The Borneo Initiative.

INTERNATIONAL PLATFORM FOR PROMOTION OF SUSTAINABLE FOREST MANAGEMENT IN INDONESIA

SUMMARY OF LOGGING WASTE STUDIES CONDUCTED IN FIVE NATURAL FOREST CONCESSIONS WITH FUNDING FROM THE BORNEO INITIATIVE

THE BORNEO INITIATIVE FOUNDATION
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1 Introduction

TBI is a nonprofit organization based in the Netherlands that promotes sustainable forest management in Indonesia via supporting FSC-certification of logging concessions. Until present, 19 forest concessions with 2,035,085 ha achieved FSC certification, while another 16 with 1,391835 ha are in progress towards FSC certification.

FSC certification requires efficiency of wood utilization. In answer to this, TBI support has included the facilitation of a number of logging waste studies, conducted by various consultants. These logging waste study were intended to determine the volumes of the existing waste in IUPHHK in Indonesia and to know the potential for future utilization. This is particularly important given the fact that current IUPHHKs in Indonesia are still focused on the production of logs for plywood and sawn timber products, without other types of potential use e.g. wood energy, local carpentry or others.

The purpose of this study now is to assess the volumes and potential uses of the existing logging waste by pooling the results of the various logging waste studies in IUPHHK concessions as funded by The Borneo Initiative in Indonesia.

2 Approach

This report brings together data from logging waste studies conducted in five forest concessions in Kalimantan. The studies, all funded by The Borneo Initiative, were conducted by various consultants. Data generated refer to conventional logging practices, before the companies started on the trajectory to FSC-certification.

All five studies quantified the so-called non-avoidable logging waste i.e. stump, branches and crown. One study also contributed data on the avoidable logging waste or collateral damage to residual trees, i.e. damage to trees that are part of the production plan.

Each consultant had different definitions of logging waste. Therefore in this overview report, we standardized their data using the following classification:

a. Stump: wood stumps and waste from trimmed bottom (if any)
b. Crown: The main stem, including the canopy which is not utilized because the quality is not in accordance with company standards or specifications
c. Branches: Branches of wood from the trunk and main branches up to a diameter of 10 cm (diameters are adjusted in some of the studies).
d. Collateral damage of residual trees: Total number of remaining stand damage after harvesting activity. Includes only trees with diameter 20-40 cm on the assumption that merchantable trees over 40 cm are part of the harvest plan and will be extracted, while damaged non-perchantable tress are not considered waste. Merchantable trees with diameters 20-40 cm are considered future yield and therefore must be included in waste calculation when damaged.

The equation to determine the logging waste volume:

$$V_{Waste} = V_{Stump} + V_{Crown} + V_{Branches} + V_{Coll.Damage}$$

To deduct the logging waste volume per hectare, the estimated waste was divided by the basal area for the total number of sample trees per report. The basal area is determined using this formula:

$$Basal\ Area = \frac{\Sigma\ Samples}{\Sigma\ Trees/_{Compartment}} \times Compartment\ Area$$

Notes:

- Information of Σ trees per harvest compartment was obtained from the annual work plan (RKT document)
- Assuming that harvest compartment area is 100 Ha.

After assessing the waste volume per hectare, a comparison was required with the commercial log yield. However, none of the five studies provided a comparison of the logging waste volume with the actual harvest yield per year. Therefore, for this report, we used data from the 10-year work plan (RKUPHHK), the annual work plan (RKT) or the companies' annual production reports as available.

3 Results

Table 1 brings together the measurements form the five studies. Each study used a different number of sample trees (from 60 to 125) from a different number of sample plots (ranging from one to five). It must be reminded that basal area and yield data were not measured directly but are inferences based on best assumptions.

Table 1. Logging waste estimates versus yield

No	Location	Sample trees	Non-avoidable waste (cu.m.)				Collateral damage (cu.m.)	Basal area (ha)	Non-avoidable waste (cu.m./ha)	Collateral damage (cu.m./ha)	Yield (cu.m./ha)
			Stump	Crown	Branches	Sum					
1	KALTENG	100	91	238	73	403		5.7	71		40
2	KALTIM	60	118	468	187	772	29	6.9	113	4	40
3	KALTIM	100	96	437	216	749		12.3	61		37
4	KALTIM	112	102	167	59	327		7.8	42		29
5	KALTIM	125	81	115	85	282		6.0	47		32
Overall result		497	487	1,425	621	2,533	29	39	**66**	**4**	**36**

Table 1 leads to the following observations:

- Non-avoidable logging waste consists mostly of the tree crown (1,425 cu.m. out of 2,533 cu.m. or 56%)
- Non-avoidable logging waste is much higher than collateral damage (66 vs 4 cu.m./ha)
- From a total felling volume of 102 cu.m., just 36 cu.m. or 35% is commercial harvest; or, for every cu.m. of harvest, another 2 cu.m. of waste remains in the forest.

4 Conclusions

1. Future studies on logging waste need proper standardisation of methodology. TBI to consult with certification coaches and CBs on a uniform study protocol. FSC certificate holders to develop their standard operating procedures for reporting of logging waste.
2. The study suggests that under conventional logging, for every 1 cu.m. of wood harvested, another 2 cu.m. remains in the forest. This is largely unavoidable, e.g. crown, branches and stump.
3. Yet, it is the market that defines when logging remnants are waste or not. The underlying studies recommend to assess the potential for handicrafts or wood pellets. Of course, most forest concessions have given this thought already and mention such constraints as the cost of collection, taxation, and distance to market. Dedicated feasibility studies will be needed to find ways to reduce the costs mentioned, or to find new markets that pay above the cost of production. FSC certification requires certificate holders to demonstrate their efforts towards optimization of resource use from the forest.
4. Nonetheless, logging waste also has an ecological function in support of natural regeneration, forest succession and biodiversity.