

FOREST FINANCE

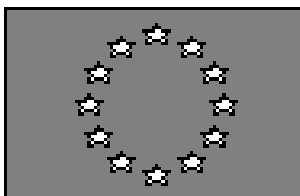
*The forest revenue system and government expenditure on forestry in Sudan*

A paper prepared for the FAO work-programme component on financing sustainable forest management

Working paper: FSFM/WP/14



Food and Agriculture Organization of the United Nations



EUROPEAN COMMISSION  
DG VIII  
DEVELOPMENT

# **THE FOREST REVENUE SYSTEM AND GOVERNMENT EXPENDITURE ON FORESTRY IN SUDAN**

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September 2001

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## **INFORMATION NOTE ON THE FAO PROGRAMME ON FOREST FINANCE**

It is generally accepted that financial considerations represent one of the most important factors that can have an impact on the implementation of sustainable forest management. With this in mind, the FAO Forestry Department has implemented a programme of work on forest finance, to examine how government policies (in forestry and other sectors) affect financing in the forestry sector and the consequences of such policies for sustainable forest management.

One of the most important ways in which governments can have an impact on financing in the forestry sector is through the fiscal policies that they implement within the sector. Where forests are owned or managed by the state, the way in which charges for the use of forest resources are determined and implemented can have a major impact on the scale and types of investment in the sector. A vast literature has developed over the last 30 years examining this topic. Other fiscal policies, such as taxes and subsidies both within and outside the sector, can also have a significant impact on the forestry sector.

The purpose of this work will be to review the impact of current fiscal policies on sustainable forest management, along with other related policies, such as land tenure, which have an impact on forest financing. However, the work will attempt to go beyond simple financial analyses of current policies (which have largely been done before) to examine the broader social, institutional and political aspects of policy reform. It is hoped that this work will assist forestry administrations to identify practical ways in which they can revise their fiscal policies, so that they can more easily pursue the goal of sustainable forest management.

This work has been funded through the FAO Regular Programme and the EC Tropical Forestry Budget Line (FAO-EC Partnership Project on Sustainable Forest Management in African ACP Countries). A large part of the work has been produced by national consultants and institutions, with the supervision and assistance of FAO.

Working papers are being produced and issued as they arrive. Some effort at uniformity of presentation is being attempted, but the contents are only minimally edited for style or clarity. FAO welcomes from readers any information that they feel would be useful for this work. Such material can be mailed to the contacts given below, from whom further copies of these working papers, as well as more information about this programme of work, can be obtained:

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**LIST OF ABBREVIATIONS USED**

FNC	Forests National Corporation
FPCS	Forest products consumption survey
GDP	Gross domestic product
NFRI	National forest resources inventory
GAC	Gum Arabic Company
IDA	International Development Agency
FAO	Food and Agriculture Organization of the United Nations
CNS	Comprehensive National Strategy
Ha	Hectares
Ft3	Cubic feet
SKAP	Southern Kassala Agriculture Development Project
WB	World Bank
Feddan is equivalent to 0.42 hectare	
Kuntar is equivalent to approximately 45kg)	

## EXECUTIVE SUMMARY

Charges paid to the forest products are very low compared to the cost required for sustaining them. Despite the fact that, the revenue generated from the unreserved natural forests (royalty) represents high percentages of the forest annual revenues, yet it does not compensate for the replacement cost, neither explains the relatively high prices in the local markets.

The FNC, the former forest department is one of the oldest departments in the country established in 1902 to cater for the sustainability of the forest resources in the country. Given the fact that, the FNC which is self-financing agency was established on the assumption the World Bank will provide financial support (69 million US dollars) a theme, which has not taken place and the newly established FNC, was left with its traditional revenues to run the forestry business in Sudan. The situation was becoming worst since 1996 when the decline in foreign aid was witnessed. Access to foreign loan or grants for the sector can alter the situation as it will secure the equipments, facilities and the capacity building necessary for development and sustainability of the forest resources of Sudan.

Later, after the development and adoption of the federal system in the country, the total revenues generated from the royalty collections were agreed to be shared between the FNC and the newly established States. Despite the fact that the FNC percentage is allocated for the development and sustainability issues but it become apparently, the sustainability of the forest resources of the country is beyond the financial capability of the FNC taken into account the decline in the potentials of forest revenues collections due to the reasons stated above and further more to the introduction of energy alternatives, and the declining trend of the forest resources of the country as elaborated by the National forest Resources Inventory (NFRI).

Although the FNC has a lot of experiences regarding the collection of its revenues and monitoring of its use to develop the forest resources but a comparison between the market prices and charges paid for the forest products indicated a wide gap and a need for a study to investigate and review the methods, rates, etc to manipulate the revenues and hence ensure sustainability of the forest resources of Sudan. For the effective revenue system to be in place, all the revenues generated from all forest products should be 100% deposited in account under the responsibility of the forest administration at the federal or state levels. The royalty rates and charges from other forest products should be increased substantially taking into consideration the current market prices and other costs i.e. cost of production, transportation and replacement costs and marginal profit to sustain the resources.

The collection of forest revenue in Sudan is based on annual fixed standard charges comprises all forest products which are set annually by the FNC authorities and approved by the respective ministries.

## COUNTRY BACKGROUND

Sudan is a vast country with an area of 2.5 million square kilometers. The most salient geographical feature of the country is the Nile valley. There are several outcrops of basement rock in Sudan. The most significant elevations are those of the Red Sea Hills in eastern Sudan, Jebel Marra in the west and the Imatong, Didinga and Donotona Hills in southern Sudan. All these elevations carry interesting and unique vegetation, which include important economical soft tree species.

The natural vegetation of Sudan plain represents a Gradient, from north to south following the rainfall isohyets. It begins with the desert in the north and ends with the semi-tropical vegetation in the south.

Sudan's total population in 1993 was 24.94 million of which 25.2% were urban. Nearly 8.7% of the total population resided in the capital. The total population grows at an average of 2.8% per year. The population of Sudan is predominantly rural and lives off the land resources. Rainfed agriculture, woodcutting internal trade in forest products and nomadic and semi-nomadic livestock production in the rangeland, are the main forms of employment in rural Sudan.

The Forests National Corporation (FNC) has estimated in a 1995 study that forestry products contribute some 12% to the GDP. Forestry also plays a far more important role in the national economy apart from that reflected in the national accounts.

This role is to be attributed to the forestry contribution to Sudan energy needs, which are 80% biomass-based. Forestry products have a substantial contribution to the internal market. The value of this market has not yet been adequately evaluated. Forest products also contribute to Sudan's balance of payments. Exports of non-wood products in 1994 have fetched 2.25% of the foreign exchange earnings. Internally, Sudan's forests produced nearly all the woody materials required for construction purposes. Very little softwood imports are made.

## 1 INTRODUCTION

Forest charges vary by the base upon which they are levied e.g. tree species, volume, area, value ... etc. The objective of the forestry revenue system is to:

- A. Encourage sustainable forests management and production, which gives relative protection to the most fragile areas.
- B. Promote production efficiently in the forestry sector.
- C. Limit the impact of rising prices on the poor.
- D. Provide incentive for the involvement of local people to promote popular participatory approaches in forestry.
- E. Raise revenue for the FNC to cover its expenses and make a marginal profit to sustain its activities.

In Sudan, a number of forest charges have been developed and levied. The forest charges in Sudan can be classified according to the nature of the forest resources into two main categories as follows:

### A. Royalty

Forest fees paid for the collection of various forest products from natural unreserved forests. This has been put into practice since 1939, when the royalty ordinance of 1939 was issued. The objective of the royalty ordinance has been to concentrate the tree cuttings inside the reserved forests, which are assumed to be managed on sustainable basis and to reduce the pressure on unreserved natural forests of the country to sustain them.

The revenue generated from royalty collection comprises more than 70 forest products that can be grouped into the following four categories:

- A.1 Charcoal & firewood.
- A.2 Saw logs.
- A.3 Building materials.
- A.4 Non-wood products.
- A.5 Other charges.

### B. Charges of forest products from reserved forests

These are forest revenues collected from selling forest products at the reserved forest gate price. Based on the management objectives of the reserved forests, these forest products can be grouped into the main four categories as follows:

- B.1 Firewood
- B.2 Railway sleepers & other sawn timber (Government saw mills)
- B.3 Eucalyptus building poles
- B.4 Round poles for construction & transmission.
- B.5 Saw logs for forest industries (Private sawmills).

### C. Forest Support Fees

Which is an extra charge established by the FNC to overcome the problems of financial shortages and restricted financial regulations. It was meant to support the rehabilitation of the reserved forests. Later, it has been used to support the main budget headings like afforestation protection in addition to the other budget items.

It comprises all forest products either from outside the reserves or from within the government reserved forest. Forest support charges are not applicable to the forest products produced from community, private or from other government institution forests.

Now the fees are collected in all states and deposited in the FNC accounts. Collected fees are normally distributed among the FNC headquarter and the States forest administration with 50% for each. The sums collected are not really recorded in the reports as not the case of other forest charges, but could be determined from the account records.

Other forest charges presently include, annual land leased for both gum tapping and cultivation of agriculture and other forest crops, license fees, charges on processed forest products, export charges on forest products, fees on service provided however, the methods and rates of these charges need to be investigated and reviewed.

**Table 1 C.1 Forest supports fees comparison (1997-2001) for selected forest products in Sudanese Dinars**

Site origin	#	Forest Product	Unit	1997	1998	1999	2000	2001	Remarks
Unreserved natural forests	01	Charcoal	40kg	16.5	n.a.	35	35	35	<i>Acacia seyal, Acacia melifera, Albizi a amara</i>
-		Charcoal	32kg	-	n.a.	15	21	21	<i>Prosopis species</i>
-	02	Firewood	Stacked m3	64	n.a.	113	138	138	<i>Acacia nilotca</i>
-	03	Firewood	Camel	13	n.a.	28	37	37	<i>Acacia seyal, Acacia melifera, Albizi a amara</i>
-	04	Firewood	Donkey	6.5	n.a.	13	17	17	<i>Acacia seyal, Acacia melifera, Albizi a amara</i>
-	05	Brick kilns	Forest wood for 1000 bricks	6.5	n.a.	61	80	80	

Notes: One US dollar is equivalent to 258 Sudanese Dinars in 2001  
n.a. = not available

**Table 2 C.2 Forest supports fees comparison (1997-2001) for selected forest products in Sudanese Dinars**

Site origin	Forest Product	Unit	1997	1998	1999	2000	2001	Remarks
Reserved forests, natural or plantations	Saw logs	Ft3		n.a.				Valuable timber
	Group A		45		29.3	38	38	
	Group B		30		26.3	34	34	
	Group C		10.5		17.6	23	23	

n.a. = not available

**Table 3 A.1 Royalty rates comparison (1997-2001) in Sudanese Dinars****A.1 Charcoal and firewood**

#	Forest Product	Unit	1997	1998	1999	2000	2001	Remarks
01	Charcoal	40kg	80	-	140	182	255	<i>Acacia seyal, Acacia melifera, Albizia amara</i>
-	Charcoal	32kg	-	44.1	63	82	107	<i>Prosopis species</i>
02	Firewood	Stacked m3	260	338	455	592	770	<i>Acacia nilotca</i>
03	Firewood	Camel	65	84.5	114.1	148	163	<i>Acacia seyal, Acacia melifera, Albizia amara</i>
04	Firewood	Donkey	30	39	52.5	68	75	<i>Acacia seyal, Acacia melifera, Albizia amara</i>
05	Brick kilns	Forest wood for 1000 bricks	140	182	245	319	415	

Note: One US dollar is equivalent to 258 Sudanese Dinars in 2001

From the table above the following observations could be recognized:

1. There is almost a constant annual increase by 30% of the royalty charges every year.
2. The annual declared royalty charges are standard for the whole country. There is uniformity in the annual approved royalty despite the fact that, the NFRI have shown that, with the exception of both Kordofan and Darfur, the other remaining four regions in Northern Sudan have a deficit in the growing stock. However, there are variations in the prices of these two forest products in the different local markets which is attributed mainly to the market demand for tree species, production and transportation costs, as the production sites are generally located in remote areas.
3. Tree species, product weight and quality are among the factors influencing the royalty rates.
4. Lack of a proper stumpage fee and royalty determination system.

5. A value of 13.7%, 17.9% and 19.6% should be added to the value of charges for 40kg sack of charcoal, stacked m3 of firewood and 32 kg charcoal sacks of prosoyis as forest support fees.

**Table 4 A.2 Saw logs**

#	Forest Product	Unit	1997	1998	1999	2000	2001	Remarks
01	Big logs of circumference greater than 127cm at the middle of the log	One meter length	250	325	437.5	569	740	Valuable merchantable tree species <i>Khaya</i> sp., <i>Tectona grandis</i> , & other economically valuable tree species
-	Medium logs of circumference between 98-127cm at the middle of the log	One meter length	200	260	320	455	592	Valuable merchantable tree species <i>Khaya</i> sp., <i>Tectona grandis</i> , & other economically valuable tree species
-	Small logs of circumference between 63-97cm at the middle of the log	One meter length	150	195	262.5	341	443	Valuable merchantable tree species <i>Khaya</i> sp., <i>Tectona grandis</i> , & other economically valuable tree species
02	Big logs of circumference greater than 127cm at the middle of the log	One meter length	200	260	350	455	592	Species like, <i>Sterculia setigera</i> , <i>Daniellia oliveri</i> , <i>Terminalia</i> sp., <i>Amblygonocarpus andongensis</i> & other tree species
-	Medium logs of circumference between 98-127cm at the middle of the log	One meter length	127.5	165.75	223.3	290	377	-
-	Small logs of circumference between 63-97cm at the middle of the log	One meter length	90	117	157.5	205	267	-
03	Big logs of circumference greater than 127cm at the middle of the log	One meter length	112.5	146.25	197.4	257	334	Big logs of <i>Acacia nilotica</i> & other tree species*
-	Medium logs of circumference between 98-127cm at the middle of the log	One meter length	96	124.8	168	218	283	Medium logs of <i>Acacia nilotica</i> & other tree species
-	Small logs of circumference between 63-97cm at the middle of the log	One meter length	67.5	87.75	118.3	154	200	Relatively small logs of <i>Acacia nilotica</i> & other tree species

From the table above the following observations were noted:

1. There is fixed annual royalty charges standard for the whole country.
2. The-royalty annual increases continue with a similar previous percentage (30%).
3. The timber quality, market demand are the main factors behind steadily increase in the annual royalty rates.

4. The recovery costs were not taken into account, and the royalty annual rates are far behind the true market value.
5. Lack of a proper stumpage fee and royalty determination system.

**Table 5 A.3 Building Materials**

#	Forest Product	Unit	1997	1998	1999	2000	2001	Remarks
01	Merig	One meter length	130	n.a.	227.5	296	740	<i>Hyphaene thebaica</i> merig of 5 mt length
-	Merig	One meter length	130	n.a.	227.5	296	740	<i>Hyphaene thebaica</i> merig of less than 5 mt length
-	Merig	One meter length	90	n.a.	157.5	205	267	<i>Acacia nilotica</i> merig of less than 5 mt length
-	Merig	One meter length	20	n.a.	35	455	592	<i>Eucalyptus</i> sp. Merig of 5 mt length
-	Merig	One meter length	20	n.a.	35	455	592	<i>Eucalyptus</i> sp. Merig of less than 5 mt length
-	Heavy poles	One meter length	20	n.a.	35	455	592	1 <sup>st</sup> class <i>Eucalyptus</i> poles
-	Medium poles	One meter length	10	n.a.	17.5	23	30	2 <sup>nd</sup> class <i>Eucalyptus</i> poles
-	Medium poles	One meter length	30	n.a.	52.5	68	88	<i>Acacia nilotica</i> medium poles
-	Sawn poles	One meter length	30	n.a.	52.5	68	170	Sawn <i>Hyphaene thebaica</i> poles
-	Different type of poles	One meter length	-	n.a.	42	55	77	<i>Anogeisus leiocarpus</i> & other poles
-	Sawn poles	One meter length	30	n.a.	52.5	68	95	<i>Pterocarpus lucens</i> sawn poles
-	Forked poles	1	65	n.a.	114.1	148	163	-
-	Bamboo	1000	1700	n.a.	2975	3868	5028	-
-	Split rafters (falakab)	100	65	n.a.	114.1	148	163	-
-	Fence posts	1	20	n.a.	35	455	501	<i>Acacia nilotica</i> 1.5 mt fence posts
-	Fence posts	1	20	n.a.	35	455	501	-
-	Fence posts	1	20	n.a.	28	36	40	<i>Prosopis</i> sp. Fence posts

n.a. = not available

#### A.4 Non-wood products

The most important non-wood forest product in Sudan is Gum Arabic, which is an exudate of *Acacia Senegal* known as gum hashab and *Acacia Seyal* known as gum talh. Gum Arabic is the second export commodity and hard currency earner. In this respect Sudan commands over 80% of the world's gum Arabic production and trade. It plays an important role as a major source of foreign exchange, accounting for about 13.6% of annual export income. Over the years, Sudan developed a complete protocol of gum Arabic husbandry processing and marketing. Until recently the Gum Arabic company was a sole government agency monopolized the gum Arabic trade in Sudan. It was agreed long time ago, the GAC pay the royalty fee of equivalent 5% of the floor price declared annually by the ministry of commerce and trade to the FNC. The floor price is the annual minimum sale price fixed by the government. The gum charges paid to the FNC is assumed to compensate for the cost of forest extension services, seedlings production, contribution to the Gum Arabic planting program and technical backup to the Gum Arabic producers. Administratively it is quite sensible and convenient to collect the royalty from the company rather than many producers.

Intermediate sellers (merchants) are responsible for cleaning, primary grading and transporting to the Gum markets. The GAC covers direct charges of final cleaning, processing, transport, grade specifications, marketing and export of the produce.

**Table 6 Gum Arabic Production (1995-2000)**

Year	Gum Hashab (tons)	Gum Talh (tons)	Total tons
1995	11564	5283	16847
1996	8388	5334	13722
1997	15576	6972	22584
1998	16107	4882	20989

Other non-wood forest products include:

- Gum Olibanum (frankincense) which is exuded by *Boswellia papyrifera*
- Gum Sterculia is an exude of *Sterculia setigera*
- Popular forest fruits
- Bamboo
- Honey & beeswax

- Oils:

The fruits and seeds of some species are known to contain extractable quantities of oils like *Adansonia digitata*, *Moringa olifera*, *Sclerocarya birrea*, *Sterculia setigera*, *Balanites aegyptica* and *Butyrospermum niloticum*. Most of those species are utilized for oils in Africa. But only the latter two species are used for the purpose in Sudan. The Seeds of *Balanites* contain over 50% of oil extracted by crushing the kernels.

- Fibers
- Tannin and dyes

**Table 7 A.4 Royalty Rates comparison (1997-2001) in Sudanese Dinars per kuntar for some of the non-wood products**

Forest Product	1997	1998	1999	2000	2001	Remarks
Acacia melifera seeds	260	-	455	2992	321	-
Acacia Senegal seeds	500	-	875	1138	1251	-
Gum Arabic (Hashab)	-	5%	5%	5%	5%	5% of the floor price will be paid to the FNC by th GAC
Gum (Talh) & others	-	5%	5%	5%	5%	5% of the floor price will be paid to the FNC by th GAC
Boswellia gums	65	-	114.1	148	192	<i>Boswellia papyrifera</i>
Balanites fruits	100	-	175	228	228	<i>Balanites aegyptica</i> fruits
Adansonia fruits	180	-	315	410	410	<i>Adansonia digitata</i> fruits
Tamarindus fruits	180	-	315	410	410	<i>Tamarindus indica</i> fruits
Cordia africana fruits	150	-	262.5	341	341	<i>Cordia africana</i> fruits
Gudaim fruits	120	-	210	273	273	-
Other trees fruits	-	-	140	182	182	-
Honey bees	400	-	700	910	1001	Extracted from the reserved or natural forest
Honey bees wax	200	-	315	410	451	-

One kuntar is equivalent to approximately 45kg

## A.5 Other charges

### A.5.1 Charges on other government institution forests

Government institutions like big irrigated agriculture schemes, sugar factories are charged 2% of their annual revenues generated from the sale of their annual forest products to the FNC. However, forest support charges are not applicable to forest products extracted from such forests. This is considered as a cost of technical backups, other forest services provided to these schemes.

Annex A.2 shows the total planted and potential area in Hectares of the irrigated plantations in Sudan.

### **A.5.2 Charges on community and private forests**

Charges levied on the forest products from both community and private forests are 2% of the total revenue generated from their forest product sales. This low percentage can only be justified under the spirit of the forest law of 1989, which encourage local inhabitants, officials and the investors to grow their own forests.

Annex A.1 shows the total area of the community forests in Hectares.

### **A.5.3 Other charges**

These involve all other charges that were not explained above. Such as a wide range of goods and services i.e.:

- Illicit felling, forest products produced illegally, confiscated and sold.

1. Gum tapping inside the reserved forests: - The existing practice is as follows: - Sealed bidding for defined areas within the reserved forests. In this season the average price for one feddan (0.42 hectare) is about 550 S. Dinars in Sennar State.

To define the rental cost per unit area (feddan). This is the case of some other States where 300 S. Dinars on the average announced for the unit area (feddan).

2. Production and distribution of different tree seedlings - to the different target groups is done against ascertain charge so as to cover the production cost and add a marginal profit for the sustainability of the operation. The prices are different depending on tree species and the demand for particular species.

3. Allow local people to use the forest land for other - Type of landuse against the true land value. This is an old practice particularly in the natural reserved forests where the total bare land is beyond the capacity of the FNC to regenerate them alone. Despite the fact that the minister of agriculture and forests announced for stopping the practice but it remain as an important opportunity to sustain such type of forests. The FNC experiences in Gedarif State have shown that 300 S. dinars have been paid to rent one feddan.

All these charges are officially collected and deposited in the normal FNC accounts.

## **B. Charges for forest products (reserved forests) 199 7- 2001**

### **B.1 Charges for firewood**

The FNC applies two main methods when offering timber in the reserved forests for sale. Sealed bidding is used for the production of firewood. The methods applied assumed the presence of the condition of competitive markets (many buyers and many sellers...etc). While in the case of forest products, these conditions do not apply and collaboration of buyers is very likely to take place. However, the highest price offered by the buyer for the stacked cubic meter of wood is accepted taking into consideration the last year price and the existing market price.

The long-term experiences of the FNC have shown that there were circumstances where the offered prices were rejected. Despite the fact that there are doubts about the true replacement cost and the stumpage value, but there is always a reasonable estimation for the reservation price (the price below which the FNC will not sell).

The average selling prices accepted by the FNC for fuelwood in Sennar State for the years 1998-2001 in S. Dinars are shown below.

Year	Average selling prices
1998	2300
1999	1650
2000	2250
2001	1900
2002	3700

The average selling prices do not include other charges like forest support fees

## B.2 Charges on processed products

This includes railway sleepers and wood panels. The market for railway sleepers is not competitive since there is one main seller FNC and one main buyer (Sudan Railway Corporation). This probably justifies the method of special agreements currently, adopted by the FNC. However, the FNC should have some idea on the reservation prices based on the knowledge of the cost of producing its products (including profit margins), the value of the product (willingness of buyers to pay) and the substitutes. The minimum prices are strongly dependent on the estimates obtained for the stumpage value. Therefore, every effort should be made to ensure that stumpage value is added to other cost items incurred at the sawmill. Buyer's willingness to pay can be inferred from imported prices of sleepers of comparable quality. Despite the fact that the number of buyers and sellers are greater in case of the wood panels, yet still there is a need to ensure that stumpage value is added to other cost items and the competitive prices at the local markets are taken into consideration. It was reported that, the FNC have reduced the prices of the local furniture making sawn wood by 10% of the declared prices in 2000, to be able to compete with the prices of the private sawmills and workshops.

The following table shows railway sleepers and other wood panel productions and revenues (Suki sawmills group).

Year	No. sleepers	Value in Sudanese Dinars	Wood panels/Ft3	Value in Sudanese Dinars
1993/94	27587	16,634,961	18,262	5,478,600
1994/95	22931	13,827,393	16,434	4,930,200
1997	22500	33,750,000	23,391	14,034,600
1999	23300	57,085,000	28,324	22,659,200
2000	32045	89,726,000	17,489	14,865,650

Note: One US dollar is equivalent to 258 Sudanese Dinars in 2001

**Table 8** *B.3 Eucalyptus building poles in Sudanese Dinars per piece*

Type of R. poles	1997	1998	1999	2000	2001	Current Market price (Wad medani) 2001	Current Market price (Sennar) 2001	Current Market price (Khartoum) 2001
Heavy pole (merig) grade 1	502.5	n.a.	703.5	914	1188	1500	2000	1500
Medium pole (merig) grade 2	390	n.a.	546	560	728	800	1500	1200
Medium pole (Rasas) grade 1	150	n.a.	210	273	355	500	900	800
Medium pole (Rasas) grade 2	105	n.a.	147	226	294	300	600	600
Light pole (Korki) grade 1	75	n.a.	105	137	178	150	275	300
Light pole (Korki) grade 1	52.5	n.a.	73.5	96	125	125	125	200
Forked poles grade 1	105	n.a.	147	191	248	250	250	-
Forked poles grade 2	60.2	n.a.	84.2	110	143	200	200	-
Heavy pole (amina)	401.4	n.a.	561.9	651	846	700	-	-
Fence posts grade 1	60.2	n.a.	84	131	170	150	-	-
Fence posts grade 2	50.3	n.a.	70	79	103	100	-	-

Notes: One US dollar equals to 258 Sudanese Dinars in 2001  
n.a. = not available

The Eucalyptus irrigated plantations are grown in the big agriculture schemes and sugar factories. With the exception of the plantations grown in Abdelmagid forest reserves in the Gezira State, very small areas of the riverine forests along the blue Nile occupied by Eucalyptus plantations. Therefore, Wad medani price is the good indicator for the Eucalyptus products prices as it is located in the abundance of Eucalyptus plantations.

The effect of the transportation cost is very clear in both Sennar and Khartoum prices.

The Eucalyptus building poles are used for the construction of traditional Sudanese houses, this may explain the demand for the product in small towns like Sennar located 300 kilometers south Khartoum and also justifies the high prices of the Eucalyptus products outside Khartoum.

The general FNC trend in increasing forest charges annually by 30% is holding true for all forest charges including building poles. However, additional forest support fees should be added (11.5%) to the forest charges illustrated in the table above to get the real charges of the different commodities.

**Table 9 B.4 Round poles for construction & transmission**

Group #	Type of R. poles	Unit	1997	1998	1999	2000	2001	Sennar Market price 2001	Specifications
A	Heavy to medium poles	1	-	n.a.	1000	1300	1300	2100	Circumference 24 inches in the middle of the log
-	Medium poles	1	-	n.a.	500	650	650	1100	Circumference 10-15 inches in the middle of the log
-	Light poles	1	-	n.a.	150	195	195	325	Circumference 10-15 inches in the middle of the log
B	Heavy to medium poles	1	-	n.a.	900	1170	1170	1500	Circumference 15-24 inches in the middle of the log
-	Medium poles	1	-	n.a.	500	650	650	1100	Circumference 10-15 inches in the middle of the log
-	Light poles for ked & korki	1	-	n.a.	150	195	195	250	-
C	Heavy poles	1	-	n.a.	700	910	910	1250	-
-	Medium poles	1	-	n.a.	350	455	455	500	-
-	Below medium poles	1	-	n.a.	150	195	195	250	-
-	Falakab	100	301.2	n.a.	421.5	548	548	500	-
-	Gushgush	kum	30.2	n.a.	42.2	55	55	50	-
-	Transmission poles	ft	-	n.a.	50.5	66	66	100	-

Note: One US dollar equals to 258 Sudanese Dinars in 2001

**Table 10 B.5 Saw logs for forest industries (private sawmills) per Khartoum price 2001**

Group #	Tree species	Unit	1997	1998	1999	2000	2001
01	<i>Khaya</i> , <i>Tectona</i> , <i>Pseu docedrela kotchyi</i> , <i>Diospyros mespiliformis</i> , <i>Azalia africana</i> , <i>Daniellia oliveri</i>	Ft3	-	n.a.	195	254	254
02	<i>Sterculia setigera</i> , <i>Terminalia sp.</i> , <i>Amblygonocarpus andongensis</i> , <i>Albizia aylmeri</i>	Ft3	125	n.a.	175.5	228	228
03	All other tree species not included in the above two groups	Ft3	90	n.a.	117	152	152

Note: One US dollar equals to 258 Sudanese Dinars in 2001

## **2 ADMINISTRATION OF THE FOREST REVENUE SYSTEM**

### ***2.1 The process of setting forest charges***

In Sudan, the annually fixed stumpage value or royalty is set standard for the whole country. The procedure and process of setting stumpage values, involves a lot of consultation between the FNC authorities at both central and state level. Different factors are normally taken into considerations. The cost of production, transportation cost and the tree species are the main factors that influence the market price. The market price is the main factor taken for setting the yearly forest charges in addition to other factors. However, as indicated in the Tables (A.1-A.4, B.3-B.5, the practice seems to be arbitrary and only adopted fixed annual increase for the royalties and other types of forest charges. Forest charges for the forest products either produced from the unreserved natural forests (royalty) or from the reserved forests including wood panels increased almost by 30% annually. Other forest products i.e. railway sleepers and firewood adopting different marketing methods.

The forests sector review, which was carried out by the World Bank in 1986, focussed on the stumpage price for woodfuel trees in Sudan. The review elaborated on the effect of transportation alternative costs (lorries, rails and river in addition to the method of production on the stumpage price for woodfuel, charcoal, poles and sawn wood. The FAO carried out a study on the forest revenue collection system in Sudan in May 1988.

However, in light of the arbitrary practices of setting forest charges, the revenues collected should not be expected to cover the replacement cost of the resources.

As the New Forest charges are set by the FNC authorities, it should pass through the minister of agriculture and finally be approved by the ministry of finance and economic planning.

Then, the FNC authorities widely publicize the New Forest charges to their state forest administration and other government departments concerned.

### ***2.2 Collection and monitoring of charge***

The FNC at the state and further down to the forest range level is responsible for the collection of all forest revenues. The forest charge comprises all the revenue generated from the sale of the forest products from the reserved forests and the royalties. The collection is based on the annual approved charges for all forest products and the ceiling of the revenues anticipated in the annual approved budget. A serial official receipt issued by the federal ministry of finance and economic planning is used.

Special designated committee is responsible for the monitoring of the revenues generated from the reserved forests. The committee is composed of three technicians representing the state forest administration, the government sawmill administration and the technical sector concerned. The purpose of the committee is as follows:

- a- Supervise the felling of the annual coupes and to make sure no leakage is taking place regarding the final products.
- b- Assess and sorting of final products into the government sawlogs, commercial logs and firewood.

- c- Produce a final report showing the actual products i.e. total number of government and commercial logs together with their respective volumes, the total stacked cubic meter of firewood.

The committee, then signs the final report and sends it to the concerned technical sector with copies to the state forest administration, sawmilling administration and copy to the FNC headquarter authorities. The settlement of all payments of forest products is therefore, dependant on the actual production as derived in the report of the designated committee. Then the government saw logs are transported to the sawmill yards using a way bill official form indicating the total number of logs and their respective volumes, vehicle plate... etc. The firewood is delivered to the buyer and removal permits for the transportation of products is issued. The commercial logs are normally sold to the private sawmills against prescribed forest charges.

All the revenues collected are deposited in the FNC accounts that normally opened in the government banks at the state level. The state forest administrations are only authorized to disburse some of the revenues collected to cover the approved budget items of the state forest administration and the surplus is transferred to the FNC headquarter accounts in the bank of Sudan.

The auditor general has an access to all financial books, receipts, accounts and records. He is allowed to check and compare the total amount of forest revenue generated with the amount of forest products from the official receipts.

### **2.3 *Centralized and decentralized levels of government in revenue administration***

Since 1989, the FNC is responsible for setting forest charges, revenue collection, and administration and monitoring of its use. In 1994, the government of Sudan adopted the federal system in the country. The federal system divided the country into 26 states. In 1997, the council of ministers issued the ministerial decree no. 40, which divided the forestry resources and its revenues between the central and the state governments according to the criteria stated in the decree. The recent constitution of the 1998 declared the forestry resources to be shared between the federal government (FNC) and the state governments later the ministry of federal system affairs was appointed to be responsible for dividing the forestry and the land resources between the central and the state governments. However, the rules which were set by the council of ministers regarding the division of the revenue still operating. Now, some of the state governments are receiving 40% of the total revenues generated from royalties. Other state governments created state forest administration fully responsible to the state ministry of agriculture. They are fully responsible of the revenues generated from their forest resources. There is a lack of uniformity in the practice of devolution of power and responsibilities which contribute negatively to the hanging issues of sustainability as the revenues collected or the percentages received by the state governments are not fully used for the development of the state forest resources. Table 11 and Table 12 show only the forest revenues received and disbursed by the FNC. States share of forest revenue and disbursement is not included in the tables.

### 3 TOTAL REVENUE COLLECTION AND EXPENDITURE

The total revenues collected from forest products comprise the forest charges to provide good and services explained in the previous chapters. According to Table 11 below, the total revenues collected by the FNC was 220 million Dinars in 1996 and increased by more than three folds to reach more than 689 million Dinars in year 2000. However, the total amount of forest revenues collected by the forestry sector were assumed to be higher than the recorded figures due to the following reasons:

- A. The percentages received by the state governments (40% royalty and others) were not included in the FNC revenues after 1997.
- B. Other charges like the forest support fees which constitute 13-20 % of the royalty charges and 11-15 % of the charges from reserved forests depending on the forest products was not added to the total revenues as illustrated below.

**Table 11 Total FNC revenues generated from forest products in Sudanese Dinars**

Year	Total revenues
1996	220,712,760
1997	340,038,260
1998	281,597,456
1999	416,819,359
2000	689,473,434

Note: Before the application of 1997 council of ministers order no. 40  
One US dollar equals to 258 Sudanese Dinars in 2001

The distribution of the revenues collected by the FNC as illustrated in Table 12 below is used to cover the normal expenses of the corporation. This comprises two main chapters. Chapter I, which deals with the cost of salaries and wages, pensions...etc. Chapter II comprises the recurrent Budget. The average expenditure on the two chapters for the last five years in percentage from the total revenues were 67.85% and 31.74% for chapter one and two respectively.

**Table 12 Total FNC expenditure in Sudanese Dinars**

Year	Chapter I	Chapter II	Development	Total Expenditure
1996	141,401,321	53,057,176	30,000	194,488,497
1997	210,776,129	98,508,550	1,153,385	310,438,064
1998	187,346,879	93,368,466	882,111	281,597,456
1999	286,336,329	131,483,030	-	416,819,359
2000	409,794,674	226,057,343	9,621,417	645,473,434

Note: One US dollar equals to 258 Sudanese Dinars in 2001

## **4 DISCUSSION AND CONCLUSIONS**

### **4.1 Overall appraisal of forest revenue system**

The base line information generated from the results of the NFRI project should be taken as guidance for reviewing the existing forest revenue system.

For effective revenue system to be in place, all the revenues generated from forest products should be deposited in a separate account under the responsibilities of the forest administrations at both levels. The royalty rates and charges from other forest products should be increased substantially taking into consideration the replacement cost and marginal profit to sustain the resources. The market prices can be taken as an indicator for setting the annual forest charges. Market demand studies, should be taken yearly, to fulfil the following tasks:

1. Consumer preference on forest products.
2. Forest products pricing trend.
3. Royalty rate revision.
4. Prepare price indices for forest products to detect trends.

The comparison of the results of the two studies. NFRI & FPCS and the annual revenues collected by the FNC together with the total amount of forest products available at the different local markets indicated a clear leakage in revenue collection. Therefore, the revenue collection system should be manipulated to increase the collection efficiencies. The consideration of a real replacement cost in the calculation of the forest charges is the key indicator for sustainable forest management.

Therefore, it is important to frequently raise the stumpage value or royalty to the level that secure the sustainability of the forest resources. The arbitrary trend in setting the forest charges in Sudan can not afford the sustainability of the forest resources in the country.

The division of the financial resources between the FNC and the state governments, coupled with no clear commitments for sustainable forest management at the state level weakened the ability of the FNC to cater for sustainable forest management in Sudan. More over the introduction and promotion of the recently discovered cheaper energy alternatives i.e. natural gases, will affect the total revenue collected in the long run.

Currently, almost all the forest revenues collected by the FNC is used to cover the expenses of the staff salaries & wages and the recurrent budget items with only insufficient or none left for development as the FNC is a self-financing agency.

Sudan is bound to the forest related international conventions and agreements, which are the hot global issues. The globalization of the forestry issues calls for foreign support to conserve and sustainably manage the resources of the Sudan. At present, the lack of foreign aids or grants for the sector diminishes the opportunities for securing modern equipments and capacity building necessary for sustaining the forest resources of the country.

It is therefore, expected that the international organizations (FAO and others) support the revision of the complementary studies, the NFRI and the demand study. Capacity building programmes should be available to develop the human resources and to provide the necessary equipments.

#### 4.2 *The impact of forestry revenue system on sustainable forest management*

The current situation of the forestry resources in Sudan is alarming and hazardous. The insufficient financial support available to the forestry sector jeopardized the ability of the concerned government agency responsible for the development and sustainability of the resources and complicating the situation further.

The table below shows the declining trend in the reforestation and afforestation programs within the reserved forests constraints by the financial shortages.

<b>Year</b>	<b>Ha</b>
1980-1990	5,000
1991	33,922
1992	25,239
1993	28,915
1994	37,477
1995	36,434
1996	31,250
1997	19,791
1998	16,666
1999	13,131
<b>Total</b>	<b>239,697</b>

The division of the revenues between the center and the States, coupled with no clear commitment to the development and sustainability of the forestry resources, is contributing to the failure of not achieving sustainability of the forestry resources. The tendency to increase the revenues generated from the royalty returns is taking place on the expenses of already eroded natural forest resources of the country.

However, the situation of the forestry resources of Sudan was reflected in the results of the NFRI, 1998. Moreover, the government reserved forests is also deteriorating due to the poor level of funding available. This is reflected in many problems facing the sustainability of the forest resources which could be summarized as follows:

1. None or very insufficient silvicultural operations are done.
2. Reduction in the forested land due to the encroachment of agriculture, local people and private big farmers.
3. Illicit felling and theft of the forest crop by the near by inhabitants.
4. Diminishing of forest boundaries fire lines, inspection lines and the boundaries for the management units (compartments) in the forests.

Lack of international commitment to the sustainability of the forest resources of Sudan (currently, no foreign aid or grants are available for the sector).

### **4.3 *The effect of other fiscal policies on sustainable forest management***

Forest resources in Sudan, are known to be deteriorating and declining since early 1950s. The assessment of the forestry resources which was carried out by the National Forests Corporation (NFRI) have shown that and the reasons behind this decline was attributed mainly to the horizontal expansion of agriculture particularly the mechanized farms. Food security is the top ranking priority for the nation as population increases. Livestock is also increasing which adds more pressure on the burden of the natural and forestry resources in particular. The lack of a national land use plan is the major constraint to the sustainable management and development of the resources. Recent studies have shown that, as a consequence to the adoption of horizontal expansion in the rainfed sector, the productivity of the cereal crops had declined significantly. The explanations for this is, the exhausted soil, poor husbandry practices, ignoring technical packages and mono cropping.

The land use survey and planning study which was implemented under SKAP project in Gedarif state (food basket of Sudan), revealed that, prior to the initiation of the mechanized farms in Sudan in early 1940s, the forest resources comprised 78% of the total area of the project. Agriculture (traditional shifting cultivation) covered less than 18%, while marginal land occupied 4%. In 1993, the picture was drastically changed, modern agriculture expanded over more than 78% of the land and forestry resources declined to less than 18% of the total area. The lack of inter-sectoral approaches, lack of coordination among the various agencies concerned with the sustainability of the resources and the lack of effective and strong mechanism, are the reasons behind the contradicted practices and approaches which is reflected in today's situation.

There are also some socio-economic reasons; poverty among some rural communities which is also contributing to the declining situation of the forest resources. Recently, the minister of agriculture issued a number of orders prohibiting the horizontal expansion of mechanized farms into new forested area. The ministerial orders emphasizing on the conservation of the forestry resources of Sudan. Despite the fact that, the viable forest law of 1989 was succeeded to advocate and promote for the private and communal forestry, yet local communities are still neglected from being involved and incorporated in the management of the next door government forest reserves. The management plan for the riverine *Acacia nilotica* plantations has shown that, 20-40% of the final crop is lost due to many factors among which community needs are satisfied through illicit felling, theft... etc.

The FNC is confronted with serious financial problems. The distribution of the revenue between the State governments and the FNC weakened its ability to sustainably manage the forest resources of Sudan. The introduction and promotion of the use of energy alternatives, i.e. natural gases will have positive impact on the conservation of the forestry resources of Sudan but on the other side it will have negative impact on the total revenue collected in the long run.

### **4.4 *Government support to the forestry sector***

The government is committed to the forestry sector through the Provision of both political and legislative support. The forestry sector review was carried out in 1984 by a joint team consisted of Sudan government and overseas agencies by a donation of IDA. This led to the establishment of the FNC through an act of the parliament in 1989 completely replacing the

former National Forests Administration, with a very clear organizational structure and defined functions. In 1986, the 1932 Forest Policy was amended in response to the socio-economic and political developments in the country. The constitution, which was formed in 1998, calls the division of the forestry resources between the federal and state governments. Comprehensive National Strategy (CNS) for socio-economic development for the period 1992-2002 has been formulated and enacted by the Federal government. The CNS calls for the allocation of 25% of the total area of the country to the natural resources namely, forestry, range and pasture and wildlife. The CNS also stressed the importance of taking the environmental dimension into considerations during the process of planning for sustainable development. The CNS is regarded as the provisional Sudan's National Action plan for Agenda 21.

#### **4.5     *Proposals for improvement***

It is expected that the international organizations, EC-FAO and others to respond positively to support the national efforts to achieve the sustainability of the forest resources in Sudan. Therefore, the following activities are proposed:

- a. Provision of technical assistance to review and reform a fiscal and other policies.
- b. Technical assistance is also required to review and up date the two studies, which were supported by the FAO (NFRI and the demand study).
- c. Capacity building
- d. Regional and international networking

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**ANNEX A.1****Forests and Other Protected areas in Sudan**

<b>Forests and other protected areas</b>	<b>Ownership</b>	<b>Forest type</b>	<b>Area in hectares</b>	<b>Charges applied</b>
Forests	Government reserved forests	Plantations & natural	8,862,977	Forest products are produced by FNC and sold at price based on market value
-	Private & public forests	Plantation	0.650	2% of the total revenue form forest product sales
-	Community forests	Plantations & natural	379,417.5	2% of the total revenue form forest product sales
Other protected areas	National parks	Natural	8.50	The wildlife laws and authorities prohibit logging & extraction of woodfuel
-	Game reserves	Natural	3,18	The wildlife laws and authorities prohibit logging & extraction of woodfuel
-	-	-	21,572,394.5	-

Note: Forest support charges are not applicable to community, private and other government institution forest reserves. Natural forests (outside the reserves) include all the area that was not allocated by the government for specific type of landuse.

## ANNEX A.2

### Other government institution forests (irrigated plantations, areas in hectares)

Irrigated schemes	Total irrigated area	Potential area for tree growing	Actual planted area	Charges applied
Agric. & Sugar schemes (14)	1805415	90633.4	2526.9	2% of the total revenue form forest product sales

Source: Forestry Outlook Study for Africa, Sudan Country Outlook Paper

### B. Concessionaires and Mills:

The sawmilling industry in Sudan, started during the colonizers regime in the early 1950s under the forest department authorities. It was incorporated in the management of the riverine natural forests along the Blue Nile. Currently, the FNC operating a total of 7 sawmills in the country out of them 5 are portable saw mills. Nearly all of them are inefficient, require major maintenance, and there is a need to replace them. Most of these sawmills are located very close to the plantations, which are managed on sustainable basis. Although the original capacities of these sawmills were higher, but only round about 300,000 cubic feet of saw logs are available per year.

The private sector involved in the wood based industries 30 years ago. Most of the private sawmills were established in towns along the Blue Nile very close to the *Acacia nilotica* plantations to make use of the available commercial saw logs. But due to the scarcity of raw materials, uncommitted concerned department to supply the raw materials and violation to the specification of the saw milling industry as prescribed in the forest law, most of these private sawmills turned to small joinery workshops.

### C. Institutions collecting forest taxes

Since the declaration and adoption of the federal system in Sudan, other official departments and organizations at the state levels began to add new taxes and collect revenues from the forest products in their respective states. Such practice was stopped by the presidential decree later. Despite the decentralization of the forestry resources, the FNC remains to be the only legal government agency responsible for proposing forest taxes and collect revenues. However, there are still some violations to the declared republican decree as some government department and organization collecting revenues from forest products. Zakat, being a federal institution is also collecting revenues from forest products.

### D. Subsidy available for forestry and other landuses

There is no subsidy for the forestry sector in Sudan. However, the situation in the sector is alarming and hazardous taking into considerations the events and changes which took place since the adoption of the new federal system. Such events resulted in the abrupt decline in the revenues collected by the FNC as it was agreed that, the total revenue generated from the royalty returns are divided by 40% for each (FNC and the states).

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