

# Forests in Sustainable Mountain Development: a State of Knowledge Report for 2000

Task Force on Forests in Sustainable Mountain Development

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a project to investigate the requirements and perspectives of forest owners has been launched. Among the 11 participating countries, several have a considerable part of their forests in mountain regions. The results of the project will furnish information on a comparative basis allowing the evaluation of specific conditions of mountain forest management and the assessment of differences in perceptions between land owners, NGOs and public services.

Due to changes in social values and new political concepts, public perception research will continue to gain importance in public policy development. Empirical inquiries are a valuable source of information for the formulation and implementation of many sectoral and cross-sectoral policies. The broadening objectives, as well as new instruments of public forest policies, provide an institutional framework that requires a more profound understanding of how forest and forestry development are perceived. The same applies to management planning, which, especially in mountain regions, refers to managerial aspects as well as to comprehensive rural development issues. The move of public services towards more demand and output-orientated policies emphasizes the need for regular information on public opinion towards forests and forestry.

#### **4.3 Traditional knowledge, Western science and environmental ethics in forest management**

*A.J. Thomson, M.N. Jimmie, N.J. Turner and D. Mitchell*

Throughout their history, most Canadian rural communities lived in relative harmony with their environment. However, in recent years, pressures of rapidly growing populations have arisen on even the rural environment, through extensive harvesting of forests for timber extraction, development of ranch land, and recreation, or creation of new farmland. These changes on the land often result in environmental degradation, and put individuals, communities and organizations in conflict.

First Nations (Canadian status and non-status aboriginal peoples, Métis and Inuit) people desire not only to preserve their heritage, but also to see that heritage is given its proper place in decisions that affect lands. In Canada, this may be facilitated by federal and provincial forest legislation and policy which now aims at inclusion of social, cultural and spiritual values in regional planning and land management. The First Nations' environmental heritage lies in their traditional ecological knowledge and wisdom (TEKW), and is based on a code of environmental ethics that often differs markedly from the codes of ethics of other groups participating in the process. The challenge for land management policy development is to bring together the different views and codes of ethics, related to effects of human actions on the environment, of TEKW and Western science.

### 4.3.1 Canadian First Nations perspective

TEKW is a critical component to understanding, using and appreciating the world we inhabit. With extensive use of and reliance on the land, indigenous peoples immanently gained extensive knowledge and benefits from their respective environments and communities without disrespect and dishonour. Therefore, TEKW is a compilation of various beliefs and practices by indigenous people of a particular landbase.

A basic belief among the *Nlhaka'pamux* (Thompson people) and probably other Canadian First Nations people is the significance of *nk'seytkn* which means kin, companions and community. However, *nk'seytkn* does not exclusively refer only to people, but it includes all elements of the *tmixw* (world, country, earth, soil) and the environment.

Another basic belief is that First Nations must understand the relationships of the various entities of the land and also to be able to mutually coexist with the environment. These basic entities (people, animals, birds, fish, plants, rocks and water) all interrelate, all have an inherent spiritual component; none more important than the other.

The *Nlhaka'pamux* revere these basic elements in a number and a variety of ways. The importance and respect for these elements can be shown for the purposes of this discussion in two ways: in personal names, and in gathering methods. Examples showing the importance and relevance of the basic entities are in the meanings of personal names, such as *K'muselqs*, which means High Mountain Clothing, and *Na'Azinek* which means Goat Hair Blanket. The translations of other personal names can include other entities such as water, rock, animals, fish, plants and birds. Gathering practices include the understanding that all things have a spirit, all things are our relatives, all things can be spoken to, and all things are of great importance. As a result, particular practices are conducted during the gathering or use of the material to ensure future and ongoing use of our world.

First Nations people have long recognized these entities as core to the existence of living things and the need for a respected relationship among living things. As stated earlier, these concepts are a way of life; if this respected relationship is not adhered to, severe consequences can result. Needless to say, First Nations people generally agree that forest planning and land management must adhere to ethical practices and appropriate policies, as well as seriously consider a mutually beneficial and respectful co-management of the *tmixw* and the *nk'seytkn*.

### 4.3.2 Traditional ecological knowledge and wisdom

TEKW is an increasingly recognized concept that pertains to systems of environmental knowledge of long-resident peoples – usually indigenous

peoples – in a particular locality. Since these peoples have depended largely on the sustained use of local resources for countless generations, they have developed sophisticated and generally successful ways of using and relating to their environment, intimately linked with their social and cultural systems (Turner, 1997; Turner *et al.*, 1999).

For First Nations of Canada, the traditional worldview is one of deep respect for all things, living and non-living. There is also a concept of oneness and kinship with other life forms, and recognition that if the environment, or Nature, is treated poorly, without respect, it has the power to 'hit back' at you (Turner and Atleo, 1998). Essential resources are regarded as gifts from the Creator, or from particular individuals in the mythical past, never to be taken for granted or carelessly wasted. Children are taught these concepts at an early age, through participation in resource harvesting and management and through often-repeated stories and lessons from their elders. The languages themselves, and the names for plants, animals, places and practices, reflect a deep and close association with the land and its life forms.

The complex interconnections in the environment are recognized and applied in TEKW. For example, the calls of certain birds and the blooming of certain flowers are indicators for important cultural and harvesting events, such as particular populations of fish coming up the river. Time is regarded as cyclical, not linear. Day and night, lunar cycles, the seasons, the salmon's return, and life itself, are all recurring events woven into a never-ending rhythm.

TEKW brings a long-term perspective to contemporary forest management. Forests last for many human generations. Forest use without respect and appreciation can bring disaster. The concept of sustainable development suggests that large-scale harvesting and massive disruption of forests, merely for short-term economic gain and without consideration of future generations and other living beings, cannot be condoned. Rather, strategies for sustainable living embodied in TEKW include careful management of populations, habitats and landscapes in a way that maintains balance. Furthermore, the needs and requirements of all living things in the forest are recognized and valued. These are lessons that all of us need to learn, and indeed, they are embodied in many of the 'new forestry' ideas that are currently promoted and implemented in forest land management.

#### 4.3.3 Western science

Western science is based on the paradigm of hypothesis formulation and testing, with an implicit assumption of causality. Ideally, its methods are objective, and involve breaking things into smaller parts for measurement, leading to reporting of results and improved understanding of processes, providing an ability to predict outcomes. The analytical and predictive powers of properly

applied scientific method will keep it as the foundation of policy, as well as benefiting First Nations through providing insights into new and changing situations, and new ecological interrelationships not covered by TEKW.

However, although the scientific method is supposedly objective, in practice value judgements often play a major role in deciding what to measure, when to measure and how to measure it, and most importantly, how to report it. The book *How to Lie with Maps* (Monmonier, 1991) highlights potential value-driven choices for reporting in the area of mapping and geographic information systems (GIS). Even when scientific knowledge is collected in an appropriate way, there are many potential pitfalls in its proper application by policy-making institutions (Bella, 1992). In applying science, we provide value-laden 'objective' technological solutions that mask fundamental social issues (Gamble, 1986). Risk and uncertainty inherent to resource utilization serve to further compound the challenge of applying scientific knowledge.

#### 4.3.4 Environmental ethics

Due to differences in various types of social norms (legal, religious, moral and conventional), cultural groups differ in their perceptions of landscapes, and in their rules covering the principal relations of social life and interaction with the environment. Ethics is the study of value concepts such as 'good', 'bad', 'right', 'wrong', 'ought', applied to actions in relation to these norms and rules. It deals with many issues fundamental to practical decision-making (Veatch, 1977). Conflicts arise when individuals or groups differ in:

- the moral import of the same acts,
- the non-moral consequences of acts and their consequences,
- importance attached to different virtues,
- ways of meeting primary needs,
- range and strength of sympathy and moral insight.

This affects how each group views potential modifications to the landscape.

In practice, power factors determine what constitutes the information used to define the landscapes, as well as the issues, alternatives and groups with standing in the landscape management process. To a varying degree, in most parts of the world, power in the land management process lies predominantly in the hands of governments and large forest industries, which rely heavily on a scientific approach to land management embodied in computer databases and complex analyses. Flybjerg (1993) argued that applied ethics should focus on values and examine power issues, through answering questions such as: Who gains and who loses? By virtue of which mechanisms of power? What are the possibilities of changing existing power relations, if desirable? Of what kind of power relations is the applied ethics itself a part? Thomson (1997) reviewed knowledge-based approaches to addressing some

of these ethical issues in the database and computer system aspects of the land management process, and Thomson (1999a) illustrates one method of including traditional knowledge in the process.

Resolving ethical differences often relies upon the method of comparative case analysis. According to this method we navigate our way to a practical resolution by discursive triangulation from clear and settled cases to problematic ones (Winkler and Coombs, 1993). Wildlife management cases in Yellowstone Park illustrate ethical concepts such as a concern for endangered species preservation overriding an ethic of letting nature take its course; there are similar ethical dilemmas regarding forest fire management (Ralston, 1993). These ethical judgements are based on a Western scientific approach to nature, with a hierarchy of individual, population, species and community. Reconciling such judgements with the view of nature of indigenous people remains a challenge for co-management of the land. Many ethical issues can only be addressed through modification of the process and institutional change.

#### 4.3.4 Policy implications

When faced with a problem, policy-makers, like other people, tend to use familiar approaches and techniques. Given the intensity of debate that can arise among competing *analytical* techniques, it is no surprise that individuals raised in a tradition of 'rational' scientific inquiry find considerable discomfort in dealing with knowledge that is achieved through a 'different way of knowing'. Many of the common attributes of 'traditional' or 'local' knowledge are difficult to accommodate within a rationalist framework – and even though rational decision-making frameworks are widely criticized, they remain the dominant approach to formal policy analysis in Western-style administrations, at least.

Science and local/traditional ecological knowledge can complement each other in resource policy and resource management. The two approaches 'operate at different time and space scales. Science tends to look at fairly short time spans but is global in its outlook. Local knowledge takes the long time view – over generations – but its focus is on the very nearby situation' (Haedrich, 1998).

Which approach is most useful, alone or in combination with the other, depends on the scale and scope of the problem. The strength of science – its concerns with precision, rigour, accuracy, and generalizability – are critical. Haedrich contends, at the day-to-day management level, while the articulation of goals requires the long-term view and holistic local focus more typical of TEKW. TEKW may also be invaluable in giving science clues as to where to focus its efforts and in conveying to policy-makers the inextricable linkages among environmental, economic and social impacts of their decisions.

A serious challenge for the application of TEKW in policy-making lies in the very process by which it is accumulated – through trial and error over many generations. The slow accretion of understanding may not be sufficient to deal with rapid and novel changes in the natural and human environments. Similarly, to the extent that ethics evolve as a reflection of the material relationships between human beings and their environment, the ethics of a simpler technology may not be sufficient to constrain the inappropriate application of new and infinitely more powerful technologies.

Science cannot resolve these problems either. Today's policy-makers are challenged more than those of any other time with the need to voluntarily limit what we do. TEKW may help us understand what it means to live with nature; science may help us understand how to achieve such an outcome.

#### 4.3.5 Conclusions

Knowledge means being aware of facts, and it also means understanding how to apply that factual knowledge (Schmoldt and Rauscher, 1996). This contrasts with 'data', which may be defined as undigested observations and relationships, and 'information', which is a collection of data that has some level of organization. Information becomes knowledge when we develop a justified belief in its truth-value (Schmoldt and Rauscher, 1996).

Indigenous people and scientists differ in their methods of justification and evaluation of truth. Scientists base their justification on hypothesis testing, while indigenous people base their justification on life experiences, often accumulated over many generations. Only when scientific truth and the truth of TEKW are given a more balanced recognition will policies and practices be developed that are acceptable to all stakeholders on the land. The key to acceptable policies and practices is to have indigenous people/First Nations involved from the outset of any planning, decision-making or activity relating to the environment. This inclusion is one way of recognizing the value of both scientific knowledge and TEKW in contributing to solutions.

TEKW has much to offer Western science in what to measure, when and where to measure it, such as in the area of non-timber forest products (NTFPs). NTFPs will be a major product of the sustainable forests of the future, especially the potential for pharmaceutical and genetic materials. In the process of eliciting and using TEKW, the intellectual property rights of the indigenous peoples must be recognized and acknowledged. Through their full participation in the process, indigenous people can ensure protection of these rights.

It is important to think of collaboration as a 'two-way' exchange of knowledge: not just indigenous people providing their TEKW to scientists and decision-makers, but also scientific knowledge and technical training being provided to indigenous people, and having their full participation as researchers and decision-makers in a consensus-based, fully collaborative approach.

