

# INVESTIGATING THE PREVALENCE OF ILLEGAL METERS ON THE NATIONAL GRID

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## Background

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The government of Ghana instituted the National Electrification Scheme (NES) in 1989 as its principal policy for driving electricity access across the country for economic growth and development. The NES is operationalised through the National Electrification Master Plan and targeted universal electricity access by 2020. The current electricity access rate of 85.17 percent show that while progress toward universal access has been substantial, it has fallen short of the 2020 target. Consequently, the timeline for achieving universal electricity access has been shifted to 2025.

One of the vehicles for delivering the NES policy is the Self-Help Electrification Program (SHEP), a community-driven electrification mechanism. Under the SHEP, communities are assisted by the government to advance their connection to the national electricity grid ahead of their scheduled connection time under the National Electrification Master Plan. The program has been delivered in phases starting in 1990 and is currently in its fifth phase. SHEP has contributed to increasing the electricity access rate from about 23 percent in 1990 to 85.17 percent in 2021.

SHEP requires communities to be within 20km of an existing 33kV or 11kV supply, be prepared to purchase all Low Voltage (LV) poles to connected and have a minimum number of houses wired up and ready to receive electricity to be considered eligible for the program. While SHEP has been relatively successful in contributing to a growing electricity access rate, the program's fundamental challenge has been the inability of communities to procure the required number of LV poles and ensure the minimum number of houses are wired for connection. As a result, the meters for SHEP find their way outside the designated areas for SHEP implementation. The incidence of the SHEP meters being used outside its designated locations has resulted in the increasing trend of illegal connections to the grid, especially in urban residential areas. In a revenue protection exercise conducted by ECG in between December 2019 and January 2020, a total of 10,142 illegal SHEP metres were recovered in the Ashanti Region.<sup>1</sup>

With the active involvement of agents of the distribution companies, people procure the SHEP meters outside the ECG system, mainly to be used in urban areas and connect them to the grid. These meters are considered illegal as they have not been processed to enable standardised readings, billing, etc., and their consumption is not captured in the grid system leading to commercial losses to the distributor. Some persons, have in the past, been arrested for the sale

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<sup>1</sup> ECG rakes in over GH¢21.5m from illegal power connections. Retrieved from <https://bit.ly/3szV47e>

and installation of illegal meters.<sup>2</sup> ECG has also revealed that politicians distribute these unregistered and uncalibrated metres in the rural areas for electoral benefits.<sup>3</sup>

Non-payment for power consumed and power theft through illegal connections are the principal causes of the commercial losses witnessed in the power distribution sector. Ghana is estimated to have lost 21.7 percent of gross electricity generated annually between 2006 and 2016 through transmission and distribution losses. The upward trend of losses from the system has continued till date. As of September 2019, system losses were 24.5 percent. This is made up of 10.5 percent technical losses and 14 percent commercial losses. Again, electricity distribution losses for the first quarter of 2020 was 26.63 percent, which is about 3.43 percent higher than the regulatory benchmark of 23.2 percent. Technical losses accounted for about 10 percent whilst commercial loss was 16.63 percent.<sup>4</sup>

These losses indicated above have significant impact on the financial health of the distribution utilities. ECG reports estimated annual losses from power theft to be about US\$418.2 million.<sup>5</sup> Pre-paid meters were introduced to reduce and eliminate illegal connections and theft due to in-built regulation and monitoring systems. Yet, power theft through illegal connections remains a menace. This indicates that the assumptions that informed the mass deployment of prepaid meters have failed to be the silver bullet for fixing the commercial losses.

The increasing commercial losses significantly contributes to the continuous debt accumulation in the sector in spite of the efforts made to clear the energy sector debts under ESLA. The inefficiencies in the distribution of power informed government's decision to use the second compact of the Millennium Challenge Compact (MCC) for the financial and operational turnaround of ECG through Private Sector Participation (PSP). Unfortunately, the PSP process was truncated due to the several actions and inactions of actors in the process. As a result, the problems in the distribution sector continue to persist with its attendant debt accumulation. In fact, the government's Energy Sector Recovery Program reports that if left unresolved, the continuous debt accumulation in the sector could reach US\$12.5 billion by 2023.

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<sup>2</sup>Two fined GH¢2,400 for stealing ECG meters. Retrieved from <https://www.graphic.com.gh/news/general-news/2-fined-gh-2-400-for-stealing-ecg-meters.html>

<sup>3</sup>Do not share metres for vote – E/R ECG to politicians. Retrieved from <https://citinewsroom.com/2020/02/do-not-share-metres-for-vote-e-r-ecg-to-politicians/>

<sup>4</sup> 2020 Electricity Supply Plan for the Ghana Power System: A Midyear Review. Retrieved from: <https://bit.ly/39xCgOt>

<sup>5</sup> ECG soon to implement system to curb power theft. Retrieved from: <https://bit.ly/31A9bxn>

## Objectives

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From the foregoing, ACEP sought to verify the existence of these illegal SHEP meters to provide empirical evidence on the problem, to raise awareness and inform policy decisions for the reform of the power distribution system.

## Methodology

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For the first phase of this investigation, we randomly sampled urban and suburban residential areas in the Ashanti and Greater Accra regions based on the perception of the prevalence of illegal SHEP meters in these regions. These areas include Dodowa and Ada in the Greater Accra Region, and Effiduase, Bekwai and Asokore Mampong in the Ashanti Region. Each meter was captured with the aid of internet-ready cameras which transferred remotely to a central server for analysis. To ensure the integrity of the data, the images contained the exact geographical coordinates of the site and the exact time the image was captured. Data from the meters was then cross referenced with available data on authorised connections in the respective areas to assure the data's quality.

We also conducted key informant interviews with individuals with knowledge and experience on the issues of illegal connections and how the operations are carried out. These interviews provided a deeper understanding of how pervasive the problem is and the connection between SHEP meters and other illegal connections.

## Results

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The study identified 3,667 illegally connected SHEP meters from selected urban and suburban residential areas. All the meters identified were in use, serving power to customers. Over 70 percent of these meters had non-functioning LCD displays hence consumption data could not be accessed. This means that even if the power distributor can locate these meters, it would be unable to estimate how much power was consumed for retrospective billing. The remaining meters identified show very high consumption with some as high as 28,320kWh.

The study also revealed a disturbing phenomenon of what is called “Abortion Meters”. This phenomenon explains why the LCD displays on the meters are not functioning. Abortion meters are meters that are deliberately damaged with the application of concentrated heat on the digital displays or the removal the digital components of the meter which allows communication with the power distributors, all in a bid to erase and prevent record of consumption, especially when it is very high. It is important to stress that agents of the power distributors, including

subcontractors and service providers who distribute meters among others, actively facilitate and advise consumers on illegal connections and meter tampering for their private gains. This is an indication of managements' inefficiency in monitoring their service providers to ensure optimal delivery.

It was also revealed that politicians get the SHEP meters from the Ministry of Energy to share and connect households to the grid for electoral gains.

The evidence from this work suggests that the number of illegally installed SHEP metres identified in the study is only a tip of the iceberg. The implication of the existence of these meters is the significant financial losses to the power distributors. Currently, distribution losses in the system is estimated to cost about GHS1.3billion annually, with an average cost of about GHp 15/kWh to the consumer. The risk of this cost increasing is very high when the illegal meter connection problem is left unattended. The result of this is the extra financial burden on the already constrained power system.

## Conclusion and Recommendations

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While the SHEP program has significantly contributed to the increase in electricity access rate in Ghana, the inability of communities to meet the minimum requirements has resulted in SHEP meters finding their way into undesigned locations for illegal connection. The evidence suggests that this problem is widespread in the country and is brazenly facilitated by agents of the power distributors. The revenue losses from these illegally connected meters further worsens the already high commercial losses being experienced in the power sector, which has manifested in the financial distress the sector is currently faced with. This raises the need for quick reforms in addressing the challenge of illegally connected SHEP meters and the wider problem of illegal connections and non-payment for power consumed.

### ACEP therefore recommends that:

1. ECG should immediately take steps to regularise all SHEP meters and eliminate the damaged ones.
2. ECG should adopt a whistle blower mechanism to support the detection of illegal connections in the system.
3. ECG should overhaul their monitoring system to ensure that they are able to account for consumption in the system. Particular attention should be paid to the high voltage feeders to enable them to identify where power theft is high.
4. Again, power distributors should monitor their staff and subcontractors in charge of installing and reading meters to identify the recalcitrant ones who are engaged in illegal connection for sanctions.

5. The Ministry of Energy should ensure that installation of the SHEP meters is made with the active participation the power distribution companies to ensure they are captured into their system for billing.



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