Status of Economic Criteria and Indicators for the Sustainable Rangeland Roundtable

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Abstract

The economic set of criteria and indicators (C&I) for rangeland sustainability are being developed through the roundtable process. The purpose is to define the set of indicators about which data could be collected that will tell those interested whether certain economic goals are being met. At this point, in addition to the traditional commodity indicators, we are working through how to deal with noncommodity indicators. We are sorting through suggested criteria and indicators from other efforts and adapting them to the rangeland situation. A draft set should be ready for circulation in early 2002.

Introduction

The role of economic C&Is for rangeland sustainability is to identify what happens to economic systems as other systems (ecological, social, legal, and political) change and to find ways that we can measure those effects. The economic system underlies how society chooses to allocate scarce resources among competing uses. Thus, these indicators should tell us, over time, how those choices are reflected for specific criteria.

Process

We began the process of identifying the economic C&Is using the Roundtable on Sustainable Forests (RSF) interpretation of the Montreal Process Criterion 6 – Maintenance and Enhancement of Long-Term Multiple Socio-Economic Benefits to Meet the Needs of Societies. Each of the RSF economic indicators has either been adapted to rangelands for further evaluation or were rejected as not being useful for evaluating rangelands. We have supplemented the RSF C&Is with issues and additional economic indicators raised by the SRR at the Salt Lake City and Reno meetings. The current list of potential indicators presented below is the result this process. We also meet jointly with the social C&I group at Sustainable Rangeland Roundtable (SRR) meetings (see Brunson, pp. 55-58) so that overlap between the two reports is expected.

The Socio-Economic Criterion Group is also working on developing a better framework to understand the economic and social relationships in "rangeland counties." Most relevant economic data are collected at the county level and aggregated to the national level in reports such as the Census of Agriculture. At the same time, understanding the social implications of rangelands requires knowledge of the structure and function of communities that are tied to the land. We believe that the best way to understand the relationships among economic and social systems and the rangeland ecosystems to which they are tied is to use a monitoring framework. This framework should be based on a valid statistical design using indices that account for differences among counties (e.g., Clark County, NV, home of Las Vegas, vs. Owyhee County, ID, a large rural county in the extreme southwestern corner of the state).

Indicators

Table 1 shows the potential economic indicators being considered. Some of the indicators such as livestock AUMs and their values are more easily obtained than others which will require extensive research before they are useful. The final suite of economic indicators will be useful for showing how rangelands are used and how decisions about their use are being made. At this point there is likely to be significant overlap among the economic indicators and those being identified by other criterion groups.

Challenges and Opportunities

There are several challenges related to developing the economic C&Is. These can be grouped into definitional, relationship, and scale questions. The definitional questions, while vexing, are perhaps the easiest challenge to address. For each of the indicators we must decide what is being measured and how it is going to be measured. The second level of question is the relationship among economic indicators and ecological and social indicators. For example, if a soil indicator shows a change is occurring, will that eventually show up in

Table 1. Potential economic indicators for sustainable rangelands.

Potential Indicator	What it tells you
Total ecologically available AUMs on rangeland and rangeland AUMs actually used or harvested and/or number of rangeland AUMs used and number of AUMs represented in total livestock production.	Measure of % utilization and/or dependence on rangeland for livestock production.
The amount and value of forage harvested from rangeland by livestock.	Shows one of the uses of rangeland. One of the few indicators that will tie together the social, economic, and ecological indicators via grazing impacts to range ecology and rural communities dependence on livestock production income.
Value and quantities of production of non-livestock products produced from rangeland.	Measures the economic value of non-livestock AUMs, wildlife, open space, and other amenities.
Supply and consumption/use of non-livestock forage rangeland products.	Direct measure of the number of people using rangelands for numerous non-production uses
Area and percent of rangeland managed for hunting recreation, dispersed recreation, tourism, and wilderness, in relation to the total area of rangeland.	Demonstrates society's desired uses of rangelands as areas become managed for different uses.
Number and type of facilities available for general recreation and tourism, in relation to population and rangeland area.	Adequate facilities are required to promote recreational rangeland use.
Number of visitor days and fees collected (in total, per capita, and per unit of rangeland area) for rangeland related recreation and tourism activities.	Shows how rangelands are being used for recreation.
Value of investment, including investment in rangeland, rangeland improvements, and recreation and tourism.	Indicates how much demand there is for new structures for a variety of uses.
Level of expenditure on rangeland research, development, and education.	Indicates long-term commitment to future activities.
Extension and use of new and improved technologies related to rangeland improvement (including "best management practices") and livestock production.	Shows how new technologies are being adapted as pressures increase.
Rates of return on investment for range livestock enterprises.	Indicates the ability of ranchers and other business enterprises to remain in business and provide stewardship.
Direct and indirect employment in the ranching sector, and ranching sector employment as a proportion of total employment.	Measures the importance of the ranching sector to the employment base.
Number of conservation easements purchased.	Measures the willingness of people to contribute to the conservation of open space and as a way to help ensure land is not developed.
Acres of rural land purchased by non-governmental organizations.	Measures the willingness of people to contribute to the conservation of open space and as a way to help ensure land is not developed.
Contributions to restoration activities.	Measures the willingness of people and organizations to invest in a variety of rangeland activities.
Trade flows (regional economic modeling information).	Measures how economic goods and services are traded between rural and urban areas. Important to know where investment of income is occurring.

an economic indicator and can they be linked into a statement of overall sustainability? Lastly, the question of scale arises continuously as we discuss economic indicators. What is relevant to an individual rangeland owner or user may or may not be relevant at the community, county, region, or national level. Furthermore, when we aggregate up or disaggregate down the results may become meaningless, especially if we want to make any kind of assessment of rangeland sustainability. For example, if we consider national data from "rangeland counties" (generally the level that data are collected), large urbanized county data can overwhelm data from lightly populated and less economically diverse counties.

While the list of indicators above will address the first two questions to some degree, we do not think they will tell us what we want to know about

rangeland sustainability on the national level, especially if we seek to link this economic information with social, ecological, and institutional indicators. The opportunity here lies in taking the time to develop a statistically valid method of sampling "rangeland counties" throughout the nation to draw inferences about the sustainability of rangelands from the economic and social perspectives and to tie those inferences into the ecological and institutional perspectives.

Conclusions and Future Work with Criterion

Developing usable economic indicators that can be combined with social, ecological, and institutional indicators to assess rangeland sustainability in the United States remains a work in progress. There is no nationally accepted framework to determine relationships to make such an assessment. We propose that developing one upon the concept of national data sets will not work for economic (or social) indicators. A new framework for making national assessments based upon statistical sampling of "rangeland counties" may be a better model. While we will continue to work on a rational set of economic indicators, we intend to pursue a parallel track of defining this alternative model. We recognize that this statistical model may not be useful until research has validated essential relationships. Nevertheless, we believe that the time to develop economic indicators that can be interpreted in relation to other indicators is now upon us and should be pursued.