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The prepaid electric meter: Rights, relationships and reification in Unguja, Tanzania

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ABSTRACT

Sustainable Development Goal 7, with the light bulb and power button as its symbols, in effect promotes the universal right to basic electricity services. Access for all demands both affordability and cost-recovery, and utilities (and donors) increasingly require users to shoulder the greater burden of cost-recovery. We argue that the electricity system is underpinned by a set of relationships among user, provider and the service itself: these relationships are mediated by the meter, the technology of commodification. Using a constant-comparison approach, and based on a year of interviews and document analysis, we compare postpaid and prepaid meter regimes in Unguja, Tanzania. We ask: what difference does the mode of payment make to the (residential) user, the utility, and to the prospects for meeting SDG 7? We find that the prepaid meter becomes reified with its automated monitoring and measurement mechanism, rendering the once-familiar meter reader obsolete, and shutting off the flow of electricity as soon as the customer's "units" have run down. Reification makes the utility more invisible to the customer, who now blames the meter rather than the utility for poor service or high bills. Our interviews reveal broad support for the prepaid meter, however, because economically vulnerable users expressed greater fear of debt than of the dark, and were willing to cede control of their consumption to the new meter. These findings undermine the common accusation of a "culture of nonpayment" in Africa. We also find that prepaid meters may incentivize the partial return to biomass-based fuels when cash is not available – exactly the behavior that universal access to electricity is supposed to prevent. We conclude that, if access to electricity in sub-Saharan Africa becomes entirely contingent on payment prior to use, this is not fully compatible with a commitment to universal basic access.

1. Introduction: Electricity as a right and a commodity

Sustainable Development Goal 7 (or SDG 7) – the United Nations initiative to "ensure access to affordable, reliable, sustainable and modern energy for all" – rests on the link between access to clean energy services and improved living conditions for the poor (United Nations, 2015). Researchers on energy policy and advocates for the rural and urban poor have strongly argued that access to affordable and clean energy is essential for the alleviation of deep poverty and poor health in the developing world (e.g. Smith, 2002; Sagar, 2005). In the quest to decrease the reliance on polluting fuels for cooking, heating, and lighting in low-income communities, SDG 7, with the light bulb and power button as its symbols, in effect promotes the universal right to basic electricity services. While such a right has no formal recognition, universal electricity access is now widely seen as a proxy for social and economic rights (Tully, 2006).

Many non-governmental initiatives, as well as foreign aid and foreign direct investment efforts, are devoted to electrification projects. Prominent examples include calls for universal access to electricity by the United Kingdom and the United States through their Power for All (UK) and Power Africa (USA) campaigns. Sub-Saharan African government initiatives include Ghana's Universal Electrification Plan and Ethiopia's Universal Electricity Access Program; their efforts reinforce the recognition of electricity as a necessity in the modern world.[1] These initiatives include the construction of electricity infrastructure, the distribution of new technologies within existing systems, and the reconfiguration of utility practices through new policies.

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[1] See: https://www.gov.uk/government/news/britain-and-us-unite-to-power-up-africa. Also Bayissa (2008) and Kemausuor and Ackom, 2017 for programs in Ghana and Ethiopia, respectively.

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Providing electricity services, especially universal basic services, entails significant capital, operations and maintenance, and ongoing delivery costs. Since these costs must be paid for, it is either up to the taxpayers (i.e. through direct or indirect taxes that go into government revenues) or up to the service users (i.e. through various fees) to pay for them (Harris, 2003, p 15). Even if the upfront or operational costs are financed by an international loan or by private investment capital, eventually these sources must be repaid either via taxation or via user fees. Who pays – taxpayers in general or specific consumers – ultimately dictates the nature and extent of electricity access for individual households. Access for all demands cost-recovery to maintain and extend services, and affordability to be 'for all', at the same time. Therefore, a tension surrounds the discourse on the implementation of SDG 7. Human rights goals and their advocates are more concerned with who has, and who does not have, access to basic electricity services than with who pays for what. Cost-recovery goals and their advocates are also concerned with access, but argue that it is neither practical nor productive to expect costs to be borne entirely, or even mainly, by the state. The terms of commodification – or, who pays, how they pay and how much they pay – are thus intimately connected to the ways in which either goal can be met. Two questions follow: Should the taxpayer or the user pay, and in what proportions? Second, if the user pays, should payments be made before the service is made available or after? This paper is concerned with the implications of the second question.

Radical changes in payment regimes are taking place in Sub-Saharan Africa (SSA). Partly a reaction to perceived flaws within utilities' cost-recovery techniques (discussed below), utilities in SSA are moving away from a postpaid electricity system – one in which users pay after a period of use – to a prepaid system in which users must pay prior to use. A report by the NorthEast Group, a smart technology and infrastructure consulting firm based in Washington, DC, projects a 234% growth in the market value of prepaid electricity meters for SSA by 2034 (Northeast Group, 2014). This report has helped to redefine the status quo in metering technologies, with academics, other consulting firms, and online news outlets citing it heavily.[2] The Zanzibar Electricity Corporation (ZECO) is one such SSA utility switching over to prepaid services as the preferred mode for their customers.

The roles and responsibilities of user and provider are different in each payment regime. The change in metering technology disconnects users instantaneously when their "units" run down; unlike the postpaid system, prepaid meters in SSA do not need a meter reader or utility employee to measure consumption or disconnect users. Thus, as we shall argue, prepaid systems are set to alter the human engagements previously established through the traditional postpaid system, i.e., the relationships between user and provider, the meter, and the electricity service itself.

Recognizing that the mode of payment for electricity is but one entry point into the social relations embedded in technologies, we explore the following questions:

(i) Given that prepaid and postpaid meters both commodify electricity services, what difference do the terms of commodification (i.e. how and when users pay) make to low-income communities and to the utility?
(ii) If access to electricity embodies a set of implicit and explicit social relations what difference do the terms of commodification make to these relationships?

We use the findings from these questions to discuss our final, broader question:

(iii) Affordable and clean energy *for all* is the seventh Sustainable Development Goal. How do the terms of commodification affect whether, and how, SDG 7 may be met?

This is the first paper (that we are aware of) to critically compare the perspectives of both postpaid and prepaid users in a single region transitioning from one metering regime to the other. As prepaid becomes the preferred meter in SSA, we examine the changing relationships embedded within each payment system. In line with previous research, we find that the prepaid meter disciplines users to use no more than what they can afford (van Heusden, 2012; Jaglin & Dubresson, 2016),[3] and has the support of the utility in large part because it reduces its nonpayment problem (Plancq-Tournadre, 2004). We find that many customers prefer the prepaid meter; it controls them (as they see it) through its automatic disconnection mechanism, but this control helps them to control their finances (Ghanadan, 2012, p 417; Baptista, 2015). The change from postpaid to prepaid therefore relieves vulnerable consumers of debt, but that relief comes with the fear of being left in the dark. The smallest consumers in our study, in fact, preferred postpaid meters. We also find that the prepaid meter tends to become reified in these low-income communities, often being conflated with the service provider in common discourse, and implicitly providing the utility with a certain distance from customer dissatisfaction. Electricity problems that were once blamed on a "cheating" ZECO staff, or on an incompetent meter reader, now tend to be attributed to the *mita mpya* (the new meter) itself.

When a basic level of electricity access is considered akin to a right, is one of a handful of globally agreed-upon development goals, and offers the possibility of improved living conditions for the poor, we must critically assess the nature of the security(ies) on offer when prepaid metering replaces postpaid. In our case study of Unguja, Tanzania (where ZECO operates), we argue that financial insecurity for many hitherto postpaid consumers has been replaced by insecurity of access to the electricity service itself. For most of these consumers, financial insecurity was the greater stressor; nevertheless, with automatic disconnection but without a low-priced (or free) lifeline entitlement, the lowest-income households are at risk of falling through the cracks of SDG 7. The utility is more secure with the prepaid meter, because customers can no longer rack up unpaid bills. However, we find that the discourse of controlling debt and using "only what you can afford", with which prepaid meters are promoted, applies largely to the residential and micro-business sectors. Many (though not all) government entities that are in heavy debt to the utility and large private sector customers continue on the postpaid system, while the public face of ZECO's debt remains the lay citizen.

2. The electric meter and the terms of commodification

The terms of commodification for basic public services determine the universal or otherwise nature of access to, and use of, such services. The debate on who should pay for electricity has brought to the forefront the difficulties of commodifying it without excluding individuals from the benefits it brings.

Whether payment should come from general revenues or individual users, and how the costs should be divided, is a debate that centers around fairness, affordability, and efficiency.[4] In principle, state-subsidized electricity provides affordable access for the poor,

[2] See, for example: Baptista (2015), Jack and Smith (2016), Sahel Standards News (2016).

[3] Similar point wrt water meters, von Schnitzler (2008).

[4] See Williams and Ghanadan (2006) and Estache (2008).