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MEMO

Promotion of Sustainable Forest Management Systems in East Kalimantan

Samarinda:

Gd. BAPPEDA Kaltim 2nd floor, Jl. Kusuma Bangsa, PO Box 1087, Samarinda 75001
Tel: ++62-(0)541-733434, Fax: ++62-(0)541-733437, Email: gtzsfmp@smd.mega.net.id

Jakarta:

Gd. Manggala Wanabakti, block I, 11th floor, Jl. Gatot Subroto, Jakarta 10270
Tel./ Fax: ++62-(0)21-5747077, Email: sfmpjkt@mega.net.id

Website: <http://www.sustainableforest-gtz.org>

Financial losses due to the 1997/1998 fires in HPH areas of East Kalimantan - Alexander Hinrichs, SFMP, 30.11.00 -

A. Background

More than two years after the fire catastrophe in 1997-1998 the Ministry of Forestry has yet to decide upon how to support East Kalimantan in rehabilitation activities. MoF has earlier agreed to implement a salvage felling concept, which was largely jeopardized by some HPHs via rampant cutting of green timber in the salvage felling areas. Needed adjustments to the mid-term management plan of the fire affected HPHs are still missing and rehabilitation has only started on very small scale. After the fires, East Kalimantan is further than ever away from sustainable forest management.

So far, the immense financial losses encountered in HPH areas and by the local and central government have not been estimated. This short memo is meant to give a rough figure about the financial losses in the fire damaged HPHs. The figures used are based on the terrestrial fire inventory of PT. Limbang Ganeca (see SFMP Doc. 7/99) and the radar satellite based fire inventory for East Kalimantan (see IFFM/SFMP Doc 1/99). Several estimations are used, always in a conservative manner.

The calculation of the financial losses in the HPH areas can give an indication upon the magnitude of the economic damage commencing the 1997/98 fires. It clearly underlines the need for a functioning provincial fire intelligence organization and the importance of fire prevention.

B. Area and Volume Figures

The 1997/98 fires mainly occurred in the Kutai region. Given the history of the forests in this region (the forest has almost entirely been logged, some parts were already fire damaged in 1982/83, encroachment and illegal logging occurs and large areas have a non-active HPH status) the fires damaged mainly forests of already moderate to depleted conditions. In this

memo it is assumed, that the forest condition of the fire damaged areas is comparable to forest conditions found in recently logged areas. To estimate the financial loss encountered by the 1997/98 fires it is therefore proposed to assume that the average condition of the forests burnt is equivalent to the condition of recently logged over burnt areas. This is a rather conservative estimation, because in 1997/98 also large parts of older logged over forests and even virgin forest were fire affected, which lead to larger volumes of dead trees per hectare.

To accomplish an idea about the stocking conditions of recently logged over forests after the 1997/98 fire data from MoFs model area HPH PT. Limbang Ganeca is used. The area of the four cutting blocks RKT 94/95 until RKT 97/98 is analyzed. Table 1 shows the fire damage in these blocks (total size 17.352 ha).

Table 1: Fire damage in recently logged areas of PT. Limbang Ganeca (*source: SFMP Doc. 7/99*)

Damage class	Heavily	Moderately	Slightly	Unburnt
Ha	9035	5638	2009	670

About 84% of the recently logged area was heavily or moderately fire affected. Table 2 shows the figures for number of dead trees and volume of dead trees per hectare.

Table 2: Standing dead trees in recently logged forests of PT. Limbang Ganeca (*source: SFMP Doc. 7/99*)

Standing dead trees	20cm up	20cm up commercial	50 cm up	50 cm up commercial
N / ha	25,3	21,7	9,4	8,1
Cbm / ha	67,2	56,4	45,1	38,1

In average 38.1 cbm/ha of dead commercial trees above the cutting limit of 50 cm DBH were measured after the 1997/98 fire. One can roughly estimate that 40% (= 15 cbm/ha) of these trees were of usable quality before the fire damage occurred and could have been harvested by future logging operations. Reduced by the utilization factor (fe) of 0.8 this results in approx. 12 cbm per ha of commercial logs lost due to the fire.

The 1997/98 fire damage in East Kalimantan was mapped as 5.2 million ha. Table 3 shows the fire damage in HPHs only.

Table 3: Fire affected areas in HPHs (*source: IFFM/SFMP Doc. 1/99*)

Damage class	Heavily	Moderately	Slightly	Sum
Ha	345.675	1.234.413	767.629	2.347.717

The percentage of heavily and moderately fire affected areas is smaller than the damage occurred in the recently logged blocks of PT. Limbang Ganeca. Only 67% were heavily or moderately burnt. To derive at a general number of cbm logs lost due to the fire, it is conservatively estimated that in average 10 cbm/ha of harvestable commercial logs are lost in the fire affected HPHs of East Kalimantan. This results in a loss of approx. 23 million cbm of commercial logs above the cutting limit of 50 cm DBH.

C. Financial Aspects

Given an average market value of commercial trees of 85 US \$ per cbm in Indonesia the financial loss due to the 1997/98 fires in HPH areas accumulates to **approx. 2 billion US \$** (23.000.000 cbm times 85 US\$). This huge financial loss only considers direct losses of harvestable timber in HPH areas. Losses to trees less than the cutting limit (potential crop trees!) and losses to the regeneration are not considered (damage leads to an extension of the cutting cycle!). In addition, the destruction of non-timber forest products and biodiversity losses are not taken into account. Further more, losses to forests in non HPH areas (almost 3 million ha were fire affected outside of HPH areas, 440.000 ha alone in protection forests) are left aside, together with all other cost centers (tourism, health, etc.). The 2 billion US \$ only represent direct financial losses on harvestable trees in HPH areas.

This immense loss is shared between the central government, the local government, the private sector and the local people. Income opportunities for all stakeholders have dropped. Even though some HPHs could raise their current income via rampant salvage felling activities, their future income will be far less because their annual allowable cut has to be adjusted to the potential of the forests after the fire to match sustainability. HPHs might drop out of business, and the government will have to take care of the depleted burnt areas.

The direct financial loss for the government (local and central) can be estimated based on losses in rehabilitation fund (DR) payments and royalties (PSDH/IHH). DR is currently set to 16 US\$/cbm and PSDH to 64.000 Rp/cbm (= 7.1 US\$/cbm given that 1 US\$ equals 9,000 Rp.). The total direct income loss to the government due to the 1997/98 fire amount to **368 Million US\$ in DR**, and **163 Million US\$ in PSDH/IHH**, respectively.

In addition, social costs in terms of a reduction in job opportunities can be estimated. If one only considers the felling and skidding activities and calculates that an average logging team (chain saw operator, tractor operator and 2 helpers) harvest about 12.000 m³ per year, the loss in harvestable trees due to the fire equals almost **40 years of work for 50 logging teams**.

Rehabilitation costs are immense. If one roughly assumes that all fire affected forests in the HPH areas which are heavily fire damaged and some 50% of the moderately fire affected areas have to be rehabilitated, the size of the rehabilitation area in HPHs only is about 950.000 ha (see Table 3). Average rehabilitation costs amount to 300-350 US\$/ha (3 Mill Rp./ha). The total rehabilitation costs in the fire affected HPH areas of East Kalimantan accordingly result to **285-330 Million US\$**.

The 1997/98 fires are the worst ever catastrophe of East Kalimantan. Taking everything into account, the losses due to fire are an extremely heavy burden for the newly decentralized government. Not only are their income opportunities drastically reduced, but also forest rehabilitation will require large funds and efforts.

Literature:

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