

Improved access to electricity – evidence based experiences

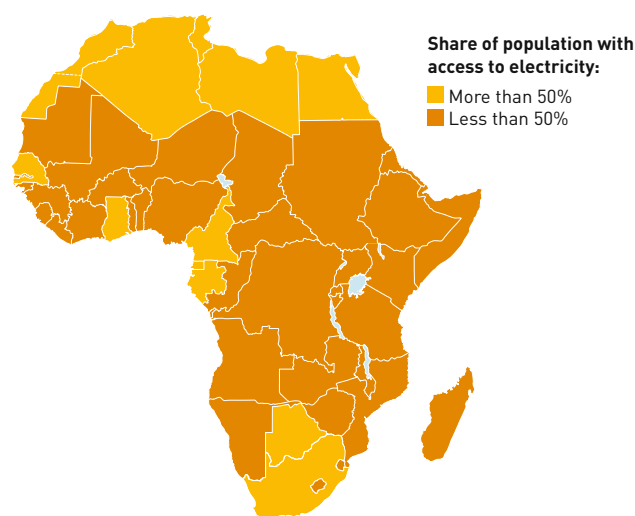
Improved access to electricity is a necessary precondition for transitioning a society out of poverty but rarely a sufficient condition for enabling income growth and employment generation. Households, businesses, social institutions as well as the wider community may benefit from electrification. Efforts to improve access to electricity need to be complemented with technical and financial assistance that encourage public and private actors to take advantage of electricity services and to use its full potential for sustainable environmental and social development and inclusive economic growth.

THE CHALLENGE

More than 1 billion people lack access to electricity to light their homes or conduct business. The vast majority of the people without access to electricity live in the poorest countries in Sub-Saharan Africa and Southern Asia.

Africa and Asia have abundant resources for power production. However investments in increased generation capacity have not been able to keep up with the increased demand for electricity, particularly in Sub-Saharan Africa. Transmission and distribution lines are generally old and there is often insufficient resources for rehabilitation or replacement of equipment. Weak transmission systems, in combination with limited generation capacity, result in unreliable supply of electricity. This is a major impediment for the productive sectors.

Institutional capacity and regulation of the electricity sector is often weak in countries with low access. Unclear and weak regulation often inhibits private investments in the energy sector.



"In Sub-Saharan Africa, 620 million people – two thirds of the population – live without access to electricity."¹

In Sida partner countries, only around 20% of the population has access to electricity and the share in rural areas are not more than around 5%. The UN Secretary-General has recognized the situation as an urgent challenge and a major barrier to eradication of poverty and the building of shared prosperity.² A common global vision has therefore been formulated to stimulate efforts to improve access to modern energy services.

SOURCES OF EVIDENCE

During 2013, Sida conducted an evaluation of Sida's and other development partners' experiences from electrification, including an extensive literature review. This fact sheet is based on the evaluation, field visits and other sources referenced. The aim is to provide evidence of the linkages between access to electricity, sustainable development and poverty reduction.

¹ Africa Energy Outlook, OECD/IEA 2014

² Launch of the Sustainable Energy for All (SE4ALL) vision, 2011

ECONOMIC DEVELOPMENT

*"A reliable provision of electricity is regarded as essential for economic development and power outage and blackouts continue to be a constraint for medium enterprise expansion in the manufacturing industry."*³

Lack of access to finance, markets and electricity constitute the biggest obstacles that businesses face in developing countries.

Reliable and sufficient modern energy sources enable private sector development. Bringing electricity to a region has shown to have positive impacts on the private sector; stimulating job creation and business development through increased production and profit.

Already established industrial and agricultural businesses dependant on diesel generated power were seen to improve efficiency in their operations when switching to reliable and more affordable electricity from the grid. Companies expanded their businesses, increased revenues and job opportunities.

Studies reveal that agricultural production may benefit from electrification through providing light during milking hours, introduce pumping for irrigation and small scale agro-processing.

Improved access to electricity has contributed to the establishment and expansion of small and home based-businesses in the case study areas. The number of new workshops, small groceries, barbershops, cafés and restaurants grew with time after electrification in the Ribáuè and Iapala districts in Mozambique.



Photo : Anders Arvidson

*"Since power came to Nyaishozi, the Wood Workshop has employed eight youths that have been trained in carpentry. One of the newly employed is a young woman. The workshop has about 20 electrically powered tools. It has reduced the time it takes to complete a job; a job that previously took one week can now be finished in one day."*⁴

Lighting provides extended productive hours at the household and community level that may be used for income generating activities. This is particularly important for women that may do business related work at night from home.

Moreover, increases in business activities may lead to increased tax revenues for local governments. It was estimated that approximately 50% of the tax revenue increase in Ribáuè district was due to electrification.

EDUCATION

*"Children – and in particular girls - with electricity services at home, have achieved better overall test results in school, compared to children without access to electricity. The most dramatic divergence is seen in English, which can be a result of increased exposure to spoken English through TV and radio broadcasts in electrified households."*⁵

Access to electricity has shown to have a positive impact on education as it improves grades and pass rates. Lighting makes it possible to spend more time studying and reading, at home, but also in schools through evening classes. Modern pedagogical tools such as copying and printing services and computers may also be used.

It is also easier to retain qualified staff when offering a modern teaching environment and staff accommodation.

HEALTH

*"Since the connection to electricity, the Izimbya Lutheran hospital has reduced its expenditure on energy from 1 million TSH per month to 300,000 while at the same time now being able to run an operation theatre, assist more deliveries and provide other, more sophisticated health services such as X-ray and an incineration facility."*⁶

Several studies find positive health impacts correlated to electrification, for both connected and non-connected households. Lighting means that health facilities can offer quality services after dark such as safe deliveries. Health services are also improved when advanced equipment may be used such as; X-rays; laboratory apparatus; sterilizing instruments; cooling of vaccines and blood preservation. The use of cell phones and computers has improved communication and organization of the health sector.

In addition, TV and radio plays an important role for improving health. The World Bank describes how "access to television significantly increases women's knowledge of health and family planning". There is also evidence on the prevention of HIV/AIDS through campaigns on TV and radio.

3 Economy Profile Mozambique, The World Bank, 2013

4 Field visit to Tanzania, 2014

5 Experience from solar electrification in Zambia

6 Deo Rutahiwa, manager at Izimbya Hospital

HUMAN SECURITY

*"Since the World Food Programme installed solar panels at their food storage facilities in Kinshasa, costs for lighting are reduced and the security situation improved."*⁷

In electrified areas, people express a higher degree of feeling safe when there is light in the streets. This is particularly important for women and children to be able to attend school, access health services, conducting business or attending social events even during dark hours. At the household level, the replacement of kerosene lamps and candles reduces the risk for burning accidents.



Photo : Anders Arvidson

*"Grace Petro is a farmer. Previously she used to travel 15 km to grind her maize and paying the motorbike driver to take her there. When power came to her neighbourhood, it became much easier and less costly for her to get her maize grounded."*⁸

7 WFP, Democratic Republic of Congo

8 Field visit to Tanzania, 2014

ENVIRONMENT AND CLIMATE CHANGE

*"In 2011, 48 percent of the households in urban areas of Tanzania reported having electricity, while electricity as main source for cooking was found to be used by only 5 percent of those."*⁹

Electrification has not demonstrated any significant changes in cooking patterns at the household level. Among poor households in rural and peri-urban areas, traditional ways of cooking, leading to exposure to in-door air pollution and high emissions of greenhouse gases normally remain also after electrification.

Extending the electrical grid to communities and businesses operating with diesel generators shows a positive impact on the environment and reduces emissions of greenhouse gases.

DEMOCRACY AND HUMAN RIGHTS

*"People in electrified areas express a feeling of being 'brought out of the dark', and 'connected to the world.'"*¹⁰

After being connected to the electrical grid, purchasing a TV is high on the priority list. The benefits of TV and radio are perceived as very positive, giving access to news, weather reports and increased exposure to the outside world.

In the case studies, the secured possibility to charge cell phones was expressed as a main benefit from electrification. This was mentioned by both connected and non-connected households. Cell phones are being used for a wide range of purposes, including communication, money transfer, as a torch, and by some, for internet and listening to radio and music.

THE SWEDISH INTENTION

Sweden strives to contribute to improved access to sustainable energy to reduce poverty and stimulate economic growth. This means increasing poor people's access to modern energy services while at the same time increasing the share of renewable forms of energy in countries' energy mix; increasing energy efficiency and promoting technologies that reduce greenhouse gas emissions. Applying economic instruments, promoting technology transfer and partnering with the private sector and civil society are also mentioned as key principles for Sweden's engagement in energy sector development.

9 Ministry of Finance, Tanzania 2012

10 NCG, 2013

UN DECADE FOR SUSTAINABLE ENERGY FOR ALL (SE4ALL) 2014-2024

Access to electricity is shown to have positive effects on development; in education, employment, communication, gender, safety, and health. Addressing improved access to electricity is to enable sustainable environmental and social development and economic growth.

The United Nations has recognized lack of access to sustainable energy as constraint to development. Three goals have been formulated at the global level and are to be accomplished by 2030:

- to ensure universal access to modern energy services,
- to double the global rate of improvements in energy efficiency,
- to double the share of renewable energy in the global energy mix.

To achieve these goals, a doubling of current funding levels is needed. To increase focus on the efforts needed, the years 2014 to 2024 have been declared the "Decade of Sustainable Energy for All" by the UN General Assembly.

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