



## Community Indicators for Sustainable Forest Management in New Zealand

### Summary

A series of seven workshops was undertaken across New Zealand from May to June, 2009, to develop community-level values and indicators for sustainable forest management. A range of forest user groups were represented at each of the workshops, with some participants involved in multiple community clubs or organisations.

The workshops identified indicators relating to access, soil and water resources, biological diversity, forests as part of local communities, involvement in managing local forests, forest productivity, forests as carbon sinks, and forests as landscape features.

As New Zealand is a member of the international Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests, or Montréal Process, the community-level indicators were matched to the indicators of the Montréal Process Criteria and Indicators.

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### Introduction

A series of seven workshops was undertaken across New Zealand with representatives of community forest users from May to June, 2009. The objectives of the workshops were to:

- gather new impressions on previous research about the values New Zealanders hold for forests;
- gauge whether there are values that are of higher priority in local areas, and what these are; and
- develop a set of community-generated indicators for sustainable forest management.

The 'Montréal Process' is the Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests. The Montréal Process was formed in 1994 to develop and implement internationally agreed criteria and Indicators for the conservation and sustainable management of temperate and boreal forests. As New Zealand is one of the twelve member countries of the Montréal Process, the match between the community-level indicators of the workshops and

those of the Montréal Process Criteria and Indicators was investigated.

### Workshop Series

The workshops were held in regions with both plantation and indigenous forests: Whangarei, Auckland, Rotorua, Gisborne, Nelson, Christchurch and Dunedin. The participants in the workshops were members of local forest user groups, with some knowledge of both forest usage and management (Table 1). A range of user groups was represented at each of the workshops, with some participants involved in multiple community clubs or organisations.

Representatives from
sporting clubs
hunting and fishing organisations
tramping clubs
mountain biking clubs
horse riding groups
motor sports clubs
environmental organisations and ENGOS
other community organisations
commercial recreation businesses
plantation forest neighbours



Table 1. Forest user representatives at the national workshops

The workshops used a qualitative research approach, and were facilitated by Coastline Consultants.

For the workshops, the values that New Zealanders hold for forests, based on the results of previous research (Barnard *et al.*, 2010), were initially considered (Table 2), followed by a facilitated process to develop indicators for those values.

What New Zealanders Value about Forests
Biodiversity at species and ecosystem level
Productive capacity of forests for timber
Non-polluted drinking water and waterways
Forests as carbon sinks
Forests as part of local communities (including intrinsic values, history)
Access for recreation (passive and active)
Forests as landscape features
Opportunity to be involved in managing local forests
Forests' contribution toward soil conservation

Table 2. List of values New Zealanders hold for forests, as used in the workshops

## Results

In general, the participants agreed to the list of values, with some wanting them to be more specific.

Access to forests for recreation is a high priority for community groups and businesses. The range of indicators described by user groups across the country for monitoring access values includes:

- A description of forest area by ownership (public and private)
- The number and location of permanent open ways as well as the number, location, timing and reason of forest closures
- The area and time of forests available to be used per activity

- A description of the full range of recreation activities including where, when and what for
- A register of all tracks, changes to tracks and whether they are useable
- Provision, adequacy and usage of amenities
- Consistency of information, signage and maps
- Satisfaction surveys, complaints and accident registers
- Noise levels
- Damage to forest environment from vandalism, use, etc.
- Consistency of management documents
- The opportunities for consultation and participation in forestry related forum
- Existence of formal access agreements, e.g., MOUs
- The level of coordination and management of access
- Costs of access

Management of soil and water resources was also important for participants across the country. The indicators include:

- Water clarity
- Whether water in forest streams is drinkable
- Water temperature
- Sediment levels in water
- Surveys of freshwater biological diversity
- Placement of culverts, roads and access points
- Identification of the best use of land for forestry (e.g., for soil erosion and waterway protection) versus other land use
- Existence of and adherence to rules

A further priority for user groups was a commitment by forest managers to maintaining and creating healthy forest ecology and indigenous biological diversity. The indicators include:

- Evidence of protecting biological diversity through management plans and funding allocation
- Surveys and species counts of indigenous ecosystems (such as remnants in gullies, riparian margins, wetlands etc.) and species



analysed on the basis of trends over time and age distribution

- Management of pest infestations.

Much of the discussion about forests as part of local communities was interlinked with other values such as access and landscape. A few groups specified indicators for this value:

- The content of management plans
- Publication of logging plans
- Species surveys for biological diversity values
- The degree of managed recreation/access
- Forest users' surveys on satisfaction and issues
- The level of investment into infrastructure maintenance.

Involvement in managing local forests was talked about throughout the workshop series in the context of other values, such as access and management of freshwater ecosystems. Results suggest that forest user groups would be more interested in being involved on specific issues (such as determining how to manage recreational areas) rather than overall forest management, provided they have evidence that a full range of values is being managed and assessed. The indicators include:

- A full range of values is being assessed
- The existence of agreements such as MOUs, and opportunities to be involved.

Few indicators were developed related to forest productivity, although there was a general understanding across the workshops that production forests were planted for economic purposes and that they would be cut down. The level of understanding varied between individuals within the workshops. The indicator developed was that:

- Forests continue to grow wood of economic value.

For the values 'forests as carbon sinks' and 'forests as landscape features', no specific indicators were developed.

## Community-level indicators matched to Montréal Process Criteria and Indicators

The indicators of the Montréal Process are deliberately indicative rather than specific about the individual measures required for sustainable forest management, allowing countries to develop the detail locally. The workshops were not similarly constrained, and some indicators developed are fairly specific. All indicators developed in the workshops were investigated for the best match to those of the Montréal Process. Table 3 shows the Montréal Process Criteria and Indicators considered relevant by the forest users, and Table 4 shows examples of community-level indicators matched to indicators from the Montréal Process.

While all Montréal Process Criteria were addressed by the community-level indicators, only about half of the indicators of Criterion 6 "Maintenance and enhancement of long-term multiple socio-economic benefits" could be matched. Several of the indicators of Criterion 7 "Legal, institutional and economic frameworks for forest conservation and sustainable management" were also not addressed.

## Community-level indicators not in Montréal Process Criteria and Indicators

A focus of community-level indicators that does not match explicitly to indicators in Montréal Process relates to harvest practices. Example indicators developed include the size of clearfells, the duration of clear land, and the interaction between harvest plans and their effects on biodiversity and forest usage. These are only indirectly addressed through themes such as management for recreation (6.4.a) and ecosystem analysis (1.1.a).

## Conclusion

The highest priority of the community forest users was that of access, although the workshops also focused on a number of other values.



A number of indicators were successfully developed for most of the forest user values. There was a broad spread of interest in information on sustainable forest management, from the environmental (e.g., water, flora) to the effects of the management (e.g., closure duration) to fundamental issues such as rights of access.

The indicators developed by the forest users could be matched to those of the Montréal Process. Some Montréal Process indicators did not have any community-level indicators matched to them; these related to socio-economic benefits and legal frameworks. On the other hand, there were no community-level indicators that were not at least indirectly covered by the Montréal Process; this international instrument is sufficiently structured to incorporate local issues.

Indicators from the Montreal Process	Relevant to forest users
1.1.a Area and percent of forest by forest ecosystem type, successional stage, age class, and forest ownership or tenure	yes
1.1.b Area and percent of forest in protected areas by forest ecosystem type, and by age class or successional stage	some relevance
1.1.c Fragmentation of forests	some relevance
1.2.a Number of native forest-associated species	yes
1.2.b Number and status of native forest-associated species at risk, as determined by legislation or scientific assessment	some relevance
1.2.c Status of on site and off site efforts focused on conservation of species diversity	yes
1.3.a Number and geographic distribution of forest-associated species at risk of losing genetic variation and locally adapted genotypes	yes
1.3.b Population levels of selected representative forest-associated species to describe genetic diversity	some relevance
1.3.c Status of on site and off site efforts focused on conservation of genetic diversity	some relevance
2.a Area and percent of forest land and net area of forest land available for wood production	yes
2.b Total growing stock and annual increment of both merchantable and non-merchantable tree species in forests available for wood production	yes
2.c Area, percent, and growing stock of plantations of native and exotic species	yes
2.d Annual harvest of wood products by volume and as a percentage of net growth or sustained yield	yes
2.e Annual harvest of non-wood forest products	yes
3.a Area and percent of forest affected by biotic processes and agents (e.g., disease, insects, invasive species) beyond reference conditions	some relevance
3.b Area and percent of forest affected by abiotic agents (e.g., fire, storm, land clearance) beyond reference conditions	some relevance



4.1.a Area and percent of forest whose designation or land management focus is the protection of soil or water resources	yes
4.2.a Proportion of forest management activities that meet best management practices or other relevant legislation to protect soil resources	yes
4.2.b Area and percent of forest land with significant soil degradation	yes
4.3.a Proportion of forest management activities that meet best management practices, or other relevant legislation, to protect water-related resources.	yes
4.3.b Area and percent of water bodies, or stream length, in forest areas with significant change in physical, chemical or biological properties from reference conditions	yes
5.a Total forest ecosystem carbon pools and fluxes	yes
5.b Total forest product carbon pools and fluxes	yes
5.c Avoided fossil fuel carbon emissions by using forest biomass for energy	some relevance
6.1.a Value and volume of wood and wood products production, including primary and secondary processing	yes
6.1.b Value of non-wood forest products produced or collected	not raised by users
6.1.c Revenue from forest based environmental services	not raised by users
6.1.d Total and per capita consumption of wood and wood products in round wood equivalents	not raised by users
6.1.e Total and per capita consumption of non-wood products	not raised by users
6.1.f Value and volume in round wood equivalents of exports and imports of wood products	some relevance
6.1.g Value of exports and imports of non-wood forest products	not raised by users
6.1.h Exports as a share of wood and wood products production, and imports as a share of wood and wood products consumption	not raised by users
6.1.i Recovery or recycling of forest products as a percent of total forest products consumption	not raised by users
6.2.a Value of capital investment and annual expenditure in forest management, wood and non-wood forest product industries, forest-based environmental services, recreation and tourism	yes
6.2.b Annual investment and expenditure in forest-related research, extension and development, and education	some relevance
6.3.a Employment in the forest sector	not raised by users
6.3.b Average wage rates, annual average income and annual injury rates in major forest employment categories	some relevance
6.3.c Resilience of forest-dependent communities	not raised by users
6.3.d Area and percent of forests used for subsistence purposes	not raised by users
6.3.e Distribution of revenues derived from forest management	some relevance
6.4.a Area and percent of forests available and/or managed for public recreation and tourism	yes
6.4.b Number, type, and geographic distribution of visits attributed to recreation and tourism and related to facilities available	yes
6.5.a Area and percent of forests managed primarily to protect the range of cultural, social and spiritual needs and values	yes
6.5.b The importance of forests to people	yes
7.1.a Legislation and policies supporting the sustainable management of forests	yes
7.1.b Cross-sectoral policy and programme coordination	not raised by users
7.2.a Taxation and other economic strategies that affect sustainable management of forests	not raised by users
7.3.a Clarity and security of land and resource tenure and property rights	yes
7.3.b Enforcement of laws related to forests	not raised by users
7.4.a Programmes, services and other resources supporting the sustainable management of forests	some relevance
7.4.b Development and application of research and technologies for the sustainable management	not raised by users



of forests	
7.5.a Partnerships to promote the sustainable management of forests	yes
7.5.b Public participation and conflict resolution in forest-related decision making	yes
7.5.c Monitoring, assessment and reporting on progress towards sustainable management of forests	yes

Table 3. The relevance of the Montréal Process Criteria and Indicators to forest users, based on their indicators

Example indicators from the Montreal Process	Example indicators developed by forest users
4.3.b Area and percent of water bodies, or stream length, in forest areas with significant change in physical, chemical or biological properties from reference conditions	water clarity; water potability; water temperature; sediment levels in water; baseline data to measure change; oxygen in stream; water levels downstream
6.4.b Number, type, and geographic distribution of visits attributed to recreation and tourism and related to facilities available	register of tracks, changes and usability; number of permits; number of OSH and ACC accidents for recreation; number of events, visitors and hours, by type of activity (e.g., fishing, riding); central locations to get permission to access
7.1.a Legislation and policies supporting the sustainable management of forests	consistency in access; area public land; rights of access

Table 4. Example indicators from three different Montréal Process Criteria matched to the indicators developed by the community forest users

## Reference

Barnard, T.; Spence, H.; Crawford, K. 2006: New Zealand Montreal Process Review: Forest Values in New Zealand. Contract Report to the Ministry of Agriculture and Forestry, Ensis Environment, Rotorua.