

Working Paper No. 182

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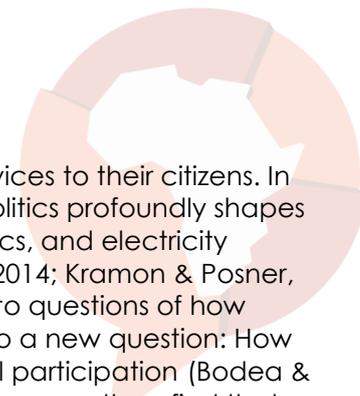
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Abstract

Electricity is often argued to be a catalyst for a country's industrialization and the social development of its citizens, but little is known about the political consequences of providing electric power to people. Contributing to literatures on the politics of public service provision and participation, we investigate the relationship between electricity and three measures of political participation: voting, political contacting, and collective action. Our comparative analysis leverages data from 36 countries collected in five rounds of Afrobarometer surveys between 2002 and 2015 (N≈160,000). Counterintuitively, we find that individuals with access to electricity participate *less* than those without access to electricity. This relationship is particularly strong for those living in democratic regimes, and with respect to non-electoral forms of participation. We hypothesize that having electricity access is associated with an "anti-politics" leading some citizens to retreat from engagement with the state to things such as the middle-class comforts of cold drinks, cooled air, and television.



Introduction

Almost all African states face pressure to deliver improved public services to their citizens. In both emerging democracies and persistent authoritarian regimes, politics profoundly shapes how states distribute public goods such as roads, schools, health clinics, and electricity access (Briggs, 2014; Dixit & Londregan, 1996; Harding & Stasavage, 2014; Kramon & Posner, 2013; Min, 2015; Weingast, Shepsle, & Johnsen, 1981). But in addition to questions of how politics shapes distributive outcomes, scholars have recently turned to a new question: How does variation in public service provision subsequently shape political participation (Bodea & LeBas, 2016; Harding, 2015)? Here, the findings are less clear. Where some authors find that the receipt of public service provision stimulates participation (Bleck, 2015; Wantchekon, Klašnja, & Novta, 2015), others caution that service provision may actually undermine engagement or have no effect (Croke, Grossman, Larreguy, & Marshall, 2015; Kam & Palmer, 2008; Mattes & Mughogho, 2009). Most of this literature has focused on the political effects of the delivery of social welfare services, especially education. Meanwhile, the political effects of electricity provision have been largely overlooked.¹

Electricity provision is important for political outcomes for several reasons. Historically, in some African countries, electricity provision was tightly linked to the independence struggle and to rights of citizenship (MacLean, Gore, Brass, & Baldwin, 2016). Yet despite these expectations, African countries continue to have the lowest rates of electrification in the world. Only about one-third of Africans have access to electricity (International Energy Agency, 2014), and only two-thirds live in a community with any grid access (Oyuke, Penar, & Howard, 2016), and these rates are much lower in rural areas in most countries (Leo, Morello, & Ramachandran, 2015).

Nonetheless, many Africans believe the state *should* provide electricity to its citizens. A sizeable proportion consider electricity a top government priority – even more important than corruption, political violence, political rights, or housing (Oyuke et al., 2016). In Afrobarometer's Round 6 surveys (2014/2015), 13% of respondents named electricity as one of the three most important problems the government should address, and in Guinea, Nigeria, Ghana, and Benin, 28% or more cited it as a top responsibility of government (Oyuke et al., 2016). In some African countries, such as Côte d'Ivoire, Ghana, and South Africa, inadequate access to affordable, reliable electricity has mobilized crowds to take to the streets in protest.² Moreover, donors and states are spending huge amounts to increase electricity generation capacity as rapidly as possible. Plans for the controversial Grand Inga mega-dam in the Democratic Republic of the Congo estimate its cost at more than \$100 billion.

Moreover, electricity is often argued to be a catalyst for a country's industrialization and for the economic and social development of its citizens. But little is known about the *political consequences of providing electric power*. A positive relationship is often assumed, but has not been tested. In particular, we do not know whether a relationship exists between access to electricity and the likelihood of voting, levels of citizen engagement through individual contact with government officials, or levels of individual-level participation in collective action. Is access to electricity associated with specific political outcomes, other things being equal? If so, do these relationships vary based on national political characteristics such as regime type, or individual characteristics such as level of wealth or membership in civil society organizations?

¹ For an exception, see Blimpo, Mensah, Opalo, & Shi, 2018.

² On Côte d'Ivoire, see: <http://www.africanews.com/2016/07/20/protest-against-high-electricity-prices-turns-violent-in-ivory-coast//>; on Ghana: <https://www.myjoyonline.com/news/2018/March-26th/four-month-power-crisis-in-akwatia-triggers-protest.php>; on South Africa: <http://ewn.co.za/2017/10/25/zandspruit-residents-vow-to-continue-protest-until-mashaba-addresses-them>.

To examine these questions, we draw on data from 36 African countries collected in five rounds of Afrobarometer surveys. Results of our analysis suggest that, counter to most expectations, electricity has a negative relationship with individual-level contacting of political leaders and citizens' collective-action practices. This relationship is especially pronounced for wealthier individuals in grid-connected communities, who participate at a substantially lower rate than do their peers whose communities lack access to electricity. We note that an exception exists, however, for individuals who are also joiners of community organizations; for them, access to electricity enhances participation. In addition, the negative relationship between grid access and participation is most pronounced in countries rated as "free" by Freedom House. Citizens with both access to electricity and the fewest barriers to efficacious participation substantively engage in politics at lower rates than those who face more obstacles to engagement. Given these findings, we hypothesize that access to the electric grid is associated with an "anti-politics of electricity" in which individuals become less engaged in politics and instead enjoy social interactions and leisure activities when they have access to electricity.

We engage with literatures in comparative and American politics. In particular, our research contributes to a nascent literature, within the politics of service provision, focused on how service provision affects political outcomes. Recent scholarship in comparative politics suggests that as communities receive services, they alter their engagement with or attitudes toward the state and its representatives (Bodea & LeBas, 2016; Brass, 2016; Harding, 2015). Within this new literature, there is some evidence that the relationship between service provision and political participation varies depending on political regime (Hern, 2017). We also build on earlier literature from American politics on political participation and citizenship to tease out factors that might interact with electricity access and shape political participation (Putnam, 2000; Verba, Scholzman, & Brady, 1995).

This research has policy implications for donors and government policymakers, who have been pushing for rapid electrification in sub-Saharan Africa in recent years. It will help them understand possible unintended consequences, such as decreased political engagement by citizens. This is particularly important because many of the donors pushing for the expansion of electricity access simultaneously fund efforts to increase democratic participation, and it may be that these two streams of funding are working at cross-purposes. For both scholars and practitioners, the analysis refines our understanding of what exactly electricity does – and does not do – in development.

Theorizing the effect of the electric grid on political participation

Most of the literature on distributive politics in developing countries focuses on how politics drives variation in policy and service-delivery outcomes (Brass, 2012; Briggs, 2012, 2014; Brown & Mobarak, 2009; Kramon & Posner, 2013). This paper, however, joins recent work that has focused on the reverse dynamic: the effects of service provision on political participation (Berinsky & Lenz, 2011; Bleck, 2015; Blimpo, Mensah, Opalo, & Shi, 2018; Bodea & LeBas, 2016; Croke et al., 2015; Harding & Stasavage, 2014; Hern, 2017; Kam & Palmer, 2008). It adds to that work by widening the theoretical lens beyond the usual focus on social-welfare services and road construction to analyze a new sector of service provision, electricity, across a large number of countries in Africa.

Among both academics and international development practitioners, electricity access is generally assumed or argued to spur an increase in political participation (Bernard, 2012; Welland, 2017). As occurs for other services, the receipt of electricity may constitute an important fulfillment of the social contract with the state and thus stimulate greater political engagement by citizens. Studies from sub-Saharan Africa have shown, for example, that those receiving education from the state are more likely to join and campaign for a political party (Wantchekon et al., 2015), contact officials (but not engage in other citizenship practices) (Mattes & Mughogho, 2009), or engage in a range of political activities such as registering to vote, voting, contacting officials, and engaging in collective action (MacLean,



2011).³ Parents whose children attend state schools are more likely to campaign or vote as well (Bleck, 2015). Likewise, those receiving state services generally (Bodea & LeBas, 2016), and electricity specifically (Blimpo et al., 2018), are more likely to pay their taxes – another means of political participation.

In addition to contributing to the social contract, electricity may increase political participation for more mundane reasons. For example, access to electricity in a community can enable the use of technologies that increase access to information through Internet cafes, TV news viewing in local restaurants and bars, and within households, thus creating a more “connected” or more informed citizenry (Jacobson, 2007; World Bank, 2008). Research has shown that people with greater access to information are more likely to participate as citizens (Gottlieb, 2013). More specifically, access to information technologies powered by batteries and electricity can create a more “critical citizenry” (Mattes & Shenga, 2007; Mishler & Rose, 1997; Moehler, 2008; Norris, 2000). This type of access to information is more likely in communities with electricity access than those without it (Gurung, Gurung, & Oh, 2011; Phuangpornpitak & Kumar, 2011).

Likewise, electric devices save individuals time, enabling people to participate more in politics. Specifically, electricity in a community may facilitate new and higher-paid employment opportunities, as when electricity makes industrialization possible, which may create free time through reduced hours worked. Electricity access may be accompanied by the purchase of new appliances in the workplace or home (e.g. refrigerators or irons) that make task completion quicker. Research in the United States has shown that individuals with more free time, such as retired people, tend to participate more in politics (Campbell, 2003), whereas people who have little free time, such as those who work multiple jobs to support their families, participate less (Brady, Verba, & Schlozman, 1995).⁴ Thus the dominant hypothesis among academics and practitioners is that electricity access spurs political participation.

At the same time, there are several reasons to be skeptical, as we are, about the political effects of electricity access. All else being equal, those with access to electricity services may be less likely to participate and engage with the state as citizens. Given that electricity access is relatively uncommon in Africa, people who have access might be among the most likely to have their needs met and thus have little incentive to make an effort to voice their concerns (Hirschman, 1970) or act as “squeaky wheels” urging politicians and public administrators to improve their performance. Some scholarship on sub-Saharan Africa shows such a relationship between service provision and political disengagement (Bleck & Michelitch, 2015; Croke et al., 2015; Bodea & LeBas, 2016). This would mean that individuals in electrified communities should be less likely to vote, to contact their officials, and to engage in higher levels of collective action.

Other, less sanguine possibilities are that electricity may facilitate longer working hours (Chakrabarti & Chakrabarti, 2002) or a more isolated culture of leisure time. By this we mean that individuals with access to electricity may retreat to their private home television, stereo, and fans to rest and relax with their families, rather than interacting with others in their villages or neighbourhoods (Putnam, 2000; Olken, 2009).

Scholars writing about the effect of the introduction of modern amenities in the United States have come to similar conclusions (Arsenault, 1984). Trippett (1979, 75), for example, asserted that air conditioning “seduced families into retreating into houses with closed doors and shut

³ Mattes and Mughogho (2009) focus on formal schooling, a proportion of which may be provided by nonstate actors, so we cannot assume state origins for this case. We point this out since Bleck (2015), Bodea and LeBas (2016), and MacLean (2011) note different trends in citizenship depending on the source of the services. Other research, however, suggests that individuals receiving services from nonstate actors such as nongovernmental organizations have equal or more favourable opinions of the state (Brass, 2016).

⁴ For the elderly in the United States, increased free time combines with strong group identities as well as the repeated habit of voting to increase participation (Campbell, 2003).

windows, reducing the commonality of neighborhood life and all but obsoleting the front-porch society whose open casual folkways were an appealing hallmark of a sweatier America.” Likewise, scholars argue that television weakens democratic participation through at least two channels. First, it sometimes frames political information so as to demobilize individuals (Delli Carpini, 2004; Iyengar, 1991), and second, it may isolate individuals, resulting in lower social interaction, social capital, and political capital (McBride, 2013; Putnam, 2000).⁵ This suggests that at-home viewing of television may distort information and reduce social connectivity, thereby actually dampening participation.

We hypothesize that individual and collective forms of political participation may actually decline among those with electricity access, in what we call an “anti-politics of electricity.” We also hypothesize, however, that the relationship between electricity provision and political participation might not work the same for all individuals. In addition to the expected variation in individual demographic characteristics, such as gender or education level, the literature reveals the role of broader group-based characteristics and the importance of the macro-level political context. We discuss below how electricity may have different effects, depending on individuals’ membership in a particular socioeconomic class, belonging to a civil society organization, or living in a more or less democratic political regime.

Electricity and the demobilization of the rising middle class

Modernization theorists have long said that “modern” infrastructure would help to create and strengthen a middle class that would demand greater democratic participation (Lipset, 1959). In a classic depiction of this, Lerner (1958) showed that when roads, radio, and electricity from Ankara reached the formerly isolated village of Balgat, Turkey, in the 1950s, people became more engaged, and democratic values triumphed over deference to the strong chief. This belief in “the passing of traditional society” is reflected in the claims of current Western donors, entrepreneurs, and policymakers who support investment in the African energy sector that rural electrification will lead to “access to the modern world” (interview by Harris, Kigali, July 2, 2014).

Critics of modernization theory, however, have pointed out that these processes of change affect different socioeconomic groups in varied ways (Moore, 1966). More recently, scholars have demonstrated how new technologies are used in contrasting ways by different socioeconomic groups – what is commonly termed a “digital divide” (Norris, 2001). Building on this insight, we theorize that electricity may also be used by the middle and upper classes in different ways than by the lower classes. While electricity may motivate the purchase of televisions, the lower classes will likely not be able to buy their own TV but will watch one in a public space, such as a restaurant or bar, whereas the middle and upper classes can afford to buy entertainment systems for their personal household and watch with fewer people at home (Olken, 2009; Venter & van Vuuren, 2000). As such, electricity may enable more social interaction in a community for the lower classes than for wealthier ones. We hypothesize that this will result in reduced forms of political participation that benefit from or rely on social interaction, such as engaging in collective action or contacting public officials, among the wealthy relative to others.

Building civil society and social capital

Electricity might also have differential effects depending on whether an individual is active in membership or civil-society organizations (Putnam, 1993). Electric light makes it easier for groups of people to meet after dark and to socialize around new means of entertainment. Electricity in community centers has been shown, for example, to facilitate women’s social networks by providing safe places to congregate (Banerji & Baruah, 2006). Electricity also energizes community celebrations (Alazraki & Haselip, 2007; Miller & Hope, 2000; Smits & Bush, 2010), which fosters social capital. Vibrant civil-society organizations and social capital, in

⁵ For a counter-argument, see Norris (2000).



turn, heighten political participation (Putnam, 2000; Skocpol, 2003). Based on this literature, we hypothesize a particularly meaningful positive association between political participation and civil-society organization membership.

Differences in regime type

Finally, previous research has shown that service provision shapes participation differently in democracies vs. more authoritarian regimes (Hern, 2017). There are reasons to believe that the relationship between electricity and participation may be significantly shaped by differences in regime type. If electricity indeed has emancipatory effects, then we should expect them to be most profound in settings where individuals face the fewest obstacles to making their voices heard. For example, democracies may encourage the opening of new small businesses powered by electricity, whereas autocracies may restrict these economic and political freedoms (Persson & Tabellini, 2006). Democratic regimes may also promote freedom of information and permit a livelier media environment as compared to more authoritarian regimes, and electricity could facilitate the sharing of this information. Finally, democratic regimes are also more likely to permit the growth of a vibrant civil society than autocratic regimes (Howard, 2003). As such, we hypothesize that electricity will be correlated with higher levels of participation in more democratic regimes.

Data and measurement

This paper interrogates these theoretical claims about the effects of grid electricity on political participation using data from 36 African countries collected in five rounds of Afrobarometer surveys (Round 2 (2002/2003) through Round 6 (2014/2015)). Afrobarometer conducts nationally representative public opinion surveys in a growing number of countries across the African continent on public attitudes about democracy, governance, and other topics.⁶ See Table 1 for descriptions of all variables used.

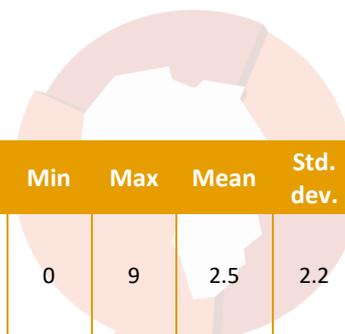
Measures of political participation

To examine political participation, our dependent variable, we use three measures that probe several distinct ways that people participate in politics: engaging in collective action, contacting public officials, and voting in national elections.⁷ The “collective action” variable is an additive index of three questions regarding how often respondents have attended community meetings, joined with others to raise an issue, and attended political protests or demonstrations.⁸ When summed, the result is a 10-point index. The second measure, “contacting public officials,” is created in a similar fashion, using questions about how often respondents have contacted a local government official, their member of Parliament or legislative representative, or an official from some other government agency. Many respondents in the Afrobarometer data do not engage in contacting public officials or collective action, resulting in a negative binomial distribution of the data. Finally, we include a binary variable indicating whether respondents report voting in the most recent national election in their country.

⁶ Data, survey manuals, and questionnaires are publicly available at www.afrobarometer.org.

⁷ The first two measures are analogous to the description of “communing” and “contacting” as distinct and relevant forms of political participation in the African context used by Bratton, Mattes, and Gyimah-Boadi (2004, pp. 251-265). These measures are also similar to those employed by MacLean (2011) in her analysis of state retrenchment and citizenship in Africa.

⁸ Each of these component variables is a five-item ordinal scale with response categories 0 (No, and I would never want to do this), 1 (No, but I would do this if I had the chance), 2 (Yes, I have done this once or twice), 3 (Yes, I have done this several times), and 4 (Yes, I do this often). Since both 0 and 1 reflect no engagement in the activity named in the question, we record 1 as 0 and adjust the other values to assemble a 0-3 scale.

**Table 1: Variable descriptions**

Variable title	Variable description	Data source	Obs	Min	Max	Mean	Std. dev.
Collective action	Frequency respondent attended community meetings, joined others to raise an issue of common concern, and attended protests or demonstrations in the past year	AB 2-6*	159,065	0	9	2.5	2.2
Contacting government officials	Frequency respondent contacted a local government official, their member of Parliament, or an official from a government agency in the past year	AB 2-6	154,057	0	9	0.9	1.7
Voting	Respondent voted in the most recent national election	AB 2-6	140,485	0	1	0.7	0.5
Grid-connected community	Respondent community has electricity grid that most households can access	AB 2-6	161,871	0	1	0.6	0.5
Electricity in home (AB 6)	Respondent has a connection to the national electric grid in his or her home	AB 6	45,375	0	1	0.5	0.5
Individual access to electricity (AB 2)	Respondent reports having access to electricity at least some portion of the time during the past year	AB 2	22,744	0	1	0.4	0.5
Information access: TV news	Frequency respondent receives news from TV news	AB 2-6	162,850	0	4	1.7	1.8
Middle class: asset ownership	Respondent owns any of the following assets: a radio, a TV, a motor vehicle (additive scale)	AB 3-6	139,842	0	3	1.2	0.9
Civil society: CBO member	Respondent is an active member or leader in a voluntary association or community group	AB 2-6	160,768	0	1	0.2	0.4
Urban	Respondent lives in an urban or semi-urban area	AB 2-6	163,553	0	1	0.4	0.5
Male	Sex of respondent	AB 2-6	163,553	0	1	0.5	0.5
Age	Age of respondent	AB 2-6	161,618	18	130*	36.7	14.5
Education	Level of education of the respondent	AB 2-6	163,130	0	6	2.3	1.7
Lived Poverty Index	Frequency respondent's household went without food, water, medicine or medical care, fuel for cooking, and/or a cash income in the past year	AB 2-6	161,281	0	20	6.4	4.6
Services in community	Respondent's community has a school, police station, and/or health clinic	AB 2-6	157,917	0	3	1.8	1.0
Piped water infrastructure	Respondent's community has a piped water system that most houses can access	AB 2-6	161,291	0	1	0.5	0.5
Partisanship	Respondent feels "close to" a political party	AB 2-6	152,460	0	1	0.6	0.5
GDP per capita	Gross domestic product per capita in the year of survey	World Bank	163,553	236	9598	1819	2177
Population density	Population per square kilometer in the year of survey	World Bank	163,553	2.4	385.2	76.2	65.6
Democracy	Average of Freedom House civil rights & political scores in year of survey	Freedom House	163,553	1.5	7	3.6	1.3

*AB indicates it is from the Afrobarometer survey data, and the numbers indicate the rounds in which the question was asked; the maximum age is reported as listed in the data.

Electricity access

Our independent variable of interest is whether or not people have access to electricity, which we measure in two ways.⁹ First, the variable “grid-connected community” measures whether respondents live in a community with a visible electric grid.¹⁰ This question was included in all five rounds of the Afrobarometer survey used in this paper. Across the rounds, 56% of respondents surveyed lived in communities with a visible electric grid. The percentage varies substantially across countries, from a low of approximately 20% in Liberia to roughly 95% in Swaziland. These figures include people living in communities with electricity access who did not have electricity access in their home, sometimes called “under grid” individuals (Lee et al., 2016), which is why Afrobarometer rates are higher than those reported in World Bank or International Energy Agency estimates. Under-grid individuals often have some access to electricity, as when they can charge their phone at a local shop or make use of others’ nighttime lights.

Second, as a validity check of this measure, we use an individual-level question about electricity access asked in Afrobarometer Round 6 (2014/2015). Specifically, respondents reported whether they had a grid connection to their home. Although we recognize that there may exist level-of-analysis issues with a community-level variable, we use it as our primary measure because it provides the greatest across-time and geographic variation. As will be shown below, moreover, the results are consistent regardless of whether the community- or individual-level variable is employed in analysis.¹¹

Measures of hypothesized key variables showing important variation

Additionally, we include independent variables that may show important variation in the hypothesized link between electricity and political participation. These include measures for greater or lesser wealth and active membership in a civil-society organization at the individual level, as well as regime type at the national level. First, to assess the hypothesis that individuals able to pay for household entertainment are less likely to participate, we include whether an individual owns a range of assets (a radio, a television, and/or a motor vehicle). The resulting measure of asset ownership, which we interact with the measure of electricity, thus ranges from 0 (respondent owns none of these items) to 3 (respondent owns all of these items).¹² Second, we include a binary variable, also interacted with electricity, that reflects whether an individual is an active member or leader in a “voluntary association or community group.” Approximately 23% of respondents were members of such a community-based organization (CBO). Finally, we examine responses from individuals within democracies, hybrid regimes, and autocracies separately, so as to determine whether results vary across regime types. We use Freedom House scores for each country-round, measuring democracies as “free,” hybrid regimes as “partly free,” and autocracies as “not free.”

⁹ Ideally, we would have measures of electricity access via non-grid sources, such as generators, solar photovoltaic panels, or small wind turbine. Afrobarometer does not collect such information. Given the timing of early rounds, moreover, the percentage of respondents with this sort of electricity in the full sample would be very small.

¹⁰ Although the Afrobarometer surveys generally elicit responses from individual respondents, survey enumerators since 2002 have also collected data about the existence of public services or government infrastructure, such as the electric grid, which they observe in the primary sampling unit where the survey takes place (i.e. the neighbourhood, village, or community).

¹¹ We do not mean to suggest that these variables represent the same thing, given the “under-grid” populations who often lack electricity in the home due to inability to afford it (Lee et al., 2016). The Round 6 variables at the community and individual levels are correlated at 0.63 (Pearson’s correlation).

¹² To confirm the validity of this measure, we ran analyses with permutations of the variable components in various specific combinations, with consistent results.



Control variables

In addition to our variable of interest and the potential causal-mechanism variables, we include theoretically relevant control variables that measure the presence of other government infrastructure and service provision, as well as an individual's gender, education, poverty, and level of political interest.¹³ We also include country-level characteristics such as per capita GDP and Freedom House democracy score in most models.

Results

To assess the relationship between service provision of electricity and political participation, we conduct pooled cross-sectional analysis modeling approaches.¹⁴ We also employ a multi-level model to control for country-level characteristics as well as individual-level factors affecting the outcome. Because there may also be time-dependent responses and we do not have panel data, we include dummy variables for survey rounds; for the sake of parsimony, we do not show these results in the analyses. Due to the negative binomial distribution of the collective-action and contacting-officials variables, we estimate count models when we use these as dependent variables. Models predicting whether respondents voted in the last election are logistic regressions.¹⁵

Electricity and participation outcomes

We first provide results of hierarchical analyses using the community-level electricity variable in Afrobarometer Round 3 through Round 6; Round 2 data are excluded because key independent variables were not included in that survey round. Table 2 presents the results of count models where citizen engagement in collective action is the dependent variable; Table 3 presents models for individual contacting of public officials; and Table 4 presents logistic regressions of individual voting in the last national election. In Table 2 and Table 3, the relationship between community electrification and participation in collective action or contacting public officials is negative and statistically significant. Access to electricity in the community interacts with other factors, as reflected in the statistically significant interactions between electricity and indicators of middle-class status and civil-society membership. Specifically, although the relationship between having assets and political participation is positive and significant, the effect of being in the middle class appears to be attenuated by electricity access, as reflected in the negative and statistically significant interaction effect, all else held constant.

Figure 1 provides a visualization of the relationship presented in Model 4 of Table 2, focusing on the interaction between electricity and asset ownership. The figure shows that there is a positive relationship between asset ownership and collective action, but that this relationship is attenuated significantly in communities that are connected to the grid. Wealthier respondents in grid-connected communities participate at a significantly lower rate than their peers in off-grid communities, while poor residents in grid-connected and off-grid communities engage in collective action at similar rates. Electricity thus appears to weaken the relationship between wealth and civic action, other things being equal.

On the other hand, electricity appears to enhance the effects of civil society on political participation, as Figure 2 visualizes (Model 5 in Table 2). A comparison of the non-grid-connected and grid-connected communities suggests that access to electricity in a

¹³ We would have liked to include a measure of time-savings or free-time levels as well, but these do not exist in the Afrobarometer data.

¹⁴ Although these survey data are pooled across multiple rounds, spanning more than a decade, they are not panel data: The same individuals and communities are not specifically surveyed more than once.

¹⁵ Evidence of over-dispersion in the distribution of the contacting and collective-action data suggests that a negative binomial regression estimate is superior to a Poisson model (e.g. Long & Freese, 2007).

community amplifies the positive relationship between membership in a community-based organization and political participation.

Table 2: Relationship between electricity and collective action

	Model 1	Model 2	Model 3	Model 4	Model 5
Grid-connected community	-0.243*** (0.005)	-0.088*** (0.007)	-0.057*** (0.007)	-0.039*** (0.010)	-0.164*** (0.009)
Information access: TV news consumption			-0.003 (0.002)	-0.002 (0.002)	-0.003 (0.002)
Middle class: asset ownership			0.054*** (0.003)	0.063*** (0.005)	0.054*** (0.003)
Civil society: CBO member			0.631*** (0.005)	0.631*** (0.005)	0.513*** (0.007)
Middle class: electricity*assets				-0.017** (0.006)	
Civil society: electricity*CBO					0.253*** (0.010)
Controls: Individual					
Urban		-0.205*** (0.007)	-0.175*** (0.007)	-0.174*** (0.007)	-0.168*** (0.007)
Male		0.216*** (0.005)	0.177*** (0.005)	0.177*** (0.005)	0.179*** (0.005)
Age		0.008*** (0.000)	0.006*** (0.000)	0.006*** (0.000)	0.006*** (0.000)
Education		0.058*** (0.002)	0.027*** (0.002)	0.027*** (0.002)	0.026*** (0.002)
Lived Poverty Index		0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)	0.011*** (0.001)
Services in community (school, clinic, police)		0.009*** (0.003)	0.006* (0.003)	0.005 (0.003)	0.007* (0.003)
Piped water infrastructure		-0.041*** (0.006)	-0.042*** (0.007)	-0.042*** (0.007)	-0.039*** (0.007)
Partisanship (feels close to a party)		0.256*** (0.005)	0.210*** (0.006)	0.209*** (0.006)	0.207*** (0.006)
Controls: Country					
GDP per capita		-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Population density		-0.000 (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Democracy (Freedom House score)		-0.005 (0.005)	-0.041*** (0.006)	-0.041*** (0.006)	-0.041*** (0.006)
Constant	0.699*** (0.008)	0.228*** (0.028)	0.199*** (0.032)	0.189*** (0.033)	0.246*** (0.033)
N	157445	139441	120103	120103	120103
<i>Standard errors in parentheses</i>					
<i>* p<0.05 ** p<0.01 *** p<0.001</i>					

Figure 1: Access to electricity attenuates the relationship between asset ownership and political participation

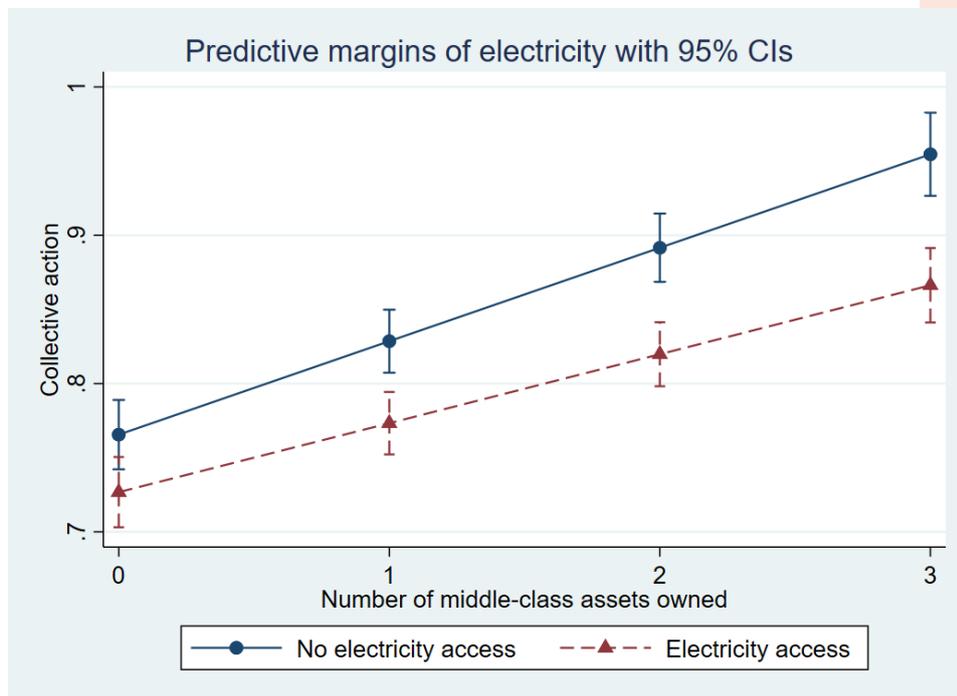
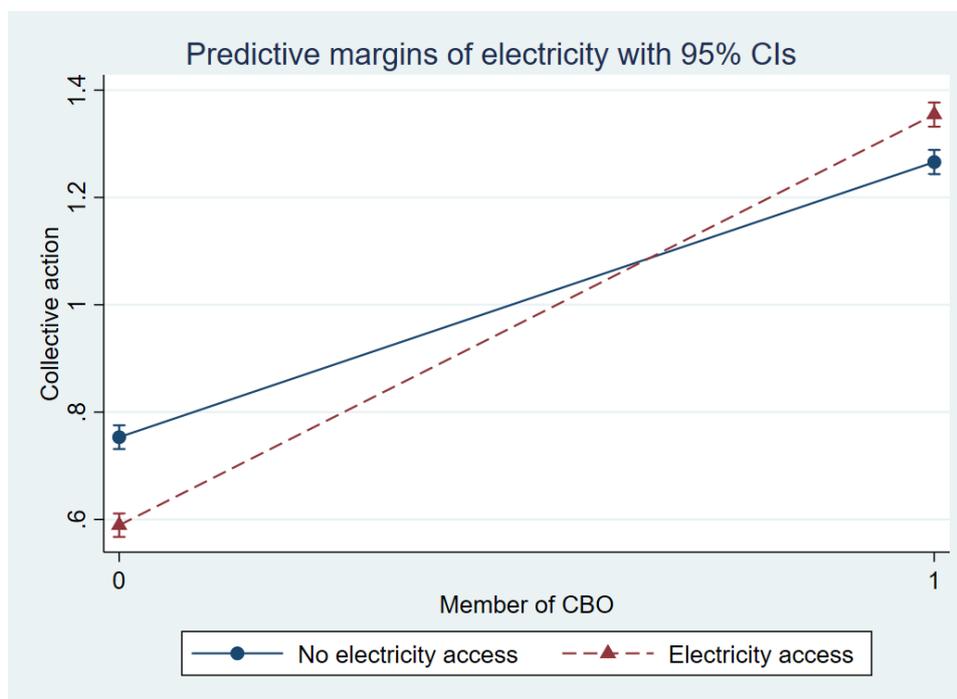


Figure 2: Access to electricity enhances the relationship between civil society and political participation



These relationships are similar when the dependent variable measures contacting government officials in the past year. The relationship between living in a grid-connected community and contacting officials is negative and significant across models; individuals in grid-connected communities reach out to representatives of the state less often than their peers in communities without access to electricity. In addition, the interaction term for grid

connection and asset ownership is significant and negative, while the interaction between CBO membership and grid connection is positive and significant. As in Table 2, these results suggest that grid connection dampens the link between asset ownership and political participation, and amplifies the effects of CBO membership.

Table 3: Relationship between electricity and contacting government officials

	Model 1	Model 2	Model 3	Model 4	Model 5
Grid-connected community	-0.240*** (0.010)	-0.150*** (0.013)	-0.144*** (0.014)	-0.084*** (0.020)	-0.218*** (0.017)
Information access: TV news consumption			0.011** (0.004)	0.011** (0.004)	0.011** (0.004)
Middle class: asset ownership			0.147*** (0.007)	0.175*** (0.009)	0.147*** (0.007)
Civil society: CBO member			0.727*** (0.010)	0.726*** (0.011)	0.644*** (0.014)
Middle class: electricity*assets				-0.048*** (0.011)	
Civil society: electricity*CBO					0.168*** (0.020)
Controls: Individual					
Urban		-0.235*** (0.012)	-0.244*** (0.014)	-0.241*** (0.014)	-0.240*** (0.013)
Male		0.406*** (0.010)	0.367*** (0.010)	0.365*** (0.010)	0.368*** (0.010)
Age		0.014*** (0.000)	0.012*** (0.000)	0.012*** (0.000)	0.012*** (0.000)
Education		0.147*** (0.003)	0.096*** (0.004)	0.096*** (0.004)	0.096*** (0.004)
Lived Poverty Index		0.014*** (0.001)	0.017*** (0.001)	0.017*** (0.001)	0.017*** (0.001)
Services in community (school, clinic, police)		0.061*** (0.005)	0.057*** (0.006)	0.057*** (0.006)	0.058*** (0.006)
Piped water infrastructure		-0.084*** (0.012)	-0.091*** (0.013)	-0.089*** (0.013)	-0.089*** (0.013)
Partisanship (feels close to a party)		0.507*** (0.011)	0.500*** (0.012)	0.499*** (0.012)	0.499*** (0.012)
Controls: Country					
GDP per capita		-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Population density		-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Democracy (Freedom House score)		0.026*** (0.007)	-0.027*** (0.007)	-0.027*** (0.007)	-0.027*** (0.007)
Constant	-1.069*** (0.009)	-2.505*** (0.036)	-2.604*** (0.041)	-2.635*** (0.041)	-2.568*** (0.041)
N	152435	134869	115769	115769	115769
<i>Standard errors in parentheses</i>					
<i>* p<0.05 ** p<0.01 *** p<0.001</i>					

Models assessing the relationship between electricity and political participation through voting, shown in Table 4, do not show a consistently significant relationship. The relationship is consistently negative, however. We provide interpretations in the discussion section below.

Table 4: Relationship between electricity and voting

	Model 1	Model 2	Model 3	Model 4	Model 5
Grid-connected community	-0.240*** (0.014)	-0.004 (0.020)	-0.029 (0.021)	-0.061* (0.027)	-0.013 (0.022)
Information access: TV news consumption			-0.001 (0.006)	-0.001 (0.006)	-0.001 (0.006)
Middle class: asset ownership			0.178*** (0.009)	0.154*** (0.015)	0.178*** (0.009)
Civil society: CBO member			0.341*** (0.018)	0.342*** (0.018)	0.381*** (0.026)
Middle class: electricity*assets				0.034* (0.017)	
Civil society: electricity*CBO					-0.073* (0.035)
Controls: Individual					
Urban		-0.125*** (0.018)	-0.145*** (0.019)	-0.147*** (0.019)	-0.146*** (0.019)
Male		0.075*** (0.014)	0.036* (0.014)	0.037** (0.014)	0.035* (0.014)
Age		0.058*** (0.001)	0.055*** (0.001)	0.054*** (0.001)	0.055*** (0.001)
Education		0.044*** (0.005)	0.008 (0.005)	0.008 (0.005)	0.009 (0.005)
Lived Poverty Index		0.001 (0.002)	0.003* (0.002)	0.003* (0.002)	0.003* (0.002)
Services in community (school, clinic, police)		-0.026*** (0.008)	-0.027*** (0.008)	-0.027*** (0.008)	-0.028*** (0.008)
Piped water infrastructure		-0.071*** (0.019)	-0.085*** (0.019)	-0.086*** (0.019)	-0.086*** (0.019)
Partisanship (feels close to a party)		0.706*** (0.014)	0.684*** (0.015)	0.684*** (0.015)	0.684*** (0.015)
Controls: Country					
GDP per capita		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Population density		-0.002 (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)
Democracy (Freedom House score)		0.131*** (0.021)	0.131*** (0.022)	0.131*** (0.022)	0.131*** (0.022)
Constant	1.006*** (0.092)	-2.214*** (0.201)	-2.224*** (0.200)	-2.197*** (0.200)	-2.234*** (0.200)
N	140124	124549	122787	122787	122787
<i>Standard errors in parentheses</i>					
<i>* p<0.05 ** p<0.01 *** p<0.001</i>					

Validity checks using individual- or household-level electricity measures from Round 6

In tables 2, 3, and 4, electricity access is measured at the community level, as questions about household or individual electricity access were not asked in most Afrobarometer survey rounds. When they were asked (in Round 2 and Round 6), the question wording and coding schemes varied. To assess the validity of the community-level variable, however, we also tested models using household access to electricity as the key independent variable. Specifically, respondents in Round 6 were asked whether they had a grid connection to their home.

Table 5 presents results of models using this Round 6 household electricity variable. The results are strikingly similar to those using the community-level variable. This suggests that the community-level variable may be a valid proxy for individual access to electricity; at a minimum, the three measures have a consistent relationship with political participation. For the sake of economy, we present only the results assessing the relationship between electricity access and collective action.¹⁶

Disaggregating by regime type

As discussed in the theoretical section, there is reason to believe that results may differ in democratic vs. autocratic countries in Africa. In all models where it is included in tables 2 through 5, there is a consistently significant and negative relationship between a country's Freedom House score (where a higher number is more authoritarian) and political participation, other things being equal. To further probe this relationship, we divided the data for each country-round by Freedom House ratings of "free," "partly free," and "not free."

Table 6 shows the results of these analyses, with the first three models providing results for collective action, the middle three columns showing contacting public officials, and the right-most columns showing effects on voting. Notably, in very few models are the relationships between group variables of interest (shown without interaction effects) and the measure of political participation substantively different across regime type. Thus we see, for example, that across all models, asset ownership and civil-society membership are positive and significant. The same cannot be said about electricity, however. Instead, these models show a relationship between having access to electricity in one's community and lower levels of political participation primarily *in democracies*, and to a lesser extent in partial democracies. There is no clear relationship between access to electricity and levels of participation in autocracies.

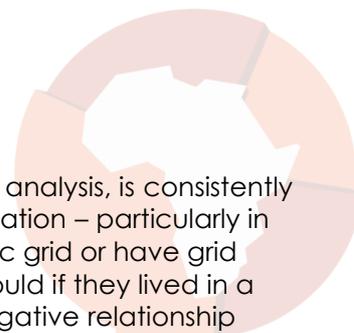
¹⁶ In analyses not presented, we also ran these models on data from Round 2, which contained another household-level measure of electricity. Results from these models are largely consistent with results from tables 2 through 5. We do not present the results here because the language of the question requires us to make assumptions about the response that may not have been intended. Specifically, the question asked how often the respondent went *without* electricity access. We coded all respondents who said they *ever* did not go without electricity as having electricity, but we aren't sure that this is a correct interpretation, given the range of possible responses. For example, respondents could say they went without electricity "many times" but did not have a grid connection, or they could say they "always" went without electricity but in fact had a grid connection without the ability to pay for electricity. Response options also included "always without electricity" and "no access to electricity," which further complicated this issue.

Table 5: Results of models testing the relationship between electricity and collective action using household-level electricity responses from Afrobarometer Round 6

	Model 1	Model 2	Model 3	Model 4	Model 5
Electricity in home	-0.294*** (0.011)	-0.129*** (0.014)	-0.129*** (0.015)	-0.100*** (0.021)	-0.290*** (0.018)
Information access: TV news consumption			0.008 (0.004)	0.008 (0.004)	0.009* (0.004)
Middle class: asset ownership			0.052*** (0.006)	0.062*** (0.009)	0.054*** (0.006)
Civil society: CBO member			0.762*** (0.010)	0.761*** (0.010)	0.620*** (0.013)
Middle class: electricity*assets				-0.022 (0.011)	
Civil society: electricity*CBO					0.332*** (0.020)
Controls: Individual					
Urban		-0.266*** (0.014)	-0.217*** (0.013)	-0.216*** (0.013)	-0.207*** (0.013)
Male		0.228*** (0.010)	0.178*** (0.010)	0.177*** (0.010)	0.177*** (0.010)
Age		0.009*** (0.000)	0.007*** (0.000)	0.007*** (0.000)	0.007*** (0.000)
Education		0.058*** (0.004)	0.029*** (0.004)	0.029*** (0.004)	0.029*** (0.003)
Lived Poverty Index		0.013*** (0.001)	0.013*** (0.001)	0.013*** (0.001)	0.013*** (0.001)
Services in community (school, clinic, police)		0.000 (0.006)	-0.003 (0.005)	-0.002 (0.005)	-0.001 (0.005)
Piped water infrastructure		-0.051*** (0.013)	-0.047*** (0.013)	-0.047*** (0.013)	-0.045*** (0.012)
Partisanship (feels close to a party)		0.275*** (0.012)	0.214*** (0.011)	0.214*** (0.011)	0.212*** (0.011)
Controls: Country					
GDP per capita		-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000** (0.000)
Population density		0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Democracy (Freedom House score)		0.016 (0.011)	-0.003 (0.012)	-0.003 (0.012)	-0.003 (0.012)
Constant	0.421*** (0.014)	-0.397*** (0.057)	-0.225*** (0.060)	-0.236*** (0.060)	-0.170** (0.060)
N	44385	39436	39087	39087	39087
<i>Standard errors in parentheses</i>					
<i>* p<0.05 ** p<0.01 *** p<0.001</i>					

Table 6: Electricity is negatively associated with political participation in democracies

	Collective action DV			Contacting government officials DV			Voting DV		
	Free	Partly free	Not free	Free	Partly free	Not free	Free	Partly free	Not free
Grid-connected community	-0.0958*** (0.0149)	-0.0431*** (0.00903)	0.00685 (0.0218)	-0.117*** (0.0267)	-0.156*** (0.0191)	-0.0324 (0.0400)	-0.221** (0.0718)	-0.000587 (0.0457)	0.0788 (0.0660)
Information access: TV news	0.00672 (0.00391)	-0.00324 (0.00268)	-0.0124 (0.00658)	0.0332*** (0.00697)	0.0148** (0.00554)	-0.0414*** (0.0123)	-0.0160 (0.0389)	-0.00747 (0.0121)	-0.0357* (0.0155)
Middle class: asset ownership	0.0545*** (0.00626)	0.0563*** (0.00445)	0.0481*** (0.0101)	0.142*** (0.0111)	0.151*** (0.00942)	0.158*** (0.0188)	0.261*** (0.0391)	0.160*** (0.0319)	0.174*** (0.0310)
Civil society: CBO member	0.722*** (0.0109)	0.570*** (0.00670)	0.613*** (0.0168)	0.740*** (0.0191)	0.728*** (0.0138)	0.728*** (0.0305)	0.270*** (0.0663)	0.363*** (0.0436)	0.382*** (0.0661)
Controls: Individual									
Urban	-0.171*** (0.0129)	-0.143*** (0.00925)	-0.270*** (0.0231)	-0.219*** (0.0223)	-0.254*** (0.0187)	-0.202*** (0.0441)	-0.0289 (0.0784)	-0.0988 (0.0619)	-0.263*** (0.0379)
Male	0.186*** (0.0102)	0.176*** (0.00650)	0.128*** (0.0156)	0.403*** (0.0183)	0.360*** (0.0141)	0.320*** (0.0298)	-0.127** (0.0403)	0.0979** (0.0360)	0.129*** (0.0335)
Age	0.00582*** (0.000331)	0.00644*** (0.000229)	0.00684*** (0.000549)	0.0120*** (0.000571)	0.0109*** (0.000488)	0.0152*** (0.000983)	0.0464*** (0.00527)	0.0559*** (0.00553)	0.0593*** (0.0107)
Education	0.0135*** (0.00375)	0.0288*** (0.00234)	0.0341*** (0.00572)	0.0826*** (0.00635)	0.0996*** (0.00475)	0.0996*** (0.0108)	0.00209 (0.0389)	0.00466 (0.0128)	0.0232 (0.0134)
Lived Poverty Index	0.0205*** (0.00118)	0.00707*** (0.000725)	0.00678*** (0.00178)	0.0243*** (0.00209)	0.0128*** (0.00152)	0.0107** (0.00332)	-0.00154 (0.00836)	0.00309 (0.00481)	-0.00391 (0.00654)
Services in community (school, clinic, police)	-0.00576 (0.00556)	0.00583 (0.00355)	0.0132 (0.00886)	0.0180 (0.00966)	0.0820*** (0.00750)	0.0416* (0.0168)	-0.0108 (0.0468)	-0.0478* (0.0223)	-0.00541 (0.0327)
Piped water infrastructure	-0.0259* (0.0129)	-0.0349*** (0.00816)	-0.136*** (0.0253)	-0.0629** (0.0231)	-0.100*** (0.0171)	-0.268*** (0.0484)	-0.117 (0.0609)	-0.0945* (0.0478)	-0.301*** (0.0846)
Partisanship (feels close to a party)	0.281*** (0.0114)	0.166*** (0.00706)	0.233*** (0.0174)	0.543*** (0.0212)	0.440*** (0.0159)	0.593*** (0.0346)	0.700*** (0.156)	0.573*** (0.0508)	0.848*** (0.0837)
Controls: Country									
GDP per capita	-0.0000812*** (0.00000693)	-0.000657*** (0.0000252)	-0.0000412*** (0.0000115)	-0.0000264*** (0.00000757)	-0.000343*** (0.0000221)	-0.0000613*** (0.0000146)	0.00000459 (0.0000444)	-0.000316*** (0.0000565)	-0.0000580 (0.0000381)
Population density	-0.00492*** (0.000558)	0.00398*** (0.000285)	0.00201** (0.000643)	-0.00122* (0.000541)	0.000706*** (0.000185)	-0.00233*** (0.000481)	0.00750** (0.00251)	0.00178*** (0.000402)	0.000222 (0.00183)
Constant	0.178** (0.0605)	0.415*** (0.0323)	0.0112 (0.0730)	-2.596*** (0.0693)	-2.511*** (0.0419)	-2.602*** (0.0956)	-1.992*** (0.421)	-1.429*** (0.182)	-2.193*** (0.236)
N	38016	68487	13600	38517	64414	12838	38849	70077	13861
<i>Standard errors in parentheses</i>									
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$									



Discussion

Access to electricity, whether at the individual or community level of analysis, is consistently and negatively associated with a variety of forms of political participation – particularly in democratic countries. When individuals live in proximity to the electric grid or have grid access at home, they tend to participate in politics less than they would if they lived in a community or house without access to the grid. Given this largely negative relationship between electricity and political participation, as well as the attenuating effect of electricity on individuals with middle-class assets, we propose that even potential access to the electric grid produces an “anti-politics of electricity” that diminishes participation. This finding pushes back against much of the existing scholarship in comparative political economy of development, particularly classic theories of modernization through middle-class development (Lipset, 1959; Moore, 1966). But it is consistent with previous scholarship on how modern technologies such as air-conditioning shaped political activity in America (Arsenault, 1984; McBride, 2013; Putnam, 2000). Given the inclusion of a broad range of theoretically important variables, the results are substantively important and merit further discussion and research.

An examination of the interactions between electricity and other key variables relative to political participation strengthens this interpretation. In particular, our indicator of the development of a strong middle class, asset ownership, is useful in teasing out the dynamics. Here, we see across models without interactions that when individuals own more valuable assets, they are more likely to engage in collective action, to contact public officials, and to vote. Yet when this variable is interacted with electricity, the positive effect of middle-class assets is weakened.

Additional studies will be needed to confirm what follows, but we propose several mechanisms that may provide a causal explanation for the anti-politics of electricity. First, we hypothesize that electricity provides new opportunities for recreation and leisure, which may sway individuals from engaging in political participation, particularly individuals with more middle-class assets. Generally, we posit that as people gain access to the electric grid, citizens may be distracted by new opportunities to watch football or other forms of entertainment, to drink cold beer, or to listen to music.

But specifically for those who own certain assets (a radio, TV, and car), it may be that access to these assets and to electricity facilitates engagement in individualized pursuits that distract from political collective action. Such people may be moving away from traditionally community-collective entertainment and engagement to a more individualized, nuclear-family orientation, with concomitant withdrawal from collective action. They may also use electricity in a more isolated office setting at work, further removing them from collective associating. Women, moreover, have been shown to use electricity to extend the hours in which they are able to work on household activities (Chakrabarti & Chakrabarti, 2002) – not to engage in collective action or contacting the government.

Our argument is supported by studies examining the link between urbanization and political participation (MacLean, 2011). Like communities with access to the electric grid, urban centers provide apolitical opportunities for social interaction and recreation. These cosmopolitan spaces may even be anti-political, as African citizens migrate from hometowns far and wide and spend most of their days in a struggle to make ends meet. Rather than transforming them into informed and politically engaged citizens, the process of electrification – like urbanization – affords Africans the opportunity and incentive to disengage from political life. This also resonates with recent work showing that the middle class is less likely to participate in politics than other socioeconomic groups. For example, the middle class in Zambia is less likely than others to vote or demonstrate (Resnick, 2015). Black middle-class South Africans are likewise less likely than others to engage in a range of political participation, including the ones we study (Mattes, 2015; Southall, 2014).

Second, we hypothesize that the relationship between electricity and participation may be related to the peculiar nature of electricity as a public good, which creates a different politics of attribution than has been presented in the literature (Harding, 2015).¹⁷ Unlike the provision of a health-care center, school, or police station, which appear to spur greater political participation in our models, all else held constant, electricity has the opposite effect. The difference may be that whereas people interact frequently with their kids' teachers, with doctors, or with the police – and with a sense of entitlement to state education, health, and security services – they do not feel the same entitlement to electricity, nor do they attribute responsibility for its continued provision to the state.

Indeed, the delivery of electricity is often seemingly agentless to beneficiaries; the role of the state is often not “visible,” if there is a role at all (Mani & Mukand, 2007). In the current era in particular, there has been considerable privatization of electricity services in many countries – or, more commonly, hybrid state-business provision of electricity.¹⁸ Those without electricity may participate more with the state in order to request this service, but once it is provided, they may be rarely reminded of the state, as they pay a private electric company or buy pre-pay cards for their home meters. The provision of piped water in a community – which, like electricity, flows through a complex and largely hidden infrastructure to an individual's home or village – has a similar dampening relationship with participation as electricity.¹⁹ Because of privatization and the lower visibility of these goods, people may attribute service provision to the state less, and therefore not participate with the state. Such a tenuous association with the state would suggest a null finding. To understand the negative relationship, our hypothesis about the anti-politics of electricity described above is crucial. It is only if electricity is expected but becomes unreliable, for example, with severe load-shedding, that citizens become agitated and participation may actually increase (Gore, Brass, Baldwin, & MacLean, 2018). More research needs to be done to draw links between variation in the nature, quality, and reliability of public goods, citizens' understanding of who is responsible for providing services, and how that attribution affects their participation in the political sphere.

The results in Table 6 suggest that the negative relationship between electrification and political participation is most consistent and strongest in democracies. Democratic regimes facilitate the rise of an activist middle class, a lively media environment with free information, and greater freedoms to organize community and other civil-society associations. It is therefore surprising, and ironic, that regimes that afford these freedoms are associated with a statistically significant decrease in political participation. Precisely in those contexts in which the barriers to collective action and lobbying officials are lowest, electricity appears to have a demobilizing effect on citizens' engagement in the political sphere. In authoritarian states, there is no discernable difference in individual participation for those with or without electricity, other things being equal.²⁰ This finding deserves further investigation, but it appears that citizens of authoritarian states may be less pacified by entertainment and other benefits provided by electricity. It is also likely the case that they make different types of requests of government officials and participate in different ways in various forms of collective action than those in democracies (see Purdeková, 2011; Wedeen, 1999), and perhaps these differences explain the outcomes.

¹⁷ In weak states, attribution links are important for understanding the relationship between service provision and citizenship (Harding, 2015; Harding & Stasavage, 2014), though attribution errors are politically important in developed countries as well (Lowery, Lyons, & DeHoog, 1990).

¹⁸ See Bayliss and Fine (2008) for a critical discussion of the privatization of electricity and water provision in sub-Saharan Africa.

¹⁹ The provision of piped water in a community (included in the control variables) is also negatively and significantly associated with political participation in our analyses.

²⁰ It is worth noting that citizens of authoritarian regimes actually participate at higher rates than those in democracies in the Afrobarometer data, when no controls are included.

Two caveats are in order in this discussion. First, participation levels do not appear to be dampened by electricity for individuals who actively join community groups, other things being equal. Instead, the relationship between civil society and participation remains vibrant in the presence of electricity access. In fact, electricity actually *strengthens* this relationship, counter to what it does for those who own middle-class assets. It may be that electricity facilitates community organizing by allowing groups to gather more safely after dark, or to charge phones that allow people to organize collective action by phone. Although we can only hypothesize on the causal mechanism here, it is clear that there is even greater political involvement of individuals who actively choose to seek out opportunities for community engagement when they also have access to electricity.

Second, while our argument is largely consistent across all measures of political participation, the results remind us of the importance of being nuanced about the different types of participation that are important on the ground. Our analysis suggests that voting is a different kind of political participation, distinct from contacting political leaders and participating in collective action. Voting is more sporadic and, in many ways, requires less effort than contacting political leaders or getting together with others to protest, because it is more individualistic. Other studies have found similar distinctiveness of voting compared with other political-participation outcome variables, in both the United States and developing countries (Baggetta, 2009; Boulding, 2010; Crenson & Ginsberg, 2004). Moreover, due to clientelism, "vote-buying," and high levels of ethnic salience in many African countries, voting in elections may not be an effective channel for Africans to make their voices heard (e.g. Wantchekon, 2003). Indeed, the decision to vote is often not a question of individual agency but is more of a behavior managed "top-down" by local leaders, brokers, politicians – making it something that should be considered differently from other forms of participation in Africa (Bratton, Mattes, & Gyimah-Boadi, 2004). These findings highlight the importance of studying the everyday politics of participation, which may have very different roots from the decision to vote in national elections.

Conclusion

The provision of the electric grid appears to have unexpected consequences for politics. It is taken for granted that electricity access shapes the dynamics of economic development, but less has been said about how electricity might also affect the quality of democracy. The findings of this paper show that the story is not a simple, straightforward one of electric power bringing more political power to the people. We find instead that access to the electric grid diminishes political participation, particularly contacting political leaders and getting involved in collective action. We hypothesize that access to an electric grid is connected to an "anti-politics of electricity" in which citizens do not engage in politics but instead retreat to enjoy apolitical social interaction and recreational activities.

This argument refutes the version of modernization theory that holds that the adoption of new technologies, such as electricity, will not only spur industrialization but also lead to urbanization and the spread of modern values and an engaged democratic politics (Lerner, 1958; Rostow, 1960). In contrast, some kinds of technological change and economic development may actually undermine political participation. This anti-politics of electricity may be more consistent with the extremely low voter turnout in some advanced industrialized countries, including the United States. The puzzling variations in the expectations of the state and nature of citizenship practices call for further comparative historical analysis both in Africa and across world regions. Because these issues are deeply historical and highly contested, future research should pair large-N analysis with intensive field research and qualitative analysis of a few carefully selected cases.

In addition, our discussion argues that the electric grid may be fundamentally different from many other kinds of service provision. Having electricity may not always be attributed directly to the state and may not provoke ongoing mobilization once established in the community. Electricity also enables a much wider range of private activities that are not directed or controlled by the state. That said, for individuals who are also active joiners in community

groups, electricity accentuates participation. Taken together, these results suggest not that electricity itself is pernicious to citizen engagement in the public sphere but that the connection of communities to the grid may itself be part of a wider, secular process demobilizing most Africans.

This study supports earlier work contending that public service provision is not a unified set of dynamics between state and citizen, but instead varies significantly across different service sectors (Kramon & Posner, 2013). Our analysis also highlights the politics of attribution, but calls for a more interpretive assessment of attribution that focuses on the interactions between and among individuals and the state, rather than a purely economic or institutional one. Attribution is not simply determined by which government branch allocates the budget for a public service (Harding, 2015), but also by whether and how citizens interact with the providers and experience that provision on a daily basis (Soss & Schram, 2007).

This paper also yields valuable policy implications in the electricity sector. The United Nations and donors have joined together and identified the expansion of electrification as one of the primary Sustainable Development Goals to achieve in the coming decades. Currently, substantial donor support exists for the expansion of central grids as well as the development of stand-alone mini-grids, often employing renewable technologies such as solar and wind power. Until now, the focus by economists and engineers has been on willingness to pay and feasibility of technological designs. We need to now investigate the consequences for politics as a potential outcome of electricity provision.

This is a particularly important moment to investigate critically the governance of electricity provision and its consequences for democracy. Electricity, along with water provision, has been heavily privatized throughout sub-Saharan Africa over the past three decades (Bayliss & Fine, 2008). Future research should evaluate what type of electricity access individuals actually have, and what that provision means to them in terms of necessary scale and reliability. We also need to focus more on whether electricity is being provided by the state, non-state actors, or some hybrid or collaborative arrangement. The transformation of the governance of electricity provision may be shaping citizens' perceptions of attribution of service delivery and their motivation and opportunity to participate in politics, with far-reaching consequences for democratic consolidation.

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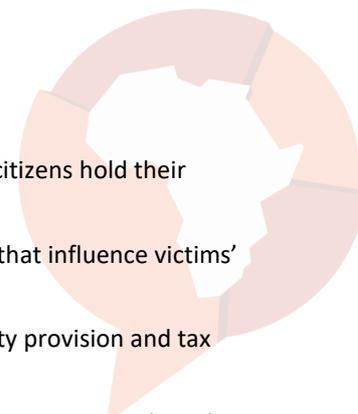


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