

Reducing the damage to the forest

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One of the strategies for encouraging Sustainable Forest Management (SFM) is the promotion of better logging practices such as those commonly referred to as "Reduced Impact Logging" (RIL). This planning and operational strategy is based on the recognition that improving harvesting practices is an absolutely essential element of achieving SFM.

The conventional approach to logging as still practiced by most concessions in Southeast Asia, which involves felling and log extraction usually relatively unplanned, results in a very high level of impact, especially to the residual trees which should be the basis for the next cutting cycle. It also results in excessive machine movements that disturb the soil and destroy forest vegetation. Excessive soil disturbance can result in major soil erosion and sedimentation of the forest streams with associated negative impacts.

RIL is a series of techniques which, when taken together, make up a comprehensive management strategy. This strategy takes planning of the extraction process to the individual tree level. It emphasises the adoption of standards and operating procedures, which will lead to a greater awareness and a more effective implementation of the harvesting activities.

Some extra costs are incurred but researchers agree that significant and immediate financial benefits - improved efficiency or production cost savings - can be had from better planning, field preparation and supervision. By minimising damage to the forest during the initial harvesting activity, long-term benefits such as an equal or better second harvest can be expected.

Foresters have to get RIL to achieve SFM

The connection between the implementation of RIL and the achievement of SFM is quite straightforward. It starts with the recognition that under most tropical forest jurisdictions, the regulatory and/or enforcement capabilities have been inadequate in ensuring that forests are left in good enough condition to ensure the maintenance of all forest values.

In Indonesia, for example, natural forests are managed under a 35-year cutting cycle. Harvesting is regulated using a minimum diameter limit of 50 cm (60 cm for limited production areas). It is assumed that each hectare will have at least 25 trees between the diameters of 20 to 49 cm prior to felling and it is further assumed that sufficient numbers of these trees will be retained to



form the next cutting cycle of equal or greater volume.

Most researchers agree that these are reasonable and safe assumptions, which can guarantee sustainable production of equal or better volumes during subsequent cutting cycles. However, there is one additional assumption – the forest is left in a good enough condition to ensure an equal harvest by the time of the next cutting cycle.

In the regulatory framework of the Indonesian silviculture system, there is no clear and enforceable criteria which adequately defines the level of “acceptable” impact. It could well be argued that regulations of this nature are almost impossible to formulate and even more difficult to enforce. The failure of the Indonesian system, for example, is due more to enforcement than a lack of regulations.

This is where RIL enters the picture. The contribution of RIL to the achievement of sustainable forest management is primarily focused on the achievement of sustainability of the productive functions of the forest. Most commonly this is seen as the maintenance of age class distributions, natural species mix and minimising impact of a number of physical aspects of the forest.

However, RIL’s contribution goes well beyond achievement of the purely productive commercial functions of the forest. The forest planning and operational activities of RIL take into account environmental concerns while at the same time seeking to improve the efficiency of the productive functions.

RIL and certification - one drawback

While a properly implemented RIL system can ensure that the silvicultural and production objectives of sustainable forest management are met, RIL does not guarantee sustainable forest management as defined under a forest certification system.

The Forest Stewardship Council (FSC) principles and criteria set out a basic framework against which any forest management unit can be evaluated. The nine FSC principles and the accompanying 47 criteria pertaining to natural forest management, are a generic guide and, as such, can present interpretation problems for forest managers whose perceptions are more attuned to the practicalities of day-to-day operations.

Reduced impact logging is not specifically mentioned in the FSC guidelines or criteria although it is acknowledged as a necessity for forest certification by certifiers who operate in the poly-cyclical management

regimes commonly applied to forest harvesting in the humid tropics. In short, it could be stated that certification is not possible without RIL but that RIL does not guarantee the achievement of certification.

The Tropical Forest Foundation (TFF) is an international field training institution whose principle focus of activity has been the training, demonstration and promotion of RIL. The very specific focus of TFF on RIL came about partly because of the realisation that RIL plays such a fundamental role in the achievement of SFM.

Another reason for TFF’s focus on RIL was the realisation that by focusing on RIL, a “win-win” opportunity presented itself in the struggle to promote the adoption of SFM. If implemented pragmatically, RIL will not only greatly reduce the impact of the logging operation, but also provide an opportunity for realising immediate financial benefits in terms of increased efficiencies and lower cost inputs into harvesting activities.

TFF has operated a large and very successful training programme in the Brazilian Amazon since the early 1990s. In February 2000, TFF opened an office in Jakarta and has since offered training to forest concessions primarily in Indonesia. This year, TFF has initiated another regional training initiative based in Guyana and is exploring the possibility of establishing a programme in Western Africa.

Here in the Southeast Asian region, TFF’s programme has a slightly different focus than that offered in Brazil. For various reasons, the Indonesia programme has placed much of its emphasis on extension training, responding directly to requests for training by taking the training activity to the concession in a “hands on” approach. This approach has been taken largely in response to the fact that most forest concessions have a reasonable level of competence on their staff and the fact that a well-developed regulatory framework already exists.



TFF has defined an RIL strategy under a series of discrete elements, activities, or “steps”. Each step requires special skills or modifications of existing practices.

Step 1

Creating an appropriate management environment is important. Without a strong commitment as the starting point, without recognising existing “gaps” in skills and understanding of the RIL concept and without taking the appropriate corrective measures, it is unlikely that technical practices alone will ensure the successful adoption and implementation of the RIL strategy. Implementation of RIL would benefit from the development of clear operational and environmental guidelines, often referred to as standard operating procedures (SOP). This may necessitate additional personnel, upgrading of the technical capability of existing staff and even adjust the hierarchy of function and responsibility within a company.

Step 2

Under an RIL system, enhanced data collection can be incorporated into an existing survey procedure to produce operational inventory maps that have a

clear planning and operational utility. In these maps, tree positions are usually combined with contours and planimetric detail.

Step 3

All agree that operational scale contour maps are a fundamental prerequisite for the successful implementation of RIL, specifically for the successful planning and location of skid trails. This can be achieved by conventional mapping techniques from aerial photographs. Of all the steps in the RIL process, this one presents the biggest technical challenge.

Step 4

Skid trails planning is a fundamental element in the RIL system. Successful skid trail system planning must look beyond the artificial administrative boundaries within the approved annual operating area and must be carried out in the context of planning for the most efficient harvest unit.

Step 5

Confirm the validity of the planned skid trail network on the ground and demarcate all skid trails by using paint or flagging ribbon.

Step 6

When a crawler tractor or skidder moves along skid trails, its blade must be raised slightly. Soil should not be disturbed and

all pole and sapling size trees need to be left on the skid trail.

Step 7

The development of appropriate felling and bucking guidelines should take into account points such as directional felling, avoiding protected trees and future crop trees, proper bucking to maximise utilisation, the use of appropriate techniques, riparian protection zones and worker safety.

Step 8

In conventional extraction practices, the skidding activity creates some of the worst damage to the soils and to the residual stands. By planning, locating and opening the skid trails prior to the commencement of felling activities significant improvements in skidding efficiency and in damage reduction can be achieved.

Step 9

In many cases it will be desirable to deactivate the skid trails, which involves cross ditching to minimise channelling and erosion of skid trails with steeper gradients.

Step 10

In order to ensure successful implementation of the RIL system and to provide a meaningful feedback to the management and staff of a concession, an appropriate evaluation procedure should be developed. **AT**

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