Changing attitude in the forest

A pilot project to implement RIL in Indonesia has created enthusiasm for the practice amongst concessionaires

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Contrast: under conventional practice (left), snig trails are needlessly wide, often restricting water drainage and causing undue damage to the soil. Under RIL (right), snig trails are narrower and cause less soil disturbance.

THE Bulungan Research Forest (BRF) comprises 321 000 hectares of forest in the Malinau District of East Kalimantan. Together with the adjacent Kayan Mentarang National Park it constitutes an expanse of more than 1.7 million hectares of primary forest in the heart of one of Asia's largest remaining tracts of biodiverse tropical rainforest.

Although much of the BRF is protected, some of it is currently being logged or will be logged. The standard practice of timber concessionaires is to employ the Indonesian Selective Logging and Planting System (TPTI), a logging regime designed by the Indonesian government that has been in use for some decades. Such concessionaires are concerned that RIL will increase logging costs because of the need for better planning and supervision. Therefore, the Indonesian Government requested experiments to test the feasibility of applying the RIL approach in Indonesia.

PT Inhutani II, a state-owned logging company, collaborated with the Center for International Forestry Research (CIFOR) in an ITTO-funded project (PD 12/97 REV.1(F)) to test the RIL approach in its operations in the BRF near the town of Malinau. The work is also being supported by the John D and Catherine T MacArthur Foundation, CIRAD-Forêt, the USDA Forest Service and PT Trakindo Utama, a private enterprise.

The project has several main components: development of appropriate logging guidelines for the Malinau forest; training of PT Inhutani II staff in the various aspects and techniques required for the successful implementation of the guidelines, especially in inventory, tree felling and planning; assessment of the costs and benefits of RIL versus conventional logging; and co-management of the transition to self-implementation of RIL by the concessionaire. This article reports some of the results, problems and outcomes of the initial phase of the project.

RIL guidelines

Central to the successful implementation of RIL is a clear set of guidelines that define the actions necessary to achieve it. The guidelines adopted by the project conform with TPTI regulations and are based on the ITTO *Guidelines for the sustainable management of natural tropical forests* (ITTO 1990) and the FAO *Model code of forest harvesting practice* (Dykstra & Heinrich 1996). The purpose of the guidelines was to set up the rules for RIL implementation in the Malinau concession; they concentrate on reducing the impacts of tree-felling and heavy machinery on the remaining stand and forest soil. The main elements (see Sist et al. 1998 for a full description) are:

- stock survey and mapping (1:2 000 scale) of trees to be harvested and potential future crop trees above 20 cm dbh;
- topographic assessment and mapping (1:2 000 scale);
- designation and mapping of protected areas (eg streamside buffer zones, important wildlife habitats, sacred areas) and unworkable areas (too steep, rocky and/or possessing very low volumes of commercial timber);
- cutting all climbers (dbh > 2 cm) around each tree to be felled at least nine months before logging;
- planning and marking roads and skid trails, which are preferentially located on ridge-tops;
- reduction in the size and number of log landings; and
- protection of topsoil and water courses by reducing use of bulldozer blades, introduction of cross-drains on skid trails, establishment of stream buffer zones, and halting forest operations during rainy periods.

The guidelines include detailed specifications for road construction, stream crossings, wet weather shut-down, skid trail width, log-landing size and location, and post-logging closure of roads and skid trails. They were developed into a

manual that can be easily understood by operators; most important of all, their implementation was closely supervised in the field at all times.

Training and implementation

The project included a strong training component aimed particularly at tree-fellers, tractor operators and forest planners. Chainsaw operators were trained in tree marking and directional felling techniques. Tractor operators were instructed on techniques to reduce damage while skidding by avoiding excessive blading and maximising use of the winch. Forest planners were trained on stock survey and topographic assessments as well as planning the skidding network using user-friendly computer software. Although these training courses were primarily for Inhutani II staff, other logging companies in the area and the research and training agencies of the Indonesian Ministry of Forestry also participated.

Assessing the differences

Logging efficiency and operational costs

RIL and conventional techniques were tested in three blocks of about 100 hectares each. Logging damage was assessed on the basis of pre- and post-harvesting stand inventories in 24 sample plots of one hectare each. The assessment showed that the area of skid trail per volume of timber extracted was twice as high in the conventionally logged blocks than in the RIL blocks (18.6 m^2/m^3 vs 8.6 m^2/m^3). Damage to the stand and canopy increased with felling intensity in the RIL blocks but not in the conventionally logged blocks. Under high felling intensity (> 9 trees/hectare), the proportions of damaged and dead trees in RIL were similar to those recorded in conventionally logged sites. This study confirmed the conclusions of other studies in tropical forests (eg Sist et al. 1998; see also Sist in this issue) that RIL cannot significantly reduce damage to the residual trees under high felling intensities. In mixed dipterocarp forest, where harvestable timber density generally exceeds 10 trees/hectare, specific rules to limit felling intensity are urgently needed.

Costs

Preliminary results from an economic cost assessment show that the productivity of felling and skidding in RIL increased by 28% and 25% respectively compared to that achieved using conventional techniques. Overall, RIL reduced costs in these two components by Rp3 235/m^3 (or about US$0.3/$m^3$). The main changes in the operational costs of conventional logging and RIL occurred in skidding and pre-harvesting. The direct financial benefit gained through waste reduction or higher recovery was estimated at Rp20 000/m^3 (about US$2/$m^3$) of commercial volume. Hence, RIL increased revenue by Rp23 235/m^3. However, the total net cost or benefit of RIL, including the costs of training and planning, remains to be calculated.

Impacts of project activities

One of the most pleasing consequences of the project has been the development of a sense of pride among the logging crews and field staff in applying RIL. The training of a few logging crews has catalysed changes in attitude towards logging in neighbouring concessions. For example, two concessionaires in nearby forests joined the first RIL training course and still more joined the second. Moreover, an increase in professional pride and a sense of competitiveness has led to an unexpected improvement in the performance of logging crews operating elsewhere in the Inhutani II concession.

Another positive effect has been the increased awareness of the benefits of RIL. The wider public has become better informed about the benefits of logging to a higher standard, while the BRF has attracted hundreds of loggers and forestry professionals to view good logging practice in action.

It is crucial to differentiate between the cost of *introducing* RIL and its *ongoing* cost. The 'up-front' costs involved in initial training and changes to the management regime and operational procedures can be considerable, but they will bring lasting returns in increased productivity and efficiency and reduced time before the next viable harvest. Assistance from international development agencies in the start-up phase of RIL can therefore have a long-term impact on forest practices and attitudes.

Critical to the success of the project is the extent of adoption by the company once the project finishes. Undoubtedly Inhutani II managers now have a more positive attitude towards RIL. Our work clearly showed that production and productivity were significantly increased under RIL; RIL is therefore no longer regarded as the experimental tool of scientists but as a way of increasing logging efficiency. The best demonstration of this change in attitude was the decision taken by Inhutani II to harvest two 100-hectare blocks in 2000 and three more blocks in 2001 using RIL.

The first phase of this RIL project has created a positive momentum towards better logging practices. It has demonstrated that the technical impediments can be overcome without major difficulty. Presenting locally adapted guidelines in a format that operators understand is critical for effective uptake.

References

Dykstra, D. and Heinrich, R. 1996. FAO *Model code of forest harvesting practice.* FAO, Rome.

ITTO 1990. ITTO *Guidelines for the sustainable management of natural tropical forests.* ITTO, Yokohama.

Sist, P., Dykstra, D. and Fimbel, R. 1998. Reduced impact logging guidelines for lowland and hill dipterocarp forest in Indonesia. *Bulungan research report series no. 1.* CIFOR Occasional Paper No. 15. Bogor.

Sist, P., Nolan, T., Bertault, J-G. and Dykstra, D. 1998. Harvesting intensity versus sustainability in Indonesia. *Forest ecology and management* 108: 251–260.

RILNET: Fifty sent and more to come!

RILNET is an email listserver dedicated to the distribution of information on reduced impact logging (RIL). In June this year, RILNET sent out its 50th message to a subscriber list that has grown from 150 at its inception in October 1999 to more than 550 today.

RILNET forms part of the Asia-Pacific Forestry Commission's efforts to raise awareness for its Code of practice for forest harvesting in Asia-Pacific. It is supported by the USDA Forest Service and FAO.

What exactly does RILNET do? It keeps its subscribers up to date on RIL-related issues. It mails out brief messages and indicates how additional information on a particular topic can be obtained. Currently it is only distributed in English.

RILNET is all about sharing information and experiences and its success depends on the enthusiasm of its subscribers. If you have experiences to share or would just like to tap into a valuable information resource contact: RILNET c/o Tan and Associates; tlc@loxinfo.co.th