

Implementing RIL in Indonesia

Introducing reduced impact logging requires a conducive company culture, which can be fostered by an understanding of company expectations

by Alexander Hinrichs¹ and Yosep Ruslim²

¹Promotion of Sustainable Forest Management in East Kalimantan (SFMP-gtz-MoF)

PO Box 1087, Samarinda 75001, East Kalimantan, Indonesia

SFMPALEX@samarinda.wasantara.net.id

²Mulawarman University

Samarinda, East Kalimantan

fmpulp@samarinda.wasantara.net.id



Which way? Directional felling is one of the components of RIL and requires on-the-job training. Photo: A. Hinrichs

REDUCED impact logging (RIL) has been tried recently by several forest concessions in Indonesia, the results indicating that RIL can be implemented in a practical manner to increase forest harvesting performance (Klassen 2000). Successful implementation also fulfils several key indicators of the Indonesian standard for forest certification in natural forests (Agung & Hinrichs 2000).

Yet most forest concessionaires in Indonesia remain reluctant to adopt RIL, mainly because it requires well-trained staff and major changes in field operations, and because the costs and benefits are still unclear. In principle, RIL is already part of the Indonesian Selective Cutting and Planting System (TPTI) but it is not widely enforced.

Following a request by the Ministry of Forestry in 1998, the Indonesian-German Technical Cooperation Project SFMP-gtz-MoF began supporting the implementation of RIL in a private forest concession in East Kalimantan. Early

on, the company set a number of criteria for introducing RIL: operational costs should be similar to 'conventional' logging; it should employ current machinery and the existing workforce; it should increase timber utilisation and reduce accident rates, rehabilitation costs and soil disturbance; and it should cause less damage to the residual stand.

We feel that these are typical desires of private companies. In this cooperative project, we therefore tried to develop a system that would meet them to the greatest extent possible.

Implementation

The first step towards RIL implementation was an analysis of field conditions (topography, workforce and management/control system). We found that the concession area was suitable for ground-based skidding (moderate terrain, slopes < 30%), but that soils were sensitive to erosion or compaction. The workforce at all levels needed considerable training, and there had to be closer cooperation between the planning and production divisions. Moreover, it would be necessary to establish a system of operational control and revise the payment scheme to include incentives for high-quality performance.

The project redefined RIL as reduced impact *tractor* logging (Ruslim et al. 1999); the existing fleet of crawler tractors would be used for skidding but machinery movements avoided as much as possible through the use of winches. All steps in the RIL process were integrated into the TPTI system to provide continuity with current management tasks and government regulations (Figure 1). The steps were:

- a detailed topographic survey—in addition to the standard pre-harvest inventory, which includes the marking of harvestable, protected and future crop trees—is conducted two years before felling (Time of extraction [Et]-2);

Logging: the damage done

We conducted detailed measurements of forest damage in five 1-hectare plots within two 100-hectare compartments, one of which was harvested using RIL and one by 'conventional' logging. Both compartments contained lowland dipterocarp forest on slightly undulating terrain. Slopes were less than 30%. The volume felled in all plots was 65 m³/hectare (11–12 trees/hectare). The distances between plots and log decks were identical between RIL and conventional plots.

For all plots, logs were extracted using Komatsu D85E-SS crawler tractors operated by experienced operators. In the RIL plots, logs were winched for up to 30 m with the assistance of two tractor helpers. The following results were achieved:

- **soil disturbance:** opening up caused by skidding decreased by 66% with RIL, while overall opening up decreased by 29%;
- **residual stand quality:** residual stand damage caused by skidding decreased by 56% with RIL, while overall residual stand damage decreased by 28%;
- **logging waste:** waste was reduced by 20% under RIL; and
- **productivity:** RIL caused a slight drop in skidding productivity (due to longer winching distances).

Source: Ruslim et al. (2000)

- based on the topographic and tree location data, a GIS-generated map showing tree locations and topographic information is developed one year before harvesting (Et-1). The optimal skid trail locations are planned on this map following ten agreed principles;
- three months before felling (Et-0.3), skid trails are marked in the forest and opened up;
- the felling team is advised to conduct directional felling wherever possible and to reduce waste. Safety measures are required (escape route, flexibility in felling direction, personal safety equipment);
- skidding is restricted to skid trails, with a winching corridor of 30 m on both sides. 'Blading'—the use of tractor blades to clear a path through the vegetation—is avoided wherever possible and no skidding takes place when it is raining; and
- the foremen of the production division perform supervisory and routine control. After skidding, the tractor operator 'closes' the skid trails and log decks to minimise erosion. Joint teams from the planning and operational divisions conduct post-harvest assessment; work quality is assessed for the calculation of premium wages based on a detailed set of agreed criteria.

In-house training courses were held for staff of the planning division and the logging crews (foremen, operators), while division heads attended outside training courses on the theory and practice of RIL.

Winning the company over

RIL, as defined in the steps above, significantly reduces forest damage at a reasonable cost at this East Kalimantan forest concession (*see box*). Due to lower skidding productivity and the additional planning steps, RIL was US\$1/m³ more expensive than conventional logging. But under RIL an additional 2 m³/hectare was extracted through waste reduction measures and rehabilitation costs were cut to almost zero; the time before the next cut could therefore be reduced. Based on the study results, the company started to implement RIL on an operational scale last year.

Lessons learned

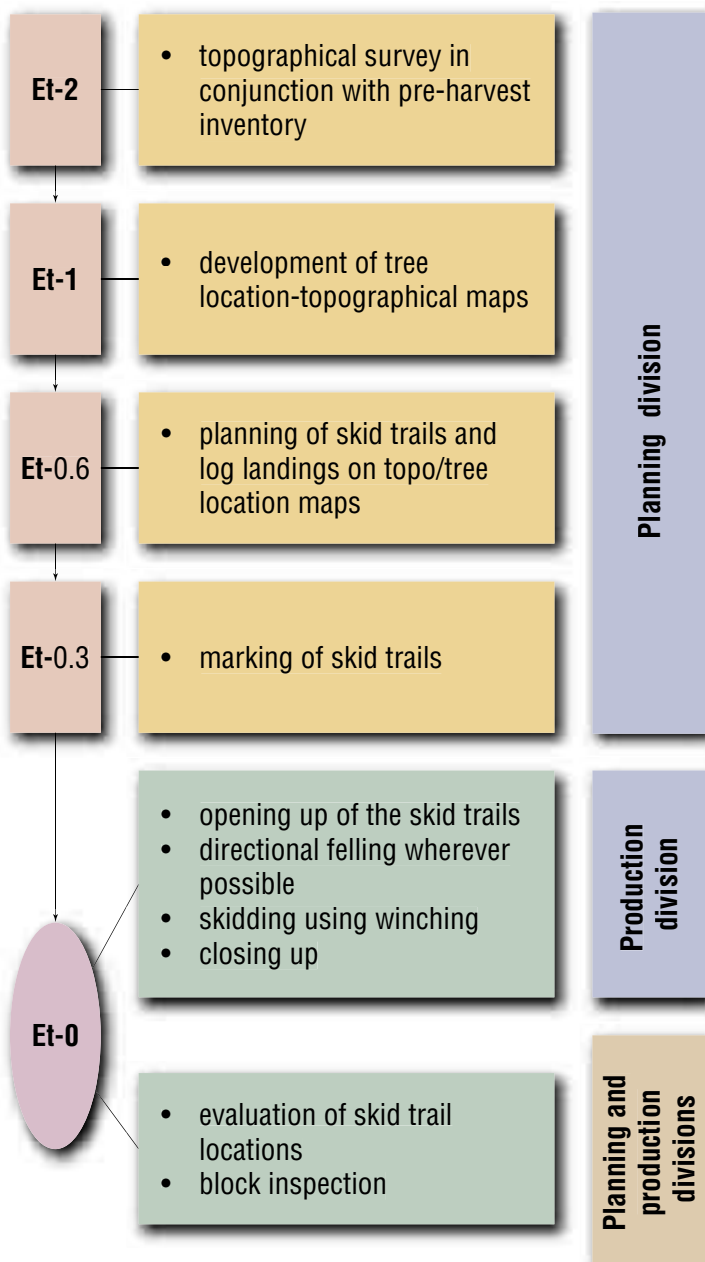
RIL can be implemented in a private forest concession if:

- increased knowledge about the benefits of RIL leads to a strong commitment for implementation by top management;
- company management is willing to invest in human resources and, if required, superior technologies;
- intensive and reliable internal control systems are in place or can be put in place;
- forest operators—planners, foresters and machine operators—have the freedom to apply a 'learning by doing' approach and the company fosters a culture of openness to criticism; and
- the company is given time—about two years—to adjust planning and production measures.

We strongly urge the Indonesian authorities to establish a legal framework in support of RIL and sustainable forest management. Only transparent and stable framework conditions will encourage investments in environmentally sound harvesting techniques by the private sector and forest communities. The forest concessionaires themselves should understand that RIL is nothing more or less than a prerequisite of sustainable forest management, which in turn is a prerequisite for any company wishing to engage in forestry over the long term.

When to do what

Figure 1: The chronology of reduced impact logging in the study area



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