The Distribution of Power: Favoritism, Efficiency, and Equity in Energy Infrastructure

On-line Appendix

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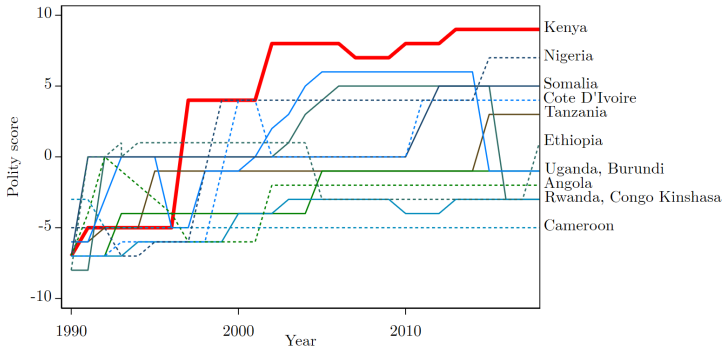
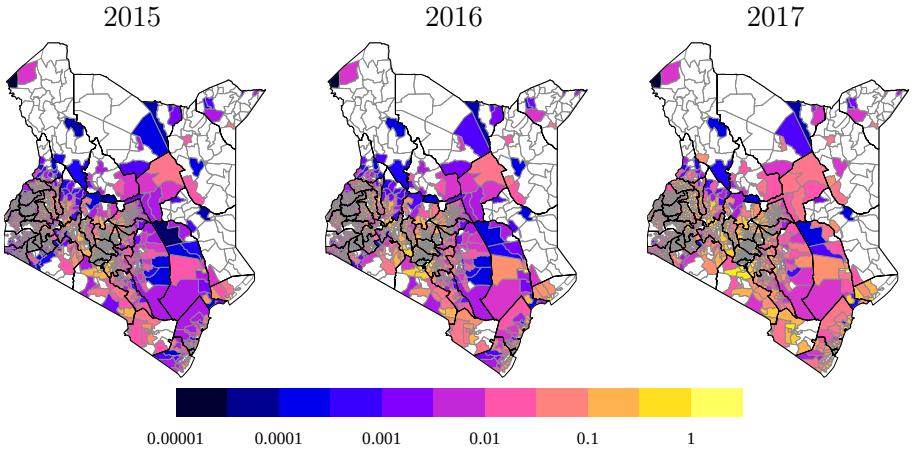
A Appendix Figures

Figure A1: Polity democracy scores among countries in Africa



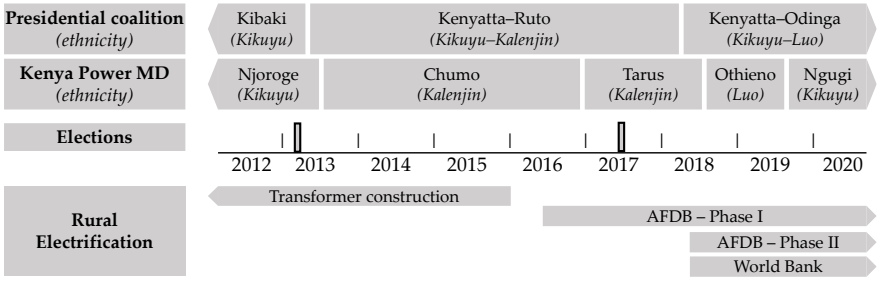
Polity democracy scores for countries in Africa. Solid lines represent countries in the East African Community. Dashed lines are other countries in Africa with GDP per capita similar to Kenya. Source: Marshall and Gurr (2020).

Figure A2: Residential meters per household by ward (log)



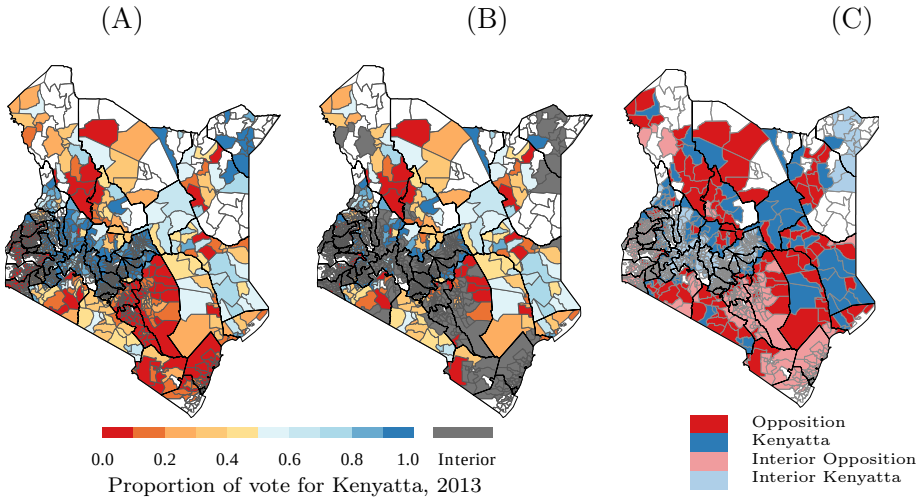
Ward-level population comes from the 2009 census after applying a uniform growth rate based on country-level population growth from UN WPP (UN, 2022). Units are residential meters per household, with shading following a log10 scale. White wards contain no residential meters in our dataset or are missing 2009 population data.

Figure A3: Timeline of political and Kenya Power events, 2013-2022



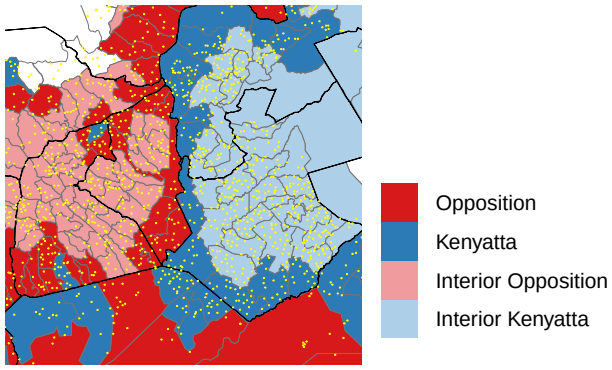
Timeline of Kenyan presidential terms, Kenya Power managing director appointments (MD), elections, and rural electrification. Kenyatta was inaugurated on April 9th, 2013 and again on November 28th, 2017. The 'Handshake' between Kenyatta and Odinga took place on March 9th, 2018.

Figure A4: 2013 Kenya presidential election results



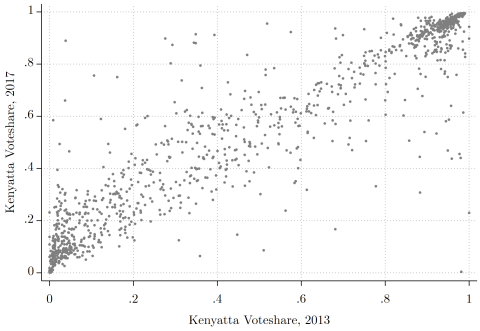
Blue wards had vote shares of over 50% for Kenyatta. Red wards had vote shares under 50% for Kenyatta. White wards are missing election data. Panel A shows 2013 presidential election results at the ward level. Panel B shows the same, but 'interior' wards—which only border similarly aligned wards—are greyed out. Panel C shows a binary version, with adjacent wards shown in dark.

Figure A5: Adjacent wards with LMCP sites (example area)



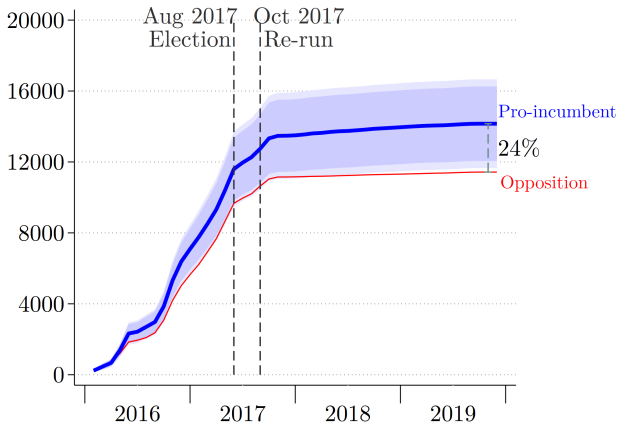
Region mapped contains primarily Bomet, Kisii, Nyamira, Kericho counties. Blue (red) wards had vote shares of over (under) 50% for Kenyatta. White wards are missing election data. Darker (lighter) wards represent adjacent (interior) wards. Yellow dots show the locations of transformers which were selected for maximization under LMCP.

Figure A6: Ward-level Kenyatta voteshares in 2013 and 2017 elections



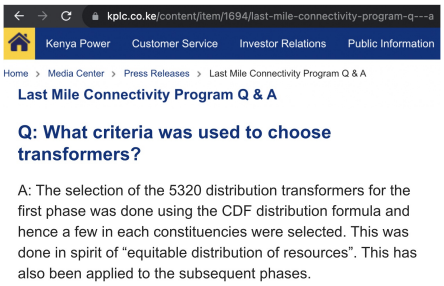
The x-axis shows Kenyatta's voteshare in the March 2013 presidential election across Kenya's 1,450 wards. The y-axis presents Kenyatta's voteshare in the August 2017 presidential election. The two variables have an R^2 of 0.89. Voting in Kenya is highly polarized across wards and this polarization is persistent over time.

Figure A7: Number of meters activated in or after 2016 at LMCP sites per 100,000 households



Results from the following regression: $y_{it} = \sum_{k=1}^{118} \gamma_k D_{it}^k + \sum_{k=1}^{118} \beta_k D_{it}^k * ProGovernment_i + \epsilon_{it}$ (no socio-economic controls). The red line plots the γ_k's while the blue line plots $\gamma_k + \beta_k$. The gap between the blue and red lines represents the difference between opposition and pro-government wards (β_k's). The darker (lighter) blue is the 90% (95%) confidence interval of the β_k's. The vertical line denotes the August 2017 Presidential election. Figure 2 shows a version without political breakdown in absolute terms. Figure A34 provides versions with controls, per capita, and per Constituency Development Fund (CDF) allocation. Figure A36 and Figure A35 show construction progress. Table B3 presents equivalent regression results.

Figure A8: Kenya Power website announcement

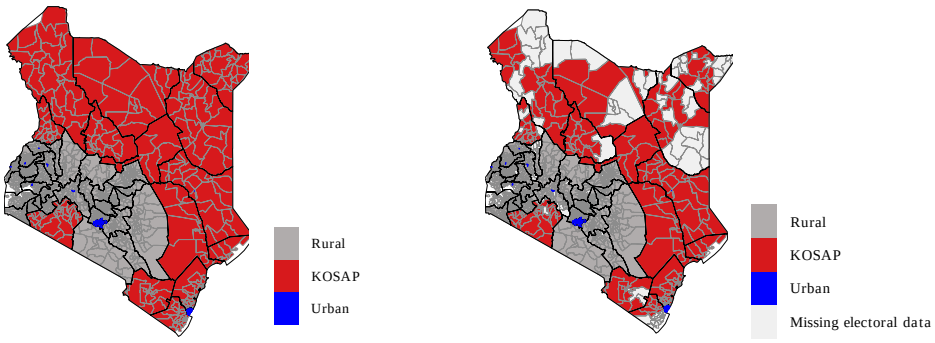


Note: The Kenya Power website announced that LMCP transformers would be allocated to constituencies according to the Constituency Development Fund (CDF) formula. Source: Kenya Power (2016).

Figure A9: Main sample specification: omitted urban and sparse areas

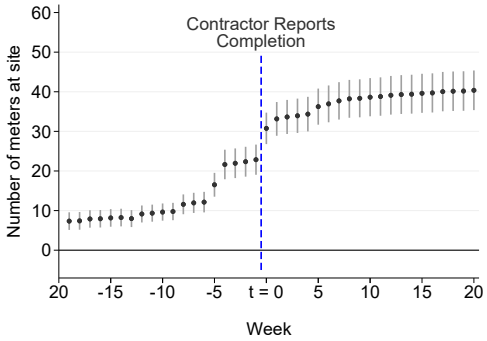
(A) All wards

(B) Only wards with electoral data



Wards labelled "rural" (in gray) form the main sample of LMCP wards (see Section 3 for a detailed description of sample construction). Wards shaded red are in counties targeted by KOSAP, an off-grid solar electrification project. Wards shaded blue are within Nairobi and Mombasa counties or are in a ward with an equal or greater population density (3,513 population per square km). Wards shaded white in panel B are missing 2013 election data.

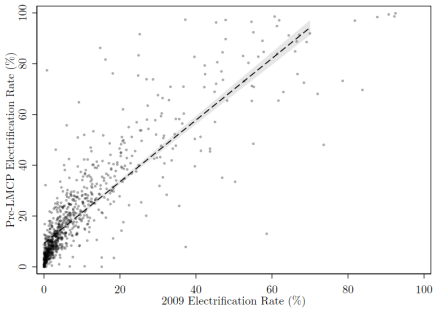
Figure A10: Meters activated in Kenya Power infrastructure database relative to when contractors report construction completion



This figure combines Kenya Power's meter data with construction progress data at the transformer level provided by independent contractors. In the weeks after a contractor reports construction at a particular transformer to have been complete, the number of meters that Kenya Power identifies as going on-line increases sharply up to on average 40, in line with estimates of the number of unconnected households living within 600 meters of each LMCP transformer (as discussed in Subsection 2.3). Point estimates and standard errors from a stacked difference-in-differences estimates of the number of meters installed in the 20 weeks before and after a contractor reports construction completion, relative to sites that were not yet completed during that period (Deshpande and Li, 2019; Cengiz et al., 2019; Goodman-Bacon, 2021).

Figure A11: Correlation between two measures of pre-LMCP connectivity:

(A) By ward ($R^2 = 0.75$)



(B) By constituency ($R^2 = 0.83$)

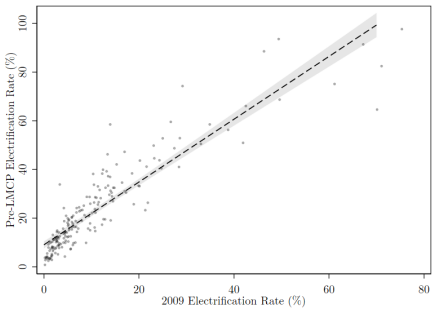
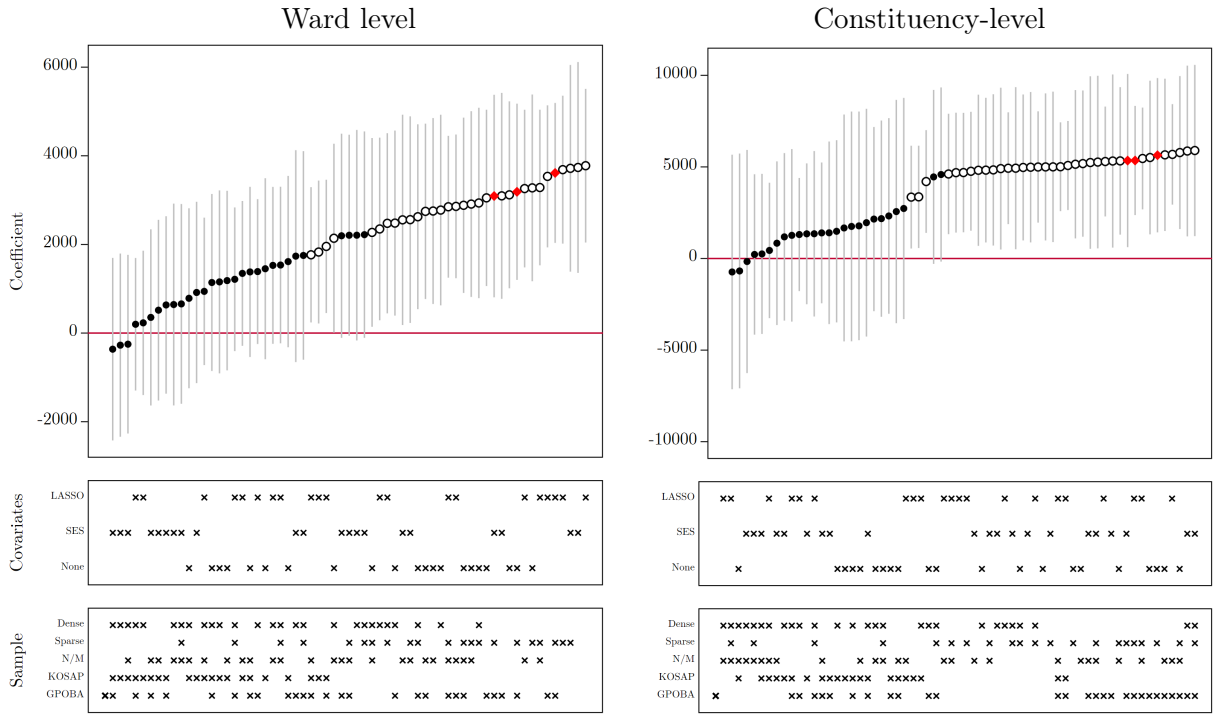


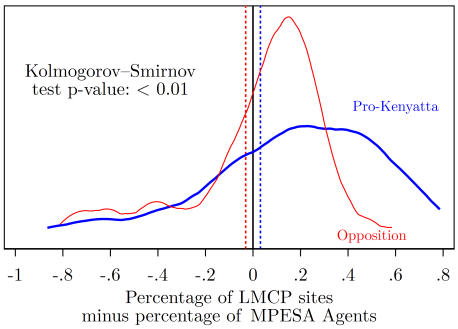
Figure A12: Specification curve (ward-level)



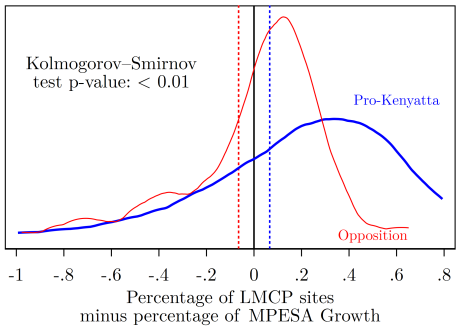
Alternative versions of Columns 1–3 of Table 1. 'SES' controls include land gradient, population density, baseline share of households that are unconnected, share adults with primary or secondary education, share adults who work for pay, dependency ratio, share households with an iron roof, household size, mobile money agents as of 2013 per capita, and change in mobile money agents between 2013 and 2015 per capita. 'LASSO' candidate covariates include those used in the 'SES' specification as well as two-way interactions between them. 'Dense' indicates the inclusion of areas with population density equal to or greater than Nairobi and Mombasa counties, which covers many urban areas that were ineligible for LMCP. 'Sparse' indicates the inclusion of areas with population density less than or equal to that of the KOSAP counties, which includes many off-grid areas that were ineligible for LMCP. 'N/M' indicates the inclusion of Nairobi and Mombasa counties. 'KOSAP' indicates the inclusion of counties targeted by the Kenya Off-Grid Solar Access Project. 'GPOBA' indicates the inclusion of areas within 1km from a site included in the GPOBA slum electrification program. White circles represent specifications with coefficients significant at the 5% level, black circles represent specifications which are not. Red diamonds represent our three preferred specifications, shown in Table 1.

Figure A13: Constituency LMCP site shares relative to mobile money shares by 2013 election result

(A) Relative to mobile money agent share

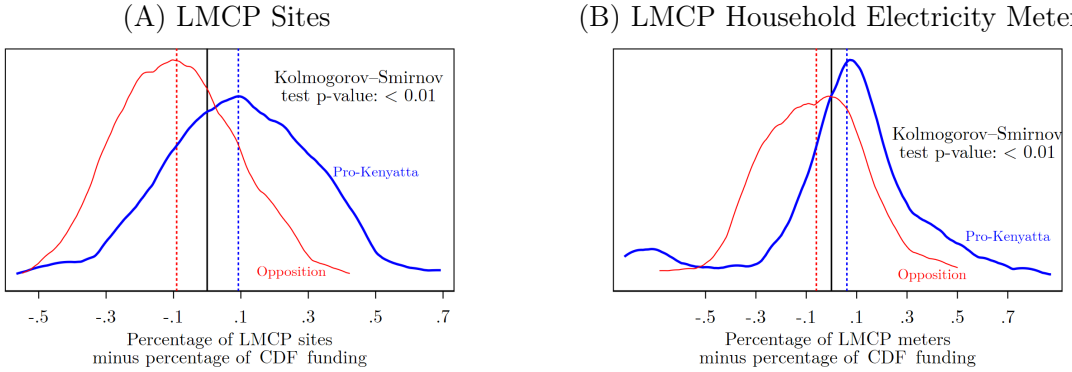


(B) Relative to 2013-2015 growth in share



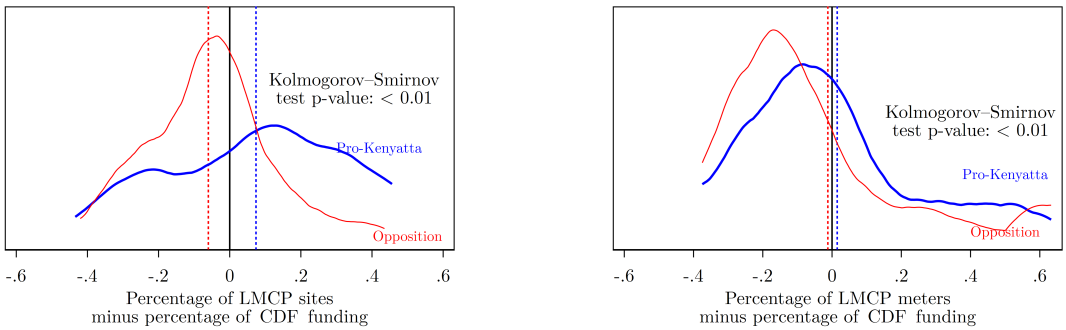
Differences between a constituency's percentage of LMCP sites minus its share of mobile money agents (panel A) or its share of new mobile money agents in 2014/2015 (panel B), by whether constituencies voted pro-government in the 2013 presidential election, bottom- (top-) coded at the 5th (95th) percentile. Both panels include only rural constituencies. Vertical dashed lines present the sample means.

Figure A14: Residuals of constituency LMCP shares relative to CDF shares by 2013 election result



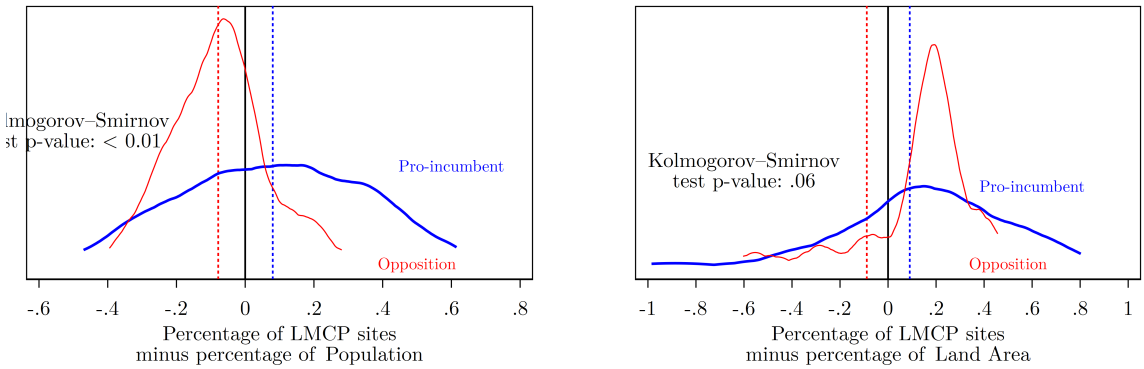
The residual of constituency's share of nationwide LMCP outcomes after controlling for socio-economic variables (as in Column 2 of Table 1) minus its share of CDF funding, by whether constituencies voted pro-Kenyatta in the 2013 presidential election. Panel A shows LMCP sites selected. Panel B shows LMCP household meters activated. Vertical lines indicate sample means. Shares are normalized according to the same sample as in Table 1. Figure 3 presents a version with raw data. Figure A17 presents a scatter plot version.

Figure A15: LMCP outcomes relative to CDF shares by 2013 election result (nationwide sample)



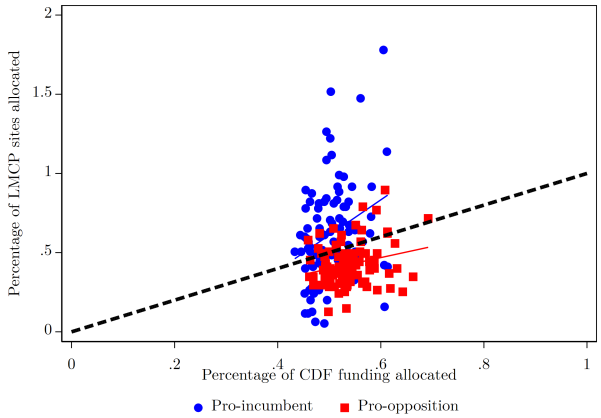
This figure shows the same as Figure 3 but for all wards nationwide. A constituency's percentage of LMCP sites minus its share of CDF funding, by whether constituencies voted pro-government in the 2013 presidential election, bottom- (top-) coded at the 5th (95th) percentile. Vertical lines indicate sample means.

Figure A16: Relative LMCP site share allocation, by 2013 election result



Panel A plots the distribution of differences between the percentage of LMCP sites that a constituency was awarded and the share of total population in the 2009 census, separately for constituencies that voted pro-government in the 2013 presidential election and constituencies that that voted against the winner. Panel B plots the difference between the percentage of LMCP sites that a constituency was awarded and the share of land area, separately for constituencies that voted pro-government in the 2013 presidential election and constituencies that that voted against the winner. Vertical dashed lines present the sample means. Bottom- and top-coded at the 5th and 95th percentile.

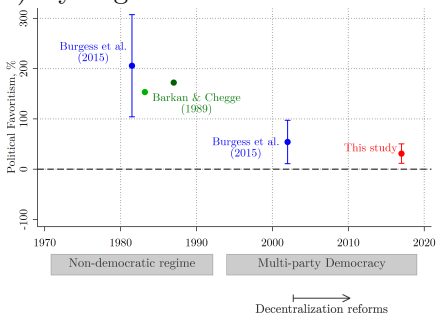
Figure A17: LMCP share versus Constituency Development Fund share, by political alignment



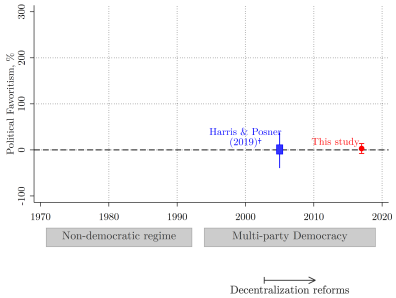
For each constituency, we construct the number of LMCP sites as a share of all LMCP sites, and the amount of Constituency Development Fund (CDF) funds allocated in 2014 as a share of all CDF funds. The sample is all constituencies without an urban ward. Points above the dashed 45-degree line indicates that for that constituency, the share of LMCP sites exceeds what would be expected based on the CDF allocation rule. Panel A of Figure 3 presents the distributions.

Figure A18: Estimates of favoritism

(A) By alignment with the President



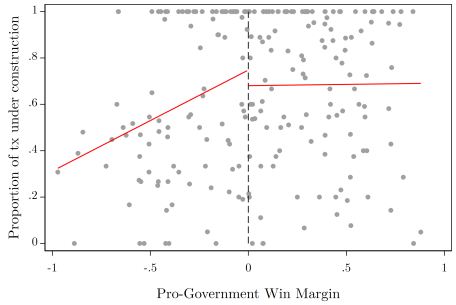
(B) By alignment with Member of Parliament



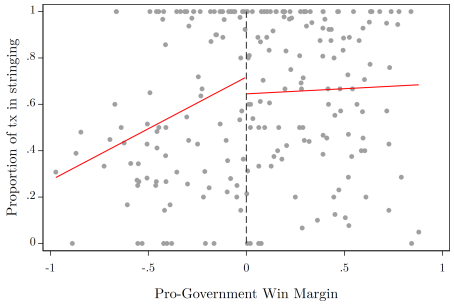
Panel A: Estimate for "this study" from Table 1. Estimates for Burgess et al. (2015) use results in Table 1 (Column 4, Panel B) on road expenditures per capita. Estimates for Barkan and Chege (1989) are on road expenditure (light green) and health expenditure (dark green). Panel B: Estimate for this study taken from Column 7 of Table 4. †: Box and whisker plot based on estimates of favoritism in each constituency, as reported in Harris and Posner (2019).

Figure A19: Share of constituency's LMCP transformers with construction progress

(A) Share of LMCP transformers in a constituency with construction started

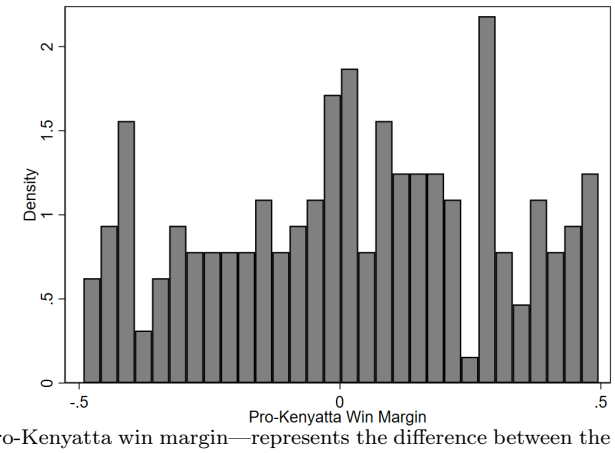


(B) Share of LMCP transformers in a constituency with stringing



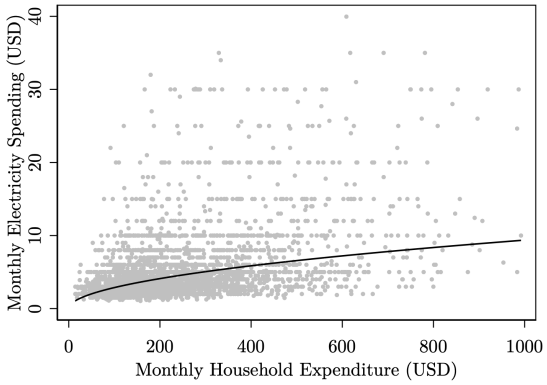
Note: Similar to Figure 4 but using two main construction outcomes as the main outcome variables. Panel A shows the fraction of a constituency's LMCP transformers where construction started. Panel B shows the fraction of a constituency's LMCP transformers where stringing had been completed.

Figure A20: 2013 Members of Parliament Win Margins



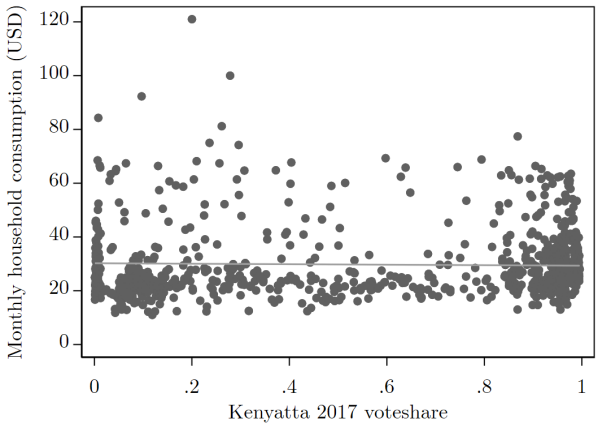
Note: The running variable—pro-Kenyatta win margin—represents the difference between the vote share of the best performing candidate in a race for Member of Parliament who was in the Jubilee coalition in the 2013 general elections and the best-performing candidate not in the Jubilee coalition. Each observation is a constituency.

Figure A21: Estimated relationship between electricity spending and total household consumption



Note: Data source: 2016 Kenya Integrated Household Budget Survey (KNBS, 2016). To reflect the LMCP target population we include rural households only.

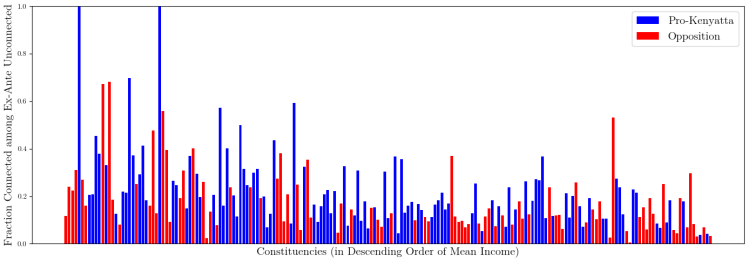
Figure A22: Ward-level correlation between 2017 Kenyatta voteshare and household consumption



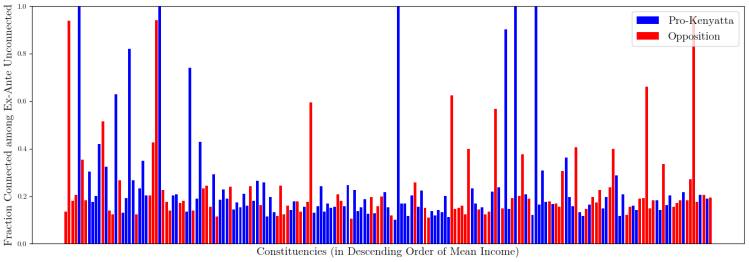
The x-axis shows Kenyatta's voteshare in the March 2013 presidential election across Kenya's 857 rural wards. The y-axis presents average monthly household consumption.

Figure A23: Fraction Connected among Ex-Ante Unconnected for All Constituencies

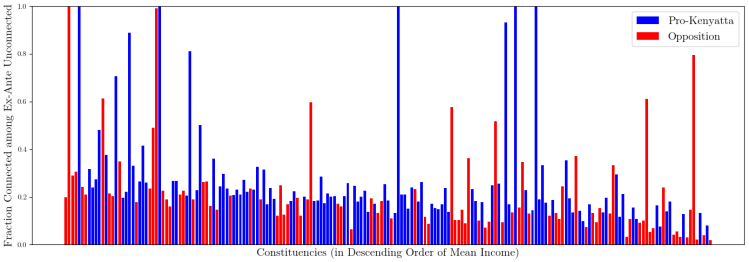
(a) Observed



(b) CDF

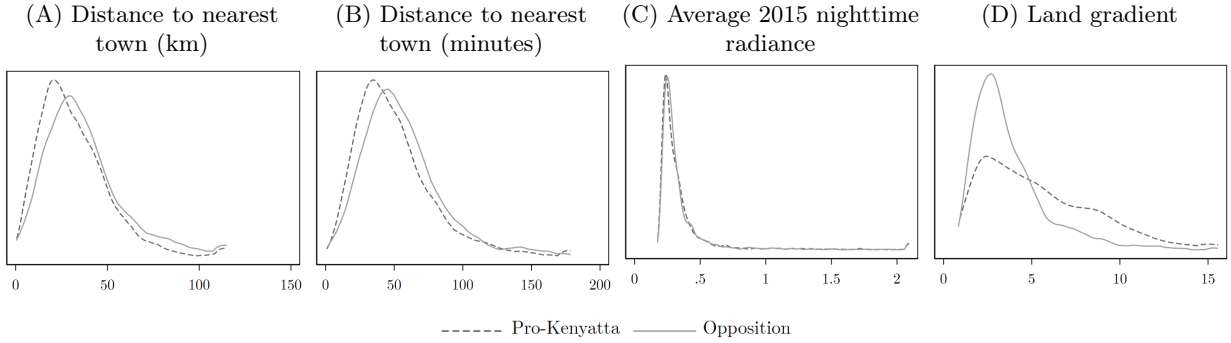


(c) Model-Implied



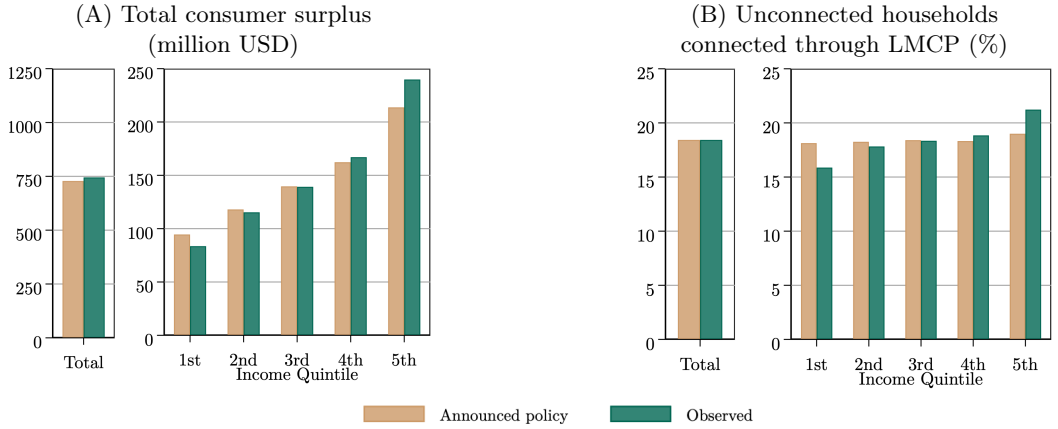
Note: Each bar corresponds to a constituency, with color indicating whether the constituency is pro-Kenyatta/opposition based on its vote-share. The bars are ordered in descending order of mean income of the corresponding constituency.

Figure A24: Balance across factors that could affect construction cost



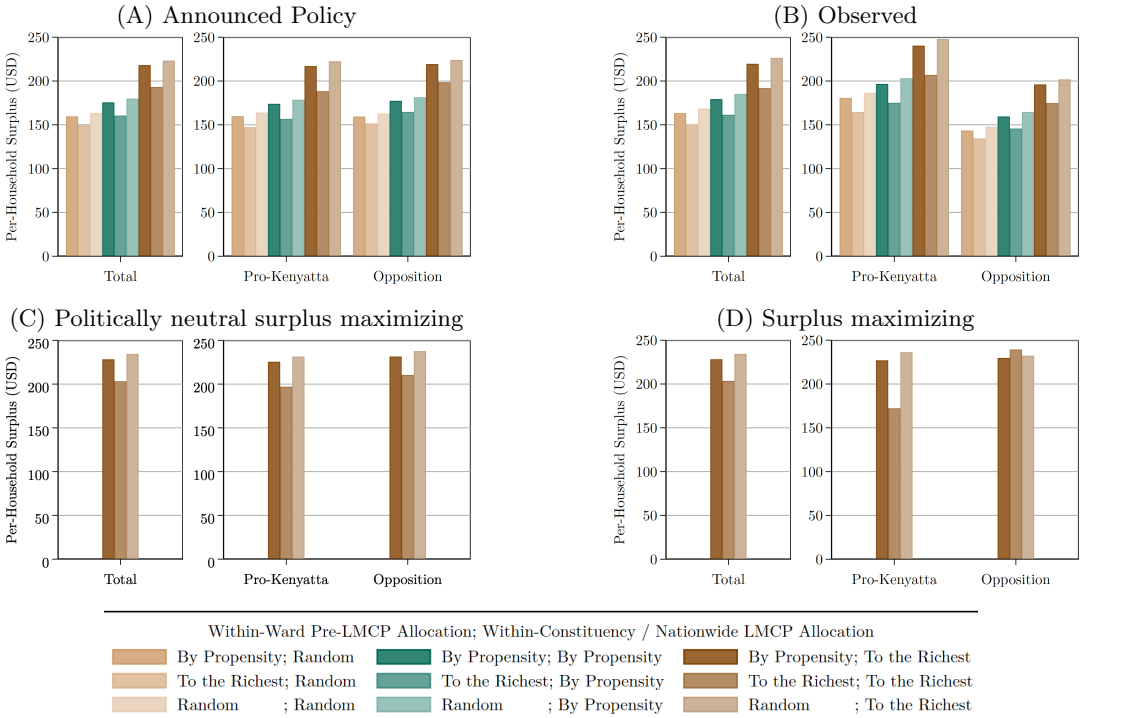
Note: Panels A and B show road distance from each site to the nearest 'major town' (WRI, 2007; HERE, 2022). Panel C shows average site-level nighttime radiance in 2015 measured using VIIRS averaged across the 600 meter radius (Elvidge et al., 2017). Panel D shows average site-level land gradient recorded using the 90-meter Shuttle Radar Topography Mission Global Digital Elevation Model (2018).

Figure A25: Connections and consumer surplus by income quintile



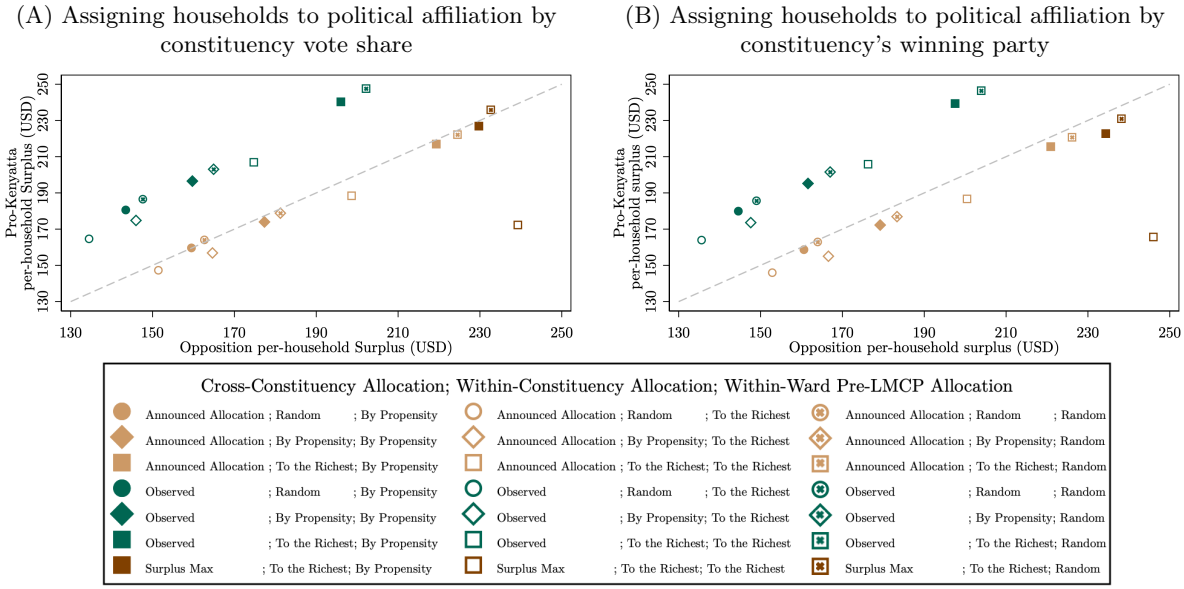
Note: Within each constituency, new connections are randomly allocated to households, following LMCP practices. The announced policy was to allocate connections according to the Constituency Development Fund (CDF). Panel A shows total consumer surplus, which favors higher-income households relative to panel A because connecting a higher-income household generates more surplus than connecting a lower-income household. Panel B shows that the CDF allocation would have allocated approximately equal numbers of connections to all households regardless of income quintile, but that the observed allocation favored higher income households over lower-income households.

Figure A26: Consumer surplus per ex-ante unconnected household in all simulated scenarios



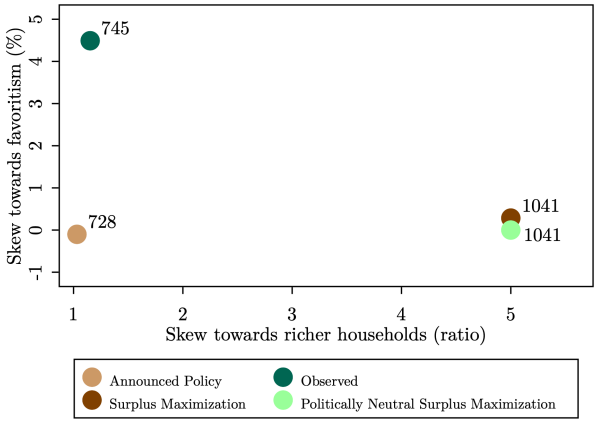
Note: The Announced Policy allocation follows the Constituency Development Fund. LMCP allocation refers to within-constituency under the (A) Announced policy allocation and (B) Observed cross-constituency allocations; LMCP allocation refers to nationwide for the (C) Politically neutral surplus-maximizing allocation. (D) Surplus-maximizing allocation. Consumer surplus assumes -0.3 demand elasticity of electricity and 10% annual growth of electricity usage over the 30-years lifetime of connection.

Figure A27: Robustness checks: Consumer surplus by political affiliation



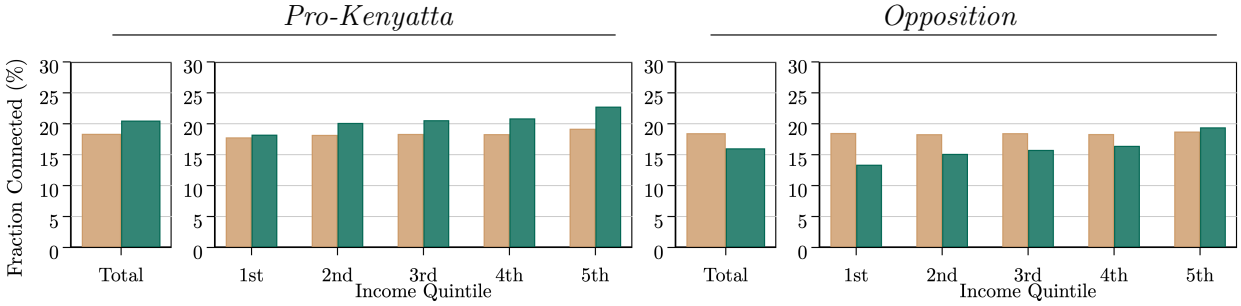
Note: The Announced Policy allocation follows the Constituency Development Fund. Consumer surplus numbers reflect averages per ex ante unconnected household, reflecting both each household's propensity to be connected and the expected consumer surplus gain from the connection. All estimates assume a -0.3 demand elasticity of electricity and 10% annual growth of electricity usage over the 30-years lifetime of connection. In panel A, households are assigned to political affiliation reflecting each constituency's vote share. In panel B, households are labeled as Pro-Kenyatta if 50% or more of the vote share in their constituency was for Kenyatta; otherwise, they are labeled as Opposition households.

Figure A28: Total consumer surplus in million USD across scenarios by political and income bias



Note: The Announced Policy allocation follows the Constituency Development Fund. Skew towards favoritism represents the percentage point difference between previously unconnected pro-Kenyatta and opposition households who received connection through LMCP. Skew towards richer households is the fraction of previously unconnected households that receive connection through LMCP that are in the highest income quintile of unconnected households, divided by 20%, which would be the equitable allocation

Figure A29: Households connected, by 2017 presidential outcome and income quintile

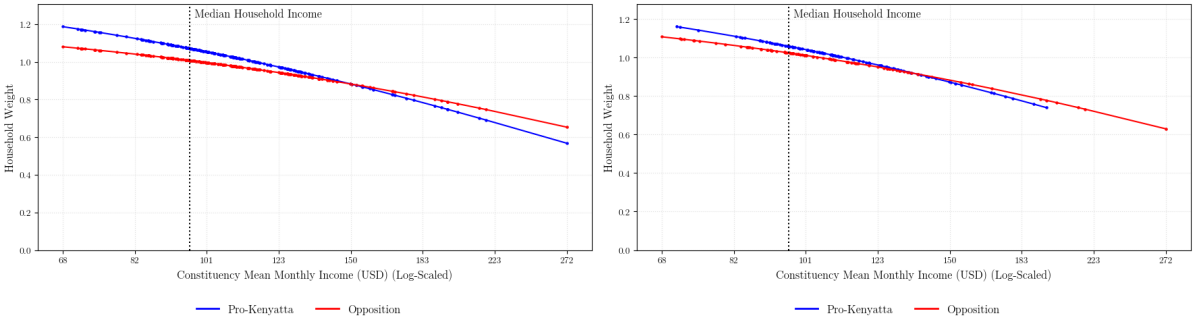


Note: Fraction of ex ante unconnected households that were connected through the LMCP.

Figure A30: Constituency-Level Per-Household Weight in Model-Implied Allocation

(a) Variant 3
(Skew weights by household affiliation)

(b) Variant 4
(Skew weights by household affiliation)



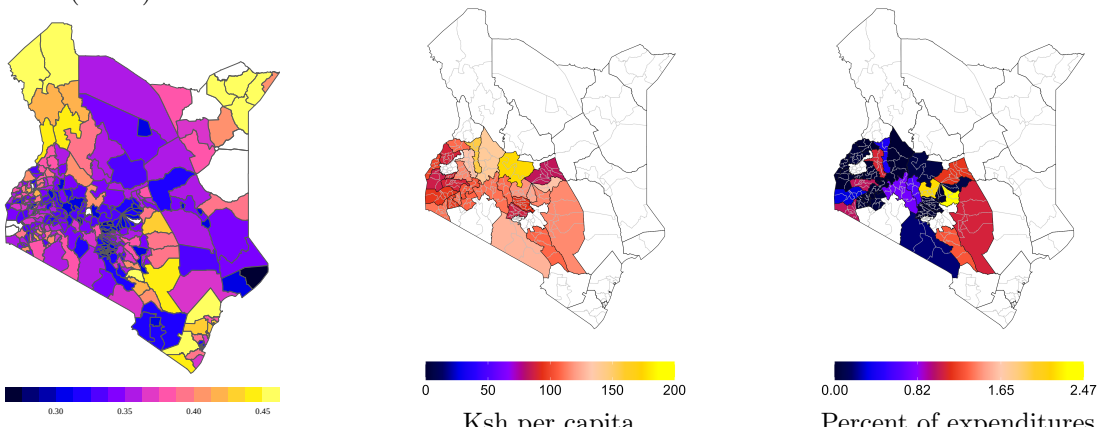
Note: Alternative versions of Figure 8 using different assumptions. In panel (a) where weights are skewed by household-level affiliation, there are two sets of weights for pro-Kenyatta and opposition households within each constituency. In panel (b) where weights are skewed by constituency-level affiliation, all households in the same constituency receive the same weight.

Figure A31: County and constituency expenditures in 2015

(A) Constituency Development Fund (CDF) allocation

(B) Total county expenditures

(C) County energy spending



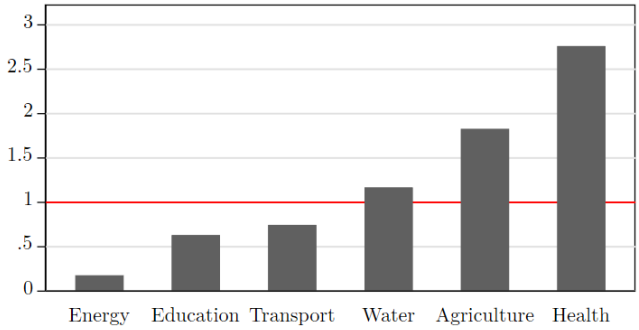
Percent of CDF funds

Ksh per capita

Percent of expenditures

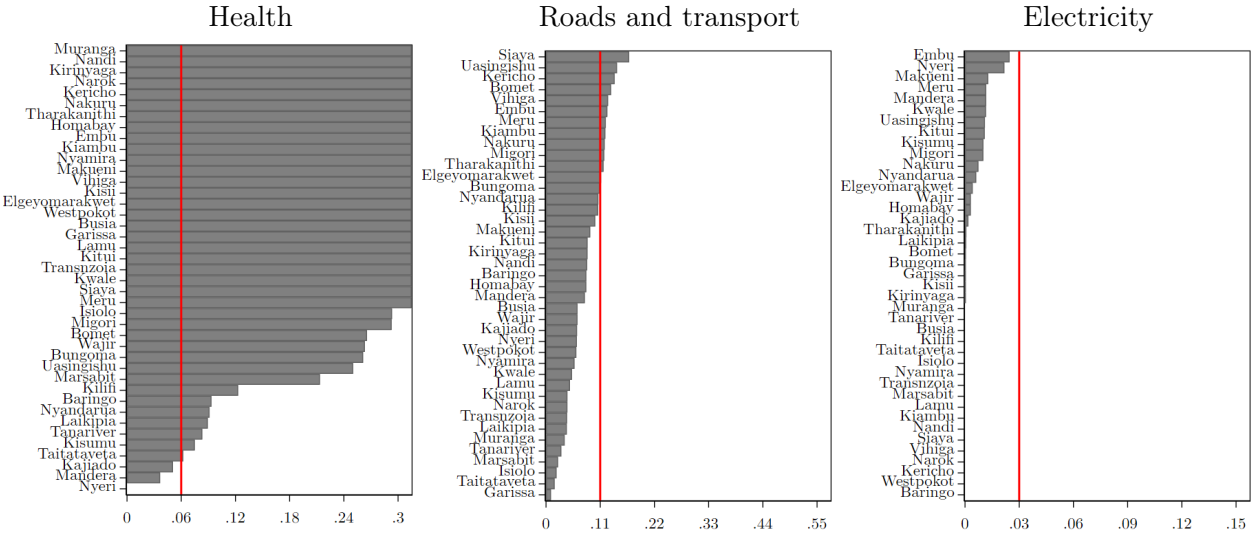
Panels B and C omit urban and sparsely populated counties (see Subsection 3.1 for more detail) and Machakos and Kakamega because of incomplete reporting (Kenya's Office of the Controller of Budget, 2022).

Figure A32: Decentralization across sectors



Note: The ratio of the share of subnational spending on a sector to the share of national spending on that sector (Kenya Treasury, 2022; Kenya Office of the Controller of Budget, 2022). Figure A33 plots county-level data.

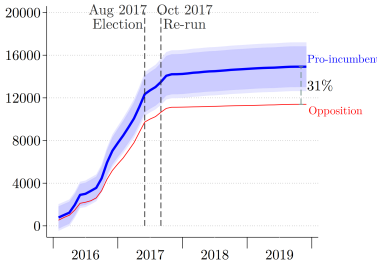
Figure A33: Fraction of county and ministerial spending spent on each sector



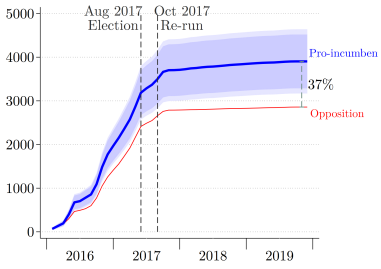
This figure compares each county's expenditures in a given sector with the national government's expenditures in that same sector (through the corresponding ministry). The gray bars plot the fraction of its public expenditures that each of the 47 counties spends on health, roads and transport, and energy (top-coded at 33%; Muranga spends 49.7% of its budget on health; Kericho, Narok, Kirinyaga and Nandi all spend between 40-42%). For comparison, the vertical red line shows the fraction of total ministerial budget that is spent by the ministry responsible for that sector 2022). For comparability, the x-axis is normalized to be five times the ministerial average. The gray bars indicate the fraction county spending assigned to that sector, top-coded at 33% for the health sector (Kenya Office of the Controller of Budget, 2022). 'Roads and transport' spending primarily funds road construction and maintenance, but occasionally includes public transportation, railways, or ports. County energy spending is primarily household electrification and streetlight construction.

Figure A34: Number of meters activated in or after 2016 at LMCP sites per 1,000 households

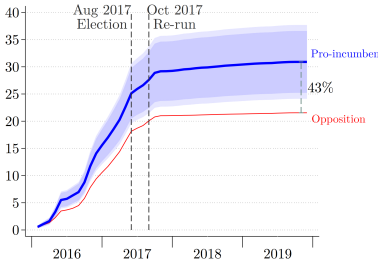
(A) Per 1,000 households, with controls



(B) Per 1,000 people



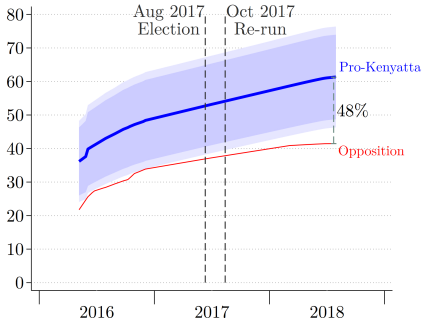
(C) Per 1% of CDF allocation, no controls



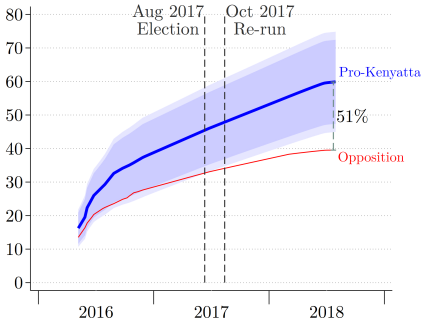
Results from the following regression: $y_{it} = \sum_{k=1}^{118} \gamma_k D_{it}^k + \sum_{k=1}^{118} \beta_k D_{it}^k * ProGovernment_i + \epsilon_{it}$. The red line plots the γ_k's while the blue line plots $\gamma_k + \beta_k$. The gap between the blue and red lines represents the difference between opposition and pro-government wards (β_k's). The darker (lighter) blue is the 90% (95%) confidence interval of the β_k's. Panel A includes socioeconomic controls as in Table 1. Figure A7 shows a version without controls. Endline estimates differ slightly from those in Table 3 and Table B11 because meter activation dates were unavailable for AfDB Phase 2 meters.

Figure A35: Construction progress per 100,000 households

Panel A: Sites in construction



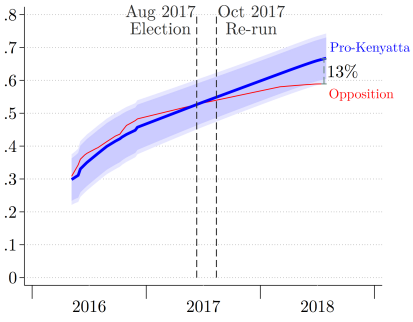
Panel B: Sites in stringing



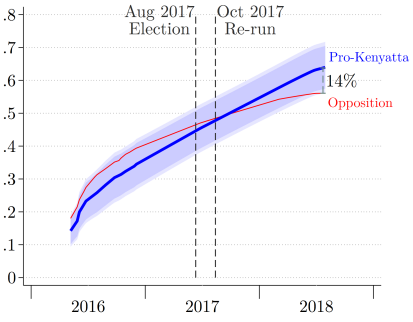
Coefficients from the following regression, for the nationwide sample, weighted by households per ward: $y_{it} = \sum_{k=1}^{63} \gamma_k D_{it}^k + \sum_{k=1}^{63} \beta_k D_{it}^k * ProGovernment_i + \epsilon_{it}$. The red line plots the γ_k's (sites per 100,000 households in construction or stringing in opposition wards). The blue line plots $\gamma_k + \beta_k$ (meters per 100,000 households in pro-government wards). The darker (lighter) blue is the 90% (95%) confidence interval of the β_k's. The national construction progress sample has 468 pro-government wards (2,419 transformers) and 541 opposition wards (2,181 transformers).

Figure A36: Construction progress as a fraction of LMCP sites

(A) In construction



(B) Stringing



Coefficients from the following regression, for the nationwide sample, with number of sites that reached the construction and stringing stages as the outcome variables, weighted by households per ward: $y_{it} = \sum_{k=1}^{63} \gamma_k D_{it}^k + \sum_{k=1}^{63} \beta_k D_{it}^k * ProGovernment_i + \epsilon_{it}$. The red line plots the γ_k's, which are the share of sites that reached each stage in opposition wards. The blue line plots the γ_k's + β_k's, which are the share of sites that reached construction or stringing in pro-government wards. The darker (lighter) blue is the 90% (95%) confidence interval of the β_k's. The national construction progress sample has 468 pro-government wards (2,419 transformers) and 541 opposition wards (2,181 transformers).

B Appendix Tables

Table B1: Determinants of Constituency Development Fund allocations to constituencies over time

	2003–2015			2016–2021		2022–	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	9.29***	8.48***	6.83***	9.36	9.36	10.01***	7.64***
	(0.10)	(0.21)	(0.41)	(.)	(.)	(0.05)	(0.00)
2013 Kenyatta voteshare (%)	-0.50***	-0.01	-0.22	0.00	0.00	0.01	-0.00
	(0.17)	(0.11)	(0.18)	(.)	(.)	(0.09)	(0.00)
Poverty index (2009)		0.36***			0.00		0.00***
		(0.03)			(.)		(0.00)
Poverty index (2005)			1.47***				
			(0.29)				
Population		0.54***	0.03		0.00		-0.00
		(0.08)	(0.13)		(.)		(0.00)
Ward count		0.11**	0.32***		0.00		0.47***
		(0.04)	(0.07)		(.)		(0.00)
Observations	290	286	229	290	286	289	285
Mean	9.1	9.1	9.1	9.4	9.4	10.0	10.0
R2	0.03	0.71	0.28	.	.	0.00	1.00

Columns 1–3, 4–5, and 6–7 use the allocations (hundred thousands 2016 USD) from 2013, 2017, and 2022, respectively, but allocations were proportional in each period. Ward counts are from 2013 administrative boundaries, consistent with those used by the 2023-24 NG-CDF Committee (GoK, 2023). The R^2 in Columns (2) and (3) of do not equal 1 because the exact constituency poverty index formula is not public. We approximate it using 2005 and 2009 Census Data. For Column (7), the regression is not perfectly collinear because of minor rounding in the allocations. $^{*} \leq 0.10, ^{**} \leq .05, ^{***} \leq .01$.

Table B2: Summary statistics

	2009	2019
Wards	n/a[c]	1,450
Constituencies	210[d]	290
Counties	n/a[c]	47
Population (millions)[a]	38.6	47.6
Households using grid electricity as main lighting source[a]	22.7%	50.4%
Households using solar panels as main lighting source[a]	1.6%	19.3%
Electricity meters (millions)[b]	1.3	7.1
Residential electricity meters (millions)[b]	1.0	6.7
Electrical transformers[b]	30,000[e]	62,271

[a]Kenyan Census (2009; 2019). [b]Kenya Power annual reports (2012; 2022). [c]Counties were created in the 2010 Constitution. [d]The number of constituencies changed from 210 to 290 in the 2010 Constitution. [e]Authors' calculation.

Table B3: Favoritism in LMCP in meters per 100,000 households (meter panel data)

	(1)
Pro-Govt Effect, Dec 2016	1359.35**
	(641.52)
Pro-Govt Effect, Dec 2017	2325.01*
	(1228.72)
Pro-Govt Effect, Dec 2018	2622.13**
	(1255.64)
Pro-Govt Effect, Dec 2019	2728.60**
	(1268.26)
Observations	42624
Opposition Mean, Dec 2016	5022.30
Opposition Mean, Dec 2017	11154.30
Opposition Mean, Dec 2018	11304.63
Opposition Mean, Dec 2019	11428.82

Results from the following regression: $y_{it} = \sum_{k=1}^{118} \gamma_k D_{it}^k + \sum_{k=1}^{118} \beta_k D_{it}^k * ProGovernment_i + \epsilon_{it}$. Listed coefficients are estimated β_k values; listed opposition means are estimated γ_k values. The estimates in this table correspond to Figure A7.

Table B4: Political favoritism in LMCP sites per 100,000 households

	In absolute terms			Relative to CDF Allocation		
	(1)	(2)	(3)	(4)	(5)	(6)
Voted pro-govt in 2013	50.6***	62.6***	58.7***	69.4***	63.7***	63.4***
	(10.6)	(11.2)	(8.13)	(18.4)	(19.4)	(12.1)
Observations	911	911	911	196	196	196
Opposition Mean	149	149	149	151	151	151
Effect Size (%)	34	42	39	46	42	42
Controls	None	SES	LASSO	None	SES	LASSO
Sample	Wards	Wards	Wards	Consts	Consts	Consts

In Columns 1–3, y_i is the number of LMCP sites per 100,000 households. In Column 4–6, y_i is the same but minus the hypothetical number had meters been allocated according to the Constituency Development Fund (CDF). Columns 2 and 5 controls for land gradient, population density, baseline share of households that are unconnected, share adults with primary or secondary education, share adults who work for pay, dependency ratio, share households with an iron roof, population density, household size, mobile money agents as of 2013 per capita, and change in mobile money agents between 2013 and 2015 per capita. Column 3 uses post-double selection LASSO (Belloni, Chernozhukov, and Hansen, 2013; Ahrens, Hansen, and Schaffer, 2020) to flexibly select from a subset of quadratic and cubic interactions between this same set of variables. Table 1 presents the same analysis for LMCP meters per 100k households. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B5: Placebo Test: Political Favoritism in Rollout of New M-Pesa Agents (2013-2015)

	In absolute terms			Relative to CDF Allocation		
	(1)	(2)	(3)	(4)	(5)	(6)
Voted pro-govt in 2013	16.3	-75.4	-83.5	54.9	-50	-11.4
	(37.6)	(58.8)	(58.5)	(48.5)	(58.3)	(52.9)
Observations	911	911	911	196	196	196
Opposition Mean	291	291	291	319	319	319
Effect Size (%)	5.6	-26	-29	17	-16	-3.6
Controls	None	SES	LASSO	None	SES	LASSO
Sample	Wards	Wards	Wards	Consts	Consts	Consts

In Columns 1–3, y_i is the number of new M-PESA agents added in 2013-2015 per 100,000 households. In Column 4, y_i is the same but minus the hypothetical number had agents been allocated according to the Constituency Development Fund (CDF). Sample in all regressions excludes urban wards and KOSAP wards. Columns 2 controls for land gradient, population density, baseline share of households that are unconnected, share adults with primary or secondary education, share adults who work for pay, dependency ratio, share households with an iron roof, population density, household size, mobile money agents as of 2013 per capita, and change in mobile money agents between 2013 and 2015 per capita. Column 3 uses LASSO to flexibly select from a subset of quadratic and triple interactions between this same set of variables. Column 4 does not include socio-economic controls. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B6: Favoritism in Core Versus Swing Areas (using 75% as the core-swing cut-off)

	In absolute terms			Relative to CDF Allocation		
	(1)	(2)	(3)	(4)	(5)	(6)
Pro-Government Core (δ_1)	3609***	4013***	4543***	6693***	6776***	4589**
	(1098)	(1235)	(928)	(2156)	(2276)	(2075)
Pro-Government Swing (δ_2)	4315**	2845	2928*	4338	3454	3175
	(1963)	(2272)	(1613)	(3693)	(3261)	(2105)
Pro-Opposition Swing (δ_3)	2686*	2889**	2538**	3279	2916	1633
	(1530)	(1401)	(1258)	(2707)	(3041)	(2412)
Observations	911	911	911	193	193	193
Pro-Opposition Core Mean	14095	14095	14095	16125	16125	16125
p-val $\delta_1 = \delta_2 = \delta_3$	.73	.74	.28			
p-val $\delta_1 = \delta_2$	.72	.62	.34	.44	.29	.52
Controls	None	SES	LASSO	None	SES	LASSO
Sample	Wards	Wards	Wards	Consts	Consts	Consts

Columns 1, 2, and 3 are the same as in Table 2. Columns 4, 5, and 6 are at the constituency level relative to the Constituency Development Fund (CDF) allocation using the same regression as in Table 1, but these estimates are noisier because only 8 of 193 constituencies are pro-government contested and only 18 are pro-opposition contested. SE clustered by constituency in parentheses. * ≤ 0.10,** $\leq .05$,*** $\leq .01$.

Table B7: Favoritism in Core Versus Swing Areas (using 60% as the core-swing cut-off)

	In absolute terms			Relative to CDF Allocation		
	(1)	(2)	(3)	(4)	(5)	(6)
Pro-Government Core (δ_1)	3340***	3384***	3732***	5772**	5535**	5207***
	(1034)	(1190)	(865)	(2123)	(2592)	(1769)
Pro-Government Swing (δ_2)	4610*	4465*	3255	874	2992	4996**
	(2641)	(2301)	(2285)	(1259)	(3996)	(2270)
Pro-Opposition Swing (δ_3)	2936	3414**	1555	-7952	-27.1	644
	(2468)	(1714)	(1529)	(4977)	(3340)	(2684)
Observations	911	911	911	193	193	193
Pro-Opposition Core Mean	14316	14316	14316	16465	16465	16465
p-val $\delta_1 = \delta_2$	.63	.64	.84	.007	.57	.93
Controls	None	SES	LASSO	None	SES	LASSO
Sample	Wards	Wards	Wards	Consts	Consts	Consts

Same as Table B6 but using 50-60% as the "swing" group. Using this definition, 3 of 193 constituencies are pro-government contested and 2 are pro-opposition contested. SE clustered by constituency in parentheses. * ≤ 0.10,** $\leq .05$,*** $\leq .01$.

Table B8: Favoritism in Core Versus Swing Areas (using 80% as the core-swing cut-off)

	In absolute terms			Relative to CDF Allocation		
	(1)	(2)	(3)	(4)	(5)	(6)
Pro-Government Core (δ_1)	3901***	4577***	4897***	7095***	7242***	5051**
	(1114)	(1177)	(926)	(2254)	(2300)	(2185)
Pro-Government Swing (δ_2)	3969**	2216	2859**	2973	2774	1005
	(1789)	(2097)	(1431)	(2932)	(2627)	(2362)
Pro-Opposition Swing (δ_3)	3306**	3438**	3248***	2608	1956	444
	(1486)	(1390)	(1132)	(2998)	(3390)	(2393)
Observations	911	911	911	193	193	193
Pro-Opposition Core Mean	13856	13856	13856	16139	16139	16139
p-val $\delta_1 = \delta_2$	.97	.23	.16	.062	.039	.083
Controls	None	SES	LASSO	None	SES	LASSO
Sample	Wards	Wards	Wards	Consts	Consts	Consts

Same as Table B6 but using 50-80% as the "swing" group. Using this definition, 13 of 193 constituencies are pro-government contested and 22 are pro-opposition contested. SE clustered by constituency in parentheses. * ≤ 0.10,** $\leq .05$,*** $\leq .01$.

Table B9: Favoritism across construction stages, not weighted by population

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	116***	.0615***	66.9***	-.0525	28.6***	-10.1	3189***
	(42.3)	(.0182)	(11.1)	(.0399)	(9.72)	(10.4)	(1076)
Observations	911	913	911	587	587	885	911
Opposition Mean	644.3	0.3	148.7	0.5	83.1	125.1	14443.6
Treatment Effect (%)	18.0	24.2	45.0	-9.8	34.5	-8.1	22.1
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 3, but not weighted by population. SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B10: Favoritism across construction stages, adjacent wards only

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	58	.0504*	32**	.0422	32.2**	-24.3	511
	(65.9)	(.0274)	(15.5)	(.0566)	(14.1)	(16.3)	(1482)
Observations	239	239	239	149	149	228	239
Opposition Mean	706.0	0.2	149.2	0.5	79.1	119.7	13976.2
Treatment Effect (%)	8.2	21.8	21.4	8.2	40.7	-20.3	3.7
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 3, but with adjacent wards only (as defined in Section 3). SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B11: Favoritism across construction stages, per capita

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	28.7***	.0539***	14.5***	-.0428	6.76***	-5.34	790***
	(10.4)	(.0178)	(2.78)	(.0415)	(2.58)	(11.1)	(290)
Observations	911	910	911	587	587	882	911
Opposition Mean	154.9	0.3	35.2	0.5	19.9	125.1	3511.0
Treatment Effect (%)	18.6	21.2	41.2	-8.0	34.0	-4.3	22.5
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 3, but per capita instead of per household. SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B12: Favoritism across construction stages without socioeconomic controls

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	214***	.0165	50.6***	-.0241	30.4***	7.85	3188***
	(35.7)	(.0179)	(10.6)	(.0336)	(8.45)	(13.3)	(1008)
Observations	911	910	911	587	587	882	911
Opposition Mean	644.3	0.3	148.7	0.5	83.1	125.1	14443.6
Treatment Effect (%)	33.2	6.5	34.0	-4.5	36.6	6.3	22.1
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 3, but with no control variables. SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B13: Favoritism across construction stages with PDS LASSO controls

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	69.4**	.0645***	53.6***	-.0317	24.7***	-8.03	3100***
	(28.3)	(.0124)	(7.45)	(.0285)	(6.54)	(10.5)	(813)
Observations	911	910	911	587	587	882	911
Opposition Mean	644.3	0.3	148.7	0.5	83.1	125.1	14443.6
Treatment Effect (%)	10.8	25.4	36.0	-5.9	29.8	-6.4	21.5
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 3, but using post-double selection (PDS) LASSO to select covariates from all possible quadratic and cubic interactions of SES controls. SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B14: Favoritism across construction stages, with constituency fixed effects

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	86.2	.017	27.7	-.11**	-6.35	-21.8	1567
	(87.1)	(.0309)	(21.2)	(.0509)	(19.2)	(19.6)	(1552)
Observations	911	910	911	587	587	882	911
Opposition Mean	644.3	0.3	148.7	0.5	83.1	125.1	14443.6
Treatment Effect (%)	13.4	6.7	18.6	-20.6	-7.6	-17.4	10.8
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 3, but with constituency fixed effects. SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B15: Deviation from the CDF Allocations

			LMCP					
	Pre-existing Transformers		Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Voted pro-govt in 2013	353.6***	N/A	75.9***	65.5***	42.7***	37.7**	5360.9**	4270.7**
	(82.3)		(18.6)	(19.7)	(14.3)	(14.6)	(1974.9)	(1921.4)
Observations	192		192	192	192	192	192	192
Opposition Mean	642.6		150.8	150.8	68.3	68.3	16532.5	16532.5
Pro-Gov Effect (%)	55.0		50.3	43.5	62.4	55.2	32.4	25.8
Comparison Allotment	2003	2016	2003	2016	2003	2016	2003	2016

Observations at the constituency level, weighted by constituency population. In column 1, y_i is the number of transformers in excess of what the CDF predicts; in columns 2–3, y_i is number of LMCP transformers in excess of what the CDF predicts; in columns 4–5, y_i is number of LMCP sites completed in excess of what the CDF predicts; in columns 6–7, y_i is number of LMCP meters in excess of what the CDF predicts; all per 100,000 households. Columns 1, 2, 4, and 6 use the 2003 CDF formula, whereas columns 3, 5, and 7 use the 2017 CDF formula. SE clustered by county in parentheses. $^{*} \leq 0.10, ^{**} \leq .05, ^{***} \leq .01$.

Table B16: MP-alignment effects without socioeconomic controls

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	216***	.0074	44.8***	-.018	27.1***	18.2	3735***
	(38.1)	(.019)	(11.4)	(.0353)	(8.46)	(14.4)	(1037)
Voted pro-MP in 2013	29.6	-.012	-5.74	.0477	4.39	14.2	1084
	(33)	(.0145)	(9.2)	(.0316)	(7.31)	(11.2)	(887)
Observations	731	730	731	478	478	706	731
Opposition Mean	644.3	0.3	148.7	0.5	83.1	125.1	14443.6
Treatment Effect (%)	33.6	2.9	30.1	-3.4	32.7	14.5	25.9
MP Effect (%)	4.6	-4.7	-3.9	8.9	5.3	11.3	7.5
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 4, but with no control variables. SE clustered by constituency in parentheses. $^{*} \leq 0.10, ^{**} \leq .05, ^{***} \leq .01$.

Table B17: MP-alignment effects with PDS LASSO controls

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	70.6**	.0637***	51.6***	-.0286	25***	-4.6	3453***
	(32.1)	(.0137)	(8.35)	(.0287)	(6.8)	(12)	(866)
Voted pro-MP in 2013	25.8	.00723	4.89	.0458*	10.7*	-3.78	352
	(24.5)	(.0118)	(7.59)	(.0272)	(6.22)	(8.41)	(742)
Observations	731	730	731	478	478	706	731
Opposition Mean	644.3	0.3	148.7	0.5	83.1	125.1	14443.6
Treatment Effect (%)	11.0	25.1	34.7	-5.3	30.1	-3.7	23.9
MP Effect (%)	4.0	2.8	3.3	8.5	12.9	-3.0	2.4
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 4, but using post-double selection LASSO to select covariates from all possible quadratic and cubic interactions of SES controls. SE clustered by constituency in parentheses. $^{*} \leq 0.10, ^{**} \leq .05, ^{***} \leq .01$.

Table B18: MP-alignment effects, not weighted by population

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	111**	.061***	61.8***	-.0623	22.2**	-7.03	3269***
	(46.1)	(.0211)	(11.9)	(.0421)	(9.41)	(12.2)	(1108)
Voted pro-MP in 2013	19.9	.01	6.09	.0464	11.6*	-7.37	263
	(26)	(.0129)	(8.11)	(.0292)	(6.58)	(9.08)	(739)
Observations	731	733	731	478	478	709	731
Opposition Mean	644.3	0.3	148.7	0.5	83.1	125.1	14443.6
Treatment Effect (%)	17.3	24.0	41.6	-11.6	26.7	-5.6	22.6
MP Effect (%)	3.1	3.9	4.1	8.6	13.9	-5.9	1.8
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 4, but not weighted by population. SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B19: MP-alignment effects, adjacent wards only

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	64.3	.0718**	38.5**	.0199	27.9*	-28.7	727
	(74.3)	(.0334)	(17.5)	(.0592)	(14.4)	(18.6)	(1580)
Voted pro-MP in 2013	23.8	-.0161	-13.7	.0935*	17.9	5.93	1423
	(44.2)	(.0242)	(15.5)	(.0545)	(13.1)	(11.1)	(1301)
Observations	199	199	199	129	129	190	199
Opposition Mean	706.0	0.2	149.2	0.5	79.1	119.7	13976.2
Treatment Effect (%)	9.1	31.0	25.8	3.9	35.3	-23.9	5.2
MP Effect (%)	3.4	-7.0	-9.2	18.1	22.6	5.0	10.2
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 4, but with adjacent wards only (as defined in Section 3). SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B20: MP-alignment effects, per capita

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	26.8**	.0532***	13.5***	-.0533	4.97**	-2.21	780**
	(11.6)	(.0203)	(2.94)	(.0422)	(2.44)	(13)	(302)
Voted pro-MP in 2013	3.89	.00761	.825	.0505	2.96*	-4.78	133
	(6.51)	(.0125)	(2.02)	(.0307)	(1.69)	(8.91)	(198)
Observations	731	730	731	478	478	706	731
Opposition Mean	154.9	0.3	35.2	0.5	19.9	125.1	3511.0
Treatment Effect (%)	17.3	20.9	38.5	-9.9	25.0	-1.8	22.2
MP Effect (%)	2.5	3.0	2.3	9.4	14.9	-3.8	3.8
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 4, but per capita instead of per household. SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B21: MP-alignment effects, without constituency fixed effects

		LMCP					
	Pre-existing Transformers	Site Selection		Construction		Meters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Voted pro-govt in 2013	102**	.0532***	57.8***	-.0533	20.1**	-2.21	3084**
	(45.6)	(.0203)	(12)	(.0422)	(9.7)	(13)	(1197)
Voted pro-MP in 2013	17.7	.00761	4.04	.0505	11.9*	-4.78	428
	(26.2)	(.0125)	(8.16)	(.0307)	(6.65)	(8.91)	(793)
Observations	731	730	731	478	478	706	731
Opposition Mean	644.3	0.3	148.7	0.5	83.1	125.1	14443.6
Treatment Effect (%)	15.9	20.9	38.8	-9.9	24.2	-1.8	21.4
MP Effect (%)	2.7	3.0	2.7	9.4	14.4	-3.8	3.0
Analysis		Marg.	Cumul.	Marg.	Cumul.	Marg.	Cumul.

Identical to Table 4, but without constituency fixed effects. SE clustered by constituency in parentheses. * ≤ 0.10,** ≤ .05,*** ≤ .01.

Table B22: Aggregate Moments from Observed and Counterfactual Allocations

	Moments				Parameter Estimate			
Scenario	Favoritism (p.p.)	Regressivity (Ratio)	Differential Regressivity (p.p.)	Distance to Observed Allocation	θ_{pro}	θ_{income}	$\theta_{\text{pro-income}}$	λ
Observed	4.528	1.153	-8.054	0.000	-	-	-	-
CDF	-0.114	1.030	5.096	197.501	-	-	-	-
Variant 1	4.703	1.162	-10.936	181.741	0.069	-0.139	-0.087	2.614
Variant 2	3.646	1.164	-9.291	182.887	0.04	-0.16	-0.058	2.348
Variant 3	4.768	1.162	-10.610	180.934	0.05	-0.158	-0.074	2.494
Variant 4	3.729	1.168	-10.210	181.963	0.028	-0.178	-0.054	2.077

Note: Favoritism is the percentage point difference between ex-ante unconnected pro-Kenyatta and opposition households who received connection through LMCP. Regressivity is the fraction of ex-ante unconnected households that receive connection through LMCP that are in the highest income quintile of unconnected households, divided by 20%, which would be the equitable allocation. Differential regressivity is the percentage point difference in regressivity between ex-ante pro-Kenyatta and opposition households. The announced policy was to allocate connections according to the Constituency Development Fund formula. Distance to observed allocation is the square root of unconnected-household-weighted sum of squares of the percentage point difference in the percentage connected of ex-ante unconnected households across all constituencies between the model-implied and the observed constituency level allocation.

- Variant 1 (main spec): political skew by households, income skew by households
- Variant 2: political skew by constituencies, income skew by households
- Variant 3: political skew by households, income skew by constituencies
- Variant 4: political skew by constituencies, income skew by constituencies

Table B23: Economic surplus by income quintile and political affiliation under different LMCP allocations (million USD)

Assumptions			Total consumer surplus by income quintile					Total consumer surplus by political affiliation				
Demand Elasticity (ϵ_D)	**Annual Electricity Spending Growth (%)**	**Total Consumer Surplus**	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Pro-govt**	**Opposition**	**Political favoritism (ratio)**	**Total Surplus**	**Return on investment (%)**
						Observed						
-0.15	0	663	74	103	124	149	214	391	272	1.3	320	93
-0.15	10	1490	167	231	278	334	480	879	611	1.3	1147	334
-0.30	0	333	37	52	62	75	107	196	136	1.3	-10	-3
-0.30	10	745	84	115	139	167	240	439	305	1.3	402	117
-0.45	0	222	25	34	41	50	71	131	91	1.3	-121	-35
-0.45	10	496	56	77	93	111	160	293	203	1.3	153	45
						Announced Policy						
-0.15	0	648	84	105	124	145	190	346	302	1.0	305	89
-0.15	10	1456	189	236	279	325	427	777	679	1.0	1113	325
-0.30	0	325	42	53	62	72	95	174	152	1.0	-18	-5
-0.30	10	728	95	118	140	162	214	389	340	1.0	385	112
-0.45	0	217	28	35	42	48	64	116	101	1.0	-126	-37
-0.45	10	485	63	79	93	108	142	259	226	1.0	142	41
						Surplus Maximization						
-0.15	0	927	0	0	0	0	927	492	436	1.0	584	170
-0.15	10	2083	0	0	0	0	2083	1104	978	1.0	1740	507
-0.30	0	465	0	0	0	0	465	247	219	1.0	122	36
-0.30	10	1041	0	0	0	0	1041	552	489	1.0	698	204
-0.45	0	310	0	0	0	0	310	164	146	1.0	-33	-10
-0.45	10	693	0	0	0	0	693	368	326	1.0	350	102
						Politically Neutral Surplus Maximization						
-0.15	0	927	0	0	0	0	927	489	439	1.0	584	170
-0.15	10	2083	0	0	0	0	2083	1097	985	1.0	1740	507
-0.30	0	465	0	0	0	0	465	245	220	1.0	122	36
-0.30	10	1041	0	0	0	0	1041	549	493	1.0	698	204
-0.45	0	310	0	0	0	0	310	163	147	1.0	-33	-10
-0.45	10	693	0	0	0	0	693	365	328	1.0	350	102

Note: The Announced Policy allocation follows the Constituency Development Fund. All surplus numbers are 15% discounted sum of surplus from consuming electricity over the life of the connection (30 years), and assume pre-LMCP meters are allocated by propensity. All surplus numbers are in million 2019 USD. LMCP cost is 35 billion Ksh (343 million USD) until the end of 2019 (Auditor-General, 2023). Politically neutral surplus maximization connects the same fraction of unconnected pro-government households as unconnected opposition households. Constituency Development Fund and Observed scenarios allocate meters to ex ante unconnected households randomly within each constituency. The political favoritism ratio is calculated by dividing the ratio of Pro-govt surplus to Opposition surplus by the ratio of Pro-govt ex-ante unconnected households to Opposition ex-ante unconnected households. A ratio of 1 indicates that surplus is allocated politically fairly with respect to the number of households that were unconnected at the start of the program.

Table B24: Electricity market structure across Africa

	Generation	Transmission	Distribution
Algeria	Sonelgaz, Private	Sonelgaz	Sonelgaz
Angola	PROTEL	RNT	ENDE
Benin	BEPC	SBEE	SBEE
Botswana	BPC, Private	BPC	BPC
Burkina Faso	SONABEL, PPAs	SONABEL	SONABEL
Burundi	REGIDSO, Private	REGIDSO	REGIDSO, Private
Cameroon	Private	SONATREL	ENEO (Private)
Cape Verde	ELECTRA , Private	ELECTRA	ELECTRA
CAR	ENERCA, Private	ENERCA	ENERCA
Chad	SNE, Private	SNE	SNE
Comoros	SONELEC	SONELEC	SONELEC
Cote d'Ivoire	CI-Energies, Private	CI-E (Private)	CI-E (Private)
DRC	SNEL, Private	SNEL	SNEL
Egypt	EEHC, Private	EETC	EEHC
Equatorial Guinea	SEGESA	SEGESA	SEGESA
Eritrea	EEC	EEC	EEC
Ethiopia	EEP, Private	EEP	EEU
Gabon	SEEG, Private	SEEG	SEEG
Ghana	VRA, BPA, Private	GRIDCo	ECG, NEDco, private
Guinea	EDG, Private	EDG	EDG
Guinea-Bissau	EAGB, Private	EAGB	EAGB
Kenya	KenGen, Private	KETRACO, Private	KPLC
Liberia	LEC	LEC	LEC
Lybia	GECOL, Private	GECOL	GECOL
Malawi	EGENCO, Private	ESCOM	ESCOM
Mali	EDM, Private	EDM, Private	EDM, Private
Mauritania	SOMELEC, Private	SOMELEC	SOMELEC
Morocco	ONEE, Private	ONEE	ONEE, Public, Private
Mozambique	EDM, Private	EDM	EDM
Namibia	NamPower, Private	NamPower	NamPower, Private
Niger	NIGELEC, Private	NIGELEC	NIGELEC
Nigeria	Gencos	TCN	Discos
Republic of the Congo	Private	Private	Private
Rwanda	REG, Private	REG	REG
Senegal	SENELEC, Private	SENELEC	SENELEC
Seychelles	PUC, Private	PUC	PUC
Sierra Leone	EGTC, Private	EGTC	EDSA
Somalia	Private	Private	Private
South Africa	Eskom, Private	Eskom, Municipalities	NTCSA
South Sudan	SSEC, Private	SSEC	SSEC
Tanzania	TANESCO, Private	TANESCO	TANESCO
The Gambia	NAWEC, Private	NAWEC	NAWEC
Tunisia	STEG, Private	STEG	STEG
Uganda	Public, Private	UETC	Private
Zambia	ZESCO, Private	ZESCO, Private	ZESCO, Private
Zimbabwe	ZPC, Private	ZETDC	ZETDC

C Proofs

Claim: The net utility gain from access to electricity is greater for high income agents than for low income agents (see Subsection 6.1):

$$\frac{\partial U}{\partial Y} = \frac{\partial u_e(e_a)}{\partial Y} + \frac{\partial u_c(c_a)}{\partial Y} - \frac{\partial u_c(c_n)}{\partial Y}$$

Using the chain rule:

$$\frac{\partial U}{\partial Y} = \frac{\partial u_e(e_a)}{\partial e_a}\frac{\partial e_a}{\partial Y} + \frac{\partial u_c(c_a)}{\partial c_a}\frac{\partial c_a}{\partial Y} - \frac{\partial u_c(c_n)}{\partial c_n}\frac{\partial c_n}{\partial Y}$$

For simplicity normalize units such that $p_e = p_c = 1$. Since the agent can only consume two goods, $\frac{\partial e_a}{\partial Y} + \frac{\partial c_a}{\partial Y} = 1$. Since without access to electricity the agent spends all money on other consumption goods, we have $\frac{\partial c_n}{\partial Y} = 1$. Since the agent equalizes marginal utilities at the optimum we also have $\frac{\partial u_e(e_a)}{\partial e_a} = \frac{\partial u_c(c_a)}{\partial c_a}$. The equation above now simplifies to:

$$\frac{\partial U}{\partial Y} = \frac{\partial u_c(c_a)}{\partial c_a} - \frac{\partial u_c(c_n)}{\partial c_n}$$

Since $c_a < c_n$, by the curvature of the utility function we have $\frac{\partial u_c(c_a)}{\partial c_a} > \frac{\partial u_c(c_n)}{\partial c_n}$ and thus $\frac{\partial U}{\partial Y} > 0$.