

FORESTRY PUBLICATION NO. 1

STUDY ON WOOD CONSUMPTION IN NAMIBIA

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DIRECTORATE OF FORESTRY
WINDHOEK

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ABBREVIATIONS

BUAN	Bush Utilization Association of Namibia
ELCIN	Evangelical Lutheran Church in Namibia
FAO	Food and Agriculture Organization of the United Nations
FNDC	First National Development Corporation
LWF	Lutheran World Federation
MLGH	Ministry of Local Government and Housing
NEPRU	Namibia Economic Policy Research Unit
NGO	Non-governmental Organization
SACU	South African Customs Union (also called the Common Customs Area, CCA). Members: Botswana, Lesotho, Namibia, South Africa and Swaziland
SWAWEK	South-West African Electrical Corporation
UN	United Nations
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

Namibian forests are located in the dry woodland zone in the northern part of the country. They are mostly open savanna forests, covering an area of about ten million hectares, of which 1.9 million hectares are classified as commercially exploitable. The forests are rich in savanna tree species and bushes. Through careful management based on sustainable yield these forests have an essential role in the national wood supply. They are also important in protecting watersheds, ensuring groundwater formation, stabilizing soil from wind and water erosion and providing fruit and fodder.

So far no studies on wood consumption and markets have been carried out in Namibia. The lack of data on various uses and requirements of wood has made it difficult to carry out forestry planning and management in a meaningful way.

The objective of the study was to find out the actual total consumption of wood products by categories and, based on that, to make an estimate of the total roundwood requirement from the national forests.

The study revealed that the total consumption of wood in 1990 was in the order of 1.8 million cubic metres, measured as roundwood equivalent. The fuelwood (including household construction wood) constitutes the by far greatest consuming sector, i.e. 1.66 million or 93 per cent of the total. The share of industrial and other wood usage is only 7 per cent. Table 1 on page 13 summarizes the total wood consumption by categories in Namibia.

All of fuelwood originates from national forests. Therefore the role of Namibia's own forests in the national wood supply - and especially for the rural energy sector - is of paramount importance. It is obvious that within the foreseeable future, the same situation will continue to prevail. The total fuelwood consumption will increase along with the growing population.

The industrial use of wood will remain small, although there is some growth potential for industrial wood-based products such as sawnwood, poles and charcoal.

The availability of statistical information on wood consumption in Namibia is practically nil. This concerns especially fuelwood and other domestic wood. It is therefore recommended that a survey on fuelwood be carried out as soon as possible after the new population census figures become available.

It is also recommended that the production and external trade of sawnwood, charcoal and poles be recorded on an annual basis, in collaboration with the pertinent government organizations and the private sector.

1. BACKGROUND

1.1 Forestry in Namibia

The total area of Namibia is 823 000 km² which can be divided into four main vegetation zones. The desert zone, 22 per cent of the area, consists of the Namib Desert and stretches all along the coast of the Atlantic Ocean. The sparse savanna in the southern territory - 29 per cent of the land - is covered with dwarf shrubs and scattered trees. Further 29 % fall into savanna zone dominated by thorn bushes and mopane trees. The remaining 20 %, the dry woodland zone, is restricted to the north and northeastern territory. Much of it is open woodland. Within this area 10 million hectares are classified as forested and 1.9 million hectares are commercially exploitable forests.

Namibian forests are not heavily stocked, nor do they form high forests, but they are rich in savanna tree species and bushes. By protecting dryland watersheds, ensuring groundwater formation and stabilizing the soil from wind and water erosion, the woody vegetation also contributes to the output from agriculture and enhances maintenance of food security. Due to the unfavourable climatic and soil conditions forestry activities are naturally limited. However, through careful management based on sustainable yield, even these forests can and are making a considerable contribution towards self sufficiency in wood supply.

Forest inventories were conducted in the 1970's by the South African authorities and partly updated later in the 80's. The data, however, is scanty and restricted to the main commercial forests only. The estimated volume of utilizable sawlogs available in the dry woodland zone is about 22 000 m³ per annum, with a rotation period of 80 years. According to some estimates, the total annual increment of the woody biomass in Namibia would be as high as 5 million m³ annually.

The role of forests in the national economy is mainly to supply wood for fuel, charcoal, fencing and construction materials as well as sawn timber. For the majority of rural people the forests traditionally provide land for shifting cultivation and free grazing areas for cattle. Forests and trees also provide fruits, nuts, honey and small-size wood for tool handles, other utensils and carving.

1.2 Objectives of the study

So far no studies on wood consumption and markets have been carried out in Namibia. Forestry planners, policy makers and other interested parties have had to rely on rough estimates concerning the various uses of wood. Neither are there any other statistics available on production, imports or exports of wood products.

The above situation is understandable bearing in mind that Namibia has only been independent less than two years and many of the services of a sovereign state have not yet had time to develop or are in the very initial stages of operation.

The lack of reliable statistical data has been felt as a serious drawback in the forestry sector and has in fact been effectively hampering forestry planning and management. Forests have an important role in the fulfilment of the most basic human needs such as fuel for cooking and heating as well as raw material for shelter and other necessities of human life. Therefore knowledge of the various uses of wood will be most valuable for meeting these needs also in the future and, at the same time, for securing the sustainable use of the forest resources.

The main objectives of the present study have been twofold, namely:

- (i) To find out the actual total consumption of wood products by various categories;
- (ii) To translate the consumption figures into roundwood volumes in order to be able to assess the actual requirement of wood raw material from national forests.

The second objective is of special interest to the forestry sector for future planning and management purposes. The results of the study will give valuable implications as to where and what kind of indigenous or plantation forests will be mostly needed in the coming decades.

1.3 Methodology

The wood products included in the study have been grouped into the following three categories:

1. Fuelwood:
 - fuelwood used in rural areas
 - fuelwood used in towns
2. Industrial wood:
 - sawnwood
 - wood-based panels
 - charcoal
3. Other wood products:
 - transmission poles
 - fencing poles
 - wood for mining

The unit of measurement throughout the study has been the solid cubic metre of wood. A lot of information was actually received in other units such as pieces, tons and square metres. However, an effort has been made to convert them to cubic metres as accurately as possible.

The information has been obtained mainly by two ways:

- From already published reports and documents related to the topic of the study (see list in Annex 1);
- From direct interviews with representatives of various ministries, government services, non-governmental organizations, UN bodies and private companies (listed in Annex 2).

The data was collected through personal interviews, telephone and telefax. All these methods proved to be useful in the Namibian conditions.

1.4 Limitations

Availability of statistics on production and trade of forest products in Namibia is non-existent. The Statistical Bureau as well as the Customs and Excise Office have just started operating and still lack the proper data collection systems.

The imports of goods from the SACU area¹ have not been recorded at all. As more than 90 per cent of wood imports to Namibia originate from this area, this is indeed a major limitation. However, the situation will change as of the beginning of October 1991 when all imports and exports from and to other SACU countries will have to be declared to the customs. This will facilitate the systematic collection of statistical data.

All data for the study had to be obtained directly from producers, importers, wholesalers, distributors and major users. Although an effort was made to secure a reasonable coverage, some of the smaller companies could not be contacted within the short time available and estimates were relied on instead. Some were not in a position to provide figures. However, the data on the consumption of industrial wood can be regarded as fairly reliable.

The greatest uncertainty is related to the wood usage for fuel and construction in the rural areas. Very scarce information is available in this sector. Considering the large number of people concerned, and that the fuelwood consumption is directly commensurate with the size of population, this is indeed a major source of potential error.

¹ SACU member countries are Botswana, Lesotho, Namibia, South Africa and Swaziland.

2. FUELWOOD CONSUMPTION

2.1 General

Fuelwood consumption is principally concerned with wood used for energy (cooking, heating and illumination). In rural conditions some wood used for various construction purposes is also included because it is often impossible to make a distinction between the two. In Namibian conditions where the majority of the population is living in the rural communal areas, fuelwood is the most important form of wood utilization. The situation is similar to most African countries, where fuelwood generally accounts for approximately 90 percent of the total wood consumption.

Quantitatively, fuelwood consumption is directly related to the size of population. It is also dependant on the income levels and tends to decrease along with improving standards of living when other forms of energy become available and can be afforded. It is also a fact that more firewood is used in rural areas compared to urban situations.

The latest population census in Namibia was carried out in 1981 when the total population was estimated to be 1 033 198. For the elections in 1989 a voter registration was carried out which produced reliable estimates on the present number of inhabitants. This data has been the basis for recent assessments by NEPRU and UNDP on the number of people in the year 1990.

In the absence of accurate census data the following preliminary estimation may be made:

- Communal areas	1 000 000
- Commercial lands	300 000
- Urban areas	500 000
<hr/>	
Total population	1 800 000

Sources: NEPRU, UNDP, MLGH

The UNDP Population and National Accounts of Namibia also revealed that:

- Population growth rate is 3 per cent per annum;
- 45 per cent of the population is under 15 of age;
- 88 per cent belong to the black community, 5 per cent to white and 7 to others;
- 40 per cent of the non-white population are supported by the modern economy whereas 55 per cent are supported by the traditional economy.

New census is being carried out by the end of the year 1991 and will give an accurate picture of the present situation.

2.2 Rural areas

Hardly any facts are available on the wood consumption patterns in the rural communal areas, except general descriptions of the "wasteful" use of wood for housing and fencing in the northern parts of the country.

In connection of a recent study by ELCIN/LWF on environmental situation in Owambo twelve farmers were interviewed on their wood consumption habits. It was revealed, among other things, that two thirds of the total wood usage per household was for fuel and one third for construction purposes, mainly fencing (see Annex). It is typical to Owambo that homesteads and often even fields are surrounded by solid fences made of poles of 2 to 3 m high. Considerable volumes of wood are therefore needed for both construction and annual maintenance. Similar pattern is followed in Kavango whereas in other parts of communal areas wood is usually only used for fuel and perhaps a little in frameworks of buildings or similar uses.

There are several studies on fuelwood consumption carried out in other African countries. A generally accepted estimate is that the average annual consumption of fuelwood in African conditions is about one cubic metre per capita.² It is assumed that the same figure will reflect the Namibian conditions as well, except in Owambo and Kavango where a little higher consumption figure of 1.3 m³ per capita seems to be justified.

Contrary to many other African countries, no charcoal is used for cooking and practically all wood is used as such for fuel. In rural areas, charcoal is only used by blacksmiths and in towns for barbecue (braai).

There are about 5 000 commercial farms in Namibia, covering an area of 36 164 880 hectares. The commercial area stretches from the north - districts of Outjo/Tsumeb/Grootfontein - right down to the southern border of Namibia. Besides about 4 000 mostly white farmers, the commercial farming area supports a large number of non-white farm workers the approximate number being at the moment about 300 000.

It is assumed that the majority of people working on the farms have more or less traditional ways of using wood, i.e. mainly for cooking and heating. For the purposes of this study it is estimated to be about one cubic metre per person annually.

² For instance, according to surveys carried out in the semi-arid conditions of Bura, Kenya, the average consumption of fuelwood per person varied between 0.7 and 1.1 m³ per annum.

Based on the above estimations and assumptions, the fuelwood consumption in the rural areas can be summarized as follows:

<u>Area</u>	<u>Population</u>	<u>Fuelwood consumption, m3</u>	
		<u>Per capita</u>	<u>Total</u>
Owambo/Kavango	800 000	1.3	1 040 000
Other communal area	200 000	1.0	200 000
Commercial lands	300 000	1.0	300 000
<hr/>			
Total	1 300 000		1 540 000

The future consumption patterns may change as a result of a more widespread introduction of stoves for cooking or adoption of other sources of energy like gas and paraffin. The use of wood for construction may be affected by the new low-cost housing schemes where the wood used per house is much less than in traditional dwellings.

However, considering the high population growth rate of 3 per cent annually, it is likely that in absolute terms the total wood consumption in communal rural areas will continue to grow where ever wood is available within reasonable distance.

2.3 Urban areas

In Namibia about one third or 500 000 people reside in towns. The figure is probably growing quite rapidly as more people move in from countryside in the hope of better living. Approximately 400 000 of these people are non-white and they are the principal firewood consumers in urban areas.

It is reasonable to assume that fuelwood consumption in towns is much lower than in rural areas for the following reasons:

- usually wood must be bought from dealers at market price;
- wood saving stoves are used increasingly;
- other forms of energy are available (paraffin, gas and electricity).

Supplying of wood to urban dwellers is a thriving business and the demand seems to be increasing. Although wood prices have gone up lately, it is still considerably cheaper than any of the alternative energy sources. According to a study made by Hoveka (1989), the price of wood per energy unit is about half of gas and paraffin prices.

Based on the data derived from the same study it may be estimated that the annual average wood consumption is in the order of 0.3 m³ per person. This means that the total firewood consumption in towns would rise to around 120 000 m³.

3. INDUSTRIAL WOOD CONSUMPTION

3.1 General

There is very little processing industry in Namibia and the same situation is also typical for the forestry sector. Wood processing industry is represented by a small number of charcoal plants and sawmills. There are also a couple of furniture manufacturers which use partly domestic, partly imported timber as their raw material.

The small size of the industrial sector is a logical consequence of the limited wood raw material base and the small domestic market. However, some increase in the utilization of both high quality wood in the north as well as the bushwood in central and eastern parts of the country is to be expected, particularly for sawnwood, charcoal and poles.

3.2 Sawnwood

There are three sawmills in Namibia, namely Lutala Sawmill in Katima Mulilo, MKU Enterprises in Rundu and Namib Wood Industries in Bushmanland.

Lutala Sawmill is owned by the government and is sawing kiasat, teak and some other hardwood species. Due to some technical reasons as well as lack of good quality raw material, the sawmill has been running far below its installed input capacity of 20 000 m³.

MKU Enterprises sawmill is government owned but leased to the private company. Raw material is procured from a wood concession in Kavango. There is some concern of the availability of the raw material and import of logs from Angola has been considered. The installed input capacity is 8 000 m³ of logs annually in a one shift operation but the actual production has remained at a about half of that.

The Sawmill in Bushmanland is actually a small semi-mobile bandmill which is operating in the bush and can be moved relatively easily to a new location. It has a concession right of 600 m³ of green logs per annum, added by dry logs and branches. All sawnwood is used by the company's own furniture factory in Windhoek.

The total production of sawnwood in Namibia during the last three years has been the following:

Year	1988	1989	1990
Production, m3	1 300	1 800	3 100
Sawlogs used, m3	2 800	3 500	5 700

Source: Directorate of Forestry and sawnwood producers

All of the sawnwood is produced from local hardwood species like Pterocarpus angolensis and Baikiaea plurijuga, and used mainly for furniture manufacture. There has been some timber export to South Africa, during the year 1990 it amounted to 1 200 m3(s) but will be only about half of that in 1991, according to preliminary information acquired from producers.

Namibia is highly dependant on sawnwood imports which in 1990 amounted to 22 000 m3, of which 20 600 m3 were pine softwoods and 1 400 m3 hardwoods. Practically all pine timber originated from South Africa which dominates the market. Some imports have been realised from Zimbabwe. Pine is almost exclusively used for construction purposes.

Hardwoods are being imported from Indonesia, Malaysia, West-Africa and North America. A considerable number of species are included such as meranti, niangon, iama, lauan, sipo, kossipo, kambala, seraya, khaya, okoume and white oak. Hardwoods are used for furniture and fixtures, parquet flooring, panelling and so on.

There is also a small amount of railway sleepers imported to Namibia from South Africa. The annual quantity is around 2 000 pieces or 100 m3, used mainly on bridges and places susceptible to corrosion like seashores. Previously wooden sleepers were commonly used but are now being phased out and replaced by concrete ones.

From the above data it is possible to calculate the consumption of sawn timber for 1990, assuming that all wood produced or imported was actually used during the same year.

Sawnwood consumption in Namibia during 1990, in m3

Production	3 100
Plus imports	22 000
Minus exports	1 200
Consumption	23 900

Wood is considered an expensive material to be afforded only by the well-to-do people. Therefore the consumption will probably stay fairly stable in the future.

The government has plans to build up to 45 000 low cost houses by the year 2000 which may increase the use of wood. In some models wood is used in roof trusses, skirting and doors, approximately one cubic metre per house. However, there are other types of houses where no wood is used at all. Therefore the future wood consumption will to a certain extent depend on what kind of decisions the government will take regarding the housing schemes.

3.2 Wood-based panels

All wood-based panels are imported and the only source so far has been South Africa. Based on the information received from importers, the approximate quantities brought to Namibia in 1990 were as follows:

- plywood	100 m3
- particle board	1 400 m3
- hardboard	600 m3
<hr/>	
Total	2 100 m3

There has been some investigation on the possibility to produce particle board from the local bush species and some laboratory scale experiments have been carried out. Pre-feasibility studies have also been made on the eventual production of wood-wool cement slabs. One of the more advanced plans aim at a factory with a capacity of 7 500 m3 of slabs/year, which would mean a consumption of 3 125 m3 of bush wood annually. The rest of the product consists of cement and chemicals. The boards would be used to produce 300 prefabricated low-cost houses a year.

Most bush species seem to be extremely hard which results in difficult workability. All tool blades are quickly dulled. A careful analysis will be needed on the technical properties required from the board products in view of the various market requirements.

3.3 Charcoal

There are 45 charcoal producers in Namibia, with an annual output of 14 000 tons of charcoal altogether. They are all farmers in the northern part of the commercial farming area, making charcoal as their additional business besides cattle raising. The average output per producer is about 500 tons/year. The main species used are svarthaak (*Acacia mellifera*) and sekelbos (*Dichrostachys cineria*).

There is a huge raw material base to support the charcoal industry. At least 10 million hectares of rangeland suffers from bush encroachment. It is estimated that each hectare can provide about ten tons of wood of more than 4 cm diameter and suitable for charcoal production. Many farmers see this as an opportunity to check the spreading of harmful bushes on their farms.

With a few exceptions, the technical level of the charcoal production is relatively low. Recovery rates range from 17 to 20 %, i.e. about five tons of wood are required to produce one ton of charcoal. Assuming that the mean specific weight of the wood is 800 kg/m³, about 88 000 m³ of wood is needed to reach the above mentioned output.

The wastage is rather high because only 50 % of charcoal produced meets the requirements set for barbecue charcoal. The rest are so called "fines" (particles less than 20 mm in size) which have hardly any use at the moment but could perhaps be briquetted in the future.

Out of the 14 000 tons produced in 1990, 8 000 tons were consumed on the domestic market whereas 6 000 tons were exported to Germany and South Africa.

The future of the charcoal business will depend much on how well the marketing can be organized. Some kind of centralized marketing body will be needed especially for the export markets. Development of appropriate technology will also be required in order to secure sufficient quality of the product and profitability of production.

4. OTHER WOOD CONSUMPTION

4.1 Transmission poles

Namibia has a relatively well developed electrical grid and telecommunication systems. Being a vast country with long distances between population centres, endless rows of telephone and electricity poles are a common sight. Although the arid climate obviously contributes to the longevity of wooden poles, some replacement is needed due to destruction caused for instance by lightning and woodpeckers. Also new lines are constructed from time to time.

Telephone poles are needed mainly for the maintenance of existing lines. The actual consumption is 20 000 poles or 2 000 m³ per annum. The annual growth of consumption of telephones poles is calculated at 4 %. The lengths vary between 6 and 11 metres, the most common being 6, 7 and 8 m. The top/butt diameters vary from 80/105 mm to 140/190 mm, respectively.

Traditionally all telephone poles have been made of pinewood and imported from South Africa. First trial purchases have now been made of Zambian eucalyptus poles. However, the arid climate

seems to cause problems, because 20 % of these poles have split and therefore cannot be used.

About 10 000 electrical poles (or 4 400 m³) are imported annually from South Africa. The consumption has been very stable during the last years and will continue on the same level at least the following couple of years. Wooden poles are mainly needed in the rural electrification scheme which has now been going for five years.

The dominant size for electrical poles is 11 metres, with top diameter 140-160 mm and butt 220-320 mm. Both pine and eucalyptus poles are used. All are creosote treated. The average lifetime is not known but the first ones were installed in 1972, with no defects so far.

4.2 Fencing poles

Namibia is a country of fences. This holds true especially on the commercial area where it is estimated that each farm has in average 70 kilometres of fence which means a total length of about 350 000 km. Most of fencing poles are wooden but also steel posts are used. The main poles are 2.5 m high, between them wires and droppers. For game fences the pole height is 3.5 metres, whereas sheep farms generally use 1.5 m poles with galvanized net between.

The fences require regular maintenance which results in a considerable use of wood per annum. Based on the 1990 sales figures obtained from distributors, it is estimated that about 200 000 wooden fence poles and 3 000 000 droppers are required each year. Considering the mean dimensions for poles 2.5 m length and 14 cm diameter and for droppers 1 m length and 4 cm diameter, this would result into the total volume of about 12 000 m³.

However, the pole market fluctuates a lot from year to year. In a good year the above figures could be doubled.

Fencing poles are made of eucalyptus and treated with creosote. All are imported from South Africa. Some consideration has been given to make droppers from local bush wood. Provided a sufficient quality can be achieved at competitive prices, there would be a considerable and growing market, because farmers prefer wooden material to steel.

4.3 Wood for mining

There are several large mining operations and hundreds of small mines in Namibia. However, there is only one significant underground mine, namely Tsumeb Corporation Limited (TCL) which has thousands of kilometres of tunnels. It has used considerable quantities of wood for pitprops and other constructions and even established a couple of own eucalyptus plantations for poles. The future of TCL is at risk because the ore might be finished in the near future.

TCL still uses some charcoal for its smelter process. It also uses 12 000 tons (15 000 m3) of wood blocks (10 x 10 cm) annually in the gas generator eventually to produce electricity. Wood blocks are supplied by farmers from nearby areas who in this way have found another use for bushwood.

The open mines have a considerable kilometrage of rail tracks. Concrete sleepers are used at the moment, but there is interest to switch over to wooden ones. This would mean an annual need of perhaps 8 000 m3 of sleepers.

5. TOTAL WOOD CONSUMPTION

The total wood consumption in Namibia is presented in the following Table 1. The products are grouped into categories and for each one production, import and export figures are shown. It is assumed that any products produced or imported have been consumed during the same year. Therefore the consumption has been calculated using the following simple formula:

$$\text{Consumption} = \text{production} + \text{imports} - \text{exports}$$

The volumes are presented in solid cubic metres or tonnes depending on the product. The consumption figures have been converted into roundwood equivalent in order to be able to calculate the total with the same unit of measurement.

As can be seen from Table 1., the overwhelming share of wood consumed in Namibia is used for fuelwood, i.e. about 93 per cent. The remaining 7 per cent is used by the modern economy, for industrial and infrastructure purposes.

TABLE 1. Estimated consumption of wood products in Namibia in 1990

<u>Category</u>	<u>Production</u>	<u>Imports</u>	<u>Exports</u>	<u>Consumption</u>	<u>TOTAL CONSUMPTION, M3</u> <u>ROUNDWOOD EQUIVALENT</u>
Fuelwood/domestic w.					
- in rural areas, m3	1 540 000	-	-	1 540 000	1 540 000
- in towns, m3	120 000	-	-	120 000	120 000
Industrial wood					
- sawnwood, m3	3 100	22 000	1 200	23 900	101 000
- wood-based panels, m3	-	2 100	-	2 100	48 000
- charcoal, tons	14 000	-	6 000	8 000	3 000
Other wood products					
- electricity poles, m3	-	4 400	-	4 400	32 400
- telephone poles, m3	-	2 000	-	2 000	4 400
- fencing poles, m3	-	12 000	-	12 000	2 000
- wood for mining, m3	15 000	-	-	15 000	12 000
TOTAL WOOD CONSUMPTION					1 794 000 m3

The following Table 2. shows how much wood has actually been removed from Namibian forests, either to satisfy local needs or for exports. All volumes are expressed in roundwood volumes of solid wood. As all of the fuelwood is extracted from the national forests, it is a natural consequence that these forests play a dominant role in satisfying the needs for wood. When comparing the totals of tables 1. and 2., we may draw the conclusion that 99 per cent of the wood used in Namibia originates from own forests.

TABLE 2. Estimated roundwood consumption from national forests in 1990

<u>Production sector</u>	<u>Roundwood consumption, m3</u>
Fuelwood	1 660 000
Sawnwood	6 000
Charcoal	88 000
Wood for mines	15 000
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TOTAL	1 769 000 m3

6. CONCLUSIONS AND RECOMMENDATIONS

The availability of information on the use of various kinds of wood is practically nil as this kind of data has not been compiled in any form so far. This concerns especially the figures on fuelwood and other wood used in households which, however, is by far the largest wood consuming sector. The availability of data on industrial wood is better although the information is scattered in a number of sources.

It is recommended that a comprehensive survey on fuelwood and other domestically used wood be carried out in Namibia as soon as possible after the new population census figures become available. The survey should cover a sufficient number of households in Owambo, Kavango, other communal areas, commercial farms and towns. All volumes of wood should be verified by measurements in order to avoid any misinterpretations.

As soon as the census figures are published, the present study should be updated concerning the fuelwood consumption figures.

It is recommended that the production of industrial wood (i.e. sawnwood and charcoal) should be recorded on an annual

basis. The sawmillers should be obliged to provide production, import and export figures as a part of their concession agreements. Data on charcoal and other bushwood products may be obtained from BUAN.

Import and export figures on sawnwood, charcoal, transmission and fencing poles as well as wood-based panels and other forest products should become available from Customs and Excise, on the year 1992 and onwards. However, it would be perhaps advisable to notify them on the information needs of the Directorate of Forestry in order to facilitate the processing and extraction of data from the manual records.

Concerning the consumption of transmission poles, both electrical and telephone, the data is easily available at SWAWEK and Posts and Telecommunications, respectively.

Finally, it is recommended that a new national wood consumption study be made in 1993 when the fuelwood survey has by then be completed and official trade figures become available on imports and exports of wood products to and from Namibia.

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K.van der Berg Manager, Sawmill and Forestry Division, MKU Enterprises, Rundu

R. Hilbert Senior Forest Officer, Grootfontein

J.J. Steyn Senior Manager (Infrastructure), Transnamib Rail, Windhoek. Tel. 298 2300.

G.K. Enkara Director of Energy, Ministry of Mines and Energy. Private Bag 13297, Windhoek. Tel. 226 571.

D. Malithano Senior Programme Officer, FAO, Windhoek. P.O. Box 24185, tel 229 220, fax 225 726.

R. Gebers General Manager, Chamber of Mines of Namibia, Windhoek

Esther S. Hoveka Programme Assistant, UNDP, Windhoek. tel. 229 220.

F.J.van der Merve Chief, Customs and Excise, Whk. Tel.3091504.

R.W. Voigt Chief Customs Officer, Customs and Excise, Windhoek, tel. 3099111.

Phil Barry General Manager, MPS Building and Engineering Supplies, M.Pupkewitz & Sons (Pty)Ltd, Box 5087, Whk. Tel. 36850, fax 34997.

M.O. Vermeulen Asst General Manager (Operations), AGRA (Co-op)Ltd, P Bag 12011, Whk. Tel. 31931, fax 31929.

P.I.Hoojnhout General Manager (Technical Services), SWAWEK, Windhoek. Tel. 31830, fax 32805.

John Allison Deputy Director (Housing), Ministry of Local Government and Housing, P. Bag 13298, Windhoek. Tel 225898, fax 226049.

MAJOR WOOD IMPORTERS¹

Name Company	Location ²	Phone	Fax	Main
Agra (Co-op)Ltd	Windhoek	31 931	31 929	fencepoles
Pupkewitz M. fencepoles, & Sons (Pty)Ltd	Windhoek	36 850	34 997	sawnwood
Schusters Building Material b	Windhoek	62 161	61 738	poles, sawn wood, w-
Benthin African Agencies	Windhoek	31 125	33 559	panels poles
Metje & Ziegler Ltd	Windhoek	32 088	22 2859	sawnwood
Ark Trading Pty Ltd	Windhoek	22 54 21	22 54 21	sawnwood
PG Wood (Namibia) (Pty) Ltd	Windhoek	38 250	35 296	sawnwood, wb panels
Cashbuild Pty Ltd	Windhoek	21 70 56	..	sawnwood
Woermann Brock & Co (Swakopmund)Pty Ltd	Swakopmund	0641-321	0641-2362	sawnwood
MKU Enterprises Ltd	Okahandja	06221-2038	06221-2059	sawnwood
E.N.O.K. Hardware	Ondangwa	06762-97	..	sawnwood, poles
ENOK Ostora Yoitungifu	Oshakati	06752-40	..	sawnwood
ENOK Hardware	Rundu	067372-76	..	sawnwood
ENOK Hardware sawnwood	Katima Mulilo	067352-105	..	

¹ Covering estimated 95 % of wood imports to Namibia

² Several importers have subsidiaries in various towns

