Science, Communities, and Decision Making: How Can We Learn to Dance with Many Partners?

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Abstract—*Ecosystem management, also called integrated management can be defined as integrated careful and skilful use, development, and protection of ecosystems using ecological, economic, social and managerial principles to sustain ecosystem integrity and desired conditions, uses, products, values, and services over the long term. Although ecosystem or conservation management issues can have global, regional or trans-boundary impacts, most activities need to be focused at the sub-regional and community level to be effective. The basic concept is that the community is the most efficient unit for change in conservation management. The main challenge is to first understand these concepts and then acquire the knowledge to sustain, use, and protect natural ecosystems in order to reach a more integrated ecological, economic, and social development. In addition, community involvement can be limited because of their level of education, capacity building, and potential for actions. Communities that have data and the tools usually feel more empowered and tend to be able to deal with issues in a more effective manner than in communities where capacity and tools are non-existent. Monitoring is certainly one of the greatest steps whereby communities feel that they can contribute, learn, and enhance awareness on very specific issues. This is where it is important to develop our science in assessing sustainability in our communities. Such capacity building can help communities increase sustainability and thus influence decision making for the benefit of all members. Partnership building between public, academic, private and community constituencies can help improve knowledge and develop decision making tools for greater sustainability. Through a regional example of the southern Gulf of St Lawrence, the discussion will include lessons learned and the challenges that face communities, decision makers, private and academic sectors in promoting sustainability and the possible actions that can be taken to improve awareness and decision making.*

Introduction

Over the last two decades, the entire approach to traditional resource management has been re-examined to strengthen efficiency and long term outcomes in accordance with principles of sustainable development. As early as 1982, the concept of sustainable management was developed. Ten years later, Agenda 21, approved at the Rio Conference, affirmed that sustainable development required a new management approach: an "integrated policy and decision making process, including all involved sectors, to promote compatibility and a balance of uses" (Bruntland 1987), that was to be practical and collaborative in its approach. This means that ensuring sustainability requires a process for developing the larger and longer term vision of how resources and ecosystems can be sustainably managed.

Talking about sustainability and ecosystems can be complex and often confusing, especially for the general public. In this paper, ecosystem can be defined as an astonishing assortment of species that interact and are interdependent in many ways and in which humans are a component like any other species (Vasseur and others 2002a). This leads to the understanding that management does not only involve general ecosystem components but also human activities and the decision making process that follows. This process, to be successfully implemented, should be inclusive as natural resources and habitats are integral components of any healthy or sustainable ecosystem along with the human communities (Canadian Round Tables 1993). Although ecosystem management issues can have global, regional or trans-boundary impacts, most activities need to be focused at the sub-regional and community level to be effective. The

basic concept is that the community is the most efficient unit for change in conservation management. The main challenge is to first understand these concepts and then acquire the knowledge to sustain, use and protect natural ecosystems in order to reach more integrated ecological, economic, and social development. This knowledge must be promoted by professionals and decision-makers but also most importantly by the youth, women and men who have the most at stake (Vasseur and Hart 2002).

A regional or community approach can therefore be promoted as a way to reach as many stakeholders as possible and thus improve decision making efficiency and social acceptability. This paper examines the components of a model for ecosystem management of regional constituency that has as its main objective developing sustainability through public participation, education, communication, science and monitoring. The example described here represents one of the few groups established in Canada that focuses on sustainability and ecosystem management and attempts to improve efficiency and environmentally sound decision making at the regional level.

A Model for Sustainability and Ecosystem Management: Integrated Approach

In this model, sustainable/ecosystem management can be defined as the "integrated careful and skilful use, development and protection of ecosystems using ecological, economic, social and managerial principles to sustain ecosystem integrity and desired conditions, uses, products, values, and services related to all development over the long term" (Vasseur and Hart 2002, p. 42). Such management, which is based on sustainable development principles, includes different components that allow for flexibility, transparency and cooperation at all steps of the process, from the observation of an issue and decision making to the implementation of solutions and monitoring. The most important aspect of this system is that it is dynamic and allows conditions to evolve; therefore it has to be adaptive. This is a process balancing protection/maintenance and sustainable use of resources and the environment (including humans) and encompasses all interdisciplinary aspects of management, development, and decision making. For each issue tackled by the region or the community, all elements of the ecosystem, not only the human (and often economic) components should be considered. Under this framework, the goals of community actions towards sustainability should satisfy several criteria as proposed by Hardi and Zdan (1997) and Slocombe (1998) (table 1). Although the complexity of ecosystems should be taken into account in any regional action plan, it is essential that the plan itself be simple and understood by all stakeholders in order to be successfully implemented. In several cases, strategies are defined and developed without a good appreciation of all the components and their interconnections and this can lead to reduced efficiency or acceptability of the solutions (Vasseur and Hart 2002). It is essential to remind decision makers and all stakeholders for that matter that without ecosystem services and functions, human demands and health cannot be fulfilled.

Table 1. Some criteria to achieve sustainability in communities upon which the SGSL-Coalition has been based.

1.	Imply and reflect a clear vision and specific goals achievable on a yearly basis.
2.	Reflect "higher" values and ethical principles and rules, leading to equity and respect.
3.	Reflect a wide range of interests and groups existing in the region (inclusiveness).
4.	Involve actors, stakeholders and public (high level of participation).
5.	Accept and recognize that ecosystems are complex and dynamic (realistic approach).
6.	Synthesize a wide range of information and knowledge from ecological to socio-economic (interdisciplinary approach) leading to knowledge and capacity building.
7.	Be applicable to a wide range of ecosystem types and conditions.
8.	Be open and transparent in the approach to enhance communication and consensus building.
9.	Be inherently tentative and evolving as conditions and knowledge change (adaptive approach).

There are several levels of public participation in the decision process (Hance and others 1990). Certain types of public consultation merely show the environmentally sound intentions of the policy makers, but they do not usually consider public concerns in a meaningful way. At another level, the decision makers have to consult the population each time a problem occurs. In this case, the population has to vote on an issue after having received the proper information and all the alternatives available to resolve the problem. This type of public participation is more likely to be costly and may be a very slow process. It is especially not adequate for solving an immediate problem. The main challenge is in defining an approach in which decision making and sustainable actions are well balanced. In addition, it is essential to define what the communities' stake is. In this paper, communities are defined as a group of people sharing a geographic context and interest in managing an environmental issue. Their involvement should lead towards consensus and social acceptability. The community can be small or large in size, number, or interests.

In the present paper, I describe an approach that was used and implemented in the Southern Gulf of St. Lawrence region in order to improve sustainability through inclusiveness, partnership and as an aid in decision making considering that all stakeholders can contribute to the building of regional sustainability. It can be shown that a region is the main unit for change when the components of this ecosystem, although larger in scale, are highly interconnected and therefore the actions of some people can affect the sustainability of others.

A Regional Example: The SGSL-Coalition

The coastal zone of the Southern Gulf of St. Lawrence, with its salt marshes, dunes and beaches, estuaries and forests, is an important ecological, economic, and social region of North America. It provides critical spawning, feeding and nursery habitats for numerous species of organisms. Communities in the region depend on its resources for income, recreational opportunities, and their quality of life. Over the years, the sustainability of this region has been threatened by several agents including overexploitation of natural resources, coastal ecosystem degradation, and pollution. In order to better integrate the concerns of all stakeholders in the region, through consultations and discussions involving different groups, the Southern Gulf of St Lawrence Coalition on Sustainability was formally created in November 1999. This multi-stakeholder regional body draws representation and membership from those portions of Nova Scotia, New Brunswick, Prince Edward Island and Quebec that are part of the Southern Gulf of St. Lawrence ecosystem. Its vision is a future in which the Southern Gulf of St. Lawrence ecosystem is environmentally, economically and socially sustainable (SGSL-Coalition 2004).

Sustainability requires integrating three key elements: ecological, economic, and social aspects. It also implies respecting cultural values, a topic of great interest in this region where French Acadians, First Nations people and English Canadians live together. The Coalition establishes a mechanism for enhancing horizontal communication among partners, which allows for the sharing of knowledge and attaining consensus. No one partner has the resources to implement a meaningful sustainability strategy for the Southern Gulf of St. Lawrence, but the Coalition allows the pooling of human resources for a meaningful and long-term impact on the sustainability of the region. The mission of the Coalition is to promote the long-term sustainability of its ecosystem and this is accomplished by developing a shared and strategic Action Plan that aims to provide the tools required to address issues of common concern (SGSL-Coalition 2004).

One of the biggest challenges to achieving an integrated planning process is to develop effective governance structures for sustainable development. This means adopting forums and processes that can foster open dialogue between governments, communities, and citizens (Vasseur and others 2002b). The Coalition represents one of the first official governance mechanisms established in Atlantic Canada to develop such an integrated planning process. This process is currently supported by and made up of diverse yet dedicated groups of individuals and representatives of non-government and community-based organizations, businesses and industries, academics, First Nations and municipal, provincial and federal agencies (SGSL-Coalition 2004).

Partnership with the Coalition: Challenges and Solutions?

The Southern Gulf of St. Lawrence Coalition on Sustainability is first and foremost a forum of partners who share a common vision towards defining solutions to ensure the sustainability of the region. The SGSL-Coalition is a door for cooperation and partnership between various groups and individuals and for implementing concrete actions. Being a voluntary body with limited resources, the Coalition tries to organize and/or facilitate meetings, workshops, forums, or task forces on topics that are of common interest for all of the stakeholders.

Considering that the community should be involved in some way in each stage of the process, communication and information sharing remains one of the challenges for regional organisations such as the SGSL-Coalition. The main hurdle to overcome in this situation is the recognition of the responsibilities of the various jurisdictions that make up the Coalition. For example, it is essential that government agencies recognize that they cannot achieve their departmental objectives by acting alone. Recognition of each other's roles within the regional community is also required in order to increase the effectiveness of environmental protection and conservation measures, to maximize monitoring and compliance activities and to realize sustainable development potential. Over the years, the SGSL-Coalition has struggled mainly in the area of industry involvement. It has been a perception from the industry side that if they open up to discussions and public participation they could face increased problems and demands and delays in their actions (Shepherd and Bowler 1997). However, under ideal circumstances the participation of all stakeholders can

promote sustainable development for all constituencies through recommending priority strategies, policies, and regulations to government agencies and monitoring the progress of implementing them. Industries can profit from the local knowledge of the communities and understand the limitations and vulnerability of the system (Sheate 1991, Bisset 2000). Additionally, any type of governmental or corporate actions that might have impacts on the environment and therefore the sustainability of a region should be monitored in order to make sure that the solutions implemented are adequate and if not, new strategies can be implemented to improve effectiveness. In projects with limited or missing monitoring of the outcomes and the surrounding environmental conditions, the main danger coming from the implementation of a strategy is the lack of adaptive response to emerging or abrupt changes.

Academic institutions including universities, colleges, and schools also have a great role to play in this type of ecosystem regional management program. The Coalition provides universities and colleges with the opportunity to develop and apply sustainability concepts to a wide range of situations and different conditions. It is an open door to explore new methods for achieving sustainable results and a way to link research to real life situations (SGSL-Coalition 2004). Since 1999, at least five academic institutions from the region have been involved in this process. This number could increase but some limitations have yet to be overcome to improve their involvement such as limited resources and time allocation. Solutions can be found to improve levels of participation from academia. For example, the SGSL-Coalition created a Sustainability Scholarship in 2003 and it is given annually to a graduate student who has undertaken research in the southern Gulf of Saint Lawrence on issues of priority for the Coalition's members. This strategy has two goals: improving the involvement of researchers in the Coalition and also communicating the research results that are acquired by scientists in the region. It has been shown in the past that scientific information should also be available to members of the Coalition who need the information for decision making. The sustainability of the scholarship and other actions initiated by members of the Coalition will remain fragile unless in the long term, endowment instead of annual governmental funding can be secured.

Academic institutions have also played an important role in the sustainability of the organisation. For example, one of the universities has been able to host the offices of the Coalition. This has helped reduce the cost of office overheads. Other organisations might be able to play this role however this is often highly limited especially for NGOs that already have limited funding to support their own work. In addition, the question of neutrality and location always come up in discussions when such an organisation is created. Using the university has helped reduce neutrality concerns as it is not taking position in debates. Spatially, the Coalition is located in Moncton as it is relatively central to the region served by the SGSL-Coalition.

In-kind contributions in an organisation like the Coalition are crucial for its survival. Involving youth in this type of organisation is relatively difficult although they are the leaders of tomorrow (Vasseur and others 2002b). However, their involvement might become essential as it is frequently reported that volunteer burnout is increasing. This has been seen in many rural or small communities and especially in regions like the Maritimes where volunteering has been a way of life for generations.

Towards Sustainability Through Community Participation: Lessons Learned From the SGSL-Coalition

In recent years, we have become aware of growing opposition from the general population to decisions which could harm society and its environment. The concerns of the public about different management strategies are often due to a lack of knowledge and information or a fear of negative impacts. Public pressures have led to stricter and more demanding type of regulations regarding consultation prior to an environmental project. Since the population increasingly needs to be consulted in relation to environmental decisions and policies in North America, there is a move towards greater public participation in environmental debates. The example of the SGSL-Coalition shows the need for such groups to lessen this gap in knowledge and information. Community or regional monitoring is one of the main actions that can help improve such knowledge upon which decision making and strategies can be based. Subsequently, considering the data and information gathered through activities from regional groups, decision makers can better address concerns and opinions from the general public before making decisions on environmental issues and sustainable development. This raises questions such as, what kind of public participation should we consider? What advantages or disadvantages does public consultation pose? Which conditions do we have to respect to obtain successful public participation in decisions on environmental questions? (Vasseur and others 1997).

Although the SGSL-Coalition is a young organization, already some lessons can be drawn from past experiences regarding decision making and public participation in sustainability strategies. Assembling stakeholders from all sectors of society can be advantageous as it can lead to greater discussion, consensus building, and social acceptability.

It is, however, a victim of its own concept, as inclusiveness remains difficult to maintain. The first challenge which the SGSL-Coalition faced was the claim of objectivity and transparency. It is easy for some groups to target some of the stakeholders and complain about their level of involvement and influence. This has occurred in the past due to the link between federal government and financial support for the Coalition. In this case, accounting and communication have to be as transparent as possible to avoid complains. To reduce concerns on this issue of interfering in funding allocation, the SGSL-Coalition management committee includes all stakeholders but government agents are ex-officio, in other words, they remain neutral and do not vote during decision making for funding allocation.

The type of actions that the Coalition can undertake have to be thought through carefully as it is not in its mandate to compete for funding and duplicate activities of other groups in the region. In fact, synergy should be promoted through the use of the Coalition as a mechanism to apply for greater funding on behalf of several smaller groups in the region. This occurred in 2004 with the implementation of a new monitoring program on a coastal aquatic ecosystem. In this example, more than 10 community and non-governmental groups have been involved and linked with the use of a newly graduated student supported under a federal employment program. Without such funding, the various groups participating in this program would have been smaller in number and more limited in terms of their level of participation.

A concern that sometime limits the participation or collaboration of industries and certain types of groups is the level of activism or influence on the decision making process the Coalition could have. Going back to its mandate, the SGSL-Coalition is first and foremost an information clearinghouse and thus has the advantage of acquiring information and communicating it in a more neutral way. There has been some debate over the years as to whether the Coalition should advocate for issues that have been of great concern for some members of the Coalition. For example, on several occasions, the SGSL-Coalition has been pushed to take a position regarding oil and gas development and the construction of incinerators. In all of these cases, the management committee has kept its role by reminding its members that the mandate of the Coalition is to help the decision making process through discussion and information sharing, not by taking a position that could be against the values and wishes of some of the members. Activism or position taking has been avoided in all cases although this has caused several groups to reduce their participation in the Coalition. This neutral role has also been a disadvantage in the profile building of the SGSL-Coalition. Because of its limited mandate, it has been viewed by other organizations as less effective and lacking in terms of action. The situation in which the SGSL-Coalition is found can work as both an advantage and a disadvantage. The disadvantage is that it is more vulnerable to criticism of inaction. This perceived inaction of the Coalition has also lead to threats in reduction for funding support. But it has the advantage, when well established, to be highly powerful for helping decision makers as its credibility is enhanced and well accepted. Consensus in decision making is not automatically reached as soon as public participation is enhanced but it certainly increases the possibility. This is the main role that the Coalition is trying to achieve through greater participation and information sharing.

Conclusions

Environmental degradation, overexploitation, and pollution are affecting the health of ecosystems and sustainability, often impacting human health, quality of life and traditional uses. Regional or community actions and information sharing can help improve sustainability if certain conditions are respected. The SGSL-Coalition is one of the few examples of a regional participative and inclusive group that works towards promoting sustainability of the southern Gulf of St Lawrence ecosystem. Communities of interests such as academic institutions, municipal agencies, or First Nations, have the possibility to get together, discuss, and build consensus that can influence the decisions that affect them, their sustainability, and their environment. This group has been created from a community perspective and can therefore reach people from different constituencies.

The SGSL-Coalition, like many others, faces several challenges over its establishment and maintenance. To be true to its mandate, the SGSL-Coalition has chosen to remain neutral, inclusive, transparent, and objective leading the way to communication and information sharing. While this role is highly legitimate in the current society it also has some disadvantages mainly in the beginning of the establishment of the coalition. For the establishment of such a group, it is recommended that the mandate of the group is clearly stated to all members and non-members to ensure that there is not dissatisfaction regarding the work that the group can or

cannot do. The group can, of course, evolve over time and integrate more activities or strategies. For example, it is envisioned that over the next few years, community-based environmental monitoring will become part of the normal actions of the SGSL-Coalition. It is clear that monitoring is an excellent approach for gathering long term data and trends, information greatly needed by decision makers for better sustainability of the policies or actions regarding the environment (Kappelle 2000, Yarnell and Gayton 2003).

The SGSL-Coalition is often perceived as a community group because it started at the grassroots/community level. Other such groups are often built from a science viewpoint with scientific partners. Exchanges on lessons learned with such groups showed that in the end, in order to sustain actions, a balance between community and science has to be established. In the case of the Coalition the community came first then the involvement of scientists. In other cases, when scientists were first involved in the creation of such groups, a community approach had to be added to maintain their actions and improve effectiveness. Decision making is a process that can be done rapidly without consultation and information sharing. If a region is to be true in terms of supporting sustainable development and environmental protection, however, information sharing and inclusiveness should be amongst the main principles by which it is doing business. While this strategy is more time and resource consuming, long term results should lead to greater social acceptability, consensus, and sustainability. It is hoped that through this process the region of the southern Gulf of St Lawrence can become a living example of these principles.

References

Bisset R. 2000. Methods of consultation and public participation (Chapter 9). In: Lee N, George C, Eds. Environmental assessment in developing and transitional countries. Chichester: Wiley. 290 p.

Canadian Round Tables. 1993. Building consensus for a sustainable future: guiding principles. Round Tables on the Environment and Economy of Canada. ISBN 1-895643-24-4.

Bruntland, G.H. (Chair) 1987. Our common future. The World Commission on Environment and Development, Oxford University Press, Oxford. 383 pp.

Hance, B.J., Chess, C., and Sandman, T.M. 1990. Industry risk communication manual: improving dialog with community. Boca Raton, FL : Lewis Publishers. 119 p.

Hardi, P. and T. Zdan. 1997. Assessing sustainable development: principles in practice. ISBN 1-895536-07-3. Winnipeg, MB: International Institute for Sustainable Development. 166 p.

Kappelle, M. 2000. Criteria, indicators and tools for monitoring ecosystem health. Environmental Conservation 27(1): 84–85.

Sheate W. R. 1991. Public participation: the key to effective environmental assessment. Environmental Policy and Law. 21(3/4): 156– 60.

Shepherd A and Bowler C. 1997. Beyond the requirements: improving public participation in EIA. Journal of Environmental Planning and Management. 40: 725– 38.

Slocombe, D.S. 1998. Defining goals and criteria for ecosystem-based management. Environmental Management. 22: 483-493.

Vasseur, L., L. Lafrance, D. Renaud, D. Morin, T. Audet & C. Ansseau. 1997. Advisory committee: a powerful tool for helping decision making in environmental issues. Environmental Management. 21: 359-365.

Vasseur, L. and W. Hart. 2002. A basic theoretical framework for community-based conservation management in China and Vietnam. International Journal of Sustainable Development and World Ecology. 9: 41-47.

Vasseur, L., D. Rapport and J. Hounsell. 2002a. Linking ecosystem health to human health: a challenge for this new century. In B. Costanza and S. Jorgensen, Eds. Understanding and Solving Environmental Problems in the 21st Century, ch. 9. Cambridge: Elsevier: 167-190.

Vasseur, L., P.G. Schaberg, J. Hounsell, R. McMurtry. 2002b. Linking ecosystem health to human health a statement to policy makers. In B. Costanza and S. Jorgensen, Eds. Understanding and Solving Environmental Problems in the 21stCentury, ch. 10. Cambridge: Elsevier: 192-213.

Yarnell P. and D.V. Gayton, 2003. Community-based ecosystem monitoring in British Columbia: A survey and recommendations for extension. FORREX Series 13. Kamloops, BC: FORREX–Forest Research Extension Partnership. 37 p.