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RURAL ELECTRIFICATION

A Study on Funding for Rural Electrification in Venda

Chris Lithole

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Purpose of Study

The purpose was to investigate the funding of rural electrification in Venda.

Methodology

Five weeks were allocated for this research.Two weeks were spent with Venda National Development Corporation Electricity Division(VNDCED).During this period with VNDCED, interviews and small discussions with VNDCED employees were conducted.

The remaining three weeks of the secondment period were spent with Eskom.

Venda

Venda is one of the four TBVC states, situated in the Northern-Transvaal.The population of Venda is approximately 580000,of which 5600000 stay in a rural area and approximately 20000 stay in an urban area.

Venda National Development Corporation (VNDC)- Electricity Division

Venda National Development Corporation was formed in 1993.It was formed as an amalgamation of Venda Electricity Corporation,Venda Development Corporation and Venda Agricultural Corporation.

Venda Electricity Corporation (VEC)was formed in 1987.It has its head offices in Thohoyandou.It is now called the Electrcity Division of Venda National Development Corporation.

Consumers

Venda National Development Corporation Electricity Divisiov(VNDCED) has three catergories of consumers.These are large power users,small power users and domestic power users.

When VNDCED they took over from the government in 1987 they inherited approximately 3000 consumers.They now have approximately 15000, of which about 13000 are domestic consumers and the remaining ones are large power users and small power users.

Out of these 13000 domestic consumers,about 9600 are rural and 3400 are urban.

Domestic consumption varies from 240kWh to more than 400kWh,depending on the income of an individual.

Domestic consumption is receiving a 50% government subsidy.

Purchases and sales of electricity.

VNDCED purchases its electricity from Eskom.They get a discount of 5.5c/unit purchased.

Throught the years,the quantity of electricity sold to consumers by VNDCED has been increasing.

Distribution losses were found to be 5.8%.

Sources of Capital

Their major source of funding is the Development Bank of Southern Africa(DBSA).

VNDCED also generate some income from their present consumers which makes 1/3 of their total expenditure.

For every connection they make,they get a grant of R400-00 from Eskom as an incentive for connecting new consumers.

Future Developments

Their Sundry Extension IV comprise mostly of construction of short 380v overhead lines from the existing 22/11kV overhead lines to the boundaries of consumer's

premises.

They plan to give priority to non-domestic consumers who are not subsidised.They have already identified villages they are going to start with.These are the villages which are situated nearest to their existing electricity lines.The success of this project depends on the availability of funds.

Rural Electrification

A study on funding for rural electrification in Venda

Purpose of study

The purpose of the study was to investigate the funding of rural electrification in Venda.Venda is an area which is mostly rural, with less than 5% of the population staying in an urban area.About 12% of the rural population has electricity,i.e.only 9689 households have electricity,whereas 99,9% of urban dwellers have electricity.

Venda Electricity Corporation claims most of these villages are far from the grid,hence it is costly to electrify these areas.

It is therefore hoped that the findings of this study would have helped in establishing the extent of electrification and identifying the sources of capital for electrification in Venda.

Methodology

The methodology followed in conducting this research was to spend some period with Electricity utilities like Venda National Development Corporation Electricity Division (VNDCED) and Eskom.

The first two weeks were spent with VNDCED.During this period,discussions were held with VNDCED employees.Interviews with Mr Steenkamp,who is the Assistant General Manager and with other Departmental Managers were conducted.Most of the information which is used in this report was extracted from the annual report which was obtained from the office of the General Manager(who used to be The Chief Executive Officer of the then VEC).

During the stay in Venda,interviews with ordinary members of the

community and civic leaders were conducted.

The last three weeks of the Secondment period was spent with Eskom.Different departments were visited,talking to different members of the organisations.The objective was to try to draw a link between Eskom and VNDCED(which is responsible for the electrification in Venda),and to also understand how Eskom,as an energy utility operates.

Besides time spent discussing with Eskom people,one had an opportunity to visit their library,where a study review on the electrification of Venda was done.

I also had an opportunity to attend two of their departmental meetings(i.e.Electrification department) which are held on mondays.

Spending time with these utilities was found useful not only for the research,it also helped to develop further ones'knowledge on energy.

Problems

There were not many problems experienced during this period.Offices were made available but they were not equipped with computers.

In Venda,transport problems made it difficult to go to the deep rural areas,where people are very poor.To establish a qualitative picture of no access to electricity, visits to these places were necessary.

Possibly the subject was too large for the time allocated.

1.Venda

1.1 Geography

Venda is one of the four TBVC states which was given Independent status in 1978 by Pretoria.

It is situated in the North-Eastern corner of South Africa(Far-Northern Transvaal),with the Kruger National Park to the East and Zimbabwe to the North(see attached map at the back).

There are four magisterial districts in Venda.These are Mutale,Dzanani, Vuwani and Thohoyandou.The latter has the most developed economic infrastructure.

1.2 Population

The total population of Venda was quantified as 580448 by VNDCED and on the basis of 7 persons per household,it is estimated that there are about 97000 households.19688 people were found to be residing in an urban area,with 560760 staying in rural areas.

Table 1.1 Population in Venda

	Rural	Urban	Total Population
number of people	560000	20000	580000
number of households	80000	3000	83000
electrified households	9689	3581	13270
non-electrified households	70000	-581	70000
% with electricity	12%		16%

The table above shows that in an urban area there are more electrified households than the total number of households.This is because it is

taken for granted that all households are composed of 7 members,which is not always the case,some households have 6 or less family members.

1.2.1 Urban/Rural

Izak van Gass (1993) describes an urban area as all the peripheral settlements which are functionally part of the metropoles.He claims that a rural area includes villages and small towns and can be divided into inner and outer rural areas.The inner rural areas are those closely associated with the metropoles and larger towns and are characterised by daily long-distance commuting of people,and outer rural areas as those farthest from the metropoles,generally underdeveloped and characterised by a high degree of migrancy,particularly of the male population.

According to VNDCED;Thohoyandou,Makwarela/Sibasa and Shayandima are the only areas considered as an urban areas.However,some Civic leaders see the whole of Venda as a rural place.These differing perceptions makes it difficult for one to can say how many rural household do have electricity in Venda.

It appears that rural people with electricity are those in inner rural areas.The availability of electricity to these people has so far not yet stopped them from using traditional fuels,but have rather succeeded in limiting availability of traditional fuels like wood,dung,crop residues because of population density.Because of the proximity of these families to urban areas,most of these families have translated into higher average households incomes and access to better retail distribution

network.This does not suggest that all households in inner rural areas have electricity,on the contrary the majority of them do not have.

In the outer rural areas the traditional fuels such as wood,crop residues and paraffin are still dominant.Very little natural wood is left.Rural women travel for more than 10km looking for wood.

There are very few families which are electrified, if any at all.

2.Venda National Development Corporation Electricity Division(VNDCED)

2.1 Background

VNDCED is an electricity division of the newly formed VNDC.It used to be called Venda Electricity Corporation (VEC).It was this year that Venda Electricity Corporation(VEC), Venda Agricultural Corporation(Agriven),Venda Development Corporation(VDC),were amalgamated into one organisation called Venda National Development Corporation(VNDC).

VEC started operating on April 1987.Funds to get VEC established were obtained from the Venda government,Independent Development Corporation and the Development Bank of Southern Africa.

The corporation's first objectives were to get the administration geared to provide regular monthly statements to the already existing 3000 consumers inherited from the Venda government.For accommodation,offices were leased from the Venda Development Corporation.The offices soon proved to be too small,and then VEC had to built its offices in Thohoyandou.

2.2 Current Situation

By the end of December 1987,VEC had 283 employees.The number of employees has now gone up to 296.

The organisation (i.e the electricity division of VNDC)is presently composed of four departments,viz Construction,Administration,Maintenance and Planning.Comparatively speaking,it is still a very small organisation. Most of the employees are based at the Head Office,which is situated in Thohoyandou,with stores and workshops throughout Venda.

3.Consumers

When VNDC Electricity Division took over from the Venda Government in 1987,it inherited only 3000 electricity consumers.This figure is inclusive of domestic and non-domestic power users.Non-domestic power users consist of small power and large power users,with robots and street lights included.

3.1 Existing Consumers

Since 1987,VNDCED has managed to increase the number of electricity consumers to 15013 of which 13270 are domestic consumers.This put the total number of connections by VNDCED to about 80% of all the existing consumers.

Table 3.1 Annual number of end-users connected and supplied (June 1988-June 1993)

Year	Consumers connected	Consumers supplied
1988	483	0
1989	1039	138
1990	1605	1443
1991	2117	1935
1992	2807	2692
1993	1566	1247
Total	9617	7455

It must be noted that the table above reflects the total number of domestic consumers connected between June 1988 to June 1993.

VNDCED has about three categories of consumers.In addition to domestic consumers,they also cater for large and small power users.

3.2 Domestic Consumers

It is difficult sometimes to tell how many of the domestic consumers in Venda are rural or urban.This is because there are differing perceptions on whether the whole of Venda area is considered as rural.There are some Civic leaders who argue that Venda is all rural.According to VNDC Electricity Division;Thohoyandou,Shayandima,Sibasa and Makwarela are the only areas which qualify to be called urban.The other areas,including newly established townships like Makhado,Mutale,Vuwani and Tshitale form part of a rural population.

Out of 82927 households (see table above),only 13270 are electrified,of which 9689 are rural consumers.

Since VNDCED took over from the government,there has been a tremendous increment in the number of electricity consumers.

In the beginning they started by connecting approximately 50 households per month. On average,160 households are being connected every month .

Sometimes they afford to make as many as 400 connections per month.This is attributed to a private Contractor which is helping them with new connections.

A report by Merz and Mc Lean(1991) claims that in October 1991, a total of 264 new consumers were connected to the VNDC Electricity Division system,85% of whom were domestic consumers outside the urban areas.

Their target has been to make 3000 new connections annually.If there is no change in the number of connections they make per year,by the year 2000 they will only be having 28453 electrified households.Such a possibility cannot be ruled out,because they do not have plans to expand their organisation so far.Though table 3.1 above show some improvement in the total number of new consumers connected and supplied year after year,such a scenario creates a continuous backlog.

The question is whether growth at these levels can be expected to persist in the long term,especially because you never know for how long is the government subsidy going to continue,and if it suddenly stops,who is going to provide the funds to replace the government subsidy.

A positive thing about these developments is that most of the more

densely populated areas of Venda are already well provided with electricity supply infrastructure and the capital costs of connecting new consumers are therefore likely to remain relatively low over the review period.

The average capital cost of connecting a new consumer in 1993 is R4100-0 0.This include all hv reticulation lines,stepdown substations,lv reticulation lines and also service connections and meters.

VNDCED charges R380-00 for rural connection fee and R350-00 for urban household connection.This is to compensate for the high costs incurred when electrifying rural areas.Their argument is that rural households are scattered,and are far from the existing grid and due to absence of business infrastructure,the electricity consumption turn to be low.

3.3 Domestic Consumption

The Venda government introduced a 50% domestic tariff subsidy with effect from April 1990.The subsidy resulted in dramatic increase in consumption and secondly in a tidal wave of applications for new domestic connections.The number of applications have increased to such an extent that,in spite of the greatly accelerated rate of connecting new customers,they started building up a considerable backlog.Due to the increased number of new applications and lack of funds,some civics representing their communities had to be turned back with cash for connection fees.

Table 3.1 shows how the usage of electricity by domestic consumers has increased and also how the rate of new domestic connections has gone up

since the introduction of the subsidy .

The most dramatic growth has been taking place in the category designated "other" which comprises of rural domestic consumers(see VNDCED's annual report).

Another encouraging aspect is that for every 11 new domestic consumers(who enjoy government subsidy),one new small power user has been connected and this ratio is being maintained.Such consumers enjoy no government subsidy but are nevertheless showing a vigorous growth in electricity consumption.In other words the domestic tariff subsidy is indirectly stimulating small business development.

The following statistics provide a dramatic illustration of what happened during the 12 months period following government subsidy to domestic consumers.

In the areas outside Thohoyandou,Shayandima,Sibasa and Makwarela the number of domestic consumers increased by 1798 from 3598 to 5394 over the 12 months period ending September 1991 (VNDCED annual report 1992/93).

In the same 12 month period ending September 1991 sales to this same group of domestic consumers were 12.846 million units compared with 8.066 million units (VNDCED annual report 1992/93)for the 12 months period ending September 1990-an astonishing real increase of 59%.

These statistics show that the subsidy has truly been an excellent investment by the Venda government,the return being a considerable upliftment in the quality of life of many of the citizens of Venda(Mr Ramuswana.G-Chairman of Venda National Unity Council).

3.4 Expenditure on Electricity

From a study by Mr Veck.A and Mr Kamp.A,classifying consumers into different gross income earning categories (R0-R9999;R10-R19999;...;R40000+...),it was observed that the higher income groups spend a relatively smaller proportion of their income on electricity as compared to low income groups(see table 3.2 below).Unfortunately,they do not explain as to why it is so.

Table 3.2 Expenditure on Electricity (as a % of total household income)

annual gross income	R0-R9999	R10000-R19000	R20000-R29999	R30000-R39999	R40000-R49999
paying	6.39	4.26	2.85	2.09	1.36
willing to pay	7.87	5.48	4.43	2.85	2.23

(Source:Mr Veck and Mr Kamp. 1992)

On average,consumers in all income groups are prepared to spend 5.01% of their total income on electricity,with the lowest income group (R0-R9999) prepared to spend as much as 7.87% on average.

However, there are some residential areas in Venda which do not have class differentiation.As a result,residents in such areas pay anything from R20-00 to R150-00 per month for electricity(Mr Veck.A and Mr Kamp.A.1992).

Such areas are those which are newly electrified and composed of households of all the income groups.A classical example is Makwarela, where people are extending their houses,as they earn more money,so that middle and higher income persons

eventually live alongside poorer persons.

Table 3.3 Monthly electricity consumption

income group(R per annum)	R0 to R9999	R10000 to R19999	R20000 to R29999	R30000 toR39999	R40000 to R49999
average consumption kWh	240	330	370	400	375
current charge(approximately c/kWh)	12,00	12,00	12,00	12,00	12,00
current expenditure(R)	40,00	50.00	55,00	59,00	56,00
willing to pay(R)	48,80	65,00	80,00	81,00	90,00
Maximum tariff which consumers are prepared to pay(c/kWh)	15,75	16,36	18,92	17,50	21,06
effective cost/kWh including R11	20,3c	19,7c	21,9c	20,25	24c

(Source:Mr Veck and Mr Kamp.1992)

.Figures on current expenditures and the maximum which consumers are prepared to spend on electricity include a flat- rate charge of approximately R11-00.

.The maximum tariff calculated is the charge for consumption of electricity over the flat-rate charge of around R11-00.

.The tables above show that the two lowest income group spend a higher proportion of their income on electricity than the higher income groups.This explains that poor people would prefer electricity to other alternative source of energy if made available and affordable to them.

3.5 Domestic tariffs

VNDCED has three categories of tariffs.They have tariff A,which is for large power users;tariff B for small power users and tariff C which is for domestic consumers.

Table 3.2 Domestic tariffs

Amount

Charges	Without subsidy	With subsidy
Basic charges/month	R26-58	R13-29
Energy charge/kWh	22,30c	11,15c

For a supply of electricity for domestic purposes for a dwelling unit or a group of dwelling units,or for a church,hall,old age home or other community premises,the following charges apply:

.A basic charge of R13-29 per month in respect of each point of supply,which charge shall be payable whether electricity is used or not.

.In respect of each point of supply a tariff of 11,15c per kWh is levied.

.The government subsidy has been taken into account in determining these tariffs.

VNDC Electricity Division used the above tariffs to calculate consumer's monthly accounts based on meter readings taken after 01 January 1993.

As shown above in table 2.2,electricity was very expensive in Venda for

domestic consumers before the introduction of the subsidy by the government.The basic charge was R26-58 per month which was payable irrespective of whether electricity was consumed or not,with each electricity unit costing 22,30c.Domestic tariffs were more expensive than non-domestic tariffs;which is 20,80c for small power users and 6,93c for large power users.

Table 3.3 Comparison of VNDCED tariffs with that of Eskom in 1991

	VNDCED		Eskom C	Eskom D	
Service charge /month	no subsidy	with subsidy	R23-84	R48-86	
	R21-96	R11-15			
Unit charge/kWh First 1000 units	19,60	11,15	12,964	19,195c	
Balance of units	19,60	11,15	12,964c	11,106c	

(Source:Merz and MacLean.1991)

Comparatively speaking,the tariffs for VNDCED appear to be cheaper than those of Eskom,a situation which is confirmed by Eskom employees,but something which does not seem to be considered by the Civic leaders in Venda.Civic leaders around Venda seem to think that direct purchase of electricity from Eskom will be cheaper for consumers than purchasing electricity from VNDCED,who purchase electricity in bulk from Eskom and then sell it at a profit.

4. Electricity Purchases

Table 4.1 Energy purchased from Eskom at Venulu(from VNDCED annual report)

Year	GWh	kVA	Total charge
1987/88	63137280	12980	4017550.3
1988/89	79410240	168320	5486099.60
1989/90	95395440	203179	6485299.60
1990/91	112785600	236620	9233358.70
1991/92	133480800	288567	12519275.80
1992/93	137805600	299084	14727272.80

(Source:VNDCED annual report.1992/93)

VNDCED purchases all of its electricity in a bulk from Eskom at Venulu.In the past they used to buy a small quantity from LouisTrichard Municipality.For every unit they purchase they are given a discount of 5,5c.

5. Sales of Electricity

Table 5.1 Units sold to non-governmental domestic users

	1988	1989	1990	1991	1992	1993
Mar	1091727	1330234	1913341	1924237	2492720	3806188
Apr	1299289	1292668	1439247	2399698	2748790	4570106
May	1238300	1455843	1565779	2395302	3301656	3862955
Jun	1419024	1840262	1895580	3056427	3388704	
Jul	1694197	1660889	2136109	3225734	3570942	
Aug	1651356	1853381	2230259	3455144	4801041	
Sep	1677065	1737488	2475703	3508392	3124058	
Oct	1344350	1385956	1983460	2630419	2910865	
Nov	1387821	1630202	2317473	3074384	3779156	
Dec	1280594	1441586	1823472	2186175	3603746	
Jan	1770544	1853233	2726929	4122469	3067077	
Feb	1248893	1327012	1641448	1985021	3153034	

(Source:VNDCED annual report.1992/93)

The sales of electricity to non-governmental domestic consumers

are given in table 5.1 above.(see graph)

An increase in the sale of electricity is seen taking place each year.This might be attributed more to an increased number of new consumers rather than to low tariffs due to government subsidy.

About 30% of the total electricity purchased from Eskom is sold to domestic consumers,the rest goes to large power users,small power users and others which consist of robots and street lights.

6 Distribution losses

In the year 1990/91 the losses incurred during distribution were 11,3%GWh.They were

reduced to 5,8% GWh in the year 1991/92.For the purpose of comparison,losses incurred by other electricity supply authorities are shown below(extracted from Merz and MacLean.1991).

Uitenhage Municipality	3,40%
Botswana Power Corporation	5,43%
City of Durban	5,68%
City of Cape Town	5,76%
City of East London	6,07%
Becor	8,46%
Swaziland Electricity Board	11,24%

The VNDC Electricity Divisions'present loss of 5,8% must therefore be regarded as normal when looking at these other distribution utilities.

7.Sources of Capital

The funds which helped in setting up VNDCED in 1986 came from The Independent Development Corporation,Development Bank of Southern Africa and the Venda Government.The IDC provided the funds only to start the organisation running and after that they ceased their funding.It was only DBSA and the Government which continued to provide financial assistance to the then Venda Electricity Corporation(VEC).

At the present time,VNDCED obtains its capital requirements from two sources,viz

.Loans -DBSA provides funds to VNDCED in the form of a loan.(note:in 1988 also a loan was made from the Standard Bank of South Africa for the building of the Head offices of VNDCED which are situated in Thohoyandou,this loan has to be paid off over a period of 10 years).

.Own capital-the own capital referred to here is generated from the operation of VNDCED.The shares which the government used to provide were stopped in 1992.Those were in fact,interest free,non-refundable loans.

In addition to that, there is little financial assistance provided by Eskom.

7.1 Eskom

Eskom does not fund VNDCED in the real sense of the word.When VNDCED started operating in 1987,Eskom provided training assistances and resources.

.VNDCED staff were given training at the Eskom college

.Eskom helped set up safety procedures

.Design of a new 22kV line configuration

.Provision of operating regulations as used by Eskom.

In order to encourage VNDCED to connect as many consumers as possible and to also

promote their mission statement of electricity for all,Eskom decided to provide grants to VNDCED.According to this arrangement,Eskom gives VNDCED R400-00 for every connection made by VNDCED. This serves as an incentive for VNDCED to connect as many new consumers as they possible can.

Another incentive provided is that VNDCED purchases electricity from Eskom in bulk at a reasonable discount of less 5,5c per unit purchased.

7.2 Development Bank of Southern Africa

Since the inception of UNDCED,DBSA has always been its major source of funding.It contributes 2/3 of VNDCED'total capital requirements.

The funding contract between the two organisations is a continual arrangement.DBSA provides a loan to VNDCED,which is payable at an interest rate of 11%.To enable them to accumulate some initial capital during their first operational years,repayments were suspended for the first five years.

DBSA does not provide finance to VNDCED in hard cash.The finance section of VNDCED presents the budget to DBSA which must first be approved.After the budget has been approved,VNDCED utilises their own funds and then make a claim to DBSA for all the costs incurred.

Table 7.1 Schedule of existing DBSA loans

Item number	Project	Amount Rand	Interest rate %	Number of repayments	Date of first instalment	Description
1	GVJ 01384	6068000	11,0	36	1990.9.30	Thenwe /Makonde/Masisi power line
2	GVJ 01641	481000	11,0	38	1990.9.30	Electricity supply,Sinthumule/Kutama phase
3	GVJ 02632	592500	11,0	39	1992.3.31	Electricity supply to Rammbuda area
4	GVJ 02644	2500000	11,0	36	1992.3.31	Sundry extension
5	GVJ 02882	4000000	14,0	38	1993.3.31	Sundry extension

(Source:Mr Steenkanp.1993)

Table 7.2 Schedule of Commercial loans

(From Standard Bank of South Africa Limited)

Amount	R3300000
Interest rate	prime overdraft
Term	10 years
Date of loan	1988.10.28
Capital repayment	16 consecutive half yearly payment of R92000,bullet payments on balance on 10th annual anniversary of the loan
Purpose of loan	construction of head office in Thohoyandou

(Source:Mr Veck and Mr Kamp.1992)

7.3 Own Capital

Besides loans obtained from DBSA,VNDCED also generates funds from its consumers.These consumers consist of domestic and non-domestic power users. In 1988,VNDCED made about R9004000.00 from electricity sales.By March 1993,they managed to generate R29393000.00 from their consumers.

Table 7.3 Income generated from consumers

Year	1988/89	1989/90	1990/91	1991/92	1992/93	Growth % p.a
Sales(Thousands of Rand)	9004	11492	15319	19792	29393	25.2
Sales(millions of kWh)	56.82	71.47	85.86	101.51	126.93	16.3
Price(cents/kWh)	15.85	16.08	17.84	19.50	24.62	7.62

(Source:VNDCED annual report.1992/93)

The total revenue made in electricity sales for 1992/93 was R29393million, as shown

above,whereof R6,29 million was contributed by the Venda government in respect of the domestic tariff subsidy.

7.4 Capital from the Government

The Venda government stopped funding VNDCED in 1992.The government has thus committed itself to subsidisation of domestic tariffs only.

8. Future Development

VNDCED site their development objectives as that of promoting economic development in Venda and to raise the living standards of local inhabitants by implementing a phased and balanced,economically rational electrical consumer expansion programme while adhering to cost-recovery principles and taking cognisance of possible future regional development trends.

VNDCED's new project(Sundry Extension Phase IV) comprise the construction of short 380v overheard lines from the existing 22/11kV overheard lines to the boundaries of consumers'premises.It is felt that short extension to the 22/11kV bulk supply line may be required before the low voltage extension can be done.They plan to erect both the 22/11kV and 380v lines on wooden poles.For insulation,post and pin type cycloalephatic resin are going to be used for the 22/11kV lines while glazed porcelain insulators will be used for the 22/11kV lines while both areal bundled conductor and base conductors will be used for the 380v lines.

The project will concentrate on the connection of new consumers to the existing 22/11kV and 220/280v lines to those communities along the main LouisTrichard/Thohoyandou route;the Thohoyandou/Sibasa/Makonde route;the Sibasa/Makhado route and the Thohoyandou/Pundamaria route,where an economic base exists.

Mr Steenkamp,the assistant General Manager of VNDCED says that they plan to give priority:

.to non-domestic consumers who are not subsidised

.the feel that the broadening of the revenue base through the connection of new consumers to the existing bulk network will further form an essential element of the long-term programme to lead the borrower ultimately to financial self-sufficiency.All these new connections will be adding to the already existing present number(+-15000) of consumers connected to its bulk grid.

8.1 Villages under LouisTrichard/Thohoyandou route:

Villages under this route are Itsani(adjacent to Shayandima),Tshisaulu,Lwamondo,Tshino,Tsianda,Ha-Mutsha and Tshakhuma.Each village has an average of three cafes;two general dealer shops;five workshops;two secondary schools;three primary schools and a fruit market along the tar road. Each village has a 22kV line and a few 220/380v lines already in place.These villages are densely populated and constantly need the expansion of the network(low voltage mainly) to cater for the connections which are required every day.Each village has an average of 2500 households.Although the area is mainly residential,there is a great deal of agricultural activity taking place due to the fertility and good rainfall of the area.Small business activity is also thriving.

8.2 Villages under Thohoyandou/Sibasa/Makonde route

Villages along this route are:-

Tshivhulani,Dzingahe,Vondwe,Tshidimbini,Khubvi,Makonde and the Mutale town.They stretch over a distance of approximately 40km from Thohoyandou. The settlement patterns and density are similar to those of the

LouisTrichard/Thohoyandou villages.The distribution of VNDCED electricity network is also similar,low voltage reticulation is needed to optimise the capacity of the 11kV and the 22kV lines which are already in place.

A total of 254 applicants for electricity connections have been received and paid for and approximately 30km of short 220/280v and 11/22kV lines is required to supply these people and to provide exposure to other prospective consumers.

8.3 Villages under Sibasa/Makgado route

Villages along this route are:-

Ngovhela,Phiphidi,Khalavha,Fondwe,Tshikombani,Sendedza,Dzanani,Ha-Rabali,Matidza,Tshituni,Tshirolwe,Tshikuwi and the Makhado town itself.This might be the widest area which stretches over a distance of approximately 60km.The Witvlag area also forms part of this route.Again all these villages are covered by over 22kVlines and some 220/380 low voltage lines which are supplying some consumers already.4000 domestic consumers and approximately 330 businesses are already using electricity,69 paid up applications for electricity are awaiting connections.Approximately 6km of mainly 220/380v is to be erected to supply these areas.There is a new spur of 22kV line of about 25km which goes through villages such as Thononda,Tshitaeni,Ha-Khakhu-Makuleni and Sheshe which require complete low voltage reticulation.Applications for supply from these communities have been received.It is however VNDCED's plan to take initiative in reticulating these villages in order to optimize the use of the 22kV line which is presently supplying two radio transmitters and very few businesses.

Villages between Sibasa and Makhado town have similar business activities to those of Sibasa/Makonde and LouisTrichard/Thohoyandou villages except for Tshikuwi

which is purely residential.

8.4 Thohoyandou/Pundamaria route

Villages along the Pundamaria route from Thohoyandou are Lufule II,Tshikhudini,Dumasi,Mangondi and Ha-Muraga.

There are newly developing villages.They stretch over a distance of +-25km towards the Kruger National Park.There is an existing 22kV bulk supply line which existed before the VNDCED was established.Approximately 10km of this route is occupied some businesses(especially workshops) which are already connected to their lines. There is domestic electricity demand coming up and therefore some 220/380 low voltage reticulation will have to be done.There are approximately 40 paid up applications which have been received and some 9km lines will be required to supply these people.

It must be noted that the villages mentioned above are not all.There are many others which are furthest from the existing routes.

9 Comments

It was a difficult task to focus only on electrification of rural communities.The demarcation between rural and urban in Venda is not clear,with the Civics arguing that the whole area is still rural.

Both Eskom and VNDCED are still sceptical about rural electrification.This has been seen by their argument against a strong emphasis on rural electrification in workshops and meetings.They do not even have budgets for rural electrification.They argue that it is a costly program,which at the end of the day will not recover the costs incurred.

The Civics have a different perception.To them,the backlog which has been created throughout the years of the apartheid era,where utilities neglected these black rural areas,cannot be blamed on the rural people.During those years,the government provided subsidies to electrify white commercial farmers who are even more scattered than rural communities.

Another factor which makes the whole issue of the cost of rural electrification unacceptable is the valid argument of the billions of rand owed to the utilities by the Townships.Most of urban townships where black people are staying have been boycotting electricity bills for many years.They owe billions of rand,but the utilities can bear these debts.The costs which can be incurred by the utilities through electrifying rural communities is too much.This sounds like urban bias to rural people. Nobody deny that taking electricity to rural communities is costly,not even the Civics.What people are saying out there is that you let the backlog accumulate,make electricity accessible to all the people,whether they are rural or urban,so that they can be in a position to choose between electricity,wood,paraffin gas,and so on. To them,their living standards is low.They see electricity as something which will improve their clinics,schools,small businesses like shops,cafe, workshops and small-scale agricultural farmers and also create employment.

They argue that the few houses with electricity has shown tremendous preference for electricity over other sources of energy.To support this argument is the fact that they have always shown preparedness to pay for electricity,even when the services are not that much satisfactory.

10 Recommendations

.The utilities,the government non-governmental organisations,community

based organisations like civics,all agree that rural electrification in South Africa will cost a lot of money,which,presently may not be there. The incoming government, will also have more than just electrification problems.There are backlogs also in housing,water availability, roads,and a whole lot of other infrastructural needs.

Therefore,it will be convenient and less costly to couple electrification of rural areas with other developmental programs.This could result in an economic base for rural people and also help in the creation of job opportunities.For VNDC Electricity Division,it can be easier to implement this kind of a program because the organisation itself is an amalgamation of Venda Development corporation which is involved in the development of that area,Venda Agricultural corporation which is concerned with the promotion of small-scale and subsistence farming,and Venda Electricity corporation.

.VNDCED,like Eskom,have not yet thought of intergrated energy planning.Their focus is only on electricity.Realising how costly it is to supply everyone with electricity,it would be a good idea for them to start looking at other energy alternatives,provided they see themselves continuing in future independent from Eskom like they are now.They can also consider remote power supply options(RAPS),than focusing on grid electricity only.

.Civics in Venda are not very happy with VNDCED.There is a claim that some Civics were turned down when they went to VNDCED with connection fees because their area is far from the grid and VNDCED lack funds to connect

them.A classical example is a civic from a certain village called Tshikamba.

A sort of mechanism to convey financial constraints of the organisation to the broader community is needed.A forum which will engage these community-based organisations in decisions making might be a good idea.This could also serve to preempt situations where community-based organisations decides to engage on boycot,refusing to pay electricity bills because either it is too expensive or the services provided are insufficient. .The government provide 50% subsidy on domestic tariffs.In 1992/93,R6,29 million of the R29,393 million generated by VNDCED came from the government subsidy.Some people argue that if such a lot of money is set aside to help subsidise new connections than to subsidise consumption by domestic end-users,it would be a good idea.If such a suggestion is accepted,1500 more connections could be made,adding to the current 3000 target per year.Maybe that is not a bad idea at all!

An important aspect which VNDCED has to consider is the question of funding.They are presently strongly funded by DBSA,and have not yet started exploring other possibilities for funding like approaching insurance companies.If DBSA suddenly stops funding them,they could run into serious financial problems.

These are some of the recommendations which need to be considered.

VNDC – ELECTRICITY DIVISION

NO. OF CONSUMERS: DOMESTIC & SMALL POWER USERS

SUPPLY AREA	EXISTING						PROJECTED			
	1991		1992		1993		1994		1995	
	DOM	SPU	DOM	SPU	DOM	SPU	DOM	SPU	DOM	SPU
A. CENTRAL										
1. Thohoyandou (Unit A–P)	1347	91	1466	134	1571	188	1735	243	1905	308
2. Shayandima (1 & 2)	776	60	937	63	1109	68	1284	75	1474	86
3. Makwarela & Sibasa	811	119	979	125	1050	127	1170	134	1301	141
	2934	270	3382	322	3730	383	4189	452	4680	535
B. LOUIS TRICHART/THOHOYANDOU ROUTE										
1. Duthuni	127	22	192	34	333	36	480	39	621	44
2. Tshasaulu	170	18	224	19	304	20	373	22	440	25
3. Lwamondo	94	5	125	7	185	10	247	13	307	16
4. Mangilasi/Vuwani	244	38	337	47	527	54	669	61	812	69
5. Tshifulanani	181	26	263	29	387	33	490	37	600	42
6. Tshakhuma	214	24	292	29	421	32	525	36	635	41
	179	37	236	39	356	42	445	45	540	48
	1209	170	1669	204	2513	227	3229	253	3955	285
C. THOHOYANDOU/SIBASA/MAKONDE										
1. Tshivhulani – Tshitereke	220	29	309	33	454	39	599	46	729	51
2. Mukula – Tshaulu	120	21	234	32	411	36	570	43	735	49
3. Vhufuli – Tshidimbini	403	44	380	43	488	45	596	47	686	48
4. Khubvi – Matangari	68	13	142	19	390	22	551	25	651	28
6. Mutale–Tshandama	95	24	189	32	402	45	572	56	732	63
	906	131	1254	159	2145	187	2888	217	3533	239
D. SIBASA/MAKHADO										
1. Ngovhela – Thathevondo	230	14	237	20	380	20	471	22	581	24
2. Ngulumbi	211	22	285	22	410	30	505	35	615	39
3. Khalavha – Siloam	299	44	392	54	602	57	757	66	892	75
4. Tshithuthuni – Mandiwana	275	14	350	28	542	35	677	49	802	63
5. Rabali – Makhado	345	74	496	86	689	96	862	108	1017	118
6. Raliphaswa – Mauluma	175	16	247	19	366	22	461	24	566	27
7. Phadzima – Maelula	152	38	225	43	366	48	451	54	541	59
	1687	222	2232	272	3355	308	4184	358	5014	405

SUPPLY AREA	EXISTING						PROJECTED			
	1991		1992		1993		1994		1995	
	DOM	SPU	DOM	SPU	DOM	SPU	DOM	SPU	DOM	SPU
E. THOHOYANDOU/PUNDAMARIA ROUTE										
Mbaleni–Dumasi–Malavuwe	148	33	196	42	300	45	395	49	501	56
F. KUTAMA/SINTHUMULE										
1. Madombidzha – Rathidili	132	18	213	20	286	22	360	25	444	27
2. Mara – Tshikwarani	31	9	98	18	164	21	232	27	304	34
3. Muraleni – Ravele	40	9	73	9	110	12	145	14	185	18
	203	36	384	47	560	55	737	66	933	79
G. VLEIFONTEIN	153	13	244	14	366	19	485	24	584	29
H. HA–MASHAU	17	6	88	9	210	19	307	28	412	35
I. NEW PROJECTES										
1. Madodonga							80	4	140	8
2. Ha–Ramantsha							70	5	130	7
3. Tshiozwi							70	3	120	5
4. Ha–Luvhimbi							40	8	65	12
5. Zamenkomst							40	4	70	6
6. Mulenzhe							50	4	80	6
7. Vuvha (This could be made by IDT							20	3	40	5
8. Ha–Magau							40	4	70	6
							410	35	715	55
TOTALS	7257	881	9449	1069	13179	1243	16824	1482	20327	1718

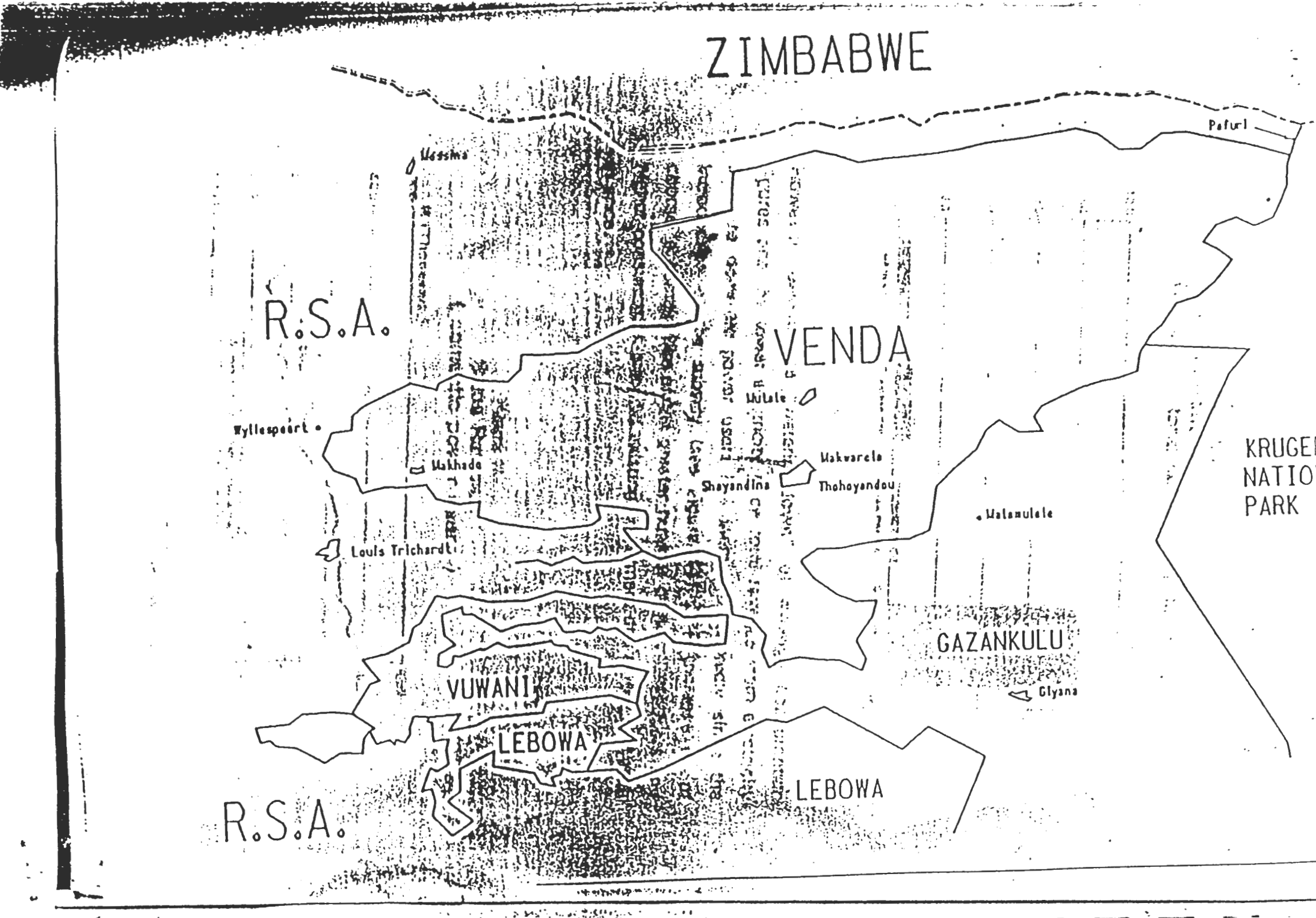
ADDENDUM I.

ESTIMATED COSTS OF IDENTIFIED ELECTRIFICATION PROJECTS

SUNDRY EXTENSION PHASE IV: 1993/1994

PROPOSED PROJECT FOR ELECTRIFICATION	CONSTRUCTION ACTIVITIES								COST BREAKDOWN			TOTAL ESTIMATED COST R
	22kV LINES km	11kV LINES km	TRFRS/ S/GEAR	380V LINES km	220V LINES km	READY BOARD EACH	CONSUMER CONNECTIONS DOMESTIC EACH	CONSUMER CONNECTIONS SPU EACH	MATERIALS R	LABOUR R	TRANSPORT R	
Thohoyandou(A-P)	-	12,0	6	8,0	-	-	164	54	537 139	265 045	85 899	888 08
Shayandima (1&2)	-	-	7	-	-	-	175	5	144 650	58 801	18 835	222 28
Makwarela&Sibasa	-	7,0	5	8,0	-	-	120	2	380 425	199 426	61 734	641 58
Duthuni	-	5,0	6	3,0	1,5	-	147	4	289 972	135 261	43 307	468 54
Tshisaulu	-	-	3	3,5	-	-	69	1	126 066	71 923	20 384	218 37
Lwamondo	4,0	-	3	4,0	-	-	62	3	205 490	105 601	32 951	344 04
Mangilasi/Vuwani	-	2,5	6	2,8	-	-	142	7	221 120	105 619	33 073	359 81
Tshifulanani	1,5	-	4	2,0	-	-	103	4	150 662	72 736	22 668	246 06
Tshakhuma	4,6	-	4	12,0	-	-	89	3	392 532	229 140	66 924	688 59
Tshivhulani/ Tshitereke	-	3,0	6	8,0	-	-	145	4	330 255	180 689	53 539	564 48
Mukula/Tshaulu	3,5	-	7	10,06	-	-	159	4	450 880	259 070	75 117	785 06
Vhufuli/ Tshidimbini	-	3,0	4	9,0	-	-	108	3	315 076	180 803	52 946	548 82
Khubvi/Matangari	1,8	-	7	9,0	-	-	161	3	343 086	192 024	55 689	590 79
Mutale/Tshandama	4,0	-	7	6,0	-	-	170	13	336 042	171 267	52 599	559 90
CARRIED FORWARD	19,4	32,5	75	85,36	1,5	0	1 814	110	4223 395	2227 405	675 665	7126 46

PROPOSED PROJECT FOR ELECTRIFICATION	CONSTRUCTION ACTIVITIES								COST BREAKDOWN			
	22kV LINES km	11kV LINES km	TRFRS/ S/GEAR	380V LINES km	220V LINES km	READY BOARD EACH	CONSUMER CONNECTIONS DOMESTIC EACH	CONSUMER CONNECTIONS SPU EACH	MATERIALS R	LABOUR R	TRANSPORT R	TO ESTI C
BROUGHT FORWARD	19,4	32,5	75	85,36	1,5	0	1 814	110	4223 395	2227 405	675 665	7126 4
Ngovhela/ Thathe Vondo	1,5	-	4	2,5	-	-	91	-	151 526	75 534	23 075	250 1
Ngulumbi	-	-	4	-	-	-	95	8	83 880	34 332	10 980	129 1
Khalavha-Siloam	2,0	-	7	4,0	-	-	155	13	246 188	123 862	37 886	407 9
Tshithuthuni/ Mandiwana	2,0	-	6	2,8	-	-	135	7	208 678	100 601	31 133	340 4
Rabali-Makhado	3,0	-	7	3,7	-	-	173	10	272 829	132 102	41 223	446 1
Raliphaswa-Mauluma	1,0	-	4	2,6	-	-	95	3	148 640	75 445	22 744	246 8
Phadzima-Maelula	2,0	-	4	3,5	-	-	85	5	108 512	93 291	28 269	230 0
Mbaleni-Dumasi-Malavuwe	1,0	-	4	3,5	-	-	95	4	166 812	88 271	26 189	281 2
Madombidzha-Ha-Rathidili	-	-	3	3,7	-	-	74	5	63 554	26 005	8 335	97 8
Mara-Tshikwarani	3,5	-	3	-	-	-	68	6	195 839	100 420	31 303	327 5
Muraleni-Ravele	-	-	2	-	-	-	35	2	34 300	18 406	4 250	56 9
Vleifontein	-	-	5	1,0	-	-	119	5	120 766	55 022	16 839	192 6
Ha-Mashau	-	-	4	1,0	-	-	97	9	104 984	48 991	14 954	168 9
CARRIED FORWARD	35,4	32,5	132	113,66	1,5	o	3 131	187	6129 903	3199 687	972 845	10302 4


ZIMBABWE
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VENDA
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Malamulele
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Louis Trichardt
GAZANKULU
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