



Sustainable forest management: What are criteria and indicators?

There is so much discussion these days about sustainable forest management (SFM). One particular aspect of SFM that many countries are involved in is criteria and indicators. What are they and how are they applied to measure sustainable management?

The traditional basis of forest management was a deceptively simple principle: harvesting the wood at an average annual rate that is no greater than that at which the forest can grow it. But in recent times the view of forests has changed to recognise their ecological, cultural and other values which may surpass the pure economic outputs.

Forests perform many functions including conservation of biological diversity, protection of soil and water values, contributions to global carbon cycles as well as providing socio-economic benefits. A forest is deemed to be managed sustainably only if all these criteria are met: a criterion is a category of conditions or processes by which sustainable forest management may be assessed.

Once the criteria are established we need to find ways of measuring the management of forests against them. These are the indicators. An indicator is a measure of an aspect of a criterion. It can be a quantitative or qualitative variable which can be measured or described and which when observed periodically demonstrates a trend.

A measurement of sustainable management is needed for two main reasons:

- to establish, over time, whether sustainable management is taking place;
- to assure concerned consumers of forest products that the product in the market in fact comes from a sustainably-managed forest.

If these two conditions are to be met, the indicators relating to the criteria should be objective and quantifiable. Unfortunately, the indicators of sustainable management cannot always be reduced to a quantifiable basis. For instance, one of the key criteria of the Montreal Process is biological diversity. It comprises the elements of the diversity of ecosystems, diversity between species and genetic

diversity in species. It has nine associated indicators. For instance, one of the indicators of species diversity under the Montreal Process is "the status of forest-dependent species at risk of not maintaining viable breeding populations as determined by legislation or scientific assessment". This can be interpreted by different countries in different ways. It could be sufficient for domestic purposes but not in the international market place where there is competition from different supply sources.

It is to overcome this type of problem that several countries have come together to produce collective C&I that will be used by that particular group of countries. For example, the Montreal Process used by 12 non-European temperate countries, the Helsinki Process of 40 European countries and the Terapoto Treaty partnership of a Latin American group of countries. When such a group of countries agree on a common basis for defining concepts and measuring them it makes for greater comparability and acceptability.

The interesting feature is that the cri-

teria and indicators of all three processes noted above are largely comparable. The criteria of sustainable management need to be virtually the same for all countries if sustainability is to be defined in the same manner. Indicators, however, could vary somewhat to capture the differing features and circumstances of countries. This leads to the possibility that one day we could have a globally acceptable set of criteria.

It needs to be noted that the Montreal and other Process provide measurements of SFM at national level. It may not provide consumers with the required information to identify, for instance whether a particular piece of timber is sourced from a sustainably managed forest. The Forestry Stewardship Council has established a certification scheme to address this problem. The forest industry is also working through the International Standards Organisation to develop an ISO 14000 standard relating to SFM.

Don Wijewardana
Ministry of Forestry

Timberlands West Coast draft Beech Management Prescriptions

Printed below is the summary prepared by the Parliamentary Commission for the Environment.

The task of the Review Panel was to review Timberlands West Coast Ltd's Beech Management Prescriptions in accordance with the requirements of Part II of the Resource Management Act 1991 and the Deed of Appointment under which the company operates. In particular, it was to determine whether the initial proposals would provide for the forests to be managed on a sustainable basis and whether management practices have been prescribed to avoid, remedy or mitigate adverse environmental effects.

The panel has provided advice on further consultation and information that will be required in the next stage of the planning process before the company applies

for resource consents.

The review was conducted against the panel's principles for indigenous forest management, as follows:

- *the effects of management on the forest are reversible;*
- *biodiversity is maintained within any given region (that region may consist of an area greater than that set aside for wood production);*
- *management and regulatory practices are adapted in the light of new information;*
- *collective responsibilities are promoted and, in relation to Crown-owned forests, include the recognition of any obligations on the Crown arising from the Treaty of Waitangi;*
- *adverse effects of forest management are avoided, remedied or mitigated.*

SUMMARY OF FINDINGS

Recommendations have been italicised and their recipients noted in bold type.

The management of New Zealand's beech forests has attracted widespread public debate since the 1970s. The sustainable management of indigenous temperate forests is an enormous challenge and the international community will be watching New Zealand's efforts. Managers of New Zealand's indigenous forests will need to show their international and domestic customers that any New Zealand beech forest timber production is derived from sustainably-managed forests.

Since the 1980s, the Government has moved to constrain the harvesting of indigenous forests. However, the present system for controlling the management of indigenous forests remains fragmented. The Forests Amendment Act (FAA) 1993 applies to most privately-owned forests, whereas the Deed of Appointment provides different prescriptions for the management of the West Coast Crown indigenous production forests. Neither the Act nor the Deed provides for public participation. This is inadequate in the case of a Crown-owned resource. While the Resource Management Act (RMA) 1991 covers the management of all production forests, there are no comprehensive policies or plans developed under the RMA to govern the management of the West Coast Crown indigenous production forests.

The public of New Zealand should have confidence that agreed principles and criteria for the sustainable management of the West Coast production forests have been established. To that end, the **Minister of Forestry** should give urgency to developing a national framework for the sustainable management of indigenous forests by amending the Forests Amendment Act 1993.

In the interim, the **Ministers of State Owned Enterprises (SOE) and Finance** should negotiate with Timberlands West Coast Ltd (TWCL) to ensure that the Deed or an addendum to the Deed contains principles and criteria by which the beech forests will be managed, and that the **Ministers of Conservation, Forestry and Environment** are included in the approval process.

A multidisciplinary technical audit team should be appointed to audit the company's management plans on a three-yearly basis in order to assess whether sustainable management is being achieved. The audit team's reports should be released to local authorities with responsibilities for monitoring resource consent conditions. The public must have confidence that sustainable management is being achieved.

TWCL's prescriptions are well written and well presented and show that significant improvements have been made in the approach to beech management since the 1970s. The panel recommends that adjustments to the prescriptions are made as further information is obtained.

Coupes (areas cleared) should as far as possible simulate gaps formed by natural processes. Aspect, slope, canopy height, edge species and their response to wind, soil depth and coupe geometry are all relevant for determining an appropriate range of coupe designs and areas. Where beech regeneration is inadequate, coupes should be no greater than 0.5 ha. No coupes should be greater than 5 ha except in areas of low landscape or biological value and then only if the Department of Conservation (DOC) is confident there is no significant risk to biological values. No coupes should be harvested on poorly-drained terraces. Similarly, no single-tree harvesting should take place on these terraces until research has been carried out into the possible use of continuous canopy harvesting systems.

Harvesting should be designed so as to leave a mosaic of non-harvested and harvested areas. This will provide for the retention of biodiversity, ecological distributions of biota, seed sources and buffer zones alongside the conservation estate. Forest health and nutrient cycling will in part depend upon the appropriate management of coarse woody debris.

TWCL will need to develop a working relationship with DOC, as manager of the neighbouring Crown resource, to design the corridor network, including riparian strips and buffer zones alongside the conservation estate, if biodiversity is to be retained and conserved.

As a cautionary measure, the panel recommends that TWCL restricts its harvesting operations to one working circle in the first three years.

Monitoring and mitigation are integral to good planning and adaptive management approaches. Management systems should be adapted in the light of new information. At the end of the third year of operations, a comprehensive risk assessment of the effects of harvesting on the forest ecosystem should be carried out before any further decisions on harvesting are made.

A multidisciplinary research programme will be required for the sustainable management of the West Coast beech forests. The panel recommends that the **Minister of Research Science and Technology** investigates means by which research can be coordinated and funding provided for operational and public good research.

There are a number of draft district and

regional plans being developed on the West Coast and in the Tasman District. These could provide for the establishment of criteria for managing the effects of indigenous forest harvesting in the two regions and would enable public discussion of sustainable management as it applies to indigenous forests. Given the high public interest in management of the forests, the panel and TWCL are of the view that consent applications should be publicly notified.

TWCL's draft prescriptions represent a major step in planning for the management of the Crown beech production forests. The panel provides advice on the Assessment of Environmental Effects (AEE) which will be required for resource consents under the RMA.

Consultation with interested and affected parties is integral to developing and implementing an effective management plan and will be necessary to identify and deal with issues as they arise as well as identifying how to avoid, remedy and mitigate adverse effects.

Additional to the ongoing work required to identify the effects of management on the forest ecosystems, further information needs to be obtained on a range of matters including effects of the proposals on the tangata whenua, landscape values, tourism, recreation, employment and training. To prepare its assessment, the panel recommends that TWCL establish working groups with interested and affected parties.

The panel recommends to the **Ministers of SOE and Finance** that the AEE is audited through a public consultation process.

If a public audit process for the AEE does not take place, the panel recommends that the **Minister for the Environment** exercise the power to call in the application under the RMA.

The areas proposed for logging will undergo significant change. The present transition crop will be converted to a younger managed crop. In order to minimise the effects of major change, a slow and measured start and careful monitoring, backed by a comprehensive research programme, are recommended. This is not without cost or risk. There is a commercial decision as to whether this approach is economic. There are also costs to the nation for DOC involvement and public good research. Approving a sustainable beech management scheme requires commitment by all parties. New Zealand could lead the world in managing indigenous temperate forest provided that sustainable management principles are followed.

Copies of the full report may be obtained from Bennetts Government Bookshops.