



**Centre For Policy Studies**

**Research report 104**

**Electrification of the rural poor:  
lessons from an interim concession**

Shauna Mottiar and Shelton George  
CPS Researchers

**Centre for Policy Studies**  
Johannesburg  
September 2003

The Centre for Policy Studies is an independent research institution,  
incorporated as an association not for gain under Section 21 of the  
Companies Act.

Centre for Policy Studies  
1st Floor  
9 Wellington Road  
Parktown  
Johannesburg, South Africa

P O Box 16488  
Doornfontein 2028  
Johannesburg, South Africa

Tel (011) 642-9820  
Fax (011) 643-4654  
e-mail: [portia@cps.org.za](mailto:portia@cps.org.za)

[www.cps.org.za](http://www.cps.org.za)

ISBN 1-919708-67-7

This report forms part of a larger project on alternative methods of service delivery in South Africa. This project is sponsored by the Ford Foundation, whose generous support and foresight we gratefully acknowledge.

**TABLE OF CONTENTS**

1. INTRODUCTION	1
2. METHODOLOGY	1
3. BACKGROUND	2
4. ENABLING POLICY FRAMEWORKS	4
5. DEMOCRACY AND SERVICE DELIVERY	6
6. EVALUATION	7
7. CONSEQUENCES	17
4. CONCLUSION	24

## LIST OF ABBREVIATIONS

NER	National Electricity Regulator
SHS	Solar Home System
RDP	Reconstruction and Development Programme
NGSP	Non-grid Service Provider
PPP	Public-private Partnership
FBE	Free Basic Electricity
DPLG	Department of Local and Provincial Government
IDP	Integrated Development Plan
SALGA	South African Local Government Association
EBSST	Electricity Basic Service Support Tariff
REDS	Regional Electricity Distributors

## 1. INTRODUCTION

In June 2002 a contract was signed, for a period of 18 months, between the National Electricity Regulator (NER), Eskom and a private company, Eskom Shell Solar Home Systems.<sup>1</sup> This contract was envisaged as an interim one which would result in a long-term concession. This concession would be for the provision of non-grid energy in the rural areas of KwaZulu-Natal and the Eastern Cape in the form of solar home systems (SHSs).

The contract, now in its review period, brings to light not only some of the problems faced when implementing non-grid electrification but also some of the issues around service delivery and regulation of service delivery in South Africa.

The Eskom Shell concession was selected as the subject of this research report because of all the non-grid concessions awarded for solar energy, the Eskom Shell concession has been running the longest; with some 5 000 systems having been installed. Furthermore, with it having reached the end of its interim period it is perfectly poised to highlight the pros and cons and indeed the viability of solar as an option for the delivery of non-grid electricity services in South Africa.

The research question being posed is whether or not solar is a viable way to extend services to the poor.

## 2. METHODOLOGY

The method employed in conducting the research for this report was mostly qualitative. In-depth interviews were conducted with the following stakeholders; the concessionaire (Eskom Shell), the NER, Eskom and the Department of Minerals and Energy (DME). While both KwaZulu-Natal and the Eastern Cape have Eskom Shell concession areas, for logistical purposes it was decided that fieldwork on this project would only be conducted in KwaZulu-Natal. Fieldwork was thus conducted in KwaZulu-Natal's Ugu District Municipality. Municipal officials as well as politicians from the Ugu District Municipality were interviewed. Fieldwork was also done in two rural areas within Ugu, namely Dweshula and Kwajali, which fall into the local municipalities of Umzumbi and Umuziwabantu respectively. Householders were interviewed in order to glean the views of the service consumers of the Eskom Shell solar home systems. Twenty household interviews were conducted.

---

<sup>1</sup> Interim Non-grid Energy Services Contract. The National Electricity Regulator, Eskom and the Eskom Shell Home Systems (Pty) Ltd, 3 June 2002.

### 3. BACKGROUND

The government's Reconstruction and Development Programme (RDP) envisaged the connection of 2.5 million households to the electricity grid during the period 1994-1999. Eskom, the national electricity utility, committed itself to meeting 70% of the RDP target while the remainder was to be met by the municipalities. By the end of 1999, approximately two million households had been electrified by way of grid connections; 80% of urban areas had been electrified in contrast to 46% in rural areas. The reason for this difference is that urban areas are easier and cheaper to grid electrify than rural areas, which are located too far away from the national grid or are too scattered to allow for easy grid electrification.<sup>2</sup>

As a result, there has been an increasing interest in the use of non-grid technologies to supply rural households with electricity. Non-grid electrification refers to any type of technology that is utilised to supply electricity that is not linked to the national grid. The assumption is that these technologies are cheaper than the grid supply, and that they can suffice for the kinds of services used in rural areas.

The current policy goal is universal household access to electricity. The policy recognises that this would have to include non-grid options such as solar home systems and mini grids using distributed generation. Legislation separates the energy sector into demand and supply sub-sectors. The demand side is analysed in terms of the energy requirements of households, industry, commerce etc and the supply side is analysed in terms of electricity, nuclear, oil, liquid fuels, gas, coal, transitional fuel and, the subject of this case study, renewable energy sources.<sup>3</sup> Renewable energy refers to energy that harnesses naturally occurring nondepletable sources of energy such as solar, wind, biomass, hydro, tidal wave, ocean current and geo thermal to produce electricity.

South Africa currently relies mostly on fossil fuels as a primary energy source (approximately 90%) with coal providing 75% of this.<sup>4</sup> This situation lends itself to concerns about coal combustion, the main contributor to carbon dioxide emissions. In keeping with current global environmental concerns, South Africa needs to be seen as a responsible player with regard to the environment. Also, the country enjoys an abundance of renewable energy sources that have yet to be developed. Developing them could prove the answer to building a new capacity that could meet the growing demand for electricity.

---

<sup>2</sup> Regulatory Framework for Non-grid Electrification in the Republic of South Africa. National Electricity Regulator, 2000.

<sup>3</sup> Theron A. *Municipal and District Municipality Responsibilities Regarding Electrification Planning - The Role of Integrated Development Plans and Prioritisation Between Grid and Non-grid Technologies*. Net Group Solutions, Durban, 2003.

<sup>4</sup> Cooper C.J. *Digest of South African Energy Statistics*. Pretoria: Department of Minerals and Energy, 1999.

At present, renewable energy accounts for only about nine percent of South Africa's total energy consumption.<sup>5</sup> Most of this energy is generated from fuel wood and dung rather than modern renewable energy technologies. Establishing and expanding renewable energy sources would go a long way to reducing reliance on wood and dung for fuels.

South Africa is in a good position to harness solar energy as it experiences some of the highest levels of solar radiation in the world. The average daily solar radiation in the country varies between 4.5 and 6.5 kwh/m<sup>2</sup> compared to 3.6 kwh/m<sup>2</sup> for the USA and 2.5 kwh/m<sup>2</sup> for the UK and Europe.<sup>6</sup> There is thus considerable resource potential for solar water heating applications, solar photovoltaic and solar thermal power generation.

In a drive to extend the provision of electricity to rural households and realise its goal of "universal access to electricity by 2010"<sup>7</sup> the government began awarding subsidies to rural areas for non-grid electrification projects. The subsidies were intended to lower the capital and service price barriers faced by consumers, thus stimulating a market and ensuring wider access to electricity services. These subsidies could also be viewed as part of the government's broader initiative on rural development.

In February 1999 the DME indicated that it was ready to enter into a series of public-private partnerships (PPPs) with various consortia to establish rural electricity supply 'concessions' in South Africa. As a result, six concession agreements were awarded for the provision of some 300 000 solar home systems to rural households.<sup>8</sup> The concessions were awarded to Solar Vision for rural areas in the Northern Province, Nuon RAPS and Electricite de France-Total for rural areas in KwaZulu-Natal, Renewable Energy Africa for rural areas in the Eastern Cape, Transenerge for rural areas in the Eastern Cape and the North West Province and, the subject of this case study, Eskom Shell for rural areas in KwaZulu-Natal and the Eastern Cape.

The abovementioned public-private partnerships are unusual because they involve the DME rather than municipalities entering into concession agreements with private companies. The reasons for this are twofold. Firstly, electricity extension to rural areas in South Africa (albeit minimal) has historically been the responsibility of the national electricity utility, Eskom, rather than that of municipalities. (Local municipalities catering for rural areas were only established in 2000.) Secondly, the aforementioned new local municipalities do not have the skills or capacity to provide electricity services to their areas and still for the most part rely on Eskom. The partnerships involve the private companies setting up and providing non-

---

<sup>5</sup> *Energy Futures 2001*. Department of Minerals and Energy, 2000.

<sup>6</sup> Srasen. *Towards a Renewable Energy Strategy for South Africa*. University of Pretoria: PhD thesis, 1996.

<sup>7</sup> Wenzel M. 'Making Rural Electrification Work.' *African Energy*. Sept - Oct 2002; 4(5).

<sup>8</sup> Banks DI, Willemsse J, Willemsse M. *Rural Energy Services-Sustainable Public-Private Partnership based Delivery*. Rural Area Power Solutions, unpublished paper.

grid electrification services in areas demarcated by Eskom for a specified period of time with regulation (including tariff setting) by the NER and guaranteed subsidies from the DME. Typically concession agreements involve the transfer of municipal assets concerning the service being provided, to the concessionaire for the period of the concession. In this case, municipalities targeted for service do not own any assets pertaining to the provision of electricity services and so the private companies awarded concessions will set up and retain ownership of assets. Furthermore the private companies involved in the partnerships are not required to pay a concession fee to their public partner, the DME.

The context in which non-grid electrification is being installed needs to be mentioned as the concessionaires are faced with several challenges. Rural households are generally associated with poverty and subsistence living, often coupled with high unemployment. It is unlikely, therefore, that the majority of them will be able to pay the full market cost for electricity services. The service providers will thus have to rely on subsidies to see a return on their investments. Members of rural households suffer from relatively high illiteracy and innumeracy levels and the service providers are likely to have difficulty in making their target consumers understand the dynamics of the service being offered. Furthermore, certain stakeholders have expressed concern that consumers would prefer to have access to grid rather than non-grid electrification. If this is indeed the case, the concessionaires remain unsure of their position should grid electrification eventually be extended to the areas they are servicing.<sup>9</sup>

#### 4. ENABLING POLICY FRAMEWORKS

The provision of non-grid electrification and more specifically, renewable energy sources are provided for in various pieces of legislation.

The South African Constitution<sup>10</sup> contains a number of rights specifically relevant to the national energy policy. It enjoins government to establish a national energy policy to ensure that national energy resources are adequately tapped and delivered to cater for the needs of the nation. Energy should be made available and affordable to all citizens regardless of geographic location. The production and distribution of energy should be sustainable and lead to an improvement in the standard of living of citizens.<sup>11</sup>

In the 1998 White Paper on Energy Policy, government commits itself to promoting access to affordable and sustainable energy services. To this end, renewable energy sources are seen as advantageous in that they can be used to supply remote areas where grid

---

<sup>9</sup> Banks D, Karotki R. 'Energy Service to Rural Communities: Power, Service and Profit.' *Renewable Energy World*, January 2000.

<sup>10</sup> The Constitution of South Africa. Act no 108 of 1996.

<sup>11</sup> The Constitution of South Africa. Act no 108 of 1996.

electricity supply is not feasible. Renewable energy is also seen as a least-cost energy service.

The Energy White Paper asserts that government will facilitate the sustainable production and management of solar power and non-grid electrification systems such as solar home systems, solar cookers, solar pump water supply systems, solar systems for schools and clinics, solar heating systems for homes, hybrid electrification systems and wind power. All of these will be largely targeted at rural communities. In addition, government will promote appropriate standards, guidelines and codes of practice for renewable energy.

The Energy White Paper acknowledges that South Africa, contrary to international trends, has neglected the development and implementation of renewable energy applications despite the fact that its renewable energy resource base is extensive and many appropriate applications exist. The White Paper states that renewable resources can increasingly contribute to a long-term sustainable energy future.

According to the white paper:

Government policy on Renewable Energy is thus concerned with meeting the following challenges:

- Ensuring that economically feasible technologies and applications are implemented;
- Ensuring that an equitable level of national resources is invested in renewable technologies given their potential and compared to investments in other energy supply options; and
- Addressing constraints on the development of the renewable industry.<sup>12</sup>

The Energy White Paper enjoins the non-grid industry to make optimal use of private sector financing opportunities in conjunction with the funding mechanisms being put into place for electrification by the government.

The White Paper on the Promotion of Renewable Energy and Clean Energy Development of 2002<sup>13</sup> argues that renewable energy resources, with which South Africa is well endowed, need to be developed in order to reduce the reliance on fossil fuels, thus reducing the level of carbon dioxide emission.

The Renewable Energy White Paper puts several objectives for renewable energy policy forward. Financial objectives include ensuring that an equitable level of national resources is invested in renewable energy technologies and facilitating the creation of an investment

---

<sup>12</sup> White Paper on the Energy Policy of the Republic of South Africa 1998, Part 3, Section 7.7.

<sup>13</sup> White Paper on the Promotion of Renewable Energy and Clean Energy Development August 2002.

climate for the development of the renewable energy sector that will attract foreign and local investment. Legal objectives include developing an appropriate legal and regulatory framework for pricing and tariff structures to support the integration of renewable energy into the energy economy and attracting investment. Technological goals include promoting research, development and local manufacturing to strengthen renewable energy technologies and optimise implementation. Other goals include promoting knowledge of renewable energy, thereby increasing its use, and improving communication and interaction between national, provincial and local government institutions on renewable energy policies. Renewable energy projects that receive government assistance will be required to incorporate empowerment and job creation.

The NER, which receives its mandate from the Electricity Act 41 of 1987, has produced a Regulatory Framework for non-grid electrification in South Africa.<sup>14</sup> The document identifies several areas of regulation that need to be considered for non-grid electrification. Among them are issues surrounding market access such as monopoly rights, concession periods, licenses and commitments to rural development. Service standards, price control and disputes are mentioned as are monitoring and evaluation.

According to an agency agreement between DME and Eskom,<sup>15</sup> Eskom is mandated to enter into non-grid contracts that are acceptable to the DME. Eskom is given control of non-grid service providers (NGSPs), including the administration of subsidies to them, but the utility remains accountable to the DME.

Any contract between Eskom and a non-grid service provider<sup>16</sup> calls for the employment of locals and the transfer of skills to previously disadvantaged people. It obliges the service provider to supply non-grid electricity systems to all customers within the permission area, provided that there are subsidy funds available. The service provider is also bound to cooperate with other suppliers of electricity on national and regional plans for the supply of electricity. The service provider is obliged to pay for the installation of non-grid electricity systems and maintain them according to specified standards. Rates and tariffs are set by the NER so that they are adequate to generate enough revenue to cover the non-grid service provider's operations, maintenance and taxes and enable it to earn a fair rate of return. The contract also obliges the service provider to ensure that fee collection, service maintenance and energy sales points are accessible to all customers.

---

<sup>14</sup> Regulatory Framework for Non-grid Electrification in the Republic of South Africa. National Electricity Regulator, 2000.

<sup>15</sup> Agency Agreement Between the Government of the Republic of South Africa in its Department of Minerals and Energy and Eskom for Non-grid Electrification, 2001.

<sup>16</sup> Non-grid Electrification Service Providers Contract between Eskom and the Non-grid Service Provider (this contract was never in fact entered into).

## 5. DEMOCRACY AND SERVICE DELIVERY

The politics of democratisation within the African context go beyond a narrow focus on formal or procedural democracy involving free and fair elections, transparency and accountability. They include socio-economic considerations. Socio-economic rights revolve around the welfare of the citizens. Service delivery is thus the responsibility of the state and is directed at meeting the needs and demands of the citizenry in the process of promoting greater levels of equality. The South African Bill of Rights explicitly entrenches a range of socio-economic rights for its citizens.

The Local Government Municipal Systems Act of 2000 directs municipalities to provide equitable access to services to all their citizens. This must be done in a financially and environmentally sustainable manner whilst encouraging the involvement of local communities and consulting them about the level, quality, range and impact of services they are receiving.<sup>17</sup>

Unfortunately, local authorities in South Africa face massive challenges around capacity and skills. Furthermore, the country's current local government system is still fairly new and many municipalities are still attempting to strengthen their capacities and consolidate their roles. For this reason, when it comes to service delivery, government and relevant municipalities often consider various alternatives. Public-private partnerships, such as the Eskom Shell concession, are one such alternative that entails service delivery by a private company as opposed to service delivery by the municipality or some other government body. The challenge in such a partnership is the reconciliation of democratic accountability and participation with efficient, affordable and equitable service delivery.

## 6. EVALUATION

### 6.1 Profile of the Concession Area

The Ugu District Municipality is one of ten districts in KwaZulu-Natal. It is made up of six local municipalities, namely, Vulamehlo, Umdoni, Umzumbe, Ezinqoleni, Umuziwabantu, and Hibiscus Coast. It covers 5 866 km<sup>2</sup> and has a population of 687 735. Some 16% of the Ugu District Municipality is urban and 84% is rural. A staggering 88% of the population lacks basic services.<sup>18</sup> Ugu faces many challenges including backlogs in the delivery of water and sanitation, hazardous road conditions, and poor accessibility. Alongside this is the municipality's clear under-capacity for the delivery and regulation of services. Also, amalgamations of previously disadvantaged areas, such as Vulamehlo, and established municipalities, such as Hibiscus Coast, have resulted in difficulties in prioritising needs and

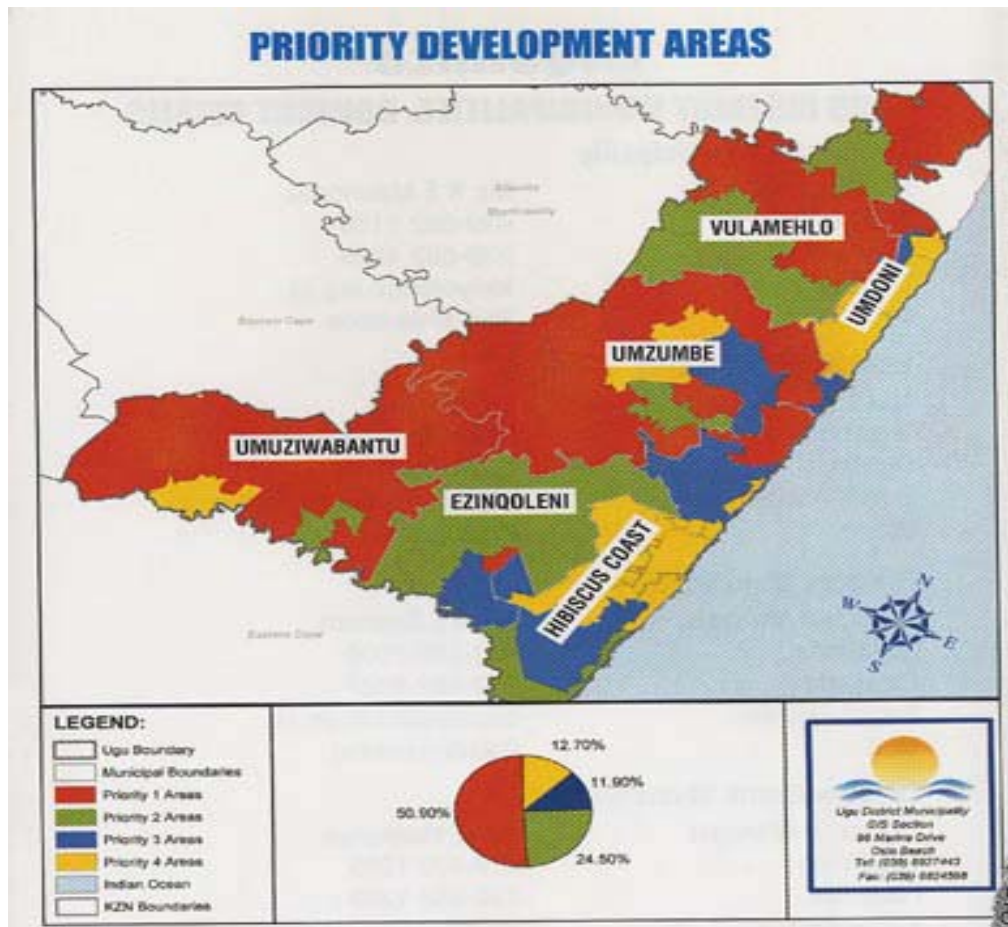
---

<sup>17</sup> Municipal Services Act 2000, Section 4.

<sup>18</sup> KZN Integrated Development Plan - Ugu District Municipality.

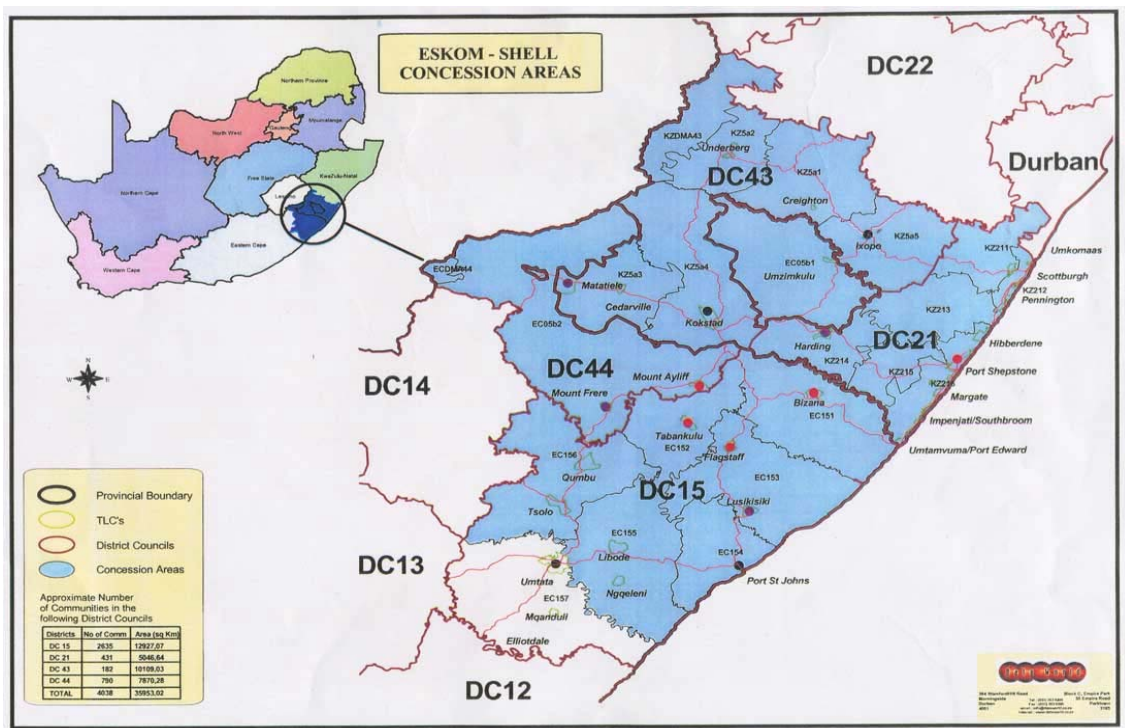
distributing capacity. Some 51% of the Ugu District Municipality has a priority rating of one (1), denoting that people living in the area are in dire need of development intervention. Examples of these are the Umzumbe and Umuziwabantu municipalities. Approximately 13% of Ugu has a priority rating of four (4), meaning a fairly low level of demand for development intervention. An example of this is the Hibiscus Coast Municipality.

Picture 1: Map of Ugu District Municipality - Courtesy Ugu District Municipality, 'Delivering Sustainable Development to Communities', 2003



Eskom Shell's concession area (also known as its 'permission area') in the KwaZulu-Natal province include the rural areas of Dweshula (Umzumbe Municipality) and Kwajali (Umuziwabantu Municipality), both of which have been the subject of fieldwork for this case study. Dweshula is what could be classified as deep rural; the nearest town, Port Shepstone, is an hour's drive away. Households are scattered on a hilly terrain, serviced by a small general dealer, and many householders are old-age pensioners caring for children. Many residents are unemployed and make do with subsistence living. Kwajali is not as rural as Dweshula and is located near the town of Harding (it has more infrastructure than a deep rural area).

Picture 2: Map of Eskom Shell Concession Area - courtesy Eskom Shell



## 6.2 The solar home system

The solar home system is a 50 WP photovoltaic system capable of powering a 12 V black and white TV, a radio and three to four lights. It consists of a battery and a solar panel mounted on a pole outside the customer's home. The solar panel attracts sunlight that is stored in the battery. The system allows for 200 watt hours per day (+- 4 hours per day). It also has a three-day autonomy ie; it can store energy for three days should there be no sunlight. The system has an interface indicating how many days usage is left before the load disconnects and also indicates the charge level of the battery. The system is activated every 30 days by a prepaid magnetic card that can be purchased by the customer at a cost of R58. The customer also has to pay an installation fee of R100.

## 6.3 Stakeholder roles and relations

### 6.3.1 Rural Service Consumers

#### *Dweshula and Kwajali: Differing Levels of Satisfaction*

A methodological point: The insights that have been gleaned from service consumers include only those of the two communities interviewed. This is a limitation of the study and one that may adversely impact on comparative analysis with specific reference to the rural solar experience. The point is pertinent because Dweshula residents seem to be experiencing

greater levels of satisfaction as compared to the residents of Kwajali. Evidence from other communities could reveal either community to be the exception. Alternatively, further investigation may show differing levels of consumer satisfaction to be consistent throughout areas where solar energy is utilised.

Nevertheless, it is helpful and informative to examine, as primary information, the different (and in some cases similar) experiences of the two communities.

### *Dweshula*

Interviews and informal discussions with members of Dweshula revealed a great deal of enthusiasm for solar power. The enthusiasm can be summed up by a comment from a female pensioner, “it’s more than I have ever had before”. She was referring to the fact that she previously had to rely on candles for lighting and a dry cell battery for her TV. The battery had to be charged periodically at the local shop at the foot of the hill she lives on. It is a long walk with a heavy battery.

This enthusiasm notwithstanding, there were various complaints about the solar home systems. The first set of complaints pertained to the cost of the service. R58 a month was cited as exorbitant in the light of the fact that costs for heating, cooking and refrigeration are borne over and above the cost for the solar home system. Householders also complained about the cost of paraffin, the most common source of energy used to supplement solar. Many were pensioners caring for grandchildren while others were young people unable to find employment and making a subsistence living.

Householders satisfied with the service expressed the hope that its uses would be extended. Comments such as “it gets very hot here; we need a fridge” and “in the winter we still use wood to make a fire” were common. Complaints regarding the technical nature of the service were also recorded. One respondent, a young unemployed man said, “all of the lights can’t work at the same time and if the TV is on, none of the lights will work.” This is apparently due to the nature of the battery allocation.

In spite of this Dweshula householders were, for the most part, satisfied with the technical and operational services offered by Eskom Shell. They claim that their complaints are dealt with swiftly, there is regular maintenance of the system, and the Eskom Shell Company is easily accessible through area managers (recruited from within the Dweshula community) and representatives at the local general store. Dweshula’s ward councillor, Joyce Cele, claims that her constituents are very happy with the service; so much so that she hopes Eskom Shell will move further into Dweshula and its neighbouring ward, Mwaleni. She adds that the two aforementioned wards are the poorest in the Umzumbe municipality and this level of development could be considered miraculous.

### *Kwajali*

Kwajali householders were clearly dissatisfied. The majority of people interviewed said Eskom Shell had not adequately maintained the systems. This was compounded by the fact that these systems were plagued with technical faults resulting in TVs and radios not working at all and users having only the benefit of solar powered lights. An angry interviewee stated, “service is very poor”. Other complaints included Eskom Shell’s lack of community consultation and communication - it seems that customers were not even able to access prepaid cards until the local ward councillor began distributing them.

The fact that grid has been introduced and installed in areas that was demarcated for solar, but where solar was yet to be installed, is possibly contributing to Eskom Shell neglecting the maintenance of its service in neighbouring areas. Its role in certain parts has been reduced to removal and salvage efforts in an attempt to prevent the systems from being vandalised, recycled or sold by consumers who believe they own the units. Eskom Shell claims that it is not informed about where and when grid is replacing non-grid, as was initially agreed. However, the view that this is giving rise to neglect on its part in terms of maintaining the service is speculative at this point. What is confirmed is that the quality of service differs significantly between the two areas identified by this study.

### **6.3.2 Eskom Shell**

The contract between the NER, Eskom, and Eskom Shell stipulates that the concession will only be signed if the interim agreement is deemed to be successful within the first 6 months of its implementation. Clearly, success is a necessary criterion for Eskom Shell (for reasons of sustainability) and for its concession partners if they are considering replication of the project. Success, according to the contract, includes recovering 80% of the service fee, containment of vandalism and theft (ie, not exceeding two percent of the total installed non-grid electricity systems), installation and connection rates of at least 80% of the planned annual installation rate, and the actual payment of subsidies by the NER to the non-grid service provider.

#### *Cost recovery*

The goal of recovering 80% service fees has been achieved. The area with the lowest payment rate in Eskom Shell’s permission area, Flagstaff, has recorded a payment rate of 87%. Areas such as Dweshula have payment rates of 90%.<sup>19</sup> Although the high payment rates may have much to do with the solar energy card being prepaid (less than 100% payment rates would be calculated by the number of solar system owners who do not purchase prepaid cards for the month), according to household interviews conducted with consumers of this service, there was an overwhelming belief that electricity should not be free but paid for.<sup>20</sup>

---

<sup>19</sup> Interview with Clive Horlock, General Manager, Eskom Shell, Port Shepstone: 22 July 2003.

<sup>20</sup> Interviews with Dweshula householders. Dweshula: 21 July 2003.

This notwithstanding, Eskom Shell had set itself various performance indicators which include payment level targets of 95%. This has yet to be reached.<sup>21</sup>

#### *Theft and vandalism*

Incidents of theft and vandalism have exceeded the two percent allocated for (and the one percent allocated for by internal Eskom Shell performance indicators). According to company representatives, 600 solar panels had been stolen at the time of writing and insurance for these panels is the responsibility of the company. Many systems have also been tampered with in efforts to tap into stored energy without using a solar energy card. Such tampering has damaged systems, calling for repairs not covered by ordinary repair and maintenance budgets. Incidents of corruption have also come to light. Certain Eskom Shell representatives have been eliciting bribes in exchange for system tampering in order to exact free power.

#### *Installations*

At the time of writing, Eskom Shell had installed 5 430 solar home systems and additional installations were underway. Of these, however, over 1000 systems have had to be removed for various reasons.<sup>22</sup> Removal of systems is worrying as Eskom Shell has set itself an installation target of 50 000 systems. Reasons for disconnection include non-payment; if a customer fails to buy a monthly card, a warning is issued after 15 days and if the customer fails to respond, the system is removed after 30 days. System tampering has also given rise to disconnections, for when it is found that a solar system has been tampered with, it is removed. There have also been disconnections where grid connections have taken place in the non-grid permission area. While the interim contract provides for grid extension into the permission areas, Eskom is required to give adequate notice of this to Eskom Shell with information as to when the connection is to take place, in order to enable the removal of the solar system.<sup>23</sup> According to Eskom Shell this procedure has not been followed. It seems that Eskom connected households in the permission area to grid electricity without informing Eskom Shell, resulting in the latter experiencing considerable trouble in removing the solar systems from the households in question. These householders appear to be under the impression that the systems belonged to them as they paid an initial fee of R150 (later R100) at installation. Some householders use the wiring and parts of the system for other purposes as soon as they did not need to access energy from them.

#### *Subsidies*

The payment of subsidies is contentious. According to the contract, the NER was to subsidise the installation of every non-grid system installed by Eskom Shell, provided that there was proof of installation. The subsidy was determined at R3 500 per installed system plus a R58

---

<sup>21</sup> Horlock interview.

<sup>22</sup> Interview with Colin Naider, Technical Manager, Eskom Shell, Port Shepstone: 22 July 2003.

<sup>23</sup> Interim Non-grid Energy Services Contract, section 5.3.

service fee.<sup>24</sup> During the contract period, however, the Free Basic Electricity (FBE) scheme was initiated by the DME (50 kW hours per month or R20, for grid services). Non-grid service providers were invited to participate. In the case of Eskom Shell, subsidies were to be administered in the amount of R40 per customer. According to Eskom Shell representatives, the FBE project was piloted by it for a period of 6 months (August 2002 to February 2003) during which customers were charged R18 for their solar energy cards as opposed to R58. To date, Eskom Shell has recovered none of the subsidies and the pilot cost it some R288 000.<sup>25</sup> The DME does not officially recognise that Eskom Shell ever reduced its service cost from R58 to R18 under the FBE scheme. It also claims that of the 5 430 systems Eskom Shell claims to have installed, only about 3 000 have been identified by the Department.<sup>26</sup> The DME is still investigating Eskom Shell's subsidy claims and it had, at the time of writing, only received capital subsidies from the NER for the systems verified. The actual contract to provide subsidisation for the FBE scheme also proved contentious. Under the contract, the DME refused to guarantee that the R40 subsidy would flow for a period of seven years and Eskom Shell refused to sign the contract because of this.<sup>27</sup>

Eskom Shell, although keen for the concession to go ahead, acknowledges that at present the company is not running optimally from a business perspective.<sup>28</sup> There is a feeling from stakeholders that Eskom Shell should change its business model to one in which it will not retain ownership of the system but rather sell it to the service consumer outright and be obliged to provide a limited number of maintenance visits a year, eg, four.<sup>29</sup> Another vital strategic business consideration for Eskom Shell is the fact that the need for solar will shrink in the future owing to the fact that grid electrification will, in time, be extended.

### **6.3.3 Eskom**

Eskom's role in the interim agreement is peculiar. It does not really seem to have one in practice except for being a 50% shareholder in Eskom Shell. The reason for this may lie in the history of the relationship between Eskom and the Shell Company that began when Eskom started looking for ways to supplement electrification to areas it could not service. Solar was seen as an appropriate alternative and Eskom entered into a solar electrification project with Shell as early as 1998. Before the interim agreement was signed in 2001 however, Eskom conducted an audit of solar services and concluded that solar energy was not

---

<sup>24</sup> Interim Non-grid Energy Services Contract, section 6.1 and section 6.2.

<sup>25</sup> Horlock interview.

<sup>26</sup> Interview with Dr Izak Kotze, Director of Electrification, Department of Minerals and Energy, Pretoria: 29 July 2003.

<sup>27</sup> Interview with David Mahuma, Director for Energy Policy, Department of Minerals and Energy, Pretoria: 29 July 2003.

<sup>28</sup> Horlock interview.

<sup>29</sup> Interview with Yaw Afrane Okese, National Electricity Regulator, telephonic, 1 September 2003.

commercially viable, owing to low payment rates. It concluded that solar was not really its core business and was too experimental.<sup>30</sup> For this reason, when the contract with solar provider concessionaires was drawn up with Eskom and the non-grid service providers, Eskom refused to enter into the agreements and the NER was left to take on Eskom's designated role (as the national utility and licensed electricity distributor in most off grid areas, Eskom was to be responsible for awarding off grid service contracts to the various consortia and acting as the agency of government as well as reporting on off grid service providers performances to the NER).<sup>31</sup> Eskom limited itself to demarcating areas for non-grid service provision.

Discussions with stakeholders such as the NER and Eskom Shell indicate that Eskom does not seem to have a particularly good relationship with Eskom Shell. Evidence is that Eskom is engaged in connecting households that fall within the Eskom Shell permission area to the grid. These were households that Eskom originally claimed to be unable to reach for the next twenty years. While reasons for this action could not be obtained from the DME, NER, Eskom, or Eskom Shell, it is clear that it is affecting Eskom Shells development plans.

#### **6.3.4 National Electricity Regulator (NER)**

The mandate of the NER is to regulate the electricity industry "in accordance with government policy and law".<sup>32</sup> The NER, Eskom, and Eskom Shell entered into the interim contract for the provision of non-grid electricity.<sup>33</sup> Originally it was planned that the NER would play a regulatory role that would include awarding market access rights, enforcing technical and customer service standards, price reviews and price control, the management of disputes and the monitoring and evaluation of the project.<sup>34</sup>

The NER's role however was redefined and increased. NER involvement has shifted beyond regulation to include the actual signing of the interim contract, compliance, quality and volume control, disputes and the administering of subsidies.<sup>35</sup> The NER is now the major role player. The main reason for this has to do with Eskom's unwillingness to enter into an agreement for solar home systems. The NER, according to sources, had available to it funding allocated for the provision of non-grid services and did not wish it to be returned, unused, to the national treasury.<sup>36</sup>

---

<sup>30</sup> De Renzy Martin P. *Shell's Business Models for Village Power*, draft, 6 December 2000.

<sup>31</sup> Afrane Okese Y, Thom C. *Understanding the South African Off Grid Electrification Programme*. Energy and Development Research Centre, University of Cape Town.

<sup>32</sup> Interim Non-grid Energy Service Contract.

<sup>33</sup> National Electricity Regulator. *Lighting Up South Africa*, 2002.

<sup>34</sup> Ibid.

<sup>35</sup> Interview with George Van De Merwe, National Electricity Regulator, telephonic, 1 September 2003.

<sup>36</sup> Afrane Okese interview.

### **6.3.5 Department of Minerals and Energy (DME)**

The DME is mandated to deal with energy policy, regulation of the electricity sector and national electrification. As the initiator of the off grid concessions programme, its responsibility includes the overall management of the programme as well as the drawing up of formal procedures to enable the NER to track the progress of the off grid electrification programme.

The DME is also largely responsible for administering the FBE subsidy with funds from the National Treasury. From 1 July 2003, however, these funds were officially supposed to flow from the treasury to the Department of Local and Provincial Government (DPLG), which would then pass them on to local authorities. This means that concessionaires would have to apply for these funds from local authorities and sign contracts with them. The DME is also responsible for determining and administering the capital subsidy in conjunction with the NER.

### **6.3.6 Municipality**

South African municipalities have a constitutionally recognised right and obligation to provide services to their local districts. With regard to the non-grid programme, however, they lack the resources and capacity to play a managerial and facilitation role as envisaged in the Integrated Development Plans (IDPs). The IDP, a framework for overseeing rural development, has itself not been implemented in the area due to resource and capacity constraints. The South African Local Government Association (SALGA) has confirmed this position. At the time of the consultation process (before the interim agreement was signed) SALGA argued that many local authorities lacked capacity to play a major role in rural electrification and preferred Eskom to act on their behalf.<sup>37</sup> Also, according to the Electricity Act, electricity providers do not require permission from municipalities to supply electricity should they be supplying less than five giga-watt hours per year per unit. The solar home systems fall into this category. It was thus concluded that municipalities do not need to play a role in non-grid service provision in the form of solar. Also owing to the fact that technology of this nature was beyond their capacity to regulate, the project was left in the hands of Eskom. As a result, the municipalities affected by this particular interim agreement play no role whatsoever in the project.

It is necessary to note that most Ugu municipal officials interviewed expressed the view that they have been excluded from the process. They do not emphasise the issue of capacity and resource related constraints. They also do not acknowledge that the municipality has a role in administering the operational subsidy.

The Ugu municipality has recognised the need for it to define its role in the provision of electricity services and has hired a consultant to draw up an 'Electricity Master Plan'. The

---

<sup>37</sup> Afrane Okese interview.

plan is currently in its infancy. It is, for the most part, a technical document at the information gathering stage and was to be presented to the municipalities, at the time of writing, for the incorporation of a political aspect. The document classifies target areas for non-grid electrification as those of a density of 50 households per square kilometre. The plan is to integrate densely populated areas with sparsely populated ones in order to facilitate grid connections. The National Electrification Fund budgets approximately R1.2 billion per annum for nation wide electrification (this is target driven and works out to about R3 500 per connection). This works out to about 42 000 connections for the KZN province, which has 10 district municipalities and 60 local municipalities. In effect, this means that about 2 500 connections per municipality are budgeted for. This budget, however, is for grid connections. Non-grid budgeting is still extremely vague. The electricity master plan certainly does make allowances for non-grid electrification simply because of various settlement densities and also because of distances of rural households from the existing grid infrastructure. The backlog for electrification at the time of writing was approximately 80 000 households. Taking into consideration the abovementioned 2 500 connections per municipality, it will take about 20 years to address the backlog, hence the need for non-grid, regardless of whether it is solar, mini grid or some other form. The municipalities will be responsible for administering the Electricity Basic Service Support Tariff (EBSST) (the FBE scheme). They will have to refund Eskom or the concessionaire in question. This was being initiated at the time of writing. For purposes of the 'Electricity Master Plan', electricity services have been split into two sections, demand side planning and supply side planning. In demand side planning the municipalities will have a big role in determining where and when services will be required and whether they should be grid or non-grid. This will then be incorporated into the IDP and Eskom and the NER must then engage. The service provider will handle the supply side planning. It is not likely that the municipality will play much of a regulation role. That will be left to the NER, as the municipality does not have sufficient capacity to liaise with Eskom or the NER regarding regulation.<sup>38</sup>

## **7. CONSEQUENCES**

### **7.1 Breakthroughs**

The most significant breakthrough with the solar home systems is that rural households once reliant on candles for lights and batteries for TVs and radios, can now more conveniently power these facilities. These households are scattered and people usually had to walk fair distances to buy candles and charge TV batteries. From a developmental point of view it would be better for electricity to be extended incrementally, beginning with lighting and communication, particularly for school-going children who need light to study by. Radios and TV's are a vital mode of communication for people in rural areas.

---

<sup>38</sup> Interview with Anton Theron, Ugu Consultant, NET Group, 1 September 2003.

The delivery of the service by Eskom Shell sets a fairly good standard for service delivery in South Africa (if Dweshula is used as an example) and may lend support to the argument that private companies can, in some instances, provide a better standard of service than a municipality. In the Dweshula case this argument can be made technically and with regard to the extension of social justice and democracy through recruitment and employment opportunities. Eskom Shell has recruited local people in the areas it services as 'Rural Service Providers' who are trained by it to maintain and repair the systems. They are also required to deal with problems or complaints from the communities in which they operate. This ensures wide accessibility by service consumers to the provider.

Rural Service Providers work under Maintenance Officers who have vehicles and they in turn work under Area Managers. Area Managers are required to keep a detailed record of all complaints, maintenance, and up keep in their zones. This level of organisation has produced an efficient service. Only three of the households interviewed complained of poor service.<sup>39</sup> The rest all said that the service was regularly maintained and that all their complaints were dealt with speedily and successfully. The local general store is usually targeted by Eskom Shell to take complaints from rural householders about their service. Store staff either phone Eskom Shell with the complaints or contact the Rural Service Provider. This also ensures that Eskom Shell is accessible to rural households.

As far as community consultation goes, Eskom Shell has utilised community networks fairly successfully. The company, in order to mobilise and reach as many service consumers as possible, usually approaches Ward councillors and traditional leaders. Meetings are then held at local schools and are used to instruct users about their service and inform them of any changes. The street theatre concept has also been utilised by Eskom Shell as an innovative way of relaying the message about solar energy. Booklets and brochures (in three different languages) about the solar home system were also widely distributed within the permission area. All of this illustrates that the company has recognised that an important part of delivering a service is regular communication with service consumers and easy accessibility to service consumers.

## **7.2 Stumbling blocks**

The positive outcomes of the service in the interim period notwithstanding, there have been some serious stumbling blocks that need to be adequately addressed before the final concession contract is signed.

The most significant of these is the cost factor. Customers are charged R58 monthly in order to utilise the solar home systems. There is distinct discontent about this among service users. About 82% of households interviewed said that the service was too expensive, especially since it only covered lights, TV and radio and prevailing costs for stoves, fridges

---

<sup>39</sup> Household interviews conducted in Dweshula and Rural Harding KwaZulu-Natal, 21 July and 23 July 2003.

and heating had to be borne above this in the form of paraffin and gas.<sup>40</sup> Clearly, the cost issue is one that should be dealt with through subsidisation but the introduction of FBE has caused some confusion as to where non-grid service providers stand with regard to the length of the subsidy. In this case the government is not prepared to guarantee subsidies beyond a five-year period. Some analysts suggest that if Eskom Shell were running its business successfully it would not need to rely on government subsidies for an extended time.<sup>41</sup> Eskom Shell's insistence on guaranteed subsidies for five years betrays the fact that its initial optimism at being able to run the service independently has been waylaid by its failure to meet internal performance indicators. Among these indicators are a payment rate of 95%, which has not been reached and a 1% budget amount for stolen panels, which has far been exceeded (see above). The company has also had to deal with the unexpected removal of systems and claims that it needs 25 000 customers to reach its break-even point. (Eskom Shell's target is to install 50 000 systems and it is hoping for a concession period of 20 years).<sup>42</sup>

Another significant stumbling block highlighted by the project is the weak, almost nonexistent, role of local authorities in the delivery of electricity services to rural areas in projects such as these. As suggested by the interim contract, the municipality (district management area) played no role whatsoever in the project. This may have something to do with the fact that the Ugu District municipality is still finding its feet after having been part of an amalgamation with municipalities with low capacities and the incorporation of rural areas into these municipalities. Local and District Municipalities in rural areas are in general, still fledgling entities which do not have the capacity or expertise to plan for the delivery of electricity services. Their IDPs generally deal with electricity at a high level, failing to coordinate or integrate electricity service delivery with other projects or services. They also have little or inaccurate budgeting details and is politically driven with not enough consideration given to technical or financial constraints.<sup>43</sup> Furthermore, water, roads, pensions, disabilities, and childcare grants have been prioritised over electricity, which although important, is seen as a bit of a luxury.<sup>44</sup> In the past these municipalities have, for the most part, been happy to leave electricity in the hands of Eskom.

This notwithstanding, Ugu municipality is beginning to realise that it needs to play a role when it comes to delivering electricity services. Examples of this are the Umzambe and the Vulamehlo municipalities; both of which fall under the Ugu District Municipality. These municipalities both have budgets for electricity but lack the capacity to deliver the service. Certain wards in Umzambe have households that receive grid electrification from Eskom,

---

<sup>40</sup> Household interviews conducted in Dweshula and Rural Harding KwaZulu-Natal.

<sup>41</sup> Kotze interview.

<sup>42</sup> Horlock interview.

<sup>43</sup> Theron A.

<sup>44</sup> Interview with Councillor Kriek, Ugu, Port Shepstone: 23 July 2003.

while in areas of Vulamehlo Eskom installed visible electrification infrastructure as part of its electrification plans before the re-demarcations and the institution of the new system of local government in 2000. The municipalities attempted to procure Eskom facilitation of electricity in their areas by hiring Eskom approved sub contractors to install infrastructure. In the case of Umzumbe, Eskom refused to participate saying it could not fit it into its budget. In the case of Vulamehlo the scheme was approved but then Eskom reneged owing to clashes with the subcontractor. The political dimensions of this situation bear mentioning, and could in fact impact on the future of non-grid service delivery. According to ward councillors in the area, householders are increasingly frustrated with not having electricity, when they see their neighbours being serviced by Eskom (as in Umzumbe) or electrification infrastructure in place (as in Vulamehlo). Some ward councillors assert that householders in their wards<sup>45</sup> expect a full electricity service and that it is unlikely that they could sell a scheme such as the solar home system service to them owing to the limited services it offers.<sup>46</sup>

In spite of this however, municipal officials insist that Ugu is embarking on plans (the 'Electricity Master Plan') to take on the delivery of electricity services that will make allowance for the provision of non-grid electrification.<sup>47</sup>

The relationship between Eskom and Eskom Shell also seems to be presenting difficulties that could impact on the future of the concession. There seems to be a breakdown of communication regarding households within the permission area. As mentioned earlier, some of the households serviced by Eskom Shell were connected to the grid and serviced by Eskom without the knowledge of the Eskom Shell. Eskom Shell representatives claim that these customers are in rural areas that did not fall within Eskom's electrification plans. The really worrying factor for Eskom Shell, however, is the fact that Eskom did not communicate with them about these installations.

### 7.3 Is this PPP working?

The contribution of public-private partnerships to service delivery should not be underestimated but likewise, should also not be overstated. For instance, the process of providing these communities with electricity is facing much difficulty and this is having negative implications for service delivery both in terms of quality and commitments. The Eskom Shell target is 50 000 solar energy systems during its entire concession period (including the interim). At the time of writing under 6 000 had been installed. Furthermore, the current service, while substantially more than people had previously, is very limited.

---

<sup>45</sup> The Eskom Shell solar home systems have not quite permeated the Ugu District Municipality; solar home systems are only operational in two local municipalities of Ugu, namely, Umzumbe and Umuziwabantu.

<sup>46</sup> Interview with Councillor Mfeka, ANC, Port Shepstone: 24 July 2003 and Councillor Gumede, IFP, Port Shepstone: 25 July 2003.

<sup>47</sup> Interview with Kamal Bhimma, Ugu Municipality, Port Shepstone: 22 July 2003.

Power is restricted to lights, television, and radio and according to some householders, faces technical difficulties. For instance, the lighting is poor and in some cases the lights, television, and radio cannot run simultaneously. Problems with the subsidy agreements and areas demarcated for solar being powered by Eskom using grid, are having negative consequences for the standards and service committed to by Eskom Shell; for instance, as evidence suggests in Kwajali, Eskom Shell does not regularly maintain and repair the solar systems.

Furthermore, ward councillors make the case that the major challenges in rural areas such as Kwajali, are, in order, widespread poverty, unemployment, HIV/Aids, the lack of clean and safe water, health facilities, educational institutions, roads and bridges, and then electricity. This is not intended to dispute the need for electricity in the area. Nor is it directed at playing down the importance of related issues such as education and access to information. The aim is rather to draw out a balanced perspective; namely that there are more pressing concerns facing rural inhabitants and their representatives. For example, electricity does not compliment educational pursuits if there are no schools or if the schools cannot be reached due to the state of rural roads and the lack of bridges. Furthermore, many families are not in a position to send their children to school or simply do not see the point. In Dweshula many individuals who had been through the local schooling system, from primary to tertiary level, could not find employment.

Also, this PPP for the provision of solar energy faces fundamental difficulties and evidence suggests that the interim agreement may not result in the signing of the concession agreement as originally envisaged. The difficulties involving major role players such as Eskom Shell have already been highlighted and as far as the Ugu municipality is concerned, local government representatives (Ugu officials) complained that they were excluded in the provision of this service. They also claimed that Eskom Shell failed to adequately follow up an initial meeting held with them.<sup>48</sup>

The community perspective also sheds important light on this subject, as many felt that they could not consult local representatives on the issue of solar, as the former had little or no information on this matter. Consultation between national, provincial, and local government, together with other role players, is an important part of service delivery to the rural poor. Failure to do this adequately and effectively gives rise to the situation witnessed at the local level, where councillors and administrative personnel are reluctant to discuss such projects and have no information to share. The local government representatives instead spoke openly about their own plans to electrify respective districts, referring to the implementation of an electrification 'Master Plan'. According to the municipality, a consultant had been identified and research was ongoing.<sup>49</sup> This can be interpreted as an effort to undermine the concession agreement because of a perception that national

---

<sup>48</sup> Interview with Councillor NB Dlamini, Harding: 24 July 2003.

<sup>49</sup> Bhimma interview.

government has marginalized local authorities on this matter. (The NER claims that the local authorities were consulted.)

The lack of consultation gives rise to such situations of confusion, duplication (wastage), which could ultimately impact adversely on service delivery efforts directed at the promotion and realisation of greater socio-economic equity in society. Democracy and service delivery to the rural poor involves participation through consultation between different levels of government and among all stakeholders, including members of the target communities. Improving this process will have positive consequences for the future of solar energy in areas such as Dweshula and Kwajali because it may still be possible to provide grid or semi-grid electrification alongside non-grid electricity. The potential for improving the non-grid service will only be fully realised if the necessary and adequate infrastructure is put in place. At present this is not the case and evidence suggests that most role players approach solar energy as an interim solution and accordingly give little commitment to its success. Instead, many seem to act in a manner that undermines the potential for sustaining solar. Areas demarcated for solar are now being powered by grid electricity, subsidies are not administered effectively and a master plan has emerged that does not prioritise consultation with Eskom Shell. This approach is at best problematic when one considers that most local councillors maintain that they will still continue to need solar in the future.

The relationship between Eskom and Eskom Shell also has a bearing on the future of the concession. Eskom is openly critical of the solar home system project despite initially regarding it as a good alternative. This is likely to impact negatively on the project's chances for continuation. The DME's refusal to pass on all the subsidies to Eskom Shell for piloting the FBE scheme as a non-grid service provider until it has confirmed the amount of systems installed by Eskom Shell for capital subsidies also does not bode well for the future of the concession. Despite all of this, the DME is optimistic that a concession will be signed for a 15-20 year period but adds that this will only happen in March of 2004 owing to the fact that the six concessions referred to earlier did not all commence their interim periods at the same time and it is thought that when the actual concessions are signed, they should all commence at the same time. The DME and NER have also made it abundantly clear that subsidies will only be guaranteed for a limited period of time, and argue that if Eskom Shell conducts itself as a business, it will not need subsidy aid after a certain period of time (the time period suggested was 5 years). Eskom Shell is keen to continue providing solar home systems but is concerned that its roll out target for systems, which in turn affect its profit, (it claims to need 25 000 customers in order to break even) is being hampered by the encroachment of grid electrification into its permission areas. The conclusion of the interim agreement and the commencement of the actual concession agreement are taking place when the electrification sector is undergoing many changes. With the establishment of Regional Electricity Distributors (REDS) it seems that Eskom will no longer hold the monopoly for electrification services. Moreover, with municipalities now being responsible for administering the EBSST tariff, concessionaires will have to sign contracts for subsidies with the municipalities. This opens up a new realm of involvement for municipalities in the future

of the concession as well as a new dynamic regarding the relationship between the private company and the municipality.

#### 7.4 Cooperation versus conflict

Implementation of the solar project has had its fair share of difficulties. Early findings suggest that more conflict than cooperation surrounds the process. Eskom, notwithstanding its earlier exploration of solar through its original partnership with the Shell Company, expressed its reluctance to enter the solar industry when it decided to limit its involvement to issues of demarcation.

Eskom Shell, on the other hand, is interested in building a sustainable business out of solar. In this quest they are facing a number of critical problems. These include the failure to receive all the subsidies that they have claimed, grid electrification of areas previously demarcated for solar energy, and Eskom refusing to sign the concession agreement.

The municipality has embarked on what it terms a 'Master Plan' for rural electrification. While this plan is in its early stages, discussions with municipal officials, political councillors and administrative staff, revealed that the municipality is more interested in working with Eskom than with Shell or Eskom Shell.<sup>50</sup> This raises concerns for the future of solar energy, which in turn adversely impacts on the Eskom Shell's need to increase the number of homes powered by solar so as to build sustainability. Eskom Shell views itself as a serious player in the renewable business, but it requires support from the government and all major role players, including the target communities.

At the time of writing, morale was low among most role players. Eskom no longer puts much faith in the future of solar home systems; photo voltaic options are seen to occupy a very small niche in the market and solar thermal energy is being seen as a better alternative.<sup>51</sup> With regards the Eskom Shell project; Eskom's view is that "There are some serious doubts about the solar home systems".<sup>52</sup> This stems from the fact that the long-term replacement cost of equipment places a heavy financial burden on the company, and that operating costs are not in the target range.<sup>53</sup> Some at the NER find solar to be an inadequate alternative, claiming, "There is some debate on whether the concession will go ahead or not".<sup>54</sup> The municipality and other major role players see solar as mostly an interim measure. This may well be compounded by a political situation in which there is pressure from ward councillors to satisfy service delivery needs in a situation where development can only be incremental. An argument can be made that owing to the municipality feeling

---

<sup>50</sup> Bhimma interview.

<sup>51</sup> Interview with Dr Louis Van Heerden, Eskom, telephonic, 1 September 2003.

<sup>52</sup> Interview with Dr Hendri Geldenhys, Eskom, Pretoria: 28 July 2003.

<sup>53</sup> Ibid.

<sup>54</sup> Afrane Okese interview.

excluded from the solar project, it is open to alternative strategies, hence, the emergence of a master plan. Rather than improve the process and build capacity to delivery solar, a municipality with major capacity constraints is making alternative plans. Will this master plan eliminate the need for solar? Likely not, but it will contribute toward distracting attention and some measure of urgency from solar, thus contributing to Eskom Shell's problems. If Eskom Shell views its role in the solar business as a long term one, it needs to develop and consolidate the infrastructure installed for its solar systems. This is proving difficult owing to the tampering and numerous disconnections. Clearly, this has negative economic consequences for the company. The dynamics of stakeholder participation and cooperation are complex and will need to be further monitored and explored so as to gain necessary insights that will shed light on the future of this relationship and the sustainability of the project.

## **8. CONCLUSION**

In conclusion, the research report will turn to the original research question of whether or not solar is a viable way to extend services to the poor.

The Eskom Shell case study illustrates that where the NER and the local municipality are unable to extend electricity services, there is a niche for solar as an off grid form of energy provision. Clearly though, these services will, for the foreseeable future, remain limited to lights, TV and radio. Powering heating, cooking and refrigeration facilities through solar is expensive and unfeasible for the service provider. The DME supports lights, TV and radio as being the necessities when delivering electricity services as they enable educational endeavours and allow for communication for people living in remote rural areas. In Dweshula and Kwajali solar has provided a way for householders to access better and safer lighting than they could with candles. Better lighting also has a positive impact on school-going children in terms of homework and studying for exams. Solar-powered radios and TVs mean that it is no longer necessary for rural householders to obtain and constantly charge dry cell batteries or fuel generators in order to stay in touch with national events via media. So this new method of service provision has managed to successfully extend electricity services, albeit limited, to the poor and indigent in the rural areas studied. It has also led to an increase, however limited, in the quality of life of the target community with the provision of electric lighting and power for radio and television. Schoolchildren can now study under electrical lights rather than by candlelight, enhancing their chances of academic success and subsequently widening their life choices. Solar is also a clean source of energy and if it had also been able to provide energy for cooking and heating, would have considerably lessened smoke pollution in rural areas. But the service has had its limitations. Limitations that is all too evident to rural people whose immediate neighbours have access to the full spectrum of household uses for electrical energy; including heating and cooking. In such circumstances, householders will continually see solar energy as a temporary solution to their energy needs.

Various ward councillors in the Ugu Municipality have already pointed out that their constituents are demanding full electricity services such as those offered by Eskom. Constituents argue that the government is failing to deliver on its promise of 'services for all'. This political dynamic is compounded by complaints from Eskom Shell customers about the high cost of their limited service.

Cost certainly is a factor in this case study as it has direct bearing on whether or not the service rendered is affordable. A comparison between the current monthly payments for solar home system with that of grid electricity reveals that solar is somewhat of an expensive alternative. Households connected to the grid pay an average of R30 monthly for services extending beyond lights, TVs, and radios. Their services can also be used simultaneously and for longer periods of time than the solar home system. Households with the solar home system, on the other hand, pay R58 for a substantially lower level of electricity supply.<sup>55</sup> Unanimous responses from householders in Dweshula and Kwajali are that, given the choice, they would prefer grid electrification.

Lack of participation by municipalities, however well justified, has serious implications for social justice and democracy in that service consumers are denied a voice in matters concerning their electricity services, and any grievances they have are directed to the service provider, thus bypassing the local political structure completely. This is an issue, however, that may well be addressed in the near future with the current restructuring of the electricity sector, which will see the establishment of REDS (formed by merging the distribution business of Eskom with that of local government electricity departments and transferring their rights and obligations to the REDS). It is hoped that municipalities will have a larger role to play in projects, such as the solar home electrification project, in terms of determining areas for grid or non-grid electrification, administration of subsidies to the service provider, and the regulation of contracts with an emphasis on the service consumer.

From a developmental point of view, the Eskom Shell project has trained and employed locals as 'Rural Service Providers' but has done nothing else to increase income generation opportunities for the communities that it serves. Various income generation opportunities were discussed at the outset of the project and include solar drying of fruit, food and crops and solar water initiatives for the pumping of drinking water. Also the equipment for the solar home systems, such as the solar panels, are imported and not manufactured locally.<sup>56</sup> To be fair though, this may well have to do with the fact that the contract was in an interim phase.

Solar power has long been hailed for its environmental benefits in the sense that, as a renewable energy source it does not contribute to carbon dioxide emissions. Research done by Afrane Okese however, shows that extensive motoring distances are covered by service

---

<sup>55</sup> Afrane Okese Y, Muller J. *How Solar Systems are Addressing Basic Energy Needs: The Voice of Rural Communities in South Africa*. Energy and Development Research Centre, University of Cape Town.

<sup>56</sup> Ibid.

providers in rural areas, usually in 4-wheel drive vehicles that cover 6 000 - 8 000 kms per month. Significant emissions of carbon dioxide from the operational motoring cannot be compared to the insignificant emissions from candle burning.<sup>57</sup>

The duplicability of the Eskom Shell project or its continuity is largely dependent on cooperation from the national electricity utility Eskom (and currently with the restructuring of the electricity sector the municipalities and newly instituted Regional Electricity Distributors). Eskom's move into solar concession areas and connecting them to the national grid without any communication with the non-grid service provider does not bode well for future relationships between the NER and other potential non-grid service providers of solar. Furthermore, it is clear that Eskom is making strides in connecting rural areas to the grid and that eventually if development targets are met, there will be little room for solar off grid services.<sup>58</sup>

---

<sup>57</sup> Ibid.

<sup>58</sup> Acknowledgements and sincere gratitude to Yaw Afrane Okese and Anton Theron.