

MAKING TOURISM SUSTAINABLE, SUSTAINABLE TOURISM, AND WHAT SHOULD TOURISM SUSTAIN: DIFFERENT QUESTIONS, DIFFERENT INDICATORS

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Abstract: *As the world's fastest growing industry, tourism has a substantial potential to positively impact important social and economic development goals. At the same time, it often brings other negative and sometimes pernicious impacts. As we move to greater consideration of sustainability as a fundamental political, economic and social goal, there is a need to better understand not only current conditions, but progress toward meeting those goals as well. Indicators are variables that help achieve the monitoring needed to assess progress toward sustainability. Selection of indicators must meet not only important technical criteria but policy relevant criteria as well.*

Understanding what is to be sustained thus becomes a significant question in the pursuit of indicators. Tourism is confronted with several different sustainability constructs that reflect not only different policies but carry implications for selection of indicators. These constructs briefly stated are: (1) what is the sustainability of the tourism industry?; (2) how is sustainable tourism developed and managed?; and (3) what should tourism sustain? The policy implication of the latter question is directly related to integration of tourism as an economic activity into community development; and served as the focus of this study.

Over 100 participants in Montana's tourism and recreation industry - representing the private sector (hoteliers, outfitters), quasi-public agencies (the six destination marketing organizations at the regional level within Montana); and agencies managing public lands used for tourism - answered a brief questionnaire designed to understand what they felt tourism should sustain and what we be useful indicators of that. The results indicated that the highest priority items

generally dealt with important social goals - economic opportunity, protection of quality of life - but indicators selected did not directly reflect those goals. There is an apparent disconnect between the two.

Keywords: *sustainable tourism, indicators*

Introduction

Perhaps the most fundamental challenge confronting the tourism industry today is its ability to contribute to three fundamental goals of human welfare: (1) providing for economic opportunity; (2) enhancing quality of life; and (3) protecting our cultural and natural heritage. In this sense then, the tourism and recreation industry is an agent for societal development, a tool deliberately and carefully chosen to address these three goals. Therefore, the tourism industry is directly integrated into broad community development strategies, rather than viewed as a separate program or entity.

The issues and challenges confronting the tourism and recreation industry in achieving these goals are well documented. The industry is often confronted both with scornful criticism and bestowed with ecstatic expectations about the role it can play in reviving, even saving, small community economies, particularly in areas where traditional resource commodity industries (e.g., fishing, logging, mining, agriculture) have lost ground.

The developmental process, however, has recently been challenged by the debate over sustainability as an important policy goal for the industry. This debate, like others in natural resources, was triggered largely by the report of the World Commission on Environment and Development released in 1987 (World Commission on Environment and Development, 1987). *Our Common Future* suggested that environmental quality and economic opportunity are closely linked and that government policies should emphasize actions that meet "the needs of the present without compromising the ability of future generations to meet their needs". The tourism industry, particularly academics and places with abundant natural resources, has embraced this discussion.

This debate is usually framed in terms of "sustainable tourism", and indeed there are now many books, countless scientific articles, and even a technical journal focusing on sustainable tourism. This literature is littered with definitions of sustainable tourism. These definitions emphasize that sustainable tourism is a "kinder and gentler" form of tourism development that stresses forms that are sensitive to environmental impact, give rise to harmonious relationships between hosts and tourists, and follow a long-term timeframe in consideration of economic consequences (see, for example, Bramwell and Lane, 1993; Innskeep, 1991; Cater and Goodall, 1992). To some, this debate over definitions has gone on too long: the focus on defining sustainable tourism, according to Garrod and Fyall (1998) needs to be replaced with more consideration of implementing the ideals that are represented by the various definitions.

While I agree with this comment somewhat, definitions serve to frame the problem and lay the foundation for future work, assessment, analysis and evaluation. Definitions that are widely shared are critical to effective communication. Widely held debate over definitions helps ensure that problems are framed in useful ways, and examining different interpretations brings out important issues (Bardwell, 1991). Because there

are real needs to assess progress toward sustainability, definitions are important in selecting indicators that can be used to monitor relevant social and resource conditions and provide information on effectiveness of social policy in meeting sustainability goals. Despite the call of Garrod and Fyall (1998) to go beyond the rhetoric of sustainable tourism [definitions], the confusion in terminology remains an important obstacle, and must be addressed prior to selecting indicators.

In this paper, I wish to address two primary questions. First, I discuss the significant differences in implications for how we construct the concept of sustainable tourism. Indicators serve as the bellwethers, as the signals suggesting progress toward or movement away from sustainability. Once chosen and systematically monitored, they become the basis for policy reform. As such, their selection is not only dependent on what construct of sustainable tourism we select, but they are also critical to understanding if actions and policies have changed the future to a more desirable one. As the title to this paper implies, there are multiple meanings to the term of sustainable tourism. I review three such constructs and suggest the implications of each for selecting indicators. Second, I will review what has happened in the State of Montana (U.S.A.) in terms of sustainable tourism indicators research as an example of the difficulties in selecting indicators. This is an example, and it provides particular lessons for identifying indicators.

Worldviews of Tourism and Sustainability

Definitions help communicate ideas and concepts by clearly specifying the underlying meaning of terms. Good definitions lead to both readers and writers agreeing to what was stated, and provide interpretation as to meanings in problematic situations. While some definitions of *tourism* (such as travel away from home of more than 100 miles in

one direction) can meet these criteria, many writers discussing *sustainable tourism* leave readers wondering about what they mean.

That the concept of sustainable tourism remains somewhat elusive is a conclusion to which most writers would agree. McKercher (1993) for example, criticizes sustainability as being "ill-defined", even within the context of the Brundtland Commission report. He argues that the definition may encompass both developmental and conservation perspectives, perspectives that conflict and lead little guidance to resolving complex resource allocation decisions. However, Aronsson (1994) suggests that it is important to recognize limits in tourism development as a key component of sustainability: development beyond these limits leads to overexploitation. He appears to favor the conservation or ecological definition of sustainability that McKercher fears: "*sustainable tourism development entails protecting the resource base*". These perspectives reinforce two major views about sustainable development—with one view emphasizing the existing "expansionist" worldview while the other supporting a newer "ecological" worldview (Taylor, 1991; Rees, 1992).

Such views are important in generating informed discussion about sustainable tourism. While science may play an important role in identifying impacts and consequences of tourism development, how much tourism is acceptable, and under what conditions remains a social and political decision. Tourism development in the context of McKercher's definition requires that decision-makers identify trade-offs between environmental protection and economic development. In this sense, decision-makers are confronted by two conflicting goals and must decide which takes primacy and how much each will be compromised to achieve the other (Cole and Stankey, 1997).¹

In general, tourism development organizations and academics have avoided the debate concerning integrating environmental, social and economic objectives, relying primarily on the economic benefits of tourism

to justify its presence. However, a number of presentations in two recent symposia demonstrate increased concern about the social, political and environmental meanings of sustainable tourism (McCool and Watson, 1995; Reid, 1991). Many authors implicitly, if not directly, emphasize the relationship between tourism and the natural environment as the basis for numerous questions about sustainability, relationships that are particularly significant in coastal and marine environments.

The widely varying approaches to tourism sustainability suggest three worldviews that have meaningfully different implications for not only selection of indicators but even more fundamentally the focus of tourism policy. Within this context the tourism and recreation industry is confronted with three views:

1. What is meant by "the sustainability of the tourism industry"?
2. How can sustainable tourism be developed?
3. What should tourism sustain?

Here I will briefly review the meanings broadly assigned to each of these worldviews.

What is the Sustainability of the Tourism Industry?

This question concerns itself with the long-term presence of the tourism and recreation industry. As such, it is narrowly focused on the industry itself—including the product or supply side. This question would entail responses dealing primarily with promotional strategies, understanding the relationship between demand and supply, competitive products, product quality development and protection, and private sector business practices. In addition, where the industry is based upon natural environments and cultural heritage, the sustainability of the industry is linked directly to actions that protect and maintain the quality of those products. Indicators that address this question would draw upon market size, travel pat-

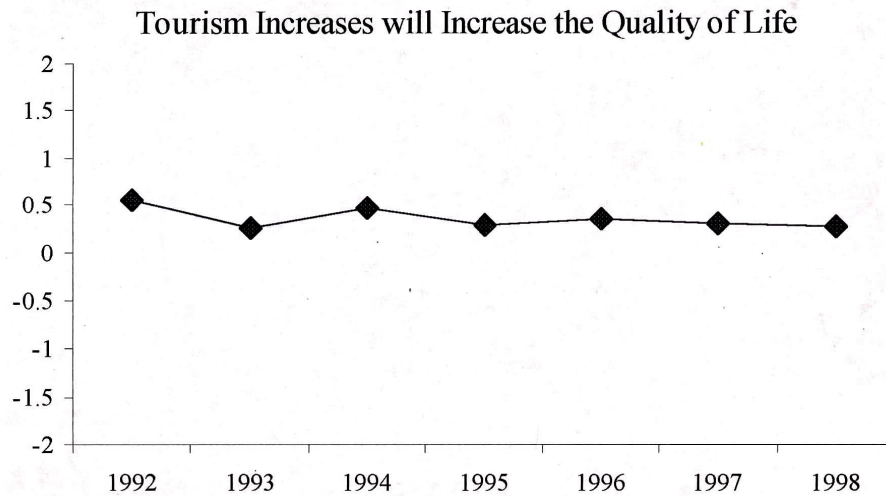


Figure 1. Extent to which adult Montanans agree that tourism increases the quality of life in their community. The data shows less variability in responses the last several years
(Source: Institute for Tourism and Recreation Research, The University of Montana)

terns, occupancy rates, park visitation rates and profitability estimates.

What is Sustainable Tourism?

The literature suggests that sustainable tourism is a different type of tourism than so-called "mass" tourism, a "kinder and gentler" form of tourism that is generally smaller in scale, more environmentally sensitive and socially aware than the former. Sometimes sustainable tourism is also termed "green" tourism or ecotourism. To some, sustainable tourism means the behaviors individual tourists practice; to others, sustainable tourism concerns itself with infrastructure and social policy questions. To others, sustainable tourism focuses on industry codes of acceptable practice. Indicators that deal with this "stainless conception" definition of tourism might focus on waste production, pollution, energy consumption and local resident attitudes.

What Should Tourism Sustain?

This question places tourism in a human and community development context. It addresses the purposes of tourism development and views tourism as a tool, not as an end. Tourism becomes a strategy to enhance certain features of a community. In this sense, public agencies engage in tourism

development because they feel it will lead to socially desirable goals, such as increased employment, higher labor income, reduced crime, greater protection of the natural or cultural heritage, or an enhanced quality of life. In a broader sustainability context, tourism would be viewed as an agent to seek income redistribution and preserving of options for future generations. While this approach directly integrates tourism into community development, the extent to which the private sector feels a responsibility to improve human welfare at the community level is unknown. Of the three questions, this is the most fundamental, because it requires us to address the reasons for economic development. By so doing, it sets the stage for addressing the previous two questions.

What are Useful Indicators of Tourism Sustainability?

Given the concerns and issues identified above, how would we know if we are making progress in addressing concepts of sustainability in our tourism development strategy? One important way is to identify a key set of quantitative measures that we can monitor over time. These measures, or indi-

cators, will inform us if we are making progress and if our actions – such as promotion or protection programs – are effective.

Indicators are pieces of information that measure things that are important to real decisions. Identifying indicators allows for monitoring to determine if policies are leading to community development goals. Vast quantities of tourism information exist and are readily obtainable to address many sustainability concerns (Meyboom, 1993).

Only a limited amount of information is truly useful to decision-makers. Indicators are useful in that they measure a few aspects of a situation, but allow a decision-maker to assess the health or condition of the entire system. Thus, an important criterion for a good indicator is that it can be used to assess more than one aspect of the overall condition.

One example of an indicator concerning tourism's ability to address the needs and concerns of host community residents is how they feel about tourism. Figure 1 shows attitudes of adult Montana residents between 1992 and 1998 in terms of their perceptions of the effect of tourism on their quality of life. The data here show little year-to-year variation, but the values do not suggest a lot of enthusiasm for tourism (nor do they show a lot of negative affect). This information is useful to tourism promotion agencies because this indicator suggests an opportunity to reevaluate the goals of tourism promotion.

What characteristics make indicators useful for tourism policy and decision-making? Linda Merigliano (1989), in her discussion of impacts from recreationists on the environment, provides several criteria for good indicators. For example, indicators should be reliable, easy to measure, quantifiable, relevant to important conditions and sensitive to change. Livermann and others (Livermann et al., 1988) mention additional criteria; indicators must 1) be sensitive to change over time, 2) have predictive ability, 3) have reference or threshold values associated with the indicator, 4) be able to measure reversibility or controllability, 5) have integrative ability, and 6) be relatively easy to collect and use. Indicators must also measure conditions over which people have some degree of control. Similar characteristics have been suggested by McCool and Stankey (McCool and Stankey, 1998, Gallopin, 1997) and many others.

Different conceptions of indicators exist among different authors. For example, Meyboom (1993) conceives of three types of indicators for sustainable tourism; *leading indicators* relate to future events (consumer confidence), *current indicators* signal what is happening now (visits, labor income), *trailing indicators* measure the effects of past action (attitudes of residents, satisfaction of visitors). Manning (1992) believes there are six different types of indicators (see Table 1).

<i>Indicator Type</i>	<i>Examples</i>
1. Warning indicators	Water quality, air quality
2. Measures of pressures or stresses	Fish caught, deer harvested
3. Measures of the state of the natural resource base and use levels.	Current use levels of facilities.
4. Measures of impacts/consequences	Loss of old-growth forest, tourism jobs lost
5. Measures of management effort/action	Regulations on visitor use and numbers
6. Measures of management impact	These indicators measure an item to evaluate if the intervention is achieving the desired result.

Table 1. Types of sustainable tourism indicators and examples of each (excerpted from Manning, 1992)

	Rank										Total N
	1		2		3		4		5		
	N	%	N	%	N	%	N	%	N	%	
Montana natural and cultural heritage	13	12.5%	19	18.1%	12	11.5%	18	17.3%	7	6.9%	69
Community economic stability	22	21.2%	13	12.4%	6	5.8%	6	5.8%	9	8.8%	56
Montana quality of life	27	26%	8	7.6%	8	7.7%	7	6.7%	6	5.9%	56
Unique Montana natural environment	7	6.7%	13	12.4%	9	8.7%	12	11.5%	7	6.9%	48
Tourism promotion activity	6	5.8%	6	5.7%	9	8.7%	9	8.7%	8	7.8%	38
Recreation opportunities	1	1%	7	6.7%	7	6.7%	12	11.5%	9	8.8%	36
Tourism employment opportunities	4	3.8%	4	3.8%	7	6.7%	8	7.7%	7	6.9%	30
Safe and secure community environment	7	6.7%	5	4.8%	7	6.7%	5	4.8%	6	.0%	30
Employment opportunities in general	1	1%	6	5.7%	7	6.7%	7	6.7%	6	5.9%	27
Level of tourism activity	4	3.8%	5	4.8%	6	5.8%	4	3.8%	7	6.9%	26
High quality natural resources	3	2.9%	3	2.9%	13	12.5%	5	4.8%	1	1%	25
Clean air and pure water	3	2.9%	6	5.7%	3	2.9%	4	3.8%	6	5.9%	22
Number of non-resident visitors	3	2.9%	3	2.9%	5	4.8%	2	1.9%	5	4.9%	18
Lodging occupancy rates	2	1.9%	1	1%	1	1%	0	.0%	5	4.9%	9
Access to higher education	0	.0%	1	1%	0	.0%	3	2.9%	3	2.9%	7
Access to affordable housing	0	.0%	1	1%	0	.0%	0	.0%	5	4.9%	6
Biological diversity	1	1%	2	1.9%	0	.0%	0	.0%	2	2%	5
Low taxes	0	.0%	0	.0%	1	1%	1	1%	2	2%	4
Biological integrity	0	.0%	0	.0%	3	2.9%	1	1%	0	.0%	4
Family cohesiveness	0	.0%	2	1.9%	0	.0%	0	.0%	1	1%	3

Table 2. Rankings of potential items that could be sustained by tourism by Montana tourism and recreation industry officials

Developing Indicators in Montana

The former Five-Year Strategic Plan for the travel and tourism industry in Montana called in its vision statement for a tourism industry that “fosters an enhanced quality of life for its residents...” (Travel Montana, 1992). To this end, the plan included as one of its four major goal areas, “Maintaining and Measuring Quality of life and Resource Sustainability.” The specifics of how this was to be achieved were not explicitly stated, although review of proposed tourism developments from the perspective of environmental sustainability was suggested. In addition, monitoring of Montanans’ attitudes toward tourism was indicated as a specific action to be undertaken by the Institute for Tourism and Recreation Research, a task that was initiated in December 1992 and continues today. The more recent strategic plan (Nickerson, 1997) also states that sus-

tainability is the most important of the five tourism development goals identified.

This study was conducted from spring 1996 to winter 1997 (McCool, Burgess, and Nickerson, 1998). The study had, as its primary objective, the response to the question “what should the tourism and recreation industry sustain?” The research was conducted in the state of Montana. The research involved 108 members of Montana’s tourism and recreation industry. These individuals sit on the boards of directors of each of the state’s six tourism promotion regions. During a regularly scheduled meeting of each of the boards, the study was explained and the participants were lead through a questionnaire concerning sustainable tourism. Each participant ranked the importance of 20 items that could be sustained by tourism. Each of the 20 items had been identified through a review of the sustainability, tourism, and economic development literature.

Respondents were also asked to evaluate the usefulness of 26 indicators of sustainability, also proposed in the literature, at three levels of destination marketing: the state, tourism region, and local community. The initial list of 26 items was identified from the sustainable tourism literature and discussions with individuals in the tourism and recreation industry. Many of the items were chosen to represent indicators of the 20 things that could be sustained. Only indicators concerning the community level are shown here.

What Should Montana's Tourism and Recreation Industry Sustain?

Respondents reported a relatively broad range of answers to the question of what the industry should sustain. The items ranked highest (see Table 2) were Montana's natural and cultural heritage, community economic stability, quality of life, and unique natural environment. These four items accounted for 44.1% of the total responses. Tourism-specific items such as nonresident visitation,

	Very useful		Moderately useful		Not useful	
	N	%	N	%	N	%
Hotel occupancy rate	86	81.9%	16	15.2%	3	2.9%
Visits to parks, recreation areas, and historic sites	83	79.8%	17	16.3%	4	3.8%
Number of non-resident visitors	76	73.1%	23	22.1%	5	4.8%
Per capita tourist expenditures	76	73.1%	21	20.2%	7	6.7%
Resident attitudes toward tourism	66	64.1%	34	33%	3	2.9%
Tourism promotion budget	64	62.1%	31	30.1%	8	7.8%
Inquiries from promotions	62	60.2%	35	34%	6	5.8%
Lodging revenues	61	58.7%	33	31.7%	10	9.6%
Annual number of new tourism businesses	60	57.7%	31	29.8%	13	12.5%
Number of tourism employees	54	52.4%	43	41.7%	6	5.8%
Resident perceptions of quality of life	54	51.9%	40	38.5%	10	9.6%
Percent of labor force in tourism	53	52%	42	41.2%	7	6.9%
Highway traffic count	50	47.6%	40	38.1%	15	14.3%
Presence of a sustainable tourism plan	50	48.5%	40	38.8%	13	12.6%
Number of non-resident fishing and hunting licenses	47	45.2%	44	42.3%	13	12.5%
Labor income from tourism	46	44.2%	49	47.1%	9	8.7%
Water pollution from sewage	36	35%	36	35%	31	30.1%
Airline deplanements	31	30.4%	35	34.3%	36	35.3%
Crime rate	31	30.4%	32	31.4%	39	38.2%
Building permits	22	21.2%	40	38.5%	42	40.4%
Gasoline tax revenue	20	2%	49	49%	31	31%
Number of State Parks	18	18%	37	37%	45	45%
Per capita water consumption	16	15.7%	35	34.3%	51	5%
Real estate sales	16	15.5%	52	50.5%	35	34%
State Park management budget	13	12.6%	38	36.9%	52	50.5%
Per capita energy consumption	6	5.9%	34	33.3%	62	60.8%

Table 3. Ratings of the usefulness of indicators of sustainability

promotional activity and lodging occupancy rates—three variables frequently discussed as objectives of tourism marketing organizations—were ranked significantly lower in importance. Items such as low taxes, biological integrity, and family cohesiveness tended to be ranked the lowest of the items presented to study participants. It is important to understand the highest ranked items tend to be broad social goals, which the participants in this study linked directly to tourism development.

What are Useful Indicators of Tourism Sustainability?

When asked to rate the usefulness of a variety of indicators of sustainability, respondents rated indicator variables that appeared to be directly related to level of tourism activity. The most useful indicators were hotel occupancy rate, visits to parks, recreation areas, and historic sites, and number of nonresident visitors (see Table 3).

Discussion and Implications

The results suggest that tourism industry representatives view sustainability from a very broad perspective, suggesting that tourism development is more of a means to an end than an end in itself. Our data imply that fundamental purposes of tourism development are being re-examined, even in the U.S. where sustainability concepts applied to tourism have generally been neglected.

While study respondents reported relatively broad perceptions of what tourism should sustain, the failure to rank specific indicators dealing with these broad definition highly (e.g., affordable housing, etc.) may have been a result of failure to see at the community level connections between tourism and these potential indicators, a lack of understanding of how the industry could have an impact, or a question about the industry's responsibility to deal with these

items. Ranking indicators such as number of nonresident visitors highly could have reflected experience with traditional methods of measuring tourism industry outputs, may suggest that respondents recognized that numbers of visitors impact such items as quality of life, or may reflect a willingness to accept crude indicators. Finally, ranking indicators may have been a task requiring understanding of a complex set of relationships among a variety of factors, thus making the ranking process itself difficult.

Defining sustainability in relatively broad terms—as a goal rather than a technique—provides the recreation and tourism industry with a strategic framework from which to respond to change and uncertainty. If the goal is economic opportunity, for example, then tourism may be viewed more as a tool to help a community attain it. By viewing sustainability in this manner, actions to enhance economic opportunity can maintain some flexibility in light of changing conditions.

Had we asked our participants to identify indicators of sustainable tourism or the sustainability of the tourism industry we likely would have found indicators that are significantly different from the current results. We would then have embarked on a potentially much different monitoring program.

We have learned that the concept of sustainability, as it applies to Montana's tourism and recreation industry, is an important concept for the industry to address, but is very complex. Simplifying this concept would be a disservice and dishonest. We need to recognize and appreciate all the various complicating factors. However, because the concept is complex does not mean we should ignore it. To the contrary, it is clear the industry feels that human welfare goals are important and certainly need attention. Yet, it is clear that sustainability goals such as biological integrity and diversity that are frequently discussed in the sustainability literature were not favored by this group. The connection between tourism and these goals may not be evident, suggest-

ing the need for venues to discuss the linkages. The study does have several implications for the concept of sustainable tourism. First, the data suggest somewhat of a “disconnect” between preferences for what should be sustained by tourism and indicators that might measure progress toward this goal. For example, maintaining the “Montana” quality of life was the third highest ranked item to be sustained, yet the indicator “resident perceptions of quality of life” was ranked eleventh in usefulness at the community level. While community economic stability was also rated high, indicators that might be useful in measuring this such as employment did not receive a very high rating.

Second, the lack of consistent results may reflect confusion among three important questions: the concept of sustainability, the question of what should tourism sustain, and the idea of sustainable tourism. Each of these concepts includes a variation on the term “sustain”, but represents significantly different notions. The question of what tourism should sustain inevitably leads to a discussion of a variety of economic, social and political processes and how they can be used to produce a better life. Sustainable tourism may represent a particular type of tourism - small-scale, community oriented, environmentally benign, for example. This confusion exists not only in the minds of tourism business operators, but most likely in academia as well.

Third, we note that many of the top-ranked indicators of sustainability identified here represent inputs: they really do not measure the results of tourism development policy, but only the level of tourist activity or tourism promotion activity. For example, the number of nonresident visitors as an indicator does not necessarily measure important economic outputs - such as labor income, nor does it assess the effects of resident-visitor interactions. While there is a statistical association between visitation levels and expenditures, a large variety of factors intervene to make this relationship more difficult to understand: if visitors don't find

many Montana made products to purchase, their expenditures will have smaller indirect and induced effects.

There are several implications for research. First, if tourism is viewed as a tool of development to achieve sustainability, there must be both agreement on what is to be sustained as well as the appropriate routes to that goal. In a dynamic social context, determining what is to be sustained involves significant, meaningful and authentic interactions among all segments of the tourism and recreation industry, but particularly with managers of the publicly owned resources upon which the industry is based. While some interactions are beginning to occur, interaction at both the local level - where tourism development happens - and the national level - where institutional frameworks and cultures originate that form the context for local efforts - are needed. This dialogue must extend to residents in communities where tourism happens so that not only tourism maintains its social acceptability, but the industry learns from residents their concerns and worries. Scientists can assist in this process by applying methodologies and approaches to developing appropriated indicators.

Second, more specific ideas about what is to be sustained are needed. Our research, for example, identified “Montana quality of life” as an important item to be sustained. But what does this mean? For which Montanans? Over what time frame? What indicators would be most suitable? And, most importantly, what is meant by quality of life? Economic development activities, such as tourism, thus are viewed more as a tool than as an end: “there are important qualitative dimensions to development that distinguish it from economic growth” (Barbier, 1987). This suggests a continuing role for research to support the industry in attaining sustainability.

Third, the sustainable tourism literature, while in the developmental stage, needs to address the question of indicators. Some literature exists (see Hawkes and Williams,

1993; Manning, 1992), but many proposed indicators do not meet the criteria for indicators identified in other fields. For example, indicators should be reliable, easy to measure, quantifiable, relevant to important conditions and sensitive to change (Merigliano, 1989). One proposed indicator we used in this study - number of state parks - that has been proposed in the literature doesn't meet all these requirements. While this indicator is easy to measure and is quantifiable, it doesn't fluctuate in response to policy initiation or implementation, and may not be closely related to significant issues such as quality of life. Linking tourism sustainability indicators to the broader discussion of indicators of sustainable development would provide a stronger integration of tourism into a more holistic approach (e.g., Moldan, Billharz, and Matravers, 1997). Identifying indicators that are more directly linked to general goals of sustainability--such as inter-generational and intra-generational equity is needed.

Note:

¹ Actually, sustainability implies the three goals of improved human welfare noted in the introduction. Each of these goals is to some degree compatible, and each is to some degree in conflict with the other. Compromises will have to be made; so decision-makers are confronted with how much compromise in each goal is acceptable.

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