The Face of African Infrastructure: Service Availability and Citizens' Demands

Benjamin Leo, Robert Morello, and Vijaya Ramachandran

Abstract

The need for infrastructure improvements is a top-tier economic, political, and social issue in nearly every African country. Although the academic and policy literature is extensive in terms of estimating the impact of infrastructure deficits on economic and social indicators, very few studies have examined citizen demands for infrastructure. In this paper, we draw upon survey data to move beyond topline estimates of national infrastructure access rates towards a more nuanced understanding of service availability and citizen demands at the regional, national, and sub-national level. We find a predictable pattern of infrastructure services across income levels—lower income countries have fewer services. The survey data also allows us to observe the sequencing of infrastructure services. On the demand side, survey respondents are most concerned with jobs and income-related issues, as well as with the availability of infrastructure: specifically transportation and sanitation. These priorities transcend demographic factors, including gender and location (urban/rural).

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I. Overview

The need for infrastructure improvements is a top-tier economic, political, and social issue in nearly every African country. These investments are widely viewed as critical inputs for promoting growth, increasing economic opportunities, and improving social services such as health and education. The academic and policy literature is extensive in terms of estimating the impact of infrastructure deficits on these economic and social indicators.[1] In fact, some estimates suggest that insufficient infrastructure dampens African growth rates by two percent a year.[2]

National statistical offices and multilateral organizations regularly track access rates for many types of infrastructure, such as electricity, improved water sources, and sanitation. In this context, Demographic and Health Surveys are a particularly important monitoring tool. Yet, very few studies have examined citizen demands for infrastructure. This includes questions like - what are the demographics of those Africans who cite infrastructure-related issues as their most pressing problems? What kind of 'typical' African is demanding action? What is the state of infrastructure service availability in their immediate area? For instance, are there significant portions of the population that reside in areas with available services, but yet cite those same services as a pressing national problem? How do these dynamics vary across and within African countries and sub-regions?

In this paper, we draw upon survey data to provide at least partial answers to these important questions. Our objective is to move beyond topline estimates of national infrastructure access rates towards a more nuanced understanding of broader service availability and citizen demands at multiple geographic levels (e.g., regional, national, and sub-national). Second, we attempt to identify country and regional trends across a range of demographic factors, such as type of locality (urban or rural), gender, and income level. Finally, we examine whether there are discernible hierarchies of both infrastructure service availability and citizen demands. By doing so, we hope to contribute to the policy discourse and perhaps even provide an additional analytical lens for considering public and private investment priorities.

[1] For instance, Agence Française de Développement (AFD) and the World Bank published a flagship report, Africa's Infrastructure: A Time for Transformation, in 2010 on infrastructure in Africa. It includes excellent analysis on the region's infrastructure deficit, the economic implications of this deficit, and accompanying policy recommendations. The report also includes extensive references to articles on specific types of infrastructure.

[2] Foster, Vivien (2008), *Overhauling the Engine of Growth: Infrastructure in Africa*, World Bank Africa Infrastructure Country Diagnostic.

Although we examine both the availability of and the demand for infrastructure, we only begin to explore the correlation between citizen demands and infrastructure availability. We use observational cross-sectional data to paint a descriptive picture. We find a predictable pattern of infrastructure services across income levels, with lower income countries illustrating fewer services available. The survey data's granularity also allows us to observe the possibility of a loose hierarchy of infrastructure rollout. On the demand side, respondents are most concerned with jobs and income-related issues as well as infrastructure: specifically transportation and sanitation. These priorities transcend demographic factors, including gender and type of locality (urban/rural).

We organize the paper as follows. In section two, we discuss the various data sources and methodological limitations. Following this, we analyze existing infrastructure service availability in 33 surveyed African countries. Next, we examine whether there are observed hierarchies of infrastructure service delivery rollout. In section five, we utilize public attitude surveys to gauge individual-level concerns both for infrastructure and other issues. We then conclude with a brief discussion of potential policy implications for African government officials, their international partners, and private investors.

II. Data Sources and Limitations

A. Data Sources

The data for the analysis is from Afrobarometer, an independent, non-partisan research project that measures the social, political, and economic atmosphere in Africa. Respondent-level data is available for 33 countries in North Africa and Sub-Saharan Africa. Although these countries account for 71 percent of the African population, we must apply appropriate caution when interpreting findings as being representative of the entire continent.[3] Throughout this paper, we often refer to regional or African trends for shorthand purposes. When doing so, this should be interpreted as those regional or African countries with survey coverage.

[3] Afrobarometer survey data currently does not cover 20 African countries. This includes several large nations, such as: Ethiopia, the Democratic Republic of Congo, Sudan, and Angola. Also, eight of the eleven smallest African countries (by population) are not covered by Afrobarometer surveys. This includes: Comoros, Djibouti, Equatorial Guinea, the Gambia, Guinea-Bissau, Gabon, Sao Tome and Principe, and the Seychelles. Also, countries without existing Afrobarometer survey coverage are more often categorized as fragile states. This omission should be given special consideration because of the importance of fragile state considerations within the African context.

All survey interviews are conducted in-person by trained field staff and offered in up to 8 official and local languages.[4] We use Afrobarometer fifth survey round data, which covers the 2010-2013 period. For purposes of analyzing sub-regional trends, we apply the following categories:[5]

- ✓ East Africa: Burundi, Kenya, Uganda, and Tanzania.
- ✓ North Africa: Algeria, Egypt, Morocco, and Tunisia.
- ✓ Southern Africa: Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe.
- ✓ West Africa: Benin, Burkina Faso, Cameroon, Cape Verde, Cote d'Ivoire, Ghana, Guinea, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

For income-level comparisons, we utilize World Bank groupings and data from the 2014 *World Development Indicators*. Countries are categorized as the following:

- ✓ Low-Income: Benin, Burkina Faso, Burundi, Guinea, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Sierra Leone, Tanzania, Togo, Uganda, and Zimbabwe.
- ✓ Lower Middle-Income: Cameroon, Cape Verde, Cote d'Ivoire, Egypt, Ghana, Lesotho, Morocco, Nigeria, Senegal, Swaziland, and Zambia.
- ✓ Upper Middle-Income: Algeria, Botswana, Mauritius, Namibia, South Africa, and Tunisia.

B. Sample Size and Design

Afrobarometer survey samples are designed to produce a representative cross-section of all voting age citizens within a given country. The sampling frame attempts to ensure that every adult citizen has an equal and known chance of being selected for an in-person interview.[6] Afrobarometer samples typically include either 1200 or 2400 cases. A randomly selected sample of 1200 interviews allows national adult

[4] In principle, Afrobarometer seeks to provide a translated questionnaire and field staff for every language group that is likely to constitute at least 5 percent of the sample. In practice, due to complications and cost implications, Afrobarometer attempts to limit the total number of languages to six or fewer. However, it has included up to 8 languages, such as in South Africa.

[5] Our sub-regions do not include Central Africa because Afrobarometer has very limited coverage across these countries. Although Cameroon is commonly considered in Central Africa, we include Cameroon in the West Africa region as to not isolate it by itself.

[6] This is achieved by: (1) using random selection methods at every stage of sampling; and (2) sampling at all stages with probability proportionate to population size (PPPS) wherever possible to ensure that larger (i.e., more populated) geographic units have a proportionally greater probability of being chosen into the sample. Additional methodological details can be found at http://afrobarometer.org/survey-and-methods/sampling-principles.

population inferences with a margin of sampling error of +/- 2.8 percent with a confidence level of 95 percent. With a sample size of 2400, the margin of error is +/- 2.0 percent at 95 percent confidence level.

Afrobarometer stratifies the sample by the main sub-national unit of government (e.g., state, province, or region) and by urban or rural location.[7] This reduces the likelihood that distinctive ethnic or language groups are omitted from the sample. Afrobarometer occasionally oversamples certain politically significant populations within a country to ensure that the size of the sub-sample is large enough for rigorous analysis. Data sets include weighting factors at the primary sampling unit (PSU) level to account for individual selection probability.[8] These sampling units typically correspond to national census units.

C. Survey Questions

We use data from two sets of questions. First, Afrobarometer enumerators identify the availability of five types of infrastructure in the respondents' enumeration area: electricity, piped water, sewage, mobile phone service, and surfaced roads.[9] Afrobarometer protocols require that both enumerators and field supervisors jointly assess the presence of infrastructure services in the enumeration areas.[10] Despite this, we apply appropriate caution in interpreting the data observations due to the potential subjectivity of coding decisions.

However, infrastructure presence does not necessarily mean that the respondent has access to it. For example, electricity service may be available, but the respondents' home is not connected to the grid. Moreover, the Afrobarometer observation data does not measure service quality. Therefore, this observation-based data provides a reasonable measure of *infrastructure network coverage rates* across different geographic regions within a

[7] Samples are then drawn in either four or five stages. Within each PSU, eight interviews are clusters to manage fieldwork costs and logistical requirements.

In rural areas only, the first stage is to draw Secondary Sampling Units (SSUs).

The next stage is random selection of primary sampling units (PSU).

Afrobarometer then randomly selects sampling start points.

Interviewers then randomly select households.

Within the household, the interviewer randomly selects an individual respondent. Each interviewer alternates in each household between interviewing a man and interviewing a woman to ensure gender balance in the sample.

[8] These weights are calculated by Afrobarometer and included in the publically available datasets, defined by the variable WITHINWT.

[9] Enumerators note whether the road at the starting point of the enumeration area is paved, tarred, or concrete.

[10] This protocol is explicitly stated in the round five questionnaires.

respective country. It is not a reliable measure of *household access rates* or *infrastructure service quality* across countries and sub-national geographic units.

Second, Afrobarometer surveys ask respondents to state up to three problems facing their country that their respective government should address.[11] This is designed to ascertain individuals' most pressing concerns, with additional survey questions that gauge individuals' perceptions about their governments' ability to address them. Afrobarometer enumerators record these 'most pressing problem' responses in the order provided (e.g., first response, second response, third response). The majority of coding response categories are used across all surveyed countries. However, enumerators also include country-specific responses, such as fuel subsidies and costs (for Nigeria only). Following Leo (2013), we have categorized all of the responses into ten overarching themes (see appendix I for details).[12] These include: (1) economic and financial policies; (2) education; (3) food security; (4) governance; (5) health; (6) infrastructure; (7) jobs and incomes; (8) poverty and inequality; (9) security and crime; and (10) all other responses.

III. Existing Infrastructure Service Availability

In this section, we examine trends in infrastructure service availability, particularly across sub-regions, urban/rural areas, and national income levels. National level summary statistics are included in appendix II. Unless otherwise specified, the cited figures represent the percentage of surveyed individuals within an enumeration area where the specified infrastructure service is available. Appendix III includes significantly more detail on each of the summary trends cited in this section.

A. Mobile Phone Service Availability

Mobile phone service is the most widely available type of infrastructure across Africa. Across the 33 examined countries, between 70 percent and 100 percent of respondents reside in areas with mobile phone service.[13] Sixteen countries display that mobile phone networks are either universally, or near universally, available.[14] Only four

[11] The specific language is "In your opinion, what are the most important problems facing this country that government should address?"

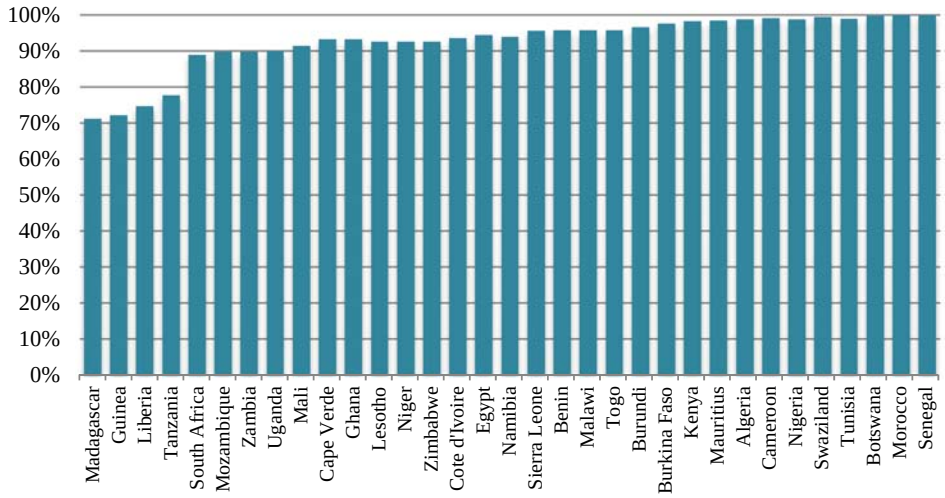
[12] Additional details on these categories and relevant caveats can be found at http://www.cgdev.org/publication/anyone-listening-does-us-foreign-assistance-target-peoples-top-priorities-working-paper.

[13] Overall, mobile phone infrastructure is available, on average, in enumeration areas that account for roughly 93 percent of surveyed individuals.

[14] Near-universal access is defined here as greater than or equal to 95 percent coverage. These 16 countries include: Botswana (100 percent), Morocco (100 percent), Senegal (100 percent), Algeria (99 percent), Cameroon (99 percent), Nigeria (99 percent), Swaziland (99 percent), Tunisia (99 percent), Burkina

countries demonstrate enumeration area service availability under 80 percent, including: Madagascar, Guinea, Liberia, and Tanzania. This suggests that mobile phone connectivity is possible in the overwhelming majority of African locales, even if actual household level ownership or access rates may be low.

Figure 1 – Mobile Phone Service Availability, Enumeration Area Average by Country

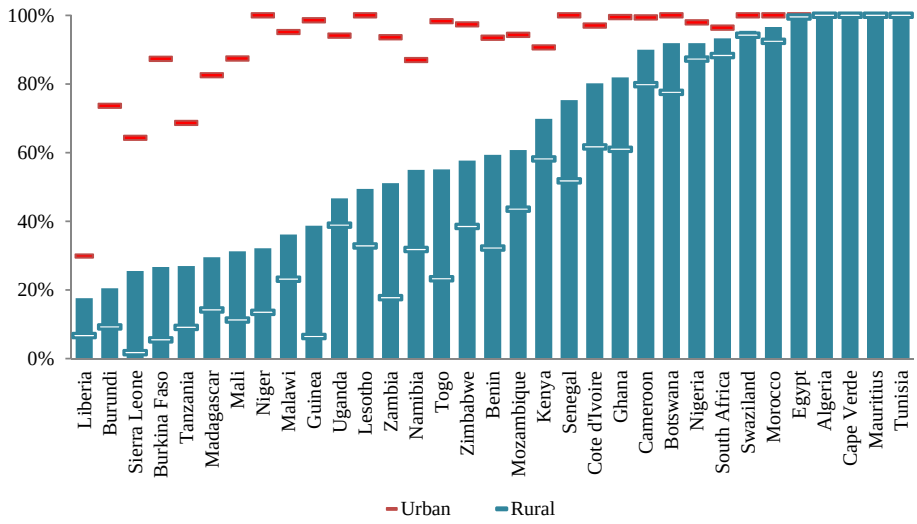


B. Electricity Service Availability

Electricity is the second most available infrastructure service across Africa, but there are wide variations in grid coverage. This ranges from 18 percent of surveyed individuals in Liberia to universal availability in five countries (Algeria, Cape Verde, Egypt, Mauritius, and Tunisia). There is an even more pronounced divide across urban and rural enumeration areas within most African countries. For instance, 17 countries have a coverage rate differential of at least 50 percentage points between urban and rural areas. Lastly, there are significant disparities across sub-regions. On average, nearly 100 percent of survey respondents in North African nations reside in enumeration areas with electricity service availability. By comparison, Southern Africa has an average coverage level of 66 percent followed by West Africa (58 percent) and East Africa (41 percent).

Faso (98 percent), Kenya (98 percent), Mauritius (98 percent), Burundi (97 percent), Benin (96 percent), Malawi (96 percent), Sierra Leone (96 percent), and Togo (96 percent).

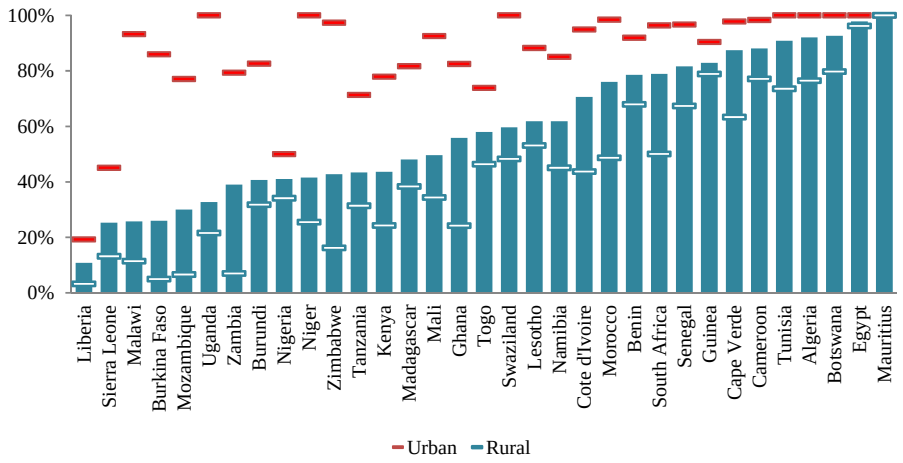
Figure 2 – Electricity Service Availability, Percent of Population Living in Enumeration Area by Country and Enumeration Area Type



C. Piped Water Service Availability

Piped water appears to be the third most available infrastructure service in Africa. On average, nearly 60 percent of surveyed individuals reside in an enumeration area with available services. Yet, as with electricity, there are wide disparities across countries – ranging from only 11 percent in Liberia to universal availability in Mauritius. On average, North African nations have a service availability rate of roughly 89 percent. By comparison, Southern Africa has an average coverage level of 58 percent followed by West Africa (57 percent) and East Africa (40 percent). Seven countries exhibit an urban-rural coverage rate differential of over 70 percentage points (Burkina Faso, Malawi, Mozambique, Niger, Uganda, Zambia, and Zimbabwe), thereby suggesting stark inequalities in infrastructure service investments and coverage plans.

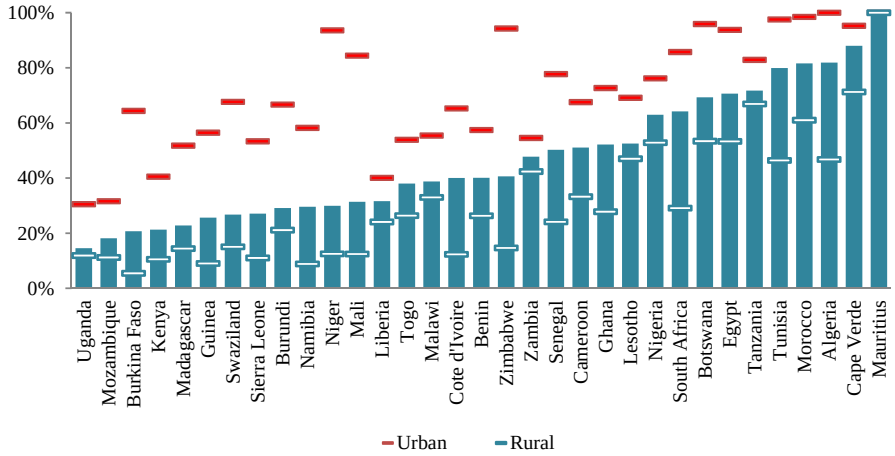
Figure 3 – Piped Water Availability, Percent of Population Living in Enumeration Area by Country



D. Improved Road Availability

On average, nearly half of surveyed Africans reside in an enumeration area with surfaced roads. Again, there are wide disparities across countries – ranging from very low levels in Uganda (15 percent) and Mozambique (18 percent) to universal coverage in Mauritius. There are significant regional disparities as well, but they are slightly less pronounced than for other infrastructure services. As expected, we find significant variations in service availability across urban and rural enumeration areas within surveyed countries. Lastly, the presence of surfaced roads within surveyed enumeration areas also appears to have a statistical relationship with national per capita income levels.

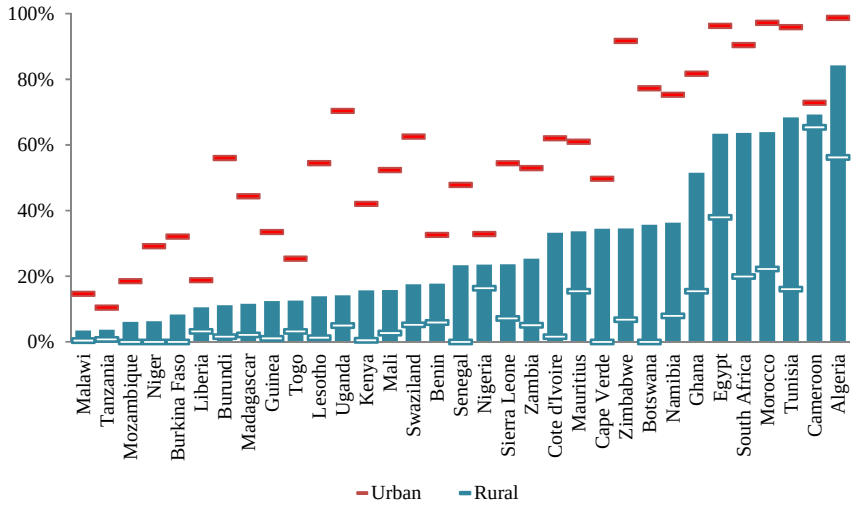
Figure 4 – Surfaced Roads Availability, Percent of Population Living in Enumeration Area by Country



E. Sewage Service Availability

Less than three-in-ten surveyed individuals live in areas with sewage services, on average. Only seven countries have coverage rates exceeding 50 percent, including: Algeria (84 percent), Cameroon (69 percent), Tunisia (68 percent), Morocco (64 percent), South Africa (64 percent), Egypt (63 percent), and Ghana (51 percent). Sewage service availability was 10 percent or less in five countries (Burkina Faso, Malawi, Mozambique, Niger, and Tanzania). We also find large urban-rural differentials within countries concerning sewage service availability, as expected. Zimbabwe demonstrates the greatest disparity between urban and rural coverage rates (92 percent versus 7 percent), followed by Tunisia, Botswana, Morocco, and South Africa. In addition, none of the surveyed rural enumeration areas in 6 countries had sewage services.[15]

Figure 5 – Sewage Availability, Percent of Population Living in Enumeration Area by Country



[15] These include: Botswana, Burkina Faso, Cape Verde, Mozambique, Niger, and Senegal. Rural coverage levels were less than one percent in three other African countries, including: Kenya (0.5 percent), Malawi (0.4 percent), and Tanzania (0.8 percent).

Figure 6 – Percent of Respondents in Enumeration Area Infrastructure Presence, Region and Country Income Level[16]

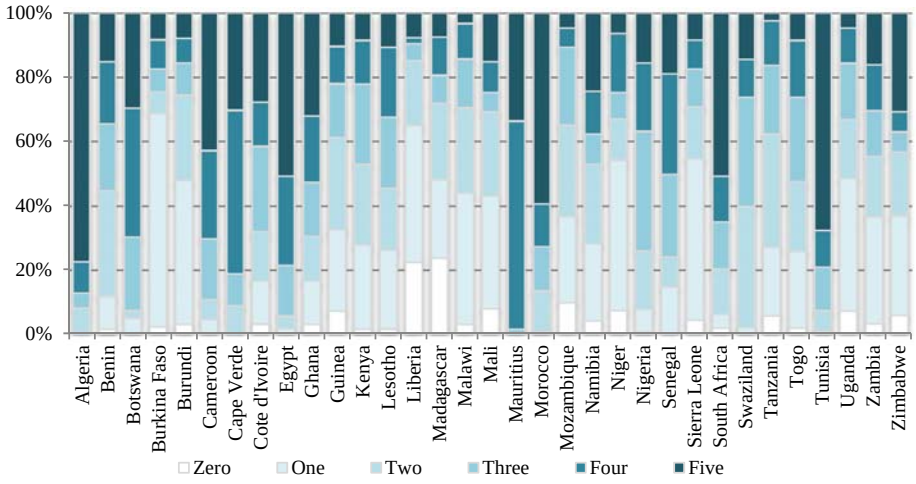
Sub-Region	Electricity (%)	Piped Water (%)	Sewage (%)	Mobile Phone (%)	Road (%)
North Africa	99	89	70	98	79
West Africa	58	57	24	92	42
Southern Africa	66	58	26	92	46
East Africa	41	40	11	91	34

Income Level	Electricity (%)	Piped Water (%)	Sewage (%)	Mobile Phone (%)	Road (%)
Upper Middle-Income	90	86	54	96	71
Lower Middle-Income	83	69	38	96	57
Low-Income	40	42	13	89	31

F. Patterns of Infrastructure Services

There are wide differences in the availability of *multiple* infrastructure services in observed enumeration areas across Africa. Mauritius exhibits the greatest level of service availability, with over 98 percent of surveyed individuals residing in areas with at least four infrastructure services available (out of five).[17] On the other end, roughly two-thirds of surveyed Liberians and Burkinabe live in areas with only one infrastructure service (or less) available.

Figure 7 – Number of Available Services by Enumeration Area, Percentage of Respondents

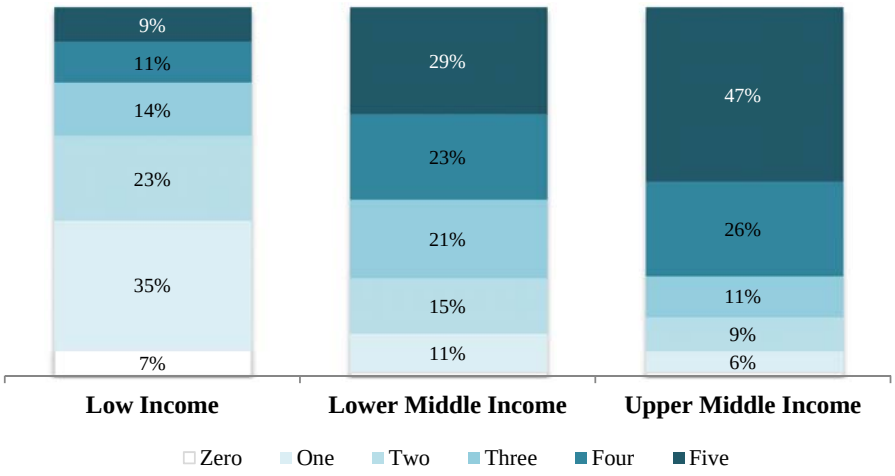


[16] Regional and income group averages weight each country equally. Adjustments are not made for relative populations within the region.

[17] Sewage is typically the only missing infrastructure service in Mauritius.

As expected, we find significant variation across income levels. On average, roughly two-thirds of surveyed respondents in low-income countries reside in enumeration areas with two or fewer available infrastructure services. Liberia and Madagascar exhibit the lowest levels, with more than one-in-five respondents having zero services available. Put differently, large portions of these countries live in isolated communities that are completely off the grid. By contrast, over 80 percent of upper middle-income country respondents live in areas with at least three infrastructure services available.[18] Namibia is the largest outlier, with only 47 percent of surveyed individuals residing in enumeration areas with at least three infrastructure services available. This puts it below several low-income countries, such as Benin and Togo.

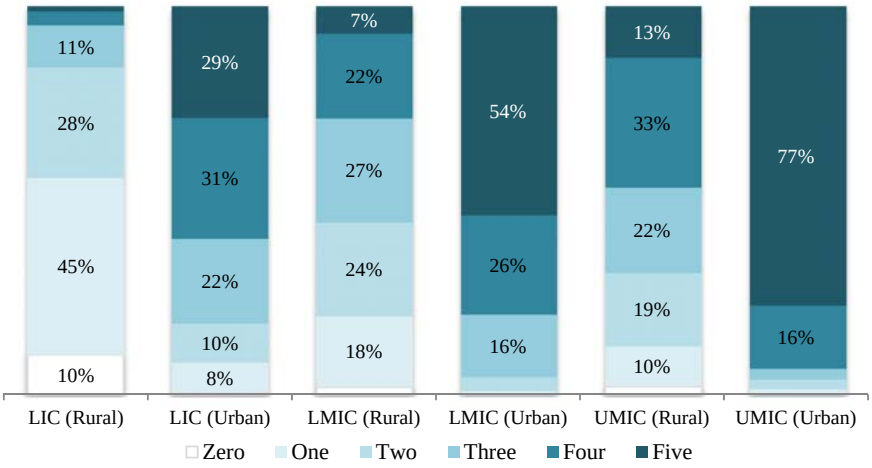
Figure 8 – Number of Available Services in Respondents' Enumeration Areas, Percentage of Respondents by Country Income Group



In addition, we find sizable differences between urban and rural survey respondents in terms of infrastructure service availability in their immediate area. This includes both within and across different country income groups. Over 80 percent of rural survey respondents in low-income countries reside in areas with two or fewer available services, on average. This compares to less than 20 percent of urban respondents in these same countries. These same general trends hold for lower middle-income and upper middle-income countries as well.

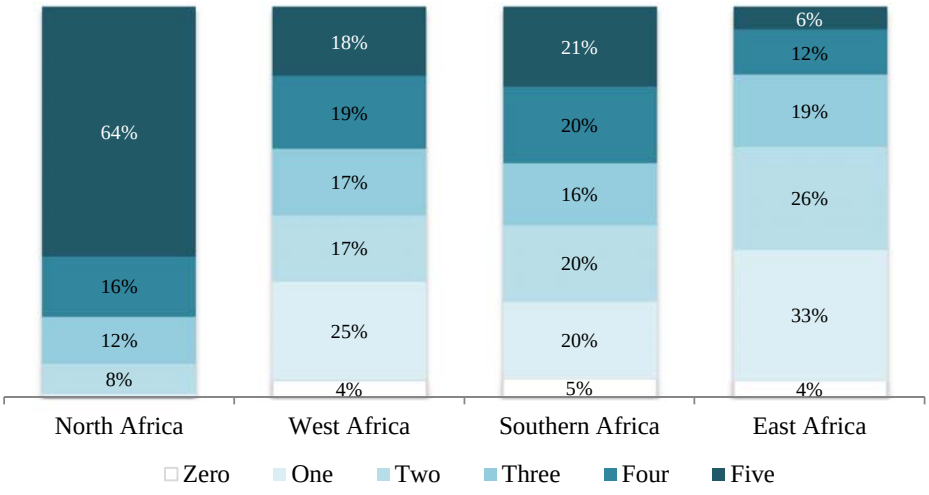
[18] This average is primarily driven by Mauritius (100 percent), Botswana (93 percent), Tunisia (93 percent), and Algeria (92 percent).

Figure 9 – Number of Available Services by Enumeration Area, Percentage of Respondents by Region



Lastly, access to multiple types of infrastructure services varies significantly across African sub-regions. The most striking observation is how far the four East African nations lag behind other sub-regions. Nearly two-thirds of surveyed individuals reside in enumeration areas with two or fewer infrastructure services, compared to 46 percent in West Africa and 45 percent in Southern Africa.

Figure 10 – Number of Available Services by Enumeration Area, Percentage of Respondents by Region



IV. Is There a Hierarchy of Infrastructure Service Supply?

Next, we examine the prevalence of specific combinations of infrastructure services that are available within surveyed enumeration areas. This includes assessing whether there are common "baskets" of services available within and across countries. We find that North Africa and Southern Africa have a higher concentration of infrastructure services. Over 60 percent of North African respondents live in an enumeration area where all five types of infrastructure are available. In Southern Africa, a plurality (24 percent) lives in an area where all five types are present. By contrast, only 6 percent of surveyed East Africans live in fully serviced areas. In both East and West Africa, pluralities of respondents live in areas where cell service is the only type of infrastructure available.

Figure 11 – Combined Infrastructure Service Availability, by Sub-Region

Infrastructure Service Combination	East Africa (%)	North Africa (%)	Southern Africa (%)	West Africa (%)
All Infrastructure Services	6	**64**	**24**	18
Mobile Phone Service	**30**	0	15	**23**
+ Paved Roads, Piped Water, and Electricity	8	10	17	14
+ Electricity and Piped Water	9	8	12	10
+ Electricity	9	6	12	5
+ Piped Water	7	0	3	8
+ Piped Water, Electricity, and Sewage	3	5	4	4
+ Paved Roads	9	0	3	3
+ Paved Roads and Electricity	4	3	2	5
+ Paved Roads and Piped Water	4	0	1	1
No Infrastructure Services	7	0	3	4
Total Applicable	**95**	**97**	**96**	**94**

The surveyed enumeration areas suggest a possible hierarchy across combinations of available infrastructure services. Comparing enumeration areas within countries and across regions and income levels, we find the appearance of a loose order in which infrastructure services are introduced to respective enumeration areas. For example, we rarely find respondents in an area with sewage that does not also have piped water. Yet, we often find respondents in areas with piped water but without sewage services. Many of these observations are logical and hold with general anecdotal impressions.

Importantly, the observed hierarchy is far from definitive and may not fully capture inter-temporal patterns. Recognizing that mobile technology is a relatively new form of infrastructure, it did not temporally precede the introduction of other types of infrastructure in many areas. Also, the observed progression does not suggest that respondents necessarily prefer this progression (see section V for further discussion of respondents' preferences).

Mobile phone service is available almost everywhere. We rarely find respondents who live in an enumeration area with any type of infrastructure who do not also have mobile coverage. The most common next stage is the availability of piped water and electricity. The sequence in which these two services arrive is mixed within the 33 surveyed African countries. Nonetheless, when one of them is available, the other one is typically the next to arrive. In addition, we find that enumeration areas typically have mobile phone service, electricity, and piped water available before paved roads are introduced. Access to sewage services usually is the last step of the infrastructure rollout process. While we do not examine whether this perceived hierarchy holds over time, further studies could test this using previous rounds of Afrobarometer surveys.[19]

The observed pattern of sequencing of infrastructure services is common to almost all countries in our sample. With only one exception (Tanzania), we find that more than 60 percent of respondents live in areas that follow this progression.[20] In addition, in three-quarters of the countries, more than 75 percent of respondents live in enumeration areas that follow the 'typical' hierarchy of infrastructure service rollout. It is also largely applicable across urban and rural contexts.[21]

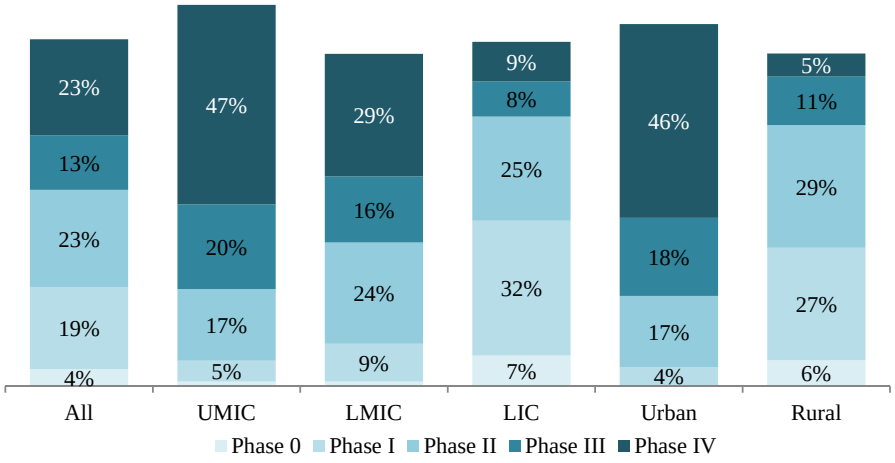
[19] Such studies also could explore whether it is possible to identify enumeration areas that have been covered by successive Afrobarometer surveys over time.

[20] In Tanzania, only 42 percent of respondents live in areas that follow the apparent hierarchy of infrastructure. The greatest deviation occurs in rural areas. Substantively, the most notable departure is the introduction of roads earlier than the penultimate stage.

[21] Among rural respondents, on average, nearly 80 percent live in enumeration areas that follow the apparent infrastructure path. On average, 86 percent of urban respondents live in areas where the order is applicable.

Figure 12 – Infrastructure Hierarchy, Average Percent of Respondents

	Service Availability	All Respondents (%)	UMIC (%)	LMIC (%)	LIC (%)	Urban (%)	Rural (%)
Phase 0	No Infrastructure	4	1	1	7	0	6
Phase I	+ Mobile Phone Service	19	5	9	32	4	27
Phase II	+ Electricity and/or Water	23	17	24	25	17	29
Phase III	+ Paved Roads	13	20	16	8	18	11
Phase IV	+ Sewage (All)	23	47	29	9	46	5
	Total Applicable	**82**	**90**	**79**	**81**	**86**	**79**



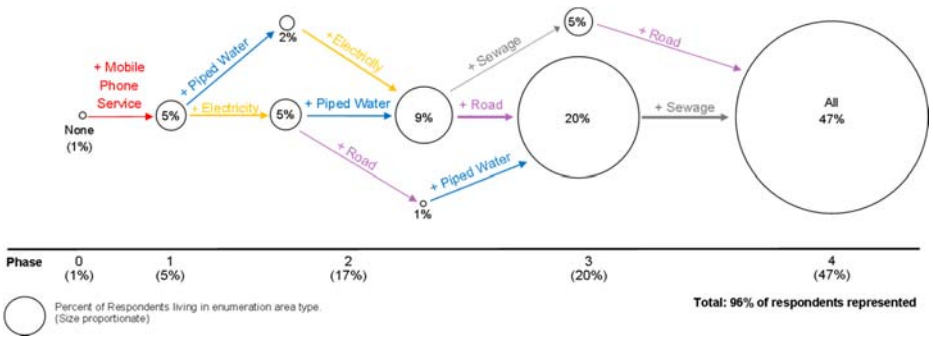
A. Infrastructure Service Availability by Country Income Level

On average, 90 percent of upper middle-income respondents live in areas that follow a 'typical' hierarchy of infrastructure services.[22] We find a few outliers, mostly in Namibia and South Africa.[23] Upper middle-income countries are sometimes lacking in sewage services. While 47 percent of respondents have all types of infrastructure in their immediate area, an additional 20 percent have all types of infrastructure except for sewage. Not surprisingly, most upper middle-income respondents are concentrated toward the top of the infrastructure hierarchy (or toward the right of the figure below).

[22] Among rural respondents, 86 percent live in applicable areas while 93 percent of urban respondents live in such an area.

[23] Some respondents live in areas with sewage and without paved roads. In other words, sewage precedes paved roads.

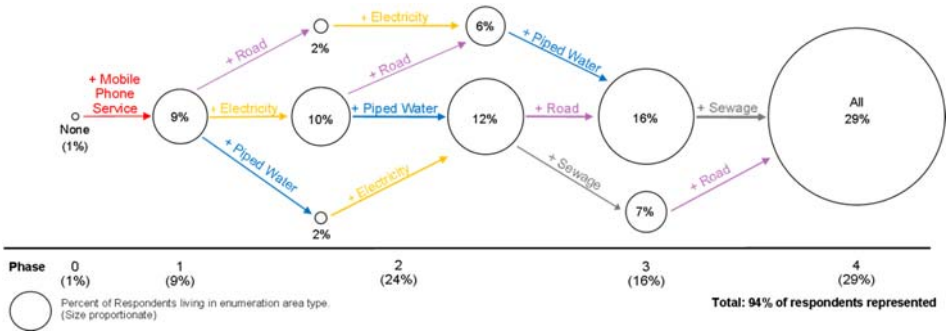
Figure 13 – Multiple Infrastructure Service Availability, Upper Middle-Income Country Average



Lower middle-income countries are usually missing sewage services and paved roads. Although a plurality (29 percent) live in an area with all five infrastructure services available, another 16 percent live in an area that lacks sewage and 7 percent of respondents reside in an area with sewage but without paved roads. An additional 12 percent lacks both sewage and paved roads. Therefore, almost two-thirds of respondents live in an area with mobile phone service, electricity, and piped water services available, while sewage and paved roads may be missing.

Once again, we find that the sequencing of services is fairly similar across lower middle-income countries. On average, nearly 80 percent of respondents reside in enumeration areas that follow the top-line progression. This also applies to both rural and urban areas, 72 percent and 86 percent respectively. Within the observed sequencing, we find that respondents live in areas concentrated toward the top (or to the right of the figure below). While upper middle-income countries are concentrated toward the final and penultimate phase, we find that lower middle-income respondents are dispersed across the last three phases (roughly 70 percent of surveyed individuals).

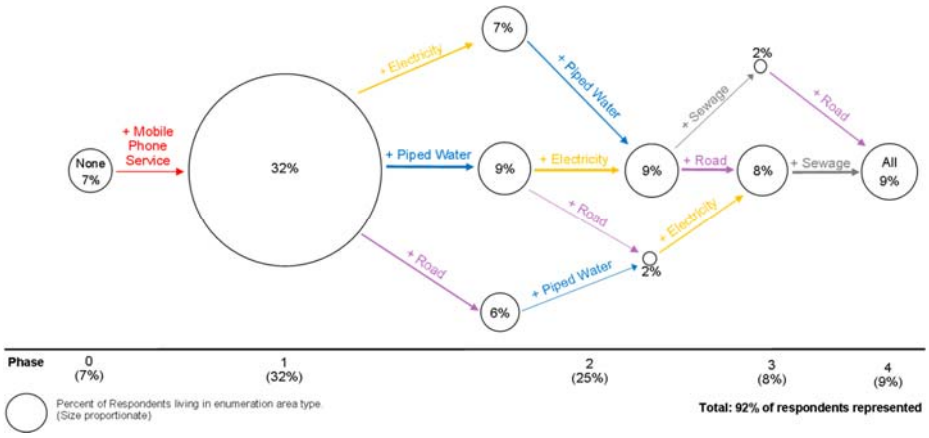
Figure 14 – Multiple Infrastructure Service Availability, Lower Middle-Income Country Average



In low-income countries, the availability of multiple types of infrastructure is limited and varied. The most popular order seems to track broadly with the sequencing pattern observed in the middle-income countries. On average, 81 percent of respondents live in enumeration areas that follow the hierarchy (81 percent of rural and 83 percent of urban respondents).

The variance in service delivery shows that low-income countries often have a different hierarchy of service rollout. Alternatively, it is possible that the observed pattern is simply less apparent. For instance, we normally observe areas with electricity or piped water available in phase II. Yet, we find a significant, though smaller, percentage of respondents (6 percent) that live in enumeration areas with improved roads. Most survey respondents are concentrated toward the bottom (or to the left of the figure below). Overall, roughly 60 percent of survey respondents reside in enumeration areas between phases 0 and II of the infrastructure service rollout trajectory. In addition, three-quarters of respondents live in areas in phases III or below.

Figure 15 – Combinations of Infrastructure Service Availability, Low-Income Country Average



V. Africans' Most Pressing Priorities – Where Does Infrastructure Fall?

In this section, we examine respondents' views about the most pressing problems facing their nation. Earlier studies have mostly focused on individuals' first response, which is available through Afrobarometer's online analysis tool.[24] In this paper, we utilize raw survey data to examine individual-level observations across all three possible responses. This enables a more complete assessment of people's priorities, including the

[24] See Ben Leo and Khai Hoan Tram (2012), What Does the World Really Want From the Next Global Development Goals?, ONE Campaign. Also see Ben Leo (2013), Is Anyone Listening? Does US Foreign Assistance Target People's Top Priorities? Working Paper 248, Center for Global Development.

potential for clustered concerns or an observed hierarchy of self-reported demands. For instance, a respondent may cite infrastructure-related problems multiple times – which likely indicates greater dissatisfaction with existing services. Importantly, this data illustrates citizen preferences during a snapshot of time. Since data collection lasts for several months, the results are less systematically influenced by short-term events. However, we find that longer-term crises or factors, such as the Arab Spring or civil conflict in Mali, affect citizen preferences.

We take two different approaches for gauging citizen demands. First, we identify the percentage of surveyed individuals who cite a specific thematic issue in the context of Afrobarometer surveys amongst *at least one* of their three responses. Second, we examine the order of individuals' responses in an attempt to gauge priorities across the referenced issues.

A. Most Frequently Cited Concerns

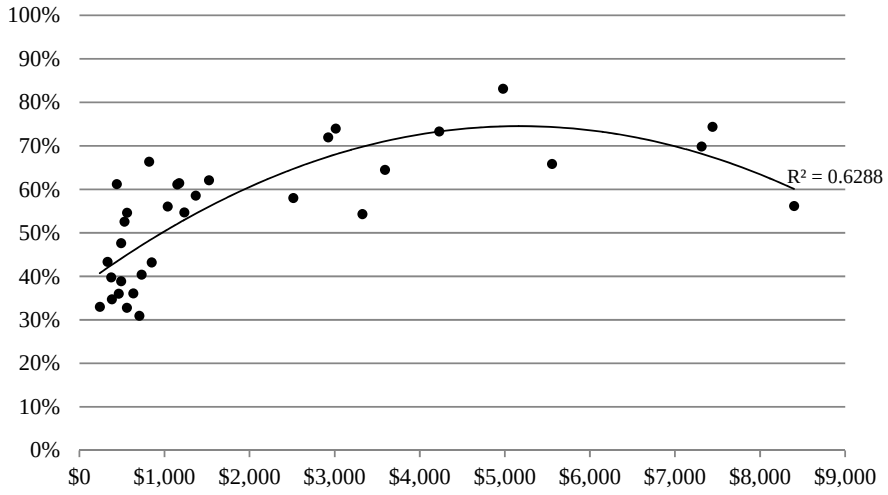
First, we look at the percentage of individuals that cite a particular thematic issue in at least one of their three survey responses. Since respondents can name up to three problems at the national level, we consider both the most frequently cited problem as well as other problems cited by a majority of respondents.

Overall, jobs and income related issues are the most frequently cited problem in over half of the examined African countries.[25] This includes a broad range of countries, such as Algeria, Kenya, Madagascar, Nigeria, South Africa, and Zimbabwe. On average, roughly two-thirds of surveyed individuals cite jobs and income related problems in these 17 countries. A simple majority of survey respondents also cites jobs and income related problems in five other countries (but not the top concern).[26] On average, we find that individuals tend to cite jobs and income related concerns more frequently in relatively wealthier countries (compared to very poor ones). However, the response frequency appears to level off or even decline amongst upper middle-income countries. Despite this, these issues are the most frequently cited problem in upper middle-income countries.

[25] These countries are: Algeria, Botswana, Cameroon, Cape Verde, Egypt, Kenya, Lesotho, Madagascar, Mauritius, Morocco, Namibia, Nigeria, Senegal, South Africa, Swaziland, Tunisia, and Zimbabwe.

[26] These countries are: Cote d'Ivoire, Ghana, Sierra Leone, Togo, and Zambia. Infrastructure-related issues are the most frequently cited national problem in these nations.

Figure 16 – Percentage of Respondents Citing Jobs/Income Concerns, by Country per Capita Income

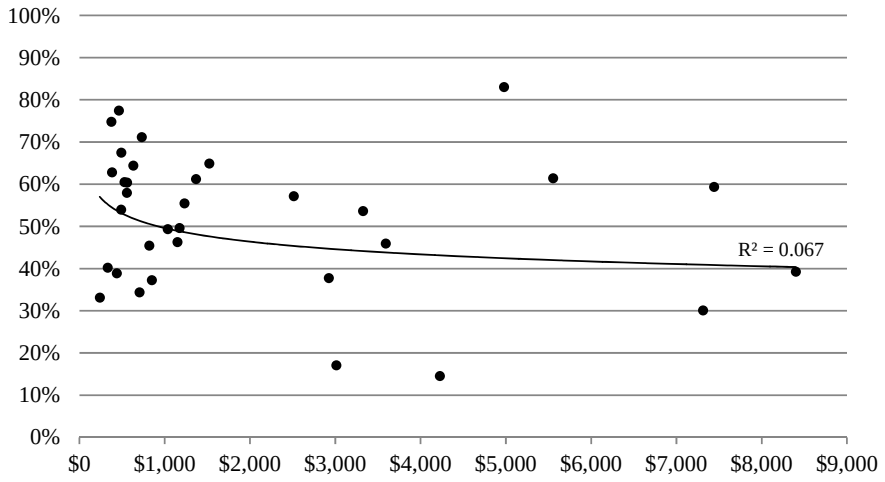


Source: Afrobarometer, World Bank, and authors' calculations

Respondents cite infrastructure as the most pressing problem in 13 countries, such as Cote d'Ivoire, Ghana, Tanzania, and Zambia.[27] This includes concerns related to transportation, electricity, housing, water supply, telecommunications, and sanitation. In these countries, nearly two-thirds of respondents cite infrastructure-related concerns. In addition, simple majorities of respondents cite infrastructure as a pressing problem (but not the top concern) in five other countries. These include: Algeria, Namibia, Nigeria, South Africa, and Swaziland. Overall, over half of surveyed African countries illustrate *at least* simple majorities citing infrastructure as a national problem.

[27] These include: Benin, Burkina Faso, Cote d'Ivoire, Ghana, Guinea, Liberia, Mozambique, Niger, Sierra Leone, Tanzania, Togo, Uganda, and Zambia.

Figure 17 – Percentage of Respondents Citing Infrastructure Concerns, by Country per Capita Income

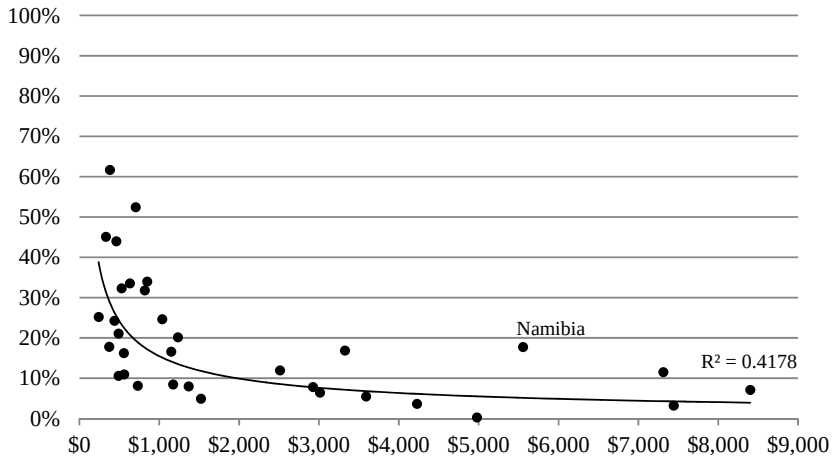


Source: Afrobarometer, World Bank, and authors' calculations

Food security-related problems are mostly confined to a handful of African countries. Respondents in these countries are concerned about food shortages, famine, and droughts. Food security appears as the most pressing problem in only two countries (Malawi and Mali). Moreover, over 60 percent of surveyed individuals in Niger raise food security-related concerns, making it the second most frequently cited issue after infrastructure. Beyond this, significant portions of respondents in a number of other African countries raise these issues. For instance, at least one-in-five individuals raise them in 13 countries.[28] The figure below illustrates how Namibia is again an outlier in terms of food security-related concerns. Nearly one-in-five surveyed Namibians cites these problems, thereby putting it on par with much poorer countries like Liberia, Mozambique, and Tanzania.

[28] These countries include: Burkina Faso, Burundi, Cote d'Ivoire, Guinea, Kenya, Madagascar, Malawi, Mali, Mozambique, Niger, Senegal, Sierra Leone, and Zimbabwe.

Figure 18 – Percentage of Respondents Citing Food Security Concerns, by Country per Capita Income

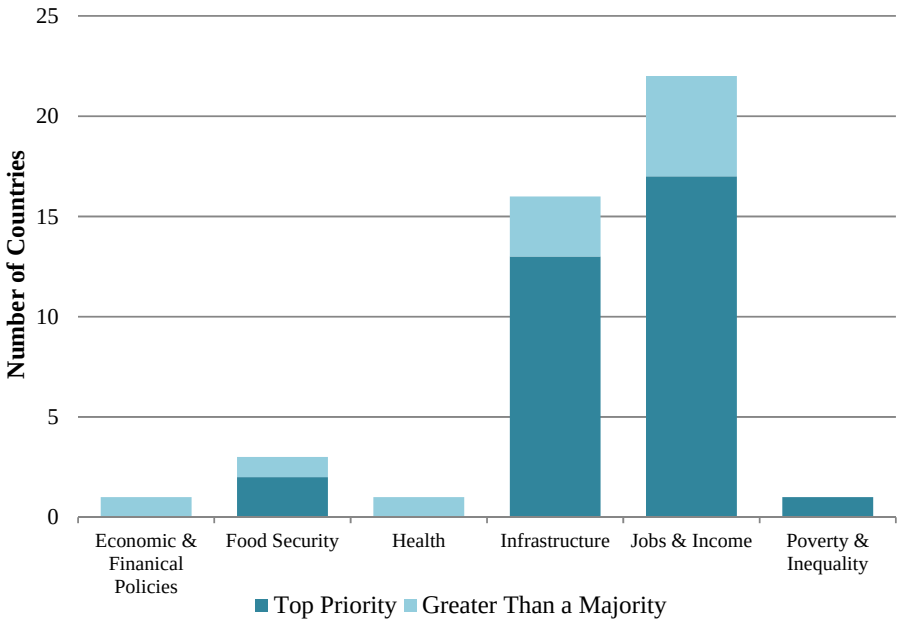


Concerns about security and crime are highly concentrated in a handful of Arab Spring and post-conflict states. Roughly one-half of respondents in Egypt and Tunisia raise concerns about these issues, making them the second most frequently cited thematic issue after jobs and income. They are also the second most common concern in Burundi and Mali, two post-conflict states.[29] Beyond this, in Nigeria and South Africa, nearly one-third of respondents cite insecurity as a pressing national problem. These responses appear to be concentrated in a number of sub-national regions, consistent with the Boko Haram insurgency in northern Nigeria and high urban crime rates in South Africa.

Other thematic issues appear as a top-tier problem in only a handful of countries. In Burundi, 51 percent of respondents cite concerns about poverty and inequality (e.g., destitution, homelessness, and discrimination). In Burkina Faso, over half of individuals raise health-related concerns (e.g., disease, AIDS, or general health issues). Lastly, 50 percent of Ugandans raise concerns about economic and financial policies (e.g., economic management and high food prices).

[29] Importantly, the Afrobarometer survey was conducted during the height of Mali's recent internal conflict. During this time, the northern half of the country was under the control of Islamic fundamentalists, with almost no presence by the government in Bamako.

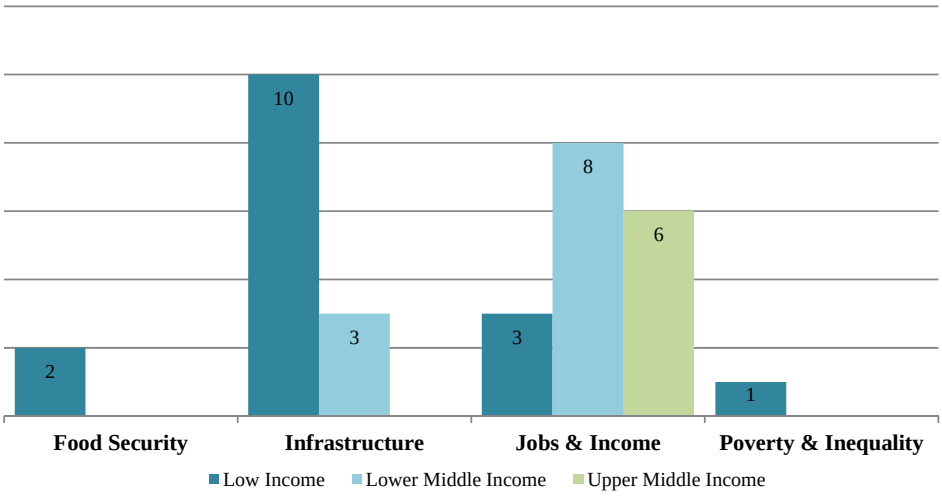
Figure 19 – Most Pressing Problems, by Number of African Countries



Survey respondents in low-income countries tend to cite infrastructure as the most pressing national problem, while wealthier countries tend to emphasize jobs and income related concerns at greater levels.[30] Although low-income countries have a wide variety of top priorities – such as food security, jobs and income, and poverty and inequality – roughly two-thirds of surveyed individuals cite infrastructure as a pressing national problem. Jobs and income related concerns are the most frequently cited priority in every upper middle-income country. Lower middle-income countries are split between infrastructure and jobs and income-related concerns. These results are broadly consistent with our previous observation that the availability of infrastructure services is lowest, on average, in the poorest African countries.

[30] We note that this trend could be driven by having more low-income countries represented in the surveys. We have six upper middle income countries and sixteen low income countries.

Figure 20 – Top National Problem by Income Level, Number of Countries



We find few observable differences in national priorities by types of respondents. Men and women both cite the same top national problem in 25 of the 33 examined countries.[31] Urban and rural populations tend to cite the same top national priorities as well. In nearly two-thirds of examined countries, we find that the urban and rural respondents cite the same top national problem[32] (see appendix V for details).

B. Prioritized National Problems by Response Order

An alternative way to examine respondents' self-reported priorities is the order in which they are provided (e.g., first response, second response, and third response). Arguably, the first problem cited could be considered the respondents' primary development priority. In this instance, jobs and income related concerns are the most popular thematic issue amongst nearly two-thirds of the examined African countries.[33] As demonstrated by the previous approach, these self-declared concerns appear most frequent in lower and upper middle-income countries. Infrastructure is the most commonly cited first priority in six poor African countries (Benin, Burkina Faso, Guinea, Liberia, Mozambique, and Tanzania). For the remaining countries, respondents'

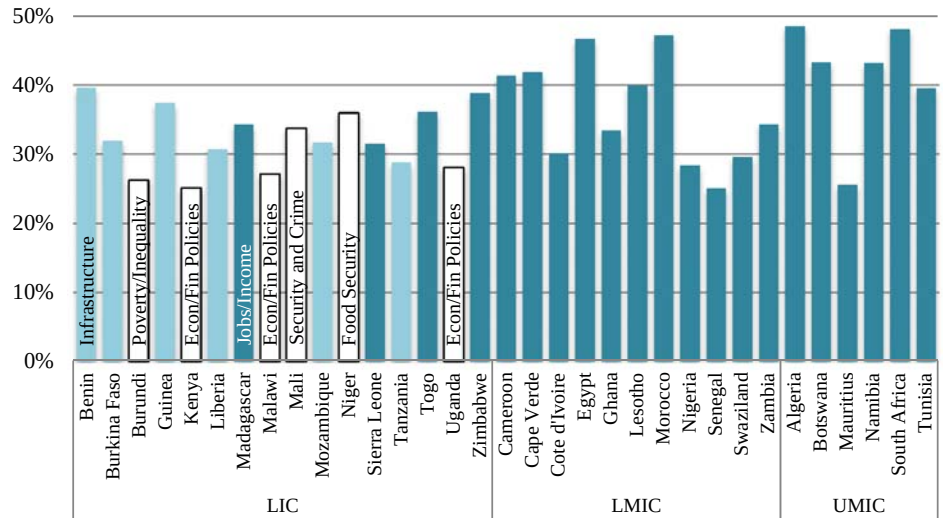
[31] These countries include: Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Cote d'Ivoire, Egypt, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Mauritius, Mozambique, Namibia, Sierra Leone, South Africa, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

[32] The countries with the same urban rural development priorities include Benin, Botswana, Burundi, Cameroon, Cape Verde, Egypt, Guinea, Kenya, Lesotho, Liberia, Madagascar, Morocco, Nigeria, Sierra Leone, South Africa, Tanzania, Tunisia, and Zimbabwe.

[33] These countries are: Algeria, Botswana, Cameroon, Cape Verde, Cote d'Ivoire, Egypt, Ghana, Lesotho, Madagascar, Mauritius, Morocco, Namibia, Nigeria, Senegal, Sierra Leone, South Africa, Swaziland, Togo, Tunisia, Zambia, and Zimbabwe.

first priorities are divided among: economic and financial policies (Kenya, Malawi, and Uganda); security and crime (Mali); poverty and inequality (Burundi); and food security (Niger).

Figure 21 – Most Frequent *First* Response, by Country Income Level (% of Respondents)

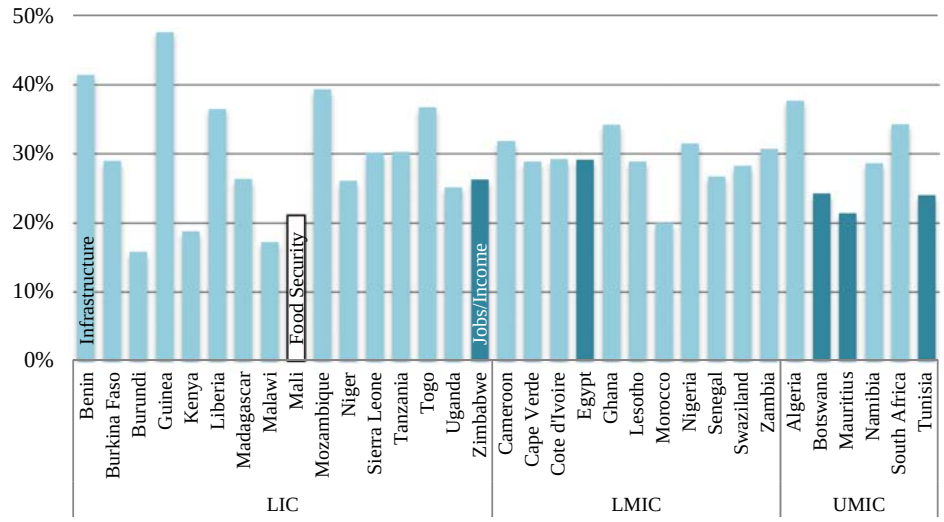


Note – Thematic issues are color coded as follows: jobs/income (teal), infrastructure (light blue) other (white, with specific issue labels embedded).

Infrastructure is the most popular *second* response among surveyed individuals, topping the list in 26 African countries.[34] In these countries, roughly 30 percent of respondents raise infrastructure-related concerns, on average, as their second response. Jobs and income-related concerns are the most popular secondary thematic issue in Botswana, Egypt, Madagascar, Mauritius, Tunisia, and Zimbabwe. Food security-related concerns top the secondary list in the remaining African country (Mali).

[34] These countries are: Algeria, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Cote d'Ivoire, Ghana, Guinea, Kenya, Lesotho, Liberia, Malawi, Morocco, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, and Zambia.

Figure 22 – Most Frequent *Second* Response, by Country Income Level (% of Respondents)

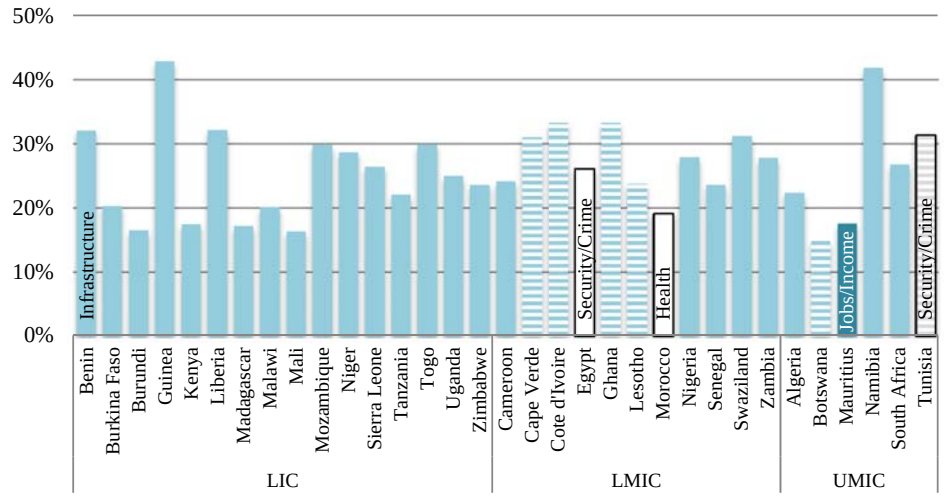


Note – Thematic issues are color coded as follows: jobs/income (teal), infrastructure (light blue), and other (white, with specific issue labels embedded).

Again, infrastructure is the most popular *third* response among surveyed individuals, topping the list in 26 African countries.[35] This result is particularly striking given the high number of responses citing infrastructure as a second most pressing national problem. Among the remaining six countries, tertiary problems include security, jobs and income, or health.

[35] These countries are: Algeria, Benin, Burkina Faso, Burundi, Cameroon, Cote d'Ivoire, Ghana, Guinea, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

Figure 23 – Most Frequent *Third* Response, by Country Income Level (% of Respondents)



Note – Thematic issues are color coded as follows: jobs/income (teal), infrastructure (light blue), and other (white, with specific issue labels embedded). Textured columns indicate that 'no answer' was the most frequent behavior for the third response question. However, we illustrate the most frequent thematic issue cited by respondents.

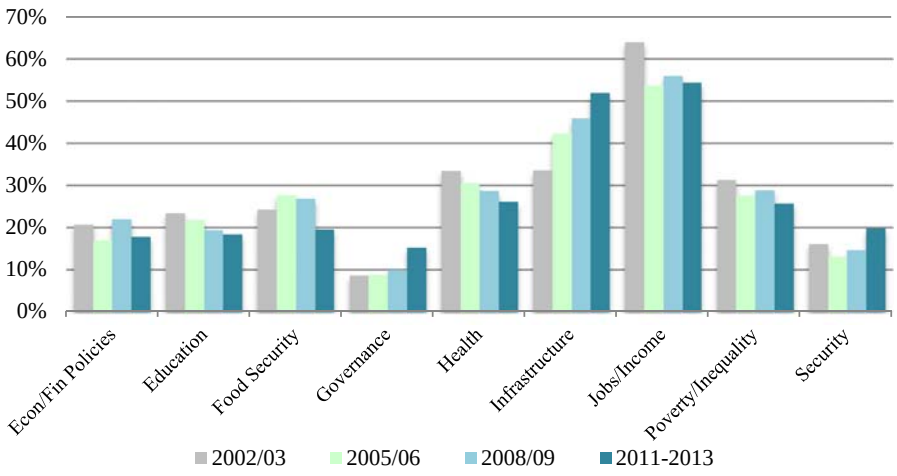
C. Citizen Views on National Problems Over Time

Over time, respondents' concerns about jobs and income-related issues have lessened somewhat while infrastructure demands have increased significantly. In Afrobarometer's second survey round (2002-2003), nearly two-thirds of respondents cited concerns about jobs and income issues amongst their three responses.[36] At the same time, one-third raised infrastructure as a national problem. A decade later, over half of surveyed Africans cited similar concerns while responses related to jobs and income issues fell to 54 percent of respondents.[37] Therefore, while both issues dominate *the most recent* African response patterns, the two issues have been trending in opposite directions. Amongst secondary issues, respondent concerns about both health and education, on average, have lessened over time across African countries.

[36] These figures represent un-weighted averages across the 16 countries included in the round two survey. These include: Botswana, Cape Verde, Ghana, Kenya, Lesotho, Malawi, Mali, Mozambique, Namibia, Nigeria, Senegal, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe.

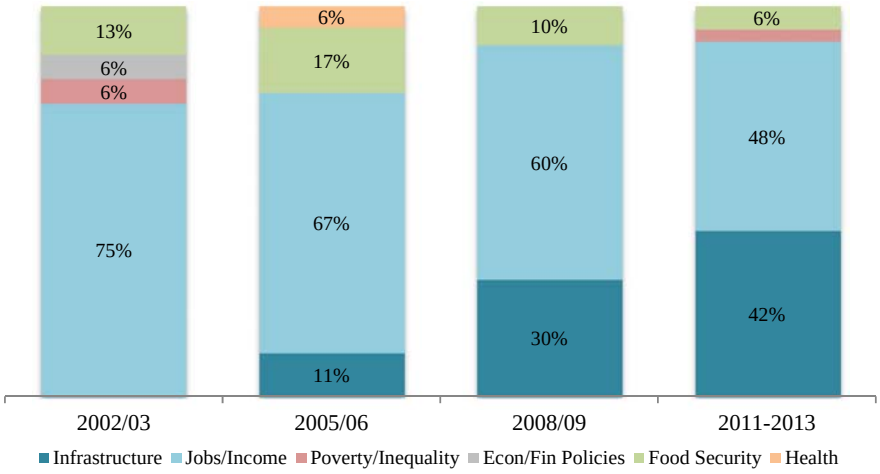
[37] In the round five survey, Afrobarometer covered 33 African countries. This trend is consistent for the 16 countries covered by both the round two and round five surveys. For this sub-set, an average of 51 percent of surveyed respondents cited infrastructure as a pressing national problem, while 55 percent cited jobs and income-related problems.

Figure 24 – National Problems Cited by Respondents, 2002-2013



As noted above, infrastructure-related concerns have risen over time as the top national concern in African countries. In 2002/2003, there were no surveyed African countries where respondents raised infrastructure as the top national problem. By 2011-2013, the top national concern shifted from jobs and income-related issues towards infrastructure in 6 of the originally surveyed countries (Ghana, Mozambique, Nigeria, Tanzania, Uganda, and Zambia).[38]

Figure 25 – Top National Problem, by Percentage of African Countries per Survey Round



[38] Overall, infrastructure had become the most frequently cited concern in 14 out of 33 surveyed countries during the 2011-2013 period.

D. Is All Infrastructure Demanded Equally?

Within the broader infrastructure services category, Africans tend to demand transportation along with water and sanitation more frequently than other types of services.[39] Among people who think infrastructure is a national problem, roads and transport are the most frequently cited sub-sector in sixteen countries.[40] Across all countries, nearly half of respondents cite transportation as at least one type of infrastructure that should be addressed. Slightly more than 40 percent believe that water and sanitation should be addressed.[41]

Yet, electricity and housing infrastructure are the top infrastructure-related concerns in several lower and upper middle-income countries. In Cape Verde, Nigeria, and Senegal, the most cited type of infrastructure is electricity. Housing is the most demanded type of infrastructure in three upper middle-income countries (Algeria, Egypt and South Africa). Interestingly, communication is Namibia's most demanded infrastructure service even though 94 percent of surveyed individuals reside in enumeration areas with mobile phone service availability.

The type of infrastructure demanded varies by country income level. Water and sanitation is the top priority in half of the examined low-income countries.[42] The other half's top priority is transportation.[43] Yet, water and sanitation is not the first priority in any lower middle-income countries; instead it is typically transportation.[44] Respondents from upper middle-income countries raise a variety of different types of infrastructure demands, which follow country-specific dynamics.[45]

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[39] The transportation category includes roads, bridges, and other forms of transportation. Sanitation includes water supply, sewerage, toilets, and other sanitation facilities.

[40] These countries include: Benin, Cameroon, Cote d'Ivoire, Ghana, Kenya, Lesotho, Liberia, Madagascar, Morocco, Sierra Leone, Swaziland, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

[41] In ten countries, respondents demand water and sanitation as their top type of infrastructure, including Botswana, Burkina Faso, Burundi, Guinea, Malawi, Mali, Mauritius, Mozambique, Niger, and Tanzania.

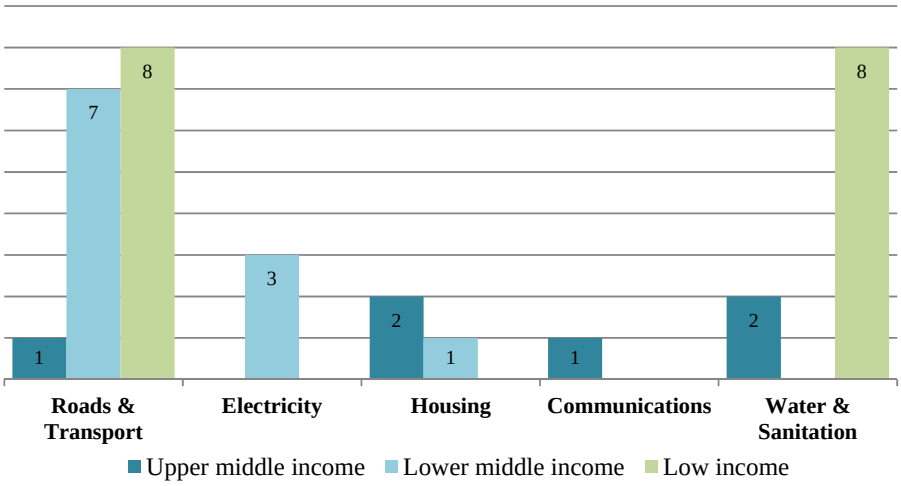
[42] These countries include: Burkina Faso, Burundi, Guinea, Malawi, Mali, Mozambique, Niger, and Tanzania.

[43] These countries are: Benin, Kenya, Liberia, Madagascar, Sierra Leone, Togo, Uganda, and Zimbabwe.

[44] Transportation is the most frequently demanded infrastructure service in seven of the eleven related countries. This includes: Cameroon, Cote d'Ivoire, Ghana, Lesotho, Morocco, Swaziland, and Zambia.

[45] In Tunisia, respondents tend to focus on roads. In Algeria and South Africa, respondents focus on housing. In Mauritius and Botswana, respondents tend to prioritize water and sanitation.

Figure 26 – Most Demanded Type of Infrastructure, by Country Income Level



Within countries, the type of demanded infrastructure varies little by respondent type. We find that male and female respondents largely demand the same types of infrastructure services.[46] Among countries where the rankings do not match, female respondents tend to prioritize water and sanitation over roads while male respondents tend to do the inverse. This trend is particularly noticeable in Benin, Botswana, Lesotho, and Senegal. Urban and rural respondents also tend to demand the same types of infrastructure.[47] Of the remaining countries where the most demanded type does not align, urban respondents prefer transportation while the rural respondents prefer water and sanitation in five of them.[48]

VI. What is Driving Demand For Infrastructure Services?

We now explore the potential drivers behind citizens' demands for new or better infrastructure services in Africa. In section III, we examined the current state of infrastructure service availability across the surveyed countries. In section V, we established that one of African respondents' top national priorities is infrastructure, concluding with observations on the degree of frequency that people cite specific types

[46] Considering how the types of infrastructure are ranked by preference in a country, male and female respondents have the exact same ranking in twenty countries. These countries are: Algeria, Burkina Faso, Cape Verde, Egypt, Guinea, Kenya, Liberia, Malawi, Mali, Morocco, Mozambique, Niger, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Tunisia, Uganda, and Zambia.

[47] In 22 African countries, urban and rural respondents cite the same top demanded type of infrastructure. These countries are: Algeria, Burkina Faso, Burundi, Cape Verde, Cote d'Ivoire, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritius, Namibia, Niger, Senegal, Sierra Leone, Swaziland, Tanzania, Togo, Tunisia, Uganda, and Zambia.

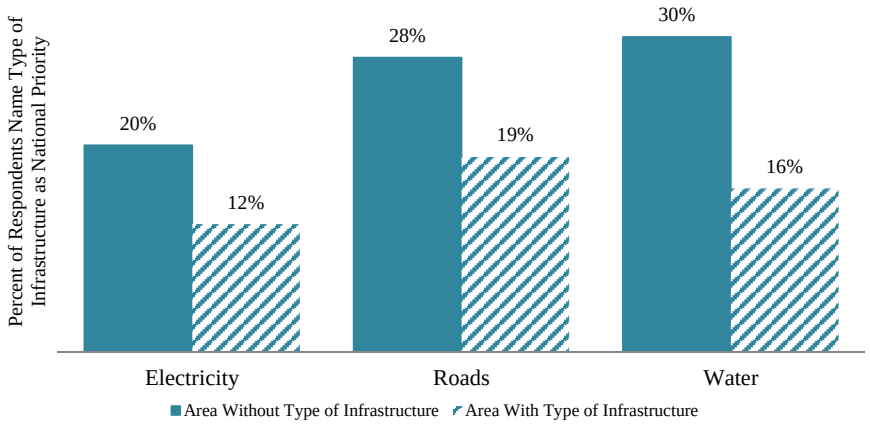
[48] These countries include: Benin, Botswana, Burkina Faso, Cameroon, and Mali.

of related services. Now, we combine these approaches to assess what factors appear most correlated with survey respondents' demands. Importantly, we are not making inferences about likely causal relationships.[49] Therefore, appropriate caution is required when interpreting results.

A. Lack of Service Availability

First, respondents from an area without a type of infrastructure are more likely to name the type of absent service as a national priority, as expected. We limit our analysis to three types of infrastructure: electricity, roads, and water.[50] On average, respondents who lack a type of infrastructure are between one-half to almost two times more likely to raise it as a national problem. This trend is most pronounced with water. On average, water is a top priority for 16 percent of respondents that live in an enumeration area with piped water, while it is a top priority for 30 percent of respondents without it. We find a similar increase between respondents living in areas with or without electricity (+8 percent) as well as with or without roads (+9 percent).

Figure 27 – Demanded Type of Infrastructure, by Presence of Type of Infrastructure

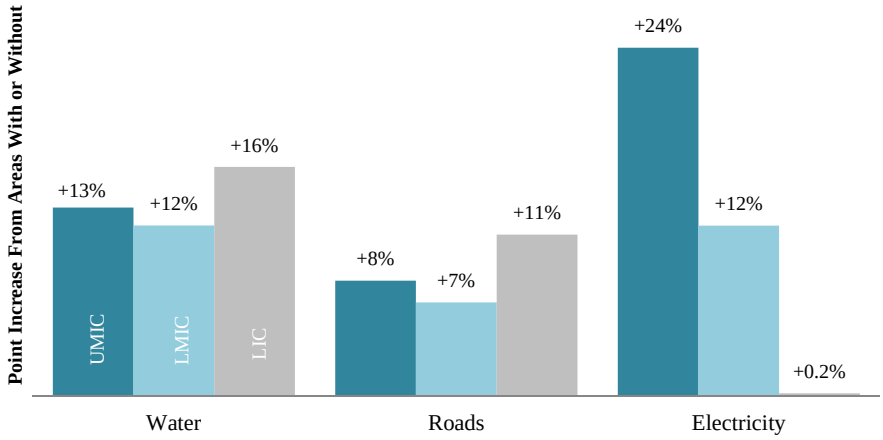


[49] We used econometric analysis to explore the drivers of infrastructure demand during the early stages of the research process. We found the survey data ill suited for these tests. This was primarily due to the individual respondent level unit of analysis, which created challenges for controlling for a range of factors that were not covered in the Afrobarometer questionnaire. As a result, country dummies tended to explain much of the differences within the data.

[50] We did not consider communications and sewage in this section. Because mobile coverage is typically privately provided in these countries, communications as a national government are probably not referring to the mobile coverage but rather other types of communications infrastructure. Although the surveys have information on whether an area has sewage and piped water, respondents' national priorities were grouped into water and sewage into a single category. To simplify the analysis, we compare piped water to demand for water and sewage because almost all areas with sewage have piped water as well.

This trend generally holds across all income level categories and countries.[51] However, electricity exhibits the most mixed picture.[52] In low-income countries, there is almost no observed difference in citizen demands depending on whether the electricity grid is present in the enumeration area. This suggests that there are likely other factors at play, such as low grid connection rates and/or service quality concerns.

Figure 28 – Point Increase in Demanded Type of Infrastructure, by Income Level Category



[51] In terms of paved roads, there is a 9 percentage point differential in citizens' demands, on average, based upon whether there is a paved road in the respondents' enumeration area. The median difference is nearly 8 percentage points, which is significantly higher than with electricity. Twelve countries have a differential of 5 percentage points or less and there are five countries with a differential of 15 percentage points or greater. In all except three countries, survey respondents living in enumeration areas without paved roads cite this issue as a national problem more than people living in areas with surfaced roads.

For water, we find a differential of 14 percentage points in citizen demands, on average, based upon whether the piped water is present in the respondents' enumeration area. In addition, the median differential across African countries is over 13 percentage points, which is markedly larger than for both electricity and roads. In terms of distribution, 7 countries have a difference of 5 percentage points or less while in 15 countries it is 15 percentage points or greater. In all except five countries, survey respondents living in enumeration areas without piped water cite this issue as a national problem more than people living in areas with surfaced roads.

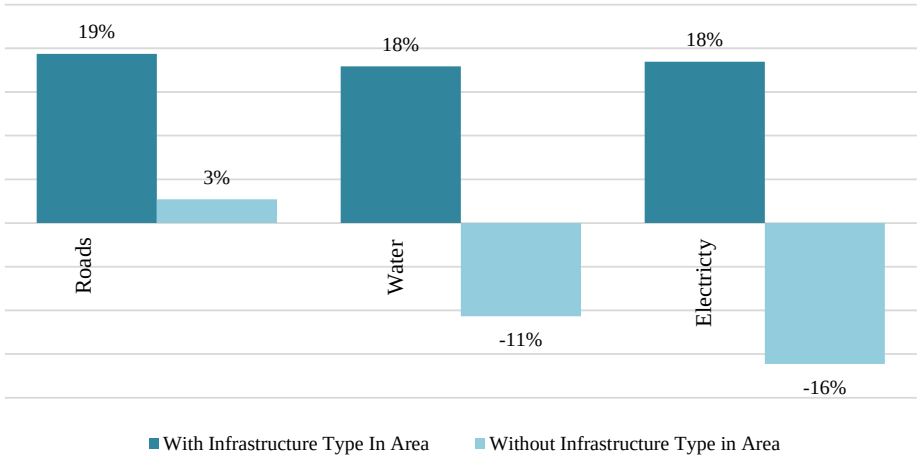
[52] As noted previously, there is a roughly 8 percentage point difference in citizen demands based upon whether the electrical grid is present in the respondents' enumeration area. However, the median difference is only 0.3 percentage points, illustrating that there are vast different *across* surveyed countries. In fact, seven Sub-Saharan countries exhibit a differential of 15 percentage points or greater, which tends to skew the broader regional average higher. These countries are Benin (25 percent), Cameroon (26 percent), Cote d'Ivoire (41 percent), Ghana (33 percent), Mozambique (23 percent), Namibia (20 percent), and South Africa (43 percent). In contrast, almost two-thirds of surveyed countries have a differential of only 5 percentage points or less. This suggests that the presence of the electrical grid is an important factor for citizens' demands, but that there are other issues at play as well.

B. Poor Service Quality

Poor quality of existing infrastructure appears to be a driver of citizen demands. The Afrobarometer survey includes a range of questions on how the respondents perceive their government's performance on handling certain issues. Within these, we focus on three categories: (1) "providing reliable supply of electricity"; (2) "maintaining roads and bridges"; and (3) "providing water and sanitation services." We use these survey response observations to estimate *net favorability ratings* as proxies for the perceived quality or reliability of infrastructure services within and across countries.[53] Appendix VI contains additional details for each type of infrastructure.

Citizens' approval ratings likely are at least partially driven by service coverage rates. Respondents that live in an enumeration area without a given type of infrastructure service exhibit more negative views about government performance. For instance, those living in areas without the electrical grid give their respective government a net approval rating of -16 percentage points while people living in areas with electricity have a 18 percent net approval rating. We find similar differentials for water and to a lesser extent for roads.

Figure 29 – Net Approval for Type of Infrastructure, by Service Availability in Enumeration Area



[53] For simplicity of analysis, we combine the percent respondents who say "very well" and "fairly well" to create a single category. We do likewise with respondents who say "very badly" and "fairly badly." We construct a single score by subtracting the "well" category from the "bad" category. Countries with negative scores have more respondents who think the government is doing badly than think the government is doing well.

Lower net approval ratings are moderately correlated with higher percentages of citizens' citing infrastructure as a pressing national problem. However, the correlation coefficients for all three types of infrastructure are lower than expected: (1) electricity (-0.32); (2) roads (-0.34); and water (-0.01). The statistical results for water are particularly surprising, which may suggest a potentially complex relationship between citizens' demands for improved water services and their views about related government performance.

Even when we limit the sample to respondents' that live in an enumeration area with a given type of infrastructure, we still find that poor quality is correlated with greater demand. Since we find that lack of infrastructure correlates with lower net favorability ratings, we acknowledge a possible alternative explanation that lower quality does not drive demand but instead merely serves as a proxy for lack of infrastructure. However, we fail to find evidence to support this alternative explanation. Even among the population with infrastructure in their area, lower levels of quality still correspond to higher levels of demand.

VII. Summary Findings and Potential Policy Lessons

A. Summary Findings

In this paper, we have outlined the level of infrastructure service availability in survey enumeration areas covering 33 African countries. At times, the picture is nuanced and setting-specific. However, there are several key trends across African countries, sub-regions, and income levels.

(1) ***Data from the Afrobarometer surveys suggest the possibility of a loose hierarchy of infrastructure services.*** The rollout often follows a pattern, starting with mobile phone services, then proceeding to piped water and electricity, then paved roads, and finally to sewage services.

(2) ***Infrastructure services vary in a predictable pattern across income levels, despite a few outliers.*** In upper middle-income countries, sewage services are usually the only missing type of infrastructure. In lower middle-income countries, the most frequently absent services are paved roads and sewage services. Yet, in low-income countries, the availability of multiple types of infrastructure is significantly more dispersed and complex.

(3) ***Respondents are most concerned with jobs and income-related issues and infrastructure.*** Within this, low-income countries tend to cite infrastructure as the most pressing national problem while wealthier countries tend to emphasize jobs

and income related concerns at greater levels. Food security related problems tend to dominate in only a handful of poor landlocked countries that are vulnerable to droughts, such as Malawi, Mali, and Niger. Lastly, concerns about crime and security are very high in several Arab Spring countries and a few post-conflict states.

(4) ***Citizen priorities within African countries tend to transcend demographic factors, including gender and type of locality (urban/rural).*** In this manner, in-country differences between these demographic groups tend to be the exception, not the rule.

(5) ***Within infrastructure demands, Africans tend to cite transportation and sanitation more frequently than other types of services.*** However, there are several country outliers. Electricity is the most frequently cited concern in three lower middle-income countries (Cape Verde, Nigeria, and Senegal) and housing is at the top of the list in three wealthier countries (Algeria, Egypt and South Africa).

(6) ***Service availability and quality are likely key factors driving citizens' infrastructure demands: although, it is difficult to isolate causal relationships using Afrobarometer survey data.*** Africans living in areas *without* infrastructure services are significantly more likely to name them as national problems. In addition, lower net approval ratings of government service performance are correlated with higher citizens' demands, albeit at more modest levels.

B. Policy Implications

While the Afrobarometer data clearly paints a nuanced picture of infrastructure service availability and citizens' demands, this type of survey information can help inform policymakers' investment strategies and reform agendas. This data is likely most useful for deepening policy discussions and informing political decisions within African countries. However, there also are potential lessons and applications for global development partners, including bilateral and multilateral agencies. For both audiences, appropriate caveats are required since the data is based on public attitudes at a given point in time.

(1) ***Public attitude survey data can be a tool for better understanding political economy issues within and across African countries.*** Infrastructure is a front-burner issue in nearly every African country. Therefore, the political environment can be both charged and highly nuanced depending on citizen demands, sub-national differences in service availability and past government investments, and the availability of public resources for future investments. Having readily available time-series data can be a helpful supplemental resource for identifying some of these

broader factors and trends, which may directly or indirectly factor into political discussions.

(2) ***Mapping infrastructure service availability to household access helps to highlight impediments, and also possible solutions, for improving service outcomes.*** For example, Afrobarometer data can be cross-referenced with DHS household data to identify geographic areas with available services but low access rates. This information could help narrow potential public policy options, such as considering why electrical grid connections are not happening instead of pursuing massive capital expenditures for grid extension.

(3) ***Donor agencies should be cautious about setting ex-ante sector priorities, instead of responding to needs and demands from African citizens and their governments.*** Previous research has illustrated how US development assistance is only minimally aligned with African citizens' most pressing concerns.[54] The fact that sector funding decisions often emanate from Washington DC (or other donor capitals) – instead of responding to partners' top priorities – is one of the central drivers of this apparent mismatch. By contrast, comparing citizen demands with service availability (infrastructure, schools, clinics, etc.) can help shape and inform donors' investment decisions at the regional, national, and sub-national levels. Ideally, this information would also include household access rates or other existing outcome indicators as appropriate.

(4) ***Service availability and citizen demand patterns reinforce the need for customized infrastructure investment strategies that reflect countries' unique circumstances.*** Beyond this, when considering large infrastructure investment projects, African and donor governments may wish to compare plans against infrastructure rollout hierarchies within that country, for both urban and rural areas.

[54] See Ben Leo and Khai Hoan Tram (2012), What Does the World Really Want From the Next Global Development Goals?, ONE Campaign. Also see Ben Leo (2013), Is Anyone Listening? Does US Foreign Assistance Target People's Top Priorities? Working Paper 248, Center for Global Development.

Appendix I

Most Pressing Problems – Response Coding Themes

Economic and Financial Policies	Education	Food Security	Governance	Health
Management of the economy Rates and taxes Loans /credit Foreign Exchange (Malawi only) Fuel (Malawi only) Currency devaluation and inflation (Malawi only) Fuel subsidy, high fuel prices (Nigeria only) Use of foreign currency (Zimbabwe only) Lack of local currency (Zimbabwe only) Agriculture input subsidy problems (Malawi only) Inflation, high food/commodity prices (Uganda only)	Education	Food shortage/famine Drought	Corruption Gender issues/women's rights Democracy/political rights Lack of transparency (Botswana only) Same sex relationships (Malawi only) Presidential term limit (Uganda only) Constitutional matters (Tanzania only) Leadership (Tanzania only) Immigration related issues (Botswana only) Removal of sanctions (Zimbabwe only) Ethics (Tanzania Only)	Health AIDS Sickness/disease Alcohol related issues (Botswana only) Drug/substance abuse (South Africa only)
Infrastructure	**Jobs and Income**	**Poverty and Inequality**	**Security**	**Other**
Transportation Communications Infrastructure/roads Housing Electricity Water supply Toilet facilities (Ghana only) Sewerage/Sanitation (Namibia only) Flood management and control (Nigeria only) Lack of development/infrastructure	Wages, income and salaries Unemployment Farming/agriculture Land Agricultural marketing Building markets Poor work ethics (Botswana only) Union matters (Tanzania only)	Poverty/destitution Orphans/street children/homeless children Discrimination/Inequality Financial support for disabled & elderly (Zimbabwe only)	Crime and security Political violence Political instability/political divisions/ethnic tensions War (international) Civil War Domestic violence/VAW/rape (Malawi only) Xenophobia/foreigners/immigration	Services (other) Other (i.e., some other problem)

Appendix II

Infrastructure Service Availability by Enumeration Area, Percentage of Surveyed Individuals by Country

	Electricity	Piped Water	Sewage	Cell Service	Road
Algeria	100%	92%	84%	99%	82%
Benin	59%	79%	18%	96%	40%
Botswana	92%	93%	36%	100%	69%
Burkina Faso	27%	26%	8%	98%	21%
Burundi	21%	41%	11%	97%	29%
Cameroon	90%	88%	69%	99%	51%
Cape Verde	100%	87%	34%	93%	88%
Cote d'Ivoire	80%	71%	33%	94%	40%
Egypt	100%	98%	63%	94%	71%
Ghana	82%	56%	51%	93%	52%
Guinea	39%	83%	12%	72%	26%
Kenya	70%	44%	16%	98%	21%
Lesotho	49%	62%	14%	93%	52%
Liberia	18%	11%	11%	75%	32%
Madagascar	30%	48%	12%	71%	23%
Malawi	36%	26%	3%	96%	39%
Mali	31%	50%	16%	91%	31%
Mauritius	100%	100%	34%	98%	100%
Morocco	97%	76%	64%	100%	82%
Mozambique	61%	30%	6%	90%	18%
Namibia	55%	62%	36%	94%	30%
Niger	32%	42%	6%	93%	30%
Nigeria	92%	41%	24%	99%	63%
Senegal	75%	82%	23%	100%	50%
Sierra Leone	26%	25%	24%	96%	27%
South Africa	93%	79%	64%	89%	64%
Swaziland	96%	60%	18%	99%	27%
Tanzania	27%	43%	4%	78%	72%
Togo	55%	58%	13%	96%	38%
Tunisia	100%	91%	68%	99%	80%
Uganda	47%	33%	14%	90%	15%
Zambia	51%	39%	25%	90%	48%
Zimbabwe	58%	43%	35%	93%	41%
Average	**63%**	**59%**	**29%**	**93%**	**47%**

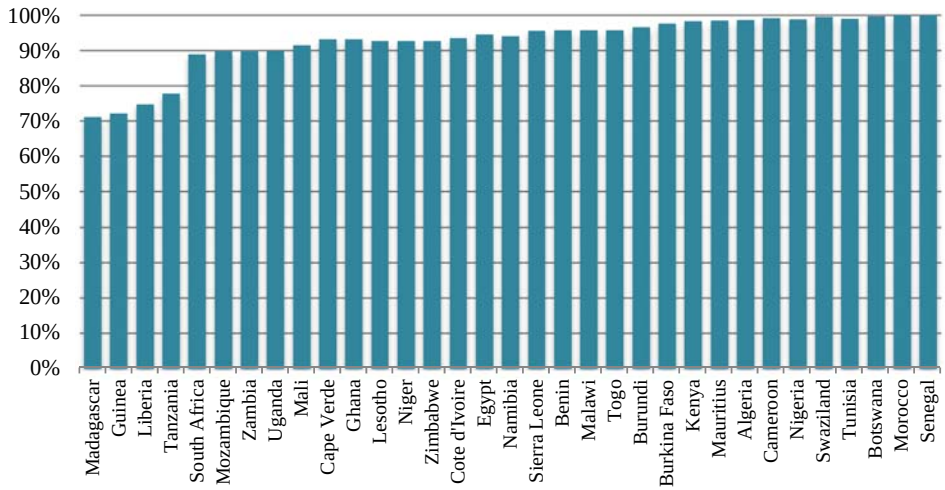
Appendix III

Existing Infrastructure Service Availability by Type

A. Mobile Phone Service Availability

Based on Afrobarometer enumerator observations, mobile phone service is the most widely available type of infrastructure across Africa. On average, mobile phone infrastructure is available in enumeration areas that account for roughly 93 percent of surveyed individuals. Across the 33 examined countries, between 70 percent and 100 percent of respondents reside in areas with mobile phone service. Sixteen countries display that mobile phone networks are either universally, or near universally, available.[55] Only four countries demonstrate enumeration area service availability under 80 percent, including: Madagascar, Guinea, Liberia, and Tanzania. This suggests that mobile phone connectivity is possible in the overwhelming majority of African locales, even if actual household level ownership or access rates are low.

Mobile Phone Service Availability, Enumeration Area Average by Country

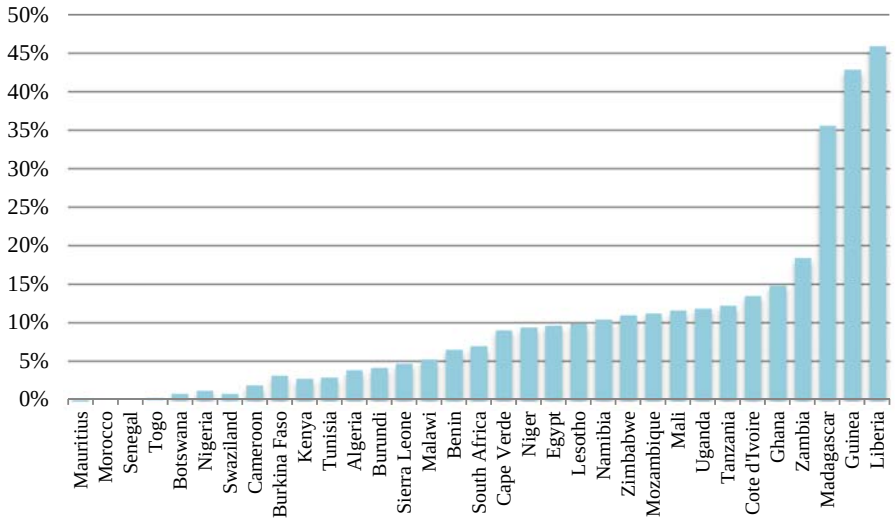


While there are only modest variations across African countries, there are slightly more pronounced differences within urban and rural areas. By illustration, only 53 percent of rural respondents in Liberia reside in areas with mobile phone service availability compared to nearly 100 percent of surveyed urban respondents. Guinea and

[55] Near-universal access is defined here as greater than or equal to 95 percent coverage. These 16 countries include: Botswana (100 percent), Morocco (100 percent), Senegal (100 percent), Algeria (99 percent), Cameroon (99 percent), Nigeria (99 percent), Swaziland (99 percent), Tunisia (99 percent), Burkina Faso (98 percent), Kenya (98 percent), Mauritius (98 percent), Burundi (97 percent), Benin (96 percent), Malawi (96 percent), Sierra Leone (96 percent), and Togo (96 percent).

Madagascar illustrate similar trends, with urban-rural differentials of 43 and 36 percentage points, respectively. However, these urban-rural divides are not present in all African countries. Nearly half of surveyed African countries have variations between urban and rural enumeration area availability rates of five percentage points or less.[56]

Mobile Phone Service Availability, Urban Versus Rural Enumeration Areas (Percentage Point Differential)



National per capita income levels exhibit a weak statistical relationship with mobile phone service availability rates. The correlation between income levels and the enumeration area service availability is only 0.33 and the R^2 for the logarithmic trend line is only 0.19.[57] Several poor, post-conflict countries, such as Burundi and Sierra Leone, have network availability rates exceeding 95 percent of examined enumeration areas. Moreover, South Africa and Mozambique have essentially the same service availability rates despite vastly different income per capita levels (roughly $7200 versus $400).[58] Nonetheless, there are five country outliers that seem to deviate from their African peers (see figure below). These include four poor countries (Guinea, Liberia, Madagascar, and Tanzania) and one upper middle-income country (Namibia). For instance, Tanzania and Sierra Leone have roughly the same per capita income ($550). Yet, 96 percent of respondents in Sierra Leone reside in enumeration areas with mobile phone service availability compared to Tanzania's level of 78 percent. This suggests that

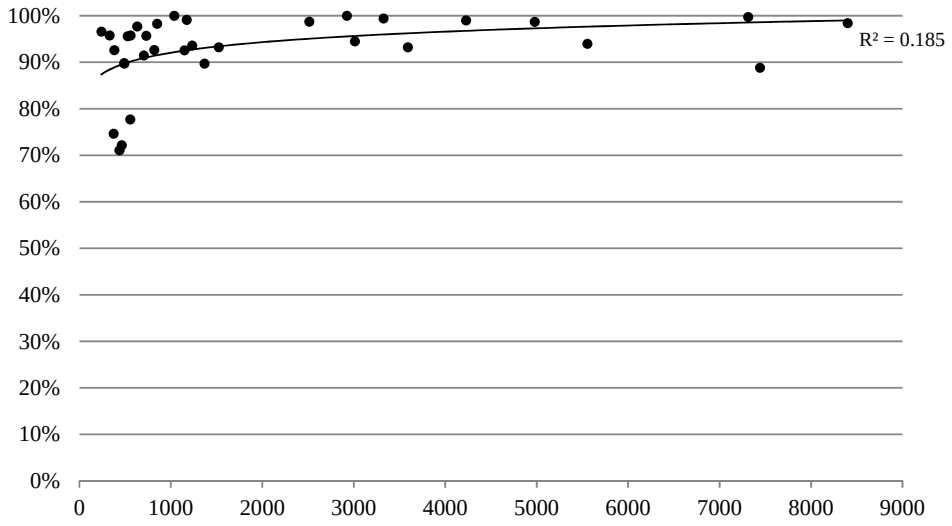
[56] These include (in order of smallest to largest differences of urban and rural mobile phone service availability rates): Mauritius, Morocco, Senegal, Togo, Botswana, Nigeria, Swaziland, Cameroon, Burkina Faso, Kenya, Tunisia, Algeria, Burundi, Sierra Leone, and Malawi.

[57] The logarithmic trend line illustrates the highest R^2. However, this is a simplistic measure and appropriate caution should be used in interpreting the results.

[58] Source: World Bank (2014), *World Development Indicators*.

there are unique country-specific dynamics in a handful of countries, apart from urban-rural phenomena and income per capita levels, which may have suppressed (or promoted) mobile phone service availability.

Mobile Phone Service Availability, by Country Per Capita Income

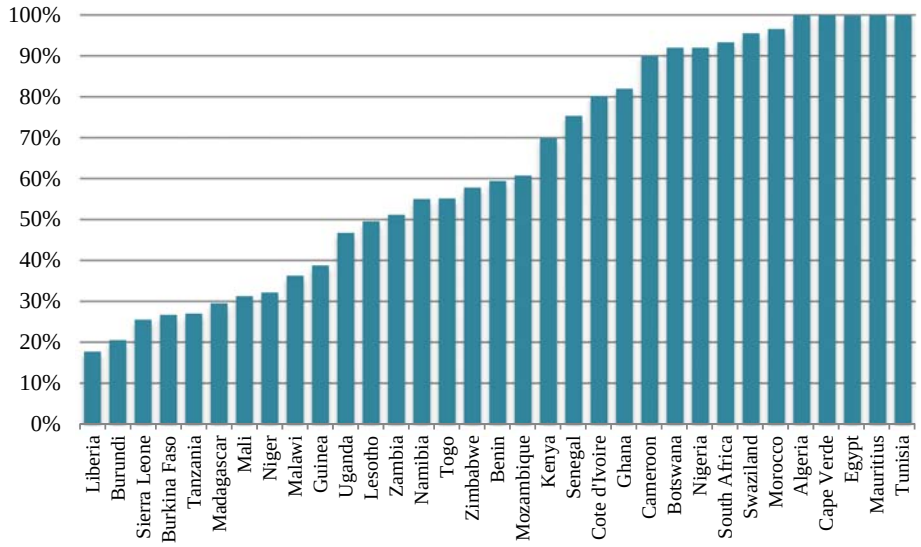


Source: Afrobarometer, World Bank, and authors' calculations

B. Electricity Service Availability

Electricity is the second most available infrastructure services across African countries. However, there are wide variations in grid coverage, ranging from 18 percent of surveyed individuals in Liberia to universal availability in five countries (Algeria, Cape Verde, Egypt, Mauritius, and Tunisia). In addition, there are significant disparities across sub-regions. On average, nearly 100 percent of survey respondents in North African nations reside in enumeration areas with electricity service availability. By comparison, Southern Africa has an average coverage level of 66 percent followed by West Africa (58 percent) and East Africa (41 percent).

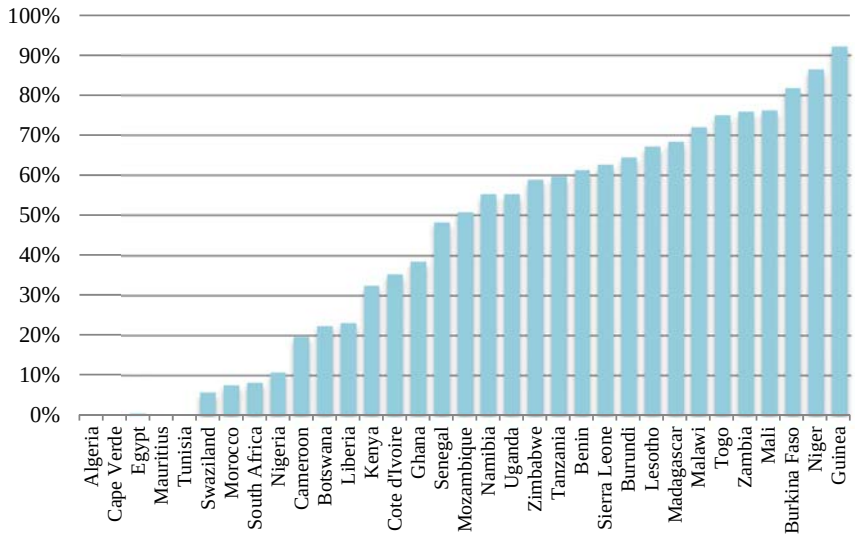
Electricity Service Availability, Enumeration Area Average by Country



There is an even more pronounced divide across urban and rural enumeration areas within most African countries. The correlation between urbanization levels and electricity service availability is roughly 0.60, which is slightly lower than the other four examined infrastructure services. Several countries exhibit only modest differentials across urban and rural lines, such as Algeria, Mauritius, and South Africa.[59] However, 17 surveyed countries have a differential of at least 50 percentage points. For instance, Guinea has a near universal availability rate in urban enumeration areas while only 6 percent of rural survey respondents live in an area with electricity service. This trend is particularly pronounced across the different African sub-regions. On average, North African countries exhibit only a 2 percentage point differential between urban and rural areas. In contrast, East African nations have a 53 percentage point differential, followed by West Africa (51 percentage points) and Southern Africa (44 percentage points).

[59] Eight countries exhibit a differential in electricity service availability between urban and rural enumeration areas of less than 10 percentage points. These include: Algeria, Cape Verde, Egypt, Mauritius, Morocco, South Africa, Swaziland, and Tunisia.

Electricity Service Availability, Urban Versus Rural Enumeration Areas (Percentage Point Differential)

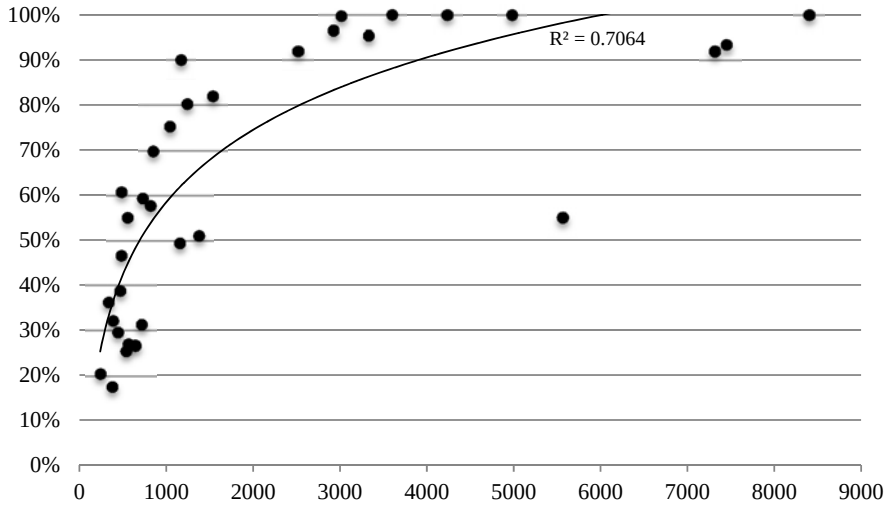


Electricity service availability rates suggest a potential logarithmic relationship with national income levels. The best-fit correlation trend line[60] follows a sharp upward trajectory, which tends to level off around an income cutoff of roughly $1500. Importantly, this does not necessarily suggest a causal relationship. There is one noteworthy country outlier to this apparent trend. Despite a relatively high per capita income ($5500), only 55 percent of Namibian respondents live in enumeration areas with available electricity services.[61] By comparison, Algeria has a comparable income level and 100 percent electricity coverage for surveyed individuals. Overall, the correlation between electricity availability and per capita income levels is 0.68.

[60] This trend line has an estimated R^2 of 0.71. If Namibia is excluded from the sample, then the R^2 is 0.78.

[61] Only 32 percent of rural Namibian enumeration areas have observed electricity services available. This compares to 87 percent in urban areas.

Electricity Service Availability, by Country Per Capita Income

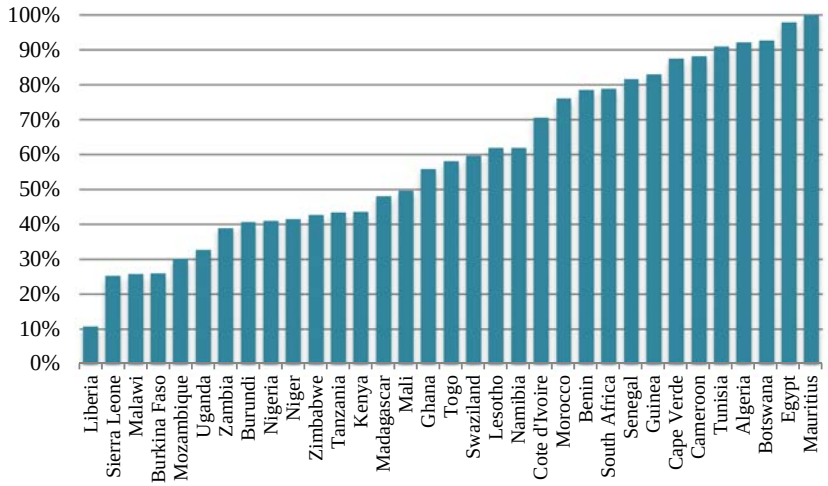


Source: Afrobarometer, World Bank, and authors' calculations

C. Piped Water Service Availability

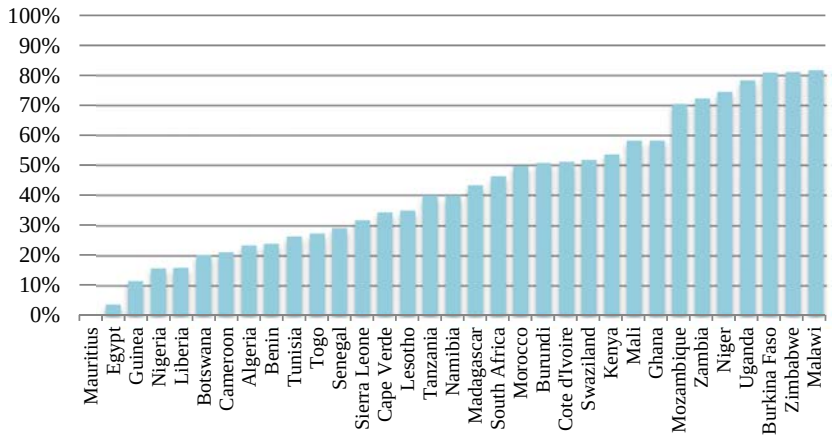
Piped water appears to be the third most available infrastructure service in Africa. On average, nearly 60 percent of surveyed individuals reside in an enumeration area with available services. Yet, as with electricity, there are wide disparities across countries – ranging from only 11 percent in Liberia to universal availability in Mauritius. Moreover, there also are substantial differences across sub-regions. On average, North African nations have a service availability rate of roughly 89 percent. By comparison, Southern Africa has an average coverage level of 58 percent followed by West Africa (57 percent) and East Africa (40 percent).

Piped Water Service Availability, Enumeration Area Average by Country



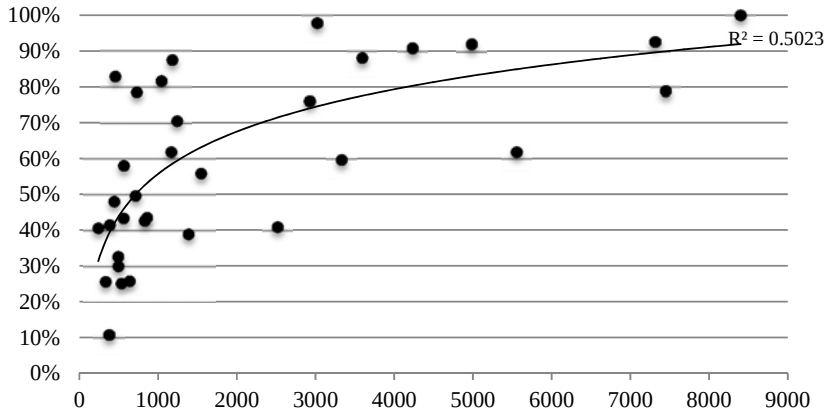
These inter-country differences also hold within urban-rural dynamics within countries. Seven countries exhibit an urban-rural differential of over 70 percentage points for piped water service availability, including: Burkina Faso, Malawi, Mozambique, Niger, Uganda, Zambia, and Zimbabwe. Relatively high service availability levels in urban areas and very low levels in rural areas drive these observed findings. The correlation between urbanization levels and service availability is roughly 0.65. At the same time, the divide across African sub-regions is less pronounced than with other infrastructure services. On average, North African countries exhibit a 26 percentage point differential between piped water service availability in urban and rural enumeration areas. This is despite very high urban and rural service availability levels in Egypt. In contrast, East African nations have a 56 percentage point differential, followed by Southern Africa (49 percentage points) and West Africa (38 percentage points).

Piped Water Availability, Urban Versus Rural Enumeration Areas (Percentage Point Differential)



Piped water service availability rates also illustrate a potential logarithmic relationship with national income levels. However, there is greater variation around the best-fit trend line than with electricity service availability.[62] There are a number of countries with low observed availability rates despite relatively higher income levels, including: Namibia, Nigeria, South Africa, and Swaziland. In contrast, several poorer countries illustrate high rates, such as: Cameroon (88 percent), Guinea (83 percent), Senegal (82 percent), and Benin (79 percent). Overall, the correlation between observed piped water service availability and per capita income levels is 0.64.

Piped Water Availability, by Country Per Capita Income



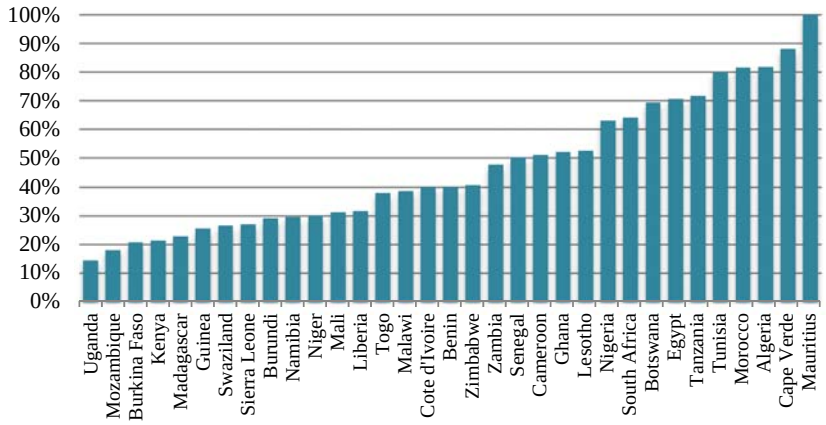
Source: Afrobarometer, World Bank, and authors' calculations

[62] This trend line has an estimated R^2 of 0.50.

D. Improved Road Availability

On average, roughly 47 percent of surveyed Africans reside in an enumeration area with surfaced roads. Again, as with most other infrastructure services, there are wide disparities across countries – ranging from very low levels in Uganda (15 percent) and Mozambique (18 percent) to universal coverage in Mauritius. There are significant regional disparities as well, but they are slightly less pronounced than for other infrastructure services. On average, roughly 79 percent of surveyed individuals in North African nations had access to a paved road. By comparison, Southern Africa has an average coverage level of 46 percent followed by West Africa (42 percent) and East Africa (34 percent).

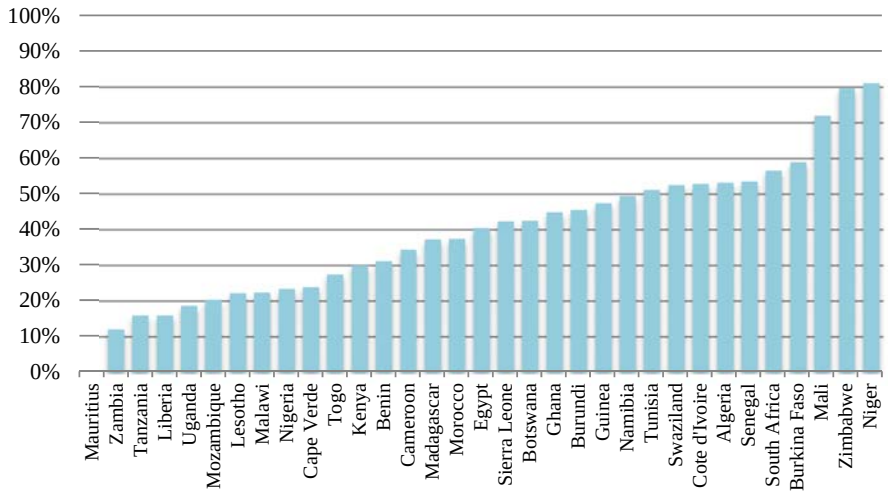
Improved Roads Availability, Enumeration Area Average by Country



As expected, we find significant variations across urban and rural enumeration areas within surveyed countries. The correlation between urbanization levels and improved roads availability is roughly 0.62. However, there appears to be much smaller differences across African sub-regions. In addition, unlike all other infrastructure services, North African countries exhibit the largest improved road differentials between urban and rural enumeration areas. On average, they have a 46 percentage point differential. In contrast, East African nations have a 28 percentage point differential, followed by Southern Africa (36 percentage points) and West Africa (44 percentage points). However, this appears to be driven more by high road infrastructure coverage rates in North African urban areas as opposed to more equal coverage rates in other African sub-regions.[63]

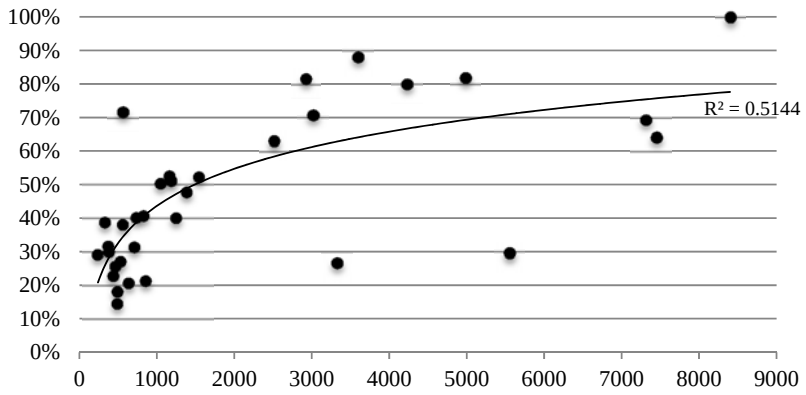
[63] When calculated as a percentage difference (versus a percentage *point* difference), the variation between North African urban and rural enumeration areas is less than other African regions.

Improved Roads Availability, Urban Versus Rural Enumeration Areas (Percentage Point Differential)



The presence of improved roads within surveyed enumeration areas, as expected, also appears to have a statistical relationship with national income levels. As with electricity, the best-fit trend line follows a sharp upward trajectory, which appears to level off around an income cutoff of roughly $1000. Swaziland and Namibia are two higher-income outliers, with both exhibiting low availability of improved roads in surveyed enumeration areas (28 percent and 30 percent, respectively). If these two countries are excluded, the estimated R^2 of the logarithmic trend line increases significantly, from 0.51 to 0.71. On the other end, despite a relatively low per capita income ($550), over 72 percent of Tanzanian survey respondents live in an enumeration area with an improved road.

Improved Roads Availability, by Country Per Capita Income

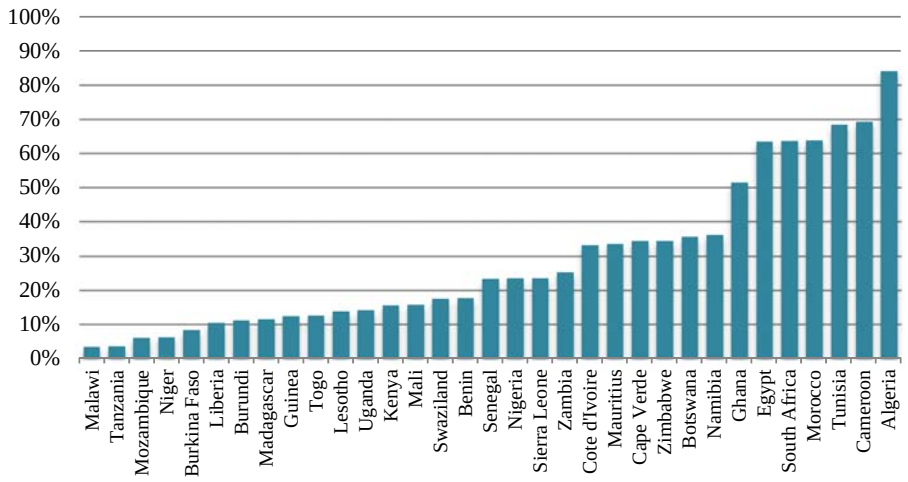


Source: Afrobarometer, World Bank, and authors' calculations

E. Sewage Service Availability

On average, only 29 percent of surveyed individuals live in areas with sewage infrastructure. Only seven countries have coverage rates exceeding 50 percent, including: Algeria (84 percent), Cameroon (69 percent), Tunisia (68 percent), Morocco (64 percent), South Africa (64 percent), Egypt (63 percent), and Ghana (51 percent). Sewage service availability was 10 percent or less in five countries (Burkina Faso, Malawi, Mozambique, Niger, and Tanzania). On average, North African nations have much higher service availability rates (70 percent) than those in Sub-Saharan Africa. By comparison, Southern Africa has an average coverage level of 26 percent followed by West Africa (24 percent) and East Africa (11 percent).

Sewage Service Availability, Enumeration Area Average by Country

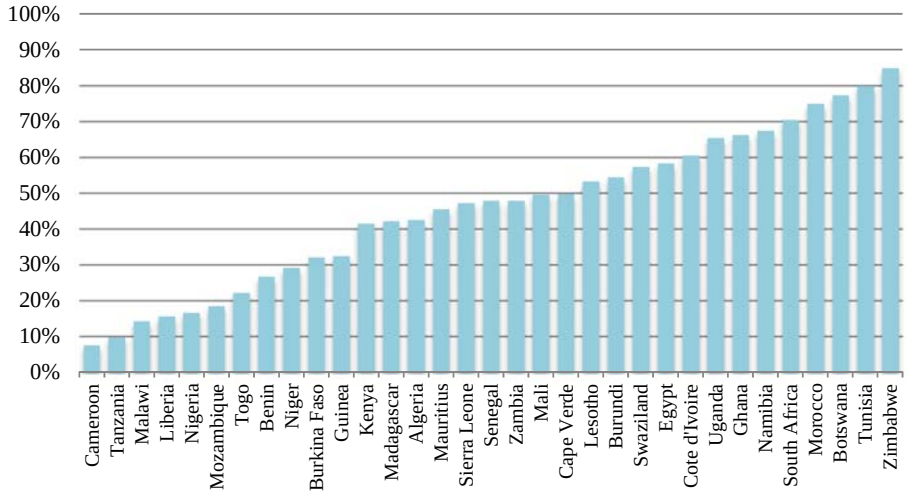


We also find large urban-rural differentials within countries concerning sewage service availability, as expected. Zimbabwe demonstrates the greatest disparity between urban and rural coverage rates (92 percent versus 7 percent), followed by Tunisia, Botswana, Morocco, and South Africa. In addition, none of the surveyed rural enumeration areas had sewage services in six African countries.[64] In fact, only a few African countries have any meaningful rural coverage, with just three countries exceeding one-third of surveyed respondents. Cameroon had the highest rate, with 65 percent of surveyed rural enumeration areas having sewage services, followed by Algeria (56 percent) and Egypt (38 percent). Overall, the correlation between urbanization levels and sewage availability is 0.73, which is the highest amongst the five examined

[64] These include: Botswana, Burkina Faso, Cape Verde, Mozambique, Niger, and Senegal. Rural coverage levels were less than one percent in three other African countries, including: Kenya (0.5 percent), Malawi (0.4 percent), and Tanzania (0.8 percent).

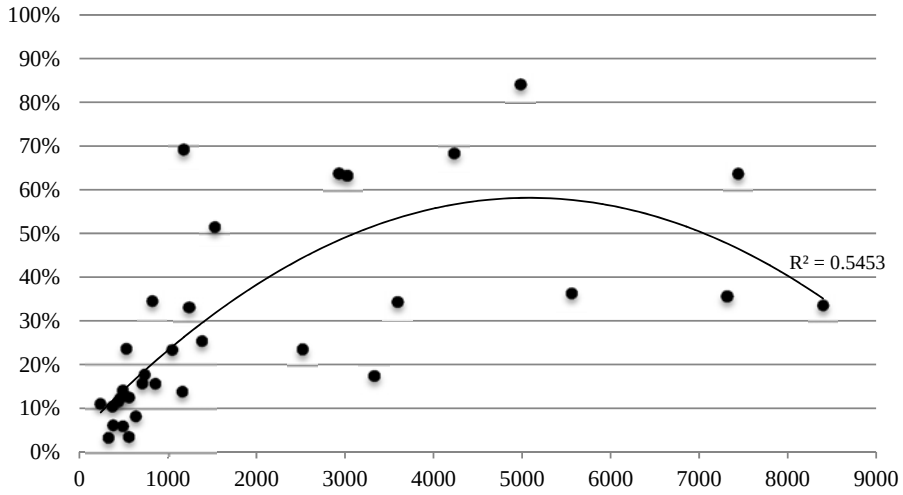
infrastructure services. On average, North African countries exhibit the highest differential between sewage service availability in urban and rural enumeration areas (64 percentage points). This is closely followed by Southern Africa (53 percentage points). East African and West African countries, on average, have slightly lower urban-rural coverage differentials (43 percentage points and 36 percentage points, respectively). This is primarily due to lower coverage rates overall in both urban and rural areas.

Sewage Service Availability, Urban Versus Rural Enumeration Areas (Percentage Point Differential)



In contrast to other forms of infrastructure, sewage service availability illustrates an inverted U-curve relationship with income per capita levels. This appears to be driven by several higher income countries with low overall service availability rates, such as Mauritius (34 percent), Botswana (36 percent), and Cape Verde (34 percent). However, as with other infrastructure services, Namibia has very low sewage service availability levels for a higher income country. Amongst low-income countries, Zimbabwe and Sierra Leone demonstrate the highest coverage rates at 35 percent and 24 percent, respectively.

Sewage Service Availability, by Country Per Capita Income



Source: Afrobarometer, World Bank, and authors' calculations

Appendix IV

Most Pressing National Problems, Percentage of Survey Responses by Country

	Economic Financial Policies	Education	Food Security	Governance	Health	Infrastructure	Jobs & Income	Other	Poverty & Inequality	Security
Algeria	5%	7%	0%	20%	6%	83%	**83%**	1%	26%	10%
Benin	36%	16%	8%	7%	26%	**71%**	40%	2%	19%	8%
Botswana	16%	15%	12%	12%	21%	30%	**70%**	3%	40%	14%
Burkina Faso	8%	24%	34%	8%	54%	**64%**	36%	3%	18%	11%
Burundi	16%	6%	25%	31%	20%	33%	33%	4%	**51%**	39%
Cameroon	14%	19%	8%	35%	26%	50%	**61%**	3%	20%	12%
Cape Verde	8%	6%	5%	5%	15%	46%	**64%**	5%	26%	41%
Cote d'Ivoire	14%	17%	20%	7%	35%	55%	**55%**	1%	18%	23%
Egypt	29%	14%	6%	13%	17%	17%	**74%**	5%	42%	44%
Ghana	25%	39%	5%	9%	27%	**65%**	62%	1%	17%	8%
Guinea	7%	15%	44%	8%	25%	**77%**	36%	2%	10%	17%
Kenya	36%	21%	34%	18%	25%	37%	**43%**	3%	22%	22%
Lesotho	5%	9%	17%	11%	13%	46%	**61%**	7%	35%	15%
Liberia	17%	44%	18%	13%	42%	**75%**	40%	2%	7%	12%
Madagascar	14%	11%	24%	10%	20%	39%	**61%**	2%	25%	36%
Malawi	44%	11%	**45%**	10%	30%	40%	43%	2%	19%	11%
Mali	7%	16%	**52%**	17%	27%	34%	31%	1%	31%	49%
Mauritius	17%	7%	7%	26%	18%	39%	**56%**	13%	38%	49%
Morocco	17%	23%	8%	27%	35%	38%	**72%**	1%	42%	11%
Mozambique	8%	15%	21%	8%	24%	**67%**	48%	2%	19%	12%
Namibia	6%	18%	18%	18%	17%	61%	**66%**	2%	32%	19%
Niger	12%	21%	62%	10%	38%	**63%**	35%	0%	33%	6%
Nigeria	16%	16%	12%	26%	13%	57%	**58%**	1%	30%	32%
Senegal	5%	19%	25%	4%	29%	49%	**56%**	10%	34%	17%
Sierra Leone	21%	42%	32%	7%	37%	**61%**	53%	3%	9%	5%
South Africa	9%	14%	3%	26%	22%	59%	**74%**	3%	25%	32%
Swaziland	20%	17%	17%	22%	19%	54%	**54%**	2%	35%	8%
Tanzania	29%	25%	16%	19%	48%	**58%**	33%	2%	12%	8%
Togo	13%	24%	11%	10%	33%	**60%**	55%	6%	15%	10%
Tunisia	23%	5%	4%	13%	7%	15%	**73%**	6%	28%	48%
Uganda	50%	18%	11%	18%	33%	**54%**	39%	2%	30%	8%
Zambia	8%	35%	8%	10%	43%	**61%**	59%	6%	16%	5%
Zimbabwe	24%	18%	32%	22%	17%	45%	**66%**	3%	20%	16%

Appendix V

Most Pressing National Problems by Country, Gender, and Locality (Urban/Rural)

We find few observable differences between male and female respondents. Men and women both cite the same top national problem in 25 of the 33 examined countries.[65] In the eight countries with gender-based differences, we find that men and women tend to still prioritize the same thematic issues. For example, the most popular national problem among men in Niger is infrastructure (64 percent of male respondents). At the same time, 61 percent of Nigerien women cite infrastructure as a national problem, although food security concerns are slightly higher. Despite these modest exceptions, gender does not appear to systematically influence survey respondent behavior at the country-level (see figure below)

Urban and rural populations tend to cite the same top national priorities. In nearly two-thirds of examined countries, we find that the urban and rural respondents cite the same top national problem[66] Moreover, in nine of the countries where rural and urban priorities do not match, the rural respondents' second most frequently cite concern matches urban respondents' top priority and vice versa.[67] More specifically, both urban and rural respondents prioritize jobs and income related issues along with infrastructure.[68]

[65] These countries include: Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Cote d'Ivoire, Egypt, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Mauritius, Mozambique, Namibia, Sierra Leone, South Africa, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

[66] The countries with the same urban rural development priorities include Benin, Botswana, Burundi, Cameroon, Cape Verde, Egypt, Guinea, Kenya, Lesotho, Liberia, Madagascar, Morocco, Nigeria, Sierra Leone, South Africa, Tanzania, Tunisia, and Zimbabwe.

[67] In cases when the urban and rural development priorities do not match, we find that the rural respondents are more likely to prioritize infrastructure, while urban respondents tend to prioritize jobs and income at higher levels.

[68] Jobs and income concerns are the top thematic priority for 35 segments (out of 66 total). Within this, there are 10 countries where urban respondents raise jobs and income related issues as their most frequently cited concern, while rural respondents cite another issue. This includes: Algeria, Cote d'Ivoire, Ghana, Mozambique, Namibia, Niger, Senegal, Swaziland, Togo, and Zambia. There is only one country (Mauritius) where only rural respondents cite jobs and income as their most pressing concern while urban respondents cite another issue. Infrastructure is the most frequently cited thematic issue in 22 segments. These segments are Algeria (rural), Benin (urban and rural), Burkina Faso (rural), Cote d'Ivoire (rural), Ghana (rural), Guinea (urban and rural), Liberia (urban and rural), Mauritius (urban), Mozambique (rural), Namibia (rural), Senegal (rural), Sierra Leone (urban and rural), Swaziland (rural), Tanzania (urban and rural), Togo (rural), Uganda (rural), Zambia (rural).

National Priorities by Country and Gender

		Infrastructure	Jobs & Income	Econ/Fin Policies	Health	Poverty & Inequality	Education	Security	Food Security	Governance	Other
Algeria	Male	82%	85%	7%	5%	26%	5%	%	0%	22%	0%
	Female	84%	81%	3%	7%	26%	9%	10%	0%	19%	1%
Benin	Male	73%	44%	25%	27%	17%	18%	11%	7%	7%	2%
	Female	70%	37%	46%	25%	22%	15%	6%	10%	7%	2%
Botswana	Male	34%	73%	17%	19%	35%	14%	15%	11%	13%	5%
	Female	26%	67%	15%	23%	45%	16%	13%	12%	10%	1%
Burkina Faso	Male	64%	38%	8%	53%	16%	29%	14%	28%	10%	2%
	Female	64%	34%	8%	55%	20%	19%	7%	39%	6%	4%
Burundi	Male	32%	34%	17%	17%	51%	6%	44%	20%	33%	5%
	Female	34%	32%	14%	22%	50%	6%	34%	30%	29%	3%
Cameroon	Male	49%	63%	16%	26%	17%	20%	12%	7%	37%	4%
	Female	50%	60%	11%	26%	24%	17%	11%	10%	34%	2%
Cape Verde	Male	47%	65%	9%	15%	23%	7%	41%	5%	6%	7%
	Female	45%	64%	7%	16%	29%	6%	41%	6%	4%	4%
Cote d'Ivoire	Male	57%	56%	14%	33%	16%	20%	26%	16%	7%	1%
	Female	54%	54%	14%	36%	20%	14%	20%	24%	7%	1%
Egypt	Male	17%	75%	35%	13%	36%	14%	44%	8%	12%	5%
	Female	17%	73%	24%	21%	48%	13%	43%	5%	14%	4%
Guinea	Male	76%	35%	8%	25%	9%	14%	19%	39%	9%	3%
	Female	79%	37%	7%	26%	10%	16%	15%	49%	8%	2%
Ghana	Male	66%	65%	24%	26%	14%	38%	8%	4%	10%	1%
	Female	64%	59%	26%	27%	21%	40%	8%	5%	9%	1%
Kenya	Male	38%	45%	37%	26%	21%	20%	24%	31%	20%	2%
	Female	37%	41%	35%	25%	22%	22%	20%	37%	17%	3%
Lesotho	Male	47%	66%	6%	11%	34%	7%	14%	16%	12%	7%
	Female	46%	57%	4%	15%	37%	10%	16%	17%	11%	7%
Liberia	Male	76%	41%	17%	39%	7%	42%	13%	15%	14%	2%
	Female	73%	38%	17%	45%	6%	47%	11%	21%	12%	1%
Madagascar	Male	42%	61%	17%	19%	21%	11%	39%	23%	11%	3%
	Female	36%	61%	12%	21%	30%	10%	34%	26%	9%	2%
Malawi	Male	41%	47%	44%	29%	18%	10%	13%	42%	11%	2%
	Female	40%	40%	44%	31%	21%	12%	9%	48%	8%	2%
Mali	Male	33%	33%	6%	26%	22%	17%	59%	50%	21%	0%
	Female	36%	29%	8%	29%	40%	14%	38%	55%	13%	2%
Mauritius	Male	42%	54%	17%	17%	36%	5%	48%	7%	30%	12%
	Female	37%	59%	16%	19%	39%	8%	51%	8%	22%	13%
Morocco	Male	39%	72%	20%	31%	40%	23%	12%	7%	28%	0%
	Female	37%	72%	14%	39%	43%	23%	11%	9%	26%	1%
Mozambique	Male	69%	48%	11%	23%	19%	15%	12%	18%	11%	3%
	Female	66%	47%	6%	25%	19%	14%	12%	25%	6%	2%
Namibia	Male	61%	67%	6%	16%	31%	16%	18%	16%	19%	3%
	Female	62%	65%	6%	19%	34%	19%	20%	19%	17%	1%
Niger	Male	64%	39%	12%	41%	24%	24%	8%	58%	9%	0%
	Female	61%	31%	12%	34%	41%	19%	5%	65%	11%	0%
Nigeria	Male	55%	60%	17%	12%	28%	14%	34%	8%	29%	2%
	Female	59%	56%	16%	13%	31%	17%	30%	15%	23%	1%
Senegal	Male	48%	61%	5%	29%	31%	20%	19%	22%	5%	10%
	Female	51%	51%	6%	30%	37%	18%	14%	28%	3%	10%
Sierra Leone	Male	61%	54%	21%	34%	9%	43%	5%	31%	5%	3%
	Female	60%	51%	22%	40%	9%	41%	5%	34%	8%	3%
South Africa	Male	57%	74%	11%	22%	24%	13%	33%	3%	29%	3%
	Female	61%	75%	8%	22%	26%	14%	31%	4%	24%	2%
Swaziland	Male	54%	59%	22%	16%	31%	16%	10%	16%	26%	2%
	Female	53%	49%	18%	21%	38%	18%	7%	18%	19%	1%
Tanzania	Male	57%	37%	30%	47%	11%	26%	8%	13%	22%	2%
	Female	59%	29%	28%	50%	14%	24%	7%	19%	15%	1%
Togo	Male	58%	57%	13%	34%	12%	26%	11%	10%	15%	8%
	Female	62%	53%	14%	32%	19%	22%	9%	12%	6%	5%
Tunisia	Male	13%	73%	28%	7%	27%	4%	50%	3%	13%	8%
	Female	16%	73%	18%	7%	30%	6%	45%	4%	12%	4%
Uganda	Male	52%	40%	50%	32%	27%	18%	9%	10%	23%	2%
	Female	55%	38%	51%	33%	33%	19%	7%	12%	13%	2%
Zambia	Male	63%	60%	7%	43%	15%	35%	4%	7%	9%	6%
	Female	60%	57%	8%	44%	17%	36%	6%	9%	11%	5%
Zimbabwe	Male	46%	70%	27%	15%	17%	15%	17%	30%	23%	3%
	Female	45%	63%	22%	20%	23%	21%	15%	33%	20%	3%

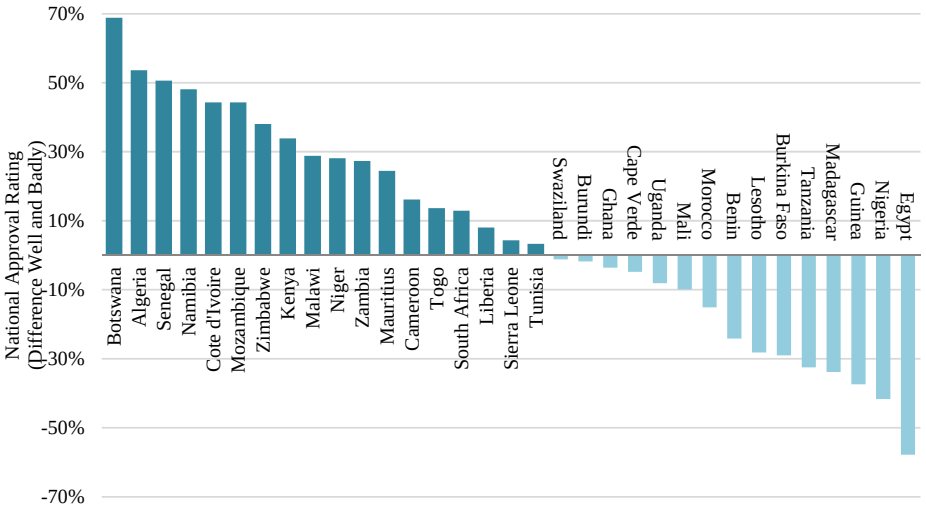
Appendix VI

Net Favorability Rating Analysis for Specific Infrastructure Services

A. Water and Sanitation

Respondents' favorability ratings for governments' provision of water and sanitation services is highly varied. On average, we find that 50 percent of respondents across countries believe that their government is doing well while 43 percent think their government is performing badly.[69] Comparing the two measures suggests a slightly positive net approval rating for the provision of water and sanitation services (+7 percent). However, we find a wide variation in net approval ratings across African countries. For example, Botswana has the highest net approval rating at 69 percent and Egypt has the lowest rating at -58 percent.

Net Favorability Rating for Provision of Water and Sanitation Services, by Country

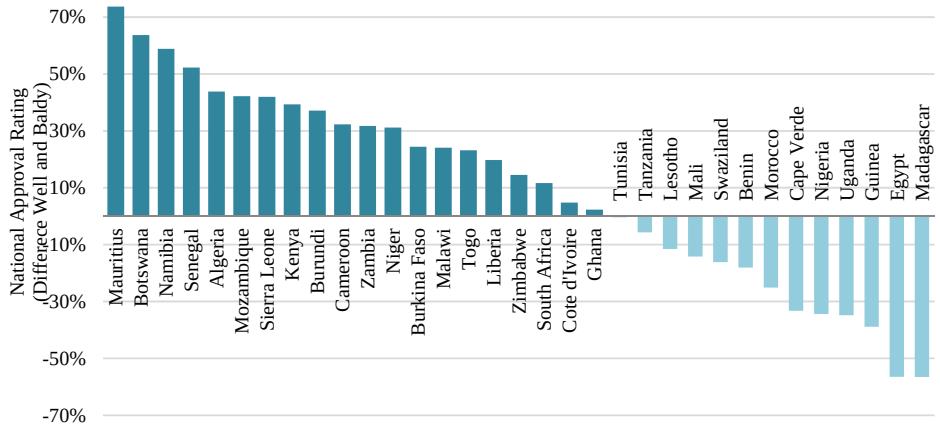


B. Road and Bridge Maintenance

The favorability ratings for road and bridge maintenance are also highly varied. Across countries, slightly more than half of surveyed individuals approve of their governments' performance (51 percent) while 41 percent believe that their government is performing poorly. This suggests a moderate net approval rating of +10 percent at an aggregate regional level. Again, we find a wide range of scores across countries ranging from Mauritius (+ 74 percentage points) to Madagascar (-57 percentage points).

[69] The median respondent level for each of these two performance categories is 49 percent and 45 percent, respectively.

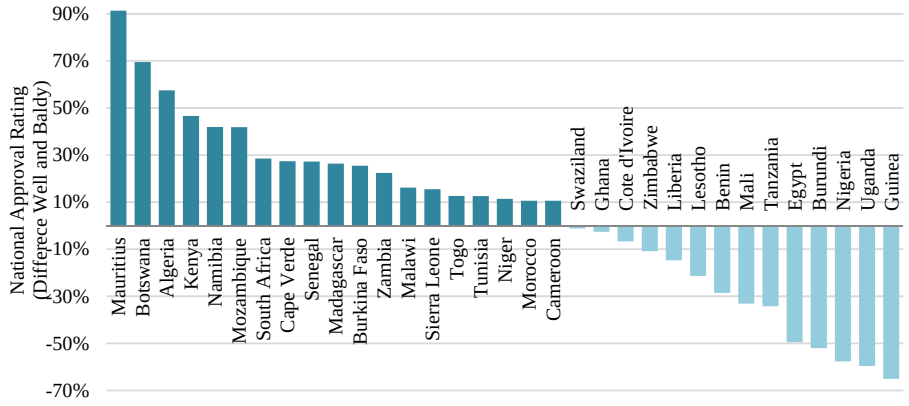
Net Approval for Maintaining Roads and Bridges, by Country



C. Reliable Electricity

Citizens' views about government provision of reliable electricity are highly mixed across countries, including income categories. Overall, roughly 47 percent of surveyed individuals approve of their government's performance while 42 percent believe it is performing poorly. This creates a slight positive (+5 percent) overall rating, which is the smallest among the three types of considered infrastructure. Yet, surveyed individuals *within countries* tend to have strong views about government performance in either a positive or negative direction. For instance, the net favorability rating is 91 percentage points in Mauritius and the net disapproval rating is over 65 percentage points in Guinea.

Net Approval for Provision of Reliable Electric Supply, by Country



Net Approval Rating versus Percent of Respondents Naming Infrastructure Type as a Pressing National Problem