

Crisis. What crisis? Maintaining our social licence to harvest steep-land forests

Keith Raymond

Managing forests for the future

About one-third of the New Zealand plantation forest estate is located on steep-lands with fragile erodible soils, where many of the forests were originally planted as protection forests to control erosion and are now managed almost exclusively for wood production.

Despite the progress being made in the improvement of environmental management systems (EMSs), certification of forest management to Forest Stewardship Council (FSC) standards, and the development of codes of practice and forest engineering guidelines, the overall performance of the forest industry in managing the environment for future generations (kaitiakitanga) is in my view rather mediocre. This is confirmed every time a group of non-forestry members of the public, or overseas visitors, goes out to a logging site anywhere in New Zealand and comments on the impact that harvesting methods have on soil disturbance, erosion potential and the landscape in general.

Environmental issues

As New Zealand foresters we tend to think of our industry as being the best at growing and managing trees, especially radiata pine. But our 1.7 million ha of plantation forest is a tiny proportion of the global plantation forest estate of 271 million ha, and in comparison with many other countries our performance on the environmental front needs to be improved. To be sure, as an industry over the last 50 years or so we have mastered the complexities of sustained yield of forests. But is that the same as being truly sustainable? I rather think not.

Is our performance good enough to maintain our social licence to operate? On steep terrain, cable logging (yarding) still remains the only operationally feasible (safe) and economically viable method for extraction of tree stems. Hauling ridge to ridge, using relatively old North American technology with a limited set of skyline cable systems (such as North Bend and 'scab' skyline), still creates a lot of deep soil disturbance ('scalping' and rutting). This is the prime source of rill and gully erosion, and channelised sediment flows leading into waterways. Sweeping of broken tops, stem pieces and branches across the cutover, through lack of suspension during extraction, is common leading to substantial accumulation of woody debris in gully



bottoms, increasing the risk of mobilisation into debris flows and damage downstream.

Around the world, many countries have suffered severe erosion, flooding and debris flows as a result of poor environmental practices. They have often realised the importance of 'looking after nature', often too late, and their governments have implemented strict environmental restrictions. What if environmental legislation was introduced to New Zealand, analogous to the proposed health and safety reform, that required persons undertaking an operation to minimise risks to the environment 'so far as is reasonably practicable' and implement risk-control measures? These measures might include:

- Substituting a practice giving rise to an environmental risk with another practice with lower risk
- Isolating the hazard from any sensitive part of the environment such as waterways, release to the atmosphere etc
- Preventing any hazardous material from coming into contact with any sensitive part of the environment
- Implementing engineering controls to achieve the above.

International experience

The Pacific Northwest region of the United States and Canada has had its harvesting volumes drastically curtailed due to environmental issues and strong public reaction against the forest industry. In the very steep terrain countries of Europe (Germany, Austria, Italy and Switzerland) they use silvicultural systems, hazard planning processes and harvest engineering technologies to protect the environment that are very different to those in New Zealand. Very steep terrain forests (over 80% slope) are managed primarily for watershed protection and recreation, and timber harvesting is secondary. Continuous cover forestry is the silvicultural system of choice with partial or selective tree harvesting.

Chile is a country with comparable terrain and climate, tree species (and area of radiata pine) and forestry practices to New Zealand. A lot of focus in Chile is placed on good roading and landing construction practices to reduce sediment entry into waterways, multi-span harvesting systems with intermediate supports, and aiming to reduce the road density per unit area. Riparian zones are also permanently protected and there are restrictions placed on the extraction of timber across or through them.

Best practice forestry

A recent review of international best practice in steep plantation forests has been published recently by the Ministry for Primary Industries as *New Forest Management Approaches to Steep Hills*. This concludes that even with quantitative hazard identification, risk management and good operational practices in place, it is unlikely that landslides and post-harvest debris flows on steep erosion-prone land that is subject to intense rainstorms can be entirely avoided.

The New Zealand forest industry has recognised that it remains under continuous challenge over its licence to operate. Neighbours of forest owners want assurances that forest management practices have no specific adverse effects on them and the wider environment and community. A constant series of plan and rule changes under the Resource Management Act (RMA) means that public perceptions against forestry can enter into the regulatory framework, often with little actual scientific justification.

To get this information to the public and regulatory authorities, scientific data that clearly demonstrate the forest industry's sustainability credentials (especially in relation to other land uses) need to be provided and able to be easily accessed and interpreted. These data need to include internationally recognised indicators plus New Zealand-specific operational indicators covering soil disturbance, erosion, water quality, in-stream ecology, emissions etc.

The small amount of funding provided by the Forest Growers Levy Trust (FGLT) in their 2015 Work

Programme for a Planted Forests Information Portal and other environmental projects (\$120,000) is a good start. But can we just apply existing knowledge and resources or is more work required?

Ticking time bombs

Our social licence to operate is vulnerable to a number of 'ticking time bombs', including:

- What impact will creating permanent protection areas in steepland forests, where timber production must be a secondary management objective, likely have on reducing landslides and capturing debris flows? And what is the cost? A small FGLT-funded research project (\$20,000) in 2015 will look at this issue.
- How can we minimise the 'bird's nest' of post-harvest woody residues piled up on every landing without creating unintended consequences such as public reaction to burning as a management practice?
- What if large-scale clearfelling is restricted? And what innovative harvesting methods can be used for cost-effective small coupe harvesting? A recent bid for FGLT funds in this area was unsuccessful.

Research and new practices

As manager of the Primary Growth Partnership Steepland Harvesting Programme at Future Forests Research, I am sorry to have to admit that 'more research is required' to develop innovative approaches to steep terrain forest management to improve our environmental performance.

One example of a harvesting technique to manage the risk of erosion from landslides and debris flows on steep terrain is multi-span skyline systems using intermediate supports. This harvesting method, common in Europe and Chile, is used to overcome lack of deflection issues in difficult terrain and provide full log suspension. This technique, linked to the use of permanent protected riparian areas comprising mature



forest trees, could be economically viable in New Zealand radiata pine clearfelling and would reduce soil disturbance and provide improved debris-flow capturing capabilities. It would also likely be seen as good practice by the public and regulatory authorities alike.

But a move to these systems would require a step change in harvesting practice. Using intermediate supports to enable productive gully to ridge extraction and avoid damage to riparian areas would require:

- Relaxing the New Zealand requirement for intermediate support trees to be topped (reducing rigging delays) or developing mobile intermediate supports for quick set up
- The use of skyline carriages capable of operating over intermediate supports
- The development of worker skills and training systems to rig intermediate supports
- Low tension skyline systems that overcome the lower payload of the carriage/intermediate support system and improve productivity.

A logical follow-up to the current Steepland Harvesting Programme could be a forest engineering programme aimed at devising best practice guidance for the industry on how to cost-effectively extract wood away from riparian management zones and wetlands, and avoid hauler scalping of hillsides and soil compaction by ground-based machines.

If, as responsible forest managers and stewards of the plantation forest estate for future generations, the members of the New Zealand Institute of Forestry believe there is a requirement to develop systems to efficiently harvest in a way that minimises the impact of our management practices on the environment, then it follows that a fully funded and resourced research and development programme must be implemented. Surely a larger share of the Forest Grower Levy should be mobilised to demonstrate the sustainability of our industry and ensure our licence to operate is recognised and valued by the community.

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Letter to the editor

Genetics, tree improvements and PSP

John Groome, NZIF Honorary Member, Canterbury

Your very informative piece fails to relate the important political, not genetic, fact about the *Pinus ponderosa* planted along the Low Level Road and elsewhere in the 1930s depression.

Trade then, as now, was of more importance than genetics. New Zealand had to buy seed within the British Commonwealth, not the United States. Some did get through from other countries and the very promising

var. *P. ponderosa* from California (Bull Pine) did get in. Very attractive specimens of these can still be seen in Canterbury and elsewhere. The state, however, had to buy the much inferior var. *Scopolorum* from the dry forestry lands near Kamloops in British Columbia.

These grew on the Kaingaroa and Karioi frost flats, but we must have lost millions of cubic metres due to this error – not by foresters, but by politicians.

