# DOWNLOAD PDF ELECTRICITY SERVICES IN REMOTE RURAL COMMUNITIES

## Chapter 1 : Solar energy provides electricity in remote areas | ScienceNordic

*Electricity Services in Remote Rural Communities describes the design and use of a particular management model for electricity services in isolated rural communities. This model was designed with the clear objective of efficient financial and technical management, taking into account the social and economic environment and the committed.*

In impoverished and undeveloped areas, small amounts of electricity can free large amounts of human time and labor. In the poorest areas, people carry water and fuel by hand, their food storage may be limited, and their activity is limited to daylight hours. Improve healthcare by electrifying remote rural clinics. Reduces the need for candles and kerosene lamps with their inherent fire safety risks and improves indoor air quality. Improve productivity, through the use of electricity for irrigation, crop processing, and other activities. Technology[ edit ] Due to their geographical location and low demand compared to the area, rural areas are mainly suitable for renewable energy off grid applications. Renewable energies based mini grids are less dependent on larger-scale infrastructure and could be placed in service faster. The following technologies are used extensively: Fully commercial and the preferred option for remote telecommunications, commercially evolving for village power. Bioenergy Micro hydro is very widely implemented in Nepal, Vietnam, and China. Hybrid power is also widely used where a number of different technologies are combined to provide a single power source. More than 17 African countries are now members of this south-south initiative with IED as secretariat. The CLUB-ER has the purpose to accelerate the development of rural electrification in Africa by creating the conditions for a mutually beneficial sharing of experiences between agencies and national structures in charge of rural electrification. Since then the country has implemented several electrification initiatives: Brazil[ edit ] In ,  In , the Federal government of Brazil , under the Fernando Henrique Cardoso administration , launched the Luz no Campo program to expand the distribution of electricity in Brazilian domiciles, with a focus on rural households. From on, the program was reinforced and renamed Luz para Todos by the Lula administration. The results were that, according to the PNAD, by ,  China[ edit ] By , percent of Chinese people had access to electric power. In the early s the average use of power in the countryside amounted to the equivalent of a 60W light bulb switched on for less than 30 minutes a day. This was followed by the China Village Electrification Program , also using renewable energy, aimed at the electrification of a further 3. The Rural Electrification Corporation Limited was formed to specifically address the issue of providing electricity in all the villages across the country. Poverty, lack of resources, lack of political will, poor planning, and electricity theft are some of the major causes which have left many villages in India without electricity, while urban areas have enjoyed growth in electricity consumption and capacity. The central government is increasingly trying to improve the dire conditions by investing heavily in biogas, solar as well as wind energy. Programs such as The JNN solar mission, and Pradhan Mantri Gram Vidyut Yojana is also known as the Saubhagya Scheme have been announced to fasten the pace of electrification and diversify the procedure. The work is also on-going for reducing wastage, providing better equipment and improving the overall infrastructure for electrical transmissions in villages. Currently, all the villages in India have been electrified w. A breakdown is provided below on the number of states and UTs Union Territories that have been electrified: Ireland[ edit ] During the s most towns in Ireland were connected to the national grid. The outbreak of World War II in Europe lead to shortages of fuel and materials and the electrification process was brought to a virtual halt. Currently the Rural Electrification scheme continues, but is primarily concerned with upgrading the quality of the network voltage fluctuations are still a problem in parts of Ireland - particularly in rural areas and making three phase supplies available to larger farms and rural businesses requiring it. Despite widespread electricity in cities, by the s electricity was not delivered by power companies to rural areas because of the general belief that the infrastructure costs would not be recouped. In sparsely-populated farmland, there were far fewer houses per mile of installed electric lines. A Minnesota state committee was organized to carry out a study of the costs and benefits of rural electrification. Electricity was

first delivered on December 24,  Before , a small but growing number of farms installed small wind-electric plants. These generally used a 40V DC generator to charge batteries in the barn or the basement of the farmhouse. This was enough to provide lighting, washing machines and some limited well-pumping or refrigeration. Wind-electric plants were used mostly on the Great Plains , which have usable winds on most days. In , the Tennessee Valley Authority was created, in part, to provide rural electrification in the Tennessee Valley and surrounding areas. TVA created the generation and wholesale transmission capabilities that enabled rural distribution systems through electric cooperatives. It was charged with administering loan programs for electrification and telephone service in rural areas. In the REA was authorized to make loans for telephone improvements; in , REA was permitted to give interest-free loans for job creation and rural electric systems. In September , the U. The program is called the Electric Infrastructure Loan Program. The REP extends the national grid through the construction of electrical distribution pole lines to un-electrified areas and provides house wiring assistance through a loan programme to householders. In June Energy Minister Phillip Paulwell disclosed that, approximately 16, homes in remote parts of the island which do not have electricity are to be supplied with solar or wind electricity through the Rural Electrification Programme REP. In March he told a newspaper that, by , "we should no longer have REP in the way we do now", adding that if the Government finds it too challenging to run power lines into communities, it will use solar.

## Chapter 2 : Rural electrification - Wikipedia

*This book describes an innovative model for the organization of electricity services, developed and tested by Practical Action as part of its research and development into access to electricity services in remote rural areas and the sustainability of these services.*

Standard sized solar PV systems are being installed, with an ongoing maintenance contract in place to guarantee the supply of power. How the school or clinic then makes use of the power supply is being tracked and evaluated, both through remote monitoring systems and also through regular field visits, to assess what else needs to be provided to maximise the impact of the intervention. The programme targets facilities which are outside the state system. These facilities are typically far from the national grid and lack a power supply. This limits the quality of education and health care which can be provided. Some piecemeal provision of solar panels through charitable donation happens, but these systems frequently fail after a short period for lack of maintenance. The OVO Foundation and Energy 4 Impact partnership aims to deliver reliable power to all privately operated education and health facilities which need help in Turkana and Kilifi counties. So far twenty pilot installations have been completed in 16 schools and 4 clinics in Turkana and Kilifi counties. Energy 4 Impact contracted the Kenya-based company Sollatek to undertake the installations, and to provide ongoing maintenance support over a three year period. A standardised system size of W was used across all sites to simplify delivery. Remote monitoring systems are being trialled in 4 locations to collect data on the performance of the systems allowing for early detection of problems, so that necessary steps can be taken to avoid system failures. Migodomani Primary School, in Kilifi county, serves students, some of them boarders. The school was connected to the grid, but a few months after connection in the local transformer blew up and the school has been without power ever since, apart from what is provided by a small solar panel for some lights and phone charging. With the W system now installed, the school can meet all of its power needs, including being able to charge tablets which they were given by the government but have never been able to use. Staff and students at the school were excited on the day of installation to see one of these tablets finally come to life. During the initial site assessments for the pilot, Energy 4 Impact staff found that government electrification plans for some state schools and health posts remain a distant prospect. A few public institutions were, therefore included in the programme. Mitsajeni Dispensary in Kilifi is a government run facility serving around 80 patients a week. Until now the dispensary has relied on kerosene lights and bottled gas to meet its energy needs. With the solar installation the facility can now provide a higher level of service, especially after dark. Staff at the dispensary said: This marks a new era for our medical operations at Mitsajeni Clinic. Mouneal Shapel boarding school, in Turkana county, caters for students. The compound consists of 14 buildings, including dormitories. The school had a large solar PV system installed on one of its buildings some time ago, but the inverter and batteries had long malfunctioned. This building was being powered by a diesel generator, which also supplies power to other buildings in the school. The Sollatek team were able to integrate the old solar panels and the diesel generator into the newly installed system, with power from the generator only used as backup power. The improved electricity supply is expected to boost the use of digital learning, and will save the school money. Representatives from the OVO Foundation will visit Kenya in May to evaluate the pilot with a view to potentially extending this programme to cover a much larger number of schools and clinics. Some of the questions under consideration are whether more should be supplied than just the power system e. Data from the remote monitoring will also be analysed and options for alternative monitoring systems reviewed. The OVO Foundation has a very entrepreneurial approach in wanting to try things out, learn and refine. Working with the schools and clinics we can create durable solutions which will have a lasting impact on these communities, said Daniel Kuria, Project Manager and Business Advisor at Energy 4 Impact. With the increased focus on tablet based learning and the rapid developments in educational software, demand for electricity in schools is growing. Health service providers also need power to operate

basic equipment for the diagnosis of illnesses, and for treatment. Powering these facilities will open up the possibility for improved education and health care service to many marginalised families.

## Chapter 3 : Electrification Challenge in Rural Areas - calendrierdelascience.com

*Abstract: It is widely recognized that electricity is a central element for social and economic development. It contributes to economic growth and underpins a range of basic welfare services, such as clean water, health, communications and education.*

Hilde Hartmann Holsten Habitants use the light to do homework in the eventing. Lan Marie Nguyen Berg Researchers have established an energy centre in a village called Ikisaya in Kenya that provides the community with affordable and accessible basic lighting and electricity services. The community driven center lends out lamps, offers mobile charging and hosts computer- and photocopying services, and has so far been a success. The project has put emphasis on including both men and women in the process; from mapping energy needs to operating the centre. The Ikisaya Energy Centre became operational on March 20th  The electric light may be used for cooking, socialising or doing homework in the evening, electricity allows you to charge your mobile phone, and electricity conditions a whole range of facilities such as computer-, printing- and photocopying services. However, historically, finding ways to expand energy services to marginalized households in developing countries has been a pressing challenge. Model design and challenges Tanja Winther. University of Oslo The energy centre was designed to be operated on commercial principles to ensure financial sustainability while at the same time attempting to ensure that the services provided are affordable and accessible. To achieve sustainability and enable expansion, the centre is operated by local residents on financial principles. Initiatives of this sort are dependent on support from governments, NGOs or other bodies. Before starting a similar center this and other issues need to be planned for agrees the two researchers. It is vital to ensure that competence is maintained in the village. For example in the case that the trained staff only three people move or otherwise leave the centre. Also, Ikisaya is remotely located and the place does not yet have access to the Internet, so communication and commuting is demanding. University of Oslo Nonetheless, the experiences that have been made - and continue to be made - are closely monitored by the staff and the research team so as to learn the most and regularly improve the system for the benefit of the population. Transferable knowledge There is no universal approach in terms of how to access electricity in marginalized areas. A number of factors determine what approach would be most suitable for a given community, for example: The Solar Transitions research project has launched a report that describes a model for off-grid, village scale power supply. The model was developed through the pilot project in Ikisaya in Kenya. The project was initiated and carried out by a team of social scientists and practitioners from Kenya, India, Norway and Austria in close collaboration with the local community. Initially, the team drew on Indian experiences with village scale solar electricity supply that had been made in the Sunderban Islands, West Bengal. This inspired the development of the model in Kenya, which nonetheless had to be adjusted to fit with the local conditions and social needs of the population. The team hopes that the report on the Ikisaya Energy Centre will be useful and inspire the establishment of similar energy centres elsewhere. Country Norway Related content.

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## Chapter 4 : Department of Health | Rural and remote communities

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Rural communities are already using commercial energy with extremely high prices. These traditional sources of commercial energy include dry cell batteries, candles, kerosene and diesel. New delivery systems have to be found to provide electric servise to millions of households in rural areas of Africa and Asia without reliable commercial service. As the consumption of rural households power is in general considerably smaller than in urban areas it is not necessarily more expensive to install. They can be engineered to supply the identified needs at an appropriate cost [9]. Socio-economic Context It is very crucial to understand the socio-economic context as it plays an important role in achieving the Millennium Development Goals MDGs linked to energy supply. The uptake of energy services and their application by the end user is needed. Influencing the Demand Living in a town or in an urban area makes a huge difference in defining the energy demand. The demand for electricity in urban and rural town areas is mostly dominated by industrial uses and large service locations. However in rural areas the demand for electricity is defined by household energy demands, needs for irrigation and local agro processing or other natural resource related enterprises such as mines. Micro scale enterprises have demands not much larger in terms of capacity requirement but yet different from households. The energy demands for those enterprises are more difficult to predict and also depend very much on the local socio-economic context in which the enterprises operate. When developing the electricity supply for households or enterprises the current consumption patterns need to be observed but also some capacity for growth needs to be taken into account. Influencing the Impacts To reach the development goals improving health care and education, increasing level of incomes to cross the poverty line the access to modern energy is a necessary condition. Lighting of homes and schools will have an influence on the education as this allows studying at home even when its dark and will attract teachers to rural schools. Also impacts related to health topics are possible by improving cooking situations, boiling water and cooling food for e. The impact of electricity on incomes especially the non-farm sector is more complex and little understood. Its important here that the impact materializes especially for the poor. The first to benefit in terms of income generation from new energy access are the more wealthy entrepreneurs within the community. Social assets rather than financial or other assets are the key to the realization of increasing incomes making use of new opportunities provided by modern energy supply, which implies: Impacts on the incomes are also relevant for the stakeholders in the energy supply as they are having incomes and therewith higher ability to pay for the energy services. Especially when reliability and predictability e. Conclusion To speed up the electrification of the more remote communities in developing countries further technical innovation and cost reduction is necessary. Further development of currently known technologies central grid systems and off-grid options is expected. University of Cape Town: