

Grid and Off Grid Electrification in Rural Afghanistan

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Summary

This paper will elaborate on a comparative assessment of grid and off grid electrification in rural Afghanistan and suggest ways of mitigation as to what direction should be opted by stakeholders.

The brief provided is out experience in the domain and suggests call for action in the area so as ways of mitigation are prepared, and a streamlined plan implemented. Since, there has to be a distinction between government activities and those of the donor agencies—here it will be assessed as an overall scenario to provide for a cohesive approach in dealing with issue of off grid rural electrification. It will form in a way a lesson learned over the last decade of intervention in this area.

Introduction

In many developing countries, the national electricity grid fails to provide rural communities with a reliable supply of electricity. Given the high socio-economic cost of this policy failure, both scholars and policymakers have recently become interested in off-grid electrification programs. However, the relationship between national grid expansion and off-grid electrification remains unclear. Are these two approaches independent of each other, or perhaps even competitors? Explicit policy integration is necessary to encourage investment in off-grid electrification and avoid duplication of effort. Otherwise, there is a danger that the poorest and geographically most remote segments of the rural population could be left outside electrification efforts.

Many developing countries suffer from an inadequate and unreliable supply of electricity. Rural electrification can contribute to economic growth and led to improvements in education, health, and gender equality, especially when implemented in conjunction with other rural development initiatives.

The challenge of rural electrification is ultimately one of supplying electricity to areas with low population densities. Traditionally, electricity has been generated and distributed by centralized, state-owned power utilities with natural monopolies.

In recent years, the shortcomings of conventional rural electrification programs have created demand for alternative solutions. One such solution is off-grid electrification, whereby electricity is generated without a connection to the national electricity grid. For example, a simple off-grid electrification project could deploy solar panels and generate electricity for the domestic needs of households in a small community. The advantages of off-grid electrification comprise a lack of dependence on planning at the national level, limited capital requirements, and an easy access to remote rural communities. A wide variety of organizational models are available for off-grid electrification, including self-generation by end users, community microgrids, and the development of charging stations to charge.

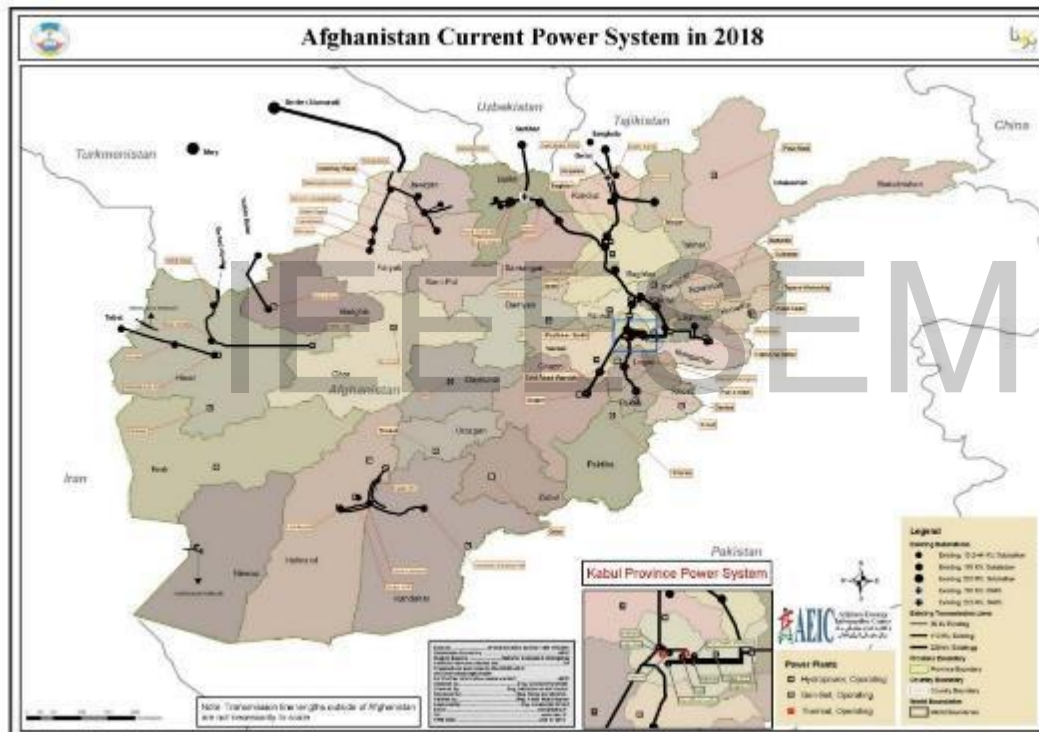
In the least developed countries, electricity utilities and the policymakers regulating them often lack the material and institutional resources to meet the rural electrification challenge.

In the same manner, Afghanistan's Grid is isolated in three main connected zones. The North, the south and the eastern. The Eastern Power Supply network is connected to the Northern Energy supply network while the Southern network is isolated.

The northern and the eastern meets with both the generated electricity from Afghanistan and those that are imported to provide for major consumption zones such as major cities.

It is planned that through the work of the Da Afghanistan Breshna Sherket DABs all the zone are connected in a HV grid that forms a HV ring gradually to meet the domestic distribution and the import capacity.

Based on the latest figures there is 390 MW of Electricity that should be fed to the grid to meet the needs of those connected or in other words that figure is the shortcoming.



Given that a high voltage ring is planned to rectify the energy transmission and distribution, most of the areas of the country will be far apart from the grid and noting that the grid extension is a costly venture, only decentralized option could be pursued and that in the form that the grids formed will eventually have the capacity to be connected to high voltage grid ring.

Afghanistan needs electricity and with due consideration given that the area is full of natural obstacles and population is dispersed therefore, it will be a hefty investment to extend the gridline in those areas and as such only decentralized options could be pursued.

It will be put here that the grid connectivity of the rural Afghanistan is very limited and only have access to electricity through dis-aggregated options that either donor provided or are from personal investments.

Concept

It is very well noted that the situation of Afghanistan calls for electricity to be provided for households as it is an economic variable and based on studies energy availability helps with poverty alleviation. In light of this it is proposed that on sidelines of the national plan, the local grids be taken in consideration using a variety of technologies. It can be a standalone system or that of a hybrid mode that can sustain the local load without the need of expensive grid expansion.

With this concept, it could be said that in many countries such a method has help alleviated the energy needs and has provided for poverty alleviation needs.

The three approaches to electrification are complete separation in which off-grid electrification is pursued by private entrepreneurs and designated government agencies in areas that are currently not planned for grid extension, uncoordinated integration in which both grid extension and off-grid electrification are pursued independently of one another by different agents within and outside the government, and integrated development in which a consistent electrification policy guides the progress of coordinated off-grid electrification and grid extension. In analyzing these three approaches, the focus is on the coordination and integration of the policy, as opposed to the distinction between private and public ownership. Both grid extension and off-grid generation can be implemented privately and publicly, and this dimension of regulatory policy is not the focus here, except when it is directly relevant to coordination and integration.

The approach of separation is proposed here as if pursued separately from grid extension. Decentralized systems can be centered within micro grids instead of vulnerable long over-head lines and their accompanying high per unit installation costs. These systems can be tailored to best employ local resources and generate energy access solutions best suited to the geographical dispersion, electricity needs, and ability to pay off a region's population. It is with this that government intervention would discourage local poor due to hefty costs of tariffs.

As part of India's electricity policy since the Electricity Act of 2003, two major rural electrification initiatives – one based on grid extension, the other on off-grid electrification – have been implemented on a national scale. The stated goal of these initiatives is to significantly improve India's electrification rates. They are not explicitly coordinated, however, and this prevents the country from realizing the full potential of off-grid electrification.

From the experience of India it could be inferred that coordination is the key and the whole model calls separation and coordination.

Conclusion:

Given that energy is the primary need and national and local policies are different it thus calls for separation and as per the situation of Afghanistan it calls that a model be implemented that focused on energy generation and coordinated implantation of activities.

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