REPORT NO. INT 171

Report on attendance at

AFRICAN NATIONAL CONGRESS
NATIONAL MEETING ON ELECTRIFICATION

University of Cape Town

6-7 February 1992

R K DUTKIEWICZ

February 1992

INTRODUCTION

The ANC National Meeting on Electrification was held at the University of Cape Town and was attended by some 155 delegates representing a range of organizations such as political parties, civic organizations, trade unions, municipalities, ESKOM, etc.

The notice convening the conference made it clear that the intention of the ANC in calling the meeting was to focus on three main issues that they saw as central to addressing the present inequalities in electrification in South Africa, namely:-

(1) the need for the restructuring of the electricity supply industry in South Africa
(2) The capacity to plan and implement electrification projects
(3) the financing of these electrification initiatives.

One of the meeting organizers, Dr A A Eberhard, opened the conference saying that there were serious obstacles to restructuring the electrical supply industry, which needed addressing at the conference. He said that it was unfortunate that there was to be no participation from ESKOM or from the National Energy Council in spite of the fact that they were active in the area and that they had originally promised to be at the conference. Government pressure on the Provincial Administrations had also caused those bodies not to be represented.

Mr Trevor Manuel gave the keynote address and expressed his regret that the Government was not represented and that ESKOM had buckled in to the demands of the Government not to attend. He stressed that apartheid was still in place and there was an inequality in the supply of electricity. Most of the electricity went to industry and the mines where it was not used to safeguard life. All whites, even those in rural areas, had access to electricity, whilst the majority of blacks, even those in urban areas did not have electricity. The system was biased towards industry and commerce with an unequal loading on the Electricity Council. Municipal rates were subsidized by the electricity tariff to the benefit of

electrification schemes for whites. The ANC wanted those presently disempowerd to have an adequate input into the policy formulation process.

SESSION 1. The current crisis in electricity provision

The current crisis in the provision of electricity was addressed by Mr D. Mofokeng of the Civic Association of the Southern Transvaal and by Mr P.R. Theron of the Science and Technology Group of the ANC and an organizer of the Conference.

Dan Mofokeng said that the problem of electricity supply was that the infrastructure in the black areas was not the same as that in the white areas. In white areas electricity supply was available before any building took place, whilst in black areas it was usually installed after construction, leading to inconvenience. He complained that often in the rural areas electricity transmission lines ran across areas where there was no electricity supplied to the people living below those lines, though often Bantustan leaders were provided with electricity.

He objected to the unfair tariff structure where black consumers were charged more than white consumers. He also called for a fixed tariff where one paid a fixed amount irrespective of how much electricity was used. Electricity was being politicized by ESKOM and the Provincial Administrations, with electricity being cut off for political reasons even when people had paid their accounts. Electricity was also being cut off when security forces wanted to attack a township. He said that ESKOM was busy supplying other countries whilst local people did not have electricity. ESKOM's cutting down on staff whilst people did not have electricity was also unjust.

Mr Paul Theron summarized the shortage of electricity by saying that only 15 to 20% of blacks have access to electricity in their homes, with the levels in rural areas being even lower. He also raised the issue of the surplus made by municipalities on the electricity tariff which was used to subsidize the rates of property owners and to finance the provision of a high level of non-income generating services.

He called for the restructuring of the distribution sector, which might require an interim step whereby electricity departments in white municipalities and ESKOM might take over electricity provision in black areas.

The discussion, following the presentation centred mainly on whether existing municipal structures should continue to distribute electricity to urban areas. Other proposals were that a central structure be established to take over this function. There was much support for a proposal that 10-15 regional distribution authorities be established with the proviso that they have representation of local governments and communities. An alternative which did not receive as much support was the provision of electricity in urban areas via integrated local authorities and that Eskom be left to supply electricity to rural users.

It was stressed that it would be more economic, and would allow for speedier electrification, if the existing local government structure were used. It was emphasized that Eskom's expertise and finance should be used in order to ensure rapid electrification in the rural areas.

SESSION 2. Restructuring the distribution sector

Four speakers addressed the restructuring issue: Mr Charles Dingley from the University of Cape Town, Mr Charles Adam of the Association of Municipal Electrical Undertakings, Mr Billy Cobbett of Planact, and Mr Chris Hock of the Rural Finance Facility.

Charles Dingley stressed the fact that the electricity distribution system in South Africa was a highly fragmented one with unequal ability and finance. Distribution is dominated by 400 municipal electricity departments supplying an estimated 2,4 million homes. The system is inherently inefficient, produces different tariffs, and inhibits the supply of resources required to provide electricity to the 30 million people who do not have electricity. He suggested that there should be approximately 10 to 15 regional distribution authorities.

Charles Adams summarized the situation as seen by the municipalities and said that up to 40 years ago the municipalities were also supplying black townships. However, thereafter it came to be seen as a State function to provide electricity to black areas. He said that much time and effort had been expended into looking at alternative methods of supplying the black consumer, time which could have been better spent on investigating the artificial division between black and white municipalities. He said that the municipalities were able and willing to take over the supply to the black areas. He proposed that the supply of electricity in urban areas should be under the control of an integrated local government. The solution to the electrification problem had to be seen as part of a complete restructuring of local government. He called on the ANC to assist the municipalities in overcoming one of the serious problems they faced with black consumers and that was with the boycott of electricity payments.

Mr Billy Cobbett said that it was not possible to separate the issue of electricity from that of local authorities. Most of the black local authorities who were given responsibility for electricity provision do not have the technical or financial ability to carry out their mandate. The problem is compounded by the lack of an industrial base in these areas and by the fact that they do not have access to the sort of financial surpluses available to white municipalities. He criticized the introduction of prepayment meters and said that they were becoming discredited since they were seen as being used only in black areas. He said that the ESKOM S1 tariff was 60% higher than that for white residents and questioned whether there was not possibly a more equitable method of recovering installation costs.

During the discussion period members from the Durban Electricity Department said that the Durban Municipality was capable of electrifying all shacks within the municipality within 5 years without any real increase in cost. Other speakers said that ESKOM had been seen to be collaborators with the apartheid regime and in the future the new government would need to have a strong control over ESKOM. A speaker from Khayelitsha asked why ESKOM were trying to cajole people into forming a joint venture at Khayelitsha and saw something sinister in this.

The ESKOM delegates present at the meeting said that ESKOM was involved in the meeting as evidenced by the presence of 4 delegates.

SESSION 3. Capacity to implement electricity projects

Six speakers were involved with the implementation section. These were Mr L.H. Nape Maepa of the ANC's Science and Technology Group; Mr Howard Whitehead, Executive Director of the Durban Electricity Department; Mr Trevor Gaunt, Director of Hill Kaplan Scott; Mr Samuel Isaacs of the Electrical Contractors' Association; Mr Bernie Fanaroff of the National Union of Metalworkers; and Mr Ben Petersen of the Metal and Electrical Allied Workers Union.

Mr Naepe Maepa appealed for South Africa not to reinvent the wheel but to learn from the electrification schemes adopted in other countries. He was involved in such schemes as part of his job for a USA consulting company. He gave as examples various schemes such as the Saudi Arabian electrification of its Eastern Province and of the city of Jubail, and in the rural areas of the USA.

Mr Whitehead discussed the capacity of distribution authorities to electrify households. He said that there are some 5 million households without electricity, but from the affordability point of view and within a reasonable time-scale, some 3 million households should be considered. With the present infrastructure, approximately 30 000 to 40 000 connections could be made per year. The requirement is however for around 230 000 connections per year if the backlog is to be made good in a reasonable length of time. He estimated that 400 transformers and 200 km of line are required for each 1000 consumers connected. The cost of distribution is approximately R 3500 per installation.

Mr Gaunt summarized the role of the consultant engineer in the electrification process.

Mr Isaacs stressed that the community had to be involved in the technology of electrification. He quoted instances where the local community had been involved

in installation and said that there was a pool of manpower available if it was tapped correctly.

Mr Fanaroff made the point that, whilst some foreign investment is necessary, local funding should be more significant in capital expenditure. He did not see that the lifting of sanctions would significantly affect South Africa's ability to finance its capital requirements. He said that electrification must be looked at in the context of the total economy and that electrification will lead to a spin-off effect due to requirements for cable, transformers and domestic electrical appliances. Cosatu believes that negotiation on matters such as electrification can take place only through CODESA. ESKOM being a parastatal must work within the economic system.

He called for a greater say in policy-making by the trade unions and said that the National Energy Council and the Electricity Council would need to be restructured in order to more adequately represent the community as a whole. Unions should also have a greater say in the management of ESKOM. He also said that Cosatu realized that the economic well-being of South Africa had to be part of the growth of the whole of Southern Africa.

Mr Petersen said that even if majority rule were introduced there would be no guarantee that the situation would improve since electricity is controlled by overseas imperialists. He said that the government must draw up an electrification programme and that the whole of the electricity supply industry needs to be restructured since it is incapable of introducing an adequate electrification plan. Finance for electrification must come from ESKOM and the government and 4% of the GDP should be allocated to electrification. He said that the Viva Voltage Committee was planning mass action to pressurize government into meeting the needs of electrification.

During discussion time Mr Jim Lay of the Rural Electric Co-operatives Association of the USA said that South Africa was now in the same situation as the USA was in 1935 when only 10% of rural homesteads were electrified. In that year US$ 20 million was provided for rural co-operatives to install electricity. This was

done by a mixture of trained engineers and technicians and local people who were trained in the necessary skills. The funding provided included a budget for training. Women, who use most of the electricity, were also given training in the use of electricity.

Mr A. Sachs said that electricity was a basic right, but it had to be tied to affordability which would dictate the levels of introduction.

It was said that ESKOM was a major problem in the electrification programme since they were incapable of finding a solution, especially for rural needs. The World Bank was a cause of pollution since its lending did not take the environment into consideration. In reply to a question on Cosatu's stand on pollution, Mr Fanaroff admitted that, whilst Cosatu had found the environment as a platform, they really had not had time to formulate a policy on the matter.

The question was as to where the skilled manpower would come from to sustain any large electrification programme.

SESSION 4. Financing electrification

The final session dealt with the routes to financing electrification and was addressed by three speakers: Professor S. van der Berg from Stellenbosch; Mr Mike O'Meara, Executive Director of Durban's Corporate Services; and Mr Patrick Bond of Planact.

Professor van der Berg said that it was impossible to electrify all those homes without access to electricity inside of two decades. He discussed three different scenarios for electrification, the first being based on "redistribution through growth", the second being "growth through redistribution", and the third being "growth and redistribution. He pointed out that model A was insufficient to redress the inequality in electricity availability in a reasonable time, that model B would lead to an unacceptably high inflation rate and to an adverse balance of payments situation which would stifle industrial growth. He discussed the

implications of the C model and showed that this required the electrification of an average of 190 000 new consumers per year between 1990 and 2000. This would result in 76% of all urban and rural homesteads being electrified by 2010. The cost of this rate of implementation would be R 380 million per annum in the period 1990 to 2000. He also pointed out that any money spent on electrification would be in competition for other social needs.

Mr O'Meara discussed the methods that could be adopted to finance electrification schemes. These ranged from raising long-term loans on the capital market, using internal capital funds, financing capital expenditure from operating funds, or a combination of these. He criticized the present fragmented nature of the electricity industry, especially the distribution sector. He produced four different scenarios as to the form that the electricity industry could take. He concluded that "... the way forward with the lowest degree of upheaval, with the greatest relative advantage for consumers is the regionalization of electricity supply with the proviso that conditional grants be made available by the State in appropriate circumstances to bring electricity to sparsely populated and/or economically depressed areas".

Mr Bond presented a paper which was largely a criticism of ESKOM's financing methods and approach to electrification. He claimed that ESKOM is importing power from Mozambique which involved deals with Renamo, whilst the people of Mozambique are experiencing severe shortages of retail electricity. He also found it startling that ESKOM should be decommissioning generating plant whilst it is building new plant. He also criticized ESKOM's foreign funding as being unhealthy.

SESSION 5. Final discussion

After a summary by Mr Ketso Gordan of the ANC's Department of Economic Planning, the discussion centred around the next step to be taken. It was agreed that an Electricity Forum needed to be called together. The Development Bank of Southern Africa offered its services as a facilitating body to bring the various

groups together. ESKOM agreed to join the committee. It was decided that a small task group be set up to organize such a forum by the end of March. The members of the organizing committee were to be the ANC, the Development Bank for Southern Africa, ESKOM, civic organizations, municipalities, and trade unions. One member from each organization would be selected and the committee would plan the next move. It was decided that the Government would also be invited.

COMMENTS

Because of the make-up of the participants, frequent strong political stances were adopted and rhetoric used. However, it was apparent that the various parties at the conference - such as the municipalities, political groupings, ESKOM, etc, - did not differ in the basic concept that a significant electrification programme was required. The main problem was how this was to be achieved. The municipalities were of the opinion that they were the main players in any electrification programme. Their main concern was with the structure of municipalities, where a technical department such as electricity was subservient to the council body and the salary of the chief executive of the electricity department was pegged to be below that of the Town Clerk.

It was also agreed that the provision of electricity had to be achieved by a suitable injection of funding as in the USA model. It was not possible to expect the "trickle down" approach, as described by one of the ANC speakers, to ensure that economic growth supported the rapid electrification programme that was required.

It was obvious that one of the main problems was the large fragmentation of the distribution service in the country, which has resulted in inefficiency and a lack of ability in the smaller undertakings in technical and financial matters. Suggestions that "white" municipalities take over the provision of electricity in the surrounding areas was, at times, greeted with derision as an apparent desire for white control. On other occasions this concept was welcomed and it was pointed out that it would soon be incorrect to consider them as a racial organization.

ESKOM was seen by many at the conference as a lackey of the Government and therefore incapable of organizing a programme of electrification for the masses. It is a highly visible organization, which makes it an ideal body for criticism. Some of the bodies represented at the conference felt that all would be solved if ESKOM were "taken over" by the "new" Government and if there was a significant presence of the community on its Board. Any action of ESKOM is likely to attract suspicion, such as its attempt to form a joint venture group to provide electricity. It was noticeable that on technical and financial matters affecting ESKOM there were many serious misconceptions and errors.

The conference was a useful forum for expressing the various viewpoints and did much in dispelling some of the "them and us" attitude. More could have been achieved if the other parties to the whole electrification debate, such as the Government and local authorities, had been present, and this could have been achieved if the conference had been in terms of a neutral non-political forum. Whilst the organizers complained that the Government was not there, it is possible that it was their organizational procedure and ability which may have been at fault.

The conference started off with a confrontational attitude which is typical of many political meetings. Fortunately the antagonistic attitude soon gave way to a greater willingness to consider other viewpoints. The meeting showed the value of getting all parties together to air their various viewpoints. Whilst such meetings are very necessary, it is also obvious that the real work needed to ensure a fair electrification programme will have to come in a very different format.

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APPENDICES

Programme

List of delegates

Papers

Paul Theron	Critical issues in electricity provision in South Africa
Charles Dingley	Institutional frameworks for the electricity supply industry
Charles Adams	The role of municipal electricity distribution authorities in the transition period
Willy Cobbett	Building the legitimacy of electricity distribution authorities in urban areas
Chris Hock	Institutional arrangements for electricity provision in rural areas
L.H. Nape Maepa	International experience in electrification planning and implementation
Howard Whitehead	The capacity of local authorities to undertake electrification initiatives
Trevor Gaunt	The electrical consulting engineer's role in a South African electrification programme
Samuel Isaacs	The role and capacity of electrical contractors
Bernie Fanaroff	Trade Unions and electrification
Ben Petersen	A labour perspective on electrification
Servaas v.d.Berg	Urban electrification and competing fiscal demands for social service provision
Mike O'Meara	Financing electrification initiatives
Patrick Bond	Community development finance for electrification initiatives

Submission by Albie Sachs - Power to the People. An electric light in every home

MEETING INFORMATION

Dinner at the Waterfront
A complimentary dinner will be held on Thursday at 19h00 at the Quay 4 Restaurant, Pierhead, Victoria and Alfred Basin, Cape Town Harbour.
Tel: 419 2008/9.
A Waterfront information brochure is available at the Registration Desk.

Photocopying
Photocopying will be done free of charge for you throughout the course of the conference. Please enquire at the Registration Desk.

Faxes and telephone calls
Faxes too will be done free of charge for you. ANC National Meeting fax letterheads are available at the Registration Desk.
Telephone calls can be made at the Registration Desk on request.

Accomodation
An accommodation list is available at the Desk for your information. We will be pleased to assist you in this matter.

Transport to airport
Transport will be available to take delegates back to the airport after the conference. Please liaise with Charleen on this matter.

Banking
Banking facilities on campus are available in the following buildings:

- Allied Building Society: Leslie Social Science Building 8h15 - 14h30
- First National Bank: Leslie Social Science Building 9h30 - 14h00
- Nedbank: P D Hahn Building 9h00 - 14h00
- Standard Bank - Leslie Social Science Building 9h30 - 14h00

Finding your way
A map of campus is available at the Desk for your information.

Any queries or problems can be directed to Charleen at the Registration Desk.

Programme & information

African National Congress

NATIONAL MEETING ON ELECTRIFICATION

6 - 7 FEBRUARY 1992
UNIVERSITY OF CAPE TOWN

DAY 1

Introductory session 11h00–11h30

(Chair: Anton Eberhard, Energy for Development Research Centre, UCT)

Keynote address
– *Trevor Manuel:*
National Executive Committee member; Head, Dept. of Economic Planning, ANC

The current crisis in electricity provision 11h30–12h30

A civic perspective on the crisis in electricity provision
– *Dan Mofokeng: General Secretary, Civic Association of the Southern Transvaal*

Critical issues in electricity provision in South Africa
–*Paul Theron: Science and Technology Group, ANC*

12h30–13h30 LUNCH

Restructuring the distribution sector of the ESI in South Africa 13h30–17h30

(Chair: Ketso Gordhan, Department of Economic Planning, ANC)

Institutional frameworks for the electricity supply industry
– *Charles Dingley: UCT*

The role of municipal electricity distribution authorities in the transition period
– *Charles Adams: President, Association of Municipal Electrical Undertakings*

Discussion

15h00–15h30 TEA

Building the legitimacy of electricity distribution authorities in urban areas
– *Billy Cobbett, Planact*

Institutional arrangements for electricity provision in rural areas
– *Chris Höck: Rural Finance Facility, Rural Advice Centre*

Discussion

17h30 CLOSURE
19h00 DINNER AT THE WATERFRONT

DAY 2

The capacity to plan and implement electrification projects 9h00–12h30

(Chair: Max Sisulu, Department of Economic Planning, ANC)

International experience in electrification planning and implementation
– *L. H. Nape Maepa: Science and Technology Group, ANC*

The capacity of local authorities to undertake electrification initiatives
– *Howard Whitehead: Executive Director, Durban Electricity*

The electrical consulting engineer's role in a South African electrification programme
– *Trevor Gaunt: Director, Hill Kaplan Scott Inc.*

Discussion

10h30 – 11h00 TEA

The role and capacity of electrical contractors
– *Samuel Isaacs, Electrical Contractors Association (SA)*

Trade Unions and electrification
– *Bernie Fanaroff: National Union of Metalworkers of South Africa*

A labour perspective on electrification
– *Ben Petersen: Metal and Electrical Allied Workers Union of South Africa*

Discussion

12h30 – 13h30 LUNCH

Financing electrification initiatives 13H30–17h00

(Chair: Paul Theron, Science and Technology Group, ANC)

Urban electrification and competing fiscal demands for social service provision – *Servaas van der Berg: University of Stellenbosch*

Financing electrification Initiatives
– *Mike O'Meara: Executive Director (Corporate Services), City of Durban*

Community development finance for electrification initiatives
– *Patrick Bond, Planact*

Discussion

15H00–15h30 TEA

Closing session 15h30

Summary: *Ketso Gordhan, Department of Economic Planning, ANC*

Discussion

17H00 CLOSURE

ANC NATIONAL MEETING ON ELECTRIFICATION DELEGATES

AFRICAN NATIONAL CONGRESS

Trevor Manuel, National Executive, Head: Dept of Economic Planning

- **Dept of Economic Planning**

Max Sisulu
Ketso Gordhan
Jaya Josie

- **Science and Technology Section, DEP**

Zav Rustomjee
Barry Dwolatzky
John Abbott
Charles Dingley
Mark Pickering
Anton Eberhard
Nape Maepa
Paul Jourdan

- **ANC Environmental Desk, DEP**

Lynn Jackson

- **Land Commission, DEP**

Derek Hanekom

- **Dept of Constitutional Affairs**

Kader Asmal
Albie Sachs

- **Dept of Information and Publicity**

Pallo Jordan

- **ANC Women's League**

Lulu Xingwana

- **ANC Regions**

Clyde Morgan, Eastern Transvaal
Collins Chabane, Western Transvaal
Franco Frescura, Eastern Cape
Basil Davidson, Western Cape
Barend Hendricks, Western Cape
Janine Le Sueur, Western Cape
Amanda Younge, Western Cape
Moleko Digwaamaje, Northern Cape

POLITICAL PARTIES

- **South Afrian Communist Party**

Charles Nqakula
Mlungu Njoli

- **Democratic Party**

Roger Hulley

REGIONAL DEVELOPMENT FORUMS

Brian Molefe, Northern Transvaal
Selinah Mathabela, Eastern Transvaal
Johnny Issel, Western Cape
David Mabija, Northern Cape

CIVIC ORGANISATIONS

- **National Interim Civic Conference**

Mike Stofile
Ciso Maseko
Lizo Kapa

- **Civic Association of the Southern Transvaal**

Dan Mofokeng
Ali Tleane
Nat Ramokgopa

- **Northern OFS Civic Organisation**

Mzwandile Kundulu
Phillip Keketsi
Ben Montsoe

- **Southern Natal Civic Working Committee**

Sbu Hlongwane
Bongani Ndumo
Thula Shozi

- **Border Civic Organisation**

Lameki Mligwana
Wonga Manga
Professor Ngazi

TRADE UNIONS

- **National Union of Metal Workers of SA**

Bernie Fanaroff
Tony Kgobe
Sam Matjane
Bheki Magagula
Peter Jantjies
Moses Phakwe

- **National Union of Mineworkers**

Gwede Mantashe
Jeff Magida
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- **Metal and Electrical Workers Union of South Africa**

Ben Petersen
Desmond Lewis

- **Viva Voltage Committee**

Desmond Manuel

- **Labour Research Service**

Ravi Naidoo
Alphonse Moshao

- **Economic Trends: Industrial Strategy Project**

Ted Baumann
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SERVICE ORGANISATIONS

- **Planact**

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- **Development Action Group**

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- **Built Environment Support Group**

Clive Foster

- **Corplan**

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- **Rural Advice Centre**

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Mimi Sesoko

- **Rural Finance Facility**

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● **Community Organisation Research and Devt**
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● **United Municipal Executive**
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Association of Municipal Electrical Undertakings
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● **Industry and Energy Operations Division, World Bank**
Mr Robin Broadfield

● **Lesotho Electricity Corporation**
Ms Eunice Bulane

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Mr Geoff Cardwell, Brown Boveri Technologies
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Thebelo Radebe, Conlog
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Mr Clive Cross, Plessey Tellumat
Mr Jim Lappin, Power Engineers
Mr Sergio De Oliveira, Power Engineers
Mr Paul van Ass, IMS Industrial

OTHERS

Mr V.J. Bath, Rand Water Board
Mr Lindley Worthington, AECI
Mr Phillip Geerds, TATU
Mr Lawrence Boya
Dr Joop de Loor
Mr David Shandler
Mr Gustav Scholtz

POWER TO THE PEOPLE

AN ELECTRIC LIGHT IN EVERY HOME

Albie Sachs

November 1991

ANC NATIONAL MEETING ON ELECTRIFICATION

6-7 February 1992

University of Cape Town

This paper is extracted from a larger paper entitled:

AFFIRMATIVE ACTION AND GOOD GOVERNMENT:

A FRESH LOOK AT CONSTITUTIONAL MECHANISMS FOR RE-DISTRIBUTION IN SOUTH AFRICA.

POWER TO THE PEOPLE - AN ELECTRIC LIGHT IN EVERY HOME

There is no reason why there should not be a light in every home in South Africa. Whites take electricity for granted.

Yet two thirds of South Africans collect firewood, burn paraffin, use coal or candles or car batteries. Their houses fill with fumes, frequently catch fire. Darkness comes early. There is no refrigeration, no hot water, no fans.

Energy comes from the earth and sun. We all have a right to fire, to enable us to cook, to ward off danger, to keep ourselves warm, to illuminate the darkness. The right to energy in a country like South Africa means a right to electricity, not just a right to collect firewood or dung or to carry paraffin.

The right to electricity is both a right in itself and also the foundation of the exercise of other rights. When we boil water, we affirm the right to health. When we read at night, we exercise the right to education. When we save food in a fridge, we strengthen the right to nutrition.

The problem is not one of enforceability, nor even of affordability. It is one of humanity. It is as it has always been, a question of who matters, of who counts. The resources are there, the cost can be recovered and means can be found for making the rights enforceable.

In the Jordan 94 per cent of homes have electricity. The figure in Chile is the same [and we are informed by the Minister of Energy there that they are very worried by it].
In Thailand virtually every urban dwelling and more than 70 per cent of rural homes have electricity.

In South Africa, which has the world's fifteenth largest power generation capability, the figure is about 32 per cent. We do not know the precise percentage because until now no government or other body has bothered to find out. What has mattered was that every white home has had lights.

The question of who has or does not have electricity has nothing to do with location. White farmers in the most remote areas can look forward to a cool beer in summer and a hot cup of coffee in winter, while blacks living in the cities, even right next to a power station, even workers in the electricity supply industry, have to do without.

Nor is affordability a major factor. Blacks pay one and a half times as much as do whites for each unit of energy they consume; they also suffer much more discomfort, not to speak of the hours they have to spend on acquiring and storing fuel.

Nor is it a matter of supply. The electricity is there. ESKOM is said to be the fifth largest generating authority in the western world. It has vast reserves which it cannot dispose of. It has enough spare capacity to supply every unelectrified house in the country. Links with hydro-electric schemes in Mozambique and Zaire promise South Africa future supplies that will be cheap and produce little damage to the environment.

The key determinant of who has and who does not have lights is accordingly not some rationally justifiable factor such as distance from a power station, capacity of the consumer to pay, or an absolute shortage of electricity. It is race. While white homes have electricity as a matter of course, only about 20 per cent of black homes have it.

The fact is that until now, the majority of South Africans were just not contemplated by the authorities that controlled the distribution of electricity. They did not have the vote, nor the right to own homes where they pleased, nor the right to

study and engage in economic activity on equal terms. Lack of power in the home was a direct consequence of lack of power in the organs of government.

The apartheid state excluded them, at best ignored them. It was not a question of excessive state intervention but of excessive state neglect. The answer is not to continue with this neglect , but to ensure that the state shoulders the same responsibility towards blacks that it has always done in relation to whites. We need to bring light to all, not to privatise darkness.

This is where a new constitution and a Bill of Rights will have immediate relevance. Democratic, non-racial government at all levels will ensure that local authorities for the first time are answerable to all the people in their area, and not just to a racial minority.

Equal protection means that all future spending, whether at national, regional or local level, has to be done on an equal basis. Street lighting has to be made equally available throughout a metropolitan area. If a white farmer has a power line running to his or her homestead, black farmworkers on the same land should have equal access to the current [subject, of course, to payment for use on the same basis].

Regional equalisation will mean that the regions which currently suffer from gross under-provision of electricity, such as Northern Transvaal or Ciskei-Transkei-Border should receive special infra-structural support. The electricity grid would have to be spread so as progressively to achieve regional equality.

Affirmative action in the narrow sense would signify that special programmes might be developed to help black consumers of electricity. An example might be special tariffs to discount costs for the poorest of the urban dwellers or to reduce connection and installation fees for those in the more remote rural areas. Basically, however, the idea would be to

extend electricity to all on an equal basis as citizens and not as blacks.

This is where the expanding floor of minimum rights comes in. It is a mechanism designed to establish an enforceable programme for the progressive extension of electricity to every home in the country. It is not something separate from equal protection, regional equalisation and affirmative action, but rather, a comprehensive and coherent means of achieving all these together. It is the non-racial constitutional framework for achieving the right to light.

The minimum standards idea would involve three parameters: defining target sections of the population with the most urgent entitlement [for example, health- education- or business-related]; specifying geographical areas most amenable to rapid and inexpensive electrification; and, finally, determining the levels and quality of supply and installation.

The first task would be to establish a nation-wide Electrification Commission with responsibility for surveying the present situation and creating a map showing the number and location of homes with electricity and those without. Acting in collaboration with government structures at national, regional and local levels, together with ESKOM and with civic and business organisations, the Commission would work out a programme setting out the steps that would have to be taken to extend electricity to every home.

The targeted populations would steadily increase in number, the territorial units would progressively be enlarged and the quality of electricity supply units would over time increase on a step by step basis. Eventually all homes in the country would have the same basic supply of electricity.

Appropriate legislation would have to be adopted to govern the implementation of this programme. It would establish the bodies responsible for determining and implementing the scheme, lay down the criteria they were to use, and prescribe

in broad terms the way tariffs would be worked out. The legislation would have built into it a mechanism for determining what funding would be available and how any fluctuations would affect the rate of advance.

Finally, it would lay down a system of empowerment\ accountability\ enforcement. Thus, the Electrification Commission would be subject to at least four kinds of accountability:

to Parliament and elected regional and local authorities;
to civic and community organisations, who would have rights at least to information and consultation;
to the courts, who would apply the principles of judicial review in the light of the nature and objectives of the legislation; and
to the Social Rights Commission, which would receive complaints and suggestions from the public, undertake investigations and research, assist the courts when necessary, and report to Parliament and local legislatures on progress made and on blockages and possible solutions.

Critics will say that access by all to electricity might well be a worthy goal but that it can hardly be considered a right, and even less so a fundamental human right. In particular, they claim, the right to light should not be called a right at all, since it cannot be enforced. Thus, somebody who wishes to have domestic electricity cannot go to court to get an order that he or she must be furnished with electricity.

Enforceability will come from the format; the nature of the remedies will emanate from the character of the rights. There is nothing strange about this.

Rights in relation to planning and development are exercised in terms of complex legislation involving a multiplicity of

bodies, some purely political, some technical, some administrative, and some judicial.

One has to repeat: if the law were as inventive in relation to securing the rights of the poor as it is in respect of the rights of the rich, there would be no difficulty in finding appropriate ways and means to enforce basic social rights.

To the extent that the law is concerned primarily with priorities and procedures, it should be relatively simple to construct legislation that created a system of enforceable rights to electricity for all.

To begin with, the Constitution lays down a general scheme for ensuring that resources are devoted in a systematic and law-governed way to the progressive extension of basic social rights to all. It also sees to it that appropriate bodies are made responsible and accountable for the process.

Within an overall energy policy, an Electrification Act thereafter specifies the ways and means whereby electricity is steadily extended to all homes in the country. It is through the provisions of this Act that individual citizens progressively enter the category of those who can demand the furnishing of electricity to their homes as of right, going to court if necessary.

At the same time, mechanisms will exist to ensure that all citizens can insist that the question of extending electricity supplies receives constant attention. These mechanisms could consist of Parliamentary, regional and local government committees to which the public has access, as well as the Social Rights Commission referred to above.

Finally, the courts will be in the background to ensure that proper procedures are followed and correct criteria adopted when decisions are made about where and when to extend the supply of electricity.

As with environmental law, new forms of enforceability involving new agencies and new forms of pressure will emerge.

What matters is that everyone will feel that they are within the regard of the constitution and the law. People's power will mean a constitution plus electrification.

I would welcome comments on any of the ideas presented here. Please write to:

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PAUL THERON

CRITICAL ISSUES IN ELECTRICITY PROVISION IN SOUTH AFRICA

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1. INTRODUCTION

This paper addresses a number of current issues and debates on electricity provision to the household sector in South Africa. Attention is given to the current situation with regard to access to electricity and its quality of supply in different areas. Central questions are examined in the areas of institutional structure, capacity to implement electrification initiatives and financing. Finally, attention is drawn to possible ways toward a national electrification programme.

2. ACCESS TO ELECTRICITY IN THE HOUSEHOLD SECTOR

South Africa currently produces about 50% of the electricity used in the continent of Africa. Yet it is common knowledge that access to electricity in South Africa is highly unequal. Whilst there is currently a substantial surplus generating capacity on the national grid, electricity is only provided to the homes of a minority of the population and to users in the developed sector of the economy. The majority of the population who live in unelectrified rural and urban areas are dependant on more expensive and less convenient energy sources, both for use in their homes and in small-scale productive activities.

- Approximately one third of all South Africans have access to electricity in their homes. Virtually all "white" South Africans, even those in remote rural areas, are served.
- Between 15 and 20% of black South Africans have access to electricity in their homes.
- In urban areas (including small towns), access to electricity amongst black South Africans in higher, in the region of 20 to 30%. In many of these areas, "access" to electricity may be higher than first thought due to the prevalence of backyard shacks on properties that are electrified.
- Levels of access in rural areas is very low. In "homelands" electricity is available to 5 to 10% of the population. On commercially owned farms in "white" South Africa around 15% of farm workers have access to electricity.
- In most cases electricity is not being provided to houses in new site and service housing schemes (including those funded by the Independent Development Trust). Only high mast lighting and electricity to "essential" facilities are being installed.
- Electricity is not provided to informal housing areas.

Statistical information on the numbers of electricity consumers in "homeland" and township areas is generally scarce and unreliable.

3. INEQUALITIES IN THE EXISTING SYSTEM OF ELECTRICITY DISTRIBUTION

Even where electricity *is* available, there are inequalities in the quality and price of the service provided. In "white" municipal areas electricity is generally considered affordable, and the service is relatively reliable. The provision of electricity by these municipalities in 1989 contributed close to R5 billion to their net revenues, some 40% of their total revenue of around R12 billion. More importantly, as a group these municipalities made a total profit from the sale of electricity of around R600 million. This profit was used to subsidise the rates payable by property owners in these areas, and to finance the provision of a high level of non-income generating services. For example, the Johannesburg City Council made an operating profit of about R200 million, about 30% on the sale of electricity in 1989.

In township areas of South Africa, where black local authorities were set up in the 1980's to administer racially separate dormitory towns, severe crises have resulted from the provision of electricity. These problems have arisen from the administrative weakness of these undertakings (poor maintenance, erratic meter reading and billing, etc), and from the political unpopularity of these structures. Low rates of payment for electricity, added to the high cost per unit of bulk power due to poor load factors, has resulted in financial crises for many BLAs, particularly in the Transvaal. In 1991, the Soweto City Council expected to show a deficit on the trading of electricity, before the provision of subsidies, of about R70 million. In reality the deficit is likely to be much larger, since this figure was based on an (unlikely) assumption that the rate of collection of payments for electricity used would be 100%.

The unstructured approach of the State to the subsidisation of services in low-income areas, particularly the *ad-hoc* system of bridging finance, has also hampered attempts to resolve these crises. In some areas the bulk supply to entire townships has been disconnected, jeopardising essential services and the safety of ordinary citizens.

4. RESTRUCTURING THE DISTRIBUTION SECTOR OF THE SOUTH AFRICAN ESI

South Africa was one of the first countries to use electricity on a commercial basis. Various municipalities installed distribution systems in the 1880s to reticulate electricity for streetlighting and domestic purposes. In the 1890's mining companies combined to erect power stations to supply their own needs. Also, privately owned electricity utilities were granted concessions to provide electricity to certain consumers and to municipalities.

The Electricity Supply Commission (now Eskom) was established in terms of the Electricity Act of 1922, as an independent public corporation charged with the responsibility of providing electricity in South Africa. Electricity generation by municipalities also dwindled with the development in 1973 of the national grid, which linked all major cities in the country to a number of very large and efficient power stations. Eskom presently generates 97% of the electricity used in South Africa.

The distribution sector of the ESI has evolved differently and does not display the same level of institutional integration. From the 1880's through to the present day, municipalities have distributed electricity to industries and businesses within their municipal areas, to street lighting systems and to domestic consumers. The prior right of a local authority to distribute electricity within its area of jurisdiction is spelt out in the Electricity Act (No. 41 of 1987).

The policies of racial segregation and "separate development" pursued by successive white minority governments in South Africa have also contributed to the fragmentation of the South African ESI. The formation of a number of quasi-independent "homeland" states in the 1960's, and the establishment of a parallel system of "black" local authorities in urban areas in the 1980's gave rise to a range of separate, generally very weak, electricity distribution authorities. By the end of 1990 there were approximately 400 local authority electricity distribution authorities in South Africa, serving a total of only about 2 million electricity consumers.

It has become clear that the current institutional structure for electricity distribution must be changed if electricity is to be made available and affordable to all. Restructuring the system of electricity provision will go hand in hand with new approaches to urban and rural development in South Africa. It is clear from international experience that the development of institutional capacity and the provision of infrastructural services are important ways of improving standards of living, combating poverty and environmental degradation, and stimulating economic growth.

Guidelines for the formation of non-racial local government structures are likely to emerge as a result of national constitutional negotiations currently under way. Important aspects will include specifying the boundaries and functions of new local government structures, and their relationship to central and regional structures. Particularly important in this regard are questions about the relative political power of these structures and their access to financial resources.

Further work is required to establish the capabilities of electricity distribution authorities in different areas, and the implications of rationalisation of separate authorities. At this stage the following questions arise.

- On what basis will regional electricity distribution authorities be formed? Should existing personnel, equipment and assets of white municipal electricity departments, BLA electricity departments, Eskom regional structures, and any other electricity authorities each region be consolidated into these authorities?

- How should the boundaries of regional distribution authorities be drawn? Boundaries may be fixed by other political criteria, but should ideally be drawn so as to ensure that, as far as possible, each region includes a well established base of existing consumers. Regions should also include urban, peri-urban and rural areas so as to ensure that all underdeveloped areas receive attention.

- Should regional electricity distribution authorities be autonomous public corporations (such as Eskom), or part of regional level state structures?

- How would equal standards of all publicly funded services, including electricity, be ensured in all areas? Should uniform tariffs for these services be charged?

- What will the effect of regionalisation be on the system of financing local government in South Africa? Given the very substantial backlogs in some areas, it is likely that regional distribution authorities would need to use surpluses generated from electricity sales in electrified areas to finance the electrification of unserved areas. Revenue from electricity sales in what were until recently "white" residential areas would no longer be available to cross subsidize other municipal services provided in these areas only. As a result of the need to finance new electrification projects, it may not be financially possible to provide the same level of non income generating services that are currently enjoyed in "white" municipal areas. The level of these services would thus either need to be scaled down in some areas, or new sources of revenue for local government would be needed. These sources would either be increased local level taxation, including higher rates, or contributions from central state to local and regional capital and operating budgets.

- How can the public visibility and accountability of regional distribution authorities be developed? This will be particularly important in urban townships where consumer confidence in BLA electricity departments is presently extremely low.

- What degree of management autonomy is appropriate in the operation of regional electricity distribution authorities?

- How can steps be taken to improve the efficiency of electricity distribution authorities in South Africa? Currently, the performance of local authority electricity departments is not regulated. Studies have shown that their efficiency is low by international standards. Also, recent trends in electricity distribution in developed countries are towards greater attention to customer service, efficiency and marketing.

The questions raised above are the subject of debates within the ANC and civic organisations. These and related issues are also being examined in the ANC-led Local Government and Planning Policy Research Project.

4. THE CAPACITY TO PLAN AND IMPLEMENT ELECTRIFICATION INITIATIVES

Given the widening support for electrification initiatives it is instructive to examine the progress currently being made in this regard. Over the past three years, Eskom has popularised the idea of "Electricity for All". Yet, given the current structure of the electricity supply industry in South Africa, Eskom is not able to gain access to most unelectrified areas. Nonetheless, Eskom recently announced plans to "assist" in the electrification of three million households over the next three years. It expects install 700 000 of these new connections itself in homeland and newly proclaimed urban areas (like Orange Farm, south of Johannesburg). The other 2.3 million connections would have to be made by local authorities, who have sole legal access to the remaining unelectrified areas.

Some local authorities are taking bold initiatives to electrify new areas. For example the City of Durban has laid plans for the electrification of 160 000 homes in the vicinity of that city, at a cost of R500 million over the next five years. Notably, this initiative is being financed from the city's own Capital Development Fund, an encouraging example of the application of the "one city - one tax base" concept. Other local authorities, particularly the now practically defunct black local authorities, have no plans to develop new connections within their areas of supply. At this stage there is no co-ordination of electrification efforts, no setting of targets for the numbers of new connections to be made, no commitment to financing such initiatives, and no commitment from the State to guide this process.

In order to drive the restructuring process and to co-ordinate electrification initiatives at a national level, it may be appropriate to establish a national electrification board (with representation from the State, the business sector, civics, unions, the ANC, and other relevant parties). This board should establish working procedures for electrification projects, including setting out parameters for the use of technology, formulating appropriate approaches to the electrification of different types of settlements in new and existing areas, and specifying procedures for community participation in electrification projects.

Programmes will be required to meet the requirements of the ESI for technically qualified staff. These may include the development and re-deployment of existing staff in the process of restructuring the ESI, and the extension of existing training programmes to recruit new personnel. Use will certainly need to be made of private electrical contractors and consultants. Trade unions must be centrally involved in the formulation of these initiatives.

It will also be necessary to extend current efforts to co-ordinate technical development work and market development for both power electrical equipment and electrical appliances by the ESI and by private industry.

5. FINANCING ELECTRIFICATION INITIATIVES

Accelerated electrification initiatives undertaken in the future are likely to require a large increase in current levels of investment. A programme to electrify all houses in South Africa in twenty years would cost about R800 million per year, which is around 1% of the annual budget of the central state.

Investment in electrification initiatives need not derive primarily from the central government budget. The income currently generated in the ESI itself is substantial. For example, since 1981 Eskom has had a positive net income of between R507 million (in 1981) and R845 million (in 1990) per year. These funds have been used to accumulate very substantial capital reserves. In addition, the surpluses generated by white municipalities and used to subsidise rates are of the same order of magnitude. In future, a larger proportion of the revenue presently generated in the ESI could be applied to extending electricity to new consumers. However, given the importance of undertaking a rapid electrification programme, the need will probably exist for the mobilisation of capital at a national level for these initiatives. To this end a national electrification fund could be formed. The fund could be controlled by a national electrification board, and its administration may be handled by an existing banking agency.

In order to make loans at below market rates, public investment from central government funds in electrification will likely be necessary. Public spending priorities in South Africa have begun to change towards the addressing of racial and geographic inequalities. Addressing social needs in the key areas of education, social pensions, health and housing will require massive and sustained public expenditure. It has been estimated that achieving racial parity at white levels in these four areas alone will require a tripling of current expenditure, from 10.7% of GDP to 34.7% of GDP at 1986 rand values. Since the current level of total taxation in South Africa is already approximately 30% of GDP, increases of this sort could only be sustained if the economy grows, and new expenditure is introduced slowly.

Despite the fact that fiscal resources will be limited, there are a number of reasons why the state should continue to spend public funds on electrification projects in urban areas. Firstly, the economic and human development of the country depends on ongoing public investment in infrastructural systems. Secondly, expenditure on electrification projects will bring about substantial external benefits and economic multiplier effects. The employment provided to those involved in the design, construction and operation of new networks, the increased demand for electrical appliances, and the productive industry stimulated by the provision of new supplies of electricity are examples of such positive effects. Thus, economic growth can be stimulated through the process of redistribution of wealth. Finally, investment in an electrification programme can take place on a cost-recovery basis. Thus fiscal allocations to a national electrification fund could be repayable to the treasury (albeit at a low interest rate).

Apart from public funds, private capital might be raised for electrification projects through the sale by a national electrification fund of treasury-backed, fixed-interest bonds. There are a number of ways in which public authorities can encourage private investors to purchase particular bond issues. The government has successfully lobbied large mutual funds, pension, provident and assurance funds to support organisations such as the South African Housing Trust in the past. The state may also force certain institutional investors to invest a certain proportion of their holdings in a prescribed set of funds. Legislation of this sort, known as the prescribed asset regulations, existed in South Africa until it was scrapped on March 15, 1989. If needs be, these regulations might be re-introduced. Access may also be sought to additional foreign concessionary loan finance from organisations such as the World Bank.

6. A WAY FORWARD

In order to make progress on electrification in South Africa it will be necessary to implement bold policy initiatives in the areas described above. The pace of the process of constitutional change at a national level is unlikely to satisfy those in the ESI who wish to press ahead. In this context it may be sufficient to move forward once broad consensus on the eventual shape of the ESI has been reached.

In order to move from the current structure of the distribution sector of the ESI to a new structure a series of regionally specific interim steps would need to be set out. These might include temporary arrangements where well-developed electricity departments in "white" municipalities or Eskom take over supply to BLA areas.

The formation of a national electrification forum, with involvement from a range of relevant parties, including government, and the resources to finance electrification initiatives, may provide the necessary catalyst for these steps to be taken.

A central aim of the African National Congress's national meeting on electrification is to bring together relevant groupings and individuals to debate these strategies.

CHARLES DINGLEY

INSTITUTIONAL FRAMEWORKS FOR THE ELECTRICITY SUPPLY INDUSTRY

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1. INTRODUCTION

The distribution of electricity in South Africa is dominated by some 400 municipal electricity departments who together supply about 85 percent of the country's 2,4 million consumers. Over half of these municipalities have fewer than 1000 consumers, and the largest about 300,000. Eskom generates virtually all of the country's power, and supplies most of the remaining consumers. Other bodies involved in distribution include the Department of Development Aid, Provincial Administrations, Regional Services Councils, Black Local Authorities, the House of Representatives, and separate corporations in each of the TBVC areas.

This highly fragmented apartheid-based institutional framework has three major drawbacks: it is inherently inefficient; it produces a patchwork of different tariffs (with rates in black areas often being higher than in adjacent white areas); and it inhibits the flow of the resources needed to take supply to the 30 million people who have no electricity in their homes.

An important issue in the forthcoming negotiations on the future of local government is whether electricity distribution should remain in the local government domain, or whether it should be transferred to regionally based specialist electricity distribution authorities.

The aim of this paper is to contribute to that debate. It looks at the factors which affect the performance of electricity distributors, and presents a brief review of electricity supply institutional frameworks in other countries.

2. INSTITUTIONAL FACTORS AFFECTING PERFORMANCE

Any assessment of the performance of an electricity distributor must go beyond mere measures of operational efficiency. It should also take into account crucial higher-level issues such as: the mandate given to the organisation and its interpretation of that mandate; the importance it attaches to broader social objectives (such as extending its service - and making it affordable - to all who want it); the organisation's level of accountability to the political formations which created it; its responsiveness to its consumers; and its financial strength and long-term viability.

The purpose here is to identify some of the institutional factors which have a bearing on these broadly defined performance criteria.

2.1 Ownership

A fundamental issue is public versus private ownership, as this largely determines an organisation's objectives and degree of public accountability.

Privatisation is usually advocated on the grounds of efficiency, but this claim is made dubious by the difficulty of measuring efficiency (or even defining it), and by electricity distribution being a naturally monopolistic activity. Privatised utilities are usually subject to regulatory mechanisms, but in practice these amount to a licence to make a "respectable" profit. Privatisation of the industry in the UK stemmed, one suspects, more from ideological motives and the attraction of an inflow of funds into government coffers, than from any belief that it would affect efficiency.

2.2 Control

The predominant institutional model in the industry is that of a publicly owned semi-autonomous body set up in terms of an act of parliament. (Eskom is an example of such a body). Overall control is usually exercised by a board made up of senior officials, government and other nominees, and people with special knowledge of the industry.

The utility's mandate will be broadly set out in the relevant legislation, but the interpretation of the mandate, the prioritisation of its various parts, and the responsibility for seeing that it is carried out satisfactorily, will largely be up to the board. The board is normally also required to produce an annual report on the utility's activities and financial affairs.

This arrangement for the control of utilities operates in many countries and generally appears to work well. But to ensure that the desired level of public accountability is maintained, two steps are necessary.

Firstly, the composition of the board must be diverse enough to prevent the development of an uncritical clubby atmosphere dominated by a group of members representing similar interests, such as those of the business community. This might be achieved by the inclusion, for example, of political party nominees and elected consumer representatives.

Secondly, the utility's affairs must be open to public scrutiny as far as is practically possible. (A lesson can be learnt here from the rural electric co-operatives in the USA where consumers have the right to attend and address monthly board meetings). Annual reports and accounts should be easily understandable to lay people, and sufficiently detailed. (The 1990 Eskom Annual Report, for example, fails to provide a breakdown of "operating expenditure" of R6,4 billion).

In addition to longer-term consumer interests being looked after at board level, there is a need to ensure that the utility remains responsive to consumers on a day-to-day basis. This may be provided for (as it is in the UK) by means of local consumer committees with established channels of communication to the appropriate utility officials.

2.3 Specialisation of function

Should distribution authorities be specialist organisations, or should they be part of some larger multi-purpose body such as a municipality?

Electricity distribution is a specialised engineering activity requiring relatively large numbers of professional staff to design, install, and operate complex systems (typically valued at around R1000 million in a large city). In South Africa this operation is run by the same councils and bureaucracies as garbage removal and the issuing of dog licences.

Professional salaries in electricity departments are linked to those of bureaucrats, and to the graduate engineer, a municipal job is seen as a dreary prospect, poorly paid and low in status. Capital expenditure proposals for millions of Rand are evaluated by inexpert council sub-committees. The performance of electricity departments is obscured amongst a host of other (more visible) municipal issues, so that these departments are effectively insulated from democratic control.

2.4 Size

While it would be difficult to put an exact figure on the optimum size for an electricity distributor (in terms of the number of consumers for example), some general observations can be made.

Size brings certain advantages. Larger distributors can afford their own in-house engineering teams, enabling them to develop standard designs, and to have a greater degree of continuity between design and operation than is possible when using consultants. They have the price advantages of bulk orders (of distribution transformers, for example), and can afford expensive testing and other equipment to improve efficiency and quality of service. Economies of scale are also realised in the administrative aspects of the operation, notably billing.

Size can make an organisation less responsive to its consumers, but this problem is overcome in the larger utilities by the establishment of area offices and service depots.

2.5 Consumer diversity

Three desirable forms of diversity may be identified.

A mix of domestic, commercial and industrial consumers will give a more even load pattern than domestic consumers on their own. This will significantly reduce the average bulk price of electricity to the distributor when the bulk tariff includes a maximum demand component (as is usually the case).

Secondly, because it is difficult for a distributor to break even on rural supplies on their own, rural electrification will be greatly accelerated if rural areas come under a regional distributor together with urban and industrial consumers.

Thirdly, a distributor with a high proportion of unelectrified households (compared to its existing consumer and revenue base) will find it financially difficult to extend its service to all. (This could happen in a new local government dispensation if black urban areas were to be dependent on the new structures for electrification. In Cape Town, for example, the cost would be roughly equal to the city's annual electricity revenue).

3. INSTITUTIONAL FRAMEWORKS IN OTHER COUNTRIES

This is a brief review of electricity supply institutional frameworks in a number of countries. (The selection is based primarily on the author having some first-hand knowledge of the electricity supply industries in these countries).

3.1 United Kingdom (England and Wales only)

All municipal and private suppliers were rationalised and nationalised in 1948 to form a single generating authority and 12 area distribution boards, established independently of local government structures. The entire industry was controlled by a statutory body called the Electricity Council.

In the 1990 privatisation of the industry, the generating authority was split into four entities and sold off, while the area boards were privatised with their previous boundaries intact. These distribution authorities have an average of about 1,8 million consumers each.

3.2 Brazil

Generation and bulk supply fall under a single federal authority, while distribution is done by a specialist electricity authority in each of the country's 23 states. The overall level of electrification is about 70 percent.

One such state-based distribution authority is CEMIG. It serves the state of Minas Gerais, which has a population of 16 million and is the size of France. CEMIG's 16 000 employees serve their 3 million consumers through ten regional offices, with each region being divided into districts and sub-districts so as to maintain close contact with their consumers.

3.3 Costa Rica

ICE is the national utility for electricity supply and telecommunication services. Seven further electricity utilities also operate: CNFL (a subsidiary of ICE), which serves the capital city of San Jose; municipal undertakings in two other cities; and four rural electric co-operatives set up in remote areas as the result of a USA initiative in the 1960's.

About 80 percent of households have electricity. ICE serves about 200 000 consumers, CNFL and the two municipalities a total of about 300 000, and the co-operatives 50 000. ICE is responsible for all generation.

3.4 USA

The industry comprises several hundred investor-owned utilities, ranging from the very small to the very large (such as Southern California Edison with 3,5 million consumers), over 2000 municipal undertakings (many of whom operate their own generating plant), Federal power agencies such as the Tennessee Valley Authority, and around 1000 consumer-owned rural electric co-operatives.

The electric co-operatives (which are quite separate from the farmers' producer co-operatives) were born in the mid-1930's out of President FD Roosevelt's initiative in forming the Rural Electrification Administration to stimulate the development of the rural areas. The investor-owned utilities did not see rural electrification as sufficiently profitable, and the REA therefore organised the setting up of electric co-operatives to do the job. The whole structure remains healthily in place; today they serve 12 million consumers scattered over 75 percent of the country's land area.

3.5 Canada (Ontario)

Ontario Hydro, the Provincial supply authority, generates Ontario's power and distributes directly to some 800 000 consumers outside of municipal supply areas. It also provides bulk supplies to over 300 municipalities who in turn serve about 2,4 million consumers.

The South African 1922 Electricity Act was partly based on the corresponding Ontario legislation, and the respective supply industry structures are still remarkably similar. The major difference is of course that the Canadian structure was designed to serve all its people.

3.6 Hong Kong

Electricity supply is in the hands of two private companies, the larger of which has 1,3 million consumers. The companies' financial operations are governed by a "Scheme of Control" in terms of which annual after-tax profit must be kept to 15% of total investment.

3.7 Thailand

Three semi-autonomous statutory bodies share responsibility for electricity supply: EGAT, which is responsible for generation and transmission; MEA, which distributes to a population of some 8 million in the Bangkok metropolitan area; and the PEA (Provincial Electricity Authority), which serves the rest of the country.

PEA has taken supply to several hundred thousand new consumers each year for the past 15 years. It now serves over 5 million consumers, and both the urban and the rural areas of Thailand are virtually fully electrified.

3.8 Greece

Greece has a single national supply authority, the Public Power Corporation, run by a board coming under the Ministry of Industry and Power. PPC was set up in the early 1950's, with the mandate of rationalising the operations and technical standards of the numerous small suppliers then serving Greece's urban settlements. In the 1960's PPC started the second phase of its mandate, which was to take supply to all rural communities. Today PPC supplies 5,2 million consumers, and Greece is fully electrified.

4. CONCLUSIONS

Electricity supply in most countries (and in the great majority of poorer ones) is carried out by highly rationalised, special-purpose, semi-autonomous, publicly-owned organisations. Many of these bodies came into being in the decades following World War 2, when it became apparent that the existing fragmented and disparate structures were inefficient and inadequate.

Utilities commonly serve several million consumers, who, because of the size of the utility and the area it covers, show all the desirable characteristics of diversity mentioned earlier. PPC in Greece, for example, generates its own power and distributes directly to 5,2 million consumers, over twice the South African total. (This PPC does with one third of the number of people employed in the electricity supply industry in South Africa).

The South African electricity distribution sector differs from the international norm in virtually every major respect, the only commonality being public ownership. The industry here is in the hands of hundreds of suppliers, virtually all of them part of multi-purpose municipal bureaucracies, controlled for the most part by inexpert councillors, and shielded from public scrutiny or accountability. Consumer diversity is poor, because of the location of industry and commerce, because of segregated residential areas, and because of rural neglect.

The structure of South Africa's electricity supply industry was designed in the 1920's to meet the needs (as perceived at that time) of the country's enfranchised and industrial sectors. Apart from the absorption into Eskom of the privately owned Victoria Falls and Transvaal Power Company in 1948, the only significant modification to this structure has been the tacking on of nominal supply authorities in black areas - nominal in that the government has given them the right of supply, while cynically withholding the resources needed to do the job.

Is this the right structure, even stripped of its apartheid debris, to take South Africa into the future?

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THE ROLE OF THE MUNICIPAL DISTRIBUTION AUTHORITIES IN THE TRANSITION PERIOD

1. INTRODUCTION

White municipal authorities have a long and proud history of providing electricity services for the inhabitants of their towns and cities. Many municipalities have been selling electricity direct to the end customer for, in many cases, periods of over eighty years. They have through experience evolved distribution techniques and technology which is reliable, safe, cost-effective and suited to the purpose, which was basically to supply electricity to customers whose houses are all-electric and who utilise an average of about 700 kilowatt hours of electricity per month. These electricity distribution networks have grown in pace with the growth of the towns and large proportions of them have already been paid for and therefore attract no further capital charges.

Up to forty-odd years ago most of the larger towns and cities were also involved in installing electricity in the black and coloured townships related to their towns, although at a much slower pace due to the perceived inability of the black and coloured residents to afford electricity. At that time, servicing of black townships became seen as a responsibility of the state and although many white municipalities remained involved in the black townships what they could achieve was limited by the funds provided by the state.

More recently with the formation of Administration Boards, which were later converted to Black Municipalities, the servicing was taken out of the hands of the white municipalities entirely. Legally, now, white municipalities can only assist black municipalities if asked.

2. ELECTRICITY FOR ALL

That then was the situation up until a year or so ago, white municipalities fully reticulated with electricity next door to black, and in some cases coloured towns, where there was very little or no electricity available, and being powerless to do anything about the situation. Municipal engineers have long been troubled by this state of affairs as it is contrary to the long-standing tradition of providing service to the local community. Others were also troubled by this situation and Eskom began to propagate the message of "Electricity for All," a sentiment heartily shared by most municipal engineers as well. At about that time it began to be realised that the provision of electricity could have very valuable socio-economic effects as well, a message forcefully driven home by the Nedbank-Old Mutual scenario study. The current situation is that it is generally accepted that electrification of the unelectrified areas is essential, and most urgent. The problem, however, remains how it should be done.

3. INITIATIVES FOR CHANGE

The recognition that electrification of black towns should be given high priority led to a number of initiatives aimed at breaking the deadlock. Many of these, recognising the powerlessness of white municipalities to become involved in electrification, became calls for changes to the structure of the Electricity Supply Industry. The ideas which surfaced ranged from a complete takeover of all electricity supply undertakings by Eskom, ranging through the creation of

regional supply undertakings, to privatisation in the form of Joint Venture Companies. Many thousands of man-hours of thought, deliberation and discussion went into these efforts. Unfortunately none of these initiatives addressed the real problem, namely the artificial split between the black and white municipalities. If more effort had gone into the removal of this political barrier and promoted the amalgamation of municipalities far more could have been achieved.

The various initiatives have crystallised into a drive by Eskom to take over the electricity supply undertakings of black municipalities, or the rights to supply electricity if this is not currently being done. This move, on the surface, would appear to be a good way of breaking the deadlock, but I will argue that this is in fact the wrong course of action, which will in the long term lead to further complications.

Unfortunately the earlier initiatives for restructuring the Electricity Supply Industry have achieved a certain amount of momentum, and roll along without taking into account that conditions have changed, and are still changing rapidly. The first change occurred in February, when the State President unbanned the ANC, and many changes have occurred since. All these changes lead one to conclude that the days of the black municipalities are numbered, and the time when black and white municipalities will be amalgamated is rapidly approaching. This step would remove the legal constraint preventing white municipalities from becoming involved, and enable the white electricity supply undertakings to tackle the dreadful backlog in services.

The moves by Eskom to take over the electricity services are, in my opinion, wrong because they take too narrow a view of the basic needs of black urban residents. It must be remembered that white municipalities' one aim is to provide services for the residents, and that electricity is but one of the services provided in a modern town. The need for upgrading services such as water supply, roads, sewerage, cleansing, parks and recreation, etc are also very pressing and the necessary expertise and experience exist in the white municipalities. Residents see the municipality as responsible for providing services, electricity being only one of many. The answer is not to separate one individual service from black municipalities and try to run it as a separate entity, but to press rather for amalgamation so that the pool of expertise and experience can be shared.

4. ADVANTAGES OF AMALGAMATING WHITE AND BLACK MUNICIPALITIES

Further advantages of amalgamation would be:

- Residents would receive one account for services, covering electricity, water, cleansing, health, site rental, etc. Payments would only need to be made at one office and only one authority would need to be approached if payment terms had to be discussed.

- Any surpluses realised on the trading accounts of the white municipalities such as electricity and water could be ploughed into local services for the benefit of local residents. If Eskom supplies electricity the surplus component is lost to the local community.

- Municipalities are close to the people and residents can influence their actions through their elected representatives. Having one service controlled by a national body removes their ability to influence its actions.

- Decisions on tariffs or levels of service are made locally, and can more readily take account of local needs or circumstances. Decisions can also be made more quickly and more easily. The local community can decide for themselves what type of metering or level of service they want, without the decision being made by a distant monolithic body and being imposed on them.

- Decisions to be applied locally are not influenced by special or different circumstances in other areas.

- The restraint of institutional factors is instantly removed. Many black local authorities find difficulty in borrowing money for system extensions due to their low creditworthiness, whereas white municipalities do not suffer from this problem. Funds for infrastructure would thus become readily available.

- Increased efficiency. In the propaganda for change to the structure of the electricity supply industry much has been made of the shortage or suboptimal use of skilled staff to justify change. Amalgamation of black and white municipalities will improve the utilisation of skilled staff and a reduction in absolute numbers required will be made possible by benefits of scale. In addition, it would avoid the drawback of an Eskom takeover as Eskom would need to duplicate facilities by establishing a maintenance presence in the area. There would also be no need to provide support services such as billing, cash collection, stores handling, salary and wage administration, clerical services etc, all of which exist in the white municipalities already.Overall amalgamation will achieve a far more cost effective result that two different authorities supplying electricity.

- The big, if not main, advantage of amalgamation of the municipal electricity undertakings is cost pooling. As mentioned earlier, the electrical distribution networks of white towns and cities are to a large extent paid off. When systems extensions are carried out for new developments the capital charges form a component of the tariff for all consumers, and the cost is spread over the whole consumer base, not only the new consumers. The consumers in the older areas , and its industrial consumers therefore effectively subsidise the cost of networks in new areas, where the customers will in their turn help to pay for still newer areas. Separating the black areas results in the situation where the capital cost of the network is spread over a small number of consumers, and because the network is new the capital charges are high, resulting in high tariffs. It is impossible to

electrify a black township next to a white town and run it separately, without the tariff to the black customers being higher than the tariff to their white neighbours.

- Tariff equalisation. The tariff charged by Eskom is in most, if not all, cases higher than the tariff charges by the neighbouring white municipality. Through cost pooling mentioned above these tariffs can be equalised, a goal highly desired by black customers.

5. CLARIFICATION OF ROLES

While fully subscribing to the concept of electricity for all, the author's opinion is that many of the people who have raised their voices in the call for the restructuring of the electricity supply industry have lost sight of the roles of the various players. The rhetoric has focused on the thousands of houses in cities and towns still to be electrified, but ignored the thousands of houses in rural and self-governing territories. The need for electrification in these areas was forcibly brought home to the author in recent trips through the Transkei, Ciskei, Boputatswana, Venda and Gazankulu.

Who then should be the main players in the electrification effort? Municipalities have traditionally been the main players in reticulation of urban areas, while Eskom has been the main player in provision of electricity in the rural areas, mostly however to farmers.

It makes more sense to utilise the various specialities that the players have developed to the best advantage of the country as a whole. There are great advantages in municipalities continuing to reticulate the urban areas, as mentioned above, and in Eskom concentrating on the rural areas and TBVC states, where their experience in long distance rural distribution can be beneficially used, and where there are no municipal supply authorities involved.

6. INHIBITING FACTORS

In defining the roles of the various players one must also look at the factors which are inhibiting the electrification effort, and possible ways of reducing these factors.

The two main factors inhibiting municipal involvement are constitutional, in the existence of separate black municipalities, and economic, in the fear of non-payment of accounts.

The constitutional factor is because the law vests the right to supply electricity in the hands of the black municipalities. It has been argued that the white municipalities can and should be the electricity supply authorities in urban areas due to their expertise, local nature and cost effectiveness. More thought and effort should therefore be put into devising ways of removing the institutional constraint than in devising new structures for the industry. Events are moving fairly rapidly on the political front and the amalgamation of municipalities can be seen to be far nearer than many people think. The Provincial Administrations can however play a bigger part in speeding up the amalgamation of the electricity services than they are doing at present. Powers exist for Administrators to force black municipalities to hand over to the white municipalities services which they are inefficiently, or at a financial loss. The protagonists of change in the industry should be campaigning more for these powers to be used to promote electricity for all. This could be done even before the total amalgamation of municipalities.

The other factor I have called financial, although it is basically a fear that if money is ploughed into electrification losses will be made due to possible failures of black customers to pay accounts. This is a very real fear in the minds of white Councillors and is a direct result of the ANC's payment boycott campaigns, compounded by the lack of action on the part of the black councils to recover money owing. Many more municipalities would be willing to become involved in electrification if this factor could be removed, and I see a big role for the ANC in this regard. The ANC should now start calling on customers supplied with electricity by white councils to pay their accounts on time. As this culture of non-payment is the result of the ANC's actions, it should shoulder the responsibility for eliminating this problem in the interests of electricity for all.

7. CONCLUSION

1. White municipalities have a major role to play in bringing electricity to the black townships, by assuming responsibility for this function.

2. It is more cost effective for white municipalities to reticulate black townships rather than Eskom, because they already have all the support functions in place and can also rationalise the use of skilled technical personnel.

3. Urban reticulation should remain a municipal function, and Eskom's role should be to distribute electricity in rural areas and homelands, where there are no municipal authorities involved.

4. Provincial authorities should facilitate the takeover of electricity supply by white municipalities by applying pressure to black councils to transfer this function to white municipalities.

5. The ANC should begin to remove the fear of non-payment by calling for payment to be made for services rendered by white municipalities.

BILLY COBBETT

Planact

BUILDING THE LEGITIMACY OF ELECTRICITY DISTRIBUTION AUTHORITIES IN URBAN AREAS

1. INTRODUCTION

This conference, and this paper, have as their context the confused, illogical and inefficient system of electricity distribution and reticulation in South Africa. This, in turn, reflects on the Electricity Supply Industry (ESI) and the product itself which are, themselves, inextricably linked up with the political problems of this country. The challenge we are faced with today is to make the industry and the product part of the solution.

To a significant extent, electricity supply and distribution have arrived in this situation because of its link to the structures of racial local government. This paper will pay particular attention to general and specific conditions that this gives rise to, and will examine some of the new strategies that are currently being employed to 'depoliticise' both the industry and the product. It will argue that these responses are, themselves, making the same sort of mistakes of the past that have yet to be removed.

The positions adopted in this paper emanate from extensive organisational and personal experience in the process of local level negotiations that have been underway in the Transvaal and Northern Cape over the past two years. What these negotiations have in common is the centrality of electricity to the negotiation process: because of inter alia (a) the size of electricity in local authority budgets; and, (b) the cost of electricity in the household budgets: without an agreement on electricity, the wider negotiations generally proceed no further.

To explain this more fully, it is necessary to examine some of the essential features of electricity distribution as a local authority function, which will help explain the extent of the politicised and contested nature of electricity in the townships. For the irony is that electricity - which is generally understood as an energy source and therefore essential for development, individual, social and economic expansion - is in fact a source of the utmost bitterness and distrust in the townships, and with good reason.

To illuminate some of the points, reference will be made to the situation within the boundaries of the Central Witwatersrand Metropolitan Chamber, centred around Johannesburg and Soweto.

2. Electricity and local government: the status quo

2.1

First and foremost, electricity was and is provided on a racial basis in South Africa: generally speaking, whites received it first and, (if and) when the townships eventually received it, it was provided through a combination of separate administrative, transmission and reticulation. Johannesburg's electricity system is as old as the city itself, while Soweto's electricity system (completely separate) is but a decade old, whereas Alexandra is still being electrified (again, separately). Notwithstanding protestations from Eskom and elsewhere, there is such a thing as 'black' electricity which is different from 'white' electricity;

2.2
Linked to this is the fact that electricity was and is linked directly to the South African constitution, by virtue of the fact that it is overwhelmingly the local authority that enjoys sole right of supply in its area. By the end of 1990, there were approximately 400 local authority distribution authorities in South Africa. This old policy, emanating from 1922, was even confirmed as recently as 1987, (Electricity Act; 41/87) by which time the Black Local Authorities (Act 102/82) and the Tri-Cameral Parliament were long rejected and discredited.

Excluding the coloured and indian management committees, there are eight local authorities in the central Rand. There are accordingly eight different electricity departments, while Sandton electricity is supplied by three different sources - Sandton, Johannesburg and Eskom. This is in a country where the lack of skilled personnel in the industry is a cause for serious concern;

2.3
By making structures such as the BLAs responsible for the distribution, supply and maintenance of the electricity system, the government was guaranteeing the current crisis. Lacking a financial base, skills, personnel and credibility, the BLAs are in no position to efficiently run an electricity system. The surplus made by Johannesburg on its electricity in the financial year 1990/91 (R242m) was more than the entire running costs for the councils of Soweto, Diepmeadow and Dobsonville, which ran at an enormous loss;

2.4
The severe, structural shortages of personnel, skills and finance in the BLAs is normally the major reason for the absolute chaos that characterises their administration and, in particular, meter reading, billing and collection. In Soweto, for example, this leads to the accounts being printed in Pretoria; a gap of up to four months between accounts last year (even as the Council was publicly criticising the civic for low payments); as well as the Council's inability to deliver accounts in envelopes;

2.5
This lack of capacity in the BLA administrations precludes the administration of normal procedures of 'credit-control', such as individual cut-offs. Because of this, and the bulk supply cost implications, most BLAs resort to the indiscriminate approach of the bulk cut-off, an experience foreign to white ratepayers. In the case of Thokoza, the township was without electricity for half a year;

2.6
The method of bulk supply to the townships is one of the most disastrous aspects of the system. In particular, the many cases where the township receives its supply from the adjacent white local authority is singularly iniquitous, for a variety of reasons. These include:

- The fact that the white local authority, as bulk supplier, derives financial benefit from the effect of the townships maximum demand in its diversity consumption;

- The ability of the white local authority to hold an entire township to ransom by cutting off the bulk supply. This is becoming a particularly prevalent weapon in the hands of white local authorities under Conservative Party control, which is true of the majority of Transvaal townships;

2.7

Perceived and real differences in standards of reticulation and maintenance. As far as maintenance is concerned, Table * shows the difference in available staff and skills between Johannesburg, Soweto and Alexandra.

On the question of standards, this is reflected both in technical criteria and in general approach. All of Soweto's meters, for example, are situated in 'wardrobes' on the street, exposed to vandalism, accidents and, subsequently, presenting a public hazard, all of which does nothing to improve consumer confidence. Technically, there are numerous examples of differential standards, such as circuit-breakers of 2A capacity in some of the Vaal townships;

2.8

Finally, where local negotiations have arrived at some solution, usually of an interim nature involving the payment of flat rates, the method of payment allocation within the Council's own accounting system has further undermined the distribution authority.

In many cases in the Transvaal, a system of 'priority allocation' of payments is introduced, often without the knowledge of the residents and their civic representatives. The procedure is simple: a resident receives and two-part account comprising payments for general services (ie, administration, water refuse and sanitation), and for electricity consumption (flat rate or metered). On receiving these payments, however, the council does not allocate the amounts against the departments for which they have charged, but allocates according to its own needs.

In many cases with which we are familiar, electricity is invariably the last 'priority' (with salaries generally being the first), meaning that residents payments may never reach the electricity account and, therefore, do not reach the bulk supplier. Where the bulk supplier is a white local authority, the electricity may then be cut, even though residents are under the impression that the service is being paid for. This crude attempt to keep bankrupt structures afloat has wider ramifications than increasing the illegitimacy of the BLAs - it puts electricity in the middle of a very volatile political sandwich.

Above is no more than a list of generally applicable conditions that characterise electricity-supply conditions in the townships. It is such conditions that played a major role in the mass protests of the past two decades, and it is such conditions that are generally to be found on the negotiation table today.

Some have tried to argue that the problem with electricity today is that it was politicised by apartheid and, as apartheid is removed from the statute books, the situation will improve and new more technicist, economic and rational approaches will emanate. This increasingly popular thesis, which has the Electricity Supply Industry as passive losers in the existing scenario, deserves more critical approach.

3. A NEW APPROACH?

Before dealing with some of the issues that will have to be tackled in order to improve the whole system, while creating and improving consumer confidence, we will first examine two of the current methods being actively proposed within the electricity supply industry.

The most actively propagated 'solution' to the problems of urban electricity supply is the pre-paid meter system. The advantages of the system, as advocated by its proponents, is that it is cheap, reliable, easy to administer, labour saving and easy to understand. Above all, its real technological advance is to render impossible a boycott of payments.

While there are sound arguments to support pre-paid meters on a number of levels, the way in which they are currently being used is fundamentally flawed. Pre-paid meters are already a source of real controversy in many townships, while some civics refuse to even discuss them in negotiations.

The way in which pre-paid meters are being promoted is almost wholly responsible for this response. From the outset, it is necessary to state that pre-paid meters, in and of themselves, do not constitute a 'solution' to the problems of urban electricity. As a response, their treatment is merely symptomatic - they do not address delivery, tariff, the supply authority or many other issues of concern.

At the moment, the whole pre-paid meter concept is fast becoming dangerously discredited. Let us first draw one basic distinction: the debate around this technology requires a differential approach, distinguishing between newly reticulated areas, compared with their being used to replace traditional metering systems.

The most obvious flaw in their application is that they are often installed on a racial basis. By way of an example, the Highveld RSC in the eastern Transvaal is currently continuing with a programme of installing some 17,000 pre-paid meters within its area of jurisdiction. However, two points are worthy of note:

- they are being used to replace existing meters in working order, and
- they are being installed only in the black townships.

In another example, one black local authority tried to insist that, in the event of a resident being cut for non-payment, they could only be reconnected if they agreed to have a pre-paid meter installed, ie, the pre-paid meter is the punishment. The second line of 'new' thinking is with the current push by Eskom and others in the supply industry to restructure the method of distribution and supply. This has two main thrusts: firstly, that distribution be rationalised into regional supply systems and, secondly, that the regional authority be 'de-linked' from local authorities.

Both arguments are logical and legitimate and require serious debate. Forgive a little cynicism, however, if we comment on the exquisite timing. With non-racial municipalities within sight, the traditional golden goose of most white local authorities is to be privatised. Again, the debate will immediately become highly politicised, which is what Eskom and others were ostensibly trying to avoid.

4. A NATIONAL APPROACH

The above two points are general in nature, but many examples could be given of similar approaches being undertaken on a daily basis. In summary, the current situation can be summarised as a series of uncoordinated, ad hoc and short term panic responses to a national problem that has been created over decades.

If we are seriously going to address the problems of electricity in this country, let us do it once and let us do it right. The proposal that follows is the approach that I would like to motivate, almost to the exclusion of any other.

A National Energy Forum should be created to discuss an energy policy for South Africa which would, inter alia, set standards and guidelines for the electricity supply authority. Electricity would, of course, be a major focus of the Forum, but not exclusively so - the South African debate seems to have focused on the fallacious assumption that energy and electricity are synonymous. However, the energy / electricity debate must not be used as a smokescreen to delay to the pressing needs of the majority of unelectrified households in this country.

Insofar as this proposal relates to the topic of this paper, which was constrained to address local distribution authorities, it is my view that this will not happen without the entire industry being examined. In accepting that this will inevitably take some time, the first role of the Forum would be to agree on short-and medium term 'holding operations' for distribution and supply at a local level.

In order to address the current lack of legitimacy of local or regional distribution authorities, the following items would have to be fully addressed:

4.1 The ESI and Eskom

The entire structure of the electricity supply industry requires detailed and careful debate, prior to a possible restructuring. Central to this, of course, the role and structure of Eskom itself would have to be put on the table;

4.2 The national tariff structure.

The national tariff structure is at the heart of the electricity and, even, legitimacy debate. A major consideration in this debate is what effect we want energy and electricity to have on the economy. At the moment, I would argue, there are aspects of the tariff structure that are anti-developmental in nature - precisely the opposite of what Eskom claims to be striving for.

A case in point is the S1 tariff, wherein the capital costs for distribution and reticulation are recouped in the tariff itself, despite the fact that the S1 is generally applied to poorer sections of the population. The effect, if not the intention, is to penalise those that have been denied electricity to date. The S1 is, for example, approximately 60% higher than the price obtaining for the same commodity in some established white towns.

Likewise, preferential rates for exporting or decentralised industries needs to be assessed against the wider picture and a national list of priorities.

4.3 Utilisation of surpluses

Most white local authorities make substantial use of electricity surpluses for transfers within their own budget - generally to the rates account. Eskom officials seem to be of the opinion that such surpluses should be returned to the consumer, possibly by way of a reduced tariff.

I would argue, instead, that any surpluses generated (after appropriate costs have been deducted) for first be used for the extension of the network to those without electricity. To be rewarding those with electricity while so many millions are without its benefits seems to be a misguided and non-developmental approach.

4.4 Affordability

The most common response to this issue is the assertion that electricity is a commodity which can only be provided on business principles and that any subsidisation - whether within the tariff, the budget or externally provided - distorts something fondly referred to as the 'free market'.

This approach, too, is to be commended for its timing, coming after decades of cross-subsidisation within white local authority budgets, the preferential treatment given to the generally exploitative decentralised industries and so on.

A creative and open-minded approach is called for, not a retreat to the balance sheet. For example, who would like to attempt to quantify the role of the non-electrification of households, or bulk cut-offs have played in the appalling and continuing school education results that are an annual national disaster?

The narrow and purely economistic approach to the problem is also highly selective of its variables. If people cannot afford the price of electricity, there are at least two solutions. One is to address the price of electricity, while the other is to examine the effects of a low-wage economy.

If making electricity available requires that it be made affordable, then we will have to tackle the issue for the sake of the individual household, as well as for the development of this country. Electricity can be subsidised in a number of ways, including within the tariff structure itself.

One possible approach is that of the 'lifeline' tariff, wherein the first (say) 400 units are provided at a low rate, with the subsidy being recouped in a higher kw/h rate for consumption in excess of 400 units. This would apply across the board to all consumers.

Whatever the approach, the goal would be to make electricity affordable, rather than merely available which is the current approach.

4.5 Larger issues

This conference is restricted to a focus on distribution and reticulation. However, the proposed Forum would also have to pay attention to some of the larger issues, such as existing and alternative methods of generation, as well as the effect on the country's environment. These would best be addressed, as stated before, within the context of an national energy debate. Finally, attention must also be given to the issue of energy within the sub-continent itself.

5. CONCLUSION

The current response to the very real problems encountered within the electricity supply industry, and its link with the enormous mess that is local government in this country, has been characterised as ad hoc, uncoordinated, racially-differentiated pre-emptive and even cynical. The main danger of these responses to a national problem of fairly uniform characteristics is the possibility of merely changing the nature of the problem, while offering no long-term alleviation.

It is my contention that, with few exceptions, this approach is extremely unlikely to resolve the long-term problems in the industry and simultaneously offer a vision for the future. This is a national problem - we need a national response to set the parameters within which local solutions can emerge. Until we can usher in a developmental debate, electricity will rightly continue to remain the highly politicised issue that it has become.

CHRIS HOCK

INSTITUTIONAL ARRANGEMENTS FOR ELECTRICITY PROVISION IN RURAL AREAS

Rural Finance Facility, Rural Advice Centre

1. INTRODUCTION

The Rural Finance Facility (RFF) was established to meet the widely expressed need for a financial intermediary for community based rural development. RFF started as a project of the Rural Advice Centre, a progressive, non-profit service organisation which supports the development struggle of the rural poor by the provision of professional community organisation, engineering and financial services. RFF provides professional financial services and finance for rural infrastructure projects (mainly water supply and electrification) and income generating projects (mainly agriculture).

2. RURAL ENTRAPMENT

The majority of South African rural communities can be described as being entrapped. Entrapment manifests itself in six dimensions.

- The well known effects of apartheid.
- Poverty inhibits the realisation of individual and community potential.
- Lack of access to expertise undermines indigenous wisdom and political and economic leverage.
- Physical isolation creates an overwhelming sense of vulnerability for rural people.
- Marginalization is the political side-lining of rural people.
- Physical environmental constraints mean immense amounts of productive time and energy are expended providing domestic water and energy instead of generating income. Illness resulting from dirty and inadequate water supply, poor sanitation and insufficient fuel adds enormous costs to rural life and economies.

3. COMMUNITY BASED DEVELOPMENT

To achieve empowerment all the above constraints must all be addressed. Technical solutions alone are not sustainable. Our experience is that community based development is the key to rural empowerment. This process is initiated and controlled by communities, mainly women, and service organisations may be invited to participate. Thus the community is the client, giving instructions, evaluating advice, making all key decisions and above all, owning the project from inception.

Infrastructure projects are very effective vehicles to create civil management capacity in rural areas. By experiencing successful collective action communities are encouraged to use the skills learnt on their next priority (often a health, education or income generating project).

4. PROJECT PROCESS

The Rural Finance Facility receives requests from rural community groups for advice on the funding of water supply, electrification and agriculture. These applications are usually made through a supporting a service organisation working with the community. We respond to these invitations by explaining our services and, if requested in writing, we proceed with the following process.

Applications are evaluated in terms of community organisation, service agency support and feasibility. If more organisation training is required, RFF will make this a condition of further involvement. After detailed study the most appropriate financial option is presented to the community and, if agreed, implemented.

5. NEBO ELECTRIFICATION PROGRAMME

5.1 Background

In 1991 RFF was approached for advice on electrification options by eight village committees from the Nebo region of the northern Transvaal. Situated in the homeland Lebowa, between Groblersdal and Jane Furse, the committees represent approximately 50,000 people. They range from experienced community based organisations who already have a domestic water supply project behind them, to informal groups of local initiators.

A community consultation process was initiated to determine their needs and available resources. Information was gathered by means of workshops and a community administered questionnaire to determine household fuel expenditure. Our consultations revealed a number of well organised rural communities who expressed considerable interest in Eskom's S1 tariff (pre-paid budget energy meters which recover capital costs in the user charge).

RFF set up a tour of the Elandskraal electrification project in Moutse for representatives of the village electrification committees in June 1991. The tour resulted in the immediate formation of a regional electricity lobby, the Nebo Democratic Development Committee (NDDC), which included additional villages which had not been involved in the process thus far.

5.2 Nebo Democratic Development Committee

The purpose of the NDDC is to create an electrification planning group which can articulate the regions demands and can exert pressure on the Lebowa government. The NDDC held a mass meeting to report progress and elected a delegation to meet the Lebowa Minister of Works to demand that the electricity supply in the Nebo district be completely handed over to Eskom. After five months of pressure the indications are that this will be achieved shortly.

An Eskom take over is demanded in order to speed up the implementation of electrification but it should not replace one top-down electricity supplier with another. The NDDC is therefore working towards a joint NDDC-Eskom planning process. This regional forum will facilitate the review of both parties priorities and requirements.

RFF has held various meetings with Eskom senior regional and head office staff to introduce the concept. In order to assist with these discussions RFF appointed a senior electrical engineer from the University of the Witwatersrand as technical advisor on the programme. In October the first meeting of representatives of Eskom's Eastern Transvaal region and the NDDC was held at Groblersdal.

6. INSTITUTIONAL OPTIONS

6.1 Community Control

Rural electrification represents an opportunity to build civil administrative and management capacity in regions which have no existing municipal or civic structures. This opportunity is not a luxury which can be dispensed with in the search for the lowest cost approach, since in the absence of communities being able to exercise significant control over the design, construction and operation of projects, long term sustainability is doubtful. The costs of building institutions which enable communities to exercise this function must be compared to the cost of project failure.

It is important to make the distinction between control and management. The former is vital to community based development while the latter is a technical skill which can be supplied by external professionals. Developing communities are often condemned to no control over project's which affect them (and are offered the sop of "participation") because they are deemed to have insufficient skills to do so. The task is to identify the key decisions which can only be made by community groups, to translate the options and implications clearly and to respect the decision arrived at.

6.2 Rural Electricity Co-Ops

RFF is working with the NDDC to develop a co-operative model which maximises local control and economic efficiency. This entails a Village Electricity Committee elected by residents which is responsible for :

- electricity purchases and sales
- determination of local tariffs and discounts (eg. for schools),
- basic repair and maintenance, and the
- allocation of surpluses.

Basic repair and maintenance would be undertaken by a local electrician or semi skilled electrical worker employed by the co-op on a full time or on a contract basis. This level of maintenance requires only basic skills but usually accounts for the majority of repair work on residential reticulation systems.

6.3 Co-operatives and Regional Electricity Supply Authorities

Current proposals for the macro restructuring of the electricity supply industry call for rationalising the fractured metropolitan sector by way of regional supply authorities. The co-operative model is complimentary to this approach since local decision making and maintenance reduce operating costs, enhance system performance and reduce pressure on limited skilled personnel.

The optimum allocation of tasks between local and regional structures needs to be determined with respect to community based development principles and economic considerations. The USA Rural Electric Co-op model provides one example of such a split.

7. FINANCIAL OPTIONS

A number of financial options are being considered. These include:

7.1 Facilitating Para-statal Investment

This includes negotiating with Eskom to secure their invest and supporting project design and implementation methods which maximise community control. The support from the National Rural Electric Co-operative Association (USA) is being obtained.

7.2 Group Credit

Group credit schemes to facilitate electrical appliance and tool acquisition and thereby shorten the transition period to electricity. Market research is underway with a National Energy Council study.

7.3 Development Bank of Southern Africa

Packaging village electrification projects for wholesale finance from the Development Bank.

7.4 Foreign Investment

Direct equity investment from foreign donors such as US foundations' programme related investments.

In order to evaluate the above options, preliminary technical designs are being prepared for two NDDC villages. A variety of scenarios will be costed using software developed at the University of the Witwatersrand and findings will be discussed with the NDDC and local committees.

8. CONCLUSION

Electrification occupies an important place in the rebuilding of rural South Africa because it is very high on the priority list of rural communities. The Rural Finance Facility is working with village electricity committees to develop viable rural electrification models which are widely replicable.

The key element of these models is the extent of local community control over the development process and how this control is consolidated over time. This leads directly into the wider realm of rural local government.

L H NAPE MAEPA

INTERNATIONAL EXPERIENCE IN ELECTRIFICATION PLANNING AND IMPLEMENTATION

Science and Technology Group, ANC

1. INTRODUCTION

If there is one thought I wish to leave with you, it is that there is no need to re-invent the wheel on large-scale national electrification. Other countries with larger populations than South Africa, with significantly fewer resources, have committed themselves to providing basic electricity services to their people, and have succeeded. You can too.

Of all the countries I know, South Africa is the only one where the electricity infrastructure is fully developed, is as good as that in any country on earth, yet a large majority of the people in the country have no access to basic electric service. And, for years those who ran the electric power system were proud of their accomplishment.

Also quite unique is the fact that everywhere else on earth it is the rural areas that tend not to have access to basic electricity services, while in South Africa homes even the most densely populated urban areas have no basic electricity service. As a general rule, in countries around the world, the local electricity company cherishes the prospect of installing a kilowatt-hour meter every few meters in such a densely populated area. So, things are rather skewed in this country, as we all know.

Because the power supply infrastructure is well developed, the distribution of electricity should be much simpler to accomplish than has been possible anywhere else in the developing world. Indeed even in the rural areas of South Africa, as long as there is a white homestead somewhere around, an electricity supply line is never far away.

There is much evidence in the newspapers all over this country that show that services of all types must be extended to the rest of the people of South Africa: adequate housing, clean drinking water, adequate sewerage, education, health care, to name a few. All of these, I submit, depend to a very large extent on the availability of reliable and affordable electric services. So, the value to this country of the results of this conference must not be underestimated.

For the purposes of this presentation, however, we will look at the manner in which a number of countries, without electricity to segments of their populace, planned for, and then implemented, the provision of these basic services. It is of interest to note that this type of information, and success stories, have been duly studied already in this country by your experts. In this respect I call your attention to the great work by Mr. Charles E. Dingley here at the University of Cape Town. In September 1988 he published the report titled "A Review of Electrification Programmes In Six Countries." I recommend this document very highly.

The look will be based, to as large an extent as is possible, on my own personal experiences. This look will also be supplemented by the world-wide experiences of Black & Veatch International, with whom I have been associated since 1975 in the field of electricity planning and implementation. Also, the look will draw upon the extensive experience in rural electrification assistance provided in a number of countries under funding programs of the United States Agency for International Development. While I cannot speak on their behalf, they were gracious enough to share with me some of their experiences in electrification assistance.

Perhaps even more relevant will be the look we will give to how the rural areas of the United States were electrified in the face of major opposition from the purely profit-centered, investor-owned, utilities in the US. As in South Africa today, everyone agrees that technically electrification is possible and is otherwise desirable. What seems to be the problem appears to be who is going to pay for it. There are sufficient parallels in the US experience for us to be able to draw some conclusions for how to approach the challenge in South Africa.

The opinions expressed in this presentation, particularly with respect to what should happen here in South Africa, however, are purely my own, and do not represent the views, by implication or otherwise, of Black & Veatch International.

2. THE INTERNATIONAL EXPERIENCE

2.1 Saudi Arabia:

In the early 70's the Saudi Government made a commitment to use some of the revenues from their natural resources, oil and gas, to bring the country into the modern age through an extensive expansion of their educational system, and a diversified economy. To accomplish these goals it was clear to the Saudis that the country had to be electrified.

I am familiar with two of the massive projects they undertook to reach their goals. These are the electrification of the Eastern Province, and within the Eastern Province, the electrification of the Industrial City of Jubail.

2.1.1 The Electrification Of The Eastern Province

To accomplish the electrification effort in the oil-rich Eastern Province, the Arabian-American Oil Company (ARAMCO) was given the task of electrifying the Eastern Province.

To meet the goal, ARAMCO hired Black & Veatch International, one of the largest US engineering consulting firms, in 1975 to provide planning and implementation services. I joined the firm that year, to work on this and other electrification projects around the world.

As in other efforts, the Saudis chose to use private consultants to sift through the various technical options and come up with the most economical that would meet the criteria set by the Government of Saudi Arabia.

The plans and specifications prepared by the consultants were then sent out for bidding by construction companies. The winners for each of these contracts then constructed the facilities under the supervision of the consultants to the Saudi Government, to assure compliance with the plans and specifications.

Saudi Arabia is a sparsely populated country, with some 6,000,000 population. Unemployment was not a problem, and so they used imported labour.

The work undertaken provided 2,000MW of new generation, the introduction of 500KM of a new 230,000 volts transmission system, and expansion of the existing 115,000 volts system.

The work was accomplished in 5 years from concept to energization of the last transmission line. The culmination of our efforts is embodied in the utility that was formed during this period, the Saudi Consolidated Electric Company (Eastern Province), or SCECO-East, for short.

There are other provinces in the Kingdom of Saudi Arabia, and concurrent electrification projects were under way in these at the time the Eastern Province was being electrified.

2.1.2 The Electrification Of The Industrial City of Jubail

The King of Saudi Arabia established a commission, called The Royal Commission for Jubail and Yanbu, for the purpose of moving the economy of Saudi Arabia from being purely petrochemical-based to one with a significant level of diversity.

Jubail and Yanbu are cities on the eastern and western coasts, respectively, of Saudi Arabia.

As in the electrification of the Eastern Province, the Saudis called upon the support of private-sector consultants to help define the concept in technical and financial terms, and to prepare the plans and specifications.

The Industrial City of Jubail is carved out of the desert, and will have a population of 100,000 by the year 2000.

The electrification of the city began with the interface between the city and the local supply utility, SCECO-East. We were the creators, essentially, of the SCECO-East system, and could provide the best interface with a minimum of problems. We provided the design and some measure of the construction support, from the 230,000 volts interface to the electricity meter on the side of the outside wall of each of the residences, commercial establishments, and industries. The industrial base of Saudi Arabia today includes plants for iron and steel, aluminum tubing, transformer manufacturing, wire and cable, and fertilizer manufacturing.

2.2 USA

The electrification of the rural areas of the United States beginning in the late 1930's represents one of the most strikingly successful stories of responding to the needs of the people. It is one I am particularly familiar with, having taken part in the provision of engineering services to many of the rural electricity providers in the United States.

Electricity utilities in existence for the purpose of providing electricity for a profit were finding out, as ESKOM will tell you, that providing service to rural communities is not worth the effort because there is little return on investment. In plain language, rural electrification is not a money-maker.

In the US, typically, the rural customer base averages 3/km, yielding to the electricity provider an annual revenue of US$3500/km.

The comparable figures for the urban customer are about 10 times as much, thus significantly more profitable.

It therefore took a bill passed by the Congress of the United States, and signed into law by President Roosevelt on May 20, 1936, for the rural people of the United States to begin to help themselves in the area of basic electricity service.

In 1935 less than 11% of the approximately 7,000,000 farms in the US had electricity. Today there are over 1000 electricity co-operatives serving 99% of the nation's rural customers, representing over 25,000,000 people.

Let us review briefly how rural America was electrified.

- Before becoming President, Mr. Franklin Delano Roosevelt, spent one month in a cottage in a rural area for the purpose of rehabilitating his health. Here he was thoroughly overcharged by the local investor-owned electricity utility, the equivalent of ESKOM. He was charged 4 times as much per unit of electricity than he expected, on the basis of what he was charged at his urban dwelling.

- The US Congress passed a law called the TVA Act of 1933 authorizing the TVA Board to construct transmission lines to serve "farms and small villages that are not otherwise supplied with electricity at reasonable rates."

  This represents one of the first instances at government level accepting the fact that the rates for supplying rural areas tended to be unreasonable, and that governmental intervention of some type was warranted, if farms and small villages were to have improvements in the quality of life comparable to that in urban areas.

- The US Congress passed a law called the Rural Electrification Act of 1936. Section 2 of the REA Act states that "The Administrator is authorized and empowered to make loans in the several States and Territories of the United States for rural electrification and the furnishing of electrical energy to persons in rural areas who are not receiving central station service, and for the purpose of furnishing and improving telephone service in rural areas, as hereinafter provided; to make, or cause to be made, studies, investigations, and reports concerning the progress of the electrification of and the furnishing of adequate telephone service in rural areas..."

So, there you have it, the commitment of a government to provide electricity and telephone services to its own population.

- What happened after the REA Act was enacted is one of the most fascinating stories in America. The lean years of the Depression were not yet over and World War II was about to begin. Thousands of rural communities, with low interest loans made available by the REA Act, used their own local labour, to build electric cooperatives which today number nearly 1000. The spirit of "let's get it done" is still evident in discussions with those who work in these electric cooperatives. As a consultant to these electric cooperative companies, I have witnessed the pride of the people in the companies they have created for the purpose of helping themselves.

As I have indicated before, the concept of the rural electric cooperative has worked sufficiently well for many countries to have sought the assistance of the rural cooperatives of the United States in the electrification of their own countries.

I believe this is a model well worth the effort of pursuing. All that is required is a commitment on the part of the people of South Africa.

3. SOME LESSONS FROM ABROAD

A common key feature among all the successful electrification projects I have talked about is that all of them were undertaken as the result of a conscious decision, and commitment, by the government of the country involved to get the job of electrification done. None were small undertakings.

Another key feature, though not common in all countries, is the total participation in the actual electrification initiative by the local population to be served, either directly as in co-operatives, or through their elected representation at governmental levels, or through both mechanisms.

Another key feature of the electrification projects is that domestic electricity, whether rural or urban, is not necessarily viewed as a profit-making undertaking, although it must be able to stand on its own financially. As a profit-making entity, for example, ESKOM, like any electricity utility whose purpose is to make a profit, and not social policy, cannot and must not be expected to provide electricity to areas with no industrial base. Where there is no industrial base, one must look in the long term for a return on their investment.

Rural electric services, especially, are just not profitable in the short term. In South Africa, these comments apply also to urban services in the so-called townships, which have no industrial base.

Today in South Africa, however, there is no such thing as "elected governmental representation" for those with the need for electricity services. Consequently, in my view the probability of success for any electrification effort based on an implementation plan of the present non-representative government, or of ESKOM, will be still-born. Particularly in this situation where there is much justifiable mistrust of those who would want to plan and implement electrification for the people. Here I refer to such non-representative bodies as the current government itself, ESKOM, and private consulting and construction companies who may not be working under contract to the ultimate beneficiaries, the consumers of electrical energy, the people, themselves.

That leaves then only community-controlled and community-sponsored electrification initiatives, as would be represented in initiatives such as electricity co-operatives, as the sole viable means of bringing electricity to the Black communities of South Africa at this point in time.

An important lesson perhaps for South Africa in the concept of the US electricity model lies in the fact that, for the first time, communities that have been shut out of property ownership and job creation, can now actually take part in an electricity company that belongs to them, is run by them, is controlled by them, employs them, and any profits it generates if they want it to, belongs to them.

In this regard, the truth must be told, in no uncertain terms. That truth is that the technology of electricity distribution is old, very well-known, with no mystery to it, and the Black people of South Africa, in spite of Bantu education, can do it for themselves, while at the same time assuring the creation of thousands of work opportunities in their communities during the construction stage, and somewhat less during the continuing operations and maintenance stages.

Some International Electrification Statistical Comparisons

Country	Percent of homes electrified 1988	Level of Govt Role	Annual Consumer Connection Rate	One-time charge to consumer	Consumer/ Employee ratio	Capital Cost/ Con-sumer
Brazil	65%	Strong	172,000	$500	173	$1,700
Costa Rica	85%	Strong	28,000	$0	293	$1,300
USA	100%	Strong	305,000	$5	199	$2,500
Thailand	75%	Strong	455,000	$0	193	$340
Greece	100%	Strong	121,000	$0	198	$1000
South Africa	35%	Weak	13,455	$2000	5	

Clearly, the strength of the commitment of a government to the effort of electrification shows a strong correlation to the success of that effort.

Clearly, charging the consumer, who in most cases cannot afford the charge, for development of the electricity infrastructure, which charge is motivated by the need to make a profit, has the negative effect of hindering electrification.

4. CONCLUSION

In my view, the whole structure of how electricity is distributed in South Africa must be changed radically, from the top to the bottom. The system has not worked for the majority of the people, because it was not meant to, like other apartheid structures. But I leave that to others who are more intimately familiar with the issue of restructuring to share with us how. The current changes underway in the political arena are going rather slowly, and should not be taken as an example of how we should go about implementing change in the electricity distribution area.

Safe drinking water, sewerage, telephone services, health care, housing, and above all, modern educational facilities and methods: all rely on dependable electricity service. Reliable electricity service in turn requires the commitment of government and the representatives of those without the franchise, to the concept of providing electricity in all areas of the country without delay.

Other countries, some with resources significantly less than what is available here in South Africa, have successfully implemented electrification and thereby effectively improved the quality of the lives of their people.

The same can be done in South Africa. There is no need to make the people to suffer the legacy of the darkness of apartheid one minute longer. If the current government thinking is truly different from that of previous governments, let it now see the light and not make the people endure any more darkness.

HOWARD WHITEHEAD

Executive Director, Durban Electricity

THE CAPACITY OF LOCAL AUTHORITIES TO UNDERTAKE ELECTRIFICATION INITIATIVES

SUMMARY

After a brief review of the historical background the paper examines the capacity of distribution authorities from human resources, technical and financial points of view.

Various factors assisting and hindering municipalities in the electrification process are discussed as well as implications for the future.

Conclusions from the findings are drawn.

In this paper in order that readers obtain a proper understanding of the subject, it is necessary to refer in certain cases to local authorities in terms of racial classifications.

I am a municipal official in an executive management position and as an electrical engineer the prime purpose of my education is to bring the benefits of science to the practical use of the man in the street. As such therefore I will pass on whatever knowledge and experience I have gained to any organisation if I feel that in doing so I will further the vision of electrification on a large scale in South Africa. Clearly therefore my position is apolitical in this role and I trust that my contribution will be of benefit to the process.

In a short paper such as this it is not possible to go into individual undertaking details and therefore it merely endeavours to give the reader an overview of the subject. The variance between undertakings in terms of each capacity parameter is quite considerable.

1. INTRODUCTION

Electricity was introduced into South Africa in the last decade of the 19th century for public use, initially for the purpose of streetlighting and electric trams but very quickly its utility was extended to private and industrial use, Kimberley and Durban being amongst the first to introduce it. Other towns soon followed and local authorities were empowered to run their own electrical undertakings. In the 1920's the Electricity Supply Commission was established to create a centralised generation system.

Development of electricity distribution networks within local authority boundaries continues to this day with in excess of 400 local authorities operating their own distribution networks - 5 of which still own power stations which meet some of their needs, the remainder coming from Eskom. One local authority, namely Durban, has a licensed area of supply extending far beyond the City boundaries encompassing some 48 other local authority, trust land and self governed areas. Clearly the municipal electricity undertakings have played a vital role in electrifying South Africa up to now and it is they who supply the vast majority of some 2 250 000 residential customers in South Africa.

In the main therefore it can be said that white local authorities have within their own areas been successful in developing the electricity distribution networks which are of a high technical standard. Local authorities of other race groups having been established in more recent times do not have a mature network unless, of course, distribution has been undertaken on an agency or other basis by an adjacent white local authority.

The implications of the above are that there is a multiplicity of engineering practices, tariffs and levels of customer service throughout South Africa.

The formal industrial and commercial sector is generally well served. However, that is not the case with regard to residential supplies and it has been estimated that only 30% of South African households enjoy electricity. Although this would mean that there are some 5 000 000 dwellings without electricity, it has been estimated that electricity is within the reach of some 3 000 000 homes from an affordability point of view. This figure can be split into 2 300 000 within municipal areas and 700 000 within ESKOM areas. If the municipalities were to electrify their areas within say a five year period this would mean 460 000 additional connections per year.

What then is the capacity of the municipal machine to cope with this backlog? In the body of this paper, having conducted a recent survey of 17 of the larger municipal undertakings in an endeavour to answer that question as well as examining other sources of information within the short time scale, I will endeavour to establish an understanding thereof.

2. CAPACITY

Capacity will be considered in the context of three parameters namely technical, financial and human resources. However, one must first consider the concept of capacity itself which has at least three aspects to it:

- capacity to maintain the status quo
- capacity to meet the challenge of electrifying South Africa
- capacity to actually get the job done.

Clearly in the context of this paper it is the latter two aspects that we are interested in and I will first deal with the human resource aspect as I believe it to be the most important.

Human Resources

The first and a very important component is the capacity of the present municipal machine to grasp the importance of the concept of electrification without which the processes that must follow would have no driving force. Unfortunately the present municipal boundaries and local government constraints do fetter the municipal electrical undertaking managers and engineers but I have no doubt that given the wherewithall there is a reservoir of talent, enthusiasm and technical ability to drive such a project. On the more physical side, however, municipal undertakings are generally staffed to cater for their current and forecasted growth needs within their current boundaries and other than extra capacity which might stem from productivity improvements, I believe that there is little capacity to tackle the proposed task of such magnitude. This is borne out by the results of the survey which indicate that the 17 undertakings presently connect some 30 000 new customers per year and have a current capacity for 40 000 per year. (See annexure A) In my own undertaking for instance where

we have embarked on a five year electrification programme costing some R500 million, resources for administration, planning and construction for some additional 3 000 connections per month in due course will have to come from additional staff, consultants and contractors. The capacity cannot be instantly created but has to be built up over as short a time as possible. In fact in the black local authorities where no doubt the greatest need exists, the picture is bleaker. Private sector contractors are available but these too are only sufficient to meet current demands.

The results of the survey of 17 of the larger municipal undertakings would indicate that there are approximately 1 000 engineers and technicians and 3 000 electricians and semi-skilled workers in those municipal services and they are presently connecting some 29 407 new customers per annum. The 17 undertakings surveyed serve approximately half of the municipal customers and therefore the remaining half are served by numerous smaller undertakings. Clearly if the programme of electrification is to be accelerated to say 230 000 per annum amongst the 17 surveyed so that the backlog can be overcome in the major urban areas, assuming an increase in productivity due to improved standard methods, there is a need for a considerable number of skilled and semi-skilled personnel. These needs, to an extent, could be met by the private sector. It would however be difficult to forecast the number of staff required as techniques and methods will improve. The results of the survey are attached in Annexure A for information.

Technical Resources

Much work has been done nationally over the past 5 or 6 years to examine engineering techniques and methods to ensure that appropriate standards and technology is followed in order to provide cost effective supplies of adequate quality. Successful co-operation has been achieved between the major players in the field namely Eskom, AMEU, other municipalities and SABS to realise a rationalisation of standard specifications in an endeavour to achieve minimum lifetime cost engineering. It has been argued that our standards are still too high and I am sure that South African engineers will continue to strive to reduce costs. Legislation affecting engineering methods and costs has been and is still under review. In my opinion ongoing effort is still required to further the rationalisation and standardisation of methods and equipment that continual improvements are effected which result in speeding up the process and minimising costs.

Financial Resources

It is beyond the scope of this paper to comment on the capacity of South African industry to meet the demands of an accelerated electrification programme but clearly this would be a very important factor because for every 10 000 customers 400 distribution transformers and 200 kms of overline would be required along with the necessary switchgear, meters and accessories to bring the energy to the customer.

Once again financial resources within the municipal area are quite diverse and it would be very difficult to generalise in view of the vast number of local authorities involved. If electricity is provided as a saleable energy source it will only be the larger local authorities with a sound financial base supported by a diverse customer base that could support an electrification programme on an economically viable basis. Small supply authorities would, I believe, not be able to service loans without considerable tariff increases. In other words within the restraints of the present municipal system, smaller municipalities would need grant funding or the like in order to grow at a fast rate. Alternatively some form of rationalisation of undertaking boundaries to create economically viable units could be considered.

Mention should also be made of the known fact that municipalities use a portion of electricity revenue to offset the cost of other rateable services and the principle has often been the subject of debate. To give the reader an idea of the cost of providing an electricity service to an individual domestic dwelling, it is of the order of R2 500 at present day costs excluding the meter and service connection which is an additional R1 000, a cost usually met by the home occupier.

3. CONCLUSION

I conclude that given the scope, support and organisational environment there is within the current municipal undertakings the capacity to drive an electrification programme and, within a reasonable period of time to allow for training, the output could be increased to cope with the problem. Conversely though the diverse and fragmented municipal electricity supply industry is severely hampered by the current legislative boundaries.

Work is being done at present to develop a database of resources within the municipal electricity supply industry in an attempt to quantify the needs more fully and accurately. The need of the people has been clearly indicated in the Durban Functional Region where, when offered at an affordable connection rate, in excess of 10 000 applications have been received within the first two months. The benefits to the community and economy of the country are inestimable and I believe that although it may appear a daunting task it is one that must be tackled.

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I acknowledge with thanks the co-operation and assistance received from my colleagues in the supply industry.

ANNEXURE A

SURVEY OF 17 MAJOR MUNICIPAL UNDERTAKINGS

1.	MANPOWER	TOTAL
	Management	93
	Engineers	304
	Technician and Technologists	707
	Electricians	1 387
	Semi-skilled Workers	1 778
	Labourers	6 237
	Administrative and Other Staff	3 542
2.	OUTPUT AND POTENTIAL OUTPUT	
	Number of new connections per year	29 407
	With the current staff complement maximum number of new connections that could be made per year	40 685
3.	UN-ELECTRIFIED POTENTIAL	
	Estimated number of residential premises within your area of supply without electricity	
	Formal dwellings	125 982
	Informal dwellings	261 714
4.	ADJACENT AREAS	
	Do you contemplate taking over responsibility for electricity supplies to individuals in and adjacent areas or townships?	11 yes 6 no
	If yes, how many residential premises without supply would be involved	
	Formal	52 530
	Informal	112 771

5.	POTENTIAL TO INCREASE OUTPUT	
	If you were to embark on a proactive electrification programme what resources would you use (e g own staff, contractors, etc.)	Own Staff & Contractors
	How many more connections a month would you anticipate as being possible	24 860
6.	FINANCIAL RESOURCES	R
A	Operating	
	Sales	4 187 960 249
	Purchase of Electricity	2 398 522 186
	Operating costs	821 380 198
	Capital charges	356 056 878
	Contributions	
	Capital Development Fund	283 071 990
	Rates Relief	236 970 043
	Other	43 970 630
B	Capital	R
	Assets (Total Capital Outlay)	3 018 853 872
	Outstanding Loans	996 911 882
	Capital Development Fund	674 460 708
	91/92 Capital Budget	472 595 808
7	GENERAL	
	Number of existing residential consumers	1 172 576

TREVOR GAUNT

Hill Kaplan Scott Inc

THE ELECTRICAL CONSULTING ENGINEER'S ROLE IN A SOUTH AFRICAN ELECTRIFICATION PROGRAMME

SUMMARY

Consulting engineers are only one of the stakeholders in the electrification process. Their role is determined, among other things, by the objectives of electrification and the organisation of the electricity supply industry. Electrical consulting engineers in South Africa have developed skills, operating procedures and capacity appropriate to the present industry structure and objectives. Consulting engineers will adapt to changes in the structure and objectives, according to the alternatives which arise. The basis of selection and appointment of consultants will also change.

1. INTRODUCTION

Consulting engineers have played a leading role in the history of electricity supply and distribution in South Africa. They have provided, and still give, advice and services to government, supply authorities, investors, contractors and electricity consumers.

Electrification is a dynamic process. The structure of the consulting engineering sector allows it to react quickly to the changing needs of other stakeholders in the electricity industry. All stakeholders have different perspectives of electrification, depending on their roles. Therefore it is important for both consulting engineers and the other stakeholders to identify the common objectives towards which all can contribute, so that the knowledge and skills of the consulting engineers can be applied most effectively.

This paper describes the work of consulting engineers, outlines some of the alternatives which may arise in the development of the electricity distribution industry and indicates the possible response of the consulting engineering sector. Some comments are offered on the selection and appointment of consulting engineers.

2. THE STRUCTURE OF THE CONSULTING INDUSTRY

Consulting engineers are professionally qualified engineers, registered with the Engineering Council of South Africa, who offer advice and design services independently of any other interests in equipment supply, contracting or operations. The work is carried out for the client by whom the consultant is employed, but the consultant is bound by a code of ethics to be fair to all parties engaged in a project.

Very few consulting engineers operate alone; most practise with other engineers in partnerships or incorporated companies. These firms may offer services only within one discipline, such as electrical engineering, but most large firms are multidisciplinary, with the different disciplines sharing the experience, quality control systems and computing facilities needed in modern engineering projects.

Most reputable consulting engineering firms are members of the SA Association of Consulting Engineers. Over 400 firms are registered with the association, but of these many do not offer electrical engineering services. Electrical engineering includes both building services work (that is installations in buildings) and electricity supply engineering. Most of the consulting firms offering services to the electrical distribution industry are also associates of the Association of Municipal Electricity Undertakings (AMEU).

In addition to their independence, consulting engineers offer two significant advantages to their clients. Those who are members of the Association of Consulting Engineers are required to carry professional indemnity insurance to protect their clients from the financial effects of errors made by the consultant, reducing the risk to the client. Second, consultants have been responsible for much of the innovation in electricity distribution, because those innovations benefitting clients create an advantage in the market environment and support the continued existence of the firm.

The consulting sector in South Africa, as in most countries, is a fragmented industry, with the very largest firms having a market share of only 3 to 5%. There are very low barriers to entry at the lowest end of the market and relatively small economies of scale available to the larger firms which typically take on more complex projects. It is a service industry in which most clients are unable to judge the probable quality of the work from their own expertise. Also, prices have been regulated until recently, so appointments are mostly made on the basis of personal relationships. Therefore the structure of the consulting industry reflects the structure of the development industry it serves.

Consultants differ from contractors in that they do not buy and install the materials and equipment needed to build a project. Consultants interpret the needs of the client into plans, designs and specifications. Contractors are employed directly by the client to build the project according to the designs and specifications, usually under the administration and financial control of the consultant.

Clients, consultants and contractors work as a team to bring the benefits of electrification to a community.

3. THE BENEFITS AND OBJECTIVES OF ELECTRIFICATION

The benefits of the electrification of homes and businesses depend on the physical, social and economic conditions of the community being electrified. In general, electrification in disadvantaged and developing communities typically offers the benefits summarised in Table 1.

TABLE 1. THE BENEFITS OF ELECTRIFICATION IN DEVELOPING COMMUNITIES.
Energy costs. Electricity is the least expensive form of energy in most urban areas and does not add to local pollution. In rural areas electricity supply helps to reduce deforestation and environmental degradation, but the effect is limited by the visible comparable costs of electricity and fuelwood.
Quality of life. Electricity improves recreational opportunities in the home. It is easy to use and increases health, safety, security and the general quality of life.
Education. Electricity provides a better environment in which to learn, by providing high quality lighting, television and an early acquaintance with electrical systems, which benefits technical training at a later stage.
Economic activity. Electrification stimulates home-based productive and economic activity. It expands the market for consumer goods and related services and encourages the participation of electricity customers in economic processes.

These benefits will be gained only if electricity is made generally available to all members of the community at prices which are affordable and at standards which are acceptable and appropriate. This is the purpose of electrification. To reach it, the electricity supply industry must adopt objectives which are acceptable to all stakeholders; objectives such as those shown in Table 2.

TABLE 2. COMMON OBJECTIVES OF ELECTRIFICATION PARTICIPANTS.
■ Large scale electrification must be implemented without further delay.
■ The electricity supply industry must be technically and administratively efficient in both establishing and operating the supply systems.
■ Decision-making must be guided by a common policy which allows for the participation of the community in implementing electrification.
■ Investment funds must be provided for electricity system construction, maintenance and operations.
■ Electricity supply should be an economic process, at least in the long term and in the context of the macro-economic system.
■ The structure of the industry must support electrification and the legitimate objectives of those who participate in the industry.

4. ALTERNATIVE SUPPLY INDUSTRY STRUCTURES

Most of the electricity supplied in South Africa is from local government or statutory authority organisations. Many people think of Eskom as being responsible for electricity supply in South Africa, but although Eskom is the largest generating utility, there are several municipalities distributing electricity to more residential and commercial customers than supplied by Eskom. In spite of the efforts and successes of several utilities, there remain very many people in South Africa without access to electricity. Either the organisations must change or the structure of the electricity distribution industry will evolve to make electrification more effective. The structure will have to achieve a balance between participation and centralisation and between economies of scale and the inflexibility of a large bureaucracy.

For illustration, three alternative structures can be considered:

- complete unification into a national electricity utility,
- rationalisation of supply authorities into regional utilities, and
- the same structure as at present, but with changed organisational responsibilities.

Within these alternative structures there are different ways of implementing the supply function; basically carrying out all activities within the organisation or contracting out some of the work to be done under the control and coordination of the utility.

The capacity of consulting engineers to contribute to the electrification of developing communities will depend on both the industry structure and the policies regarding private sector participation.

5. THE CONSULTING ENGINEER IN THE EXISTING STRUCTURE

Supply utilities make use of the services of consulting engineers when they:

- lack the skills or experience to do the work themselves,
- lack sufficient continuity of that type of work to justify taking on the staff and the related supervisory responsibilities,
- have the skills or resources for the work but they are already committed to the existing workload in the short term.

Most large utilities have the capacity to carry out low and medium voltage work using their own staff and use consultants only for the high voltage work. At the other end of the range, small municipalities have little need for high voltage work but require consultants to assist with the low and medium voltage systems.

The utility has to provide a 24-hour service for operation of the system and this continuity of work justifies taking on staff for this function. (It should be noted, however, that in some countries such as Brazil, the utilities use a mix of their own staff and private sector contractors even for operations and operational trouble-shooting.) Therefore, consultants have organised to supply the other skills and services needed by the utility, such as shown in Table 3.

TABLE 3. SERVICES PROVIDED BY ELECTRICAL CONSULTING ENGINEERS.
Technical advice. Network planning, network analysis, fault calculations, protection setting, installation inspections, maintenance planning, valuations.
Tariff advice. Formulation of tariffs, financial viability studies.
Design. Concept, preliminary and detailed designs of networks and the overhead lines and substations comprising the networks.
Project services. Reports, design and tender document preparation, coordination of the different organisations involved in a project, adjudication of tenders and placing of contracts, construction stage administration and financial control, inspection and witnessing of tests and putting into operation.
Operational assistance. Assistance with the recruitment and training of staff, secondment of management staff, preparation of financial, operations and maintenance reporting systems, including computer-based information management.
Research and development. Policy formulation, special investigations and analysis, development of special design procedures, preparation of standard requirements and standard specifications.

Utilities need different services at different times and often the consultant's first task is to establish the scope of work which is needed by the utility in each instance. Accordingly, consultants have developed a flexible approach to identifying and meeting the needs of their clients.

Very recently, consulting engineers in South Africa were the only non-medical profession still not allowed to advertise their services and skills to potential customers. This situation changed during 1991 and many consultants have already adapted to this new situation. It is likely that new services will be added to the traditional range to meet new needs as potential markets are identified and proved.

Under the existing structure, consultants have been responsible for most new distribution development, particularly in urban areas. In addition to employment by utilities, consultants are employed by the private sector to design and administer township extensions in a wide variety of supply authority areas. It is probable that the consulting engineering industry employs most of the experienced distribution system designers in South Africa.

In the future, in an unchanged industry structure, the role of electrical consulting engineers will remain very similar to their present role. There will always be utilities needing some of the services outlined above, particularly if electrification proceeds to a meaningful extent. Indeed, the demand for advice, designs and project services (activities which lead any major electrification programme) will probably increase to such an extent that the capacity of consultants will be stretched to the limit and, in the short term, limit the scale of an electrification programme.

6. A NATIONAL UTILITY AND THE CONSULTING ENGINEER

It has been proposed that electrification on a large scale requires the unification of the electricity distribution industry into a single utility. Although the proponents of this strategy concede that it may take several years to achieve this objective, it must be considered as a real possibility under a new government, as has been demonstrated in other countries such as Zambia and Zimbabwe.

An imposed rationalisation of the distribution industry into a single utility would be highly disruptive of existing systems and electrification initiatives. At the same time, some functions would continue to be carried out by the municipalities, such as revenue collection. Unification would be unlikely to contribute significantly to an accelerated electrification programme unless very capable and motivated managers could be found to coordinate the resultant large, bureaucratic structure, in addition to taking over and managing efficiently all the existing electricity supply organisations and activities.

A major policy decision which would have to be made in the unified utility would be how much of the work should be done by the utility itself and how much should be contracted out to the private sector or to other agencies. In particular, most of the design expertise for distribution systems would not automatically be incorporated by unification. Advice and designs could continue to be purchased from the consulting engineers (or from installation contractors who may use their own consultants). Alternatively design expertise could be developed in-house, possibly taking a little longer and costing a premium in the initial period, and by encouraging the consultants to join the utility. Of course, some consulting engineers might choose to maintain their independence and take up other activities or even leave the country to practice their skills elsewhere. If the utility uses the services of consulting engineers, the nature of the work would probably concentrate on design, network analysis and research and development. Design work would probably be given mostly to the larger firms, to ease the administration and control needed of the utility.

During the unification process, some consulting engineers might be called upon to give advice on policy, organisational, operational and development issues which would need to be resolved. This is a traditional role for consultants, but the demand would be relatively small, consistent with the few firms having the necessary expertise.

7. CONSULTING ENGINEERING SERVICES FOR REGIONAL UTILITIES.

Rationalisation of the electricity distribution industry will probably evolve along regional lines. This process will be least disruptive of the existing processes but have sufficient scale to accelerate electrification. It allows the adoption of more uniform tariffs and the more efficient use of resources than under existing conditions. Regionalisation also allows sufficient flexibility to adapt to the particular needs of each region, without introducing problems within a unitary organisation. Ultimately the regional utilities may report to the same minister or electrification board, but in other respects they would operate independently.

Within this scenario, there is scope for many combinations of doing work in-house and by contract. The industry structure will evolve more gradually, giving time to suppliers, contractors and consultants to adjust to the new conditions as they arise. Obviously, long periods of uncertainty and change would be detrimental to the industry as a whole, so the general policy adopted should be communicated as widely and as early as possible.

Economy of scale in technical aspects will be achieved by national committees for standardisation and technical development. Consulting engineers, because of their wide and detailed experience, are well placed to contribute to, and even administer, such committees.

Under a regional industry structure, with work being contracted to consulting engineers, the consulting firms will probably organise internally on a regional basis also. The poor viability of very small, but not specialist, firms will encourage concentration into larger groups better able to provide the range and scale of service, and the quality control and continuity needed by a large utility.

There are several advantages in contracting work out to the private sector. The market environment in which consulting engineers work encourages economic operations and stimulates innovation, while both the commercial and technical risks to the utility are low. Their acceptance of responsibility and the ability to make decisions without too much delay are other important advantages of appointing consulting engineers.

Regional utilities will be unlikely to contract out all the work which would be suitable. Some work will continue to be carried out within the organisation, so that it retains an ability to assess the quality of the work offered from outside, as well as to provide training for the utilities' own qualified but inexperienced staff, possibly under the guidance of a consultant. At the same time the concentrated purchasing power of the utility could be used in a strong bargaining position with the consulting engineers and other providers of goods and services. However, abuse of that power will not be in the long term interests of the utility, since a vibrant consulting engineering sector can provide stimulus for further and better development.

8. APPOINTING A CONSULTING ENGINEER

As the objectives of the electricity distribution industry adapt to a large electrification programme, and the industry structure itself changes, the selection of consulting engineers (and contractors also) will become more difficult. The need to assess a consultant's abilities will not change and it is always good to consider those similar projects which have already been completed, where that is appropriate. However, changing circumstances will require new solutions and track record will not always be the best indicator of suitability. Then it is necessary to determine whether the consultant has the approach to problem solving which is consistent with that of the client/employer, best established in meetings and discussions.

A consulting engineer advises an employer or carries out work on the employer's behalf. Therefore, it is very important that the employer and consultant communicate well with each other. Proper briefing and reporting procedures contribute to the successful execution of projects and other assignments. The consultant can advise on formal procedures to be adopted where the utility does not already have clear communication procedures within its organisation.

A common problem in the appointment of consultants is deciding the price of the service. The lowest cost may not procure the best advice. The costing basis for consulting services may take one of several forms, as shown in Table 4.

TABLE 4. FEES FOR CONSULTING ENGINEERING SERVICES.
Percentage. This is the most common fee, applied to the total value of the construction works of the project. It is suitable for works of a conventional type.
Time Basis. Where the work is not a conventional construction project or is of an unusual character or the extent is not easily determined before the project commences, it is usual to charge a fee on a time basis, with a higher cost per hour for senior and specialist staff. The employer often perceives this fee basis as being open-ended and in the consultant's favour, so it is usually wise to agree budgets and place limits on the total fee or on the fees for defined stages of the project.
Fixed Fee. To the extent that the scope of a project can be clearly defined at the start, a negotiated fixed fee is often most satisfactory to both parties.

Common misunderstandings made by some utilities are that in-house designs, or those designs provided in turnkey or design and supply contracts, are free. The cost of design will be incurred by the supplier in all cases, but may be hidden in higher profits on the equipment needed to implement the project. In particular, the designer in design and supply contracts is working for and in the interests of the contractor and has no obligations to the ultimate employer, as in a normal consulting engineer appointment. In such cases, therefore, the employer must ensure that the contract is written in strict performance terms. The need for adequate protection may require the employer to engage a consulting engineer to prepare the specifications for the design and build contract!

9. CONCLUSION

The skills and experience of consulting electrical engineers are available to assist in the electrification process. Consulting engineers cost no more than in-house or other advisors and designers, and offer impartiality, innovation, efficiency and protection from risk.

A most important characteristic of the relation between consulting engineers and their clients is the trust established between them. Such relationships have been the basis of the growth of a significant consulting industry, serving the diverse needs of the large electricity distribution industry - municipalities, government departments and Eskom. The structure of the consulting industry reflects the structure of the industry it serves. Changes to the electricity distribution industry will initiate changes in electrical consulting in South Africa. It is within the power of the decision makers who mould the electricity distribution industry to adopt structures in which the existing good relations with consultants are maintained and ensure that both sectors can continue to serve each other's needs and those of the communities they serve.

SAMUEL ISAACS

THE ROLE AND CAPACITY OF ELECTRICAL CONTRACTORS

Electrical Contractors Association

The Electrical Contracting Industry in South Africa has traditionally been involved in the installation of electrical reticulation systems to townships and the wiring systems to buildings in those townships.

However, many disadvantaged communities, such as low cost housing schemes which were designed without the provision of electrical services and squatter communities with their informal housing which were never recognised, until recently, as candidates for electrification were deprived of the benefits and developments that electrification offers and as such were not a client base for electrical contractors. These communities certainly have provided some of the unskilled and semi-skilled workers for the industry, but in the absence of sufficient data it is impossible to assess the interaction there has been between the Electrical Contracting Industry and the non-electrified communities of South Africa.

However, the following conditions prevailing in the Electrical Contracting Industry will increasingly influence the nature of this interaction especially as disadvantaged communities demand electrical services and there is an attempt to have a national electrification programme.

1. DE-REGULATION OF THE ELECTRICAL CONTRACTING INDUSTRY

There are currently moves to de-regulate the industry whereby anybody can undertake to do electrical installation work. These draft regulations only require that qualified persons test the work. This allows new job opportunities for many who were outside the formal structures of the industry.

2. THE ELCONOP SYSTEM

The industry has since 30 March 1990 a graded system of Electrical Contracting operators (The Elconop System) whereby workers can develop from labourers through to artisans. This system has often been referred to as an alternate apprenticeship system. The chief advantage of this system is that it affords the unskilled worker an opportunity to progress to artisanship without the onerous schooling qualifications required by an apprenticeship.

3. TRAINING FACILITIES

The industry has its own training facilities in Cape Town, Johannesburg, Durban and Port Elizabeth. Other centres are serviced from these training centres. In addition to providing training courses for all the workers in the industry these centres provide training at a fee to other industries and organisations.

An interesting example is the training that the Cape Town Training Centre has done at a fee for the Centre for Continuing Education of Peninsula Technikon. The Centre for Continuing Education is running three community empowerment projects to provide disadvantaged communities with electrical skills. The aim of these projects is to transfer ownership of the relevant electrical technology to the disadvantaged community by equipping a sufficient number of its members with the necessary skills and qualifications and to give them access to further development programmes through selected job opportunities. So far 51 persons have been trained in this manner and in the case of one community, they have already successfully completed their first major electrical installation. It is aimed that within the next four years these communities will have their own licensed electricians.

These training courses vary in duration from one to four weeks. The emphasis is placed on practical work undergirded by the necessary theoretical knowledge. All training courses conform to the competency based modular training system. They are ideally suited to the efficient and cost-effective ongoing training of large numbers of electrical workers over a short period.

4. THE ELECTRICAL INDUSTRY TRAINING BOARD (E.I.T.B.)

Since the recent establishment (2 December 1991) of the E.I.T.B. the electrical contractors have the power to accredit various other training organisations and educational institutions to do their training. This will ensure a uniform standard and quality for the training of electrical workers in the electrical contracting industry as well as training located in most regional centres including the outlying rural ones. There is no reason why this training could not be offered at a fee to disadvantaged communities embarking on electrification programmes.

5. INNOVATIVE WIRING SYSTEMS

Already the latest Wiring Regulations have accepted a number of wiring systems as standard and no longer lists them as "innovative wiring systems". However, if we are to electrify all the homes in South Africa and especially informal housing, such as is found in most of our squatter communities, at affordable cost and safety then another hard look has to be taken at the equipment we use and the way we install them. Only by bringing down the high cost of the initial installation can we induce more persons to electrify their homes. Equally important are the type of reticulation systems in current use. Cost savings in this area can go a long way to reducing connection fees.

Given the prevailing conditions enumerated above the following would be important criteria for the implementation of a national electrification strategy:

(i) Ownership of technology

It is cardinal that disadvantaged communities are given ownership of technology through being involved in the design, installation and maintenance of the electrical system that will be installed. Only in this way will a community be empowered to fully benefit from such developments and its many spin-offs.

(ii) Access to the formal sector

The electrical industry requires persons with a certain amount of skill and knowledge. While many operations in the installation of wiring systems can be done with limited on-the-job training, it would be far more responsible if this occurred within a system which would allow the worker to gain a recognised qualification on a career path which would allow him/her to develop to his/her full potential. It is therefore important that workers (especially those unemployed) from the community are given every opportunity to engage in the electrical work available in that community but that this is done in ways that give the workers access to the formal system i.e. jobs in the Electrical Contracting Industry.

The Electrical Contracting Industry has the capacity, formal structure and flexibility to assist in a national electrification programme in the following ways:

(a) Traditional electrical installation and reticulation contracts
(b) Partnerships with communities to electrify their communities
(c) Training of workers for electrical installations and reticulation

The actual human resource and material requirements to implement a national electrification programme for South Africa would generate much economic growth and the first recipients of such growth should be the disadvantaged communities in terms of job opportunities and the further development that electrification brings. Other economic sectors including the Electrical Contracting Industry stand to benefit greatly from these developments. We should do all in our power to enable every home in South Africa to have electricity and the benefits that electrification brings.

BERNIE FANAROFF

TRADE UNIONS AND ELECTRIFICATION

National Union of Metalworkers of South Africa

1. INTRODUCTION

In its discussions on how to reconstruct the South African economy after the destruction wrought on it by years of Nationalist Party and business mismanagement, COSATU has targeted housing and electrification as the two major initiatives for a growth path of redistribution through growth. This growth path envisages generating rapid growth in the economy by putting very large amounts of investment into these areas: this will serve to provide some of the basic goods and services which the majority of our people have been denied, while at the same time starting to redistribute assets and income into the parts of our community which now have very little.

2. ELECTRIFICATION AND A NEW GROWTH PATH

The financing of this spending will require further in depth discussion, but proposals have already been made by CAST and discussed in some COSATU unions for a Bank of Reconstruction which would utilize government, donor and private sector funds. We believe that there are substantial funds available in SA to generate growth, but they are locked up in financial institutions and companies which would rather invest in property and share speculation - the problem is to unlock the funds.

We do not believe that the SA economy can only grow if there is huge foreign investment, and we also don't believe that merely removing sanctions will lead to a sudden regeneration of the economy. The structural problems are too deep, and are not primarily problems caused by sanctions.

In this scenario, then, electrification cannot be divorced from the strategy for growth through redistribution. It cannot and should not be seen in isolation.

There are already numerous discussions of electrification taking place in different communities with different parties. Different principles are being used in each. In our view, it is essential that there should be a central agreement on principles and directions, so that regional development can take place in a way which is consistent with the long-term growth path.

Bear in mind that, although many groups do agree with the general prioritization of housing and infra-structure development, there are many different views on how and when. The dominant "free market" position, for instance, is that growth in the economy should take place by lowering wages and improving our export position, and then using the wealth which that makes available to allow the market to provide houses, electricity etc. This kind of free market has failed to provide these basic goods and services up to now; there is no reason to think that it would do so in the future, and certainly not in a period of time which would be politically acceptable. If we are to launch a major programme of electrification, it must be within the context of an agreed economic programme and strategy. It is for this reason, amongst others, that COSATU has been demanding the creation of a central economic negotiation forum.

Clearly, a major electrification project would have immense effects elsewhere in the economy, by creating demand for a variety of products. Obviously the cable and wire industry, the steel construction industry and the electrical engineering industry would be dramatically effected. Surveys have shown, however, that even in squatter camps there is substantial potential spending by households, and much of this would go into the purchase of domestic appliances, particularly fridges, stoves, heaters and washing machines. There are potentially inflationary and BoP problems, but we believe that these can be dealt with by careful policy development and research. In particular, there should be careful thought on problems of supplying demand.

Part of our discussions on the growth path have dealt with the need to make SA manufacturing more competitive. At present it is generally uncompetitive. It has been protected. Many industries, such as telecommunications, grew up as strategic industries which were nurtured on a cost plus basis. Unlike management in (for instance) Germany, SA investors and managers have a very short term view, concentrated on this year's bottom line profit. Because of apartheid, we have generally unimpressive management and a generally underskilled workforce. There are usually very strict divisions: anything which requires thought or planning is reserved for management, so the capabilities of the workers are repressed, not developed. The capital stock averages over 20 years old and cannot hope to be competitive. The declining GDFI figures for manufacturing are devastating.

Part of the growth path envisages restructuring these industries, but to do so in a way which does not mean that overall unemployment and exploitation increase. In addition, the fruits of increased efficiency must be available to workers and the community. Trickle down doesn't work: there will have to be directly negotiated means of directing profit into income and investment in industry and the community.

In order to restructure industry, there will have to be an industrial strategy for each industry and for industry in general. This is something which has been absent up to now. Various COSATU unions have begun negotiations in their industries towards a restructuring and a strategy, but many issues (such as a rational technology policy, tariff policies and so on) must be centrally discussed. The recently announced position of the Cabinet is that everything of a socio-economic nature must be diverted to CODESA: then a transitional government will handle all policy matters and therefore make all negotiation forums unnecessary. This is completely unacceptable to COSATU and many other mass organisations.

Electrification will give us scope for restructuring in a situation of growth. Although there is already very substantial demand for electricity and for telephones, both the cable industry and the telecomm manufacturers are in the process of restructuring in a way that is designed to cope with a greatly reduced market, rather than a market which will be able to provide electricity and phones to all those who want them. We believe that this is inappropriate. It makes it all the more urgent for us to move to a democratic government and an agreed economic growth path, before our industries are restructured in a situation of drastic recession in a way which is very hard to reverse.

Export growth is clearly an important (but not the only) component of the growth path, and should not be completely divorced from the leading sectors of housing and electrification. There should be synergy between them, where growth of a domestic market allows the restructuring of industries and the development of products which are exportable - perhaps not always to the USA or Western Europe, but certainly to other developing or newly industrializing countries. For instance, we presently have a number of manufacturers of domestic appliances, with a very wide range of models of everything. That may well not be efficient. Can we see any rationalisation in this industry in a way which doesn't cost jobs? Can we develop good quality but affordable appliances which are attractive to other countries with similar affordability criteria? Can growth in the cable industry be used to make it internationally competitive?

Traditionally, employers are very resistant to any attempts to tell them how to do business, except of course when it comes to the extensive tax perks and other hidden benefits which government grants them. In particular, they are very resistant to workers and unions asking them what they plan to do and how they plan to do it. NUMSA members are, however, doing just that and are trying to investigate inter alia how affordable appliances can be made. We are also negotiating completely new approaches to skills and training and other strategic issues.

3. THE NATURE OF ELECTRIFICATION INITIATIVES

Electrification can be done in many ways: it can be done by applying traditional big SA corporation methods, with large profits for the corporations and little left behind for workers or the communities. We believe, contrary to this approach, that it should be an opportunity for a major diffusion and upgrading of skills. A huge project of this type can be used as the basis for upgrading the skills of existing workers and for imparting skills to people in communities which are to be electrified.

In 1990 NUM and NUMSA approached Eskom with proposals for restructuring its operations to absorb 4 700 workers which Eskom believed to be redundant as well as miners from the tied coal mines. We suggested that the workers be formed into autonomous work teams which could electrify the communities which don't yet have electricity. We suggested that these teams be self-managed, and that Eskom provide them with intensive training in planning and design, installation of grids, cables, sub-stations and wiring, maintenance, marketing and administration. Eskom should also provide the materials and tools, and the workers would remain Eskom employees. The work teams would use local people as much as possible, so that skills and earnings remained within the community as far as possible, allowing for further development. Presently, for instance, commercial concerns charge about R1 000 to wire a house. We believe the teams could do it more cheaply and equally well, with more spin-off in the community, both directly and from development of small business and other wealth creating activities.

After several discussions, Eskom rejected our proposal as impractical and uneconomic, but part of the reason at least is because Eskom was precluded from operating in most communities because of apartheid law.

Last year a summit of members of CAST, NUM, NUMSA and the Electricity Workers Union was held. The summit reiterated our proposals. It also called on Eskom to halt the restructuring which it was carrying out without any consultation whatsoever with the unions or workers. We then met with Eskom and were informed that it had been restructured into new divisions, one of which is meant to electrify everything. Of course, the strategic plan for that electrification is not being discussed with workers in Eskom, with the unions or, to the best of our knowledge, with anyone else.

3.1 Eskom's Aims

Eskom is a parastatal corporation. As such, it should have a special status. It is appropriate and necessary that Eskom should operate according to commercial criteria of profitability, but that should take place within the economic programme and strategy. For that reason we proposed that Eskom's aims be broadened, so that rather than just supplying electricity as cost effectively as possible, it should for instance:

- provide affordable electricity to all as cost effectively as possible;
- substantially upgrade the skills of its own employees and provide a service in upgrading the skills of the SA workforce in general;
- maintain and extend employment as far as possible;
- play a role as a base for developing technology.

Further, workers and their unions should have a much greater role in determining policy and conditions than in the normal private sector firm.

Eskom should not be compelled to maintain jobs at any cost - it should operate on full cost accounting, but because of its role in providing basic goods and services and of stimulating the economy, government and the trade unions must play a much larger role than would be the case in a private sector firm. This requires amendments to the aims and decision making procedures of Eskom.

Thirdly, the controlling Electricity Council should include very significant representation of workers and the community, and not simply be dominated by big business and the National Party and civil service.

None of this has been seriously discussed by Eskom.

3.2 National Energy Council/Department of Mineral and Energy Affairs

The three unions and CAST also discussed the government's plan to restructure the electrical distribution industry. Earlier, COSATU approached the National Energy Council, not long before it was absorbed into the Dept. of Energy, in order to discuss the control of this council and the general control of policy - making in the field of energy. We were (and remain) convinced that the make-up of these policy - making councils, dominated by big business, government (of the old kind) and White municipalities, is fundamentally wrong. Workers and community members have an equally valid view of what is needed in our society, and we believe that organised workers, civics and other mass organisations have opinions which are no less valid, and possibly often better informed and more creative, than those of the present narrow interests.

The NEC informed us at the time that it was conducting a study for the Cabinet on the distribution of electricity. They told us that they would invite Mr Ramaphosa, then NUM General Secretary, to sit on a steering committee in his private capacity. COSATU rejected that approach. We said that any study should be part of negotiations on how to restructure the industry.

Subsequently, of course, the study appears to have been completed and submitted. The summit of EWU, NUM and NUMSA therefore wrote to George Bartlett asking him to suspend the entire exercise until a representative forum could be convened which would properly represent the people of SA. He subsequently replied that his department would be convening a major workshop on the subject early this year, and we would be notified. We don't know whether this means "Yes" or "No".

The three unions also agreed to work with other organisations to convene an energy policy forum as a matter of urgency.

3.3 Eskom's Operation

During the 1970's Eskom planned and committed itself to a major increase in capacity. Even when it later became clear that the development of the economy would be much slower than predicted, Eskom elected to proceed with the construction of new generating capacity, largely because they feared that the financing and tendering by external sources would be unavailable if there was a delay, because of sanctions. as a result, it became clear earlier than 1990 that Eskom would have significant generating overcapacity. the company then began to close its older plants and mothball others. Their projection for reopening capacity depends on projected economic activity.

These decisions were made by management and government, with expert advisors, not by workers or trade union officials. It is arguable whether the way it was done was the best way to spend many billions of rands.

There has clearly been a bonus in efficiency of new plant, but it appears to me that there has been little improvement of the environmental effects. It is well-known that the Eastern Transvaal is one of the world's most heavily polluted regions, and anyone driving through it or flying over it can see that much of the pollution originates from eskom's plants. It was obviously not a major factor in their multi-billion expenditure plans. It is damaging for our members and their families, and for everyone else as far as Johannesburg.

The closures and mothballing affected more than 4 000 workers over a couple of years. Initially, Eskom only wanted to discuss the severance package with us. In effect, they wished to restructure their operations without any social programme to alleviate the effects. We cannot accept that - if restructuring of an industry is to take place, it must be accompanied by social programmes which try to ensure that communities are not devastated by the loss of a major employer in their region. (In the event, most of the workers were retained in Eskom after negotiation).

We believe that it is unlikely that most of the mothballed plants will re-open in the foreseeable future. Ultimately, the technology and pollution of the older plants are likely to be so expensive to upgrade that there will have to be increasing use of the southern African grid with cleaner hydro electric power from Mozambique and Zaire. As a labour movement, we will insist on being involved in this long-term planning, with criteria such as the humanization of work and technology, employment creation, training and reduction of pollution as major issues. This of course requires that we must have full access to company information, including costs and affordability data.

4. CONCLUSION

Workers' organisations have a unique position, at the point of production, to both influence and learn from economic development. In the field of electrification, workers' organisations, because of this unique position, have challenged the industry in several areas, and will continue to think about and fight for policies, investments and work practices which benefit all the people of SA, and not only narrow groups.

BEN PETERSEN

A LABOUR PERSPECTIVE ON ELECTRIFICATION

Metal and Allied Workers Union of South Africa

1. INTRODUCTION

Whatever the outcome of CODESA millions of black people will remain without basic necessities such as water, electricity, housing, education, health facilities etc. It is estimated for example that at least 20 million black people do not presently enjoy the benefit of electricity in their homes. This is despite the fact that South Africa has the 15th largest generating capacity in the world and generates more than half the electricity generated on the African continent. It is one of the strange ironies of living and working in South Africa that thousands of our members who install electricity in other peoples homes do not have electricity in their own homes.

Even if majority rule was obtained rapidly (and this is by no means a foregone conclusion, given the strength of the right-wing amongst whites) there is no guarantee that fundamental social reforms needed to overcome the terrible legacy of racial inequality would be implemented given the huge cost factor. It is extremely unlikely that those who own our economy, the huge SA monopolies and overseas multi-nationals will be prepared to bear the cost of such a programme of social reform. In our view as a trade union it would be unacceptable to make the victims of apartheid pay the costs for ending the inequality they have had to bear for so long.

We believe that as the struggle against legal apartheid ends the more fundamental aspect of that struggle continues i.e. the struggle for fundamental social reforms aimed at overcoming the impoverishment of our people. As dedicated as our trade unions, civics, youth, student and women's organisations were in fighting legal apartheid so will they need to be in mobilising our people for the realisation of housing, land,education, health, electricity and the wiping out of all inequality in our society.

2. THE NEED FOR ELECTRIFICATION

Apart from the fact that we organise substantially in the electrical industry and therefore have a direct concern in what happens in it, we look at the issue of electrification from a far more critical point of view. It is best summed up by one of our shop stewards who at a recent Viva Voltage workshop innocently said:

> "While the government and the ANC are talking about the road to a new SA, the majority of us do not have the light to see the road to our houses at night"

Electrification is one of the shortest and most effective routes to dramatically raise the quality of life of the mass of urban and rural poor. It is the most convenient, clean, safe and generally the most economical form of energy.

Electricity is a far cheaper energy source (at least 1.5 times) than alternative sources such as wood, paraffin, coal etc. Electric heat, boiling water, refrigeration and electric lighting will immediately raise the standard of health in our communities. Entertainment and recreation would not have to be the preserve of only the privileged minority as televisions, music centres etc. become possibilities. With lighting, studying and reading would suddenly no longer be a day-time-activity. Our townships could be made much safer by installing street lighting and communication and transportation could be dramatically improved.

This is not even to talk about the impact that electrification would have on job creation and other aspects of the economy which would be similarly stimulated.

3. VIVA VOLTAGE CAMPAIGN

For us, then, electrification is a right and not a privilege. Most industrialised countries in the world are totally electrified and many countries which have a lower per capita GNP than South Africa are approaching total electrification.

We in MEWUSA therefore started the VIVA VOLTAGE campaign - spread the light last year. The campaign has the objective to unite trade unions, churches, community organisations and political organisations around the demand of ELECTRICITY FOR ALL. We aim to create community pressure groups who will put pressure on the government, local authorities and Eskom to provide efficient and cheap electricity. So far we have sent organisers and shop stewards to various townships and rural areas to make contact with community organisations and educate people around the benefits of electrification and the right thereto.

Various communities have already begun to mobilise and demand access to electricity from the municipalities and local authorities. Very often these authorities attempt to draw us into lengthy and quite frankly useless round table discussions on the difficulties they face in meeting our demands. While they remain racially based and therefore undemocratic we are not prepared to sit with them and jointly plan how to provide electricity. Our task, as we see it, is to mobilise and pressurise them to act in our interests. While we are prepared to negotiate with them we are not prepared to get involved in a process that makes us take joint responsibility for the existing unacceptable state of things. We envisage a programme of mass action involving pickets, demonstrations, marches on municipalities and local authorities. Our campaign is not confined to the urban areas but will have a strong rural bias, given the underdevelopment of SA rural areas. This programme must be intensified now and not depend on negotiations at a national level.

Our campaign should lead to the government drawing up a clear timetable for the full electrification of the country which should be acceptable to all the people. It should lead to a complete overhaul of the electricity supply industry which is demonstrably incapable of embarking on a large-scale electrification project. It would entail the dismantling of the system of local government and its replacement with a completely non-racial municipal government. The supply of electricity should be the responsibility of regional electricity boards acting under the co-ordination of a national electricity board.

The financing of electrification is the responsibility of the state and must come out of funds received from Eskom and from the national budget. It has been estimated that if 350 000 households were electrified each year we could have total electrification in 20 years. The cost would be less than 1% of the government's annual expenditure. We therefore propose that full electrification be completed in a much shorter space of time at the expense of government spending on defence, covert operations, slush funds etc.

We believe that working class communities must have a say in the provision and pricing of electricity. For now that will depend on our capacity to mobilise and force Eskom and the local authorities to consult with our communities.

As our campaign document states:

> The first houses in the country were electrified in 1895. Almost one hundred years have passed and still only 30% of the country has electricity. Clearly something has to be done.

We in MEWUSA are doing something. It is called VIVA VOLTAGE. We ask all of you to support us and pledge our own support to any campaign that is in agreement with our objectives and our methods.

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URBAN ELECTRIFICATION AND COMPETING FISCAL DEMANDS FOR SOCIAL SERVICE PROVISION

1. INTRODUCTION [1]

Political change will create new pressures on fiscal resources as democratisation proceeds; it will also be the driving force determining the rate and nature of electrification in the next two decades. Pressure on financial and skills resources makes substantial rural electrification unlikely in the present decade.[2] It also appears unlikely that most informal housing will be electrified. Hence, electrification will then mainly be an urban issue, and would probably mainly remain the preserve of those in formal housing. Most formal houses will probably have electricity within the next twenty years; the less resolved question is how much formal housing will be constructed, which will largely be determined by the priority given to urban housing provision by a future government.

Even under an optimistic scenario regarding the rate of urban electrification, new electricity demand stemming from this source is limited when compared to generation capacity. But in order to accommodate this, a large number of new connections will have to take place and the electricity supply industry will have to plan for greatly expanded electricity reticulation. In particular, attention should be paid to an appropriate institutional framework for reticulation, and to financing arrangements. This is the subject matter of this paper.

If those political problems currently retarding electrification, such as payments boycotts and the fragmented structure of metropolitan electricity supply authorities, will be overcome in the transition to democracy, the question then remains: does South Africa have the financial resources to afford electrification?

This paper sets out three possible scenarios for the next twenty years of urban electrification, with their cost implications. It is then shown that even for the most optimistic scenario, these costs are relatively limited, e.g. when compared to the costs of housing or education. The three scenarios are then assessed, and the conclusion is drawn that the political imperative for change rules out the first scenario and financial constraints the second, which leaves only one likely scenario. It is noteworthy that it is not the financial costs of the electrification process itself that rules out the most optimistic scenario, but the costs of the housing process, which constrains formal housing provision. Finally, the paper touches on related issues, such as alternative tariff structures to address the question of reticulation costs, and the present financial surpluses on the electricity account of white municipalities.

2. THREE SCENARIOS AND THEIR COST IMPLICATIONS

Table 1 provides base estimates of population distribution, housing availability and electricity penetration for 1990, and estimates of the urban-rural population distribution for 2000 and 2010. It is assumed that the average household size is five.

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[1]This paper is based in large measure on a soon to be released final report of a research project to the National Energy Council by S. van der Berg and J. du Toit.

[2]Because of the large unmet energy needs of the rural poor, who are not highly mobilised, an energy policy is required that extends beyond electrification. To meet the basic energy needs of the rural poor, particularly in areas that will be expensive to electrify, the rural woodfuel situation will require special attention.

Table 1: Base Estimates for scenarios of housing and electrification, 1990 to 2010.

Year	Rural		Urban		Total
		Formal	Informal	Total	
POPULATION					
1990	16m	15m	7m	22m	38m
2000	16m	??	??	32m	48m
2010	17m	??	??	43m	60m
HOUSEHOLDS					
1990	3,2m	3,0m	1,4m	4,4m	7,6m
2000	3,2m	??	??	6,4m	9,6m
2010	3,4m	??	??	8,6m	12,0m
HOUSEHOLDS ELECTRIFIED					
1990	0,2m	2,2m	0	2,2m	2,4m
PERCENTAGE OF HOUSEHOLDS THAT HAVE ELECTRICITY					
1990	6%	73%	0%	50%	32%

Sources: Estimates based on Urban Foundation, 1990; Dingley, 1990.

It is now possible to quantify some of the implications for urban electrification under three alternative scenarios for the two decades extending from 1990. It was assumed that the cost per urban connection would be approximately R2000 in 1990-Rand.[3]

2.1 Scenario A (pessimistic scenario for electrification): "Redistribution through growth"

Under the least optimistic scenario for electrification, labelled "Redistribution through growth", economic policy will focus on macro-economic stability and classical supply-side measures (e.g. reduced taxes) to stimulate growth and pay little explicit policy attention to the needs of the poor. Such a policy would be based on the argument that growth should receive precedence to provide the resources for long term poverty alleviation. Under such piecemeal social reform there will be only a limited effort to provide formal housing and

[3]This does not take account of the additional energy generation required, taken to be 1,5 kW average peak load plus a required 20 per cent spare capacity, i.e. 1,8kW per urban connection. If the installation cost of 1GW of coal-fired capacity is R1300m, the required capacity per urban connection should cost R2340. However, as this capacity would not be immediately required – Eskom presently has considerable spare capacity –, this cost was not considered in the cost calculations.

electricity to urban dwellers; informal housing will be the dominant form of housing expansion. All new formal homes may well be electrified, but electrification will remain confined to formal housing structures. Electricity will then remain the preserve of a relatively small group of urban insiders.

Based on Urban Foundation estimates (1990:46), only some 40 per cent of the incremental urban population will be able to afford formal housing. Thus 80000 electricity connections per annum will have to be made in the last decade of this century, and 100000 per annum in the first decade of the next century. (Table 2) Even under such a pessimistic scenario, the overall penetration level of electricity will increase marginally, mainly due to increased urbanisation, but due to the growing prevalence of shack housing, the proportion of all urban households connected to grid electricity will drop slightly.

2.2 Scenario B (optimistic scenario for electrification): "Growth through redistribution plus inward industrialisation"

Scenario B provides a directly opposite picture, in which drastically expanded public housing provision will be accompanied by electrification in the belief that it will stimulate economic growth. For instance, the Nedcor/Old Mutual scenario even suggests eliminating the housing backlog within three years.

To eliminate the full urban housing backlog and electrify all homes by the end of the century will require 420000 additional connections per year for the first decade. Once the backlog is eliminated, only 220 000 connections per annum will be required for the next decade for the urban population increment.(Table 2)

As the inflationary and balance of payments problems of such a demand-driven inward industrialisation policy may be severe, the growth consequences will probably only be positive if it stimulates a return of investor confidence through providing conditions for a return of stability. Without rapid growth, the resources required for maintaining such a growth path will soon dry up, and the housing and electrification process will then be slowed by lack of funds.

Such a policy will extend grid electricity to all formal homes and even to some informal dwellings in urban areas, thus rapidly incorporating most urban dwellers in a modern consumer society and drastically affecting demand patterns for appliances, energy and food. As a consequence, modernisation will be speeded up, with beneficial consequences for fertility decline. But this is of course conditional upon resources being available and continuing to be available for this purpose, and on this high a priority being attached to housing and electrification.

2.3 Scenario C (Intermediate scenario for electrification): "Growth and redistribution"

If a new government engages in a social contract with other important actors to ensure confidence in and the legitimacy of the socio-political system, it will have to entail economic compromises. An elected post-apartheid government with a constituency that demands material benefits will have to assure whites and the business community that redistribution will be moderated by resource constraints and that tax increases and asset redistribution (e.g. nationalisation) will have to be limited. On the other hand, such compromise would require whites to accept deep cuts in social service provision (especially education) and upward pressure on tax rates.

Scenario C thus shares neither the optimism of Scenario B nor the pessimism of Scenario A. It allows for the same proportion of the urban population (68 per cent) to be housed in formal dwellings in future as is the case at present. It is further assumed that the all new formal houses will be connected to grid electricity. In addition, electricity will be extended to all unelectrified formal houses over the next two decades, and to a significant proportion of informal dwellings. In this case, electricity connections per annum will be 190 000 in 1990-2000, and 215000 in 2000-2010.

A "redistribution and growth" strategy is likely to:

- include limited increases in tax rates;
- attend especially to the needs of mobilised urban workers; to concentrate on the provision of human capital; and
- attempt to provide visible short to medium term benefits to some of the previously disenfranchised through paying considerable attention to housing.

Electrification will be one area in which a new government could visibly demonstrate to the urban poor that credible social policies will eventually benefit them in concrete ways. Electricity sales and sales of appliances will accelerate, with moderately positive effects on fertility decline.

3. ASSESSING ALTERNATIVE SCENARIOS

Scenario A is ruled out by the fact that South Africa is entering a democratisation process, which will induce strong pressures on a future government to meet the needs of the newly enfranchised. It is unlikely that a new government will allow a continuation of the status quo regarding access to resources and social services.

Scenario B, on the other hand, will probably run into financial resource constraints. The pressure on fiscal resources is indicated by the fact that a three-fold increase in social expenditure was required in 1986 to apply white expenditure norms to the whole population and to whittle away the housing backlog.

Table 2: Scenarios of housing construction and electrification in urban areas, 1990 to 2010

	FORMAL HOUSING	INFORMAL HOUSING	TOTAL
Urban Population in Formal and Informal housing 2000 (Assumption)			
Scenario A	19m	13m	32m
Scenario B	32m	0	32m
Scenario C	22m	10m	32m
Urban Households 2000			
Scenario A	3,8m	2,6m	6,4m
Scenario B	6,4m	0	6,4m
Scenario C	4,4m	2m	6,4m
Proportion of Urban Households electrified 2000 (assumption)			
Scenario A	79%	0%	46%
Scenario B	100%	..	100%
Scenario C	91%	10%	66%
Number of Urban Households Electrified 2000			
Scenario A	3,0m	0	3,0m
Scenario B	6,4m	0	6,4m
Scenario C	4,0m	0,2m	4,2m
New Urban Electricity Connections required per annum 1990-2000 (thousands)			
Scenario A	80	0	80
Scenario B	420	0	420
Scenario C	180	10	190

Annual Cost of New Urban Connections 1990-2000 (1990-R)			
Scenario A	R160m	R0m	R160m
Scenario B	R840m	R0m	R840m
Scenario C	R360m	R20m	R380m
Urban Population in Formal and Informal Housing 2010 (Assumption)			
Scenario A	24m	19m	43m
Scenario B	43m	0	43m
Scenario C	29m	14m	43m
Urban Households 2010			
Scenario A	4,8m	3,8m	8,6m
Scenario B	8,6m	0	8,6m
Scenario C	5,8m	2,8m	8,6m
Proportion of Urban Households Electrified 2010 (Assumption)			
Scenario A	83%	0%	46%
Scenario B	100%	..	100%
Scenario C	100%	25%	76%
Number of households electrified 2010			
Scenario A	4,0m	0m	4,0m
Scenario B	8,6m	0m	8,6m
Scenario C	5,8m	0,7m	6,5m
New Urban Electricity Connections Required per annum 2000-2010 (thousands)			
Scenario A	100	0	100
Scenario B	220	0	220
Scenario C	180	35	215
Annual Cost of New Urban Connections 2000-2010 (1990-R)			
Scenario A	R200m	R0m	R200m
Scenario B	R440m	R0m	R440m
Scenario C	R360m	R70m	R430m

(Van der Berg, 1991).

As this is unaffordable, white standards, which have come to act as a norm, will have to be reduced in various areas of social policy. Given this pressure on budgetary resources, what priority will a post-apartheid government attach to different aspects of social policy? Of particular relevance for this study: how important is housing provision when compared to social pensions and welfare, to health, and to education? In the optimistic scenario (from the perspective of electrification) (Scenario B), housing and electrification become the driving force for domestic demand driven economic growth. But a subjective assessment is that a future government will be unlikely to give housing and electricity such a high priority, that Scenario B would become realistic. Far more likely is the assumption in the Scenario C, that housing provision will receive more attention, but that it will have to continually compete with other equally desirable objectives social programmes. Scenario C assumes that pragmatic considerations will limit the priority given to housing and electricity, but that the political imperative will ensure that social programmes receive much more attention than in the past. Though there is scope for some disagreement about the precise quantitative implications for various social programmes, the figures contained in Scenario C offer some order of magnitude of the most likely developments as far as it effects electrification.

Table 3 - Housing and electrification requirements and annual costs (public and private) under three scenarios, 1990-2000 and 2000-2010

	1990-2000	2000-2010
Additional housing units required over period		
Scenario A	0,8m	1,0m
Scenario B	3,4m	2,2m
Scenario C	1,4m	1,4m
Additional Electricity Connections Required		
Scenario A	0,8m	1,0m
Scenario B	4,2m	2,2m
Scenario C	1,9m	2,2m
Cost of Additional Housing Units (1990 R-m per annum)		
Scenario A	R3 200m	R4 000m
Scenario B	R13 600m	R8 800m
Scenario C	R5 600m	R5 600m
Costs of electricity connections (1990 R-m per annum)		
Scenario A	R160m	R200m
Scenario B	R840m	R440m
Scenario C	R380m	R430m

Electrification is not of itself a very expensive service, compared to education or housing, for instance. However, as argued above, the process of housing provision is likely to determine the electrification process, and the financial burden of housing provision by the state is likely to be high. Consider the figures in Table 3, which show the cost to the state of housing provision as well as of electrification. In view of the fact that the cost of an additional housing unit (assumed to be R40000) is about 20 times that of an electricity connection, it is small wonder that the costs of the latter are dwarfed by that of the former.

In the short term, expansion of social programmes is constrained by capacity constraints. In education, by far the dominant social programme in its funding requirements (Van der Berg, 1991), administrative and legitimacy problems and the shortage of qualified teachers place a constraint on rapid expansion. For a post-apartheid government under considerable pressure to show quick, visible redistributive results, housing may be an attractive area. Once the demands of the other social programmes grow, however, there would probably be some curtailment of housing construction. There are, however, considerable problems attached to a boom-to-bust housing programme such as proposed by the Nedcor/Old Mutual scenario team, thus housing expansion will have to take place at a more modest rate.

Even without rural electrification, the aggregate electricity penetration ratio will rise from its 1990 level of 32 per cent under all three scenarios. While the rate in 2010 under scenario A is very low indeed for a country at South Africa's level of development (35 per cent), Scenario C's rate is almost respectable (56 per cent) and Scenario B's rate relatively high (73 per cent). In terms of manpower and technical resources, all three scenarios are achievable. Dingley (1990:10) suggests that 350000 new domestic electricity connections annually to bring electricity to all (urban and rural) over the next two decades is possible, i.e. a rate of about 9 new connections per thousand population per year. Even the 420000 new connections per annum under Scenario B is not an unrealistic connection rate, seen in international development perspective. (Dingley 1988) Thus technical constraints do not limit the achievement of any of the scenarios, but financial constraints may be more binding, as argued before.

4. INSTITUTIONAL STRUCTURES, TARIFFS AND FINANCING RETICULATION COSTS

The changing political landscape and the restructuring of political power relations will have a considerable impact on the institutions within which services are delivered, on financing arrangements and on the priorities attached to various social services.

A more appropriate electricity reticulation structure is required. Present fragmentation within metropolitan areas hinders planning, leads to a misallocation and underutilisation of resources, raises costs, and limits possibilities of cross subsidisation between electricity consumers. Addressing the fragmentation of local electricity supply authorities is difficult because this structure is presently linked to the local government structure. However, addressing the issue of fragmentation will only be possible if the question of local government profits from electricity supply is addressed simultaneously. At present, such profits are used by "white" local authorities to cross-subsidise other municipal services, whilst the amounts involved are far larger than will be required to cross subsidise the suggested

new connections discussed above. (In 1988/89, white municipalities experienced a surplus of R922,8 million on their electricity trading accounts.)

Developing countries often have electricity tariff structures with some sort of cross subsidisation from rich to poorer consumers built into them. If there may be benefits to society from large-scale electrification (i.e. externalities), economic theory supports subsidisation of electricity costs (up to a threshold level beyond which these externalities may not apply). This may give rise to a differential tariff structure based on levels of consumption. At present, within the fragmented reticulation structure in South African metropolitan areas, the tariff structure is usually biased the other way, mainly because the capital costs of new reticulation are captured by black local authorities, though efficiency and economies of scale also play a role. White local authorities still manage to charge lower tariffs despite using electricity tariffs as a revenue raiser. The costs of reduced tariffs for low levels of consumption could either be retrieved from government by way of subsidies (which appears unlikely in the face of growing demands on the government budget), or from cross subsidisation from larger consumers of electricity, who could be charged a tariff somewhat exceeding the marginal cost. (This is in fact already the case, but the revenue thus gained by white local authorities from electricity sales is used to subsidise other municipal services.)

Various alternatives can be considered for retrieving the costs of new connections. The present system is based on connections being loan-financed by the responsible electricity supplier; the cost of repayment of the connection can then be borne either by the affected consumer by way of a tariff that allows for repayment of the capital cost, or by all the consumers in the service area of a particular electricity supply authority. The latter would imply that a different redrawing of the boundaries of electricity supply authorities would lead to considerable readjustment of tariffs and a considerable degree of cross subsidisation. Other alternatives would be to extend loans which have to be repaid over a specific period to individual consumers (various payback periods and repayment structures are possible), or to include the cost of the connection with the purchasing price of all new housing. Alternatively, various alternative forms of direct or cross-subsidisation of connection costs are possible and, indeed, would appear likely if electrification is given high priority by government.

Additional borrowing to finance electricity connections would not place undue upward pressure on South African capital markets, as even rapid electrification would require less than 3 per cent of the annual turnover on the capital market. Moreover, foreign borrowing for this purpose may become quite feasible, e.g. from institutions such as the World Bank.

One possibility would be for the cost of all new electricity connections to be borne by all consumers, e.g. by funding it from the total revenue of Eskom. The extent of the consequent upward pressure on electricity tariffs would be relatively small, as connection costs would never exceed 8 per cent of Eskom's revenue even under the most optimistic scenario for urban electrification (Scenario B). If this were passed onto consumers by way of an across the board tariff increase, the electricity bill for an average household would then rise very little. For the country as a whole, the effect would be less than a rise of one quarter of a percentage points in the VAT rate. The inflationary consequences are thus small.

5. CONCLUSION

To conclude, then: Electrification is highly desirable and relatively cheap, in terms of the capital costs of reticulation. It appears that there are no fundamental technical or manpower considerations that need to retard this process. But electrification is not the most basic need, and it will have to compete with many other desirable objectives and social needs. In particular, it is likely to be closely tied to the housing process, which is far more expensive and which will have to compete for funds with education, a very expensive social need.

Electricity payments boycotts experienced by black local authorities are far more expensive than the capital costs of electrification, as this is a recurrent rather than a capital cost. This problems can only be overcome in a new political structure that carries enough legitimacy to make enforcement possible. Until then, major expansion of electricity connections in black townships could cause huge financial shortfalls, increased de facto subsidisation of electricity consumption (rather than of new connections), interrupted electricity supply, and therefore a continuation of the situation in which new electricity consumers cannot adjust their appliance purchases to the permanent availability of electricity. It is rational for electricity consumers in such conditions to plan for a mix of energy sources, thus leading to an arrested energy transition. Potential benefits flowing from electrification are then reduced.

Hence, the present priority should be not electricity reticulation, but the creation of local government structures that hold more legitimacy. In such an institutional rearrangement, a strong case can be made out, on efficiency grounds, for local electricity supply authorities that extend across several municipal areas. However, against this should be set the potential advantages of devolution of income sources to municipalities. Moreover, removing the surpluses on the electricity trading account from white local authorities will further increase the pressure on rates income at a time in which they will already have to expand municipal services to cover present black townships, for these trading surpluses on electricity currently exceed fifty per cent of their income from property rates.

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FINANCING ELECTRIFICATION INITIATIVES

1. INTRODUCTION

In any discussion on the question of new electricity initiatives the aim of which must be to bring a supply of electricity to as many people as possible at the lowest cost practicable, it is necessary to bear in mind that financing is a critical issue that must be regarded from two points of view whether or not electricity is supplied centrally, regionally or by local authorities:-

- the financing of capital expenditure;
- the financing of operating expenditure.

Before dealing briefly with these issues and the more pressing matter of the appropriate structure through which electricity should be supplied to bring about a set of tariffs that is within the means of the vast majority of all peoples of South Africa, it is necessary, I believe, to accept as a given, that by providing electricity to all, economic and social development will be facilitated and expedited which, in fact, results in a natural thrust for wanting to find a better way.

2. FINANCING CAPITAL EXPENDITURE

To finance capital expenditure, there are a number of ways:

- Raise long term loans on the capital market at prevailing rates, or
- use internal capital funds as a source of long term finance, or
- finance capital works from operating accounts, or
- combination of any of the above.

Dealing with each seriatim:-

- By raising long term loans, any organisation is faced with a very high interest rate which, given the ongoing double digit inflation rate in this country, could be as high as 20% because investors will want a real return on their money. And even then, it is normally difficult to raise such a loan over a period which suits the borrower who wants the loan over, say 15 to 20 years, and the lender who normally requires a much shorter loan period, say between 5 and 7 years, to give him a switching opportunity at the end of the loan period. In addition, the borrower will normally have to approach a financial institution which specialises in raising loans and will have to pay a fee for the service provided. This fee is usually charged against the loan and arguably can be regarded as a "wasted" cost.

- The use of internal capital funds as a source of capital financing over the loan terms presupposes the existence of such internal funds, but provided they are available, opportunities exist for effective low cost financing.

Having regard to the difficulties experienced on the capital market from time to time and the high interest rates payable, an approach was adopted in the 1950's by local authorities, and other large organisations, of creating Capital Development/Revolving Funds in terms of which amounts were appropriated from operating accounts and transferred to such a Fund. The Fund then makes an advance to finance a capital asset and the operating accounts carry the interest and redemption costs on those advances which amounts are then repaid to the Fund for use in further capital financing.

This means that the operating account, which in the case of an electricity undertaking, is the consumer pays twice, once as a contribution to the Fund and a second time when he pays interest and redemption. However in future years this results in a permanent capital pool which will continue to grow from interest earnings alone and contributions can be stopped. Provided that the contribution to the Fund in its formative stage is a reasonable amount and the burden on the consumer within limits, this is not unreasonable and the benefits are considerable. For instance, an internal source of capital finance provides insurance of a kind for future electricity supplies, and depending upon the policy adopted in respect of interest, relieves the burden on the operating account. If, for example, 50% of the interest on the loans from the Fund were credited to the operating account, the interest cost on the loan is effectively halved. An interest rate of 18% on a loan becomes 9% with obvious benefits to the consumer.

Alternatively, advances could be made at lower than market rates of interest which implies an interest subsidy. However, by doing this, the benefit becomes difficult to measure in later years and distorts cost comparisons. In my view, therefore, the interest return to operating account is the preferable alternative.

Most local authorities have Capital Development/Revolving Funds. In fact, in Natal, Capital Development Funds are compulsory by legislation.

- Financing of capital works solely from operating accounts is hardly practicable, but depending upon whether or not surpluses occur at financial year ends, it may be possible to make use of all or part of those surpluses to prematurely repay internal loans and so reduce capital charges in future years or finance a part of the capital expenditure incurred during the financial year from the surplus.

Naturally this implies that no surplus is transferred to the operating account of the Rates and General Service to subsidise property taxes.

If I may digress on this particular issue, for the moment, let me say that some valid reasons can be found for using surpluses on the electricity operating account to subsidise property rates although this step would depend on the additional costs of bringing electricity supplies to all people who require it, and the financial health of the Electricity Service.

These reasons would include eliminating backlogs in extending the sewerage and community health services, meeting transport service deficits or subsidising transport costs and dealing more extensively with refuse removal.

A variation of this method of financing could be the financing of capital expenditure, in part, over a short period to save interest costs. For example, although he life of a capital asset could be 25 years, it could be financed over, say 3 years, which would mean higher redemption costs, but a substantially lower interest burden. This alternative is facilitated if internal funds are available for the purpose.

- Generally a mix of all these alternatives is found, but a weighting on financing from internal sources either by way of a subsidised interest rate or preferably a percentage return on interest received by the internal capital fund from the operating account carries the greater most practicable advantage to the consumer.

3. FINANCING OF OPERATING EXPENDITURE

Traditionally, the equation for the financing of operating expenditure is :-

Creditors + Reserves + Short Term Loans = Debtors + Stock + Cash + Short Term Investment

Accordingly, the lower the debtors + stock figure, for example, the lower the reserves + short term loans. Consideration needs to be given to each element in the equation to ensure the lowest cost to the operating account and hence to the consumer. For instances, because short term loans are expensive in terms of the interest costs, it would be preferable if short term investments exist, to monetise these to obviate the need for a short term loan, accepting that interest earning on the investments would be lower than interest costs on borrowing for the same amount of money, e.g. interest earning on an investment over 30 days may be 18% but borrowing costs could be as high as 22%. Equally attention needs to be give to stocks to ensure that no obsolete stock holdings are kept and that a sound debt collection policy exists and is implemented.

Most of what has been said up to now is merely business sense, but unless sound financial housekeeping rules and policies exist and are observed, waste can and will occur and ultimately will have to be met by consumers in the form of higher tariffs.

4. FINANCING FUTURE ELECTRICITY INITIATIVES

At present Eskom is a statutory body and approximately 500 local authorities are responsible for the distribution of electricity in South Africa with Eskom being the national supplier of electricity. This fragmentation has resulted in a number of adverse criticisms, including :-

- poor quality of services
- significant differences in cost structures and standards and hence tariffs
- incorrect and under-utilisation of capital equipment
- the ineffective use of qualified personnel

- duplication of administrative effort
- sub optimisation of capital resources
- cross subsidisation of tariffs

and has contributed to the huge backlog in the electrification process.

On the other hand, it has been largely through the historical effort of local authorities that the use of this energy source developed rapidly in traditional local authority areas. Eskom ultimately took over the role of generator of electricity with a few exceptions, e.g. Johannesburg with local authorities becoming its customers as distributors. In this way local authorities which supply upward of 2,5 million consumers, provide an interface and a more personal service than would otherwise exist.

Be that as it may, it is estimated that some 23 million of South Africa's people do not have access to household electricity supplies and a way forward must be found to remedy this unhappy situation rapidly. In this regard it has also been estimated by Eskom that some 7,5 million householders will need to be electrified within the next 10 years due to population growth and urbanisation.

Personally, I do not believe that this can be achieved without major changes taking place, having regard especially to the limitations broadly placed on local authorities in distributing electricity within their areas of jurisdiction only or in urban areas where Eskom is either unwilling or not in position to make supplies available.

4.1 Option One

One alternative could be increasing the size of local authorities to include, black local authorities contiguous to or nearby traditional local authority areas. This would have the merit of eliminating the situation whereby the traditional local authority buys electricity in bulk from Eskom and distributes it to its own consumers and on-sells in bulk to black local authorities which, after adding its own administrative costs, supplies its consumers. The consequence is that black local authority consumers pay more per unit of electricity than traditional local authority consumers of the same kind and more than would be the case if the traditional local authority supplied electricity direct to all consumers.

Furthermore, the bulk purchase of electricity in these circumstances results in an improvement in the base load, relative to peak load which ameliorates the electricity tariff to consumers in the traditional local authority, but not to consumers supplied by the black local authority assuming that the bulk supply of electricity is charged to the black local authority on the same formula that Eskom uses when it supplies in bulk (i.e. its Tariff A).

In this connection, it is worth mentioning at this stage the Eskom formula for charging for bulk supplies of electricity (Tariff A). The formula is as follows:-

- a basic charge to all bulk consumers notwithstanding the quantity of electricity consumed;

- a demand charge which is dependent on the highest electricity demand in any one half hour period during a calendar month;

- an energy charge per unit of electricity purchased.

The demand charge is higher than the energy charge. Accordingly the higher the base load, which represents a relatively constant demand for electricity, to peak load, the higher the proportion of electricity charged on the energy charge and the lower the demand charge. In black authorities areas where there is limited industrial activity, the base load is relatively low, but peaks which occur in the morning when people prepare meals before leaving for work and the evening hours when people return from work are high relative to that base load. As a result the payment made for bulk supplies of electricity are higher per unit than would be the case if black local authorities and the traditional local authority areas combined their purchases and would be lower to all consumers if they were supplied direct by one local authority.

In existing circumstances, where the so called "dependant" supply of electricity to black local authorities occurs i.e. where bulk supplies of electricity are on-sold to black local authorities, black local authority consumers are clearly disadvantaged.

For similar reasons, where two local authorities each purchase bulk supplies from Eskom their respective consumers pay more per unit of electricity than would be the case if they combined their purchases and consumers were supplied direct by one authority. The situation is aggravated where one such local authority has few industrial/commercial consumers because of a low base to peak load ratio.

It is also significant to note that where a high base load to peak load ratio exists, i.e. where there is a significant demand for electricity supplies from the industrial/commercial sector, the tendency exists for political reasons to use surpluses from those consumers to subsidise domestic consumption.

Although this alternative has merit and would be relatively easy to implement, it does not take us much further because the inefficiencies of which reference has been made earlier would still exist although to as lesser extent.

4.2 Option Two

A second alternative could be the regionalisation of electricity supplies where one local authority buys in bulk from Eskom and supplies consumers in its own local authority and a large number of consumers in other local authorities direct. Durban is an example of this where it supplies some 289 000 consumers in over 40 local authority areas including over 36 000 black residential consumers.

The alternative has numerous advantages, as follows:-

- the inefficiencies mentioned are largely eliminated;

- because a good base to peak load ratio exists, arising from a good mix of customers, consumers generally enjoy a tariff that is as low as it is practicable to set it;
- tariffs for consumers of the same kind can be equalised throughout the region;
- it is possible to create an internal capital financing pool of funds that is significant with all the attendant advantages to which reference has been made;
- as a consequence of its size, it is possible to employ staff with high levels of technical and financial expertise;
- it becomes possible to make a significant and meaningful effort to bring electricity supplies to all who require it.

In this connection Durban has recently embarked on such a campaign where it proposes over a 5 year period to bring electricity to 168 000 homes in black areas on a cash payment basis for usage through pre-payment meters. To this end it was agreed a connection fee of just R125.00 which includes a two plate hotplate for cooking and an energy tariff which provides for the redemption of a small power distribution unit and the pre-payment meter and is in line with the Eskom tariff for this purpose.

On the other hand, certain difficulties in implementation exist. Firstly, those local authorities which forego their right of electricity distribution, and it is a right in terms of the Electricity Act, will need to be compensated for the use of their physical assets and perhaps for surpluses generated which would have been used to subsidise the provision of other services, e.g. sewerage.

In addition, a means will need to be found to nullify the effect on the grading of local authorities which either take over or releases the electricity distribution function as the grade of a local authority determines, inter alia, the remuneration they are able to pay staff. Obviously, the higher the grading the higher the remuneration offered and the easier it is to employ staff of quality.

Furthermore, Eskom will certainly lose income from this change and in terms of the existing formula (Tariff A) could increase its charges to make good the shortfall.

An alternative tariff structure could be considered such as a Time of Use (TOU) system where different prices are charged depending on the system loading during a specific period. The detailed effect of this system will need to be fully investigated before its introduction.

Consumer attitude surveys or some other means of staying close to consumer views will have to be implemented if their complaints, views etc are to be taken into consideration. In this connection it will be understood that most consumers on the existing local authority electricity distribution arrangement have ready access to officialdom where their complaints, views and queries can be readily handled.

Economies/Diseconomies of scale will have to be carefully considered as will the degree of autonomy and authority.

However, importantly, in a regional context, standard tariff policy is fairly simple to implement which is of special significance to domestic consumers where at present variances occur between local authorities which militates against mass electrification.

4.3 Option Three

A third alternative is privatisation of the electricity function throughout the country. Whilst this alternative has he advantage of eliminating he inefficiencies mentioned he prime disadvantages are:-

- the entire operation, by definition becomes profit orientated which will tend to operate to the disadvantage of all consumers unless real cost savings materialise which is a moot point;
- difficulty in implementation quickly;
- probable reluctance to extend into rural areas where demand is low, costs high and income relatively low;
- removal of electricity as a policy instrument relative to economic and social development;
- adverse impact on ratepayers generally where they have benefitted from Rate and General Service subsidies from electricity surpluses;
- compensation payments to local authorities will be necessary for their physical assets and, perhaps, for loss of surpluses.
- surpluses will be distributed in the form of dividends.

In addition, a great deal of research will be necessary before this alternative can be seriously considered.

4.4 Option Four

A fourth alternative is a totally integrated electricity operation to serve the entire country but remaining in public ownership and being managed accordingly. This alternative envisages a management structure in terms of which a central or corporate group would determine policy of all kinds e.g. personnel policies, tariff policy, financing policy, the raising of loans, etc, and undertake appropriate long and short term planning, with a number of subsidiary groups which would in all probability be regionalised but which would report individually to the corporate group. This is not dissimilar from a large holding company with a number of subsidiary companies, the main difference as I have said being that the electricity function would be publicly owned.

The advantages of the alternative seem obvious, but it would involve a major upheaval and would need to be carefully and fully researched before any decision was taken one way for that very reason.

It would have a major effect on tariffs, on income and expenditure of Eskom and on all local authorities distributing electricity. There is the question of compensation payments for physical assets and losses of surpluses, personnel are affected, there is the question of economies or otherwise of scale, the degree of autonomy is a major consideration etc.

5. CONCLUSION

In my view, the way forward with the lowest degree of upheaval, with the greater relative advantage for consumers is the regionalisation of electricity supply with the proviso that conditional grants be made available by the State in appropriate circumstances to bring electricity to sparsely populated and/or economically depressed areas.

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PATRICK BOND

COMMUNITY DEVELOPMENT FINANCE FOR ELECTRIFICATION INITIATIVES

Planact

1. INTRODUCTION

South Africa's existing electricity distribution system reflects starkly, on the one hand, the biased, inefficient and self-destructive direction in which the economy as a whole is presently headed, especially insofar as it relates to the basic needs of the majority. This situation is only partly the result of the gross insensitivity of leading corporate institutions (like Eskom) to the problems they have created. It also reflects more deeply-rooted structural problems that stand to be exacerbated, not solved, by a continued reliance on orthodox financing principles.

But on the other hand, there are ample opportunities for transformation of electricity distribution towards community-control of a social good, according to principles that stress the empowerment of ordinary people. In mooting a feasible community-based financing framework for electrification (and other infrastructural and community facilities), the paper focuses on

- the rationale for change;
- the principles of community-controlled electrification;
- the relations between community and government finance; and
- the broad contours of the financial playing field;
- the principles of community-controlled finance;
- the possibilities for relating community-controlled finance to electrification initiatives.

The paper concludes that if South Africa's civic movement becomes increasingly serious about (and capable of) carrying out non-profit community-controlled development, as it seems likely to, excellent prospects exist for incorporating electricity as a developmental tool in the form of a social good (not market-determined commodity) and, in the process, for vastly empowering the majority of the country's citizens.

2. THE RATIONALE FOR CHANGE

There are several ways to approach the issue of financing electricity provision. The main rationale for change is based on the near-complete failure of the existing system to meet the majority of South Africans' basic energy needs. But this is by now a trite, self-evident pronouncement, to which the main institutions – the parastatal Eskom, the other state supply authorities, and their private for-profit sector allies – reply, in effect, "In the new South Africa, if institutional constraints are set aside, the environment for growth will improve, and more blacks will get the benefit of the existing system."

There is a need to probe for solutions deeper than the simple expansion of the existing system to cater for the basic needs of more people. The electricity crisis will not be resolved by a mere dismantling of certain institutional, political and legal barriers, as Eskom would have us believe.[1] A structural overhaul of the electricity distribution – especially financing -- system is in order.

In order to demonstrate this convincingly, a critique of Eskom itself is offered, which focuses both on problems that might be resolved by a different corporate philosophy (and management), as well as on problems that may require an entirely new financing vehicle. The focus of analysis is not merely financing, however. Both capital financing and end-user ("retail") financing offer a broader view on other crucial relations between electricity supply and demand. The reason for focusing on Eskom is that the company is the largest player in the field; it will be around long after the Black Local Authorities and other apartheid intermediary institutions have died; and it already claims to be explicitly committed to the "New South Africa."

2.1 Eskom: overcapacity and underservicing?

What is most startling about Eskom is that notwithstanding the enormous need for retail electricity within South Africa at present, the country's largest state agency is:

- turning its back on expansion of retail sales to many black townships;
- pressuring illegitimate state officials for township payment deals in an extremely untimely, insensitive manner;
- generating substantial profits;
- offering enormous discounts to selected corporate users; and
- shutting down a huge proportion of its generating capacity and laying off thousands of workers.

These all reflect the undemocratic and unsuitable nature of the current system, and deserve elaboration.

Most disturbingly, Eskom is currently shutting down plants, after having already, since 1985, shed some 16 000 workers (out of a peak of 66 000). The cost of mothballing plants came to R128 million in 1990 alone. Meanwhile, Eskom imports power from Namibia and Cahorra Bassa in Mozambique (the latter involving deals with Renamo terrorists) while the majority of people in those countries are experiencing severe shortages of retail electricity.

The result is that in spite of the fact that perhaps only 10% of black people in South Africa have access to electricity in their homes, Eskom has huge levels of overcapacity at present (4 700 MW, or 13% of total capacity, according to a recent report). Thus Eskom is in the process of closing ("Asset Storage" in some cases) as many as ten major generating plants. Since 1989, these included Taaibos, Highveld, Vierfontein, Camden, Grootvlei, Ingagane and Komati, with generating capacity of more than 5 200 MW.

Yet at the same time, new more efficient plant is being installed elsewhere with the capacity to produce 1 900 MW. It is startling that Eskom is spending money on new capital-intensive generating capacity while actually decommissioning plants and firing thousands of workers. Now is precisely the time when it is crucial to expand development spending generally, and especially for labour-intensive production processes aimed at increasing energy supplies to retail users.[2]

It is in this structural crisis of overcapacity that Eskom mirrors the problems inherent in the South African apartheid economy: excellent infrastructure and products for white and capitalist South Africa, and underservicing of black, working-class South Africa. This mirror image is confirmed by other characteristics, including subsidies to support export-oriented growth rather than support for a more balanced, inward-oriented economy.

"Eskom supports initiatives and efforts to establish a democratic, outward oriented South Africa," the company announces on the cover of its latest annual report. Outward oriented, maybe, but at enormous cost. In accordance with the philosophy of then-leading (now deceased) economic official Wim de Villiers in September 1990, Eskom and state transport authorities granted widely-publicised 40% discounts to corporate customers which exported manufactured products.

This was precisely the moment when a number of emergency negotiations between the undemocratic local/regional authorities and civic associations over rent and service charge boycotts had broken down. The response of Eskom was to maintain inordinate pressure on the authorities to repay backlogs.[3] With electricity cut-offs in township after township, much higher rates of discomfort and disease were the logical outcome. Worse, the electricity cut-offs coincided with the intensification of attacks by Inkatha, and so darkened townships became easy killing fields.

This was the point, too, at which it became widely understood that the oft-threatened privatisation of Eskom was being shelved for the time being. So while Eskom was more than willing to jettison its stated commitment to straight business principles -- which worked to the benefit of the manufacturing exporters which fit De Villiers' macroeconomic strategy -- the same leeway was obviously not applied to the townships, in a very selective principle of adherence to the rules of the market. Such "bad timing," as one Eskom official told Planact at the time, gives community advocates little confidence in Eskom's official corporate sensitivity.[4]

Aside from the issue of market principles versus subsidies, there is the issue of retail financing of electricity through Eskom's new S-1 individualised meter tariff system. Three complaints have begun to emerge from the civic associations about the tariff. First, the system reduces the scope for collective consumption of electricity (which, after all, is the point for Eskom, as it wishes to denude townships of the power to collectively engage in service boycotts). Second, the system costs quite a bit more, since the infrastructural costs are higher and are built into the tariff (the cost per unit of electricity is thus typically 17-18c, as opposed to 12-13c under normal conditions). Third, with pre sales of the electricity, Eskom earns an enormous amount of aggregate income in the form of interest on money paid prior to consumption of the service. This is a straight redistribution of income from poor and working-class people in townships, to Eskom. Is this, then, the most appropriate way of financing the next stage of electrification initiatives?

2.2 Financing electrification -- or financial engineering?

The problems with the existing system extend beyond the deeper crisis of overcapacity and underservicing. Consider a few other aspects of Eskom's financing policies. The parastatal is among the ten largest utilities in the world, and has the capacity to draw from enormous, varied funding sources, including the existing government, electricity consumers, and domestic and international financial markets. Is there a balance to Eskom resource mobilisation which reflects the fact that electricity is, at some very basic level, a social good? In other words, does the fact that a public utility such as Eskom need not compete on the supply side, affect its approach to raising financial resources?

We examine these questions both in terms of Eskom's sources and uses of funds, and then with respect to Eskom's tendency to tap foreign long-term financing sources when local sources are more appropriate. This sort of examination, even though cursory, allows us to suggest reforms of the existing system while identifying potential resources and financing vehicles that will support a more serious overhaul of that system.

What strikes any observer of Eskom finances, is that notwithstanding its vast programme of decommissioning plants and reducing generating capacity, Eskom is today borrowing even more.[5] Moreover, the debt is occurring at a time when real interest rates are far higher than normal (the prime overdraft rate is currently 4%, after inflation, as opposed to -1,2% during the 1970s, and -4% in the mid-1980s). In nominal terms, Eskom was paying 15,1% interest and finance charges at year-end 1990. As a result of high levels of expensive foreign debt and excessive borrowing domestically, more than a third (R3,3 billion in 1990) of Eskom's total expenditures today are repayments on debt.

These huge borrowing requirements bring to light Eskom's questionable experiments with what is known as "financial engineering." Not all such efforts end in disaster, of course. Financial engineering at Eskom is so well-advanced that the corporation has issued an enormous security (#168, authorised at R16 billion at year-end 1990, and set to expire in 2008) which actually pays a rate below the rate paid on the government's long-term stock. Eskom has managed this "through a deliberate strategy of providing liquidity in the stock by making a market in both the spot and options market."[6]

Identifying and engineering a relatively inexpensive funding source is a laudable accomplishment, certainly, but raises the question of why so much effort has been expended in this direction in view of the current surplus of liquidity, and the need to prioritise R&D on electricity provision for low-income consumers, and to apply Eskom's considerable political muscle to changing the terms under which electricity is provided to retail customers. In other words, should some of Eskom's most talented staff not be redirected from the comfortable atmosphere of the JSE and the money markets, and into the townships?

In fact, it appears that Eskom is speculating in the stock market and other financial markets (including international markets) with increasing vigour, and now has some R4 billion in investments in such outlets as stocks and bonds, forward exchange contracts, options, interest rate swaps, interest rate caps and forward rate agreements. Through these, Eskom generated R835 mn in interest receipts in 1990, an amount higher than net earnings that year. In order to take some of the financial engineering "off-balance sheet," Eskom even started a finance company purely for employee loans in 1990, funding it with a R521 mn loan.

At present these financial investments are presumably generating a higher rate of return than provision of electricity. However, this is an enormously speculative field, one which can go badly wrong. Many US industrial corporations (General Motors, General Electric, Ford) which pushed billions of dollars out of their manufacturing operations and into financial subsidiaries, are now having serious regrets, as loans and investments sour.

Eskom probably understands this, reporting "lower swap cash flows than anticipated" in 1990, for example. While Eskom has traditionally borrowed on fixed-rate terms, it appears, recently, to have made the mistake of predicting a drop in interest rates, and then apparently swapped some of its fixed-interest loans for variable loans, thus running up large losses.

According to the company's Annual Report, the swap cash flow problem was one reason Eskom required an enormous R1,2 billion (39%) more in outside funding than the R3.1 billion that was expected in 1990 (the extra money came from the money market and liquidating R500 million worth of other investments). Perhaps this goes to show that an electricity company should be spending more time and energy on financing electricity rather than financial engineering.

Again in 1991, Eskom apparently also made huge miscalculations on funding requirements, which "were actually undercut by R1,2 billion last year, to only R1,6 billion of an estimated R2,8 billion," according to Business Day (27/11/91). Some years Eskom's financial engineers wildly overestimate their needs, some years underestimation is the problem.

Given the orientation to financial engineering instead of financing electrification, it is worth recalling former Reserve Bank Deputy Governor Jan Lombard's warning, as emblematic of the situation at Eskom:

> Young upwardly mobile professionals (yuppies), able and interested in making money out of restructuring existing financial empires, are in great demand. But blue collar work has been expanding very little... It really seems as if the intellectual talent of the community was being increasingly devoted to financial management [during the 1980s]. To my mind such a trend for an economy in the position of South Africa is not a healthy one.[7]

2.2 Foreign funding for electricity?

A further reflection of an unhealthy approach to financial resource mobilisation is Eskom's reliance on foreign sources for no apparent reason. Eskom received R464 million in unnecessary foreign credit in 1991 alone, and is set to expand foreign borrowings in coming years. An estimated R700 million will be raised in 1992. In spite of limited capital spending plans, "foreign loans will begin to play a greater role as a source of funds than in recent times."[8]

Indeed, already nearly 40% of Eskom's colossal R30 billion in outstanding gross interest-bearing debt emanates from expensive foreign sources.[9] Of South Africa's total US$20 billion in foreign debt, Eskom has the largest single share, at about US$3 billion. These are expensive loans. In addition to carrying a nominal interest rate at what are generally acknowledged to be historically-high international levels, it must be remembered that the

loans have to be repaid in foreign currency, and the rand is declining in value and is likely to continue to do so in coming years.

More generally, medium- and long-term foreign financing for electricity (and development generally) are problematic. If Eskom needs to import foreign capital goods (turbines and other equipment not manufactured in South Africa), there is traditional export finance available from foreign sources and often at subsidised rates (eg, from government export financing agencies), instead of expensive commercial rate foreign bonds. Indeed, the first general principle that might be adopted regarding a future Eskom's financing approach is that foreign-sourced financing should be acquired strictly on the basis of foreign input costs.[10] This would better match the cost of funds to Eskom uses, as well as the length of loan repayment terms to the anticipated life of the foreign capital goods.

Such principles are continually violated by Eskom's exorbitant use of foreign funding from European commercial banks.[11] This is a risky business, and one which, it will be recalled, generated all manner of problems for the PW Botha regime in 1985 when foreign bankers negatively appraised SA's debt burden, and then rapidly pulled out. Indeed, reflecting the difficulty of playing in international financial markets, Eskom's attempts in 1990 to refinance many of its foreign loans fell flat, and resulted in a 35% funding shortfall in foreign funding.

Setting aside the foreign financing charade Eskom has been engaged in, another orthodox foreign financing source for electricity appears on the horizon: generically, "international development funds"; specifically, the World Bank. The same principle of foreign finance correlated to foreign inputs should be considered, but there is an added dimension when the Bank is involved. That concerns the Bank's bias towards capital-intensive technologies aimed at satisfying corporate energy needs, as opposed to appropriate distribution systems aimed at the markets which are currently underserved.[12] Moreover, the orientation to high-cost energy sector projects with high debt loads gives the Bank enormous clout (through loan conditionality) over many aspects of energy policy in Third World countries.[13]

It is therefore of crucial importance that a strong position be developed on foreign-sourced financing for electrification. Given that there appears very little to be gained from the current trajectory of raising and investing foreign funds when so much needs to be done to make electricity available to the poor of South and Southern Africa, a new set of principles for financing electricity may be in order. These principles incorporate community-controlled electricity as a centrepiece, and lead us to consider new forms of community-controlled financial institutions to match them.

3. PRINCIPLES OF COMMUNITY-CONTROLLED ELECTRICITY FINANCE

In the current political context, a number of ideas have arisen about a future non-racial, democratic framework for development. The near-uniform stress in these proposals, is for community-control of development. It is true that these are mainly still at the level of proposals, with few opportunities to attempt pilot projects given the range of other survival pressures that exist in the townships. Nevertheless, these proposals are emanating from civic associations and other progressive representatives of the black majority, and deserve consideration in any discussion of a restructured system of financing electrification initiatives.

It should be noted from the outset that Eskom appears particularly hostile to the notion of community-control, as witnessed by the introduction of the individualised S-1 tariff system. Theron, Eberhard and Dingley have spelled out some of the ways in which community-control can be established with respect to electricity:

- Community-based organisations could be represented on the boards of regional electricity distribution authorities.

- Community-based structures could be represented on a National Electrification Board, to participate in the process of setting macro-level policies and targets in electrification initiatives.

- Community-control over upgrading and development projects in existing townships and informal areas could be ensured. This would include decision-making power over the micro-level design of electricity networks, and control over the process whereby such networks were constructed. In particular, there is scope for involving local labour in some aspects of the construction of electrical networks.[14]

The major omission here, however, is that of community institution-building. This paper attempts to contribute to the ongoing work on optimising community-control through a synthesis of real experiences of Planact clients in institution-building, and theoretical assertions about the institutions and mechanisms that might best advance community-controlled financing of electricity.

To this end, we begin a survey of an alternative framework for financing electrification initiatives by reflecting on lessons from drawn-out negotiations between the Soweto People's Delegation and the authorities, dating to mid-1989. There emerged from these negotiations and extensive community workshops and report-backs, a set of principles for organising community-controlled electricity. These relate, as well, to some broad principles for community-controlled development, which the Alexandra Civic Organisation has recently articulated.

Next we consider the traditional approach to financing of end-user electricity, via local government. This approach has its strengths, but in the current and near-future context, its limitations as well. There are, in contrast, several options for a community-controlled financial institutions now being discussed in some sections of the civic movement. Those options all stem from the problems that the existing system has generated. The financial playing field is therefore surveyed briefly, before broaching some of the community-controlled financing options and considering their relevance to electricity initiatives.

3.1 Principles of community-controlled electricity

Electricity is a basic need, and its provision a basic right which a future democratic government will need to consider in terms far beyond "rationalising" existing systems and bringing them to townships not currently electrified. Simply said, electricity is a highly politicised issue in South Africa. Once certain townships began to receive electricity in the early 1980s, the anti-apartheid tactic of the rent boycott ensured that electricity would remain at the centre of mass interest and action.[15]

But the politicization of electricity emanates not only from the broader anti-apartheid outcry: electricity is provided to intermediate and retail buyers in a way that discriminated against blacks, especially millions of Sowetans. In early 1990, for example, electricity was sold to the illegitimate Soweto councils at 9,7 cents per unit; and to Johannesburg City Council at just 6.9 cents per unit.

The Soweto People's Delegation (SPD) began negotiations in 1989 with Eskom concerning the non-payment of electricity tariffs. According to the SPD,

- electricity must be supplied to all in a non-racial way;
- the councils must not supply electricity;
- the community must control and make decisions on the supply of electricity;
- electricity is a right for all;
- electricity must be cheap enough for everyone;
- the electricity system (in Soweto) must work as well as it does in Johannesburg.

The SPD asked the people of Soweto what sort of electrification system they would like, if given the choice. The overwhelming majority favoured a community-controlled electricity co-operative:

> A co-op works for the good of its members and the whole community. An electricity co-op will be a way for the people to control the supply of electricity. All people who use electricity will be members of the co-op. All members will have a vote in how the co-op works. The co-op will buy electricity from Eskom and sell it to the members. The co-op will not make a profit. Any extra money will be used to help the co-op to do its work better. The electricity co-op can work like a civic. There will be electricity committees for each block, branch, zone and inter-zone.[16]

While the co-operative idea is still being investigated, the main activity of the Soweto Civic Association in the intervening months was to sign a flat-rate temporary service charge agreement, and to force Eskom to stop supplying the Soweto councils. Instead the Central Witwatersrand Regional Services Council will now be providing electricity to Soweto directly. This is one step along the road to community-control.

Another major step is the initiation, beginning in mid-1991, of community-controlled "Development Trusts," which might eventually develop capacity to run electricity co-operatives and similar ventures from within the community. For example, the Alexandra Civic Organisation submitted a proposal to the Transvaal Provincial Administration in 1990 which spells out one notion of Development Trust functions:

> The Alexandra Community Development Trust would regulate the involvement of all interested parties in the development process... The Trust would establish specialist substructures to deal with three specific areas: land, finance, and planning and development.

- Land acquired by the Community Development Trust would be held in a Land Trust, and regulated through a lease.

- Finance would be raised and managed by a Community Development Loan Fund, which would be administered by a full-time financial manager, responsible to the Board of Trustees.

- Planning, land-servicing and improvements would be managed by a Community Development Corporation, which would be administered by a full-time development manager, responsible to the Board of Trustees.[17]

One of the main barriers that prevents further control is lack of access to and control over financing. While this paper moots community-controlled development finance as one option, traditionally, local government has organised the financing of major social infrastructural projects, through taxes and rates. Why would this not be the preferable route for electrification financing in the future?

3.2 Government-run and community-controlled finance

Theron, Eberhard and Dingley have spelled out in good detail the variety of existing government-run financing options available for electrification initiatives, ranging from the Independent Development Trust, to local authority capital funds, to Regional Services Councils, to Eskom's own capital funds, to other state-sponsored development funds, to the National Housing Fund, to the Local Authorities Loan Fund to the Development Bank of Southern Africa.[18] This section does not attempt to duplicate the cataloguing of how the existing system of electricity finance works, but instead takes a step back to examine the very rationale for government-run as opposed to community-controlled financing.

There is little question but that in a typical system of local governance, the municipality is best equipped to provide for both project and retail financing of electricity, through its powers of taxation and service charge collection. But most local settings in South Africa, urban and rural, are clearly still years away from having typical, much less ideal-type democratic systems of local governance.

Moreover, as it stands, there is universal recognition that black local authorities are not financially viable as independent units, as a result of the tax subsidy that black townships residents pay to white areas, via consumer and employee taxes collected from businesses in the white areas. The Regional Services Council concept is a recognition of the need to transfer resources to townships, and there is a more recent official recognition of the need for 'One-City' unified tax bases.

However, in many areas of South Africa this remains an unacceptably distant goal. The government's pernicious Thornhill options will probably empower white areas to set up a local governmental system which maintains control of resources for white residential areas, much as has happened in post-independence Zimbabwe and Namibia. It is for these reasons that another option -- a centrally-funded set of community-controlled financial institutions -- is worth exploring.

Nevertheless it must be clearly understood that Planact and its clients are by no means prepared to give up on the prospect of a massive expansion in the responsibilities that a democratic local government would bear for townships. On the contrary, the civic associations have been far ahead of all national political discussions on the urgency of basic needs services and housing, and continue to moot creative approaches to township problems that could be taken up by local government, now and in the future.

The same applies to central government. For example, it is quite feasible to moot an expanded retail role for a central electricity supplier such as Eskom, in place of the mosaic of regional and local authorities which presently are responsible for politically-motivated decisions that deny the majority of South Africans access to electricity. At present, electricity is provided by Eskom to most residential areas either through a joint agreement with the white and black local authorities, or to black local authorities through white local authorities.

Consider how these factors affect the financing of electricity, in particular. According to Planact's Soweto electricity specialists Swilling, Cobbett and Hunter,

- White local authorities almost always show a surplus on electricity;
- That surplus is often a very important part of the general income of white local authorities;
- Black local authorities almost always show a deficit on electricity.[19]

In Soweto, a variety of circumstances – which apply to many black townships – are responsible for a 40% higher per unit cost of electricity in recent years, ranging from the lack of diversity of energy users, the lack of non-domestic consumers and the lack of local generating capacity. Simply merging energy authorities would save, in the case of Soweto, some R25 million in merely bulk supply costs. (Duplication costs are also a major problem.) As it stands at present, Soweto must also pay the capital costs of the early 1980s electrification programme, which in the early 1990s was R400 million (Johannesburg's system has mostly been paid off).

While Johannesburg and one or two other major cities have the capacity to share resources with the townships in the near future, most of them do not. As Swilling, Cobbett and Hunter put it,

> The basic problem is that under apartheid, local government has been steadily disempowered to a point where it is now responsible for only 10 per cent of public expenditure. Deracializing this small fiscal base will leave a future non-racial local government system without the resources it will require to meet the needs of the future non-racial towns and cities.[20]

It may be possible, in the future, to centralise financing functions in regional bodies (the RSCs are potentially satisfactory models for this). The current set of RSCs are so diverse and unevenly developed, however, that it is not feasible to place a great deal of responsibility for redistribution functions solely in their hands at this stage (or in the immediately foreseeable future).

Instead, there is an alternative to both the current system, and to some reformed approach which leaves the basic resource allocation and fiscal transfer system between central and local governments largely intact. The principle which underlies this alternative is important. Within the democratic movement there seems to be an emerging consensus for a "strong but slim state" – ie, one with the power to appropriate surpluses through central powers (eg through prescribed assets and other controls over the financial system), but with the foresight and sensitivity to promote local implementation and capacity-building for various organs of civil society (non-state organisations which, in the context of the current alignment of forces, represent poor and working-class people). It is this development that offers perhaps the greatest hope for a new environment for the financing of electrification initiatives. But before exploring the modalities of this approach, a brief review of the existing financial playing-field is in order.

3.3 The financial playing-field

First, consider the basic characteristics of South Africa's financial system, namely, how does finance relate to production; what are the institutional aspects of the financial system; and what prospects exist for gaining subsidies for basic goods and services via the financial system?

Consider, first, the fact that the economy has been mired in a deep-rooted economic crisis since the late 1960s, which has led, from around 1974, to a steady decline in the rate of growth, interrupted periodically but not meaningfully by brief economic upturns. Such a long-awaited upturn may or may not be on the horizon in 1992. At the root of the crisis is the problem that rapid gains in automation and technological change outran the capacity of the market to absorb what quickly became surpluses of consumer inventories, idle capital and unemployed labour. Growth slowed noticeably from the mid-1970s, and especially during the 1980s.[21]

In response to this situation, capital flooded out of its traditional home in manufacturing plant and equipment, and into various outlets ranging from share speculation and debt to real estate. The most important of these is the Johannesburg Stock Exchange, where the prices of shares have increased from R50 billion in 1982 to more than R500 billion today, notwithstanding stagnation in industrial shares' capital stock. Over the past three years, the JSE has outpaced every other major stock market in the world – in spite of representing the companies at the heart of what is the fastest decaying industrial economy in the world outside Eastern Europe.

Too, South African banking sector exposure to private borrowers reached R110 billion (47% of GDP) in 1989 (up from R16 billion in 1979, which was a mere 26% of GDP). One result is the frequent failures of financial institutions, and some of the lowest capital ratios in the world (even for SA's biggest banks). Worse, the past few years have seen further increases in banking system credit of greater than 30%, yet only in the past months has there appeared an absolute limit to the financial engineering and restructuring that can occur before running into the limits of debt repayment. Corporate liquidations and personal bankruptcies are today running at extremely high rates.

And finally, there have also been inordinate speculative increases in strategically-located real estate sales (title transfers reached R20 billion a year by the end of the 1980s, having hovered at R10-12 billion in the mid-1980s). While housing investments have shrunk, fancy post-modern buildings in Central Business Districts or suburban shopping malls are the main forms of new real estate investment, most of which can be attributed to the major institutional investors.

How has all of this affected the black townships? Given the surplus of liquidity in the banking system, the top 10% of the housing market is presently saturated, and upper-middle class black homebuyers are heading for the suburbs. Part of the township housing finance bottleneck result from the unsheathing of the bond boycott weapon against shoddy construction firms tied to building societies (especially the South African Housing Trust's Khayelethu Homes). And too, there have been numerous defaults due merely to the interest rate increase of 1988-89, from 12,5% to 21%. More generally, problems of political/social stability sometimes seem insurmountable.[22]

What is on offer from the current state and big business, for housing and community development finance more generally? A variety of state, state-related, for-profit business and non-profit business-related financing initiatives have been established in recent months and years, and the following institutions are now actively engaged in township financing:

i) state and state-related:
- Central state, including National Housing Fund
- Development Bank of Southern Africa
- South African Housing Trust
- Independent Development Trust
- Small Business Development Corporation
- Other central state institutions
- Provincial governments
- Regional Services Councils
- Municipal governments

ii) private:
- Urban Foundation
- Banks and building societies
- Insurance companies and pension/provident funds
- Other private financial institutions
- Corporate development funds
- Employers
- Foreign funding sources (especially bilateral aid, multilateral institutions like the World Bank, and the proposed South African Trust for Equity and Development)
- Local Non-Governmental Organisations
- Community-based funding sources

The financier's institutional orientation affects everything from the style to the functional direction of development finance. Notwithstanding the fact that South Africa currently has a surplus of financial funds searching for outlets, the seemingly impenetrable institutional home of most of those funds -- within the big insurance companies, pension funds, banks and building societies -- makes a direct transition from speculative finance to development

finance very difficult indeed. South Africa lacks even a firm secondary market for home loans, though efforts have been made to set up the machinery to either securitise home loans or to tie them to unit trusts, pension funds, or other securities.

What is important about the institutional orientation of the current financial playing field, thus, is the incongruity of the notion of community-control and the reality of the power at the financial peaks of the economy's commanding heights. For example, there are vast problems when tens of billions of rands can change hand in financial markets (eg, R30 billion lost in two days of speculative trading in September 1990 when Gulf War tensions cooled and the gold price dropped), in the context of a backlog of electricity supply for 70% of South Africa's black population (which would cost about R15 billion, half the amount lost those two days).

What all of this suggests is that major state interventions in financial markets will be necessary, in order to remove liquid funds from purely speculative markets and redirect them into more appropriate development functions. State intervention is especially important in freeing up monies for development functions like infrastructure provision, which is usually handled by state-related institutions like RSCs, the Development Bank of Southern Africa, and so forth.

Most importantly, there is a dire need for national subsidies if the goals "housing is a right" and "electricity for all," and the achievement of broader development visions are all to be pursued seriously. It has recently become common cause, even among government officials, that state funding for development of black townships and rural areas will need to be boosted dramatically, and that this will involve not merely cost-recoverable expenditure, but subsidies for low-income people.

In the near future, the main state priority for development finance subsidies appears to be for housing, though other avenues for subsidies -- especially tax deductions for various sorts of investments, industrial development in strategic areas, entrepreneurial financing, and infrastructure – will very likely continue to receive heavy state support.

Already, it should be noted, an enormous amount of South African development – particularly housing – receives subsidies. Even in an age of privatisation and, particularly, declining state commitment to housing, some 70% of building society mortgages carry some form of subsidy, while direct state financing was responsible for fully a third of all South African housing in the late 1980s.[23] There is, however, extreme class, racial and gender bias in the way the current home ownership subsidies are distributed.[24]

In contrast, within the democratic movement, the "strong but slim state" principle implies a new direction for subsidies. Such a state would have taxing and redistributive powers (and powers to prevent capital flight and the current rash of white collar crime) such that resource transfers could be organised and implemented at a central level. However, actual development implementation – including distribution of development finance – would ideally be delegated to much more locally-controlled agencies and institutions.

The nature of the subsidies that will be demanded may vary according to function. Housing subsidies are currently devoted mainly to lowering the interest rate on individual bonds. There is a major shift in this subsidy being contemplated by the state, such that R7 500 will become available to developers for site and service provision, the titles to which can then be used by individuals as security against a bank or building society bond for informal housing construction finance. Aside from housing, other sorts of development functions require particular subsidies to make them viable under current constraints and conditions.

Any subsidy framework should, at the first opportunity, be subjected to a democratic process of determining national spending priorities, for only by such means can the state's current orientation of subsidies to farmers, to Afrikaner business (especially financial institutions), to decentralised (mainly superexploitative) firms, and now, via Eskom and Transnet, to manufacturing exporters, be subjected to scrutiny and effective rationalisation. Such a process should also, of course, apply to other questions that affect the cost of development, particularly interest rate determination, which is arguably the most important variable and the variable currently most subject to pressure by financiers, via the Reserve Bank.

Ideally, subsidies should come through public grants which are not necessarily tied to income (in classic welfarist style) but rather which ultimately constitute public entitlements (eg, the way health care does, regardless of class, in progressive welfare programmes of select advanced capitalist countries). From a progressive perspective, there is a growing consensus concerning state reforms in this direction. But the vehicles for taking these grants to the recipients in the most appropriate manner, have not yet been developed. The failure of the IDT in so many urban settings offers sufficient proof that non-universal subsidies adorned with merely rhetorical support for community-control, are not sufficient.

There is a crying need, hence, for the development of a community-controlled finance that can direct state subsidies toward their most desired outcomes. To this end a few pilot schemes are now being developed, and deserve attention. Whether they are appropriate to extend into the sphere of electrification is still a matter for consideration.

3.4 Community-controlled finance

There are, at present, several emerging ideas and options for community-controlled finance, covering urban, rural and women's needs. While varied in the style and scale of their operations, each of the options involves a new institutional form, the vision for which includes community-control and the capacity, one day, to challenge the existing system. A review of these is offered as a prelude to considering the optimal community-controlled manner of financing electrification initiatives.

This review is not meant to be comprehensive and fully authoritative. Rather, it is a set of introductory comments on new institutions such as the community loan fund, credit union, mutual bank, rural finance centre and women's bank. Each will develop and prosper in their own ways. At this stage they are members of a very loose-knit family, one which could grow closer and more cohesive over time. It is this prospect of community-controlled institution-building which is worth pursuing if a more democratic system of political and economic governance is ever to be successful at the grassroots level in South Africa.[25]

Not all the financing initiatives discussed below meet all the strongest criteria for full community-control. However, they are aiming to fill needs that the existing financial system clearly is not able or interested in.

3.4a Community Development Trusts and Community Loan Funds

A number of townships across South Africa are today hosting new "Community Development Trusts" (CDTs), which have the responsibility for handling money and, potentially, for creating community loan funds. These new institutions are aimed, ostensibly, at bringing development under community-control. Some are more authentic community-controlled institutions than others, naturally.

But what most of them have in common, at this stage, is a common origin in the R750 million Independent Development Trust (IDT) funding that was committed to provision of 100 000 serviced sites in July 1991. That funding threatened to smother many civic associations (the main ground-level representatives of township communities), far exceeding their present capacities to implement housing on the scale required. Moreover, the funding also attracted a variety of questionable for-profit private sector agents, as well as government agencies such as the South African Housing Trust and homeland authorities.

There was, however, a countervailing force to the flood of top-down money: the recognition of the necessity of community involvement. Like the IDT trustees, nearly all players in the establishment development industry today recognise how crucial community involvement is in view of the near-complete lack of legitimacy of the existing housing delivery system.

Traditionally such involvement has often been reduced to rubber-stamp "consultation," or at best "participation" in for-profit development. However, formal "community-control" remains a goal not only for many in the civic movement. It is also increasingly recognised by many enlightened development industry officials as the only guarantee of some measure of social peace under conditions where extremely firm community demands for increased social expenditure ("housing is a right") will not be satisfied by the small amounts now being doled out in the "New South Africa" (eg, R7 500 for site-and-service in apartheid-style suburbs).

This puts an even greater onus on community institutions like the emerging CDTs. The clearest vision of the CDT may well be that of the Alexandra Civic Organisation (ACO), articulated in a proposal to the Transvaal Provincial Administration in December 1990, for the development of the "Far East Bank" of Alex.[26] ACO mooted the initiation of a Community Development Loan Fund (CDLF) as a subsidiary of the Alexandra CDT, which "would be responsible for both external and internal financing" and which could access "a wide range of financial mechanisms":

- Seed Finance.

  The CDLF would seek to raise seed funding to cover initial administration costs, as well as the costs of establishing the Board of Directors and running educational and informational workshops and meetings within the Alexandra community

- Bond finance.

  The CDLF would seek to utilise various bond finance packages aimed at the lower end of the existing housing market, including the First Time Homeowners Subsidy, the Urban Foundation's Loan Guarantee Fund, the South African Housing Trust, bonds secured by pension fund holdings, bonds tied to borrower incomes and bonds with variable repayment periods.

- Capital Subsidies.

  Government once-off capital subsidies for families earning under R1000 per month, which ACO understands will be introduced in the near future, would be utilised to service the land.

- Subsidised loans.

  The CDLF would apply for grants and/or subsidised loans from institutions such as the Development Bank of Southern Africa, the Independent Development Trust, corporate development funds such as Liberty Life, and international donors.

- Public/private finance blending.

  The CDLF could establish a process whereby subsidised public and non-governmental money is blended with commercial funds to provide below-market financing.

The ACO CDLF proposal remains, still, to be implemented. What may be most important about the idea, is its ability to address two concerns that prevent many for-profit financing sources from operating in townships, high administration costs (on large numbers of small loans) and high risk levels:

- Reducing administration costs.

  Administration costs would be built into charges to end-users of finance raised by the CDLF. However, the CDLF would be developed with cost-savings in mind, for example, in the management of scale economies in the centralisation of the community's financial information, and in the avoidance of duplication that comes with several different financiers providing end-user finance to a community. This has been achieved by Community Development Trusts in other parts of the world.

  It is clear that the administration of financial transactions such as loan repayments (or rentals) is a highly complex and exacting task. There would probably need to be an arrangement between the CDLF and existing financial institutions, so that the expertise and capacity within these institutions could be utilised by the CDLF.

- Reducing risk.

  The CDLF would serve to reduce the risk of low-income borrowers by acting as a mediating agent between the community and the lenders, through the provision of forms of collective security, and through the monitoring of repayments by individual borrowers. Ultimately, the best "risk protection" that a financier can get is when a community perceives that everyone is benefitting from collective credit, and therefore is willing to assume collective responsibility for repayments.

There are several advantages to setting up a CDLF or other community loan fund with ties to development trusts or other community-controlled housing initiatives:

- money can be raised from sources outside the community, while investigations are underway about local savings capacity;

- so long as there are fewer than twenty sources of funds, the CDLF does not fall subject to the Deposit-Taking Institutions Act, or to all the bureaucracy and capital requirements that the DTI Act implies;

- the CDLF can issue the broadest conceivable variety of grants, loans and investments, so long as they remain within the bounds of the parent body's constitution; and

- although the tax implications of CDLFs are under investigation, it has been established that for special-use projects, tax deductible status is possible.[27]

All of these features make community loan funds ideal for the project of funnelling subsidies to new electrification projects in the immediate- and medium-term.

But a community loan fund is difficult to maintain in a thorough-going democratic manner if there are merely a few community leaders who have been granted responsibility for decisions. A much more democratic approach would be one in which at the very grassroots level, individuals have a firm stake in a collective institution. That may be achieved by adding informal savings to the community loan fund, in the form of a credit union or People's Mutual.

3.4b From Informal Savings to Credit Unions to People's Mutuals

Possibly, existing informal savings institutions such as stokvels and burial societies can be tied more closely to the existing system, as is intended by the National Stokvel Association, the Foundation for African Business and Consumer Services, Future Bank, First National/Wesbank, and the Perm. However, to date, such ties have generally meant that the informal savings sector centralises funding, and deposits a convenient bulk sum (the average account size is R2 500) in an financial institution, with regular, easily-predicted turnover patterns.

This, naturally, is a boon for the existing system, but fails to put any sort of transformation or community-controlled development on the agenda. Many more township savers are drawn into the formal financial system, reap a relatively low rate of return, and make their savings available to financiers for use in other sectors of the economy (aside from the Perm, all financial institutions draw more money from black customers than they lend to them). Are stokvels getting the best deal from this relationship at present? Can the flow of funds from stokvels into banks be reversed, as a flow of low-interest money into ever-larger, increasingly sophisticated stokvels?

Perhaps. But the options for circulating disposable informal savings in communities go far beyond merely having a relationship which the formal financial system, a relationship that financiers only enter because of the prospects for earning profits from township savings. Instead, a bottom-up means of circulating savings might be organised, by expanding the existing network of credit unions, or through the emerging concept of a People's Mutual Bank.

Credit unions have a long and interesting history in Southern Africa. As one example, Zimbabwe's church-based credit unions grew from nothing in 1963 to 24 groups with a membership of 24 000 by 1967; many of the loans were for fertilizers, school fees and emergency supplies of maize when crops were poor. An extensive credit union network also exists in Lesotho.

In South Africa development of credit unions has been slower. Last year the South African Credit Union League was evolved out of the Cape Credit Union League (itself founded in 1981) and some other affiliates in SA and Namibia, and has been receiving significant support from Catholic Relief Services and some foreign agencies. SACUL now has some fifty member credit unions with +\-3,500 members, as well as good connections with the relevant international bodies and with sister-credit unions in Canada and elsewhere. Although government regulations may intercede at some stage, SACUL estimates that within three years there could be 100 new credit unions in townships with 20,000 members. Most importantly, perhaps, the majority of credit union members are women. With support from foreign funders, SACUL is now aiming to move into trade unions and expand parish-based credit unions into full community credit unions. Yet credit unions fund relatively small loans, and may not have the capacity in the short-term to finance housing and community development. Nor have they built a working relationship with township civic associations so far.

To bridge some of these gaps, the concept of a "People's Mutual" is now being discussed in the civic movement, linking the emerging grassroots demand for a "People's Bank" to traditional forms of mutual building societies. These societies were at the heart of the white working-class strategy for developing affordable housing, beginning in the nineteenth century. For example, the Perm was founded as a mutual in the 1870s when Kimberley was racked by a crisis of affordable housing. The Perm was organised according to the British system in which the society's owners were all those who held shares. Pooled, the shares were sufficient to build a few houses; the repayments on those helped enlarge the pool so that more houses could be built. A small difference between the interest rate on the house bond, and the rate paid to depositors, permitted growth of the Perm's "reserves." Indeed, over the next century, the Perm collected several hundred million rand in reserves. (All of these reserves subsequently vanished into the current equity-based institution – which is now a profit-driven fund, not geared to its original social mission – when legislation changed in

the early 1980s, in order to permit current shareholders to acquire ownership of all the shares that made up the reserves in the past.)

Is there room, in the 1990s, for a new beginning for the mutual financing movement, this time based in the townships? The Mutual Building Society Act may permit the establishment of small, grassroots-oriented institutions, although there currently exists a R1 million minimum capital requirement that must be negotiated. Like the community loan fund, a township-based People's Mutual would have the capacity to draw in all manner of other funding (especially with interest rate subsidies), perhaps mixing, initially, 20% local savings with 80% outside bulk financing. A People's Mutual could also have the capacity – at the level of 15% of total assets – to make different types of loans than the traditional home loans of mutual building societies: small consumer loans; building materials loans; collective housing loans; community facilities; and even infrastructural, community facility, and economic development investments.

Electrification initiatives could easily be incorporated into the asset base of a People's Mutual and the costs and benefits of this sort of financing thus spread out to a variety of the institutions' members and community residents. The exact procedures for assessing the costs, in the absence of an appropriate local government tax- or tariff-based financing vehicle, would have to be investigated.

Can a large set of People's Mutuals, supported by a national office for backroom facilities and bulk funding assistance, actually get off the ground in coming months? In the townships themselves, further investigations and market research are needed, but prospects are encouraging. In even Phola Park, one of the PWV's poorest communities of shack-dwellers, it appears that a substantial proportion of people are able to save R50 per month. Once local community leaders decide to explore this option, intense workshops with a broad cross-section community members will be undertaken, along with feasibility studies of each particular market. The marketing of a given People's Mutual will follow logically from these steps. Next might arise the aggregation of several townships People's Mutuals from a variety of pilot projects in different townships, to a regional, and to a national People's Mutual. Supporters of the People's Mutual concept have organised the "Community Banking Project," staffed by Cas Coovadia, advised by (among others) former Perm MD Bob Tucker and Planact, and located at the Legal Resources Centre in Johannesburg.

3.4c Rural Finance Facility

There is now in place an institution gearing up to support community-control of finance in rural areas. The Rural Finance Facility (RFF) is an offshoot of the advocacy group Rural Advice Centre of Johannesburg. It is a centralised agency that must operate in many different parts of South Africa, and it does not provide a local savings mechanism. But RFF does aim to support community-control of finance, through its role as an intermediary between bulk funding sources and rural communities.

Insofar as it makes available funding for "total development" – to integrate physical infrastructure, social infrastructure, economic infrastructure and political infrastructure – the RFF (or some similar structure) could serve as a full-fledged development bank. Indeed, even where there are no local governmental structures that would support "communal infrastructure" (eg, communally-used goods such as roads and water supply), the RFF might fill the gap. Another advantage of rural community-based development finance in this respect is the added sense of community ownership, where elsewhere maintenance and sustainability of communal ownership might lag.

A variety of other community facilities – electricity supply, household water supply, water-borne sanitation, schools, clinics and hospitals – can also be financed fully or partially by rural communities if adequate front-end financing sources are available. Additionally, a Rural Finance Centre would aim to support income-generating projects through credit, even to the extent of helping transform development grants into revolving credit funds.

RFF objectives include empowerment of rural people, investment efficiency, provision of a set of alternative options for financing, non-partisan political orientation, and provision of leverage for rural development.

This new financing initiative relates very much to electrification, even at this early stage. For example, the community of Nebo in Lebowa has managed to secure access to electricity partly because of a group credit scheme that the help of the Rural Finance Facility is organising. The group credit applies to the purchase of appliances, which then permit electricity use to increase and thus the unit cost of electricity to diminish to levels that make retail financing feasible.

It is telling, however, that Eskom balked when it came to community-control of the electricity. For instance, a proposal to subsidise electricity in a community school by charging slightly higher tariffs on local businesses was rejected, and the S-1 tariff system was imposed on the community when the group credit scheme might well have been expanded to incorporate the financing of the electrification itself (not merely the appliances that can be mobilised as a result).

3.4d Women's Development Bank

The concept of a bank controlled by a "community" of women is not a new one. Women's World Banking in New York, for example, has performed a role as an intermediary providing 75% credit guarantees in many parts of the world. Zwanele Mbeki, the local leader of the women's banking movement, has explained the concept as follows:

> Women's Development Banking in South Africa aims to raise a capital fund which will be utilised as a guarantee to cover micro-lending delivered by participating commercial banks to thousands and even millions of women. The loans will be non-collateralised and based on group assessment. This lending process will, of necessity, be underpinned by a training programme which will cover WDB's delivery mechanisms; business training for women's groups; basic methodology on community organisation and community development and gender issues.[28]

The crucial role of women's development banking cannot be underestimated, given the extreme patriarchy of South African society and the extraordinary constraints women face in gaining access to resources. With this in mind, Women's Development Banking of South Africa established a series of guiding principles, including:

- open to all South African women;
- national and non-sectarian character, with emphasis on rural women and those who face particular disempowerment;
- will foster unity and development of women;
- will associate itself with all struggles for women's emancipation;
- move away from dependence on external funding sources;
- attempt to have women ultimately buy out loan guarantors; and
- develop its own income-generating projects.

The intermediary role means that Women's Development Banking will not, in its initial stages, include a savings facility. But it will, initially, operate a micro credit programme, attend to legal requirements, conduct basic research, run a pilot programme, and develop training materials and begin training. Whether electrification initiatives are appropriately financed by a gender-specific financing facility remains to be investigated. However, where WDB does play a crucial role in any conception of community-controlled finance, is in highlighting the impact of money on women, in the household and in the larger economy. Any policy for financing electrification initiatives should address the gender issue directly, or face the risk of alienating from the development process the single largest and most oppressed constituency in the country.

As Mbeki puts it, "WDB is not the final answer to what women want. However, it is a well calculated method to achieve what is possible (accessing enclave funds) with the limited resources available and allowing room for further development in the future."

4. CONCLUSION: TOWARDS COMMUNITY-BASED FINANCE FOR ELECTRICITY

Mbeki's conclusion might be said for all the community-controlled financing alternatives as they presently exist, some on paper, some in the heads of key organisers, and a few in pilot programmes just beginning to get off the ground. What they have in common, at this point, is that they all must be nurtured by the democratic movement to the point that communities are able to accept or reject them with the confidence of experience.

Electricity provision may be just the arena for promoting an expansion of community-controlled finance and of institution-building, given the immediacy of the need for change and the possibilities for concrete implementation of widescale subsidies through bulk financing of community-based financial institutions. In this paper, Eskom has been targeted as a major barrier to change, and various establishment financing approaches – retail, bulk, foreign, and government-run – have been attacked as inappropriate to a progressive transformation of South Africa.

Eskom can, however, play a profoundly constructive role in seeding the new system from within the old one. It can do this by applying its enormous resource base and township networks to supporting the formation of new community-controlled institutions. There are a range of concrete tasks involved in this, from supplying office space and other material resources, to training in office and rudimentary financial management, to lobbying for legal, regulatory and institutional changes that will advance the cause of community-controlled finance.

No matter the outcome of the struggle to establish community-controlled finance in its various forms, it is precisely these sorts of challenges that will test whether Eskom, and the established system of electricity distribution more generally, can play a constructive role in the transformation of South Africa. It is the contention of this paper that a radical move away from the current system is required in order to meet the needs of the vast majority, and the ball is now in the Eskom's court to confirm this, either with further hostility and inaction on township electrification, or, alternatively, by offering constructive patronage to community-controlled financing of electrification initiatives.

NOTES

1. "Funding, legal constraints and political issues remain the most significant problems with electrification. These are best addressed by rationalising the electricity supply industry and directly involving the customer," according to Ian McRae [Eskom (1990), Annual Report, p.13]. Aside from disputing the underestimation of the crisis evident in such a statement, this paper argues that "rationalisation" must make room for entirely new institutions which don't merely "involve" the customer but which dispense substantial democratic control over resources to communities and their representatives.

2. This must be well-understood by Eskom's chairman, John Maree, who played a role in the Old Mutual/Nedperm "Scenario Planning" exercise.

3. In neutral language, Eskom explains as follows:

> "In 1990 Eskom was faced with an additional risk as a result of a number of townships not paying for services, including electricity. When the government ceased supplying bridging finance, Eskom entered into negotiations with local authorities and other parties representing the customers to initiate payments and avoid the interruption of electricity supplies to large areas. Where negotiations have failed, legal action was instituted against local authorities." [Eskom (1990), Annual Report, p.12]

Nowhere in the 1990 Annual Report are the discounts for export-oriented corporate customers mentioned.

4. Confidence is further diminished when considering Eskom's dreadful environmental record, detailed in, for example, extensive investigative reports in the Weekly Mail in 1991. Even Eskom's own management consultants, Deloitte Pim Goldby, filed a report in December 1990 which accused Eskom of violating legal requirements on emissions of ash and sulphur, and even suggested that Eskom equipment could not measure the emissions correctly. Deloitte Pim Goldby also stated that "generally there is insufficient understanding in Eskom of the extent of the organisation's actual and potential impacts on the environment and of ways of managing these issues." This is the result of "an ad hoc approach which is very often reactive and dependent on the level of awareness and commitment of the individual" implementing environmental management policy in different components of Eskom [Eskom 1990, Annual Report, p.27).

5. In 1992, Eskom expects to borrow R2,4 billion, of which nearly a third will be from foreign sources. In 1991, Eskom predicted it would need R2,8 billion, but in fact only ended up spending R1,6 billion.

6. Eskom (1990), Annual Report, p.34.

7. Lombard, Jan (1988), "Housing finance and the national economic scenario," speech to CSIR conference "Finance: The pathway to housing," Pretoria 2 June, p.9.

8. Eskom (1990), Annual Report, p.34.

9. Eskom (1990), Annual Report, p.33. It is widely understood that Eskom borrowed many of the unnecessary foreign loans at interest rates far higher than a comparable utility in a major industrialised country would need pay. Like much of the Third World debt morass of the 1970s and 1980s, this situation reflected the laxity of an Eskom treasury and of top corporate officials who were too anxious to travel overseas for fundraising missions, as well as the willingness of foreign lenders to lend excessive amounts to sovereign or parastatal borrowers. The unfortunate result is that ordinary taxpayers and ratepayers end up paying for the mistakes of corporate elites in Eskom and in the foreign banks.

10. A resolution to this effect was passed by the Development Finance Commission of the National Development Forum, 7 December 1991.

11. The controversial foreign-sourced financing issue needs detailed clarification, given a great deal of obfuscation and confusion on the topic. In the first place, what does Eskom need foreign funding for? The Financial Mail (22/11/91) explains:

> Depending on economic growth, Eskom will some time in the second half of the Nineties need a new capital programme to finance an expansion of generating capacity in the early 21st Century. If most of this has to be raised locally, the strain will be considerable, so much depends on the possibility of foreign borrowings at that stage.

Using the principle of equating foreign loans with foreign input costs, it is not clear that at present, the (dramatically-declining) capital expenditure at Eskom necessitates foreign-sourced capital goods inputs. Eskom will only need financing in a decade's time, but, according to the FM, only if local monies are not available then. Yet there is no good reason why "the strain will be considerable," in terms of local-sourced financing, given what is likely to be a continued surplus of liquidity in South Africa for some time to come.

The problem is heightened by the fact that today, some state-related institutions (the Independent Development Trust and Development Bank of Southern Africa) are raising finance abroad, even though there is no reason to do so. In the same issue of FM, mention is made of the controversy surrounding IDT director Jan Steyn's effort to procure $100 million through a JP Morgan syndication:

> On why it is necessary to raise a foreign loan, Steyn says there is not sufficient capital in SA to create the flexibility needed by development initiatives.

This is nonsense, of course, and the ANC have made very clear their official opposition to financial sanctions-busting using the excuse of the poverty of black people. For later in the same article it is conceded, "there is sufficient local capital to meet SA's current limited demand."

In fact, since a) there is no lack of investible funds in SA at present -- indeed there is an abundance of liquidity in the financial system -- and b) since foreign currency inputs for most IDT-style basic needs development projects are minimal, there is no real reason to go to external markets, other than to help the Reserve Bank acquire foreign currency to repay the $1,5 billion in foreign loan repayments coming due in 1992 (not to mention the $7,3 billion due in 1993). This being the case, it is consistent with the ANC official position of strengthening financial sanctions (see, eg, Mayibuye, February 1990), to oppose current Eskom plans for foreign-sourced finance.

Yet the problem is not solved with this simple a principle. From the regime's standpoint, a much more sophisticated response to the issue -- exemplified by the Development Bank of Southern Africa's attempt in February 1992 to raise several hundred million DM in German markets -- is the need to maintain "exposure" in the international financial scene, so that future borrowings will go smoother. (Eskom's substantial foreign borrowings are probably carried out with this in mind as well.) However, it is just as reasonable to suggest that other underlying motivations for raising foreign finance are a) because of the trauma associated with financial sanctions, and b) because of the need to encumber a future democratic government with sufficient foreign debt, such that external pressure (eg, from the World Bank and IMF) on behalf of market-oriented policies is that much more easily imposed.

Any financing scheme that is developed for Eskom and for any other system of electricity supply, now and in the future, should take into account these issues.

12. One early example of this problem in South Africa is the Bank's critique of the Independent Development Trust capital subsidy. The subsidy programme requires that developers provide essential services including water supply and water-borne sewage as part of stand servicing. The left generally proposes that electricity be considered a "right," and therefore that minimal servicing levels be expanded to this effect. For the Bank, "Proposed levels of subsidies implicit in the current IDT plan, and the standards associated with them, appear to be higher than would be desirable if the goal is to reach the broadest population of eligible households" ("Urban Sector Aide Memoir", Part C, May 1991, p.34). On the question of whether certain basic goods and services (like minimal, decent formal housing) may be considered a "right" in a post-apartheid society, the Bank offers a particularly disturbing neo-conservative analysis, equating apartheid and socialism:

> One of the most evident features of housing policies for non-whites in South Africa has been their resemblance to the housing policies of the command economies of Eastern Europe and other socialist countries. In such countries, an ironic consequence of the determination that housing was

> a "right" rather than a commodity, and, as such, a product confined to the "non-material" and "non-productive" sphere of economic activity was that housing markets were not permitted to develop. Housing was provided by the state, and private property rights were circumscribed or altogether prohibited. (This resembles policies for the Black townships, which prohibited freehold tenure and treated Blacks as "temporary sojourners".) (Ibid, pp.10-11)

13. The experience from Zimbabwe is telling. The Zimbabwe Electricity Supply Authority (ZESA) was a major beneficiary of early World Bank loans, but now publicly blasts the Bank for a range of sins, ranging from tightfisted control of capital spending and debt management, to an overemphasis on thermal (as opposed to hydro) power generation, to "the apparent inability of the Bank to carry out timely reviews and decisions on ZESA's investment programmes":

> It is also a requirement for ZESA to finance 40% of its capital investments from internally generated funds, which is an extremely onerous condition as it imposes high tariffs on consumers, with negative consequences on the economy... The World Bank's influence and policies in the electricity sector are therefore inconsistent with the Bank's supposed support for the country's economic structural adjustment programme. (original emphasis) (Energy and Communications, March 1991:10)

The Bank's first electricity loan in Zimbabwe dates back to the infamous Kariba Dam of the mid-1950s. The Bank's largest project to date (US$80 million), and the largest artificial lake in the world at that point, its main beneficiaries were US and South African multinational copper-mining companies operating in colonial Zambia. The dam's construction led to hundreds of deaths of black labourers, and resulted in the forced displacement of the 56 000 Batonka tribe from the shores of the Zambezi River, which in turn wreaked enormous havoc on their health and livelihoods. [For details, see Payer, Cheryl (1982), The World Bank, New York: Monthly Review.]

14. Theron, Paul, Anton Eberhard and Charles Dingley (1991), "Electricity provision in urban areas of South Africa: Towards a new policy framework," Unpublished paper, University of Cape Town Energy for Development Research Centre, p.25.

15. This interpretation conflicts with Eskom's current efforts to paint the supply problems in townships as related to poor service by the Black Local Authorities. Not denying that the servicing of retail customers has been horrendous, nevertheless it is myopic to deny the political centrality of electricity in the democratic movement.

16. Soweto People's Delegation News, 28 January, 1990.

17. Alexandra Civic Organisation (1990), 'Proposals submitted to the Transvaal Provincial Administration,' 5 December (reproduced in History in the Making, v.1, #3, January 1991).

18. Op cit, pp.12-16.

19. Swilling, Mark, William Cobbett and Roland Hunter (1991), "Finance, electricity costs and the rent boycott," in M. Swilling, R. Humphries and K. Shubane (Eds), Apartheid City in Transition, Cape Town: Oxford University Press, p.180.

20. Ibid, p.193.

21. Bond, Patrick (1991), Commanding Heights and Community Control: New Economics for a New South Africa, Braamfontein: Ravan Press.

22. Bond, Patrick (1990), 'Township housing and South Africa's "financial explosion,"' Urban Forum, 1, 2.

23. Cronje, WB (1988), "The Margo Report - taxation and home financing," Paper presented to CSIR conference "Finance – the pathway to housing," June, p.143.

24. Parnell, Sue (1991), "Race, class, gender and home ownership subsidies in South Africa," Paper presented to Conference on Gender, Durban, February.

25. A further set of local financing alternatives has been in existence for a few years, including the Get Ahead collective credit programme, the Urban Foundation's Cape Town-based group credit company, and, more recently, an initiative of the Independent Development Trust Finance Corporation along similar lines. However, as Bob Tucker puts it,

> While these credit granting agencies are of importance in the short term in that they are the only vehicles which will be able to transmit credit through to the people who require it, in the medium to longer term however they suffer from a number of disadvantages and deficiencies. Significant amongst them are:
> * the fact that they transfer enclave credit through to community members and do not mobilize any community savings;
> * they do not provide the community with any value added services such as a repository for savings and facilitator of their transaction needs;
> * they do not empower the community in any sense other than the facilitation of credit; and
> * one cannot really talk of any development of "institutional capacity" at the community level as a result of the existence of a credit granting agency.

Tucker, Bob (1991), "Development finance," Briefing paper prepared for National Development Forum Development Finance Working Group, 20 November.

26. The proposal was reprinted in History in the Making, v.1, #3, January 1991, pp.23-33.

27. The formal route for this is generally a Section 21 Company, although legislation dealing with trusts may provide some opening for tax deductibility for certain uses.

28. Mbeki, Zwanele (1991), "Women's Development Banking," Briefing paper prepared for the National Development Forum Development Finance Working Group, 20 November.

REPORT NO. INT 171

REPORT ON ATTENDANCE AT AFRICAN NATIONAL CONGRESS NATIONAL MEETING ON ELECTRIFICATION

R K DUTKIEWICZ FEBRUARY 1992

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