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Paradoxical impacts of electricity on life in a rural South African village

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HIGHLIGHTS

- Linkages between energy and development outcomes are complex and not deterministic.
- Ethnography better reveals the complex relationship between energy and development.
- People's contexts affect whether, how and who benefits from energy access.
- Benefits like sense of worth and inclusion are often neglected in development.
- Electrification can have negative impacts such as rising sense of income disparity.

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ABSTRACT

Debates on the nexus between energy and development emphasise that access to modern energy carriers such as electricity improve development outcomes. This paper discusses the impacts of electrification on educational outcomes, gender and power relations, income generation, feelings of inclusion and exclusion and health in the village of Tsilitwa in the rural Eastern Cape, South Africa. It is based on an ethnographic grounded theory study conducted in 2009. The paper shows that the impacts of electricity may not match the benefits cited in the literature, and are not experienced in the same way by everyone in the community. The study uncovers the weakness of ignoring individual and group agency, and the complexity of social settings when advocating interventions to improve quality of life. The paper recommends that researchers and policymakers consider using ethnographic methods to complement other methods and reveal context and its implications on the energy–development nexus that other methods may not capture.

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1. Introduction

Advocates for energy for development assert that access to modern energy carriers, such as electricity and gas, stimulate economic and human development (United Nations, 2005; Barnes et al., 2003). Electricity, whether on- or off-grid, is seen as critical for improving educational outcomes (Daka and Ballet, 2011), gender and political empowerment (Mahat, 2003; Standal, 2008; Jensen and Oster, 2009), and income generation opportunities (Cabraal and Barnes, 2006; Peters et al., 2011). However, other research shows that in practice, few, if any, benefits are derived directly and only from access to electricity (Gustavsson, 2007; Neelsen and Peters, 2011; Kooijman-van Dijk, 2008; Kooijman-van Dijk and Clancy, 2010). There is then the need to understand why certain expected impacts of electricity access

do not materialise in order to help policymakers design energy interventions that can improve lives in developing countries.

This paper discusses the impacts of electrification as perceived by users, and observed by one of the researcher (MNM) in a rural village in Eastern Cape in South Africa. The researcher used ethnographic grounded theory to collect, analyse and interpret data. The paper focuses on users' perception of impacts of electrification on security and studying, empowerment through information access, on income generation, health behaviours and on feelings of inclusion and exclusion in a wider society.

The findings indicate that – in the short term – development impacts of electricity access are unclear and may not materialise because of lack of complementary services, conflicting information and deep-rooted customs and power relations. Electrification may also change lives in ways that appear to compromise conventional goals of development interventions such as education and may conflict with cultural values. The paper contributes to filling a gap on contextual issues that enable or hinder the accrual of electricity-related benefits to individuals and communities.

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2. Methodology

This paper uses information from an ethnographic grounded theory study on energy and health in rural villages of the Eastern Cape, South Africa (Matinga, 2010). Rather than use pre-designed questionnaires and protocols, the study used broad themes, then inductively developed new themes and analytical categories during data collection in line with grounded theory methodology (Glaser and Strauss, 1967; Charmaz, 2006). Techniques for gathering data included in-depth interviews, observations and ethnographic participation in daily life. Interviewees were heads of households, household members responsible for acquiring household energy (electricity, firewood and dung), students, teachers and health workers. A total of 89 households were interviewed, of which only three did not have electricity because their houses had been constructed after electrification.

The average age of household heads was 43 years, and for teachers and health workers was 42 and 46 years, respectively, while the average age of students 16 years. Up to 71% of households heads were female as a result of male-migration, divorce or separation, and single parenthood. Men headed 22% of the households while 4% of the households were headed by both a man and woman, and 2% were headed by a group of siblings, all over the age of 18.

The village was selected from an electrification schedule provided by the provincial office of the electricity utility, Eskom. A combination of factors including accessibility, having electricity for at least five years, and ease and consent to hosting one of the researchers (MNM) influenced its selection. Interviewed households were selected randomly. Electricity connection was free of charge, nearly universal in Tsilitwa and, at the time of the study, had reached 70% of households nationally. This reduces a common bias in electrification studies where grid electrification favours the non-poor who pay to the connection (Ravallion, 2007; Peters, 2009).

One researcher (MNM) lived in the village for five months, of which three months were spent as a household guest. In addition, MNM conducted detailed observations in four other households where she stayed for a minimum of two nights and three full days. The remaining two months were spent living in the village guesthouse, while continually participating in the village social life. Observations included interactions at weddings and funerals, participating in household tasks including cooking, observations at a local clinic, and at a village school including teaching at the school for one week¹. Data on changes brought by electrification was compared to the counter-factual situation (Bensch et al., 2012a) of before electricity, through recollection. Themes of inquiry that guided data collection included:

- Changes in evening study routines, income generation and daily life attributed by the respondents to electrification.
- The television programmes that women and men access and prefer.
- Changes to power relations and attitudes among women and men, attributed to information access.

All interviews were conducted in isiXhosa (the local language) and English. Interviews were recorded on a digital data recorder, transcribed and read at least twice. Field notes and memos were written throughout the stay, and all extensive observation notes were time stamped. Data were analysed by coding interview

transcripts, field notes and memos, and developing analytical categories (Charmaz, 2006; Miles and Huberman, 1994). Emerging themes were checked against the literature and interpreted to explain the findings.

The focus on one village with a largely homogenous ethnicity and the small size of the sample limits the extent to which findings can be generalised to other settings. Further, results are affected by problems of recollection of the situation before electrification, and inability to isolate effects of changes other than electrification. However, the study provides rich data that advances understanding of why certain expected impacts of electricity access may not materialise. While spending five months to understand intricacies of any culture is inadequate, it exposes complexities of effects of electrification which quantitative assessments can simplify, leaving policy makers with sanitised views of development impacts of electrification.

3. Context of the study area

3.1. Public service infrastructure

Tsilitwa is a village of about 700 households, 30 km from the nearest rural town of Qumbu, in the former Transkei area of the Eastern Cape Province, South Africa. At the time of the fieldwork in 2009, it had three schools: Bambisa Junior Primary School, Joubert Junior Secondary School and Qumbu Technical College (a senior secondary school). A further primary school was under construction. Tsilitwa is served by a clinic and the nearest hospital is 26 km away. The village had ten water taps (installed in 2001), although when piped water is cut off, households collect water from streams. There is a six-bedroom guesthouse, built in 2001 and equipped with various modern facilities, although this was rarely used because of low number of guests to the village. Tsilitwa was electrified between 2003 and 2004.

3.2. Economic situation

Tsilitwa has a high unemployment rate, reflected in a high dependence on welfare grants. Of 89 households interviewed, 91% receive more than 65% of their income from various welfare grants. Otherwise, government is the largest employer, employing teachers and clinic staff. However, 60% of the village teachers live in Qumbu town, which lessens cash circulation in the village, as domestic workers, employed by the teachers and nurses, are from Qumbu and not the village. High unemployment, contrasted with few relatively well-paid government jobs, has led to a skewed income distribution (Table 1).

Table 1
Income distribution in Tsilitwa ($n=72^a$).

Income category (Rand per month)	Income category (US \$ per month)	Number of households	Percentage of households (%)
240–1,000	29–122	23	32
1,001–2,000	123–245	26	36
2,001–3,000	246–368	6	8
3,001–4,000	368–490	4	6
4,001–7,000	491–856	0 ^b	0
7,001–10,000	857–1222	8	11
> 10,000	> 1222	5	7

^a Income information was available for only 72 of the 89 households interviewed.

^b Households in the first four income categories depend on government grants or low salaries. The next income categories earn government salaries, often above R6,000 per month. These households often have businesses or two incomes, increasing their earnings well above the first four categories.

¹ This was serendipitous as the school principal requested the author (MNM) to teach computer science due to lack of experienced teachers when examinations were about two months away.

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