grassroots Indicators to National Reporting Systems

Certain initiatives are overcoming the obstacle of finding ways to incorporate grassroots indicators into environmental reporting systems. In Rijnmond, Netherlands, people telephone a central "hotline" number run by the Environmental Monitoring Centre to report noise and air pollution based on what they smell, see and hear. Periodic tallies of these reports are then passed on to public authorities. Data from the grassroots indicators of pollution can then be compared and synthesized with official data from the national environmental services.

Similarly, in Ontario, Canada, telephone hotlines are operated by provincial authorities, often with the participation of community groups, for monitoring invading plant species and sightings of endangered birds and animals. Use of local observations means that decision makers have an additional source of data, including an increase in sample size due to a larger number of direct observations.

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