

## EXECUTIVE SUMMARY

A need for a revision of the present system of forest charges, including the export tax on wood, has been identified. It will have to satisfy better the interests of the different productive stakeholders (loggers, transporters, industry, exporters, etc.). At the same time it will have to fulfill the need for both an improved rational, sustainable and integral use and management of the national forest resources and a reasonable sector contribution to the socio-economic development of the country.

The forest charges in Suriname are presently composed of basically two elements: 1) an Area Fee (composed of Concession and Exploration Fees) and 2) a Volume Retribution. Furthermore an Export Tax is collected related to the roundwood exported. Linked with the export a “hidden” charge is collected, on both roundwood and processed wood. It is caused by the obligation to enter the export earnings in foreign exchange in the Central Bank, and then to receive the corresponding value in Sf at an exchange rate below the open market (Cambio) rate. It also causes that approximately 50% of the export earnings evade Suriname.

The present system has serious weaknesses. The low Area Fee causes that the logging enterprises request larger areas than they can exploit, causing that a considerable part of the productive, accessible forest is kept out of production. No incentive is given to concessions in more remote areas nor to concessions under intensive forest management. The insignificant difference between the Volume Retribution of the valuable species and the less valuable species, causes that large quantities of accessible secondary timber are not harvested. The absence of a Management Contribution paid directly to the forest service causes that it is incapable of securing neither the effective collection of the forest charges nor the control and management of the national forest resources. The obligation to receive the treasury exchange rate for the export earnings places an extra charge on all export, thus making the wood export very little lucrative, and tempting the exporters to circumvent the legislation.

A new forest charges system is proposed to eliminate or alleviate the present weaknesses. The **Area Fee** is increased considerably. The Concession Area Fee will vary from 0.08 – 0.48 US\$/ha, offering an incentive of 0.24 US\$/ha to the concessionaires practising intensive forest management, according to the rules fixed in the legislation. The concession areas in the Sipaliwini district will pay an Area Fee 0.16 US\$/ha lower than in the other districts. The Exploration Area Fee is proposed to be equivalent to 0.48 US\$/ha/half year. By making it a half year fee, the logging enterprises are stimulated to perform the obligatory inventory as rapidly as possible, and a situation with huge exploration areas lying idle is avoided. Presently the concessionaires pay only 65,909 US\$/year for the 1,820,000 ha presently conceded in concessions. With the proposed system they will have to pay 524,160 US\$ for the same area, **an increase of 458,251 US\$**. A system of conservation concessions is proposed.

The substantial increase in Area Fee is compensated with a considerably lower **Volume Retribution**. The timber-producing species have been distributed in 3 classes with fiscal values of respectively 100, 75 and 50 US\$/m<sup>3</sup>, compared to 120 and 110 US\$/m<sup>3</sup> in the present system. The rate will continue to be 5% of the fiscal value. This will stimulate the harvesting of secondary species, and thus increase the profitability of the harvesting activities. With the proposed system the yearly Volume Retribution will decrease from 1,055,349 US\$ to 806,000 US\$, **a decrease of 249,349 US\$**. This decrease is nevertheless expected eliminated very soon through an increase of production.

As the fiscal values for the export roundwood species have decreased with approximately 24%, the **Export Tax** rate has been increased from 20 to 30%. The annually collected export tax is expected to increase from 460,000 US\$ to 525,000 US\$, **an increase of 65,000 US\$**. The processed wood will continue to be free of export tax, but the fiscal values are decreased with the same 24% as the roundwood. The recent substantial reduction in difference between the Central Bank and Cambio exchange rates is expected to offer a strong incentive to the wood export.

All fee values are expressed in US\$, but paid in Sf, according to the official Central Bank exchange rate. One third of the total Area Fees and Volume Retribution will be paid to the State and two thirds will be paid to SBB, while the full Export Tax will be paid to the State. The budget of LBB in 2000 was equivalent to 885,043 US\$, excluding the funds earmarked for the Nature Conservation Department. The funds SBB will receive will be 886,773 US\$, **an increase of 1,730 US\$**. But while LBB was almost incapable of taking any steps towards a rational and sustainable use and management of the national forest resources and only able to collect a part of the forest charges due for payment, SBB has already demonstrated its capacity, living up to international forest service standards.

Even though the calculations show that the productive wood sector initially will have to pay a yearly increase of 208,902 US\$, the proposed system offers the concessionaires ample opportunities to radically increase their profits 1) by adjusting the concession area to their real production capacity, 2) by introducing rational and sustainable intensive forest management, 3) by increasing the harvesting of secondary species, and 4) by increasing processing and exports.

## A. INTRODUCTION

A need for a revision of the present system of forest charges, including the export tax on wood, has been identified<sup>1</sup>. It will have to satisfy better the interests of the different productive stakeholders (loggers, transporters, industry, exporters, etc.). At the same time it will have to fulfill the need for both an improved rational, sustainable and integral use and management of the national forest resources and a reasonable sector contribution to the socio-economic development of the country.

The forest charges in Suriname are *presently* composed of basically two elements: 1) an Area Fee (composed of Concession and Exploration Fees) and 2) a Volume Retribution. Furthermore an Export Tax is collected related to the roundwood exported<sup>2</sup>. Linked with the export a “hidden” charge is collected, on both roundwood and processed wood. It is caused by the obligation to enter the export earnings in foreign exchange in the Central Bank, and then to receive the corresponding value in Sf at an exchange rate, which presently is approximately 15% below the open market (Cambio) rate.

With the decision of the Government to create the SBB, as a self-supporting, parastatal forest service to be responsible for the rational, sustainable and integral use and management of the forest resources, a separate Forest Management Contribution will have to be instituted, dimensioned and collected.

The wood producers should thus in *the future* pay three charges for the use of the Nation’s forest resources and for the use of the national infrastructure, and the wood exporters should pay two additional charges.

- 1) Area Fee (Exploration and Concession Fees);
- 2) Volume Retribution;
- 3) Forest Management Contribution;
- 4) Export Tax (and Grading Fee);
- 5) Export Income Exchange Charge.

This system follows the general forest charges principles of most countries with the notable exception of the last one. Nevertheless the weight that each of them has in the total does not correspond to international practice, and it definitely does not serve the dual national interest of both a development of a sound, strong wood production sector capable of contributing substantially to the socio-economic development of the country and a durable conservation of the natural resources.

In the following the rationale of each of the charges will be discussed, the actual situation will be presented, and proposals for their future level and composition will be offered. It is crucial to understand that the charges have to be seen with a holistic approach: that the level of each one of them is intimately related to the level of the others.

## B. RATIONALE AND PRESENT SITUATION OF THE DIFFERENT FOREST CHARGES

### 1. Area Fee

*The Area Fee is collected as a rent for having the exclusive rights to harvest the timber resources of a part of the state-owned forest.*

The present yearly rates of the Area Fee (concession component) are fixed in Staatsblad No. 77 of 1998. They are linked to the size of the concession: 25 Sf/ha for those up to 50,000 ha, 50 Sf/ha for those with areas in the range 50,001 – 100,000 ha, and 100 Sf/ha for those with areas 100,001 – 150,000 ha. During the preceding exploration phase of the new concessions, when the logging company will have to make the obligatory inventory of

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<sup>1</sup> In this report only the charges related to the roundwood and the derived primary processed wood products are treated. Later a proposal for the other minor forest charges will be elaborated.

<sup>2</sup> A Grading Fee is collected linked with the export of both logs and processed wood; 200 Sf/m<sup>3</sup> in Paramaribo and 300 Sf/m<sup>3</sup> outside Paramaribo, double on Sundays or holidays (Staatsblad No. 70 of 1996).

the existing timber resources the annual Area Fee (exploration component) is 10 Sf/ha for all concession sizes (Staatsblad No. 71 of 1996).

Table 1 presents a calculation of the approximate value of the Area Fee per m<sup>3</sup> harvested roundwood in concessions with different sizes, duration and harvesting intensities. It shows a variation in the range 10.4 – 250 Sf/m<sup>3</sup>, with the smallest short-term concessions operating with the highest harvesting intensities paying the lowest Area Fee per m<sup>3</sup>. These amounts are low compared to applied practices in countries with similar forest resources<sup>3</sup>. By having such low Area Fee it stimulates the logging companies to occupy areas larger than their actual needs. A cautious calculation<sup>4</sup> shows that the actual annually harvested volume, from all type of cutting licenses, could be produced in a well-managed total area less than 1/3 of the present concession area.

In most of the major timber producing countries there is a trend to increase the percentage of the Area Fee of the total forest charges, until around 50/50 in relation to the Volume Retribution, with the intention to stimulate the logging companies to only occupy areas, which can be duly harvested according to the resources of the company. As can be deducted from the numbers presented in Table 9 the presently collected Area Fee is only around 6% of the Volume Retribution.

## 2. Volume Retribution

*The Volume Retribution is collected as a payment to the State for the roundwood harvested in the national forest patrimony. Furthermore it has until now included the contributions to the control by the State of the rational, sustainable and integral use and management of the national forest patrimony and for the use of the infrastructure.*

The present Volume Retribution rate is fixed in Staatsblad No. 76 of 1998. It is “5% of the export value”. This again is fixed per m<sup>3</sup> in Staatsblad No. 27 of 1999<sup>5</sup>. It is linked to the quality of the different tree species, and it is divided in two classes, A and B. 35 species are classified in class A with an estimated export value of 120 US\$/m<sup>3</sup>, while for all the rest of the species it is fixed to 110 US\$/m<sup>3</sup>. For the roundwood cut in ICL (“Incidentele Houtkap Vergunning”) the Volume Retribution is doubled<sup>6</sup>.

The size of the Volume Retribution is not to be discussed here, as its size is dependent of the size of the other components of the forest charges, but the classification of all the timber species in only 2 classes with less than 10% difference in value is very unfortunate. As the harvesting and transport costs are practically the same for all tree species, the loggers will preferentially go after the high-priced species, if they are not obliged or stimulated otherwise through lower retribution for the low-priced species. Presently the sum of production costs and retribution make it a rather bad business to harvest the often very abundant tree species with wood of inferior quality, but still perfectly suitable for specific uses (See Table 8).

In the world it is common to have a ratio of about 1 to 5 between the lowest and highest fiscal values. With such a system the State can stimulate the use of abundant but little used species by lowering the volume retribution, or protect other species which are considered overexploited by increasing their volume retribution.

## 3. Management Contribution

*The Management Contribution is collected to cover the costs of the State to secure the rational, sustainable and integral use and management of the forest resources.*

Until now this contribution has been included in the total collected forest charges. With the creation of the SBB as a self-supporting, parastatal forest service, it will be necessary to create a separate Management Contribution to be paid directly to SBB, thus following a common trend in many countries of letting the proper users of a utility or resource pay the costs of the State, linked with its control and management. **In both Guyana and French Guiane the forest service receive all the forest charges.**

<sup>3</sup> In Guyana it varies from 0.18 to 0.20 US\$/ha/yr and in Bolivia it is 1.00 US\$/ha/yr.

<sup>4</sup> 8 m<sup>3</sup>/ha and a rotation of 30 years.

<sup>5</sup> The Decree uses the term “Minimum FOB Value”, but in reality it is a fiscal value, and it is proposed to use this term in the future.

<sup>6</sup> In Guyana it varies from 0.5 to 2.1 US\$/m<sup>3</sup>. In Belize, where no Area Fee is collected, the Volume Retribution is 2 to 20 US\$/m<sup>3</sup>. In French Guiane the trees are sold to the loggers at an average of 8 US\$/m<sup>3</sup>.

#### 4. **Export Tax**

*The Export Tax is collected as the State's part of the value of the natural resources harvested in the national forest patrimony and exported by private individuals. It is also imposed as a way for the State to discourage or encourage the export of specific goods.*

The present Export Tax is fixed in Staatsblad No. 27 of 1999. The State has here used its possibility to discourage and encourage the export of certain goods by fixing the Export Tax for roundwood to 20% of the export value, and the Export Tax of processed wood (sawnwood and plywood) to 0%. For wood in squares and other semitransformed products the export tax is fixed to 5-10%. In the same Decree the fiscal values of the different tree species are determined.

The international trend is to eliminate the export of roundwood, but Suriname is not yet ready for such a development. The national wood processing industry works presently in general with equipment and technology, which are not competitive on the export market. The aim is therefore to stimulate the development of modern wood processing facilities. By taxing the export of logs and not of processed wood the forest charges system promotes this development. It could be further accelerated, if the exporters would be incentivated to spend part of their export earnings on investments in upgrading the wood processing equipment and technology, without being penalized by the Export Income Exchange Charge system.

As in the case of the Volume Retribution the present small difference in the fiscal export value of the different species does not promote the export of secondary species.

#### 5. **Export Income Exchange Charge.**

*The original aim with this charge was to secure that the export earnings stayed in the country, financing the national development efforts.*

The decision to demand that the total export earnings in foreign exchange has to be entered in the National Bank is fixed in the General Decree No. 207 of the Forest Exchange Commission, revised in 1998. Afterwards the exporters receive the corresponding value in Sf at the treasury exchange rate.

This system is prejudicial to the development of an export market for Surinamese wood, as it incentivate the exporters to operate with a sort of double accounting system. In 1998 20.747 m<sup>3</sup> of logs were exported; 98% of that quantity was formally exported to the Virgin Islands, to the minimum fiscal value. The wood was immediately "resold" to a price corresponding to the world market prices, possibly around 50% higher, and the logs never arrived to the Virgin Islands, and neither did the increased price income arrive to Suriname.

#### 6. **Summary of consequences of present system.**

The low Area Fee causes that the logging enterprises request larger areas than they can exploit, causing that a considerable part of the productive, accessible forest is kept out of production. No incentive is given to concessions in more remote areas nor to concessions practising intensive forest management. The insignificant difference between the Volume Retribution of the valuable species and the less valuable species, causes that large quantities of accessible secondary timber are not harvested. The absence of a Management Contribution paid directly to the forest service causes that it is incapable of securing neither the effective collection of the forest charges nor the control and management of the national forest resources. The present difference in Export Tax rate between roundwood and processed wood stimulates the national wood processing. At the same time the obligation to receive the low official exchange rate for the export earnings places a heavy charge on all export, thus making the wood export very little lucrative, and tempting the exporters to circumvent the legislation.

As shown above the present system of forest charges is not benefiting the interests of the country. Nobody is favored! The forest resources are being used irrationally and without the needed monitoring and control. The logging enterprises are obliged to leave considerable quantities of secondary species in the forest or paying unreasonable retribution for these less valuable species, thus damaging the economy of the whole operation. The prohibitive Export Income Exchange Charge eliminates the development of the necessary market for the wood industry, as the low demands in both quantity and quality of the present local market do not form an economical basis for a development of a modern expansive wood industry.

## C. PROPOSAL FOR A NEW FOREST CHARGES SYSTEM

By being conscious about the effects of the different components of the total forest charges and by composing a suitable combination it will be possible, to give the forest sector development a boost, converting it from being an economically unhealthy place to a sound expansive economic sector of the country.

The level of the total forest charges will have to be so low that it will allow the private productive sector to cover the production costs and achieve reasonable profits, which will stimulate it to expand and to improve its operations. It will have to be so high that the contribution of the forest sector to the integral socio-economic development of Suriname will be satisfactory, and it will have to so high that the SBB will receive the necessary funds for its operation.

The composition of the total forest charges will have to satisfy a collection of weighed considerations such as:

- a) The Area Fee must be fixed at a level, where it will become a disincentive for the occupation of areas larger than those needed for wood production.
- b) The Volume Retribution must be fixed at a level, where, it will collect a reasonable part of the economic rent from the forest operations<sup>7</sup>.
- c) The Management Contribution must be fixed at a level, which secures the full operability of the SBB.
- d) The Export Tax must be composed and fixed at a level to stimulate the export of processed wood at the cost of the export of logs, collecting a reasonable part of the export earnings.
- d) The Export Income Exchange Charge should be eliminated, or at least modified so that the exporters can receive without delay the needed foreign exchange for investments in the forest sector at a reasonable exchange rate.

In the following a proposal for the different forest charges is presented, based on the above main considerations<sup>8</sup>.

### 1. Area Fee

The Area Fee must be substantially increased, allowing for variations in forest management intensity and distance from the coast. Thus the concessions, which will fulfill all the demands for intensive management prescribed by the legislation will as compensation pay a lower Area Fee<sup>9</sup>. The concession areas in the interior (Sipaliwini district) will pay a lower Area Fee<sup>10</sup>. The variation based on the size of the concession is not considered to serve any reasonable purpose.

The increase in Area Fee, compensated by a lower volume retribution, is expected to cause some concessionaires to abandon considerable areas, which they cannot harvest rationally due to limitations in equipment and manpower. These areas can then be occupied by other loggers with equipment and experience to exploit them.

The proposed Area Fee (concession component) is presented in table 2. As in the case of the Volume Retribution the fee is fixed in US\$, but to be paid in Sf, at the official Central Bank exchange rate.

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<sup>7</sup> A forest economist from FAO has recently studied the Surinamese forest production sector, and he has presented three very useful reports, which offer valuable data and advice on how to achieve this goal. Adrian Whiteman: *Economic Data and Information about the Forest Sector in Suriname* (July 1999); *A Roundwood Production Cost Model for Suriname* (August 1999); and *Economic Rent from Forest Operations in Suriname and a Proposal for Revising its Forest Revenue System* (December 1999).

<sup>8</sup> As all forest charges, including the export tax, are paid in Sf, all calculations in national currency have been made using the exchange rate of 2,200 Sf/US\$.

<sup>9</sup> A logging enterprise fulfilling all the demands imposed by the new forest legislation will thereby also fulfill most of the technical demands for achieving the "green label" export certification, which will soon be compulsory for all wood export.

<sup>10</sup> The division between Sipaliwini district and the other districts has been made, considering that a more "just" distribution based on the average road distance from concession to industry/harbour will not be practically possible to apply.

**Table 2. Proposal for a new Concession Area Fee**

Forest Management Intensity	District(s)	US\$/ha/year
Intensively Managed Concession	Sipaliwini district	0.08
Intensively Managed Concession	All other districts	0.24
Extensively Managed Concession	Sipaliwini district	0.32
Extensively Managed Concession	All other districts	0.48

The compensation for fulfilling all the legal requirements to intensive forest management will thus be 0.24 US\$/ha in all districts.

The Exploration Area Fee is proposed to be equivalent to 0.48 US\$/ha/half year. By making it a half year fee, the logging enterprises are stimulated to perform the obligatory inventory as rapidly as possible, and a situation with huge exploration areas lying idle is avoided.

One third of the total Area Fees will be paid to the State (user rights) and two thirds will be paid to SBB (management control).

In Table 3 a comparison is made between 1) the present area situation with the present Area Fee, 2) the present area situation with the new Area Fee, and 3) a probable area scenario after the productive sector has adapted to the new situation. Presently approximately 145,000,000 Sf ( $\approx$  65,909 US\$) should be collected annually, corresponding to  $818 \text{ Sf/m}^3 \approx 0.37 \text{ US\$/m}^3$ . If the same area occupation and production will continue after the introduction of the new Area Fee, the logging enterprises will have to pay annually approximately 524,160 US\$  $\approx$  1,153,152,000 Sf, equivalent to  $(2.96 \text{ US\$/m}^3 \approx 6,512 \text{ Sf/m}^3)$ . If they respond to the new situation by excluding the non-productive areas and the areas, which they cannot exploit with their equipment and manpower capacity, mainly in the Sipaliwini district, they will only have to pay 408,000 US\$  $\approx$  897,600,000 Sf, equivalent to  $2.30 \text{ US\$/m}^3 \approx 5,060 \text{ Sf/m}^3$ , plus an eventual exploration fee. As can be deducted from the numbers presented in Table 9 the proposed Area Fee will be around 65% of the Volume Retribution.

As a new feature a concept called Conservation Concessions is proposed. If for example an ecotourism enterprise wants to avoid logging activities in an area surrounding its tourist installation, or if an NGO would like to see an area protected, which is not included in the national system of protected areas, they should be able to request a Conservation Concession, paying the double of the Area Fee for an extensively managed concession. The experience in e.g. Costa Rica has demonstrated how such “unproductive” protected parts of the forest area have contributed significantly to the national economy. In Guyana, Conservation International is in the process of leasing an area of approximately 80,000 ha as a Conservation Concession. Conservation Concessions should only be issued after a careful analysis of alternative uses of the area.

The annual Area Fee for the Conservation Concessions for a situation, where 200,000 ha will be conceded in the Sipaliwini district and 50,000 ha in the other districts, will be 176,000 US\$.

## 2. Volume Retribution

A system of classification of the timber producing tree species in 3 classes is proposed<sup>11</sup> with fiscal export values of respectively 100, 75 and 50 US\$/m<sup>3</sup>, closely following the recommendations of the Loggers Association (ABE) and the Chamber of Commerce. The Volume Retribution will be 5% of the fiscal export value, of which one third will be paid to the State (for the use of a national resource) and two thirds to SBB (production and management control). In Table 4 the species classification and a comparison in Volume Retribution between the present system and the proposed system is presented. Each year during the period 1996-98 an average annual Volume Retribution 1,055,349 US, was collected<sup>12</sup>. According to the proposed system the annual Volume Retribution will be 806,117 US\$  $\approx$  1,773,457,400 Sf, if the harvested roundwood volume and the species composition remain the same. It is nevertheless expected that the total volume will increase, and that the share of the secondary species will increase.

<sup>11</sup> A fourth class will include the protected species, which can only be cut in exceptional circumstances.

<sup>12</sup> As the official Central Bank rate varied during that period, no corresponding Sf-value is given.

The SBB will be charged with the responsibility of revising the classification regularly, according to the need to promote increases or decreases in the harvesting of certain species.

### 3. Forest Management Contribution

The Forest Management Contribution, to be paid in Sf directly to SBB, will as explained in the two preceding paragraphs be two thirds of the total Area Fees and two thirds of the Volume Retribution. The total value of 886,773 US\$ is dimensioned on the estimations made by FAO on the foreseen annual operational costs of SBB<sup>13</sup>.

The grading of export wood is a service executed by SBB. It should therefore be paid directly to SBB, but it will need to be revised to reflect the real costs.

### 4. Export Tax

The Export Tax rate on roundwood is proposed increased to 30%. This will increase the Export Tax revenue collected with only approximately 14%, because of the decreased fiscal values. For the moment the Export Tax rates for the other wood products are proposed to remain unaltered. In Table 5 a comparison between 1) the present situation, 2) the situation immediately after the introduction of the new classification and fiscal values, and 3) the expected situation after the exporters have responded to the new situation with a volume increase of 25%.

**Table 5. Export Tax – Comparison between present and expected situation**

#### a. Present situation

		Volume	Fiscal Value	Export Tax (20%)	
		m <sup>3</sup>	US\$/m <sup>3</sup>	US\$/m <sup>3</sup>	Total (US\$)
Class A	50%	10,000	120	24.00	240,000
Class B	50%	10,000	110	22.00	220,000
Total		20,000			460,000

#### b. Present volume situation, with new Export Tax

		Volume	Fiscal Value	Export Tax (30%)	
		m <sup>3</sup>	US\$/m <sup>3</sup>	US\$/m <sup>3</sup>	Total (US\$)
Class 1	50%	10,000	100	30.00	300,000
Class 2	50%	10,000	75	22.50	225,000
Class 3	0%	0	50	15.00	0
Total		20,000			525,000

#### c. Estimated situation after market adaptation to the new Export Tax

		Volume	Fiscal Value	Export Tax (30%)	
		m <sup>3</sup>	US\$/m <sup>3</sup>	US\$/m <sup>3</sup>	Total (US\$)
Class 1	50%	12,500	100	30.00	375,000
Class 2	50%	12,500	75	22.50	281,250
Class 3	0%	0	50	15.00	0
Total		25,000			656,250

The increase in Export Tax revenue to be paid by the exporters, of approximately 14%, will be compensated by the decrease in the Export Income Exchange Charge.

<sup>13</sup> Douglas Winn: *Organizational Development in the Foundation for Forest Management and Production Control (SBB)* (October 1999).

## 5. Export Income Exchange Charge

It is recommended to abandon or modify the system of the Export Income Exchange Charge. If not done, it will be crucial also to change the fiscal values of the processed wood (Staatsblad No. 27 of 1999), because if only the fiscal value of the logs are lowered, it will stimulate the export of logs to the detriment of the export of processed wood. Considering that the average fiscal values of export logs have been lowered with approximately 24%, a similar decrease should take place with the fiscal values of the processed wood (Table 6).

## 6. Collection of forest charges

The Exploration Area Fee will be paid at the beginning of each month and the Concession Area Fee will be paid at the beginning of each concession year, while the Volume Retribution will be paid monthly based on the data from the cutting register, all in Sf at the official Central Bank rate. The contributions to the State and to the SBB will be made simultaneously. The Export Tax will be paid, exclusively to the State, immediately before the embarkation of the wood products.

## D. COMPARISON OF PRESENT AND PROPOSED SYSTEMS

### 1. Per m<sup>3</sup>

In Table 7 a comparison between the present and the proposed forest charges per m<sup>3</sup> is presented.

**Table 7 Forest Charges (Roundwood) - US\$/m<sup>3</sup>**

	Existing System				Proposed System					
	Class A		Class B		Class 1		Class 2		Class 3	
	Local	Export	Local	Export	Local	Export	Local	Export	Local	Export
Area Fee	0.37				2.96					
Volume Retribution	6.00		5.50		5.00		3.75		2.50	
Export Tax		24.00		22.00		30.00		22.50		15.00
<b>TOTAL</b>	<b>6.37</b>	<b>30.37</b>	<b>5.87</b>	<b>27.87</b>	<b>7.96</b>	<b>37.96</b>	<b>6.71</b>	<b>29.21</b>	<b>5.46</b>	<b>20.46</b>
Export Income Exchange Charge (in US\$/m <sup>3</sup> )		18.00		16.50		15.00		11.25		7.50

The immediate effect of the proposed forest charges will be an increase for the high quality timber, but a decrease for the secondary or little known timber species. By decreasing the concession areas the concessionaires will be able to reduce considerably the total forest charges to be paid.

Table 8 presents the consequences of the proposed forest charges, based on the actual approximate roundwood prices on the local market.

**Table 8. Calculation of local market roundwood profit in Sf per m<sup>3</sup>**

	Local Price	Production Costs	Area Fee	Volume Retribution	Total	Profit
Class A	120,000	75,000	818	6,900	82,718	37,282
Class B	90,000	60,000	818	6,325	67,143	22,857
Class 1	120,000	75,000	3,400	5,750	84,150	35,850
Class 2	105,000	60,000	3,400	4,324	67,724	37,276
Class 3	90,000	45,000	3,400	2,876	51,276	38,724

Note: This table was elaborated immediately before the official Central Bank rate was changed from 1,173 Sf/US\$ to 2,200 Sf/US\$. As it has not yet been possible to register the consequences of this monetary measure, it reflects the situation immediately before the exchange change.

The difference in production costs between the classes is explained by the fact that most of the fixed production costs should be charged on the most valuable species, while the extra costs for harvesting additionally the secondary species will be marginal.



The table shows that the total forest charges are presently around 10-12% of the production costs, while they will vary in the range of 12-14% after the introduction of the proposed system.

## **2. Total**

In Table 9 a comparison is made in the total amount of forest charges to be collected.

With the present system the State should receive annual forest charges, including the wood export taxes, of 3,478,767,600 Sf  $\approx$  1,581,258 US\$. With the proposed system the productive wood sector will pay 4,081,352,000 Sf  $\approx$  1,855,160 US\$, of which SBB will receive 1,950,900,600 Sf  $\approx$  886,773 US\$. The total forest charges to be paid by the productive sector will be approximately 13% higher than before. Furthermore it is estimated a development toward a yearly Conservation Concession Area Fee of approximately 176,000 US\$.

Some possible development scenarios are presented in Table 10 and 11. In Table 10 is shown how the Area Fee will vary with different Total Concession Areas, Management Intensity and Distance to Coast, while in Table 11 it is shown how the Volume Retribution will vary with level of total production and species composition.

## **3. The new system and the economic rent of the forest operations**

This proposal has been elaborated as a comparative study, where the consequences of the new system have been compared with the hitherto used system. It could have been made by calculating the economic rent of the forest operations, and then decide which part should go to the State and which part should go to the productive sector. Considering the heterogeneity of the productive wood sector, it was decided to use the first approach. By using a strict economic rent analysis the result would probably be that a significant amount of the present logging enterprises would have to close down before they would manage to adjust to the new system.

Nevertheless it is important to compare the result of the present analysis with the results of the recent much more detailed FAO study. It calculates that the overall average level of economic rent from roundwood produced for the local market might be around 8.15 US\$/m<sup>3</sup>, which with the proposed forest charges should give some excess profit to the producers, especially if the species from Class 2 and 3 will go preferentially to the local market. The economic rent for wood destined for export is calculated to be around 36 to 42 US\$/m<sup>3</sup>, including the Export Income Exchange Charge as a production cost. Thus the proposed system fits well inside the limits traced by the more technically refined economic analysis executed by the FAO. If the Export Income Exchange Charge will be abolished there will be margin for increasing the Export Tax considerably without distorting the competitiveness of the export sector.

## **4. Conclusion**

In the introduction to the description of the proposed forest charges system (page 3 and 4) a series of criterias and conditions were listed, which it would have to fulfill. Will it?

Even though the calculations in Table 9 show that the private productive sector will have to pay a forest charges increase of around 13%, the proposed system offers ample opportunities for the sector to adjust to the new system, in a highly beneficial way. By adjusting the concession areas to the productive capacity and by going towards an intensive forest management, considerable gains are at hand. The new Volume Retribution, is lower pr. m<sup>3</sup> than before. The classification of the timber producing species in 3 classes with significant differences in retribution will offer the loggers better opportunities to increase production, in particular relating to the secondary species.

The introduction of the Management Contribution will make it possible to create the minimum conditions for SBB to fulfill its obligation to secure a rational, integral and sustainable management and use of the national forest patrimony.

The national treasury will receive approximately 2,130,451,400 Sf  $\approx$  968,387 US\$ in forest charges, a decrease of 612,871 US\$. Nevertheless it is crucial to understand that the forest charges are an almost insignificant part of the total contribution of a healthy, expanding forest sector to the national socio-economic development. This is demonstrated by the fact that in the neighboring countries to the East and West the full forest charges are paid to the forest services. In the year 2000 the budget of LBB was 880,618,000 Sf, excluding the part earmarked to the Nature Conservation Department. With the official Central Bank exchange rate at the moment of approval of the budget, 995 Sf/US\$, the LBB received 885,043 US\$, compared to the 886,773 US\$, which the SBB will receive, according to this proposal.

By introducing the proposed forest charges system, the State will create the base for a stronger national wood sector, creating employment, especially in the rural areas, increased production and export earnings, and a general dynamic contribution to the socio-economic development of the country. By doing so the related increased fiscal income and the general spin-off and multiplier effects on the other economic sectors will more than substitute the initial loss of forest sector fiscal revenue. Another favorable result will be that, by creating the financial base for the SBB, the State will live up to its national and international commitments by securing the rational, sustainable and integral use and management of the forest resources.

**SURINAME**  
**MINISTRY OF NATURAL RESOURCES**

**FAO / NETHERLANDS**



**GCP / SUR / 001 / NET**

**Forestry Advisory Assistance to the Ministry of Natural Resources**

**PROPOSAL FOR  
REVISION OF  
FOREST CHARGES SYSTEM**

by

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**&**

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**November 2000**

**Table 1. Examples of the contribution of the present annual Area Fee (Concession Fee) to the total forest charges per m<sup>3</sup> harvested roundwood.**

Concession size	5,000 ha			50,001 ha			150,000 ha		
Duration	5 years			10 years			20 years		
Yearly cutting area	1,000 ha			5,000 ha			7,500 ha		
Cutting intensity	8 m <sup>3</sup> /ha	10 m <sup>3</sup> /ha	12 m <sup>3</sup> /ha	8 m <sup>3</sup> /ha	10 m <sup>3</sup> /ha	12 m <sup>3</sup> /ha	8 m <sup>3</sup> /ha	10 m <sup>3</sup> /ha	12 m <sup>3</sup> /ha
Yearly total cut	8,000 m <sup>3</sup> /yr	10,000 m <sup>3</sup> /yr	12,000 m <sup>3</sup> /yr	40,000 m <sup>3</sup> /yr	50,000 m <sup>3</sup> /yr	60,000 m <sup>3</sup> /yr	60,000 m <sup>3</sup> /yr	75,000 m <sup>3</sup> /yr	90,000 m <sup>3</sup> /yr
Annual Area Fee per ha	25 Sf			50 Sf			100 Sf		
Total Annual Area Fee	125,000 Sf			2,500,050 Sf			15,000,000 Sf		
Area Fee/m <sup>3</sup>	15.6 Sf/m <sup>3</sup>	12.5 Sf/m <sup>3</sup>	10.4 Sf/m <sup>3</sup>	62.5 Sf/m <sup>3</sup>	50 Sf/m <sup>3</sup>	41.7 Sf/m <sup>3</sup>	250.0 Sf/m <sup>3</sup>	200.0 Sf/m <sup>3</sup>	166.0 Sf/m <sup>3</sup>

**Table 3. Area Fee - Comparison between different situations and scenarios**

**a. Present area situation, as of April 2000, with present forest charges**

		Concession Area (ha)	Exploration Area (ha)	Exploration Fee		Concession Fee	
				Sf/ha/yr	Total (Sf)	Sf/ha/yr	Total (Sf)
All districts	Small concessions	140,000	0	10	0	25	3,500,000
	Middle size concessions	530,000				50	26,500,000
	Large concessions	1,150,000				100	115,000,000
		1,820,000	0		0		145,000,000

**b. Present area situation, as of April 2000, with new forest charges**

		Concession Area (ha)	Exploration Area (ha)	Exploration Fee		Concession Fee	
				US\$/ha/mth	Total (US\$)	US\$/ha/yr	Total (US\$)
Sipaliwini district (80%)	Intensively managed concessions (0%)	0	0	0.08	0	0.08	0
	Extensively managed concessions (100%)	1,456,000				0.24	349,440
Other districts (20%)	Intensively managed concessions (0%)	0				0.32	0
	Extensively managed concessions (100%)	364,000				0.48	174,720
		1,820,000	0		0		524,160

**c. Estimated area situation, after adaptation to introduction of new forest charges**

		Concession Area (ha)	Exploration Area (ha)	Exploration Fee		Concession Fee	
				US\$/ha/mth	Total (US\$)	US\$/ha/yr	Total (US\$)
Sipaliwini district (70%)	Intensively managed concessions (25%)	262,500	50,000	0.08	48,000	0.08	21,000
	Extensively managed concessions (75%)	787,500				0.24	189,000
Other districts (30%)	Intensively managed concessions (25%)	112,500				0.32	36,000
	Extensively managed concessions (75%)	337,500				0.48	162,000
		1,500,000	50,000		48,000		408,000

**Table 4. Proposal for new timber species classification and volume retribution**

Local Name	Scientific Name	Volume in m <sup>3</sup> harvested in period 1996 - 8	Present (5%)			Proposal (5%)		
			Cl.	US\$/m <sup>3</sup>	Volume Retribution in US\$	Cl.	US\$/m <sup>3</sup>	Volume Retribution in US\$
Basralokus	<i>Dicorynia guianensis</i>	114,717	A	120	688,302	1	100	573,585
Bruinhart	<i>Vouacapoua americana</i>	14,329	A	120	85,974	1	100	71,645
Ceder	<i>Cedrela odorata</i>	1,752	A	120	10,512	1	100	8,760
Groenhart	<i>Tabebuia serratifolia</i>	4,859	A	120	29,154	1	100	24,295
Gronfulu	<i>Qualea</i> spp.	49,222	A	120	295,332	1	100	246,110
Ingipipa	<i>Couratari</i> spp.	7,895	A	120	47,370	1	100	39,475
Kabbes, Gele / Gerikabisi	<i>Vatairea guianensis</i>	11,099	B	110	61,045	1	100	55,495
Kabbes, Zwarte	<i>Diplotropis purpurea</i>	4,167	A	120	25,002	1	100	20,835
Kopi	<i>Goupia glabra</i>	43,650	A	120	261,900	1	100	218,250
Krapa	<i>Carapa</i> spp.	9,526	A	120	57,156	1	100	47,630
Kromanti Kopi	<i>Aspidosperma megalocarpon</i>	2,003	A	120	12,018	1	100	10,015
Kwari	<i>Vochysia guianensis</i>	36,952	A	120	221,712	1	100	184,760
Letterhout	<i>Piratinera guianensis</i>	6,602	B	110	36,311	1	100	33,010
Lokus, Rode	<i>Hymenaea courbaril</i>	9,174	A	120	55,044	1	100	45,870
Pritijari	<i>Fagara pentandra</i>	788	A	120	4,728	1	100	3,940
Purperhart	<i>Peltogyne</i> spp.	6,044	A	120	36,264	1	100	30,220
Satijnhout	<i>Brosimum paraense</i>	429	B	110	2,360	1	100	2,145
Slangenhout	<i>Loxopterygium sagotii</i>	7,635	A	120	45,810	1	100	38,175
Wana	<i>Ocotea rubra</i>	29,039	A	120	174,234	1	100	145,195
Agrobigi	<i>Parkia nitida</i>	2,616	A	120	15,696	2	75	9,810
Anaura	<i>Licania &amp; Couepeia</i> spp.	157	A	120	942	2	75	589
Baboen	<i>Virola</i> spp.	60,366	A	120	362,196	2	75	226,373
Bos-mahonie	<i>Martiodendron parviflorum</i>	83	B	110	457	2	75	311
Bostamarinde, Gevlamde	<i>Zygia racemosa</i>	426	A	120	2,556	2	75	1,598
Donsedre	<i>Cedrelinga cateniformis</i>	2,354	B	110	12,947	2	75	8,828
Goebaja	<i>Jacaranda copaia</i>	4,372	B	110	24,046	2	75	16,395
Ijzerhart	<i>Swartzia bammia</i>	148	B	110	814	2	75	555
Kabbes, Rode	<i>Andira coriacea</i>	8,259	A	120	49,554	2	75	30,971
Kaneelhart	<i>Licaria cayennensis</i>	0	B	110	0	2	75	0
Koenatepi	<i>Platymiscium trinitatis</i>	0	B	110	0	2	75	0
Kwari, Goejaba	<i>Qualea dinizii</i>	0	A	120	0	2	75	0
Kwattakama	<i>Parkia ule &amp; pendula</i>	77	B	110	424	2	75	289
Maka Kabbes	<i>Hymenolobium flavum</i>	12	B	110	66	2	75	45
Makagrín	<i>Tabebuia capitata</i>	107	B	110	589	2	75	401

Local Name	Scientific Name	Volume in m <sup>3</sup> harvested in period 1996 - 8	Present (5%)			Proposal (5%)		
			Cl	US\$/m <sup>3</sup>	Volume Retribution in US\$	Cl	US\$/m <sup>3</sup>	Volume Retribution in US\$
Manbarklak	<i>Eschweilera</i> spp.	7,032	A	120	42,192	2	75	26,370
Mataki	<i>Symphonia globulifera</i>	1,231	B	110	6,771	2	75	4,616
Meri	<i>Humiria</i> sp.	3,436	A	120	20,616	2	75	12,885
Mora	<i>Mora excelsa</i>	8,663	A	120	51,978	2	75	32,486
Morototo	<i>Didymopanax morototoni</i>	1,735	B	110	9,543	2	75	6,506
Okerhout / Okro-udu	<i>Sterculia pruriens</i>	5,405	A	120	32,430	2	75	20,269
Pakuli / Geelhart	<i>Platonia insignis</i>	4,898	A	120	29,388	2	75	18,368
Pisi	<i>Ocotea wachenheimii</i>	7,035	A	120	42,210	2	75	26,381
Possum	<i>Hura crepitans</i>	407	B	110	2,239	2	75	1,526
Riemhout	<i>Micropholis</i> spp.	221	A	120	1,326	2	75	829
Sali	<i>Tetragastris</i> spp.	7,823	A	120	46,938	2	75	29,336
Soemaroeba	<i>Simaruba amara</i>	11,521	A	120	69,126	2	75	43,204
Tingimoni	<i>Protium &amp; Trattinickis</i> spp.	5,069	A	120	30,414	2	75	19,009
Walaba	<i>Eperua falcata</i>	5,630	A	120	33,780	2	75	21,113
Wana Kwari	<i>Vochysia tomentosa</i>	1,269	B	110	6,980	2	75	4,759
Wana Pisi	<i>Ocotea</i> sp.	0	B	110	0	2	75	0
Wiswis Kwari	<i>Vochysia tetraphylla</i>	457	B	110	2,514	2	75	1,714
Bofroe-udu	<i>Sacoglottis cydonioides</i>	146	B	110	803	3	50	365
Bos-kasjoe	<i>Anacardium giganteum</i>	366	B	110	2,013	3	50	915
Bos-katoen	<i>Bombax</i> spp.	1,703	B	110	9,367	3	50	4,258
Djindja-udu	<i>Buchenavia tetraphylla</i>	24	B	110	132	3	50	60
Foengoe	<i>Licania avalifolia &amp; Parinari</i> spp.	1,094	B	110	6,017	3	50	2,735
Kaiman-udu / Pinto Kopi	<i>Lactia procera</i>	231	B	110	1,271	3	50	578
Kwattapatu	<i>Lecythis zabucajo</i>	3,018	B	110	16,599	3	50	7,545
Mappa	<i>Macaibea</i> sp.	1,551	B	110	8,531	3	50	3,878
All other species		13,072	B	110	71,896	3	50	32,680
Bolletri	<i>Manilkara bidentata</i>	62	P	120	372	P	100	310
Hoepelhout	<i>Copaifera guianensis</i>	17	P	110	94	P	100	85
Parwa	<i>Avicennia nitida</i>	0	B	110	0	P	100	0
Pinus	<i>Pinus caribaea</i>	0	B	110	0	P	100	0
Rozenhout	<i>Aniba</i> spp.	0	P	---	0	P	100	0
Tonka	<i>Dypteryx odorata &amp; punctata</i>	0	P	---	0	P	100	0
<b>TOTAL (1996 - 98):</b>		531,975	<b>TOTAL:</b>		3,166,048	<b>TOTAL:</b>		2,418,351
<b>Yearly Volume Retribution</b>			<b>Presently</b>		1,055,349	<b>Proposal</b>		806,117

**Table 6. Proposal for new fiscal values for processed wood**

**ASSORTIMENT 2: RUW BEWERKT HOUT**

Product / Species		Fiscal Value		Export Tax
		Present	Proposed	%
1. Vierkant of bekapt	Basralocus, Groenhart, Makagrin, Bruinhart, Zwarte Kabbes	175 US\$/m <sup>3</sup>	135 US\$/m <sup>3</sup>	10
2. Vierkant of rondbekapt	Manbarklak, Foengoe, Walaba transmissie- en omrasteringspalen	130 US\$/m <sup>3</sup>	100 US\$/m <sup>3</sup>	
3. Bekapte gordingen en dwarsliggers				
4. Overige ruwbewerkte houtwerken o. a. rondbewerkte palen, bil		125 US\$/m <sup>3</sup>		5
5. Ontbast en verduurzaamd hout				
6. Ontbast Letterhout	A - kwaliteit	2.50 US\$/kg	1.90 US\$/kg	
	B - kwaliteit	1.75 US\$/kg	1.35 US\$/kg	

**ASSORTIMENT 3: GEZAAGD HOUT (incl. gezaagde dwarsliggers, gordingen en shingles)**

Local Name	Scientific Name	Grading Quality			
		First - A	FAS - A/B	No. 1 - B	COM - B/B
<b>Class 1</b>					
Bostamarinde	<i>Pithecellobium racemosum</i>	Present: 350 US\$/m <sup>3</sup>	Present: 300 US\$/m <sup>3</sup>	Present: 200 US\$/m <sup>3</sup>	Present: 100 US\$/m <sup>3</sup>
Bruinhart	<i>Vouacapoua americana</i>				
Ceder	<i>Cedrela odorata</i>				
Zwarte Kabbes	<i>Diptotropis purpurea</i>				
Kromantie Kopie	<i>Aspidosperma album</i>				
Rode Locus	<i>Hymenaea courbaril</i>				
Satijnhout	<i>Brosimum paraense</i>	Proposed: 265 US\$/m <sup>3</sup>	Proposed: 230 US\$/m <sup>3</sup>	Proposed: 150 US\$/m <sup>3</sup>	Proposed: 75 US\$/m <sup>3</sup>
Slangenhout	<i>Loxopterygium sagotii</i>				
Basralocus	<i>Dicorynia guianensis</i>				
Groenhart	<i>Tabebuia serratifolia</i>				
Kopie	<i>Goupeia glabra</i>				
Purperhart	<i>Peltogyne pubescens</i>				
Wana	<i>Ocotea rubra</i>				
<b>Class 2</b>					
Ingipipa	<i>Couratari</i> spp.	Present: 270 US\$/m <sup>3</sup>	Present: 250 US\$/m <sup>3</sup>	Present: 175 US\$/m <sup>3</sup>	Present: 125 US\$/m <sup>3</sup>
Gronfollo	<i>Qualea</i> spp.	Proposed: 205 US\$/m <sup>3</sup>	Proposed: 190 US\$/m <sup>3</sup>	Proposed: 135 US\$/m <sup>3</sup>	Proposed: 95 US\$/m <sup>3</sup>
Pinus	<i>Pinus</i> spp.				



Class 3	Present:	Present:	Present:	Present:
Overige houtsoorten (incl. gezaagde dwarsliggers en gordingen en shingles)	175 US\$/m <sup>3</sup>	150 US\$/m <sup>3</sup>	125 US\$/m <sup>3</sup>	90 US\$/m <sup>3</sup>
	Proposed:	Proposed:	Proposed:	Proposed:
	135 US\$/m <sup>3</sup>	115 US\$/m <sup>3</sup>	95 US\$/m <sup>3</sup>	70 US\$/m <sup>3</sup>

#### ASSORTIMENT 8: SPAANPLAAT + TRIPLEX

Quality	BK	BCK	COMMON
	Present Fiscal Value		
Fineer triplex (Veneer plywood)	275 US/m <sup>3</sup>	250 US/m <sup>3</sup>	225 US/m <sup>3</sup>
Cellular board (Bijenraatmodel)	325 US/m <sup>3</sup>	300 US/m <sup>3</sup>	275 US/m <sup>3</sup>
Samengesteld triplex			
Kertriplex (Core plywood) - Dikte in mm			
- 4, 5 en 6	325 US/m <sup>3</sup>	300 US/m <sup>3</sup>	275 US/m <sup>3</sup>
- 9, 12, 15 en 18	275 US/m <sup>3</sup>	250 US/m <sup>3</sup>	225 US/m <sup>3</sup>
	Proposed Fiscal Value		
Fineer triplex (Veneer plywood)	210 US/m <sup>3</sup>	190 US/m <sup>3</sup>	170 US/m <sup>3</sup>
Cellular board (Bijenraatmodel)	250 US/m <sup>3</sup>	230 US/m <sup>3</sup>	210 US/m <sup>3</sup>
Samengesteld triplex			
Kertriplex (Core plywood) - Dikte in mm			
- 4, 5 en 6	250 US/m <sup>3</sup>	230 US/m <sup>3</sup>	210 US/m <sup>3</sup>
- 9, 12, 15 en 18	210 US/m <sup>3</sup>	190 US/m <sup>3</sup>	170 US/m <sup>3</sup>

**Table 9 - Forest Charges (roundwood) - Total**  
**Present area situation, export volume and species composition**

Parameters: Area under concession: 1,820,000 ha  
80% in Sipaliwini, 20% in other districts  
Area under exploration: 0 ha  
Annual harvested quantity: 177,325 m<sup>3</sup>  
Distribution of species: 68% class 1, 28% class 2; 4% class 3  
Quantity exported: 20,000 m<sup>3</sup>  
Distribution: 50% class A; 50% class B

**a. Present forest charges**

Exploration Fee (1)	Concession Fee (2)	Volume Retribution (5%) (3)	<b>TOTAL</b> (4)	Export Tax (20%) (5)
Sf				
0	145,000,000	2,321,767,800	2,466,767,800	1,012,000,000
US\$				
0	65,909	1,055,349	1,121,258	460,000

**b. Proposed forest charges**

Exploration Fee (1)	Concession Fee (2)	Volume Retribution (5%) (3)	<b>TOTAL</b> (4)	Export Tax (30%) (5)
Sf				
0	1,153,152,000	1,773,200,000	2,926,352,000	1,155,000,000
US\$				
0	524,160	806,000	1,330,160	525,000

Sources: (1) & (2) Table 3; (3) Table 4; (4) (1) + (2) + (3); (5) Table 5

**Table 10. Variation in Area Fee to Total Concession Area, Management Intensity and Distance to Coast**

**a. Different total concession area and 100% of the area extensively managed**

Concession Area ha	District	Management Intensity	ha	Area Fee per ha	Area Fee per group	Total Area Fee
				(US\$)		
1,200,000	Sipaliwini (70%)	Intensive (0%)	0	0.08	0	441,600
	All other (30%)		0	0.24	0	
	Sipaliwini (70%)	Extensive (100%)	840,000	0.32	268,800	
	All other (30%)		360,000	0.48	172,800	
1,500,000	Sipaliwini (75%)	Intensive (0%)	0	0.08	0	540,000
	All other (25%)		0	0.24	0	
	Sipaliwini (75%)	Extensive (100%)	1,125,000	0.32	360,000	
	All other (25%)		375,000	0.48	180,000	
1,820,000	<b>Sipaliwini (80%)</b>	<b>Intensive (0%)</b>	<b>0</b>	<b>0.08</b>	<b>0</b>	<b>640,640</b>
	<b>All other (20%)</b>		<b>0</b>	<b>0.24</b>	<b>0</b>	
	<b>Sipaliwini (80%)</b>	<b>Extensive (100%)</b>	<b>1,456,000</b>	<b>0.32</b>	<b>465,920</b>	
	<b>All other (20%)</b>		<b>364,000</b>	<b>0.48</b>	<b>174,720</b>	
2,100,000	Sipaliwini (85%)	Intensive (0%)	0	0.08	0	722,400
	All other (15%)		0	0.24	0	
	Sipaliwini (85%)	Extensive (100%)	1,785,000	0.32	571,200	
	All other (15%)		315,000	0.48	151,200	

**b. Different total concession area and 10% of the area intensively managed**

Concession Area ha	District	Management Intensity	ha	Area Fee per ha	Area Fee per group	Total Area Fee
				(US\$)		
1,200,000	Sipaliwini (70%)	Intensive (10%)	84,000	0.08	6,720	412,800
	All other (30%)		36,000	0.24	8,640	
	Sipaliwini (70%)	Extensive (90%)	756,000	0.32	241,920	
	All other (30%)		324,000	0.48	155,520	
1,500,000	Sipaliwini (75%)	Intensive (10%)	112,500	0.08	9,000	504,000
	All other (25%)		37,500	0.24	9,000	
	Sipaliwini (75%)	Extensive (90%)	1,012,500	0.32	324,000	
	All other (25%)		337,500	0.48	162,000	
1,820,000	Sipaliwini (80%)	Intensive (10%)	145,600	0.08	11,648	596,960
	All other (20%)		36,400	0.24	8,736	
	Sipaliwini (80%)	Extensive (90%)	1,310,400	0.32	419,328	
	All other (20%)		327,600	0.48	157,248	
2,100,000	Sipaliwini (85%)	Intensive (10%)	178,500	0.08	14,280	672,000
	All other (15%)		31,500	0.24	7,560	
	Sipaliwini (85%)	Extensive (90%)	1,606,500	0.32	514,080	
	All other (15%)		283,500	0.48	136,080	

**c. Different total concession area and 25% of the area intensively managed**

Concession Area ha	District	Management Intensity	ha	Area Fee per ha	Area Fee per group	Total Area Fee
				(US\$)		
1,200,000	Sipaliwini (70%)	Intensive (25%)	210,000	0.08	16,800	369,600
	All other (30%)		90,000	0.24	21,600	
	Sipaliwini (70%)	Extensive (75%)	630,000	0.32	201,600	
	All other (30%)		270,000	0.48	129,600	
1,500,000	Sipaliwini (75%)	Intensive (25%)	281,250	0.08	22,500	450,000
	All other (25%)		93,750	0.24	22,500	
	Sipaliwini (75%)	Extensive (75%)	843,750	0.32	270,000	
	All other (25%)		281,250	0.48	135,000	

1,820,000	Sipaliwini (80%)	Intensive (25%)	364,000	0.08	29,120	531,440
	All other (20%)		91,000	0.24	21,840	
	Sipaliwini (80%)	Extensive (75%)	1,092,000	0.32	349,440	
	All other (20%)		273,000	0.48	131,040	
2,100,000	Sipaliwini (85%)	Intensive (25%)	446,250	0.08	35,700	596,400
	All other (15%)		78,750	0.24	18,900	
	Sipaliwini (85%)	Extensive (75%)	1,338,750	0.32	428,400	
	All other (15%)		236,250	0.48	113,400	

**Table 11. Variation in Volume Retribution to ±25% total production and variation in class composition**

**a. ±25% variation in total volume - Present volume distribution in classes**

	Yearly Cut	Distribution in Classes	Vol. Ret. / Class	Vol. Ret. Total
	m <sup>3</sup>		(US\$)	
Total production 25% down	132,994	68% Class 1	452,179	605,122
		28% Class 2	139,643	
		4% Class 3	13,299	
Total production 10% down	159,593	68% Class 1	542,615	726,146
		28% Class 2	167,572	
		4% Class 3	15,959	
<b>Present production volume</b>	<b>177,325</b>	<b>68% Class 1</b>	<b>602,905</b>	<b>806,829</b>
		<b>28% Class 2</b>	<b>186,191</b>	
		<b>4% Class 3</b>	<b>17,733</b>	
Total production 10% up	195,058	68% Class 1	663,196	887,512
		28% Class 2	204,810	
		4% Class 3	19,506	
Total production 25% up	221,656	68% Class 1	753,631	1,008,536
		28% Class 2	232,739	
		4% Class 3	22,166	

**b. ±25% variation in total volume - 60% Class 1, 30% Class 2 and 10% Class 3**

	Yearly Cut	Distribution in Classes	Vol. Ret. / Class	Vol. Ret. Total
	m <sup>3</sup>		(US\$)	
Total production 25% down	132,994	60% Class 1	398,981	581,848
		30% Class 2	149,618	
		10% Class 3	33,248	
Total production 10% down	159,593	60% Class 1	478,778	698,217
		30% Class 2	179,542	
		10% Class 3	39,898	
<b>Present production volume</b>	<b>177,325</b>	<b>60% Class 1</b>	<b>531,975</b>	<b>775,797</b>
		<b>30% Class 2</b>	<b>199,491</b>	
		<b>10% Class 3</b>	<b>44,331</b>	
Total production 10% up	195,058	60% Class 1	585,173	853,377
		30% Class 2	219,440	
		10% Class 3	48,764	
Total production 25% up	221,656	60% Class 1	664,969	969,746
		30% Class 2	249,363	
		10% Class 3	55,414	

**c. ±25% variation in total volume - 50% Class 1, 35% Class 2 and 15% Class 3**

	Yearly Cut	Distribution in Classes	Vol. Ret. / Class	Vol. Ret. Total
	m <sup>3</sup>		(US\$)	
Total production 25% down	132,994	50% Class 1	332,484	556,911
		35% Class 2	174,554	
		15% Class 3	49,873	
Total production 10% down	159,593	50% Class 1	398,981	668,294
		35% Class 2	209,465	
		15% Class 3	59,847	
		<b>50% Class 1</b>	<b>443,313</b>	

<b>Present production volume</b>	<b>177,325</b>	<b>35% Class 2</b>	<b>232,739</b>	<b>742,548</b>
		<b>15% Class 3</b>	<b>66,497</b>	
Total production 10% up	195,058	50% Class 1	487,644	816,803
		35% Class 2	256,013	
		15% Class 3	73,147	
Total production 25% up	221,656	50% Class 1	554,141	928,186
		35% Class 2	290,924	
		15% Class 3	83,121	