

1926

X.F. 8273  
17 DEC 1926

KENYA

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17 DEC 1926

C0533/363

From  
ACT. OF COLONIAL  
SECRETARY

Date  
19th November 1926.

KILN SEASONING OF LOCAL TIMBER.

CLOSED  
UNTIL  
11/11

Previous paper	(Minutes within)	
Subsequent paper  X. 10022 27		
Roa 2 1/2		
Mr. Allen 2 1/2		
K.R.		

NOT TO BE TURNED INSIDE OUT.

Kiln Seasoning of Local Timber

1) Actg Col. Secretary. 3pn. ----- 19.11.12.

Encloses six copies of report  
on ----- by Mr Eckbo.

~~(Copy - J.S.A.)~~

Mr. Allen.

I suppose we shall hear  
further, if the Govt. <sup>decide to</sup> embark on  
the scheme.

Put by

G. Hazleriff.

Wait till Estimate Oct is disposed of; this also  
refers to a receipt as to supplementary  
infundr.

22/12/12

at once

Provision has been approved in the  
Estimate (3<sup>rd</sup> Sept<sup>h</sup>, 1926 £5000 &  
1927 Est. £3,500) for the cost of installing  
this plant. £2500 has been approved  
in the 1927 Est. as the annual cost of  
operating the plant. It would appear  
that this annual provision (see  
p. 6 of Mr Lynde's letter, (Happd)) covers  
£800 as the cost of getting a man  
for S.A. in the first year, mentioned on  
p. 3 of the same letter.

No further action seems to be  
called for on this; but see X10022/27 as  
to the cost of getting Mr. Eckbo's advice  
G. Hazleriff 12.1.13



THE SECRETARIAT.  
NAIROBI,  
KENYA.

WHEN REPLYING  
PLEASE QUOTE  
No. S/D.  
AND DATE

19<sup>th</sup> November, 1926.

X.F. 8273  
17 DEC 1926

The Acting Colonial Secretary of the Colony and Protectorate of Kenya, presents his compliments to the Under Secretary of State for the Colonies and has the honour to transmit six copies of Mr. Eckbo's Report on Kiln Seasoning of Local Timber.

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COLONY AND PROTECTORATE OF KENYA.

KILN SEASONING OF LOCAL TIMBER.

REPORT OF MR. ECKBO,  
OFFICER IN CHARGE OF TIMBER INVESTIGATIONS,  
FOREST DEPARTMENT, PRETORIA, SOUTH AFRICA,  
AND RELATIVE CORRESPONDENCE.

---

Nairobi.

27th August, 1926.

C O P Y.

P. O. Box 662.

PUBLIC WORKS DEPARTMENT,

HEAD OFFICE,

NAIROBI.

27th August, 1926.

Ref.No.3563

The Hon.the AG.Colonial Secretary,  
Nairobi.

KILN SEASONING OF LOCAL TIMBER.  
MR.ECKBO'S VISIT.

I forward herewith Mr.Eckbo's report.

2. It will be observed that Mr.Eckbo considers that there is no doubt that the common species of local timber can be adequately seasoned by the modern kiln process and that this is the only method of seasoning likely to prove satisfactory in this country. He states further that this method is coming into general use in South Africa, not only on the part of Government who introduced the system into South Africa, but also on the part of Timber Merchants and Contractors. The system in South Africa is not confined to local timber but is also used for imported Baltic timber and Teak. The experience of South Africa is that all timber so treated is very much improved, and Contractors are willing to incur the small additional cost involved in using kiln seasoned timber for joinery as work so executed is much more reliable and can be guaranteed to remain sound.

3. I have discussed the question of the action to be taken in connection with this report with the Hon.the General Manager, Kenya and Uganda Railway,

C O P Y.

P. O. Box 662.

PUBLIC WORKS DEPARTMENT,

HEAD OFFICE,

NAIROBI.

27th August, 1926.

Ref. No. 3563

The Hon. the AG. Colonial Secretary,  
Nairobi.

KILN SEASONING OF LOCAL TIMBER.  
MR. ECKBO'S VISIT.

I forward herewith Mr. Eckbo's report.

2. It will be observed that Mr. Eckbo considers that there is no doubt that the common species of local timber can be successfully seasoned by the modern kiln process and that this is the only method of seasoning likely to prove satisfactory in this country. He states further that this method is coming into general use in South Africa, not only on the part of Government who introduced the system into South Africa, but also on the part of Timber Merchants and Contractors. The system in South Africa is not confined to local timber but is also used for imported Baltic timber and Teak. The experience of South Africa is that all timber so treated is very much improved, and Contractors are willing to incur the small additional cost involved in using kiln seasoned timber for joinery as work so executed is much more reliable and can be guaranteed to remain sound.

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C O P Y.

P. O. Box 662.

PUBLIC WORKS DEPARTMENT,  
HEAD OFFICE,  
NAIROBI.

27th August, 1926.

Ref. No. 6563

The Hon. the As. Colonial Secretary,  
Nairobi.

KILN SEASONING OF LOCAL TIMBER.  
MR. ECKBO'S VISIT.

I forward herewith Mr. Eckbo's Report.

2. It will be observed that Mr. Eckbo considers that there is no doubt that the proper method of local timber can be adequately seasoned by the ancient kiln process and that this is the only method of seasoning likely to prove satisfactory in this country. He states further that this method is coming into general use in South Africa, not only on the part of Government who introduced the system into South Africa, but also on the part of Timber Merchants and Contractors. The system in South Africa is not confined to local timber but is also used for imported Baltic timber and Teak. The experience of South Africa is that all timber so treated is very much improved, and Contractors are willing to incur the small additional cost involved in using kiln seasoned timber for joinery as work so executed is much more reliable and can be guaranteed to remain sound.

3. I have discussed the question of the action to be taken in connection with this report with the Hon. the General Manager, Kenya and Uganda Railway.

Mr. Felling, and with the Chief Engineer, Major Rhodes, and after full consideration of all aspects of the case recommend that Government immediately embark upon a scheme for the installation of at least six kilns of sufficient total capacity to season 600 tons of timber per annum. It is probable that it may be found necessary to increase the number of kilns to ten, but I think it wiser to commence with six. The kilns would be installed and run by the Public Works Department, but the Kenya and Uganda Railway will assist by doing certain metal work in the shape of boiler, piping, trucks, and other fittings which Mr. Ekko advises can best be made locally. Certain other equipment will have to be obtained from overseas, but the buildings can be erected and most of the fittings made and installed locally and can be ready by the time the overseas equipment arrives.

4. The following further particulars are given:-

(1) Site. It is recommended that the plant be installed as a separate unit upon a site which could later on if desirable be handed over to be run by private enterprise. Such a site exists at the back of the P.W.D. yard adjoining the new P.W.D. siding. Timber would be purchased "sawn up" from local sawmills up-country and delivered by rail to the seasoning yard. It would then be unloaded and stacked under cover to await its turn to be seasoned. When seasoned it would be withdrawn from the kiln and stored in the P.W.D. store until required for use.



(2) Superintendent.

The question of a superintendent is very important, and it is essential that an experienced man be engaged at first. An intelligent young European should also be engaged as a learner with a view of taking charge later on. It is understood that the work of operating the kiln is not difficult but experience is essential especially at first and in a new country. There are not a great many experienced kiln seasoners available, but it may be possible, with the assistance of Mr. Eckbo, to borrow a man from the South African Government for say a year, to get the kiln in order, arrange working schedules for different kinds of timber and train a man to take over.

(3) Obtaining Timber.

Mr. Eckbo considers that it will be quite safe to purchase timber from sawmills ready sawn to boards and scantlings. Such timber would be "case hardened" to a varying degree, but this can be rectified in the modern seasoning kiln before seasoning proper commences provided permanent damage (such as cracking or splitting) has not occurred. This fact is of great advantage as it obviates the necessity of a sawmill adjoining the seasoning plant, and it also may obviate the necessity of installing such a fully equipped joiner's machine shop as was at first proposed. It will be possible for Contractors for building works to purchase their timber in the ordinary way and send it to the P.W.D. kilns to be seasoned. I still advocate a machine joiner's

shop but upon a smaller scale than before to deal with furniture and joinery for departmental works in outstations, etc. I am submitting proposals for this separately.

(4) Method of Working.

It is strongly recommended that the seasoning plant be operated as a self supporting unit, and the running costs together with interest on capital and sinking fund be charged to the timber seasoned. These charges would be based on estimated costs at first until reliable data had been obtained. Any profits could be utilized to liquidate the capital expenditure in addition to the ordinary sinking fund charge. I have discussed this matter with the Ag. Deputy Treasurer who expressed the opinion that there would be no difficulty. It would be analogous to the Mombasa Water Supply.

(5) Mr. Eckert refers to a dipping tank for the treatment of timber for protection against white ants and rot which has proved successful in South Africa. Not only is this treatment much cheaper than the usual "coating" treatment with various patent wood preservatives, but it is much more effective. It would be valuable as a complement to the seasoning kilns and could be operated in conjunction with them. Timber exposed to the attacks of white ants as in buildings, bridges, telegraph poles, etc., could be treated with great advantage; the cost is estimated at £.500,

and I recommend that one tank be installed.

(6) Capital Cost.

The estimated cost is approximately as follows:-

(a) Battery of six kilns complete with boiler, piping, trolleys, rails and all equipment.	£. 4600
(b) Timber sheds to hold 200 tons of timber.	1500
(c) Preserving Tanks for treating timbers.	500
(d) Trolley rails, etc.	500
(e) Roads and murrum floors to unloading tanks.	200
(f) Racks to keep timber clear of ground.	100
(g) Siding and switches.	500
(h) Boys' Quarters.	200
(i) Bath House and Latrines.	75
(j) Office.	75
(k) Fencing and Gates.	100
(l) Contingencies.	150
	<hr/>
	£. 8300
	<hr/>

The extra cost of installing four additional kilns would be £.2850.

(7) Operating Cost.

The estimated cost of operating a battery of six kilns per annum (capable of seasoning 600 tons of timber) is:-

Adviser.	\$800 for 1 year only.
Superintendent.	500
Clerk.	200
10 Boys.	150
Fuel	}
Current	
Water	
Depreciation 10% on \$3000 (cost of machinery only).	300
Maintenance 3% on \$8000 (\$240 less cost of preserving tank \$500)	240
Interest & sinking fund 7% on \$8000 (\$560 less cost of preserving tank \$500)	60
Emergencies.	100

= 1.67 \$ per ft.cube.

plus .65 \$ per ft. cube for 1st year to cover Adviser.

Cost of treating in preserving tank  
10 Cents per ft.cube.

5. I have discussed methods of financing the scheme with the As. Deputy Treasurer who is of the opinion that there will be no difficulty as the plant would be operated to pay for itself. He rather thought that the capital cost might be met from the Colony's balance, in which case annual contributions would be made to Miscellaneous Revenue equivalent to interest, sinking fund and any profits.

Sd. W.M. Lynde.

AG. DIRECTOR OF PUBLIC WORKS.

C O P Y.

P. O. Box 662.

PUBLIC WORKS DEPARTMENT,

HEAD OFFICE,

NAIROBI.

27th August, 1926.

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(f) Racks to keep timber clear of ground.	100
(g) Siding and switches.	500
(h) Boys' Quarters.	200
(i) Bath House and Latrines.	75
(j) Office.	75
(k) Fencing and Gates.	100
(l) Contingencies.	150
	<hr/>
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The extra cost of installing four additional kilns would be £.2850.

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Adviser.	<u>£.800</u> for 1 year only.
Superintendent.	500
Clerk.	200
10 Boys.	150
Fuel	} 500
Current	
Water	
Depreciation 10% on £.3000 (cost of machinery only).	300
Maintenance 3% on £.8000 (£8500 less cost of preserving tank £.500)	240
Interest & Sinking Fund 6 1/2% on £.8000 (£.8500 less cost of preserving tank £.500)	520
Emergencies.	<u>100</u>
	£. 2510

= 1.67 Sh. per ft. cube.

plus .53 Sh. per ft. cube for 1st year to cover Adviser.

Cost of treating in preserving tank  
50 Gents per ft. cube.

5. I have discussed methods of financing the scheme with the Ag. Deputy Treasurer who is of the opinion that there will be no difficulty as the plant would be operated to pay for itself. He rather thought that the capital cost might be met from the Colony's balance, in which case annual contributions would be made to Miscellaneous Revenue equivalent to interest, sinking fund and any profits.

Sd. W.M. Lynde.

AG. DIRECTOR OF PUBLIC WORKS.

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Clerk.	200
10 Boys.	150
Fuel	}
Current	
Water	
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Maintenance 3% on £.8000 (8500 less cost of preserving tank £.500)	240
Interest & Sinking Fund 5 1/2% on £.8000 (£.8500 less cost of preserving tank £.500)	520
Emergencies.	100
	£. 2510

= 1.67 Sh. per ft. cube.

plus .53 Sh. per ft. cube for 1st year to cover Adviser.

Cost of treating in preserving tank 50 Cents per ft. cube.

5. I have discussed methods of financing the scheme with the AG. Deputy Treasurer who is of the opinion that there will be no difficulty as the plant would be operated to pay for itself. He rather thought that the capital cost might be met from the Colony's balance, in which case annual contributions would be made to Miscellaneous Revenue equivalent to interest, sinking fund and any profits.

Sd. W.M. Lynde.

AG. DIRECTOR OF PUBLIC WORKS.

COPY.

UTILIZATION OF KENYA TIMBERS.

Acting Director of Public Works,  
Public Works Department,  
Nairobi.

Sir,

Your letter No. 3127 of the 3rd inst. is received. The questions raised are repeated and answered below after having gone into the local conditions from July 31st to August 23rd, in which time I have been afforded generous assistance not only by the various Government Departments concerned, but also by a number of private individuals as well.

Paragraph 2. (1) "Do you consider that the common species of local timber, particularly Podocarpus, Cedar, Camphor and Msharagi, are suitable for joinery and furniture if properly seasoned?"

Reply. All the timbers mentioned are considered not only suitable for ordinary joinery and furniture but for high class work as well when properly seasoned.

(2) "Which of the local timbers do you consider suitable for outside joinery work such as doors and windows?"

Reply. Cedar is particularly well suited for outside joinery, but I should not hesitate to use Podocarpus if carefully painted or otherwise preserved, and the construction is such as to prevent water lodging in joints. As an example may be mentioned a batten door as satisfactory when painted, while a panel door will

-2-

decay below the panels although painted in the ordinary way.

Another wood that should be mentioned as suitable for outside work is Brown-Olive (*Olea chrysophylla*), and there are probably others.

(3) "Do you consider that local timbers can be adequately and economically seasoned by a natural process? If so, please give particulars."

Reply. Drying out timber by a natural process requires a very long time and casehardening is liable to take place to such an extent as to render joinery made from this timber imperfect. Aside from this, the process is not considered economical if the timber is kept in stacks until sufficiently dry for joinery purposes, while a combination of the natural process and kiln seasoning may be applied to advantage.

(4) "Are you of opinion that local timber can be rapidly and economically seasoned by an artificial process? If so, please give particulars and state which process you recommend."

Reply. I am convinced that dimensions 2" and below can be both rapidly and economically seasoned from the green stage, but would recommend a combination of the natural and artificial process for the larger dimensions of the harder woods in particular.

The actual drying schedule for each one or group of species may be worked out as experience is gained, but preliminary schedules can be supplied from the Forest Department, Pretoria, and these may be accepted to begin with as suitable for timbers seasoned

in a forced draft high humidity chamber (Sturtevant).

(5) "In the light of your South African experience do you consider that Powellizing is likely to be of use in the treatment of local timber?"

Reply. Powellizing is essentially a timber preservative process, and the timber is saturated with moisture after the treatment. This moisture evaporates slightly faster than the moisture in untreated material, but not sufficiently fast to dispense with kiln seasoning or other adequate means of drying. From a seasoning point of view, there is little gained by Powellizing and as a preservative process I may say that Powellized Podocarpus sleepers have not proved satisfactory and several experiments carried out in South Africa with other timbers have not been encouraging at all. No further experiments are contemplated for this reason, and I don't think the process is suited any better for Kenya conditions.

Paragraph 3. (1) "Drawings and Specifications?"

Reply. A set of drawings was supplied the General Manager of the Kenya and Uganda Railway. The single unit has been accepted as most suitable for the South African Railways, six chambers being constructed at the present time. I would suggest that this kiln be duplicated in Kenya with certain modifications and additions as follows:- Four feet rail with 1 1/2" hole, 2 inches from one end to be placed so as 1 foot will protrude above floor level, up against the centre of the operating room wall. The protruding piece of rail with the hole in it to be used as an ancre for block

and tackle in connection with the charging and discharging of timber in the seasoning chambers. The steam spray pipe to be placed immediately above the heating coils instead of the opposite side as shown on the blue print. Discard drain in the middle of heating coil unit. The boiler, in case one is not available, to be of a woodburning type instead of coal. Deviation at one end of operating room is necessary to make room for fan and motor. Slant fan to coincide with slope of bottom of dust. Full specifications are not available, but a description of the equipment is made under the next heading.

(2) "Estimates of cost of installation?"

Reply. The cost of installing seasoning plant depends somewhat on the number of chambers desired, local conditions, etc. Assuming the conditions in Kenya to be similar to the conditions in South Africa, the following figures may be used as a guide for erection of six kilns:-

	Labour.	Material.
6 Multivane Fans Size 3 Design 3 and direct drive Motors, Erection of same & foundation.	40	680 x 16
Wiring including cables & trenching.	45	149
Heating coils & boxes over air inlets including connections to traps & waste pipes.	100	69
Steam piping, Valves, etc.	24	38
Air Outlet duct covers.	12	38
Mild steel dust (fan to outlet ducts)	43	29
6 1" steam traps. x		50 x
Current deflector, guide rods, etc.	55	40
6 Recorders.	10	355 x
Carried forward.	329	1454

	Labour.	Material.
Brought forward.	329	1464
1 2½" Reducing Valve. x	5	16 x
8 Trolleys.	94	246
1 Traverser.	43	173
1 24 H.P. Boiler (wood burning, low pressure).		325
Foundation and shelter to same.	22	27
Office benches, shelves, flooring, etc.	20	30
1 Sample oven (Steam or electrically heated to 200° F.)		
1 Platform Scale capacity 40 grams to 5 kgs. (not lbs.) with weights. x		
1 Balance Scale Triple Beam 1 centigram to 111 grams. x		
1 Slide Rule (18").		50
1 Electric plate and kettle for sample end dip.		
8 Hygrometers with long glass bottle water supply. x		
2 Tally boards.		
1 Anemometer to register 200' p.m. or less		
1 Hand lens.		
Contingencies.		<u>100</u>
	513	2431
Buildings.	<u>535</u>	<u>1121</u>
	1048	3552
Grand Total.	£.4,600.	

x Items to be ordered overseas.

(3) "Estimates of probable cost of operating for soft, medium and hard woods?"



Reply. The figures below have been compiled from plants in South Africa.

Thickness of material.	Price per cubic foot.					
	Partly air dry material 20% to 30% moisture content.			Green materials 60% to 100% moisture content.		
	Soft woods.	Medium woods.	Hard woods.	Soft woods.	Medium woods.	Hard woods.
1/2	25	38	50	42	67	83
1	50	75	1.00	83	1.25	1.67
2	1.00	1.50	2.00	1.67	2.50	3.33

(4) "Particulars of the materials and fittings which will have to be ordered from overseas and names and addresses of suppliers. This information should be given in sufficient detail to enable an order to be despatched immediately and should be accompanied by approximate costs."

Reply. On a basis of six chambers, the following equipment would have to be ordered from Sturtevant Engineering Co., Ltd., 147 Queen Victoria Street, London, or B.F. Sturtevant Co., Hyde Park, Boston, Mass., U.S.A.:-

6 Multivane Fans, size 3, design 3 with direct drive motors, current AC voltage 415	£. 680
6 Steam traps 1".	50
6 Recording Psychrometers with about 18 feet tube and 400 week-charts.	355
1 Reducing valve 2 1/2".	16
1 Platform Scale Weights 40 grams to 5 kg.	10
1 Balance Scale Laboratory Triple Beam 1 centigram to 111 grams.	10
1 Anemometer to register 200+ p.m. or less.	10
8 Hygrometers.	16

£. 1147

It is believed that the remaining items are either available at merchants in Nairobi or may be made locally. The above equipment is practically a duplicate of the items ordered for the Railway seasoning kilns at Pretoria, which was supplied by B.F. Sturtevant Co., Ltd., U.S.A., a short time ago.

The six recording psychrometers and the balance scale are of particular designs and should be obtained from U.S.A. in any case.

(5) "Particulars of working arrangements and staff required, especially the Superintendent; how he can be obtained and at what salary?"

Reply. The kilns should be working day and night except when loaded or discharged, and the staff would consist of 1 Superintendent, 1 Mechanic in charge of boiler and maintenance of equipment, a number of boys for stoking boiler, loading and unloading kiln trucks, depending on amount of work at hand.

There are very few men available in Africa that would be suitable for the position as Superintendent, and they would probably not consider a temporary position, but I will mention some of them:-

Name.	Address.		App. salary per annum at present.
M.H. Scott.	Forest Dept. Pretoria.	Technical Forester.	600-0-0
George Trest-rail.	South African Railways, Pretoria.	Coach Builder.	500-0-0
A.J. Turnbull.	Tanganyika Forest & Lumber Co., Ltd., P.O. Shume, Tanganyika.	Kiln Superintendent.	500-0-0
Wentzel.	Hillman Bros., Ltd., Denver, S. Africa.	" "	200-0-0

The first three are all particularly well qualified to run a battery of kilns and Mr. Trestrail would be capable of running a joinery shop as well, as he has had about twelve years experience as joiner etc. with the South African Railways. Mr. Wentzel has been employed one year as Assistant Kiln Operator at our experimental kilns and one year with Hillman Bros. I would suggest that a letter be sent each one of these men, informing them of the position and asking them to state the lowest salary they would demand in case they would consider an appointment.

Another well qualified man that may be considered is the Seasoning Specialist Mr. Fitzgerald at the Forestry Institute, Dehra Dun, India.

Mr. Scott should, I think, be approached through the Chief Conservator of Forests, Pretoria; Mr. Trestrail through the General Manager, S.A.R. & H., Johannesburg; and Mr. Fitzgerald, through the Forest Economist, Dehra Dun, India.

Should none of the foregoing consider an appointment it may be possible to select a particularly promising junior at our experimental kilns and give him as much training as possible, before you require his services six months hence.

(6) "For the purpose of these estimates it may be assumed that the annual output of the plant is to be 800 tons (50 feet cube) of soft and medium woods and 200 tons of hardwoods, in suitable sizes for joinery and furniture."

Reply. The maximum capacity of a kiln chamber 24' long x 10' high by 8' wide is 500 cu.ft. of timber,

and since it will not be possible at all times to fill it completely the average load may be taken to contain 400 cu.ft. or 8 tons.

Assuming the average thickness of the planks to be  $1\frac{1}{2}$ " and all the timber to be semi dry to grass green the average load will require 25 days.

The kilns are very largely automatic in their operation and would ordinarily be working on Sundays. On a basis of 325 working days per year it should be possible to complete 13 runs @ 8 tons each or 104 tons per kiln chamber per year.

An output of 1000 tons per year would require 10 chambers.

Instead of erecting 10 chambers that will only be required during the present building programme it may be preferable to reduce this number to six, which would correspond more closely to the normal requirements. If the latter number is accepted, it would be necessary to airseason a sufficient amount of timber to such an extent that the average run would require 15 days instead of 25 days.

With reference to your paragraphs 4 and 5, I think that it should be possible to have a plant working in about six months' time.

(7) In view of the difficulty in obtaining durable timber for construction of bridges, sheds, telephone poles, etc., it is advisable to give full consideration to the possibilities of timber preservative treatments. You will be interested to know in this connection that we

have carried out numerous experiments with many different preservatives that we are capable of injecting into the timber by any one of the processes in commercial use at present. Between 20,000 and 30,000 pieces of treated timber have been placed under service tests in representative parts of South Africa during the last four years, and we are beginning to reap some very valuable information regarding the efficacy of the treatments against white ants and decay.

Cresote, carbolinum, solignum and other oils have given excellent results, but the price of about 2.50 per gallon is prohibitive as a rule for cheap construction.

Metallie salts on the other hand like Zinc chloride, Arsenite of soda and many others are very much less costly although quite effective. Zinc chloride should be used in a 5% solution and would cost approximately 20 cents per gallon. Arsenite of soda is effective against borers and termites in a 2% strength and would cost about 13 cents per gallon, but the latter preservative must be used with discretion.

We use high pressure treatments a great deal but have found that full absorptions of about 15 lbs. per cu.ft. may be obtained by hot and cold treatments in open tanks. The time required to treat timber in the open tanks is approximately four hours in hot solution and about 12 hours (over night) in the cooling solution. A long open U shaped tank 30' long x 4' wide x 4'.6" deep with a return bend heating coil in the bottom should, I think, prove very useful. It could be heated by steam

from the seasoning kiln boiler and operated by the kiln superintendent.

The cost of the tank made of 1/2" plate with coils attached should not exceed £.500 fully installed.

Detailed plans of tank together with further data relative to preservatives and operation may be obtained by application to the Chief Conservator of Forests, Pretoria.

(8) To avoid delays and facilitate seasoning and preservation as well, it is urged that arrangements be made immediately for adequate timber supplies with the idea of carrying from six to twelve months supply on hand.

Any further information you may desire will be supplied, as far as I am able to, with the permission of my Government.

I have the honour to be,

Sir,

Your obedient servant,

Sd. Nils B. Eckbo.

OFFICER IN CHARGE OF TIMBER INVESTIGATIONS;  
FOREST DEPARTMENT, PRETORIA, SOUTH AFRICA.  
27-8-1926.

C O P Y.

The Secretariat,  
Nairobi, Kenya.  
When replying please quote:-  
No.S/"B" 21737/3c/39 and date  
24th August, 1926.

The Hon. Director of Public Works,  
Nairobi.

VISIT OF MR. ECKHO.  
Ref: Your No. 3277 of 17th inst.

His Excellency considers that Mr. Eckho should be asked to give his opinion on the whole question of the provision of timber for buildings etc., comparing conditions here with conditions in South Africa. He should report particularly on the local prices of timber and the quantities available locally, both of which are important elements in consideration of the question.

Sd. J.E.S. Merrick.  
for ACTING COLONIAL SECRETARY.

C O P Y.

P. O. Box 662.

PUBLIC WORKS DEPARTMENT,

HEAD OFFICE,

NAIROBI.

2nd September, 1926.

Ref.No.3680

The Hon. the Ag.Colonial Secretary,  
Nairobi.

KILN SEASONING OF LOCAL TIMBER.  
MR.ECKBO'S VISIT.

I forward herewith a supplementary report by Mr.Eckbo in reply to your letter No.B.21787/36/39.

2. It is unnecessary to comment on this report, but as regards Mr.Eckbo's opinion that Government should lay down a yard stocked with six to twelve months' supply of timber, the P.W.D. have at present storage accommodation at Nairobi for about 1,000 tons of timber. This would be about a year's supply for joinery work and furniture, but not for carpentry. It is, however, anticipated that a large amount of the loan building programme will be undertaken by contract, and the timber for such work will be obtained by Contractors direct from the sawmills. Joinery timber will be seasoned at the P.W.D. kilns for Contractors undertaking Government work. It is therefore possible that the existing P.W.D. storage will be sufficient, and I do not consider that further storage should be provided at present. I entirely disagree with Government undertaking anything in the nature of a Timber Merchant's business and stocking timber for any but their own use.

Sd. W.M.Lynde.

AG.DIRECTOR OF PUBLIC WORKS.



C O P Y.

Nairobi,

31st August, 1926.

Acting Director of Public Works,  
Public Works Department,  
Nairobi.

Sir,

With reference to letter "B" 21787/36/39 of the 24th inst., addressed to you by the Acting Colonial Secretary, it is noted that His Excellency the Governor desires that I should give my opinion on the timber situation in Kenya as compared with conditions in South Africa.

Timber Resources. Kenya is in the very fortunate position of having a larger acreage of indigenous timber within its borders than South Africa.

The country is not only capable of satisfying its own requirements, but produces, according to the Forest Department, a considerable annual surplus of timber, while South Africa on the other hand imports a very large percentage of its requirements as a matter of necessity.

Utility of the Timbers. The Kenya forests certainly resemble those of South Africa to a very marked extent and many trees only vary slightly botanically. Both countries have valuable species of Podocarpus; but Kenya is also favoured by having timbers like Cedar and Camphor that it is difficult to equal anywhere.

A well balanced supply of soft and hard woods is found and the timbers are thought suitable for probably all requirements in the way of building, joinery, furniture, wagon making, and many other purposes, provided they are

procurable at a reasonable price in a seasoned condition when required. But much remains to be done by the Forest Departments in this country and Uganda in the way of determining the physical and mechanical qualities of the timbers, their seasoning properties and need for preservation against white ants and decay in order to increase forest revenue by putting each timber to its best use.

I would like to suggest in this connection that the Forestry Adviser to be appointed for Kenya and Uganda should be a Professional Forester particularly well versed in Forest Engineering including exploitation, conversion and utilization of timber.

Timber Cut. There are twenty two sawmills on the Forest Reserves. These mills produced during the year 1925 about  $\frac{1}{2}$  million cubic feet or 10,000 tons of sawn timber, consisting principally of Cedar, Podo, Camphor and Musharagi.

This timber is ordinarily cut as the sawmiller receives orders, which means that the consumer has to wait a long time to get his timber, and when it finally arrives it is quite green. Although this arrangement is thoroughly unsatisfactory to the consumer, it is the only possible method to many small millers that are not in a position to saw up timber in anticipation of orders, but must have cash on completion of sawing.

It would appear that the demand for timber is greater than the supply and if that is the case it would be necessary to extend sales by the Forest Department. In view of the annual surplus of timber grown, this would seem feasible, and the cost of any additional staff required by the Forest Department should be covered by the additional revenue received.

Increased production would tend to expedite supply to a degree, but it would not help in getting seasoned material. The solution of this difficulty as far as the Government is concerned is in a Government Timber Yard equipped with seasoning and preserving machinery and stocked with six to twelve months supply of timber.

Prices of Sawn Timber. The prices of sawn timber in Nairobi are as follows:-

Dimensions.	Podo.	Cedar.	Camphor.	Archangel Secund.	Toak. Approx. Average Price for boards & scantlings 150 Cents per Board foot.
9" x 3"	29	40	Average Price for boards & scantlings	53½	
9" x 2"	31	43	50 Cents per Board foot.	54½	
9" x 1"	33	43		59½	
4" x 3"	29	40		54	
6" x 1" T&G	22			22½	
6" x 1" T&G	14			19½	

Prices are cents per board foot except T & G material which is per running foot, delivered P.W.D. Yard, Nairobi. Prices of imported timber are exclusive of duty and a rebate of 15% is allowed on railage.

It will be noticed that the prices of Podo are considerably lower than Archangel Secund although the former is a much superior wood. The prices of Cedar and Camphor are likewise much below Toak for which they may be substituted.

Even after a generous allowance is made for seasoning, the prices are in favour of the local product.

Considering further the large sentimental value attached to locally grown timbers, and the great

advantage of keeping money in the country, there seems to be no good reason why the timber industry of the country should not be patronized.

Conclusion. The local timber outlook in this country is entirely satisfactory provided a timber yard is established as suggested, capable of turning out thoroughly seasoned material on short notice. If this is done, the Government could well adopt the policy of using "Kenya timbers for Kenya buildings".

I have the honour to be,

Sir,

Your obedient servant,

Sd. Nils B. Eckbo.

OFFICER IN CHARGE OF TIMBER INVESTIGATIONS,  
FOREST DEPARTMENT, PRETORIA, SOUTH AFRICA.

COLONY AND PROTECTORATE OF KENYA.

KILN SEASONING OF LOCAL TIMBER.

REPORT OF MR. ECKBO,  
OFFICER IN CHARGE OF TIMBER INVESTIGATIONS,  
FOREST DEPARTMENT, PRETORIA, SOUTH AFRICA,  
AND RELATIVE CORRESPONDENCE.

---

Nairobi.

27th August, 1926.

COPY.

P. O. Box 662.

PUBLIC WORKS DEPARTMENT,

HEAD OFFICE,

NAIROBI.

27th August, 1926.

Ref.No. 6563

The Hon. the Ag. Colonial Secretary,  
Nairobi.

KILN SEASONING OF LOCAL TIMBER.  
MR. ECKBO'S VISIT.

1. Forward herewith Mr. Eckbo's report.

2. It will be observed that Mr. Eckbo considers that there is no doubt that the common species of local timber can be adequately seasoned by the modern kiln process and that this is the only method of seasoning likely to prove satisfactory in this country. He states further that this method is coming into general use in South Africa, not only on the part of Government who introduced the system into South Africa, but also on the part of Timber Merchants and Contractors. The system in South Africa is not confined to local timber but is also used for imported Baltic timber and Teak. The experience of South Africa is that all timber so treated is very much improved, and Contractors are willing to incur the small additional cost involved in using kiln seasoned timber for joinery as work so executed is much more reliable and can be guaranteed to remain sound.

3. I have discussed the question of the action to be taken in connection with this report with the Hon. the General Manager, Kenya and Uganda Railway,

Mr. Felling, and with the Chief Engineer, Major Rhodes, and after full consideration of all aspects of the case recommend that Government immediately embark upon a scheme for the installation of at least six kilns of sufficient total capacity to season 600 tons of timber per annum. It is probable that it may be found necessary to increase the number of kilns to ten, but I think it wisest to commence with six. The kilns would be installed and run by the Public Works Department, but the Kenya and Uganda Railway will assist by doing certain metal work in the shape of boiler, piping, trucks, and other fittings which Mr. Ekbo advises can best be made locally. Certain other equipment will have to be obtained from overseas, but the buildings can be erected and most of the fittings made and installed locally and can be ready by the time the overseas equipment arrives.

4. The following further particulars are given:-
- (1) Site. It is recommended that the plant be installed as a separate unit upon a site which could later on if desirable be handed over to be run by private enterprise. Such a site exists at the back of the P.W.D. yard adjoining the new P.W.D. siding. Timber would be purchased "sawn up" from local sawmills up-country and delivered by rail to the seasoning yard. It would then be unloaded and stacked under cover to await its turn to be seasoned. When seasoned it would be withdrawn from the kiln and stored in the P.W.D. store until required for use.

(2) Superintendent.

The question of a superintendent is very important, and it is essential that an experienced man be engaged at first. An intelligent young European should also be engaged as a learner with a view of taking charge later on. It is understood that the work of operating the kiln is not difficult but experience is essential especially at first and in a new country. There are not a great many experienced kiln seasoners available, but it may be possible, with the assistance of Mr. Eckbo, to borrow a man from the South African Government for say a year, to get the kiln in order, arrange working schedules for different kinds of timber and train a man to take over.

(3) Obtaining Timber.

Mr. Eckbo considers that it will be quite safe to purchase timber from sawmills ready sawn to boards and scantlings. Such timber would be "case hardened" to a varying degree, but this can be rectified in the modern seasoning kiln before seasoning proper commences provided permanent damage (such as cracking or splitting) has not occurred. This fact is of great advantage as it obviates the necessity of a sawmill adjoining the seasoning plant, and it also may obviate the necessity of installing such a fully equipped joiner's machine shop as was at first proposed. It will be possible for Contractors for building works to purchase their timber in the ordinary way and send it to the P.W.D. kilns to be seasoned. I still advocate a machine joiner's



shop but upon a smaller scale than before to deal with furniture and joinery for departmental works in outstations, etc. I am submitting proposals for this separately.

(4) Method of Working.

It is strongly recommended that the seasoning plant be operated as a self supporting unit, and the running costs together with interest on capital and sinking fund be charged to the timber seasoned. These charges would be based on estimated costs at first until reliable data had been obtained. Any profits could be utilized to liquidate the capital expenditure in addition to the ordinary sinking fund charge. I have discussed this matter with the Ag. Deputy Treasurer who expressed the opinion that there would be no difficulty. It would be analogous to the Mombasa Water Supply.

(5) Mr. Eckbo refers to a dipping tank for the treatment of timber for protection against white ants and rot which has proved successful in South Africa. Not only is this treatment much cheaper than the usual "coating" treatment with various patent wood preservatives, but it is much more effective. It would be valuable as a complement to the seasoning kilns and could be operated in conjunction with them. Timber exposed to the attacks of white ants as in buildings, bridges, telegraph poles, etc., could be treated with great advantage; the cost is estimated at £.500,

and I recommend that one tank be installed.

(6) Capital Cost.

The estimated cost is approximately as follows:-

(a) Battery of six kilns complete with boiler, piping, trolleys, rails and all equipment.	£. 4600
(b) Timber sheds to hold 200 tons of timber.	1500
(c) Preserving Tanks for treating timbers.	500
(d) Trolley Rails, etc.	500
(e) Roads and murrum floors to unloading tanks.	200
(f) Racks to keep timber clear of ground.	100
(g) Siding and switches.	500
(h) Boys' Quarters.	200
(i) Bath House and Latrines.	75
(j) Office.	75
(k) Fencing and Gates.	100
(l) Contingencies.	150
	<hr/>
	£. 8500

The extra cost of installing four additional kilns would be £.2850.

(7) Operating Cost.

The estimated cost of operating a battery of six kilns per annum (capable of seasoning 600 tons of timber) is:-

Adviser. £.800 for 1 year only.

Superintendent.	500
Clerk.	200
10 Boys.	150
Fuel	}
Current	
Water	
Depreciation 10% on £.3000 (cost of machinery only).	300
Maintenance 3% on £.8000 (6500 less cost of preserving tank £.500)	240
Interest & Sinking Fund 6 1/2% on £.3000 (£.8500 less cost of preserving tank £.500)	520
Emergencies.	100
	£. 2510

= 1.67 Sh. per ft. cube.

plus .53 Sh. per ft. cube for 1st year to cover Adviser.

Cost of treating in preserving tank 50 Cents per ft. cube.

5. I have discussed methods of financing the scheme with the AC. Deputy Treasurer who is of the opinion that there will be no difficulty as the plant would be operated to pay for itself. He rather thought that the capital cost might be met from the Colony's balance, in which case annual contributions would be made to Miscellaneous Revenue equivalent to interest, sinking fund and any profits.

Sd. W.M. Lynde.

AG. DIRECTOR OF PUBLIC WORKS.

COPY.

UTILIZATION OF KENYA TIMBERS.

Acting Director of Public Works,  
Public Works Department,  
Nairobi.

Sir,

Your letter No.3127 of the 3rd inst. is received. The questions raised are repeated and answered below after having gone into the local conditions from July 31st to August 23rd, in which time I have been afforded generous assistance not only by the various Government Departments concerned, but also by a number of private individuals as well.

Paragraph 2. (1) "Do you consider that the common species of local timber, particularly Podocarpus, Cedar, Camphor and Msharagi, are suitable for joinery and furniture if properly seasoned?"

Reply. All the timbers mentioned are considered not only suitable for ordinary joinery and furniture but for high class work as well when properly seasoned.

(2) "Which of the local timbers do you consider suitable for outside joinery work such as doors and windows?"

Reply. Cedar is particularly well suited for outside joinery, but I should not hesitate to use Podocarpus if carefully painted or otherwise preserved, and the construction is such as to prevent water lodging in joints. As an example may be mentioned a batten door as satisfactory when painted, while a panel door will

decay below the panels although painted in the ordinary way.

Another wood that should be mentioned as suitable for outside work is Brown Olive (*Olea chrysophylla*), and there are probably others.

(3) "Do you consider that local timbers can be adequately and economically seasoned by a natural process? If so, please give particulars."

Reply. Drying out timber by a natural process requires a very long time and casehardening is liable to take place to such an extent as to render joinery made from this timber imperfect. Aside from this, the process is not considered economical if the timber is kept in stacks until sufficiently dry for joinery purposes, while a combination of the natural process and kiln seasoning may be applied to advantage.

(4) "Are you of opinion that local timber can be rapidly and economically seasoned by an artificial process? If so, please give particulars and state which process you recommend."

Reply. I am convinced that dimensions 2" and below can be both rapidly and economically seasoned from the green stage, but would recommend a combination of the natural and artificial process for the larger dimensions of the harder woods in particular.

The actual drying schedule for each one or group of species may be worked out as experience is gained, but preliminary schedules can be supplied from the Forest Department, Pretoria, and these may be accepted to begin with as suitable for timbers seasoned

in a forced draft high humidity chamber (Sturtevant).

(5) "In the light of your South African experience do you consider that Powellizing is likely to be of use in the treatment of local timber?"

Reply. Powellizing is essentially a timber preservative process, and the timber is saturated with moisture after the treatment. This moisture evaporates slightly faster than the moisture in untreated material, but not sufficiently fast to dispense with kiln seasoning or other adequate means of drying. From a seasoning point of view, there is little gained by Powellizing and as a preservative process I may say that Powellized Podocarpus sleepers have not proved satisfactory and several experiments carried out in South Africa with other timbers have not been encouraging at all. No further experiments are contemplated for this reason, and I don't think the process is suited any better for Kenya conditions.

Paragraph 3. (1) "Drawings and Specifications?"

Reply. A set of drawings was supplied the General Manager of the Kenya and Uganda Railway. The single unit has been accepted as most suitable for the South African Railways, six chambers being constructed at the present time. I would suggest that this kiln be duplicated in Kenya with certain modifications and additions as follows:- Four feet rail with 1½" hole, 2 inches from one end to be placed so as 1 foot will protrude above floor level, up against the centre of the operating room wall. The protruding piece of rail with the hole in it to be used as an ancre for block

and tackle in connection with the charging and discharging of timber in the seasoning chambers.

The steam spray pipe to be placed immediately above the heating coils instead of the opposite side as shown on the blue print. Discard drain in the middle of heating coil unit. The boiler, in case one is not available, to be of a woodburning type instead of coal.

Deviation at one end of operating room is necessary to make room for fan and motor. Slant fan to coincide with slope of bottom of duct. Full specifications are not available, but a description of the equipment is made under the next heading.

(2) "Estimates of cost of installation?"

Reply. The cost of installing seasoning plant depends somewhat on the number of chambers desired, local conditions, etc. Assuming the conditions in Kenya to be similar to the conditions in South Africa, the following figures may be used as a guide for erection of six kilns:-

	Labour.	Material.
6 Multivane Fans Size 3 Design 3 and direct drive Motors, Erection of same & foundation.	40	680 x 16
Wiring including cables & trenching.	45	149
Heating coils & boxes over air inlets including connections to traps & waste pipes.	100	69
Steam piping, Valves, etc.	24	38
Air Outlet duct covers.	12	38
Mild steel duct (fan to outlet ducts)	43	29
6 1" steam traps, x		50 x
Current deflector, guide rods, etc.	55	40
6 Recorders.	10	355 x
Carried forward.	329	1464

	Brought forward.	Labour.	Material.
1 2 $\frac{1}{2}$ " Reducing Valve. <sup>x</sup>		329	1464
8 Trolleys.		5	16 <sup>x</sup>
1 Traverser.		94	246
1 24 H.P. Boiler (wood burning, low pressure).		43	173
Foundation and shelter to same.			325
Office benches, shelves, flooring, etc.		22	27
1 Sample oven (Steam or electrically heated to 200° F.)			
1 Platform Scale capacity 40 grams to 5 kgs. (not lbs.) with weights. <sup>x</sup>			
1 Balance Scale Triple Beam 1 centigram to 111 grams. <sup>x</sup>			
1 Slide Rule (18").			50
1 Electric plate and kettle for sample end dip.			
8 Hygrometers with long glass bottle water supply. <sup>x</sup>			
2 Tally boards.			
1 Anemometer to register 200'p.m. or less			
1 Hand lens.			
Contingencies.			100
		513	2431
Buildings.		535	1121
		1048	3552
Grand Total.	£.4,600.		

<sup>x</sup> Items to be ordered overseas.

(3) "Estimates of probable cost of operating for soft, medium and hard woods?"



Reply. The figures below have been compiled from plants in South Africa.

Thickness of material.	Price per cubic foot.					
	Partly air dry material 20% to 30% moisture content.			Green materials 60% to 100% moisture content.		
	Soft woods.	Medium woods.	Hard woods.	Soft woods.	Medium woods.	Hard woods.
1/4	25	38	50	42	67	83
1	50	75	1.00	83	1.25	1.67
2	1.00	1.50	2.00	1.67	2.50	3.33

(4) "Particulars of the materials and fittings which will have to be ordered from overseas and names and addresses of suppliers. This information should be given in sufficient detail to enable an order to be despatched immediately and should be accompanied by approximate costs."

Reply. On a basis of six chambers, the following equipment would have to be ordered from Sturtevant Engineering Co., Ltd., 147 Queen Victoria Street, London, or B.F. Sturtevant Co., Hyde Park, Boston, Mass., U.S.A.:-

6 Multivane Fans, size 3, design 3 with direct drive motors, current AC voltage 415	£. 680
6 Steam traps 1".	50
6 Recording Psychrometers with about 18 feet tube and 400 week-charts.	355
1 Reducing valve 2 1/2".	16
1 Platform Scale Weights 40 grams to 5 kg.	10
1 Balance Scale Laboratory Triple Beam 1 centigram to 111 grams.	10
1 Anemometer to register 200' p.m. or less.	10
8 Hygrometers.	16
	£. 1147

It is believed that the remaining items are either available at merchants in Nairobi or may be made locally. The above equipment is practically a duplicate of the items ordered for the Railway seasoning kilns at Pretoria, which was supplied by B.F. Sturtevant Co., Ltd., U.S.A., a short time ago.

The six recording psychrometers and the balance scale are of particular designs and should be obtained from U.S.A. in any case.

(5) "Particulars of working arrangements and staff required, especially the Superintendent; how he can be obtained and at what salary?" /

Reply. The kilns should be working day and night except when loaded or discharged, and the staff would consist of 1 Superintendent, 1 Mechanic in charge of boiler and maintenance of equipment, a number of boys for stoking boiler, loading and unloading kiln trucks, depending on amount of work at hand.

There are very few men available in Africa that would be suitable for the position as Superintendent, and they would probably not consider a temporary position, but I will mention some of them-

Name.	Address.		App. salary per annum at present.
M.H.Scott.	Forest Dept. Pretoria.	Technical Forester.	600-0-0
George Trest-rail.	South African Railways, Pretoria.	Coach Builder.	500-0-0
A.J.Turnbull.	Tanganyika Forest & Lumber Co., Ltd., P.O. Shume, Tanganyika.	Kiln Superintendent.	500-0-0
Wentzel.	Hillman Bros., Ltd., Denver, S. Africa.	" "	200-0-0

The first three are all particularly well qualified to run a battery of kilns and Mr. Trestrail would be capable of running a joinery shop as well, as he has had about twelve years experience as joiner etc. with the South African Railways. Mr. Wentzel has been employed one year as Assistant Kiln Operator at our experimental kilns and one year with Hillman Bros. I would suggest that a letter be sent each one of these men, informing them of the position and asking them to state the lowest salary they would demand in case they would consider an appointment.

Another well qualified man that may be considered is the Seasoning Specialist Mr. Fitzgerald at the Forestry Institute, Dehra Dun, India.

Mr. Scott should, I think, be approached through the Chief Conservator of Forests, Pretoria; Mr. Trestrail through the General Manager, S.A.R. & H., Johannesburg; and Mr. Fitzgerald, through the Forest Economist, Dehra Dun, India.

Should none of the foregoing consider an appointment it may be possible to select a particularly promising junior at our experimental kilns and give him as much training as possible, before you require his services six months hence.

(6) "For the purpose of these estimates it may be assumed that the annual output of the plant is to be 800 tons (50 feet cube) of soft and medium woods and 200 tons of hardwoods, in suitable sizes for joinery and furniture."

Reply. The maximum capacity of a kiln chamber 24' long x 10' high by 8' wide is 500 cu.ft. of timber,

and since it will not be possible at all times to fill it completely the average load may be taken to contain 400 cu.ft. or 8 tons.

Assuming the average thickness of the planks to be 1 1/2" and all the timber to be semi dry to grass green the average load will require 25 days.

The kilns are very largely automatic in their operation and would ordinarily be working on Sundays. On a basis of 325 working days per year it should be possible to complete 13 runs @ 8 tons each or 104 tons per kiln chamber per year.

An output of 1000 tons per year would require 10 chambers.

Instead of erecting 10 chambers that will only be required during the present building programme it may be preferable to reduce this number to six, which would correspond more closely to the normal requirements. If the latter number is accepted, it would be necessary to airseason a sufficient amount of timber to such an extent that the average run would require 15 days instead of 25 days.

With reference to your paragraphs 4 and 5, I think that it should be possible to have a plant working in about six months' time.

(7) In view of the difficulty in obtaining durable timber for construction of bridges, sheds, telephone poles, etc., it is advisable to give full consideration to the possibilities of timber preservative treatments. You will be interested to know in this connection that we

44

have carried out numerous experiments with many different preservatives that we are capable of injecting into the timber by any one of the processes in commercial use at present. Between 20,000 and 30,000 pieces of treated timber have been placed under service tests in representative parts of South Africa during the last four years, and we are beginning to reap some very valuable information regarding the efficacy of the treatments against white ants and decay.

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from the seasoning kiln boiler and operated by the kiln superintendent.

The cost of the tank made of  $\frac{1}{4}$ " plate with coils attached should not exceed £.500 fully installed.

Detailed plans of tank together with further data relative to preservatives and operation, may be obtained by application to the Chief Conservator of Forests, Pretoria.

(8) To avoid delays and facilitate seasoning and preservation as well, it is urged that arrangements be made immediately for adequate timber supplies with the idea of carrying from six to twelve months supply on hand.

Any further information you may desire will be supplied, as far as I am able to, with the permission of my Government.

I have the honour to be,

Sir,

Your obedient servant,

Sd. Nils B. Eckbo.

OFFICER IN CHARGE OF TIMBER INVESTIGATIONS,  
FOREST DEPARTMENT, PRETORIA, SOUTH AFRICA.  
27-8-1926.

COPY.

The Secretariat,  
Nairobi, Kenya.  
When replying please quote:-  
No.S/"R" 21787/36/59 and date

24th August, 1926.

The Hon. Director of Public Works,  
Nairobi.

VISIT OF MR. ECKBO.

Ref: Your No. 3277 of 17th inst.

His Excellency considers that Mr. Eckbo should be asked to give his opinion on the whole question of the provision of timber for buildings etc., comparing conditions here with conditions in South Africa. He should report particularly on the local prices of timber and the quantities available locally, both of which are important elements in consideration of the question.

Sd. J.E.S. Merrick.  
for ACTING COLONIAL SECRETARY.

C O P Y.

P. O. Box 662.

PUBLIC WORKS DEPARTMENT,

HEAD OFFICE,

NAIROBI.

2nd September, 1926.

Ref.No.3680

The Hon. the Ag. Colonial Secretary,

Nairobi.

KILN SEASONING OF LOCAL TIMBER.  
MR. ECKBO'S VISIT.

I forward herewith a supplementary report by Mr. Eckbo in reply to your letter No. B.21787/36/39.

2. It is unnecessary to comment on this report, but as regards Mr. Eckbo's opinion that Government should lay down a yard stocked with six to twelve months' supply of timber, the P.W.D. have at present storage accommodation at Nairobi for about 1,000 tons of timber. This would be about a year's supply for joinery work and furniture, but not for carpentry. It is, however, anticipated that a large amount of the loan building programme will be undertaken by contract, and the timber for such work will be obtained by Contractors direct from the sawmills. Joinery timber will be seasoned at the P.W.D. kilns for Contractors undertaking Government work. It is therefore possible that the existing P.W.D. storage will be sufficient, and I do not consider that further storage should be provided at present. I entirely disagree with Government undertaking anything in the nature of a Timber Merchant's business and stocking timber for any but their own use.

Sd. W.M. Lynde.

AG. DIRECTOR OF PUBLIC WORKS.



C O P Y.

Nairobi,  
31st August, 1926.

Acting Director of Public Works,  
Public Works Department,  
Nairobi.

Sir,

With reference to letter "D" 21787/36/39 of the 24th inst., addressed to you by the Acting Colonial Secretary, it is noted that His Excellency the Governor desires that I should give my opinion on the timber situation in Kenya as compared with conditions in South Africa.

Timber Resources. Kenya is in the very fortunate position of having a larger acreage of indigenous timber within its borders than South Africa.

The country is not only capable of satisfying its own requirements, but produces, according to the Forest Department, a considerable annual surplus of timber, while South Africa on the other hand imports a very large percentage of its requirements as a matter of necessity.

Utility of the Timbers. The Kenya forests certainly resemble those of South Africa to a very marked extent and many trees only vary slightly botanically. Both countries have valuable species of Podocarpus; but Kenya is also favoured by having timbers like Cedar and Camphor that it is difficult to equal anywhere.

A well balanced supply of soft and hard woods is found and the timbers are thought suitable for probably all requirements in the way of building, joinery, furniture, wagon making, and many other purposes, provided they are

procurable at a reasonable price in a seasoned condition when required. But much remains to be done by the Forest Departments in this country and Uganda in the way of determining the physical and mechanical qualities of the timbers, their seasoning properties and need for preservation against white ants and decay in order to increase forest revenue by putting each timber to its best use.

I would like to suggest in this connection that the Forestry Adviser to be appointed for Kenya and Uganda should be a Professional Forester particularly well versed in Forest Engineering including exploitation, conversion and utilization of timber.

Timber Cut. There are twenty two sawmills on the Forest Reserves. These mills produced during the year 1925 about  $\frac{1}{2}$  million cubic feet or 10,000 tons of sawn timber, consisting principally of Cedar, Podo, Camphor and Musharagi.

This timber is ordinarily cut as the sawmiller receives orders, which means that the consumer has to wait a long time to get his timber, and when it finally arrives it is quite green. Although this arrangement is thoroughly unsatisfactory to the consumer, it is the only possible method to many small millers that are not in a position to saw up timber in anticipation of orders, but must have cash on completion of sawing.

It would appear that the demand for timber is greater than the supply and if that is the case it would be necessary to extend sales by the Forest Department. In view of the annual surplus of timber grown, this would seem feasible, and the cost of any additional staff required by the Forest Department should be covered by the additional revenue received.

Increased production would tend to expedite supply to a degree, but it would not help in getting seasoned material. The solution of this difficulty as far as the Government is concerned is in a Government Timber Yard equipped with seasoning and preserving machinery and stocked with six to twelve months supply of timber.

Prices of Sawn Timber. The prices of sawn timber in Nairobi are as follows:-

Dimensions.	Podo.	Cedar.	Camphor.	Archangel Second.	Teak. Approx. Average Price for boards & scantlings
9" x 3"	29	40	Average Price for boards & scantlings	53½	150
9" x 2"	31	43	50 Cents per Board foot.	54½	150
9" x 1"	33	43		59½	150
4" x 3"	29	40		54	150
6" x 1" T&G	22			22½	150
6" x ¾" T&G	14			19½	150

Prices are cents per board foot except T & G material which is per running foot, delivered P.W.D. Yard, Nairobi. Prices of imported timber are exclusive of duty and a rebate of 15% is allowed on railage.

It will be noticed that the prices of Podo are considerably lower than Archangel Second although the former is a much superior wood. The prices of Cedar and Camphor are likewise much below Teak for which they may be substituted.

Even after a generous allowance is made for seasoning, the prices are in favour of the local product.

Considering further the large sentimental value attached to locally grown timbers, and the great

advantage of keeping money in the country, there seems to be no good reason why the timber industry of the country should not be patronized.

Conclusion. The local timber outlook in this country is entirely satisfactory provided a timber yard is established as suggested, capable of turning out thoroughly seasoned material on short notice. If this is done, the Government could well adopt the policy of using "Kenya timbers for Kenya buildings".

I have the honour to be,

Sir,

Your obedient servant,

Sd. Nils B. Eckbo.

OFFICER IN CHARGE OF TIMBER INVESTIGATIONS,  
FOREST DEPARTMENT, PRETORIA, SOUTH AFRICA.