



Utilising Electricity Access for Poverty Reduction

EXECUTIVE SUMMARY



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The productive use of electricity can support sustained poverty reduction by enabling the creation and improvement of income generating activities. However, in order to realise these positive impacts, the level of electricity access must be sufficient and enabling conditions beyond the electricity supply itself must be in place.

The relationship between electricity access provision and poverty reduction has been unclear and policymakers are seeking answers to the following questions:

- 1. What level of electricity access is required to enable and sustain poverty escape?**
- 2. What constraints, despite increased access to electricity, mean that people are not able to use that electricity productively? How can they be removed?**

The research presented in this report has sought to explore these questions through a review of existing literature and case studies in Kenya and India which looked at the policy and regulatory regime in each country, and included stakeholder interviews and field research. The Literature Review and Case Study reports are included as annexes to this report.

Neither the literature review nor the field research demonstrated a clear, unambiguous, relationship between level of electricity access and poverty reduction.

While there is some evidence of positive relationships between level of electricity access and increases in enterprise revenues and profits, it has not been possible to identify any relationship between level of access and poverty reduction. Of the eight programmes studied, the three where the greatest increases in household income were seen included two grid extensions but also a solar lantern programme.

Instead, our research has reinforced messages from the literature regarding the importance of combining electricity access with other enabling factors to achieve poverty reduction. It would appear that electricity solutions which provide relatively low-level access may offer the greatest value in terms of poverty impact, while matching electricity access to the particular needs of communities and linking electricity access to markets, skills and finance is critical.

The research explored two variations on the causal chain that can link electricity access to productive uses and to poverty reduction. The first of these mechanisms concerns the improvements in enterprise performance (sales, productivity, profits, quality) that may result from electricity access for those enterprises. The second concerns the impact of electricity access as experienced by people, households and



communities, which may increase the time, effort and application of skill that people are able to put in to productive activities.

No decisive link was found between the level of electricity access achieved by households and enterprises (as defined by the SE4ALL Global Tracking Framework) and the productive use or poverty indicators that were inferred from the proposed causal chains. The narrow range of access levels found in the communities studied for the field research limited the degree to which the impacts of different levels of access could be investigated. Improved electricity access was sometimes, but not always, found to result in the creation of new enterprises; however, the level of access did not seem to drive this impact. Contrary to the expectations derived from existing literature, the field research found that improved revenues and profits were often observed for existing enterprises that received improved electricity access, and the magnitude of the benefit did bear a loose relationship with the level of access. However, the case studies proved that sometimes even the most basic electricity access (solar lanterns) can have significant poverty reduction impacts when electricity access eases a limiting factor for a community (e.g. number of working hours) and other factors (markets, raw materials, skills) are favourable to productive use.

The findings relating to employment were inconsistent, with the literature reporting positive impacts but mixed indications generated by the field research, indicating a complex interaction between electricity access and other factors.

Both the literature review and the field research were inconclusive regarding impacts on household income. Some community pairs studied showed strong positive correlations between the household electricity access level and household income, whereas others showed no clear relationship or indicated negative correlations. Electricity access seems to have had a significant positive impact on the quality of education available to children of households surveyed during the field research, especially in India. Positive impacts in terms of healthcare appear to have been less widespread, although survey respondents widely agree that those improvements that have taken place can be attributed at least in part to improved electricity access.

From the evidence of the case studies examined in this study, it would appear to be the lower level, off-grid, energy access solutions which provide the greater value for money in terms of both access tier achieved and increase in beneficiary household incomes.

These sometimes contradictory and counter-intuitive findings affirm that the mechanisms by which electricity access enables poverty reduction are numerous and complex and are influenced by many other factors beyond electricity access.

An examination of the literature and a review of the regulatory and policy framework in the case study countries (including stakeholder consultations) found that the features of policy and regulation that are most critical in increasing use of electricity access for productive purposes by poor people are:



- Clear policy focus on provision of electricity for productive use (relative to basic household provision) and of off-grid electricity in the many contexts in which grid extension is not feasible
- Electricity access policies with explicit links to policies in other areas of livelihood creation and income generation, such as industrial and agricultural development.
- Regulation that encourages the provision of off-grid electricity access by non-governmental actors. In the case of mini-grids, tariff-setting, cross-subsidisation and licensing regulations are key to bringing about new mini-grid investments. Furthermore, mini-grid developers need policies that protect them from uncertain grid extension plans.

With respect to the electricity supply itself, the poor service provided by on-grid and off-grid supplies alike emerged as a highly influential barrier. Most often, productive use and poverty impacts of electricity access were hampered by the low number of hours per day that electricity was available, poor reliability and quality and the high cost of electricity consumption. The capacity of the supply is also a frequent limiting factor for (potential) productive users. Despite this confirmation of the importance of not just electricity access, but good quality access, a direct connection between level of access and poverty impact could not be established.

Stakeholder interviews and research in communities which had received electricity access confirmed that socio-economic context and the presence of a number of critical enabling factors strongly affect the extent to which looked for benefits of electricity can be achieved. The most significant factors appear to be:

Costs and Access to Finance – both for electricity itself and for the wiring and equipment needed to use it productively, are strongly identified by all as factors driving (or preventing) its take up and use. Stakeholders in both countries saw the high cost of rural provision as being exacerbated by inequitable support regimes which favour grid over off-grid supply and fail to counterbalance the inbuilt cross-subsidy between urban and rural areas inherent in grid systems, with the effect that off-grid communities are competing on unequal terms with nearby grid-supplied communities.

Knowledge & Skills - Low skill levels and capacity act as a barrier to local people securing economic benefits through involvement in electricity provision. Knowledge of the benefits and possible productive uses of electricity is key in the take up of electricity access, and potential users also need the skills to operate and maintain electrical machinery. Finally, entrepreneurial skills are required to identify new opportunities created by electricity access, create new enterprises and find and access markets for the new products and services provided.

Access to Markets - In the absence of adequate access to external markets, demand in rural areas is often constrained and unable to absorb additional production, leading to market saturation with new and newly electrified enterprises simply competing with existing and un-electrified firms for the same overall “pool” of value.



In the absence of access to wider markets, the availability of additional labour freed-up by electrification is likely to simply drive down wages and the prices of goods and services produced informally so that even those able to use additional time productively may well not see any increase in incomes.

The design of programmes, as well as policies, must give more attention to the productive use of electricity access, and ideally electricity access should be delivered as part of broader development initiatives that tackle infrastructure, skills and foster access to markets and finance.

Although the relationships between electricity access, productive uses and poverty outcomes identified in the literature are not straightforward, and impacts are highly specific to the country and context in which they are studied, some clear recommendations have emerged to increase the chances of the desired poverty reduction impacts resulting from policies and programmes relating to electricity access. By putting village-scale productive uses at the heart of electricity access provision, policymakers and programme developers can simultaneously improve the viability of electricity access projects and better ensure that the ultimate aims of poverty reduction and economic development are achieved.

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