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# Challenges of networked energy systems in informal and low-income settlements of Nairobi

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## Résumé

Urban electricity infrastructure shape the imaginary of modern cities, commonly seen as shining centers at night, full of blinking electric lights in the streets and soft glow at the windows. But proper and secure access to electricity still remains a distant dream for the urban poor of many cities in the global South. Taking into account this inequality, the post-2015 agenda adopted by the UN in September 2015 has put forward access to affordable, reliable, sustainable and modern energy for all.

Through the example of the public electricity system and its alternatives in Nairobi, this contribution aims at investigate the imaginaries of a modern "networked city" and the challenges that this model raises for ensuring universality of "public" services in a fragmented agglomeration. This ideal of a networked "electropolis" generally refers to a centralized topology of power networks, with unilateral flows from centralized power plants to transmission and distribution networks to the passive users and a homogenized urban space with uniform supply of standardized urban services. Accordingly, national and urban governments and Nairobi's public utility company, Kenya Power, have claimed to achieve the accessibility of all urbanites to the centralized power networks by 2020, to replace the use of other competing energy sources (such as kerosene or charcoal which are commonly consumed in slums), and to formalize illegal network connections (considered as danger for the users and as economic losses for the public utilities). Beyond raising huge investment sums that are needed for network extensions, one key challenge is to formalize the electrification of the off-grid slum areas and thus to secure cost-recovery in areas of the urban poor. This is currently tackled through the on-going installation of new transformers and the implementation of prepaid meters, following the African examples of Mozambique, Tanzania and South Africa where prepayment was largely introduced as a way to deal with an energy supply constraint and an economic deficit. Beside these resource and financial aspects, the Nairobi case also raises:

- specific sociotechnical challenges related to the resistance/acceptance/adaptation by users in poor and informal areas where an illegal and cheaper access often already preexisted;

- sensitive political issues, in terms of insecurity of land tenure status which implies the contested (non)recognition of some unplanned settlements.

This contribution presents the results of a survey conducted in slums of Nairobi, analyzing the prepaid electricity strategy of Kenya Power engineers for poor settlements and the responses of low income inhabitants in their changing everyday practices in the use of energy. It makes a contribution to expand theorizations of the networked city and its re-imagination in the global South.

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