

Sustaining Efficiency in Electricity Distribution to Enhance Effective Human Security for the Vulnerable People in Ghana

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Abstract : The unreliable and poor efficiency of electricity distribution leading to frequent power outages and high losses are the major challenge facing the power distribution sector in Ghana. Distribution system routes electricity from the power generating station at a higher voltage through the transmission grid and steps it down through the low voltage lines to end users. Approximately all electricity problems and disturbances that have increased the call for renewable and sustainable energy in recent years have their roots in the distribution system. Therefore, sustaining electricity distribution efficiency can potentially contribute to the reserve of natural energy resources use in power generation, reducing greenhouse gas emission (GHG), decreasing tariffs for consumers and effective human security. Human Security is a people-centered approach where individual human being is the principal object of concern, focuses on protecting the vital core of all human lives in ways for meeting basic needs that enhance the safety and protection of individuals and communities. The vulnerability is the diminished capacity of an individual or group to anticipate, resist and recover from the effect of natural, human-induced disaster. The research objectives are to explore the causes of frequent power outages to consumers, high losses in the distribution network and the effect of poor electricity distribution efficiency on the vulnerable (poor and ordinary) people that mostly depend on electricity for their daily activities or life to survive. The importance of the study is that in a developing country like Ghana where raising a capital for new infrastructure project is difficult, it would be beneficial to enhance the efficiency that will significantly minimize the high energy losses, reduce power outage, to ensure safe and reliable delivery of electric power to consumers to secure the security of people's livelihood. The methodology used in this study is both interview and questionnaire survey to analyze the response from the respondents on causes of power outages and high losses facing the electricity company of Ghana (ECG) and its effect on the livelihood on the vulnerable people. Among the outcome of both administered questionnaire and the interview survey from the field were; poor maintenance of existing sub-stations, use of aging equipment, use of poor distribution infrastructure and poor metering and billing system. The main observation of this paper is that the poor network efficiency (high losses and power outages) affects the livelihood of the vulnerable people. Therefore, the paper recommends that policymakers should insist on all regulation guiding electricity distribution to improve system efficiency. In conclusion, there should be decentralization of off-grid solar PV technologies to provide a sustainable and cost-effective, which can increase daily productivity and improve the quality of life of the vulnerable people in the rural communities.

Keywords : electricity efficiency, high losses, human security, power outage

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