

Project TCP/MOZ/2904 (A)
**“Support for the Implementation of the Forest and Wildlife Legislation in
Mozambique”**

Forest Law Enforcement in Mozambique

An Overview

Mission Report
Draft Version

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Executive Summary

According to the estimations carried out in this report, clandestine timber production in Mozambique may be between 50 and 70 per cent of the total national production. In roundwood terms this would mean between 90,000 and 140,000 m³ of unauthorised production per year. In monetary terms, the gross value of this production is quantifiable in the region of US\$15-24 million.

The non-payment of stumpage fees by this unregistered production causes an annual fiscal loss to the Mozambican government estimated in US\$3-5 million. This is an annually recurring loss. The discounted net present value (NPV) of current and future losses, applying a 10% discount rate and allowing for declining timber production in line with a constant deforestation rate of 0.2%, can be estimated as high as US\$22-36 million.

Due to this unregistered production, the present extraction rate of the most valuable Mozambican timber species may be between two and four times its sustainable potential. Further research is needed to forecast the impact of this overexploitation on future supply.

In the case of charcoal, probably only 1-5% of the total production is currently registered. This suggests that the informal production of charcoal could be more than 8 million bags per year. The market value of this amount of bags is probably around US\$32-44 million, considerably higher than the amount estimated for roundwood. The calculation of the associated revenue loss is more complex because small quantities of charcoal are considered a non-commercial item for auto consumption and therefore tax exempt. However, the potential loss (without considering this exemption) could be US\$1.6 million per year and US\$12 million in discounted NPV terms.

These are tentative estimates, they should be considered as provisional numbers. However, their 'order of magnitude' clearly suggests that there is an evident case of national self-interest in tackling this issue.

The principal recommendations from this report for the ongoing DNFFB-FAO TCP project to improve forest and wildlife law compliance are the following:

1) On-the-ground assessments – Field monitoring is essential to document the existence and scale of illegal operations, to highlight where enforcement is most needed, and to monitor progress in addressing the problem. Improving the capacity to carry out effective field monitoring activities should be regarded as one of the most important objectives of the new forest law compliance strategy that is being prepared.

This should be based on three central elements:

- adequate training of staff involved in field monitoring;
- adequate logistic support (transport, maps, GPS, cameras, etc.);
- the use of remote-sensing tools such as aerial photographs and different types of satellite imagery.

2) Log-tracking system – Complementing ground monitoring with the implementation of a log-tracking system would offer the opportunity to tackle the problem on a more comprehensive basis. One important concern here is the availability of sufficient financial resources. Testing on a small-scale basis and if necessary sequencing these two instruments over a reasonable period of time (avoiding simultaneous start) are key issues.

3) Partnerships with other stakeholder groups – To improve the effectiveness of roadside checkpoints, mobile patrols and field surveys it is important to analyse the possibility to form solid partnerships with other stakeholder groups interested in improving forest and wildlife law compliance. The experience of *Vigilancia Verde* in Ecuador could be explored as an interesting example.

4) Control of exports – The analysis of timber trade data suggests that there may be some weaknesses in the current control of timber products exports. Further research is needed to understand this issue and to suggest possible remedies.

5) Community involvement – As already widely acknowledged, to enhance the participation of local communities in forest and wildlife law enforcement it is important to prepare the legal instruments that will define the functions of the community level institutions (*Conselhos Locais de Gestão de Recursos Florestais e Faunísticos*) created by the new legislation. These institutions could have a central role in organizing and supporting local forest and wildlife law enforcement. They could be in charge of (i) training and monitoring the work of the *fiscais comunitarios*, (ii) monitoring the payment of fines and ensuring that the 50% of their amount is redistributed among the people involved in detecting the illegal act, and (iii) that the 20% of the tax revenue derived from the exploitation of forest or wildlife resources is reinvested transparently at local level. There are ongoing efforts working on these issues, so this recommendation only aims at highlighting their importance.

6) Training plan – The new forest law compliance strategy should include a specific *training plan* aimed at different stakeholders (*fiscais*, timber managers, logging crews, police, judiciary personnel, DNFFB and SPFFB employees, customs authorities, communities, NGO members, forest professionals, etc.). The possible topics will depend on specific diagnostics, but they should probably include administrative procedures for simple licenses and concessions, forest and wildlife legislation, forest and wildlife crimes, professional ethics, and judicial procedures.

7) Certification – Forest certification is an instrument that could strengthen the contribution of companies to forest and wildlife law enforcement. A first contribution is its requirement to maintain mutually beneficial relationships between companies and communities. Secondly, the experience from Bolivia suggests that certification can act as an important incentive to legality when it is used as an indicator to reduce the transaction costs of 'good' forest management, while at the same time diminishing the work load of the forestry authority that in this way can concentrate its efforts on other priorities. Perhaps certification could do even more by linking (through 'conditions' and 'recommendations') the achievement and maintenance of this recognition to the accomplishment of specific measures against illegal logging and poaching. The

ongoing effort to produce the FSC National Standards for Mozambique represents the arena where such possibility could be further discussed.

8) Supporting legal charcoal production – Improving the effectiveness of roadside checkpoints should surely contribute to controlling the informal trade of charcoal. To reduce its unregulated production it would be important to adopt instruments that could create incentives (and promote some level of investment) in legal charcoal production. The allocation of concessions specifically for charcoal production could be a valid instrument to consider. The involvement of communities in these new concessions should be a priority.

The recent AFLEG Ministerial Declaration recently signed in Cameroon represents a great opportunity for improving forest law enforcement. It provides the momentum and backing necessary to act. It also indicates a wide list of priorities. The TCP project “Support for the Implementation of the Forest and Wildlife Legislation in Mozambique” could hardly have started in a more appropriate moment. It can help provide the operational mechanisms for implementing the commitments derived from this continental Declaration.

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Introduction

The TCP project “Support for the Implementation of the Forest and Wildlife Legislation in Mozambique” focuses on the development and testing of a participatory strategy for the implementation of the legal framework related to forests and wildlife. Through supporting the development of innovative policies and participatory instruments for law enforcement, the project aims at making a substantial contribution to put into practice the new *Lei de Florestas e Fauna Bravia* and its *Regulamento*, discouraging illegal activities and serving as a basis for better governance in this sector. The expected outputs are: (i) the development of a strategy (and associated action plan) for improving forest and wildlife law compliance; and (ii) its testing in the field.

This document represents an attempt to give a general overview of the problems surrounding forest and wildlife law compliance in Mozambique, as a basis for the implementation of this project. Considering that wildlife poaching has traditionally captured much more attention, both at national and international levels (EFI, 1999), this report focuses primarily on forest production and trade. However, animals and forests are so closely linked, in the field and in the law, that the measures suggested in this report to tackle forest crimes should also help reduce illegal wildlife hunting.

As with many analyses, a useful first step is to try to understand the magnitude of the issue under investigation. The first section focuses therefore on the estimation of unauthorised roundwood production. The second section tries to corroborate this estimation by analysing timber trade data between Mozambique and several of its main commercial partners. The third section carries out a similar quantification for charcoal production. The fourth section focuses on the market value of these illegal productions, while the fifth represents an attempt to quantify the associated loss of forest revenues. The sixth section considers the current exploitation rate of the most valuable species versus their sustainable supply. The seventh section analyses the existing law enforcement system and the scope for improvements. The eighth section considers how various stakeholders, especially local communities, might be involved in law enforcement. The ninth section examines some examples of the international experience. The tenth section concludes with a few final recommendations.

1. Illegal logging in Mozambique: how much could it be?

The lack of compliance of forest legislation is widely acknowledged in Mozambique, as indicated by the numerous documents that in recent years have analysed this issue (amongst others, Barne, 2001; Bila and Salmi, 2003; Mussengue, 2001 and 2002; Nhantumbo and Macqueen, 2003; Reyes, 2003). However, when it comes to the possible magnitude of illegal logging operations there is little information and no agreement.

A preliminary estimation of the illegal timber extraction can be made by comparing the official forest statistics with the results of a survey carried out by Eureka in 2001. In Table 1 the first column presents the registered annual roundwood production in Mozambique from 1997 to 2001, as reported by the *Relatório Estatístico Anual 2001*. While the second column indicates the overall average annual cut (180,000-200,000 m³) estimated by Eureka on the basis of its survey. The third column gives the resulting percentage of unauthorised production.

Table 1. Estimating unauthorised roundwood production in Mozambique.

Years	Official annual log production (m ³)	Estimated total annual harvest (m ³)	Estimated percentage unauthorised production
1997	120,558	180,000-200,000	35%-40%
1998	119,761	180,000-200,000	35%-40%
1999	61,482	180,000-200,000	65%-70%
2000	84,750	180,000-200,000	55%-60%
2001	91,250	180,000-200,000	50%-55%

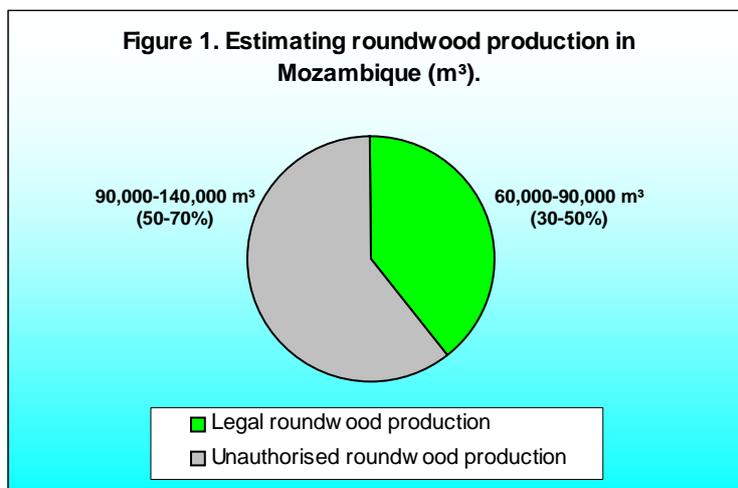
Sources: *Relatório Estatístico Anual 2001* and Eureka (2001).

Before analysing Table 1 it is important to discuss briefly two points about it. First, from the Eureka report it is not clear if the higher end of the annual harvest range (200,000 m³) was estimated taking into account (at least partially) that possibly not all logging companies operating in Mozambique received and answered the questionnaire; that logging managers may have tended to underestimate in their answers the amounts of timber harvested; and that the survey did not include clandestine small/micro operators. If these considerations were not considered, then the real annual log production in Mozambique may be appreciably higher than the range suggested by Eureka.¹ Secondly, by taking the same estimated total production for all the five years analysed, Table 1 does not reflect the evidence suggesting an increase in logging operations in recent years (Reyes, 2003; FAO, 2003), which would result in even higher percentages of unauthorised production.

Despite these limitations, Table 1 is illustrative because it clearly suggests the existence of illegal production. And, even considering a constant total production, it shows an increasing trend in the last three years considered (1999-2001). Taking into account the percentages for these three years (and also the two points discussed above), we can reasonably suppose that illegal timber production in Mozambique may be at least between 50 and 70 per cent of the total national production. In roundwood

¹ For example, according to FAO (2003) the industrial roundwood production in Mozambique could be as high as 1.2 million m³.

volume this would mean between 90,000 and 140,000 m³ of unauthorised production per year, as shown in Figure 1.



Unsurprisingly, some logging managers could challenge these figures. As happened in some interviews, they probably would argue that the limited financial and equipment capacities prevailing in Mozambique act as a ‘barrier’ to illegal extraction. This is why, they could point out, the actual extraction of timber is often even lower than the officially authorised volumes.² Thus, while they may acknowledge that the officially authorised logging operations are often carried out with little regard to environmental concerns, they would tend to dismiss (quite naturally) the existence of an illegal extraction above the authorised volumes.

However, these arguments appear rather flawed. Considering again Eureka’s report, the estimated harvesting and transport capacities in Mozambique are respectively of 230,000 and 470,000 m³ – well above the officially reported production volumes. While Reyes (2003) reports that often foreign traders provide the necessary financial capital, particularly to small operators, supposedly reducing this constraint. Furthermore, the total production considered here (180,000-200,000 m³) is only 15-17% of the total roundwood production estimated by FAO (see Footnote 1). Therefore there should not be much doubt about its financial/technical possibility.

2. Analysing timber export/import data

The analysis of timber trade data between Mozambique and some of its main commercial partners is interesting because it appears to largely substantiate the results of the previous section. In Table 2 Mozambique timber export numbers come from the *Relatório Estatístico Anual 2000* and the subsequent *Relatório Estatístico Anual 2001*,

² According to the *Relatório Estatístico Anual 2000*, in that year the actual log production was only 68% (84,750 m³) of the total officially authorised volume (125,423 m³). The same percentage (68%) is reported by the *Relatório Estatístico Anual 2001* (91,215 m³ actually extracted of the 135,114 m³ officially authorised). However, these differences may be due to loopholes in the current monitoring and control system and/or in the reporting procedures.

while the imports data from the trading partners were obtained from the FAOSTAT Forestry 'Bilateral Trade Matrices' (<http://apps.fao.org/cgi-bin/nph-db.pl?subset=forestry>).³

Table 2. Comparing timber trade data.

Years	Products	Mozambique Exports	Imports from Mozambique										Differences (m ³)	Differences (%)
			China	France	Germany	Italy	Japan	Portugal	S. Africa	Spain	USA	Total		
1997	Roundwood	52,386	26,869	-	85	-	-	811	-	-	47	27,812	-24,574	-47
	Sawnwood	691	1,327	3,217	69	909	10	46	-	-	58	5,636	+4,945	+716
1998	Roundwood	24,655	15,709	-	6,269	-	1,840	89	997	162	-	25,066	+411	+2
	Sawnwood	9,403	-	28	74	1,080	2	204	967	116	19	2,490	-6,913	-74
1999	Roundwood	23,554	34,171	-	1,809	61	74	36	64	-	-	36,215	+12,661	+54
	Sawnwood	9,435	3,966	1	506	1,470	-	1,447	45,045	136	22	52,593	+43,158	+457
2000	Roundwood	18,626	71,692	-	1,692	53	475	-	-	236	-	74,148	+55,522	+298
	Sawnwood	2,243	4,389	93	941	1,257	-	-	45,038	202	-	51,920	+49,677	+2,215
2001	Roundwood	33,000	64,949	-	-	163	258	-	-	-	2	65,372	+32,372	+98
	Sawnwood	2,000	592	14	-	1,896	-	-	2,559	-	313	5,374	+3,374	+169

Sources: 1) *Relatório Estatístico Anual 2000* and *Relatório Estatístico Anual 2001* for the Mozambican exports; 2) FAOSTAT Forestry 'Bilateral Trade Matrices' for the nine countries import data from Mozambique.

It is well known that discrepancies in declared volumes between trade partners can largely depend on reporting problems. ITTO (2001)⁴ has highlighted several 'understandable' reasons that can cause these problems (e.g., lack of training, different scaling or measurement systems, inadequate use of conversion factors, products definition, etc.). Some of these problems are also evident in Table 2. For example, the export data for roundwood in 1997 is greatly in excess of the total imports declared by the nine countries. This clearly suggests missing data from one or more importing countries for that year. Likewise, probably the large differences for sawnwood in 1999 and 2000 depend on some problems with the reporting of these exports to South Africa. Nonetheless, according to ITTO when discrepancies are consistent in direction for different years and/or partners and/or products they may be due to undocumented trade (Johnson, 2002).

Considering the years 1999-2001 in Table 2, it is not possible therefore to simply conclude (comparing the total exports with the total imports, respectively 88,858 and 285,622 m³) that for each meter cubic exported legally in that period there have been another 3.2 cubic metres exported fraudulently. This would be a flawed deduction. But other considerations are possible:

1. Table 2 indicates an increase in undocumented export in the last three years considered (1999-2001), both in terms of cubic metres as in terms of percentages. Even if solid numbers cannot be deduced, these results as a minimum appear to corroborate the estimation reported by Landis (2002) that the illegal export of some timbers from Mozambique might be as high or higher than that of the legal trade.

³ The selection of the countries was based only on the availability of information in the 'Bilateral Trade Matrices'. Unfortunately there was no data for some countries considered relevant importers of timber from Mozambique, such as Zimbabwe, Malawi and Malaysia (Eureka, 2002).

⁴ Cited in Johnson, 2002.

2. A second element of interest is the temporal coincidence between the alleged increase in undocumented exports in the years 1999-2001 and the parallel alleged increase in illegal production discussed in the previous section. As suggested by Johnson (2002), undocumented timber trade is often linked to undocumented timber production. These two trends therefore tend to confirm each other, indicating a general rise of forest-related illegal activities in recent years.

3. The third and perhaps most important element is the corroboration of the volumes estimated in the previous section. The total amount of declared sawnwood imports for the years 1999-2001 is 109,887 m³. Considering an average sawing conversion rate of 40%, this volume corresponds to approximately 275,000 m³ in roundwood production.⁵ This means that in roundwood terms the total amount of declared imports by the nine countries in that 3-year period corresponds to approximately 450,000 m³ (175,735 m³ + 275,000 m³) – in average 150,000 m³ per year. If domestic consumption and other timber-based exports were added it is reasonable to suppose that the total amount would easily come up to the national production estimated by Eureka (180,000-200,000 m³), especially considering the high sawing rate applied here and the limited number of importing countries analysed. By corroborating the total national production this trade analysis reinforces the illegal production estimate of the previous section.

3. Informal charcoal production

This section tries to repeat for charcoal the same kind of estimation done for roundwood in Section 1. According to FAO (2003), the average fuel wood production in Mozambique is approximately 16.7 million cubic metres per year. Of this, at least 3 millions are converted to charcoal, mainly for urban consumption (Mansur, pers. comm.). Table 3 compares this quantity with the authorised production reported for the years 1997-2001 by the *Relatórios Estatísticos 2000* and *2001*.

Table 1. Estimating informal charcoal production in Mozambique.

Years	Official annual production (m ³)	Estimated total annual production (m ³)	Estimated percentage informal production
1997	280,500	3,000,000	90.7%
1998	134,500	3,000,000	95.5%
1999	39,500	3,000,000	98.7%
2000	59,000	3,000,000	98.0%
2001	159,500	3,000,000	94.7%

Sources: *Relatório Estatístico Anual 2000*, *Relatório Estatístico Anual 2001* and FAO (2003).
 Note: Conversion factors were those suggested for Mozambique by Brouwer and Falcão (no date):

- Piled (stere) to cubic metre: 0.65 m³
- Average specific weight of firewood: 657Kg/m³
- Conversion efficiency to charcoal: 14%
- Average bag of charcoal: 32 kg

⁵ According to Eureka (2001), common sawing rates in Mozambique are much lower, between 25-30%, reaching 35% only in one well-equipped industry utilising exotic species. The use of 25-30% conversion rates would have given much higher volumes in roundwood timber (approx. 365,000-440,000 m³).

According to this table, probably only 1-5% of the total production is currently registered. This means that the informal production of charcoal could be more than 8 million bags per year.

4. How much is the illegal production worth?

In Section 1 it was estimated that the unauthorised roundwood production might be between 90,000 and 140,000 m³ per year. For many people, including for many foresters not involved in inventories and harvesting, these could be quite abstract numbers, difficult to visualise in practice. It is therefore useful to translate such amounts in their monetary value, much easier to appreciate. Another valuable economic information concerns the loss of forest revenues due to illegal logging, since it can help persuade policymakers of the case for self-interested action (Richards *et al.*, forthcoming).

This and the following section focus on these two elements. It is important to underline that the estimations presented here are only 'back of the envelope' calculations. Their aim is to give 'orders of magnitude' of these two economic implications, not indisputable numbers, which would need intensive and expensive forest-based research. Nonetheless, if these preliminary estimations are based on conservative assumptions they can send out a powerful political message.

The main difficulty for both calculations is the subdivision of the estimated amount of illegal production between the five classes of timber species established by Art. 11 (and detailed in Annex 1) of the *Regulamento da Lei de Florestas y Fauna Bravia*. Unfortunately there is little information about this subdivision. However, according to the *Relatório Estatístico Anual 2000* during that year about 90% of the registered production was of first class species ('especies produtoras de madeira da 1a classe'), only 1-2% of precious species ('especies produtoras de madeira preciosa'), and the remaining 8-9% of other species. It is plausible to suppose that the unauthorised production follows a similar distribution pattern, but perhaps with a higher proportion of precious species, considering that such production clearly tends to focus on the most valuable species.⁶ A higher proportion of precious species is also suggested by Eureka (2001), for which the roundwood production in Mozambique is concentrated in the first two of the five groups established by the *Regulamento* (precious and first class species). Hence, here it is provisionally assumed that such division could be around 20% of precious species, 70% of first class ones and 10% of others species. Table 3 shows the resulting numbers.

⁶ Sharman (1995) reports that Pau-preto (*Dalbergia melanoxylon*) is perhaps the world's most valuable timber, fetching between US\$15,000 and US\$18,000 per cubic meter in the musical instrument trade (cited in Landis, 2002).

Table 3. Estimating the market value of the illegal production.

Estimated illegal log production (m ³)	Subdivision in precious and first class species	Resulting volumes ¹ (m ³)	Average FOB price (US\$/m ³)	Estimated gross value (US\$ million)
90,000-140,000	Precious: 20%	18,000-28,000	Precious: 250	4,5-7.0
	First class: 70%	63,000-98,000	First class: 150	9.5-14.7
	Others: 10%	9,000-14,000	Others: 130	1.2-1.8
Total				15.2-23.5
Approximated total				15-24

The estimation of the market value of the illegal production is based on free on board (FOB) export values. FOB prices represent more realistic gross values than the domestic market prices. They are relatively less influenced by market failures (e.g. less competition from cheap illegal timber) and represent the amount that would need to be paid for importing any specific timber if the country did not produce it. The figures of 250, 150 and 130 US\$/m³ come from Rytkönen (2002) and Eureka (2001), and represent average FOB prices achieved in recent years for exports of species pertaining to the three groups considered (precious, first class and 'others'). Consequently, the gross value of clandestine timber production in Mozambique is quantifiable in the region of US\$15-24 million.

In the case of charcoal, given its limited export the selling price in Maputo, between US\$4-5.5 per bag (Rytkönen, 2002),⁷ can be considered as an indicative estimation of its market value. Thus 8 million bags have a total value of US\$32-44 million, considerably higher than the amount estimated for roundwood.

These calculations indicate the scale of the problem, but do not tell us how much is the direct cost to the government, though clearly much of it represents a transfer from the state to the illegal private sector (Richards *et al.*, 2003).

5. How much tax revenue is the Mozambican government losing?

The loss of stumpage fees is the clearest direct cost to the government. To quantify this loss the estimated illegal production divided by classes was multiplied by the respective official stumpage fees, as established by Table II of the *Regulamento da Lei de Florestas y Fauna Bravia*. In the case of the group 'others' the stumpage fee of the second class (300,000 MT/m³) was applied, since the species of this class are by far the most extracted among such group.

As shown in Table 4, the non-payment of forest taxes by unregistered roundwood production causes an annual fiscal loss estimated in US\$3-5 million. This is an annually recurring loss. If we consider the discounted net present value (NPV) of current and future losses, applying a 10% discount rate and allowing for declining timber production in line with a constant deforestation rate of 0.2% (FAO, 2003), then

⁷ Calculated considering the average market exchange rate for the first semester 2003: 1 US\$ = 23,804.77 Meticals (Source: Bank of Mozambique).

this financial loss can be estimated as high as US\$22-36 million.⁸ These are tentative estimates, but their 'order of magnitude' appears unbearable for an economically poor country like Mozambique.

Table 4. Estimating the loss of forest tax revenues.

Estimated illegal log production (m ³)	Subdivision in precious and first class species	Resulting volumes (m ³)	Official stumpage fees (MT/m ³)	Estimated revenue loss (MT million)	Estimated revenue loss (US\$ million) ¹
90,000-140,000	Precious: 20%	18,000-28,000	2,000,000	36,000-56,000	1.5-2.4
	First class: 70%	63,000-98,000	500,000	31,500-49,000	1.3-2.1
	Others: 10%	9,000-14,000	300,000 ²	2,700-4,200	0.1-0.2
Total					2.9-4.7
Approximated total					3-5

¹ Average market exchange rate for the first semester 2003: 1 US\$ = 23,804.77 Meticais (Source: Bank of Mozambique).

² 300,000 MT/m³ represents the stumpage fee for second class species, by far the most common among the group of 'others'.

In the case of charcoal the estimation of the revenue loss is more difficult because small quantities of it (up to two bags) are considered a non-commercial item for auto consumption (Vicente, pers. comm.), and therefore tax exempt. Without considering this exemption, the unpaid fees for 8 million unregistered bags would add up to US\$1.6 million per year (considering a fee of approximately US\$0.2 per bag). In discounted NPV terms, this would mean US\$12 million. However, the existence of this exemption (even if often the charcoal is in reality marketed) means that these numbers must be considered only as indicative potential figures. **[This paragraph needs confirmation.]**

6. Overexploitation of valuable timbers

It is generally acknowledged that the main environmental impacts of logging activities usually do not come from the extraction operations carried out, but from the hunting, wildfires, and agricultural activities that often follow (having been brought by) such operations (Kaimowitz, 2003). An assessment of the environmental impact of current logging operations goes therefore beyond the scope of this report. However, an attempt is made here to compare the current exploitation rate of the most valuable species versus their sustainable supply.

Many experts agree that the country's sustainable logging potential is approximately 500,000 m³ of commercial roundwood timber per year, as suggested by Saket (1994). The total annual roundwood production of 180,000-200,000 m³ is therefore far lower (only 36-40%) than the total potential. This, however, does not imply that the current harvesting rate is sustainable. As it is well known, the problem is the logging pressure on the most valuable commercial species. According to the DNFFB (1999), market

⁸ In this NPV calculation two suppositions were also applied in order to consider the effect of local currency devaluation on the value of the stumpage fees: (i) a devaluation rate of 10% per year; and (ii) an increase every five years of the stumpage fees in order to restore the approximate value in US\$ of these fees when they were established in the *Regulamento* in October 2002 (that is approximately US\$84/m³ for 'madeiras preciosas', US\$21/m³ for 'madeiras da 1a classe', and US\$12.5/m³ for 'madeiras da 2a classe').

demand is currently concentrated on a small number of timber species that compose only 10-15% of the country's sustainable logging potential. That is merely 50,000-75,000 m³ per year. These species are naturally the ones currently being logged, also because the savannah-like, low-density nature of Mozambican forests makes it somewhat easier to find, access and remove these trees (Reyes, 2003). Thus, the present extraction rate of the most valuable Mozambican timber species may be between two and four times its sustainable potential. Further research is needed to forecast the impact of this overexploitation on future supply. But undoubtedly many forest areas will lose their most valuable species in the coming years.

7. Existing law enforcement system and scope for improvements

7.1 Provisions of the forest and wildlife legislation

The forest and wildlife policy/legal reform effort that has been carried out in Mozambique in the last 5-10 years has produced an advanced and sound legislation for this sector. As accurately listed by Bila and Salmi (1993), there are several regulatory instruments (*modelos, normas, diplomas* and *despachos*) that still need to be prepared; however, their elaboration is going ahead (following a priority sequence). Once this process is concluded Mozambique will have adequate legal provisions for tackling illegal forest acts through a strategy based on prevention, detection and suppression.

This of course does not exclude that reforms and improvements in the legal framework will be needed sooner or later as the context, especially at local level, continuously changes. For example, transparency in the allocation of forest concessions could be enhanced by the introduction of a competitive bidding system, as recommended by Siteo, Bila and Macqueen (2003) and Rytkönen (2002). The utility of some administrative procedures should also be analysed, since they may unnecessarily increase the transaction costs of legality (Box 1). Another small possible change concerns road transportation of timber products and is discussed below in Subsection 7.2.

A part from these few specific cases, the main point here is that the current challenges for improving forest law compliance do not concern the policy/legal framework, but the operative capacity to monitor forest production and trade. The following subsection focuses on this.

Box 1. Bureaucratic barriers.

TCT (2003) reports that eleven administrative steps are necessary to export one container of rough sawn timber to Europe, which include obtaining a *Certificate of Origin*, a *Certificate of Quality* and a *Phytosanitary Certificate*. However, according to TCT none of these three certificates is required by the European importer, so they remain in Mozambique when the container leaves the country. Transaction costs that appear unjustified and avoidable can act as a strong disincentive for legal operators.

Source: TCT, 2003.

7.2 Monitoring forest production

The control of forest production is currently based on two main instruments: (i) monitoring visits in the cutting areas and sawmills; and (ii) checkpoints along the main roads of the country.

Of the two, the field surveys appear at present the weakest element. Due to the limited logistic capacity of the SPFFBs, it has been quite common that the licence holder or concessionaire provides the necessary transport, which means that the visit must be agreed with anticipation with the operator that is going to be supervised (Barne, 2001). Moreover, there appears to be a weak preparation of such visits (for example, little use of maps, aerial photos, satellite images, GPS or other tools). On-the-ground assessments are essential to document the existence and scale of illegal operations, to highlight where enforcement is most needed, and to monitor progress in addressing the problem (Smith, 2002). Therefore, improving the capacity to carry out effective field monitoring visits should be regarded as one of the most important objectives of the new forest law compliance strategy that is being prepared with the support of the FAO TCP project. This should be based on three central elements:

- adequate training of staff involved in field monitoring;
- adequate logistic support (transport, maps, GPS, cameras, etc.);
- the use of remote-sensing tools such as aerial photographs and different types of satellite imagery (aerial over-flights have also proved to be very useful in some countries, but of course they are expensive).

If possible, complementing ground surveys with the implementation of a log-tracking system (as the one suggested by Barne, 2001) would offer the opportunity to tackle the problem on a more comprehensive basis. The limitation here might be the availability of sufficient financial resources to implement both instruments. Clearly they would need to be implemented gradually, starting on a small-scale basis in the Provinces considered priority (for example, the two that will be selected for testing the new forest law compliance strategy). Also, to reduce financial restraints they can be sequenced through a reasonable period of time, avoiding simultaneous starts.

As mentioned above, the second (and most important) element of the current forest control system is based on roadside checkpoints between the logging sites and the major ports and cities, where government controllers (*fiscais*) check timber volumes by category and track licensing compliance (registered volumes are also used for tax collection purposes). The work of these fixed checkpoints is also complemented when possible by mobile patrols.

This system works quite well (as proven by the considerable amount of fines that are charged every year). However, one weakness appears to be insufficient personnel. The *fiscais* carry out long working turns. Moreover, in some checkpoints there is only one *fiscal* available (for example, in Mocímboa da Praia, Cabo Delgado Province), which means that the controls are carried out only during daytime (while at night trucks can proceed without restraints). One way to reduce this problem is by hiring more personnel, which is in the plans of MADER/DNFFB. However, this possibility is always limited by the availability of resources. In other countries, such as Honduras, they have tried to improve this same situation by allowing the transport of forest products only

during daytime (for example, from 5 a.m. to 5 p.m.). Any truck with timber driving at night would therefore be immediately fined and undergo further controls. Apparently this measure has been also tested in one Mozambican Province with good results, but it has encountered strong opposition by logging operators (Pechisso, pers. comm.). They have argued that most trucks have tires in extremely bad conditions, thus driving in the day heat increases the risk of punctures. This, however, should be a relatively small obstacle to overcome.

Another weakness on these checkpoints might be their vulnerability to corruption. As known, with the aim to reduce this problem the new regulatory framework provides that *fiscals* receive a percentage of the fines they impose. This is surely a positive measure. However, to reduce more this vulnerability it may be useful to consider the possibility to involve other interested groups in these activities. The experience of *Vigilancia Verde* in Ecuador is one example that could be analysed, to understand if and in what terms it might be valid in Mozambique. A brief summary of this experience is reported in Box 2.

Box 2. The experience of *Vigilancia Verde* in Ecuador.

Vigilancia Verde was created in 2000 by a broad coalition of public and private entities concerned with the quality of environment management in Ecuador: the National Police, the National Defense Ministry, five NGOs and the Ministry of Environment that led the initiative. *Vigilancia Verde* is a supervision body responsible for controlling the transport of timber between the forest and processing and marketing locations. Thirteen fixed and seven mobile control points are being established, each one of them formed by a representative of the forest authority, one from the civil society and two from the police. These teams operate on a 24 hours basis and their members are periodically reassigned to other control points. The system is funded by a trust that receives 50% of the sale value of the timber that is detected, confiscated and auctioned. The funds are administered by a Bank and managed by three directors from the civil society and two from government agencies. All these features have been designed to avoid unaccountable practices, and to reduce the temptation of corrupt deals. It has already demonstrated its effectiveness: in its first year of existence the volume of timber seized was nearly 600% more than the amount seized by the government during the previous year.

Sources: Contreras-Hermosilla, 2002; ITTO, 2002; The Economist, 2003.

Finally, Table 2 (in Section 2) suggests that there may be some weaknesses also in the control of the export of timber products, indicating the need of further research on this issue. Such research should be a priority in order to find possible remedies to the current loopholes. Clearly, it must be carried out in close partnership and under the leadership of the customs authorities.

8. Stakeholder participation in forest law enforcement

Vigilancia Verde is an interesting example of one constructive way in which NGOs can be involved in forest law enforcement. This public-private monitoring partnership could also include the field surveys discussed at the beginning of the previous section. Independent monitoring by national NGOs should also be welcomed.

The new legal framework greatly enhances the role of communities in the forest sector of the country. For their effective involvement in supporting law enforcement, an important step would be to clarify the functions of the community level institutions (*Conselhos Locais de Gestão de Recursos Florestais e Faunísticos*) created by the new legislation. These institutions could have a central role in organizing and supporting local forest and wildlife law enforcement. They could be in charge of (i) training and monitoring the work of the *fiscais comunitarios*, (ii) monitoring the payment of fines and ensuring that the 50% of their amount is redistributed among the people involved in detecting the illegal act, and (iii) that the 20% of the tax revenue derived from the exploitation of forest or wildlife resources is reinvested transparently at local level. Nhantumbo and Macqueen (2003) suggest that these community level institutions could better perform their functions (including law enforcement) if they are divided in two different institutions: *Conselhos de Gestão Participativa* at the district level and *Comité de Gestão Comunitária* at the community level. This possibility like others should be analysed in the current participatory effort to prepare the legal instrument that will define the delegation of functions and responsibilities to local communities.

As widely acknowledged, the most promising way to increase the involvement of communities in law enforcement is to strengthen the stake that they have in the commercial exploitation of the local forest resources and in detecting lack of compliance. The legal instruments (currently in preparation) concerning the redistribution of 50% of the fines and the reinvestment at local level of 20% of the tax revenue go in this direction. Their approval will surely encourage community participation in local forest governance. In the future the allocation of concessions to adequately prepared communities could contribute even further in this direction.

With regard to companies, concession holders are already contributing substantially to forest and wildlife law enforcement by employing *fiscais ajuramentados*. As widely recognised, in many concessions these private officials are carrying out effective control activities, especially against illegal poaching of wild animals. Their increase in number and their training should be considered a priority.

An instrument that could further strengthen the contribution of companies in forest and wildlife law enforcement is forest certification. A first contribution is its requirement to maintain mutually beneficial relationships between companies and communities. Secondly, as described in Box 6 certification can act as an important incentive to legality when it is used as an indicator to reduce the transaction costs of 'good' forest management, while at the same time diminishing the work load of the forestry authority that in this way can concentrate its efforts on other priorities. Perhaps certification could do even more by linking (through 'conditions' and 'recommendations') the achievement and maintenance of this recognition to the accomplishment of specific measures against illegal logging and poaching. The ongoing effort to produce the FSC National Standards for Mozambique represents the arena where such possibility could be further discussed.

9. The international experience

In recent years several analysts have proposed concrete suggestions for improving forest law enforcement in Mozambique. Some of the measures recommended have already been experimented in other countries, so this section has been prepared trying to link a few of these past recommendations with relevant international examples.

Box 3. The United States approach to forest law enforcement.

Mussengue (2002) has recommended the establishment of a *Serviço Nacional de Fiscalização*, under the umbrella of the DNFFB but with administrative-financial autonomy and a centralised command chain. This recommendation reflects closely the approach of the U.S. Forest Service to forest law enforcement. The enforcement program related to timber products of this agency was reformed deeply in the late 1980's and early 1990's. As a result of Congressional pressure and internal recognition of increasing problems, the Forest Service separated its law enforcement personnel from the rest of its supervisory structure and created a separate agency budget for law enforcement. All law enforcement personnel now work for law enforcement senior officials in an organization that mirrors that of the National Forests, up to a Director of the Law Enforcement and Investigations (LEI) programme, who works directly for the Chief of the Forest Service. Apparently these institutional changes (together with operative improvements) have greatly enhanced the effectiveness of forest law enforcement in the United States.

With regard to Mozambique, the main concern is that we are talking about a deep institutional reform. Mozambique has already gone through a long and remarkable policy and legal reform process, so according to several observers the political feasibility of Mussengue's recommendation appears uncertain at present. More information of the United States experience in forest law enforcement can be found at the following site:

[http://lnweb18.worldbank.org/eap/eap.nsf/Attachments/FLEG_S7a-2/\\$File/7a+2+Anne+Melle+-+USFS.pdf](http://lnweb18.worldbank.org/eap/eap.nsf/Attachments/FLEG_S7a-2/$File/7a+2+Anne+Melle+-+USFS.pdf)

Source: Melle and Beck, 2001.

Box 4. Independent monitoring.

Sitoe, Bila and Macqueen (2003) and Bila and Salmi (2003) recommend independent monitoring as a key measure for improving control of forest production and trade in Mozambique. As indicated by Sitoe, Bila and Macqueen (2003), the collaboration of independent agencies can be a valuable option for a more careful monitoring of the complex technical and social issues linked to forest activities, especially with regard to the new concession system currently being implemented.

The major international experience on independent monitoring comes from the work of Global Witness (a UK-based international NGO) in Cambodia and Cameroon. Apparently the results have been positive in the latter while in the former there have been several problems that eventually brought to an end the project. At least part of these inconveniences originated from the fact that the independent monitor was also involved in campaigning against illegal logging and forest corruption. This double role clearly reduced its 'independent' status in the country and prompt misunderstandings and difficulties. The Cameroon experience instead was more pragmatic, focussing on carrying out monitoring activities without using the results for campaigning purposes, which apparently greatly facilitated the implementation of the project. The need to separate these two functions seems therefore to be one of the most important lessons from these past experiences. More information on independent monitoring can be found on the web sites of Global Witness (www.globalwitness.org) and Forests Monitor (www.forestsmonitor.org).

Source: Global Witness, 2002; Vauthier, pers. comm.

Box 5. Ecuador's Outsourced Forestry Supervision System.

Bila and Salmi (2003) have suggested the outsourcing to private companies of some of the public functions concerning the administration and supervision of forest activities. This recommendation closely reflects the ongoing experience of Ecuador's Outsourced Forestry Supervision System. *Vigilancia Verde* discussed in Box 2 is one of the three main components of this innovative system. Another fundamental element of this system is the *Regencia Forestal*, or Forest Steward programme. Forest stewards are independent foresters working under the State's authorisation and supervision with the legal responsibility to ensure that the timber harvesting activities authorised by the state's forestry administration are carried out following defined standards, logging permits and management plans.

The third central element of this system is the contracting out to a private organisation of a major part of the public forestry administration and supervision responsibilities. The open tender organised to select this private organisation was won by the recognised Swiss-based company SGS, that in November 2002 was officially contracted by the Government of Ecuador to run the proposed outsourced National Forest Control Service. However, as known this innovative approach has encountered a strong opposition by some actors of the Ecuadorian forest sector. Loggers staged protests and a forestry industry association deposited a claim to the 'Tribunal Constitucional' (TC) of Ecuador arguing that this outsourcing of public functions was unconstitutional. Recently, the TC has in effect ruled that the contract signed with SGS was unconstitutional, so now the all effort has been halted (perhaps for ever).

This experience clearly shows how sensitive can be the '*terceirização*' of public forestry responsibilities. However, it is important to stress that these difficulties don't concern *Vigilancia Verde* and the *Regencia Forestal*, so despite the recent events in Ecuador it would be important to openly consider them in the current effort ongoing in Mozambique. More information can be found at <http://www.ambiente.gov.ec/AMBIENTE/actividades/vigilverde%5Cindex.html>

Sources: ITTO, 2002; The Economist, 2003.

Box 6. The Bolivian experience.

This box does not refer to a specific past recommendation. But it was prepared because the Bolivian experience – widely considered one of the most successful cases in reforming the forest sector and promoting sustainable forest management – has several elements that appear relevant also for Mozambique.

Insulating the office of the head of the public forest administration from narrow interests and political interference

In Bolivia, the decisions of the head of the forestry administration were often guided by political pressure from the ruling party or by private interests channelled through the Minister, who had great unaccountable discretion to remove this person from its position. Not surprisingly, this happened quiet often, with his substitution by a more 'collaborative' official. Sector reforms changed all this. The new legal framework dictates that the head of the public forest administration must be appointed by the President who, in turn, can only chose from a list of three names submitted by the Congress. The forest chief is appointed for a period of six years thus not coinciding with the political cycle and presidential period, which last five years. This strategy largely insulates the forest administration from the influence of narrow interests and political pressures that before facilitated illegal abuses of public duties.

Box 6. The Bolivian experience (cont.).

Reforming disclosure rules in Bolivia

The public forest administration (*Superintendencia Forestal*) is required to consult with various stakeholder groups of the civil society and decisions are no longer within the exclusive discretion of bureaucrats, but are instead done under public scrutiny and with public participation. Thus, open auctions will govern the allocation of all new concession contracts. Open auctions also rule the sale of confiscated forest products and equipment. Moreover, the *Superintendencia* must submit reports to the government twice a year, hold public hearings once a year to explain work carried out, and provide an opportunity for the public to raise questions about performance. Any citizen can freely request copies of official documents. Likewise, the Ministry of Sustainable Development can modify regulations under its jurisdiction (technical regulations) only if this is done in consultation with the interested parties through public hearings.

Promoting certification as a tool to ensure greater law compliance

Bolivia is the tropical country with the largest area of certified forests, reaching about a million hectares in only a few years. What explains this remarkable result? First, when it was clear that the government was going to enforce forest management plans, the relative coincidence between these plans and the requirements of certification apparently contributed to the expansion of the area under certified forests. Another element has been an important incentive established by the 1996 forest law, according to which certified forests are exempt from government forest audits, making it desirable for timber managers. Some concessionaires and entrepreneurs have indicated that they prefer to deal with an independent certifying firm rather than with the government bureaucracy. At the same time, independent certification is beneficial to the public forest administration because it liberates scarce resources that otherwise would have to be dedicated to monitoring and controlling the application of the law. This win-win situation goes a long way in explaining the rapid spread of certification in Bolivia. More information can be found at the following sites:

- 1) <http://www.forest-trends.org/whoweare/pdf/BoliviaEspa%F1ol.pdf> in Spanish;
- 2) <http://216.239.39.104/custom?q=cache:IAEDLPloYV4J:www.forest-trends.org/whoweare/pdf/BoliviaEnglish.pdf+Bolivia&hl=es&ie=UTF-8> in English.

Source: Contreras-Hermosilla, 2002.

This brief review of the international experience clearly suggests there is a wide range of political options that can be used to improve governance in the forest sector. But an important concern is that several of the experiences described imply deep political, legal and institutional reforms. Mozambique has already accomplished a remarkable policy and legal reform process, so the examples that perhaps should receive more attention inside the current TCP project are those concerning operative policy instruments (like *Vigilancia Verde* and independent monitoring).

10. Final recommendations

The Mozambican forest sector faces several problems. Some argue that illegal logging and trade is not the most severe and important one. However, only taking into account the loss of roundwood stumpage fees, estimated in US\$3-5 million per year and US\$22-36 million in discounted NPV terms, it appears that there is a clear case of national self-interest in tackling this issue.

The following are some final recommendations for the ongoing DNFFB-FAO TCP project to improve forest and wildlife law compliance:

1) On-the-ground assessments – Field monitoring is essential to document the existence and scale of illegal operations, to highlight where enforcement is most needed, and to monitor progress in addressing the problem. Improving the capacity to carry out effective field monitoring activities should be regarded as one of the most important objectives of the new forest law compliance strategy that is being prepared.

This should be based on three central elements:

- adequate training of staff involved in field monitoring;
- adequate logistic support (transport, maps, GPS, cameras, etc.);
- the use of remote-sensing tools such as aerial photographs and different types of satellite imagery.

2) Log-tracking system – Complementing ground monitoring with the implementation of a log-tracking system (as the one suggested by Barne, 2001) would offer the opportunity to tackle the problem on a more comprehensive basis. One important concern when recommending two simultaneous instruments is the availability of sufficient financial resources. This is absolutely central. Testing on a small-scale basis and if necessary sequencing over a reasonable period of time (avoiding simultaneous start) are key issues.

3) Partnerships with other stakeholder groups – To improve the effectiveness of roadside checkpoints, mobile patrols and field surveys it is important to analyse the possibility to form solid partnerships with other stakeholder groups interested in improving forest and wildlife law compliance. The experience of *Vigilância Verde* in Ecuador could be explored as an interesting example.

4) Control of exports – The results of Table 2 (in Section 2) suggests that there may be some weaknesses in the current control of timber products exports. Further research is needed to understand this issue and to suggest possible remedies. Clearly, this must be done in close partnership and under the leadership on the customs authorities.

5) Community involvement – As already widely acknowledged, to enhance the participation of local communities in forest and wildlife law enforcement it is important to prepare the legal instruments that will define the functions of the community level institutions (*Conselhos Locais de Gestão de Recursos Florestais e Faunísticos*) created by the new legislation. These institutions could have a central role in organizing and supporting local forest and wildlife law enforcement. They could be in charge of (i)

training and monitoring the work of the *fiscais comunitarios*, (ii) monitoring the payment of fines and ensuring that the 50% of their amount is redistributed among the people involved in detecting the illegal act, and (iii) that the 20% of the tax revenue derived from the exploitation of forest or wildlife resources is reinvested transparently at local level. There are ongoing efforts working on this, so this recommendation only aims at highlighting their importance.

6) Training plan – The new forest law compliance strategy should include a specific training plan aimed at different stakeholders (*fiscais*, timber managers, logging crews, police, judiciary personnel, DNFFB and SPFFB employees, customs authorities, communities, NGO members, forest professionals, etc.). The possible topics will depend on specific diagnostics, but they should probably include administrative procedures for simple licenses and concessions, forest and wildlife legislation, forest and wildlife crimes, professional ethics, and judicial procedures.

7) Certification – Forest certification is an instrument that could strengthen the contribution of companies to forest and wildlife law enforcement. A first contribution is its requirement to maintain mutually beneficial relationships between companies and communities. Secondly, as shown by the Bolivian experience (Box 6) certification can act as an important incentive to legality when it is used as an indicator to reduce the transaction costs of ‘good’ forest management, while at the same time diminishing the work load of the forestry authority that in this way can concentrate its efforts on other priorities. Perhaps certification could do even more by linking (through ‘conditions’ and ‘recommendations’) the achievement and maintenance of this recognition to the accomplishment of specific measures against illegal logging and poaching. The ongoing effort to produce the FSC National Standards for Mozambique represents the arena where such possibility could be further discussed.

8) Supporting legal charcoal production – Improving the effectiveness of roadside checkpoints should surely contribute to controlling the informal trade of charcoal. To reduce its unregulated production it would be important to adopt instruments that could create incentives (and promote some level of investment) in legal charcoal production. The allocation of concessions specifically for charcoal production could be a valid instrument to consider. The involvement of communities in these new concessions should be a priority.

As a final consideration it is worthwhile underlining the importance of the AFLEG Ministerial Declaration recently signed in Cameroon. This Declaration represents a great opportunity for improving forest law enforcement. It provides the momentum and backing necessary to act. It also indicates a wide list of priorities. The TCP project “Support for the Implementation of the Forest and Wildlife Legislation in Mozambique” could hardly have started in a more appropriate moment. It can help provide the operational mechanisms for implementing the commitments derived from this continental Declaration.

REFERENCES

- Barne, J. 2001. *O cumprimento das regulações florestais em Moçambique*. DNFFB, Maputo, Moçambique. Unpublished report.
- Bila, A. and J. Salmi, 2003. *Fiscalização de Florestas e Fauna Bravia em Moçambique. Passado, Presente y Acções para Melhoramento*. DNFFB, Maputo, Moçambique.
- Brouwer, R and M. Falcão, undated. *What about the consumers...? Results of a consumers' survey in Maputo with additional input from Tanzania and Zambia*. UEM, Maputo, Moçambique.
- Contreras-Hermosilla, A. 2002. *Emerging practices for combating illegal activities in the forest sector*. World Bank, Washington DC, USA.
- DNFFB, 1999. *Política e Estratégia de Desenvolvimento de Florestas e Fauna Bravia*. DNFFB, Maputo, Moçambique.
- DNFFB, 2001. *Relatório Estatístico Anual 2000*. DNFFB, Maputo, Moçambique.
- DNFFB, 2002. *Relatório Estatístico Anual 2001*. DNFFB, Maputo, Moçambique.
- EFI, 1999. *Country Reports – Mozambique: Current forest resource and market profile*. EFI, Joensuu, Finland.
- Eureka, 2001. *Inquérito á Industria Madeireira*. DNFFB, Maputo, Moçambique. Unpublished report.
- FAO, 1999(?). *Commercial timber harvesting in the natural forests of Mozambique*. Forest Harvesting Case Study 18, FAO, Rome, Italy.
- FAO, 2002. *Support for the Implementation of the Forest and Wildlife Legislation in Mozambique*. FAO, Rome, Italy. Unpublished project document.
- FAO, 2003. *Mozambique country information*. FAO (<http://www.fao.org/fo>), Rome, Italy.
- Global Witness, 2003. *A proposal to investigate the expansion of Independent Monitoring in support of forest law enforcement*. Global Witness, London, UK. Unpublished draft proposal.
- ITTO, 2002. *Ecuador's new approach to enforcing forest law*. Tropical Forest Update, Volume 12, No. 1, ITTO, Yokohama, Japan.
- Kaimowitz, D. 2003. *Disturb forests for their own good*. CIFOR-POLEX Electronic Listserv, CIFOR, Bogor, Indonesia.
- Landis, S. 2002. *Carving Woods in Mozambique. Developing an Approach to Sustainable Management*. Aid to Artisans, Hartford, CT, USA. Unpublished report.
- Johnson, S. 2002. *Documenting the undocumented*. Tropical Forest Update, Volume 12, Number 1, ITTO, Yokohama, Japan.

- Melle, A. and D. Beck, 2001. *The U.S. Forest Service Approach to Forest Law Enforcement*. United States Forest Service, USDA, Washington, D.C., USA.
- Mussengue, J.J. 2001. *Documento a ser apresentado no Seminário Nacional de Fiscalização de Florestas y Fauna Bravia*. DNFFB, Maputo, Moçambique. Unpublished report.
- Mussengue, J.J. 2002. *Resultados da Investigação sobre o Memo 013/DEF*. DNFFB, Maputo, Moçambique. Unpublished report.
- Nhantumbo, I. and D. Macqueen. 2003. *Direitos das Comunidades. Realidade ou Retórica*. DNFFB, Maputo, Moçambique.
- Rytkönen, A. 2002. *Revenues from Forests of Mozambique*. DNFFB, Maputo, Moçambique. Unpublished report.
- Reyes, 2003. *An Evaluation of Commercial Logging in Mozambique*. Collaborative for Development Action, Cambridge, MA, USA.
- Richards, M.; Del Gatto, F.; Alcócer López, G. 2003. *The Cost Of Illegal Logging In Central America. How Much Are The Honduran And Nicaraguan Governments Losing?* ODI, London, UK.
- Richards, M.; Wells, A.; Del Gatto, F.; Contreras-Hermosilla, A.; Pommier, D. Forthcoming. *Impacts of illegality and barriers to legality: a diagnostic analysis of illegal logging in Honduras and Nicaragua*. International Forestry Review, Commonwealth Forestry Association, Oxford, UK.
- Saket, M. 1994. *Report on Updating of the Exploratory National Forest Inventory*. FAO-DNFFB, Maputo, Moçambique.
- Smith, W. 2002. *The global problem of illegal logging*. Tropical Forest Update, Volume 12, Number 1, ITTO, Yokohama, Japan.
- TCT, 2003. *Mozambique Timber Industry – An Industry in Crisis*. TCT Indústrias Florestas, Beira, Moçambique. Unpublished report.
- The Economist, 2003. *Cut down. The courts versus the rainforest*. The Economist print edition, Oct 30th 2003, London, UK.

Annex 1. Brief Summary of Daily Activities

Day	Activity
September 7 – 9	<ul style="list-style-type: none"> ▪ Travel from Honduras to Mozambique
September 10	<ul style="list-style-type: none"> ▪ Morning: meeting with project team (Rucay Aly Danto, Pedro Vicente, Yolanda Arcelina and Eduardo Mansur) ▪ Afternoon: visit to two sawmills and a road checkpoint in/around Maputo
September 11	<ul style="list-style-type: none"> ▪ Morning: participation in a community meeting in Goba, Maputo Province ▪ Afternoon: meetings with Adolfo Bila and Pedro Vicente
September 12	<ul style="list-style-type: none"> ▪ Morning: participation to presentation of NFP Facility ▪ Afternoon: meeting with Adolfo Bila and literature review
September 13	<ul style="list-style-type: none"> ▪ Literature review
September 14 - 16	<ul style="list-style-type: none"> ▪ Visit to Sofala Province (visits and meetings in Beira, Inhaminga and Gorongosa)
September 17	<ul style="list-style-type: none"> ▪ Morning: meetings with Rucay Aly Danto, Adolfo Bila and Pedro Vicente ▪ Afternoon: other meetings in the DNFFB and literature review
September 18	<ul style="list-style-type: none"> ▪ Morning: planning with Pedro Vicente of monitoring activities for Maputo Province ▪ Afternoon: literature review
September 19	<ul style="list-style-type: none"> ▪ Preparation first draft project workplan
September 20	<ul style="list-style-type: none"> ▪ Literature review
September 21-24	<ul style="list-style-type: none"> ▪ Visit to Cabo Delgado Province (visits and meetings in Pemba, Macímboa da Praia, Mueda y Montepuez)
September 25	<ul style="list-style-type: none"> ▪ National festivity (literature review)
September 26	<ul style="list-style-type: none"> ▪ Morning: discussion with Rucay Aly Danto and Pedro Vicente of first draft project workplan ▪ Afternoon: changes and additions draft project workplan
September 27-28	<ul style="list-style-type: none"> ▪ Preparation first draft discussion document
September 29	<ul style="list-style-type: none"> ▪ Morning: meetings in the DNFFB ▪ Afternoon: revision draft discussion document, preparation PowerPoint presentations for draft workplan and draft discussion document
September 30	<ul style="list-style-type: none"> ▪ Morning: presentation to DNFFB staff of the first two mission outputs: draft project workplan and draft discussion document ▪ Afternoon: visit to UICN office in Maputo for literature research
October 1	<ul style="list-style-type: none"> ▪ Morning: final meeting with Rucay Aly Danto, Adolfo Bila and Pedro Vicente to discuss FAO comments to project workplan; meeting with Peter Vandor (FAO Representative); meeting with Yolanda Arcelina (FAO Officer) ▪ Afternoon: departure for return to Honduras

Annex 2. List of People Interviewed

Name	Position
Addiz, Simão	Extensionist, DDADR Mocímboa da Praia, Cabo Delgado
Aly Dauto, Rucai	Coordinator, Project FAO TCP/MOZ/2904 (A), Maputo
da Silva, Olima	Officer DNFFB, Maputo
Antonio, Pedro	Director, DDADR Cheringoma, Sofala
Arcelina, Yolanda	FAO Officer, Maputo
Bechane, Sabudo	Head Fiscalização, SPFFB, Sofala
Bila, Adolfo	Consultant, Project FAO TCP/MOZ/2904 (A), Maputo
Bonito, Sensão	Officer DNFFB, Maputo
Cuco, Arlito	Director DNFFB, Maputo
Davies, Carrie	Administrator, TCT Industrias Florestais, Lta. – Dalmann Furniture, Sofala
Faloma, Marcelino	FAO-DNFFB project coordinator, Maputo
Faque, Dade	Administrative assistant, Centro de Formação de Fiscais, Parque Nacional Gorongosa, Sofala
Félix, José João	Head FFB, DDADR Gorongosa, Sofala
Fernando, Antonio Macuire	Inspector (<i>Fiscal</i>), Parque Nacional Gorongosa, MITUR, Sofala
Gabriel, Narciso	President AIMCAD, Cabo Delgado
Jeque, Rita	Officer DNFFB, Maputo
Magane, Samiro	Head, Departamento Fauna Bravia, DNFFB, Maputo
Martins, Omar	Head FFB, DDADR Muanza, Sofala
Mudumane, Adelino	Manager, Madeiras Comercio e Industrias Lda. (MCI), Maputo
Nakala, Mandrate	Officer DNFFB, Maputo
Paulo, Geraldo	Head Fiscalização, Mocímboa da Praia, SPFFB, Cabo Delgado
Penicela, Fernando	Head, DDADR Mocímboa da Praia, Cabo Delgado
Pechisso, Darlindo	Head, SPFFB, Cabo Delgado
Puna, Nilza	Officer DNFFB, Maputo
Reichelt, Brit	Coordinador, Project WWF - Parque Nacional Gorongosa, Sofala
Saguete, José Paulo	Director, DDADR Gorongosa, Sofala
Semo, Victor	Extensionist, Associação de Aiuda Mutua ORAM, Gorongosa, Sofala
Vandor, Peter	FAO Representative, Maputo
Vasco, Atanasio	Head Fiscalização, SPFFB, Cabo Delgado
Vicente, Pedro	Supervisor Fiscalização, DNFFB, Maputo
Wele, Rogelio	Inspector (<i>Fiscal</i>), Posto Fiscalização Michafutene, SPFFB, Maputo
White, Graeme	Owner/Manager, TCT Industrias Florestais, Lta. – Dalmann Furniture, Sofala
White, James	Concessionaire, Concessõe TCT Catapu, Sofala
White, Pat	Concessionaire, Concessõe TCT Catapu, Sofala
Zengano, Marmela Estinde	Inspector (<i>Fiscal</i>), Parque Nacional Gorongosa, MITUR, Sofala
Zolho, Roberto	Administrator, Parque Nacional Gorongosa, MITUR, Sofala

Annex 3. Terms of Reference

International Consultant in Illegal Forestry and Law enforcement (4 weeks in two missions)

Under the general supervision of the Chief, FONP; in close collaboration with the officers at LEGN, RAFO, SAFO and FAO Representation in Mozambique; in direct contact with the national director of forests and wildlife of Mozambique, the national project coordinator, and other project, DNFFB and SPFFB staff, and in collaboration with the relevant working groups of the Forest Forum, the Consultant will:

First mission (two weeks):

1. Make a thorough analysis of forest crimes, especially illegal logging, corruption and poaching of precious and/or endangered trees and animal species in Mozambique;
2. Estimate the socio-economic and environmental impacts of illegal forestry activities in the country;
3. Study the existing law enforcement system, including the provisions of the forest and wildlife legislation with regard to the supervision and control of logging, transport of logs, use and conservation of other forestry and wildlife products and resources;
4. Analyse inadequacies in the forests and wildlife law implementation, with emphasis in timber concession areas, simple licenses for logging, transport permits, hunting concessions and licenses;
5. Examine how the various stakeholders, especially local communities might be involved in law enforcement;
6. Make available information about similar processes of participatory law enforcement in forestry and wildlife in other countries;
7. Assist the project coordination in the development of the inception phase, including support in the formulation of the action plan for project implementation;
8. Report his/her findings during an Inception Workshop.
9. Submit a mission report.