

THE HIDDEN DIMENSIONS OF ENERGY POVERTY: THE CORRELATION BETWEEN THE ELECTRICITY THEFT AND PUBLIC SECURITY IN RIO DE JANEIRO

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Overview

The 2017 IEA's Energy Access Outlook (IEA, 2017) puts energy access as “a necessary condition for poverty alleviation” (p. 20). In fact, access to energy resources is a main concern in many non-developed countries. Energy poverty literature usually focuses on two dimensions of the problem. First, is access to energy provided? Second, can users pay for it? Since many in-development countries promoted policies to universalize energy access (especially electricity in urban areas) and to make energy more affordable (Social tariffs), the problem of energy poverty needs another perspective. Besides of direct economic returns and costs, others dimensions also interact and influence with energy poverty. These are what we call “the hidden dimensions of energy poverty” dimensions classified like three types: urban distribution pattern, political and institutional boundaries and criminal. In this paper, we focus our analysis on the the city of Rio de Janeiro as a case study.

Methods

We analyse four types of data. First, non-technical losses at power distribution concessionaires level. Second, use geolocalized data of energy non-technical losses of power sub-stations of distribution to estimate non-technical losses at neighbourhood level. Third, we use the Index of Social Development (analogous to Human Development Index, locally weighted) at the neighbourhood level. And last, we analyse the energy quality indicators measured by ANEEL (electric industry regulator) at the sub-station level. The distribution of organized crimes territories is descriptive. We use our data to build a spatial correlation of variables to identify sensible areas of energy poverty.

Results

Our results show a spatial correlation between the low Social Development Index and areas with high non-technical losses. These areas also overlap low-income regions where the absence of State action is notable (the *favelas*). Moreover, comparing this spatial distribution with public security indicators, we find that regions that switched institutional controlling from state to mafia (drug-dealers or militia), had an immediate effect on the quality of electricity

service. We find two explanations to this. First, mafia groups explore the service of illegal connection. Second, the power distribution concessionaire have difficulties to access high risk areas to perform maintenance.

Conclusions

In this work, we look at other energy poverty dimensions apart from the commonly used supply-and-access side. Briefly, we analysed energy poverty using three particular dimensions: social, criminal and political-institutional. These dimensions translate a complex concerning of energy poverty: major Transmission and Distribution Losses are registered in areas with low Social Development Index and the presence of traffic and militia's groups. Within these areas lives a significant share of Rio's population which is more vulnerable to suffer from the absence of a quality service. What our research shows is that urban energy poverty is not only an access issue, but a complex multidimensional phenomena.

References

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