

RURAL ELECTRIFICATION IN ZIMBABWE REDUCES POVERTY BY TARGETING INCOME-GENERATING ACTIVITIES

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ABSTRACT

National electrification programmes are given priority in many developing countries and the level of electrification is generally seen as one of the key indicators of development. Utilities find rural electrification programmes a challenge because the returns on the investment made in grid extension are minimal given the usually low levels of power consumption in rural areas.

An approach, adopted in Zimbabwe that promises to address this problem is to target income-generating activities, mainly the small and medium scale enterprises (SMMEs) in the areas where the electricity grid is extended. This will have the benefits of potentially increasing the return on the utility's investment by also stimulating small-scale commercial and industrial activities in the areas reached by the grid. It is however important to understand the SMMEs and their needs in order to tailor any support appropriately.

When extending the grid to the growth points the Rural Electrification Agency may also provide loans and deliver to site electrical machinery like grinding mills, irrigation equipment and welding machines that local entrepreneurs may order.

This paper discusses the findings of recent case studies among small enterprise beneficiaries of rural electrification in the arid southwest of Zimbabwe and highlights key lessons learnt.

1. INTRODUCTION

The approach to rural grid extension in Zimbabwe is to focus on unelectrified rural centres, often called 'growth points'. These are rural centres where local government infrastructure such as police stations, agricultural extension and health services is located. Local councils promote enterprise development and let small stands, typically a few hundred square metres to small and medium scale enterprises (SMMEs). Typical services provided by these SMMEs include automotive, electrical, electronic, and general repairs, welding and spray-painting, milling, carpentry, secretarial services and general retail sales of hardware, groceries, meat and alcoholic beverages. Houses

of civil servants including teachers, nurses and agricultural extension officers are usually found at growth points. These houses are not owned by the occupants and are generally connected free upon arrival of the grid. The majority of other households are scattered, which is the usual settlement pattern in rural Zimbabwe. If near grid-electrified growth points, such households benefit from the proximity of the grid, but household connections for the general rural public are not otherwise subsidised.

The survey of 73 small enterprises on which this paper is based was carried out in the south west of Zimbabwe in Matebeleland South province (Figure 6). The findings should not therefore be extrapolated to the whole country as the region where the surveys were undertaken is comparatively dry and arid and the mix of enterprises may be influenced by the local climatic and other conditions. Since the expanded rural electrification programme (EREP) is still limited in its coverage, as many small enterprises that had been exposed to it as could be found were approached. The questionnaire used was structured so that the initial questions explored the general area and the types of enterprises found in it. The questions then narrowed down to the specific enterprise and its use of energy, and finally the impacts of the expanded rural electrification programme on the enterprise. The survey focused on end-user perspectives as these are often not well captured in official literature on such programmes.

Ideally further surveys in other parts of the country and complementary methodologies including focus groups discussions and interviews with key stakeholders would complement the findings presented in this paper.

2. ENTERPRISES IN SURVEY AREAS

The respondents were asked what the nature of their enterprise was and the various responses grouped into broad categories. These are presented in Table 1.

2.1 Activities of the enterprises visited

Retailing activities were the most common type of enterprise encountered, with almost one third of all enterprises involved in general retail as general dealers, and selling of farm produce.

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Table 1. Types of small enterprises found in the survey areas

Type of enterprise	Frequency %
Retailing	21
Bottle store	15
Grinding mill	15
Farming / ranching	12
Supply farm produce	10
Butchery	7
Welding	4
Agricultural training	1
Barber shop	1
Butter making	1
Night entertainment	1
Poultry	1
Sewing	1
No response	7

If the sale of liquor in bottle stores and meat in butcheries are included, the total in this sector is about 53% of all the enterprises. The operation of grinding mills constitutes another 15%, with farming/ranching another 15%. Welding was also significant at 4% and includes repair work and the fabrication of window and door frames, and agricultural implements.

2.2 Enterprises considered most prevalent

The results presented in this section are based on responses of respondents at the enterprises visited and therefore reflect the views of the respondents rather than being a census of enterprises.

Respondents were asked which enterprises they considered most prevalent in the area. Agriculture was seen as the most prevalent enterprise, followed by grinding mills, bottle stores, and retail shops. Figure 1 gives the breakdown of the results. Agriculture is the mainstay of the Zimbabwean economy [2], and general dealer shops and bottle stores dominate rural service centres. These factors explain the main trends in perceptions of the prevalence of enterprises.

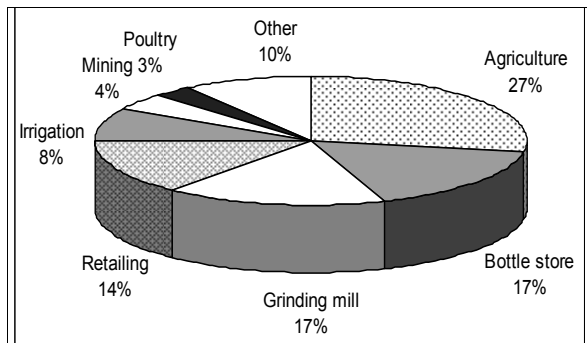


Figure 1. Perceptions of the prevalence of types of enterprises

2.3 Enterprises considered most profitable

The perception of which enterprises were the most profitable differed from the prevalence perception presented in Figure 2.

Retailing was seen as the most profitable by a considerable margin, with agriculture and grinding mills also seen as

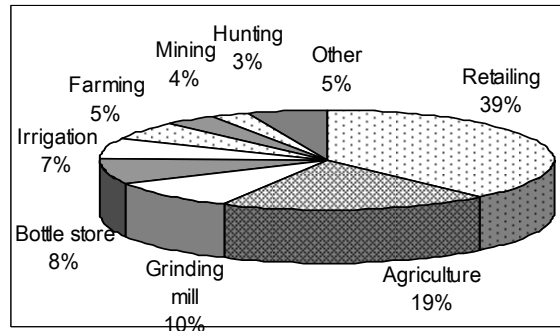


Figure 2. Perceptions of the profitability of different enterprises

comparatively more profitable as shown in Figure 2. The perceived lower profitability of agriculture may be related to the relative aridity of the survey area, and perceptions are likely to differ in other regions of Zimbabwe. The importance of grinding mills is explained by the fact that maize meal is the staple food in Zimbabwe and much of the region. Many rural households grow their own maize. The local milling of dry maize seed is thus an important service with a guaranteed market

3. PROBLEMS FACED BY THE ENTERPRISES

Table 2. Problems faced by the enterprises

Problem faced	Frequency %
Financial constraints	30
Power cuts	23
Transport / deliveries	10
Fuel Scarce	4
Lack of equipment	4
Lack of skills	4
Agric inputs short	3
Animal traps and poaching	3
Competition	3
Lack casual labour	3
Not enough water / rain	2
Few sewing machines	1
Night clubs / prostitution	2
Stock turnover	1
Theft	1
No response	4

Financial difficulties were the most cited problems for the enterprises interviewed. Power cuts were the next major

problem followed by transport and delivery problems. There were a number of other, lesser problems as indicated in Table 2. The prevailing difficult economic conditions in Zimbabwe explain the financial problems faced by enterprises. Power cuts are also a result of the economic situation, as are the transport problems since fuel is often very scarce or obtainable on the parallel market at exorbitant prices.

4. FUEL USE AMONG THE ENTERPRISES

4.1 Fuels used

89% of the enterprises reported spending money regularly on specific fuels, with most reporting spending on a single fuel. Expenditure on more than two fuels was not common.

Table 3. Multiple fuel use among enterprises

No. of fuels	No. of respondents	Frequency paying for fuels
1 Fuel	42	65%
2 Fuels	15	23%
3 Fuels	4	6%
4 Fuels	4	6%

74% of respondents spent money on grid electricity, 22% spent money on wood and 16% on diesel. The number of enterprises who reported using other fuels including candles, paraffin, batteries etc was negligible. No enterprises spent money on solar home systems.

5. ENERGY-RELATED PROBLEMS FACED BY THE ENTERPRISES

The key problems cited with the most used fuel, grid electricity, was that of power cuts by 70% of all respondents, and, to a much lesser extent (5%) high tariffs. For the second most prevalent fuel, wood, comparatively few respondents cited problems, the key problems being high cost (16%) and scarcity (7%). The problems cited for diesel were scarcity, by 26% and high cost by 6% of all respondents. The main problems reported for grid electricity and diesel reflect the frequent shortage of both.

6. THE IMPACT OF THE EXPANDED RURAL ELECTRIFICATION PROGRAMME

6.1 Types of enterprise

Table 4 shows the scope of enterprises said to have existed among the interviewed respondents before and after the expanded rural electrification programme programme.

The increase in both the scope and number of enterprises suggests that electrification contributes to an increase in rural enterprise opportunities. Many of the activities like running nightclubs, bottle stores, grinding, and welding are greatly facilitated by having electricity.

Table 4. Types of enterprises before and after EREP

Type of enterprise	Before EREP	After EREP
	Frequency %	Frequency %
None	70	30
Retailing	11	14
Grinding mill	-	11
Bottle store	3	8
Farming / ranching	8	7
Butchery	-	4
Welding	1	4
Irrigation	3	3
Restaurant	-	3
Barber shop	-	1
Irrigation / cattle ranching	-	1
Nightclub	-	1
Sewing	-	1

6.2 Employment

The reported total number of employees among all respondents was 106 before the expanded rural electrification programme and 285 after the expanded rural electrification programme, an increase of about 270%. Of these 41% were reported to be female. This agrees with the perception that the enterprises are either operated by both men and women, or by mostly men. It cannot of course be concluded that the increase observed in employment is solely due to the expanded rural electrification programme. There may well be other important factors, but the other evidence (presented in the next sections) of increased scope and number of enterprises and the fact that electricity use has risen considerably suggest that electrification is one of the major factors.

6.3 Fuel Use

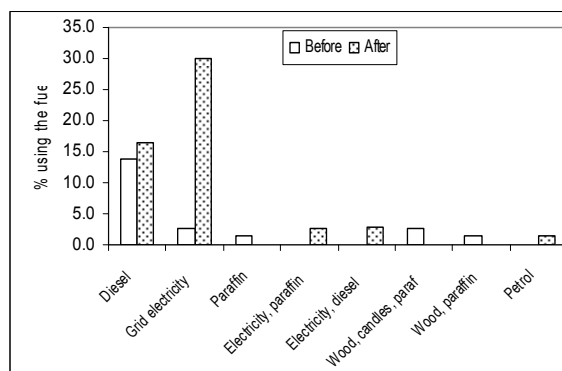


Figure 3. Fuel use before and after EREP

The reported use of grid electricity among the respondents increase from around 3% to 30%, a tenfold increase, and the use of other fuels besides diesel seems to have often

been eliminated, or in a few cases used along with electricity, perhaps to cope with power cuts.

6.4 Machinery use

A pronounced increase in the prevalence and variety of machinery used was reported after the introduction of the expanded rural electrification programme. This was particularly pronounced in the case of grinding mills, refrigerators and welding machines. A decrease in the number of respondents using generators can be seen in Figure 4.

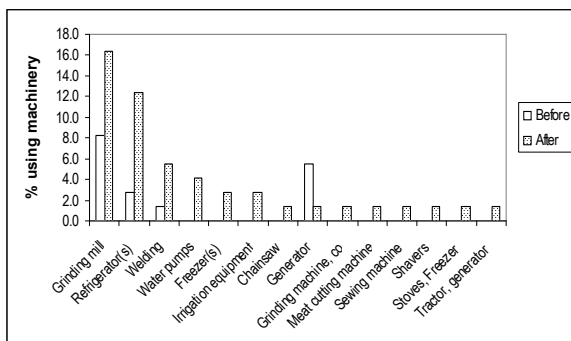


Figure 4. Machinery use before and after EREP

7. PERCEPTIONS OF THE EREP

7.1 Perceived major benefits

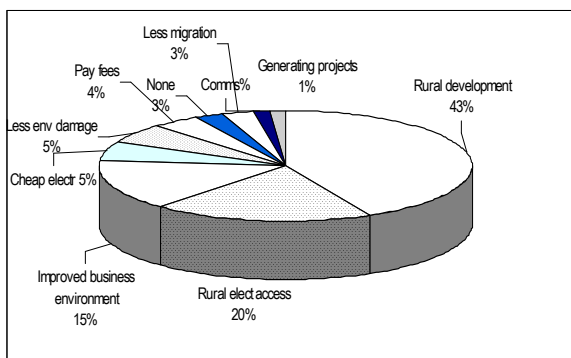


Figure 5. Perceived benefits of EREP

Views on benefits seemed to revolve around improvements to the quality of life. Almost two thirds of respondents cited rural development and access to electricity as the main benefits. A significant number of respondents (15%) felt that a better environment for business had resulted. There were several other minor benefits as shown in Figure 5.

7.2 Negative aspects

Table 5. Perceived negative aspects of EREP

Criticism	Frequency %
Expensive	25
Slow	25

Power cuts	14
Not reaching everyone	8
None	7
Not participatory	4
Not transparent / bias	4
Abandoning projects	3
Lack Education and skills	3
Implementation	1
Limited equipment	1
Limited support offered	1
Emphasis on schools	1
Provide materials	1
No revolving fund	1

The main negative aspects were perceived to be the high costs, slow progress and the selective reach of the expanded rural electrification programme programme.

7.3 What respondents would change if they were in charge of EREP

Table 6. What respondents would change

Proposed change	Frequency %
Financing approach	18
Improve equipment supply	15
Speed up implementation	14
Install Electricity	12
No response	8
None	8
Education, skills	4
Improve efficiency	4
People must payback	4
Benefits to everyone	3
Reduce power cuts	3
Avoid free electricity for schools	1
Govt. pays for schools, chiefs	1
Improve infrastructure	1
Participatory approach	1
Provide electricity to institutions	1

Asked what they would change if they were in charge of the expanded rural electrification programme programme, respondents zeroed in on the major criticisms raised about the programme. Some 18% would revise the financing approach, and specific measures mentioned included loans and subsidies. 15% would improve equipment supply and 14% would speed up the programme. 14% would extend the grid to more areas. The last three responses are linked in that they attempt to address the frustrations felt around the speed of implementation of the expanded rural electrification programme. This is however partly due to financial constraints faced by the Rural Electrification Agency within the context of the national economy.

8. WIDER COMMUNITY POVERTY ALLEVIATION BENEFITS: AN EXAMPLE

Considerable focus has been placed on working with schools and the experience thus far has been good, with loans for grinding mills repaid ahead of time, and some schools providing outstanding successes with benefits accruing to their communities. One example is a primary school³ located in an arid and famine-prone area in Masvingo Province. The headmaster registered the school as a milling company, thereby qualifying for a maize allocation from the central Grain Market Board. The school grinds, bags, and markets the maize meal to the community. This venture has been so successful that the school and several others have been able to see their communities through famine situations, autonomously build additional classroom blocks, and have reduced or suspended tuition fees in times of drought. It can be said that in these cases a tangible impact on poverty has been demonstrated by electrification, and these models are worthy of closer study.

9. CONCLUSIONS

Overall 60% of respondents felt that despite the shortcomings cited, the expanded rural electrification programme was good, needing improvements to its slow speed and selective reach. Given the prevailing difficult economic environment in Zimbabwe, it is to be expected that financial difficulties would rank high among problems faced by enterprises. Despite this, the expanded rural electrification programme has continued, albeit at a slower pace. The funding via a 6% levy on the electricity tariff that goes direct to the Rural Electrification Agency has helped ensure that the Rural Electrification Agency has access to the funds. This is not normally the case where the funds first go to treasury via a government department.

There is growing consensus that focusing on economic activities in the provision of energy services is an effective way to reduce poverty [3] [4]. The experience in the expanded rural electrification programme in Zimbabwe seems to lend weight to this view and deserves further study as it evolves since it undoubtedly holds lessons for other countries in the region.

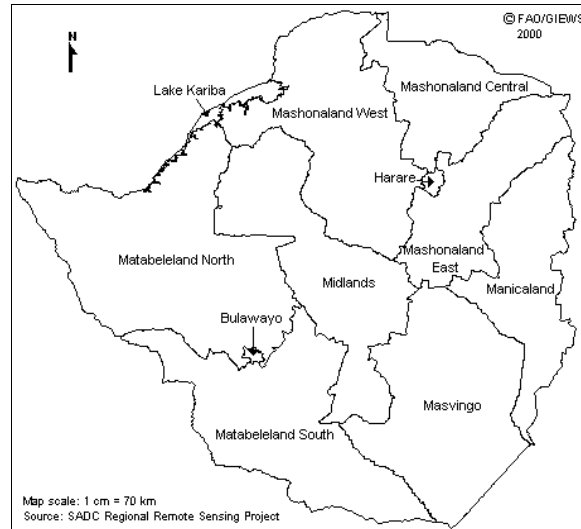


Figure 6. Provincial Map of Zimbabwe.

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Presenter: The paper is presented by Maxwell Mapako.

Acknowledgements:

The **CSIR** kindly facilitated the principal authors' participation, and the Energy Research Centre, University of Cape Town kindly facilitated the co-author's participation at the DUE 2007 conference.

Lethabo Mosomane and Lufuno Mukwevho, interns at the CSIR in Pretoria for diligently entering the data, making corrections and contributing to data analysis.

The **Rural Electrification Agency of Zimbabwe (REA)** kindly permitted the collection of data in areas where they are active and their offices in both Harare and Bulawayo took an active interest in this work. In this regard particular mention must be made of the following:

Harare: Chief Executive of REA, Mr E Midzi for information, support and authorisation, and his senior staff including Mr J Mashamba, Mr Nhandara, Mr P Mashapa and Ms M Zvipore for assistance and much information.

Mr I Dube of the Zimbabwe Electricity Supply Authority and the Zimbabwe Electricity Regulatory Commission for advice and logistical support

Bulawayo: Mr J Sikhosana the Provincial Rural Electrification Manager based in Bulawayo for providing advice and logistical support. Dadirai Tunha, Kassim Kapito and Khulekani Sibanda for ably carrying out the survey work.