



ELECTRIFICATION STATISTICS



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

2009

Minister's Foreword

The peaceful transformation in 1994 from an apartheid regime to an open, non-racial democracy was an inspiring event which continues to pose many challenges. One of the major challenges facing government is to redress the unequal distribution of basic services (electricity inclusive) in order to ensure a better quality of life for all South Africans.

For the past 15 years, the Integrated National Electrification Programme (INEP) has been able to connect 4.9 million households and to date about 75% of all households in South Africa have access to electricity. However, the mandate of the Department of Energy (DoE) is not only aimed at addressing challenges related to access to basic electricity services, but is also directed towards ensuring the socio-economic empowerment of historically disadvantaged individuals. As part of this mandate, the INEP has been monitoring the number of schools and clinics electrified on an annual basis, as well as the number of jobs created through the programme. Since 2001/2002 almost 5000 schools have been electrified and the universal access target is set to be reached by 2010/2011. The universal access target for clinics was reached in 2007/2008. Also, through this programme, a total number of 32 995 jobs have been created in the last eight years. The numbers of learners that have been trained as part of the electrification programme has reached almost 7000 for the past four years.

To determine the impact of electrification at household level, the DoE annually undertakes a national electrification socio-economic impact study. Almost nine in ten households (87%) mentioned that the electrification process has benefitted them. More than three fifths (62%), of households said that the electrification process had benefitted their respective communities, giving them opportunities to establish small businesses and improve their safety and security. Ten percent of households also said that electricity has contributed to their household's income. Satisfaction with the installation of electricity was also extremely high with more than 90% of households satisfied with the installation process.

This booklet details some of the above mentioned achievements and also discusses the findings of the household survey.



Ms E. D. Peters
Minister: Department of Energy

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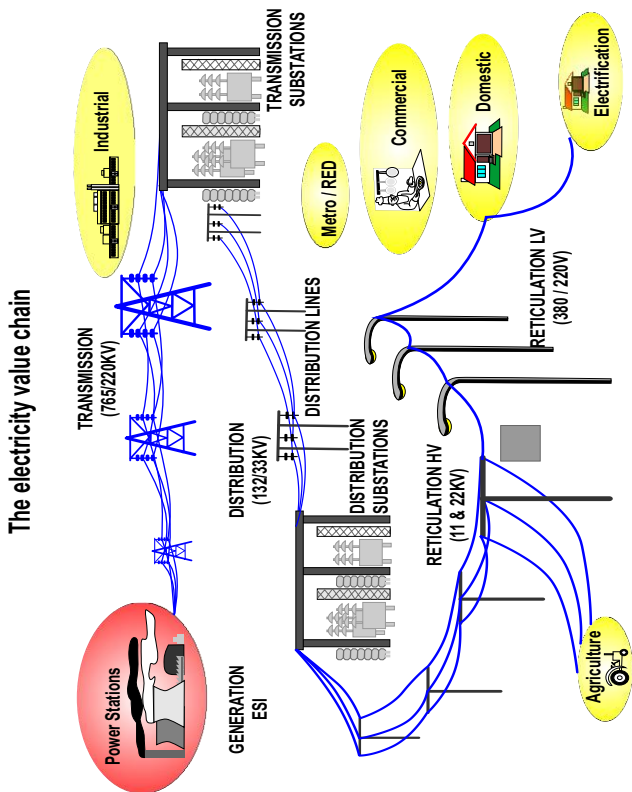
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Electricity Value Chain

The electricity value chain is a complex system of integrated networks and transmission distribution stations. Below is an illustration of the value chain indicating how the power is generated from the power stations and moved to lower end commercial and domestic users.



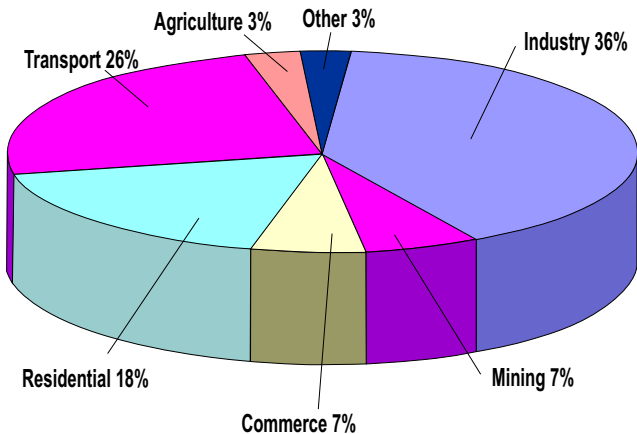
South Africa's Maximum Electricity Capacity

In total, South Africa has 24 power stations with a total net maximum capacity of 36 208 MW.

TYPE	13 STATIONS	NET MAX CAPACITY
Coal Fired	13 stations	32 066 MW
Gas Turbine	2 stations	342 MW
Hydro Electric	6 stations	600 MW
Pumped Storage	2 stations	1 400 MW
Nuclear	1 station	1 800 MW
TOTAL	24 Stations	36 208 MW

Electricity Sectoral Usage

The three largest electricity consuming sectors are industry, transport and residential.





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Electrification Programme

Electrification Status

The mandate of the Department of Energy (DoE) is not only aimed at addressing the challenges related to access to basic electricity services, but also towards the social economic empowerment of historically-disadvantaged individuals. As part of the integrated National Electrification Programme the number of households, schools and clinics electrified are being monitored on an annual basis.

Up to 2009, 75% of all households in South Africa have been electrified, totalling 9 245,357 households. The highest percentage of electrified households is found in the Western Cape (86%) as opposed to the lowest percentage electrified (60%) found in the Eastern Cape.

Province	Total Number of Households	Backlog	Households not electrified (percentage)	Number of electrified households	Electrified households (percentage)
Western Cape	1,333,886	191,366	14%	1,142,520	86%
Northern Cape	272,958	50,405	18%	222,553	82%
North West	914,070	196,605	22%	717,465	78%
Gauteng	3,127,991	740,569	24%	2,387,422	76%
Free State	823,972	201,919	25%	622,053	75%
Mpumalanga	879,082	231,485	26%	647,597	74%
Limpopo	1,250,716	329,440	26%	921,267	74%
Kwa Zulu-Natal	2,405,165	818,708	34%	1,586,457	66%
Eastern Cape	1,667,435	669,421	40%	998,014	60%
Total	12,675,275	3,429,918	25%	9,245,357	75%

Since 1994 there has been a shift towards servicing the poor and the rural areas as well as disadvantaged groups. The increase in coverage comes from both extending the grid to new communities such as rural areas (extensive growth) and connecting the unconnected in already electrified areas (in-fills).

Electrification status

Clinics

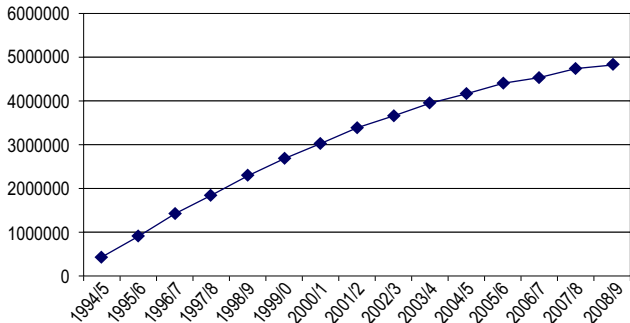
The number of clinics electrified peaked during 2007/2008 when 163 clinics were electrified. The universal access target was reached by 2007/2008.

Schools

Since 2001/02 4957 schools have been electrified. The universal access target is set to be reached by 2010/11.

Cumulative Trend in Household Electricity Connections

Approximately 4,9million households have been electrified from 1994 to 2009.



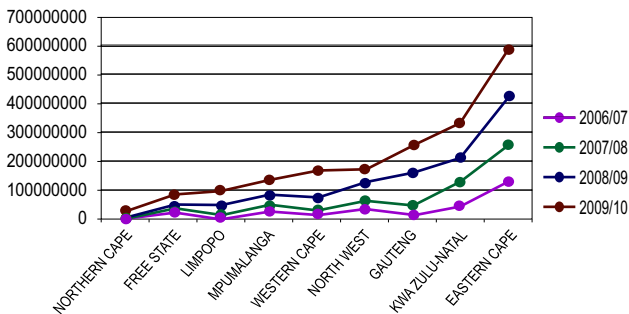
Currently most of the backlog is in remote and outskirt areas which poses three main challenges: topography, high cost per connection and lack of bulk infrastructure.

Bulk Infrastructure Investment

Bulk infrastructure investment have been increasing since 2006/07. Provinces receiving the highest fund allocation are Eastern Cape, Kwa Zulu-Natal and Gauteng primarily due to lack of infrastructure.

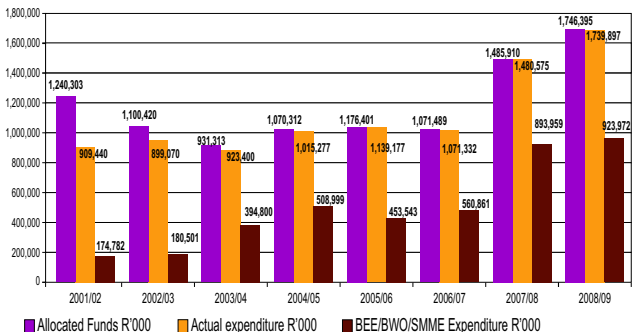
Province	2006/07	2007/08	2008/09	2009/10	Total
Northern Cape	1,334,145	2,223,000	2,000,000	25,112,900	30,670,045
Free State	17,007,925	17,501,000	13,267,505	36,902,503	84,678,933
Limpopo	1,382,473	10,933,200	33,296,877	53,230,200	98,842,750
Mpumalanga	25,031,660	22,623,000	36,700,000	53,857,928	138,212,588
Western Cape	13,504,800	17,234,000	47,430,772	87,511,157	165,680,729
North West	34,624,369	27,845,672	65,060,767	43,376,894	170,907,703
Gauteng	12,062,685	35,186,000	114,821,828	96,784,259	258,854,772
Kwa Zulu-Natal	41,722,778	86,634,509	85,128,053	118,143,503	331,628,842
Eastern Cape	128,005,389	123,740,519	176,987,016	159,053,673	587,786,598
Total	274,676,225	343,920,899	574,692,819	673,973,017	1,867,262,961

As illustrated in the previous table, the graph below shows the bulk investment increasing from one year to another.



Fund Allocation and Expenditure Trends

In line with the Preferential Procurement Policy Framework Act 5 of 2000, the DoE seeks to promote new opportunities for and increase the levels of participation of historically-disadvantaged groups in the ownership, management and control at equity level. It is evident that since 2001/02 the proportion of electrification funds have benefitted historically-disadvantaged groups and have been increasing annually. In the 2007/08 period this proportion to BEE/BWO/SMME was 60% of the actual expenditure and in 2008/09 it was 53%.

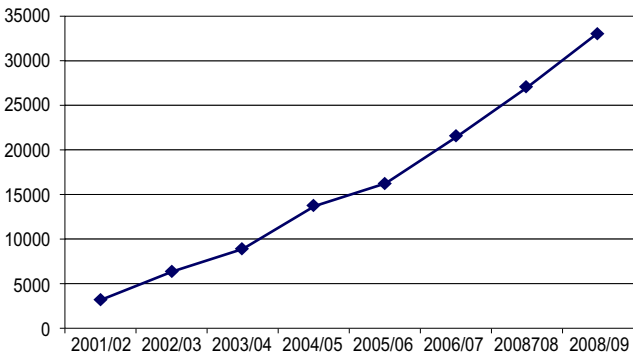


The table below shows the total electrification programme expenditure on BEE/BWO/SMME by province for the financial year 2008/09.

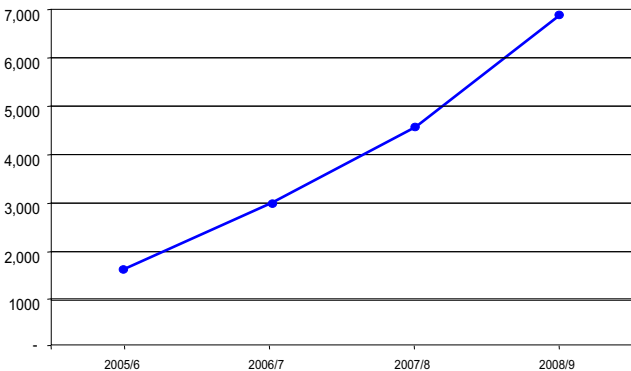
2008/09 Financial Year Province	Total Programme Expenditure '000	Total BEE/BWO/SMME Expenditure '000	BEE Expenditure '000	BWO and SMME Expenditure '000
Eastern Cape	511,993	360,394,012	244,645,32	115,748,684
Free State	38,978	23,961,552	12,932,162	11,029,390
Gauteng	182,542	77,025,256	44,422,124	32,603,132
KwaZulu-Natal	329,281	187,660,523	143,350,881	44,309,642
Limpopo	226,129	107,612,242	82,163,040	25,449,202
Mpumalanga	129,943	48,561,886	45,555,298	3,006,588
North West	141,131	14,304,592	11,378,361	2,926,231
Northern Cape	68,612	61,700,453	44,456,666	17,243,787
Western Cape	111,283	42,751,232	21,406,058	21,345,174
Total	1,739,892	923,971,748	650,309,919	273,661,829

Electrification Socio-economic Benefits

The cumulative number of jobs created by the electrification programme has almost doubled since 2001/2002 with a total of 32 995 jobs created in the last eight years.



The cumulative number of learners that have been trained as part of the electrification programme has reached 6 909 between 2005/06 and 2008/09.





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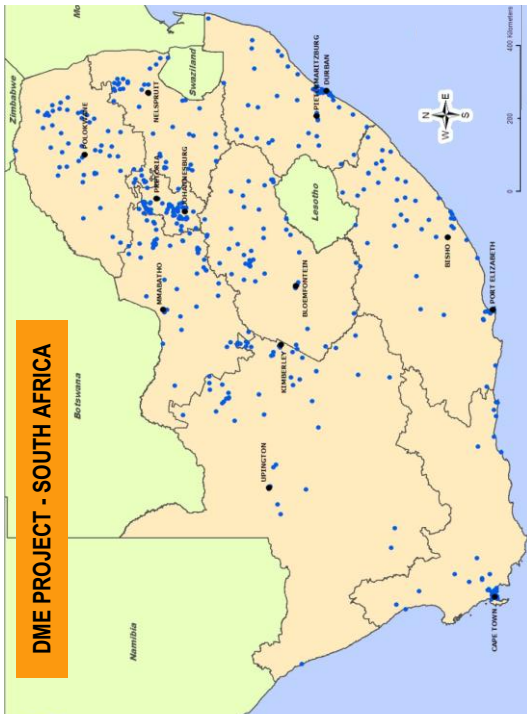
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Electrification Survey

On an annual basis, the DoE conducts a national socio-economic impact study to determine households' perception towards electrification. The sampling frame for the 2008/09 study was based on low income households representative of Living Standards Measure (LSM) categories 1 to 3. The study was conducted in all nine provinces and a total of 3960 households were visited.

Map of all the selected areas that were visited during the study.



Sampling and weighting

The weighted sample represents 1,8 million households in LSM categories 1 to 3.

Province	No. Of Households (Sample)	No. Of Households (Weighted)
Eastern Cape	435	493,837
Free State	450	56,410
Gauteng	433	182,570
KwaZulu-Natal	432	425,907
Limpopo	447	329,143
Mpumalanga	448	194,418
North West	425	127,940
Northern Cape	447	16,255
Western Cape	443	20,517
Total	3960	1,846,996

Household Characteristics

In the electrified communities, household heads are, on average, more likely to be females than males and to be a few years older than those in the non-electrified communities. The only exceptions are the Free State and Western Cape, where household heads in electrified communities are predominantly young and male. Conversely, in the non-electrified communities, it is only in the Eastern Cape and KwaZulu-Natal that there are more female than male heads of households.

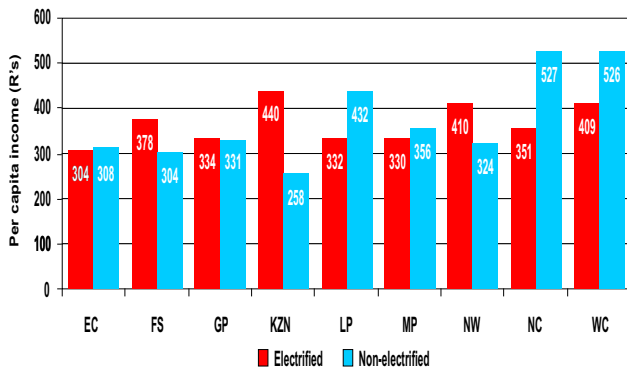
	Electrified			Non - Electrified		
	Male	Female	Mean age of household head	Male	Female	Mean age of household head
Eastern Cape	44	56	55	35	65	54
Free State	65	35	47	81	19	46
Gauteng	46	54	50	67	33	44
KwaZulu-Natal	33	67	50	35	65	53
Limpopo	44	56	52	58	42	50
Mpumalanga	44	56	52	72	28	45
North West	49	51	52	56	45	41
Northern Cape	50	50	49	58	42	45
Western Cape	58	42	46	68	32	42

Household Characteristics

Most households in the survey rely on child grants, part-time and full-time employment as well as old age grants as sources of income.

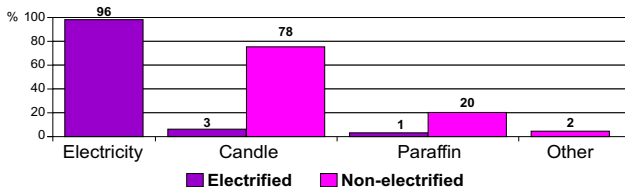


The mean per capita income in the sampled households varies between R258 and R527.

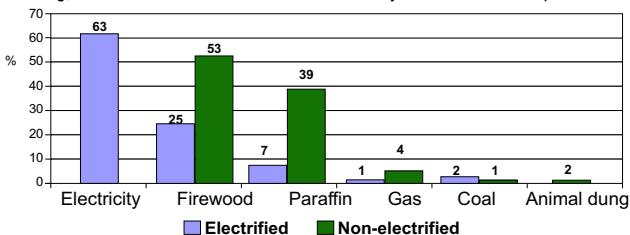


Main Energy Sources

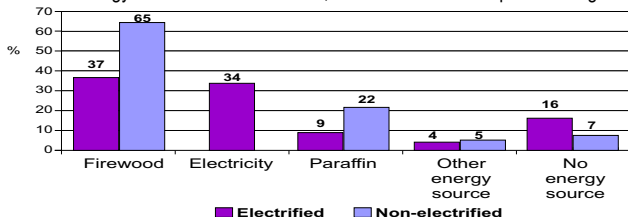
For **lighting**, electrified households mainly used electricity, whilst non-electrified households mainly used candles and paraffin.



For **cooking**, electrified households mainly used electricity and firewood for cooking, whereas non-electrified households mainly used firewood and paraffin.

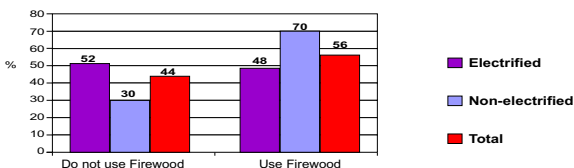


For **heating**, firewood and electricity were mainly used in electrified households, whereas firewood and paraffin were used in non-electrified households. The category 'Other energy source' includes gas, coal, animal dung and crop residues, while 'No energy source' includes blankets, warm clothes and no space heating.

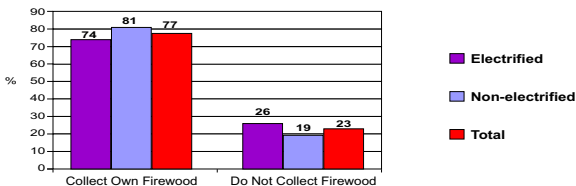


Use and Collection of Firewood

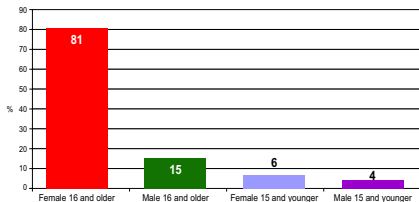
More than half 56% (1601) of all households in this study indicated that they use firewood. The use of firewood as an energy source is much more prominent amongst non-electrified households (70%) than electrified households (48%).



Of those households that do use firewood, the majority (77%:1247) collect their own firewood.

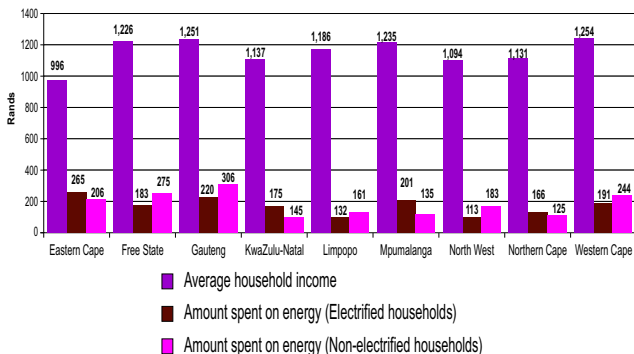


Female adults are largely responsible for firewood collection in households. In 15% of households it is a male adult that collects firewood. In 10% of the households it is children (15 years and younger) that are responsible for firewood collection. Female children are slightly more likely to be collecting firewood than male children. Adult females are primarily responsible for wood collection in all provinces, except Western Cape where male adults are mostly responsible for firewood collection. The popular notion that females are responsible for wood collection therefore holds for this study.



Household Expenditure on Energy

Households spent between 10- 25 percent of their income on energy. People living in Gauteng, Eastern Cape and the Free State spent a larger proportion of income on energy.



Energy Poverty Measure

- **'Energy poverty incidence'** refers to the percentage of electrified or non-electrified households in a population sub-group (province, geographic location, income quintile, gender of household head, etc) that is classified as energy poor (i.e. spends more than 10% of income on energy). It allows for comparison of differences in poverty rates across sub-populations.

- **'Energy poverty share'** refers to the percentage of all electrified or non-electrified energy poor households in the country that is in the population sub-group. This allows us to look at the distribution of the country's energy poor across various sub-populations.

Household Expenditure on Energy

Energy Poverty by Province (%)

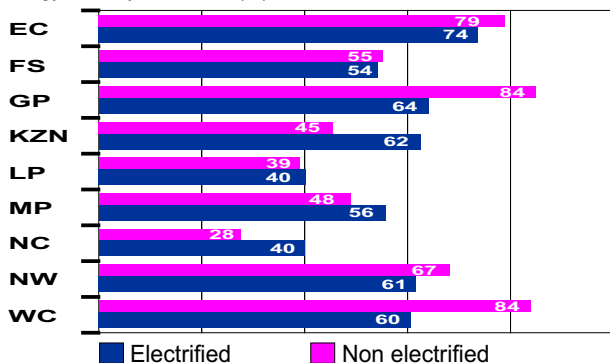
Among households in this study, 59% of electrified and 60% of non-electrified households spent more than 10% of net income on energy.

Energy Poverty Shares (%)

	Electrified	Non-electrified
EC	31	41
FS	2	4
GP	10	11
KZN	17	27
LP	16	7
MP	11	6
NC	1	0
NW	9	3
WC	1	1
TOTAL	100	100

The highest incidence of energy poverty is found in non-electrified households in Western Cape, Gauteng and the Eastern Cape.

Energy Poverty Incidence (%)



Household Expenditure on Energy

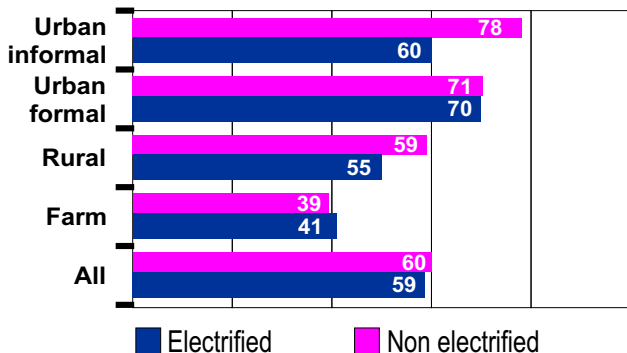
Energy Poverty by Geotype (%)

Energy Poverty Shares (%)

	Electrified	Non-electrified
Rural	53	66
Urban formal	27	6
Urban informal	15	20
Farm	4	9
TOTAL	100	100

The highest incidence of energy poverty is found in non-electrified households in urban informal settlements.

Energy Poverty incidence (%)



Household Expenditure on Energy

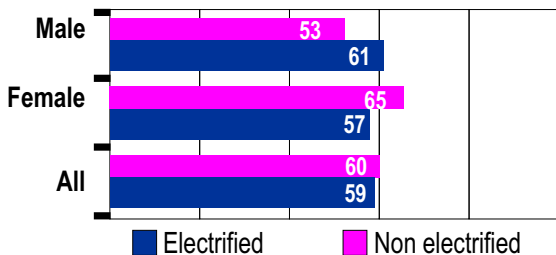
Energy Poverty by Gender of Household Head (%)

Energy Poverty Shares (%)

	Electrified	Non-electrified
Male	44	40
Female	56	60
TOTAL	100	100

The highest incidence of energy poverty is found in non-electrified households headed by females. In electrified areas, it is apparent that energy poverty is higher among male headed households.

Energy Poverty Incidence (%)



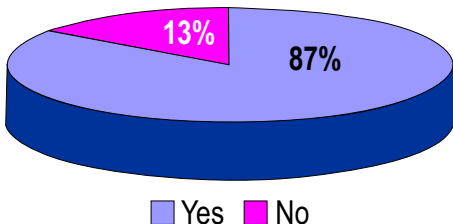
Household Expenditure on Energy

Among electrified households, 65% of the energy budget is spent on electricity but varies per province. As can be seen from the table below, a large proportion of the energy budget of electrified households in KwaZulu-Natal is spent on electricity, whilst households in Mpumalanga spend much less on electricity and use alternative energy sources more.

	EC	FS	GP	KZN	LP	MP	NW	NC	WC	ALL
Electricity	60	77	77	84	60	48	60	83	74	65
Other	40	23	23	16	40	52	40	17	26	35
Total	100	100	100	100	100	100	100	100	100	100

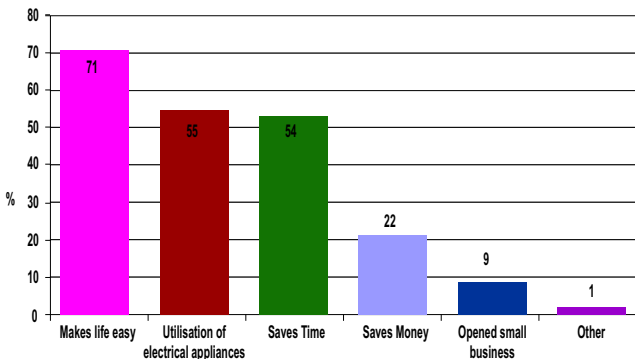
Household Benefits

A majority of electrified households 87% (2380) said the electrification process has benefited their households. About 13% (290) said the electrification programme had not benefited them.



Household Benefits

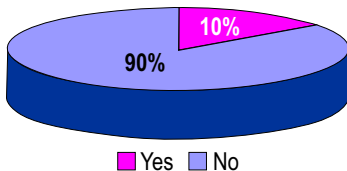
Those who said the electrification process has benefitted their households (87%) were asked to give examples of how it has done so.



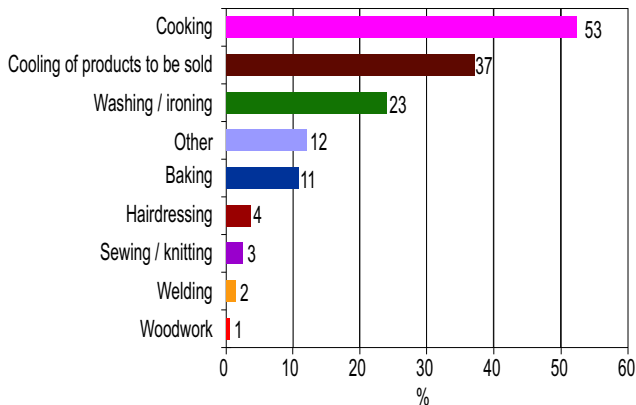
The most frequently mentioned benefit was that having electricity 'makes life easy'. This response was most prevalent in Northern Cape (91%), Gauteng (91%), Free State (79%), Mpumalanga (75%), KwaZulu-Natal and Western Cape (71%). The second most frequently mentioned benefit was the opportunity to 'use electrical appliances'. This was closely followed by the view that having access to electricity helps one to 'save time'. 'Saving money' as a benefit was the next most mentioned benefit. About 9% of households cited being able to operate small businesses as another benefit.

Household Benefits

Only 10% (554) of all households indicated that electrification has contributed to income generation whilst about 90% (3398) indicated that electrification had not contributed to income generation in their households.

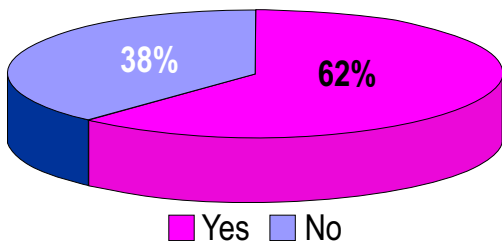


Cooking was generally the most popular activity to generate income, cited by more than half of the people that said that electricity contributed to their household income. The cooling of products, washing and ironing was also income-generating activities made possible by electricity. Baking, hairdressing, sewing, knitting, welding and woodwork were also activities that generated some income. Other activities included running small businesses, operating photocopying shops, operating public phones, running crèches, renting rooms and harvesting.

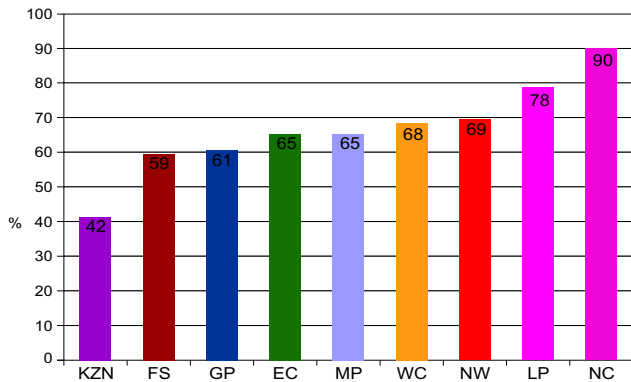


Community Benefits

About 62% (2662) of all households were of the view that the electrification process has benefitted their respective communities.



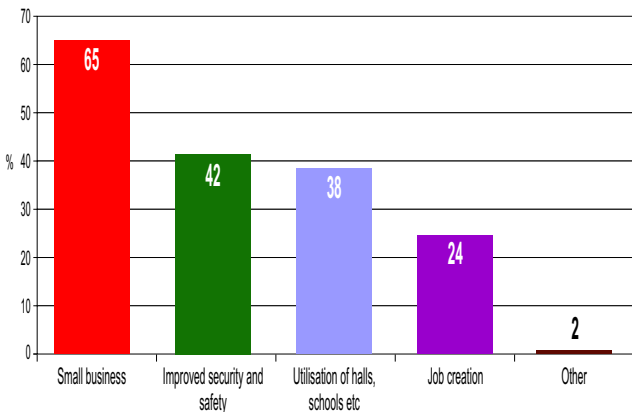
Responses of those who responded positively to this question were analysed by province to check for any significant differences.



Positive community benefits were most noted by households in Northern Cape (90%), with KwaZulu-Natal having the lowest proportion (42%) of households sharing this sentiment.

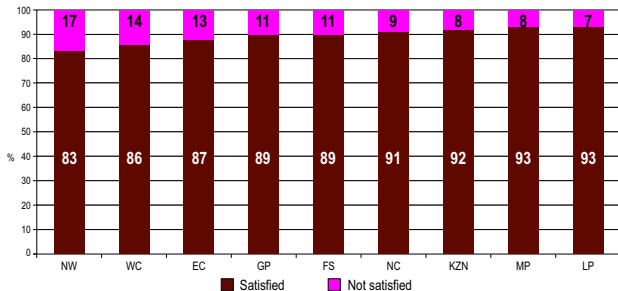
Community Benefits

When asked to cite examples of community benefits, about 65% cited being able to start small businesses. About 42% mentioned improved security and safety in their communities. About 38% mentioned the ability to use halls, schools and similar spaces as benefits to their communities of the electrification programme. Nearly a quarter (24%) cited employment creation, 2% mentioned 'other' benefits.



Satisfaction with Service

The levels of satisfaction with electricity installation in all provinces were generally high, with 93% of households in Limpopo and Mpumalanga provinces responding that they were satisfied.



Did you know?

- 95% of sample households have a pre-paid meter and only 5% use a conventional monthly metering system.
- People in non-electrified areas spend about three to four times more money on energy than people in electrified areas.
- Government has a policy that allows up to 50kWh free electricity per household per month.
- At the time of our democratic election in 1994 only 30% of South African households had electricity.
- Currently 75% of households in South Africa are electrified.



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Participation Chart

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