CHAPTER 17

CONCLUSION:

INTEGRATION, INNOVATION, AND PARTICIPATION

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The main objectives of the book were to learn from the work of diverse local and regional resource management institutions in northern Canada, analyze the underpinning structure, and explore policy options to build capacity to adapt to change. A major focus was on how northern communities can be resilient and sustainable in the face of behavioural and historical conflict, dynamic socio-ecological conditions, and high levels of uncertainty about the future. The North has significant experience to offer the theory and practice of resource and environmental management, particularly with respect to joint problem solving and new institutional arrangements. It is a very dynamic region, presenting a diversity of responses to rapid social, cultural, economic, and environmental changes. Northern Canada has been the home of Aboriginal peoples for a period greatly exceeding the time since its "discovery" by European explorers. Inuit and First Nations have shown an understanding of and appreciation for the delicate ecological balances of northern ecosystems that southern Canadians are only now beginning to fully comprehend. Thus, any effort to understand and address present and future challenges in the Canadian North should strive to ensure full participation of northern peoples. State-centred methods of resource management and public policy making are becoming increasingly obsolete in the North, and thus innovative and bold thought is required.

In addition, the volume addresses an important objective of Canada's new *Oceans Act*, namely developing and implementing integrated management for ocean use in Canada's Arctic Ocean region. All the chapters are relevant to this issue, providing insights from interdisciplinary or multidisciplinary perspectives into stimuli and guidance provided by the Act, and problems and successes related to its implementation. In doing so, however, the papers largely kept the Act in the background as a broad framework encompassing ecosystem

management, sustainable development, and the precautionary principle. Consequently, as much consideration (or more) was given to land claims agreements, including the emergence of Nunavut, with its committees for wildlife and its concern for sustainable development. Further, the volume includes analyses of two international concerns (persistent organic pollutants in the Arctic and ownership of Hans Island) typical of the new complex cross-scale challenges facing the Arctic.

The book examines important challenges facing the Canadian North, largely pertaining to how people, organizations, and communities are responding and adapting to profound and diverse changes. It has done so in a manner that brings together different perspectives from a range of professional backgrounds and disciplines, including researchers, managers, policy makers, and resource users. As a complement to the different chapters, the views of three northern communities on community-based monitoring are conveyed through a thirty-minute DVD, "Watching, listening and understanding changes in the environment." The main objectives of the DVD were to (1) learn from experiences with community-based monitoring efforts, (2) apply critical thinking to the phenomena of change and the way in which northern communities understand, respond, and adapt to change, and (3) examine the dynamics of change and explore options to build capacity to adapt to change.

As noted in Chapter 1, the book and DVD emerged from the Ocean Management Research Network, a unique collaborative project focusing on new directions in ocean use management. Although many of the book's topics have been dealt with elsewhere, this volume is unique for specifically addressing Arctic development and resource use in the context of the *Oceans Act*, and for doing so within a framework of adaptive management and resilience. From a networking perspective, of note is that people who had not previously worked together undertook many of the joint efforts reported in this volume. As well, the book includes several examples where local communities were brought into the research in a meaningful way. Further, the book includes reports not only from well-recognized researchers, but also from policy makers, practitioners, and new (and young) scholars. This is a real strength that is demonstrated, for example, in Chapter 6, which dealt with sustainability through the lens of a younger person, and in the various chapters on the experiences of co-management boards.

Given its origins and interdisciplinarity, and the diversity of its authors, the book will be of interest to both academic readers (including undergraduate and graduate audiences) and policy makers. In particular, it should appeal to people in territorial, provincial, and federal governments and to non-governmental and community-based groups. In addition, given the growing interest in comparative experiences of integrated management of marine and coastal regions, the book is relevant internationally because it presents current and careful analysis of Canada's experiments and new mechanisms for co-management as an approach to northern governance. Further, the book could appeal to at least part

Box 17.1

Watching, listening and understanding changes in the environment

Community-based monitoring in northern Canada

Aboriginal people have traditionally been keen observers of their environment. Their observations are based on many generations of living and working on the land, on detailed observations of all living and non-living components of the environment, under different conditions and under different seasons. These observations have enabled them to understand and communicate about change. They capture key aspects of the environment, they provide insights into the condition of wildlife species, and they reflect on the connections between themselves, their community and the "Land." It is a way of life.

The DVD takes you across Canada's Arctic regions to three northern communities. In the Yukon, the Arctic Borderlands Ecological Knowledge Co-op is a collaborative alliance of indigenous communities, First Nations, Inuvialuit organizations, co-management boards, government agencies, and university researchers. The US-Canada Arctic borderlands are defined by the range of the internationally known Porcupine Caribou Herd and its near-shore environment. The region is known for its history of gas and oil development proposals. It is also considered a hot spot of recent and projected future climate change scenarios. Randall Tetlichi monitors this environment and shares his findings.

Into the Northwest Territories, Lutsel K'e is a community of three hundred people located on the east arm of Great Slave Lake. It is the most northerly and isolated of the *Denesoline* communities and depends strongly on hunting, fishing, and trapping. In recent years, diamond exploration and development in the traditional territory of the Lutsel K'e Dene has raised concerns about the health of the land, water, and wildlife. As a result, the Lutsel K'e Dene Band began an environmental and socio-cultural research and monitoring program guided by the Wildlife, Lands and Environment Committee, a group of eight local harvesters and elders.

And finally from Nunavut, Qikiqtarjuaq is a community of about five hundred people located on the east coast of Baffin Island. The Inuit have a traditional lifestyle and strongly depend on hunting and fishing for subsistence. Davidee Kooneeliusie, Park Warden in Auyuittuq National Park, has been conducting a polar bear monitoring program for the past twenty-five years, one of the longest time-series of observations in the eastern Arctic. The monitoring protocol is based on very detailed knowledge of the species, its behaviour, and its ecology.

This DVD is the output of many discussions and workshops on community-based monitoring and the generous contributions of many individuals and communities involved in this type of work.

of the growing general audience attracted to stories of current and past Arctic explorers and adventurers, and to media accounts of dramatic environmental change in the North such as ice melt impacts.

A major lesson of the book is that integrated management (IM) can provide both an analytical framework and a means of developing and implementing policy. Furthermore, the use of IM carries certain normative elements when applied to the North. In terms of analysis, it provides a means of identifying and

understanding the competing demands on the environment at different spatial and temporal scales, from both a social and biophysical perspective. At the same time, it provides a means of synthesizing different forms of knowledge to define the nature of the problem. In terms of policy, IM allows (or perhaps requires) decision makers to go beyond state-centred policy responses. The involvement of communities is integral to identifying and responding to problems. In addition, the forces of change that are now accelerating many of these problems require management and policy capacities that must respond in a timely fashion. And, of course, there is the requirement that any management and policy response be carried out in the face of severe resource limitations.

From a normative perspective, IM engages resource users, managers and policy makers. Rather than accepting the state-centred approach that characterizes conventional management and policy actions, IM requires government officials and scientists to work in partnership with local communities or key publics in those communities. Further, it postulates that this is the best means of proceeding in a complex, conflictual, and uncertain management environment. A second key normative element of IM is that it is based on the assumption that humans do not "own" the environment, but rather have custodial or stewardship responsibilities to maintain natural resources and environmental services at levels that are adequate for successive generations. Thus, IM assumes a long-term perspective that is based on core sustainability principles.

The contributors of this book have helped us better understand the significance of integrated management. They have reinforced awareness that IM differs greatly from conventional resource management, which too often focuses on single activities and single species at one spatial scale. IM, which in effect strives for a practical holism, emphasizes a systems approach, diverse components of an ecosystem, different resource uses, various impacts, and multiple scales. It is a sophisticated and integrative way of understanding and framing environmental problems and corresponding policy responses, and does so in a manner that incorporates different values and needs. In many ways, IM is highly compatible with northern indigenous perspectives in which land, water and sea are an indivisible, coherent whole – "The Land."

This book was organized into four main sections: (i) Understanding the issues: learning from experience; (ii) Responding and adapting to new challenges; (iii) Resilience and institutions; and, (iv) Governance, policy, and future directions. However, it should be evident to the reader that many of the chapters defy easy classification. Rather, many deal with all four of the subheadings and/or focus on issues that link the main themes. This is due to the complex means by which the authors dealt with their specific topics and to the emergent nature of IM theory and practice. The book's coherence is rooted in its heavy reliance on ideas from resilience thinking and adaptive management, its commitment to systems perspectives (especially regarding the health of people, communities, and ecosystems), and its focus on new institutions established under land claims agreements in the western Arctic and Nunavut. Some of the main cross-cutting issues and themes deal with the utilization of indigenous knowledge in resource management, new approaches to resource management in the Canadian north, and participatory governance and policy.

The Utilization of Indigenous Knowledge in the Canadian North: One of the most significant findings of this book is the importance of indigenous knowledge (including traditional ecological knowledge and Inuit Qaujimajatuqangit) in responding to change (broadly defined – see Chapter 1) and in generating positive change in social-ecological systems. Most of the contributors to this volume agreed that indigenous knowledge often reflects a complex and sophisticated understanding of social-ecological linkages. Moreover, all would likely agree that indigenous knowledge has long included stewardship ideas that respect and protect the resource needs of future generations. In this respect, indigenous northerners have utilized sustainability practices long in advance of the southern discovery of the sustainability concept.

The key issue that many of the chapters raised is how can managers and policy makers best utilize indigenous knowledge? There are no simple answers to this question, but many authors conveyed that in order for knowledge – any knowledge – to be used in decision making, it needs to be communicated, linked to other information, and interpreted validly within any given context. When the information originates from different knowledge systems, the challenge is greater, requiring increased emphasis on communicating, listening, and learning. It is clear from Chapters 6, 8, and 13 that appreciation and comprehension of different types of knowledge can only be achieved by working closely together, fostering collaborative interactions among knowledge holders, managers, and policy makers. Although there has been reluctance in conventional resource management to accord indigenous knowledge a proper place in decision making, several chapters in this book demonstrate how this is changing and how there is an increased understanding, respect, and trust of indigenous knowledge systems. This is the result of significant efforts made by indigenous communities at documenting their knowledge, formalizing local data collection processes, developing internal capacity, and communicating results in a form and format that is readily accessible. Scientists have made similar efforts, spending more time presenting and discussing research methods and results beyond academic and scientific communities. The process of acceptance is by no means complete, but as the chapters noted above have shown, southern-based scientists, managers, and policy makers are increasingly accepting the legitimacy of indigenous knowledge.

Chapters 6, 12, and 13 describe Aboriginal-led resource management cases where both indigenous and Western knowledge were used in research activities, monitoring, and management decisions. Furthermore, the cases showed that community-based approaches go beyond simply being manageable to being desirable. Given the long-standing sensitivity that Inuit and First Nations have

to ecosystem health and integrity, it is clear that indigenous perspectives on and applications of some of the main elements of sustainability are very mature relative to those that exist among southern Canadian scientists, managers, and policy makers.

Thus it is readily apparent from this book that the need to incorporate indigenous knowledge into resource management practices exists on several levels. First, it provides an important way of understanding the northern environment that complements or exceeds the capabilities of Western science. Second, the use of traditional knowledge results in additional community capacity, enhanced confidence, and increased control over management decisions. Third, it is clear that indigenous knowledge provides an important means of ensuring that the principles of sustainability are incorporated into decisions pertaining to future activities in the northern environment.

That being said, it is important to remember that there is still much to learn about how to use traditional and conventional ecological knowledge and related management practices. It is more than a matter of merging databases or amalgamating information sources. It requires a true synthesis in a dialectic involving fundamentally different epistemologies and worldviews. Moreover, it entails overcoming an often tragic history rife with profound behavioural, interest, and value conflict. To complicate matters, accomplishing a legitimate and equitable integration is not within the neat domain of instrumental rationality. It is essentially a communicative task in the messy realms of politics and social learning (see Chapters 6, 7, 9, 13 and 15). It is dependent on the collective construction (or negotiation) of meaning in conditions that are free of coercion, and on the capacity for innovative (or double-learning) societal learning.

New Approaches to Resource Management in the Canadian North: Almost every chapter touched on the issue of co-management, shared responsibilities, or increased community participation in resource management in the Canadian North. Overall, an important unifying theme is the strong need to give greater consideration to the interests, knowledge, and values of those with the experience and resilience honed over thousands of years in the harsh environment of the Arctic. The imperative is a collaborative, highly inclusive process for addressing future action and research. For example, Chapter 16 indicates that some of the key issues identified by northerners in relation to oceans sustainability revolve around the long-term ability to secure country food and maintain traditional livelihoods, and this has led to a strong desire for meaningful local participation in resource management and/or greater local authority over natural resources. Various chapters describe management initiatives pertaining to a wide range of resources (including terrestrial, freshwater and marine species), ecosystems (*e.g.,* Beaufort Sea, Quttinirpaaq National Park), and non-renewable resource extraction activities (*e.g.,* mining, gas and oil exploration) that reflect deep local stewardship values and responsibilities. In the context of traditional livelihoods, the level of commitment is particularly strong, since northern Canadians depend on a healthy environment, healthy fish, and healthy animals for much of their diet. As Chapters 2 and 3 conveyed, when these resources become depleted or contaminated, the diet and hence the health of northern peoples immediately suffers.

Many of the chapters clearly illustrate that the use of IM is integral to ensuring that the resources of the North are managed in a manner that will ensure their availability for future generations. In addition, it was made clear that it was necessary to think in terms of systems and not a single type of resource. In effect, what is needed is an understanding of the key social and ecological processes that support the system, and how these processes and relevant structures respond to social, cultural, economic, and environmental changes. One of the key themes that emerges from many of the authors is the recognition that the term "management" in integrated management may in fact be misleading. The idea that resources can be "managed" is one with which some of the authors took issue. It was argued that while there is a need to ensure that resources are utilized in a manner that will ensure their availability for future generations, northern social-ecological systems are so complex and interconnected that it is impossible to "manage" them. The practices and polices that communities and larger political entities develop need to be thought of as means of adapting to both the existing environment and the changes that it faces. Thus, what becomes increasingly important is the need to understand and manage for resilience. Connected to this is the recognition that social and natural systems interact in complex, dynamic, and adaptive ways, and that static, linear, and reductionist views of human-environmental interactions do not provide adequate understanding for responding to uncertainty. Instead, what is required is an understanding of the capacities of systems to self-organize, cope with change, and adapt and learn (Chapters 1, 11, 13, 14). Once these capacities are understood it then becomes possible to develop practices that will ensure that the resources and functions in the system are maintained in a healthy balance.

There are several key implications that flow from these new IM-related management approaches. First, if it is necessary to understand the ability of a system to adapt to change rather than trying to increase the productive capability of the system, policy makers must be more willing to accept their limitations. In effect, it requires that the role of governance in resource management be understood as providing a much more limited capability to shape the system. Thus, policy makers need to be more humble in deciding what they can and cannot do regarding the management of resources in Canadian northern coastal regions. And they must be more prepared to accept and learn from policy and management errors (*i.e.,* when the outcomes of policy or management actions do not match the intended consequences).

A second important point (one that was made earlier but bears repeating) is the absolute need to involve communities and stakeholders in key resource management functions, including planning, decision-making, research, and education. Unfortunately, while most managers and policy makers accept this in principle, several of the authors demonstrate the difficulty in applying this

in practice. However, as shown in Chapters 5, 7, 8, 12, and 13, not only is it desirable to ensure community involvement in the management of their resources, it is feasible and highly beneficial. Chapter 5 shows how effectively the Inuvialuit participated in the establishment of a marine protected area. Chapter 13 describes how community-based management can represent (and facilitate) double-loop organizational learning (manifested by fundamental changes in an organization's values and goals).

Still, with regard to involving communities in basic resource management functions, Chapters 2, 3, and 8, as well as the DVD, establish clearly the desire of communities to contribute to monitoring environmental changes; "watching, learning and understanding changes in the environment." Alone or in collaboration with government organizations, communities have participated in the development of meaningful environmental indicators. They have developed their own methodology to gather and communicate the observations, often building on observations of many generations. Chapters 2 and 3 focus on the issue of food security, and both chapters make it clear that there is confusion as to what is safe and what is not safe to eat in terms of country food, *i.e.,* the nature and effects of outside contaminants are not always fully understood. This has two potential impacts. First, it can cause northern peoples to turn away from country food, which often means adopting a diet that is high in fat and low in nutrition. On the other hand, a lack of understanding can also lead to a minimization or denial of real health risks associated with eating some country foods. Thus it is necessary for those on the land to be able to identify and understand the key indicators of environmental stress on country food. In some cases, this requires a close collaboration between scientists and traditional knowledge holders.

A third point that must be acknowledged illustrates a limitation of this book. While the case studies that were examined provide important new insights into the successful application of IM in the North, most of the evidence revolves around small-scale resource utilization. There is a need to examine the impact of a large-scale development that is driven by southern needs rather than by northerners. For example, is the dramatic expansion of the diamond industry in northern Canada being conducted with the principles of integrated management in mind? What of the coming energy extraction developments that are now being prepared for northern oil and gas production? What types of cross-scale linkages can help reconcile community-oriented IM imperatives with drivers rooted in economic globalization? Similarly, will IM be important in the search for the right balance between efficiency and profit making on the one hand and conservation of natural capital on the other? Is harmonization feasible (or even possible) in the face of high-level negotiations led by transnational corporate interests?

Another limitation of the book is that it does not examine in detail the impacts of federal institutional interplay on local situations (although some chapters did encompass aspects of federal-international interactions, *e.g.,* Chapters 11, 13, and 15). Implementation of the *Oceans Act* has been a struggle internally within the Department of Fisheries and Oceans, and interactions among various federal departments in the North have been tricky to say the least. These dynamics compound uncertainty, complexity, and conflict in the management environment, and can have important adverse effects on the implementation and outcomes of community-based models. As such, they deserve dedicated research attention, but were unfortunately beyond the scope of the original research design and are not discussed in this volume.

Governance and Policy: One of the greatest challenges that now face those who live in the North, resource managers, and policy makers centres around governance issues. A major lesson from the book is that Canada and the people of the North have developed new and robust approaches to law, knowledge sharing, and institutions. This is tempered, however, by a lack of capacity of the overall governance system to adapt to rapid social and technological change and to anticipate and prevent foreseeable problems, such as climate change, persistent organic pollutants, and a youth culture that lacks direct connections to the land. Most of the chapters of this book argue that the North is facing increasingly intractable problems requiring difficult and challenging management decisions and policies. It is clear that there will be a need to ensure that the state-centred mode of governing is replaced by newer understandings of governance. Several of the most important points have already been touched on in the preceding sections, but still warrant consideration.

First, it is clear that members of northern communities need to be included in all decisions concerning the North. It is important to stress that this inclusion must be based on meaningful participation (*e.g.,* shared decision making over normative planning issues). All of the authors who have examined this issue have found that when there has been proper involvement, the net result has been better resource management. This will mean that, at times, decisions may not be taken as quickly as possible. But this is a small price to pay.

A second theme that emerges from the new governance is the need to better understand cross-scale linkages and their potential as determinants of sustainable development. Chapters 11 and 14 repeatedly returned to the challenge of managing resources at difference scales – the local, the regional, the national, and the international. Each scale has a different set of institutions, actors, and requirements. In many instances there are inherent difficulties in coordinating action. For example, some of the most significant changes in the Canadian North are being caused by climate change. The impact on the Canadian North requires actions at all levels of governance. However, it is immediately apparent that any effort to coordinate policy is going to be difficult. There is a need for those involved to come to a shared understanding of the problem and the action needed to respond. As Chapter 14 shows, even when addressing a relatively localized resource such as the northern fisheries in Nunavut, this is difficult enough. Thus, when facing a challenge as broad as climate change, shared understandings will be difficult to reach.

The next step is the development of a policy response that will utilize the experience provided by IM practices. That is, we need truly adaptive policy development. But of course this implies a need for sound baseline information and an understanding of how a particular system is responding to different forces and types of change. Thus there is a need to identify the ability of the system to respond to the stresses that are requiring policy action. Monitoring, tight feedback loops, and the capacity for social learning at organizational and community levels are essential in this regard.

In practice this will be difficult. Since the end of the 1980s, fiscal realities have limited the ability of all levels of government to provide resources to support policies. As a result, there are significant limitations to what can be done. This has been particularly clear in terms of Canada's actions in the international context. It is clear that a response to the challenges created by climate change will be expensive and will require significant actions at the international level. However, as Chapter 15 argues, the Canadian government has not shown great willingness to devote significant resources to northern international issues. Chapter 15 focused on the ability of the Canadian government to maintain a surveillance and enforcement capability in the North, but it is easy to understand why the government will continue to employ limited resources. Thus, the need to maximize Canadian resources through cross-scale linkages will remain a critical requirement in the development of future policy initiatives.

As highlighted in the penultimate chapter, issues of resources management will remain current for many generations to come. Confronted with the complexity, uncertainty, and conflict associated with ocean resources and coastal management, solutions to questions asked by northern peoples – "How can we develop our resources responsibly while maintaining our health, well-being, and culture?" and "How can we sustain our waters, lands, and the traditional activities that depend on them?" – will likely emerge in the context of interdisciplinary understanding and collaboration, and in the context of flexibility in the approaches used and solutions adopted. Strategies will continue to evolve as new knowledge is gathered, and as new relationships between governments and stakeholders develop.

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