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**SUSTAINABLE WATER AND SANITATION SERVICES  
FOR ALL IN A FAST CHANGING WORLD**

**Access to services in low income urban communities  
in Cameroon, Ghana, Rwanda and Tanzania**

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*Rapid urbanisation and rising population growth in many countries is putting increasing pressure on the provision of services including water, sanitation, health, education, electricity, mobile phones, transport and street lighting. People living in urban areas have better access to services (water supply, sanitation, health services, schools, mobile phones) than those living in rural areas, despite the challenges of keeping up with growing urban populations. Completed as part of the 'RurbanAfrica' research project this paper provides an overview of access to services by low-income communities in urban areas of four case study countries; Cameroon, Ghana, Rwanda and Tanzania, outlining the barriers to access for each service. In all four countries, urban households have much better access to improved water sources and mobile phones than to improved sanitation.*

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**Background**

The availability and provision of services in Sub-Saharan Africa are highly variable, by location (e.g. urban/rural), by socio-economic factors (e.g. household income and tenure status) and in the quality of services available. This paper presents an overview of selected public services in four case study countries: Cameroon, Ghana, Rwanda and Tanzania. It considers patterns of service access, barriers and innovative or successful approaches in a variety of sectors including sanitation, water, electricity, education, health, mobile phones, urban transport and street lighting. All four case study countries have recognized the importance of improving infrastructure provision in key areas and consequently improving levels of access to services.

This paper presents findings from the EU RurbanAfrica project, Work Package 4 "Access to services in low income city communities". These findings are based on country reports by Ngouanet et al. (2014), supported by Demographic and Health Surveys (DHS) data for the four countries and a review of the literature for sub-Saharan Africa which are reported by Medland et al. (2014). The DHS data analysis process forms the content of another paper and will not be further addressed here.

**Case study countries**

Cameroon has experienced rapid urbanisation with over fifty percent of the population living in urban areas. The total population in 2010 was approximately 19.5 million people with an urban population of over 10 million. The two principal cities, Yaounde and Douala had populations of approximately 2 million each. (National Institute of Statistics, 2011).

Ghana had a population of approximately 24.6 million in 2010. The proportion of people living in urban areas is 50.9% with the levels of urbanisation varying between regions. Accra, the capital, has 10% of the total population (Ghana Statistical Service, 2012). Other major cities include: Kumasi, Sekondi-Takoradi, Tema, Tamale, and Cape Coast.

Rwanda had a total population of approximately 10.7 million in 2011. The capital, Kigali City had a total population of approximately 1.1 million, equivalent to approximately 10% of the population. The percentage

of urbanized areas has grown from less than 1% in the 1960s to 14.8% in 2011 (National Institute of Statistics, 2012). After the capital, the principal towns are Musanze (north), Muhanga (south), Huye (south), and Rubavu (west).

Tanzania had a population of almost 45 million in 2012 with an urban population of 29.6%. Dar es Salaam had a population of 4.36 million, accounting for 10% of the total Tanzania Mainland population. Most of the Tanzania mainland is sparsely populated, however, in Dar es Salaam and the Mjini Magharibi region population density is significantly higher than average (National Bureau of Statistics, 2013). After Dar es Salaam the next largest cities are Mwanza, Arusha, Dodoma, Mbeya and Morogoro.

## **Access to services in urban areas**

### **Education**

Overall, access to both primary and secondary education is better in urban areas than rural ones because there is a higher concentration of schools, which means more places available and smaller teacher to pupil ratios. Children from poorer urban households therefore have better levels of access than their rural counterparts.

Schools in urban areas tend to pay higher salaries and can therefore attract better quality, more qualified teaching staff. There is also a continued growth in the number of private schools, many of which are concentrated in urban areas. In all four cases, fees for attending public primary schools have been reduced to very low levels in order to support increased enrolment. Private schools charge much higher fees and are therefore more likely to be attended by children from wealthier households.

Rates of enrolment in secondary education are lower than primary with demand for places outstripping supply in many areas of the four countries. The number of qualified teachers needed to meet staffing levels is also a challenge. Fees are higher for secondary school than for primary school, therefore, whilst parents from low-income households might be able to afford primary school fees, secondary school fees place a greater financial burden on the household budget.

### **Health**

In all four case countries there is a mixture of public, private, religious and not for profit facilities available. These range in size from large referral hospitals to small rural clinics. Overall, access to health facilities is better in urban areas than in rural ones because the concentration of health facilities is much higher in urban areas which leads to a greater choice in services.

Urban health facilities are able to attract more qualified staff, especially doctors and nurses, which means that staffing ratios are better in urban facilities but still well below the WHO recommended levels overall. Cameroon and Rwanda highlight the decreasing levels of medical professionals available nationally as a particular challenge. Staff are lost through brain drain or retirement and the training of new professionals has not kept pace with population growth.

Although the availability of services is higher in urban areas, treatment costs are higher which leaves those from poorer households unable to afford them. The use of traditional healers, informal vendors and self-medication through pharmacies is still widespread and is not necessarily dependent on income. In Cameroon, people from poor households were only slightly more likely to use a traditional healer than those from non-poor households. Countries around the world are struggling with the problem of providing equitable access for all. An interesting development in Rwanda is the introduction of medical insurance specifically designed to support access to better health care for the poor which is helping to increase access to health facilities.

### **Transport**

Car ownership in the four countries is limited almost exclusively to the wealthiest households in both urban and rural areas. Urban residents are less likely to be employed close to their home than their rural counterparts. Therefore, many urban residents rely on the use of public transport to move around and especially to get to work. One of the biggest factors affecting access to transport for the urban poor is the quality of roads in and around urban areas. When road quality is poor, the flow of traffic slows down which increases congestion and traffic jams and consequently makes public transport less reliable.

In all four countries, the public transport sector is dominated by private operators, many of whom use small mini-buses. These operators work to maximise their profits so if a route is heavily congested or not in

high demand the operators can switch routes with little notice, leaving some passengers unable to reach their original destination. As urban areas expand to accommodate growing populations there is an increased use of difficult or marginal land. Road networks cannot be expanded fast enough to keep pace with the expansion of settlements into new areas. Therefore, 'roads' in these areas tend to be of very poor quality and are susceptible to damage from rains or flooding. The continued use of very poor roads leads to vehicle damage. Consequently, public buses tend not to operate in these areas leaving them underserved. The cost of travelling into an urban area from a periphery is higher because the route is longer or requires the payment of multiple fares along the way.

The use of motorbike- taxis, especially in urban areas, is popular in all four countries. In Douala Cameroon motorbikes can account for 75% of the traffic on the road and lead to high levels of congestion. In the case of Ghana, motorbike taxis are illegal but they are still found in some areas of the major cities, including Accra. In rural areas, motorbikes can provide a service to passengers when other forms of public transport, such as buses, are not available. Statistics for road traffic accidents are not always detailed enough to capture specific data on the use of motorbike taxis but anecdotally, motorbike taxis are associated with poor driving behaviours and high levels of accidents. The use of bicycles varies in accordance with national preference, in Rwanda they are very common in rural areas but are prohibited in Kigali and other major towns but in Cameroon they are generally not a popular option.

### **Street lighting**

In many parts of Sub-Saharan Africa, reliable and comprehensive statistics for the provision of street lighting do not exist. However, it is known that the greatest impact of unlit roads is the level of road traffic accidents with pedestrians particularly at risk. Additional positive impacts attributed to street lighting are; reduced fear of and actual robbery and assault; increased night time trading; more attractive inner city areas; extended use of the road network outside daylight hours which reduces daytime congestion and a boost to tourism (ILE, 1990).

The major barrier to increasing the use of street lighting is the means of funding it, both the installation and running costs. Alternative sources of energy for street lighting, including the use of off-grid renewables has been suggested with one notable example being the UNEP Enlighten Project in Nairobi. A partnership between the Kenyan Urban Roads Authority and Philips aims to provide solar-powered LED street lighting in Nairobi (UNEP, 2014).

### **Mobile phones**

The growth of mobile phones is a recent phenomenon in Sub-Saharan Africa and as such has only recently been incorporated into the DHS surveys. Longitudinal data for the case countries is not yet available through DHS surveys, coverage data is only available for the most recent survey year so trends are not yet visible. However, in the four case study countries, more households have access to a mobile phone than have access to an improved latrine, piped water or electricity. The only exception is in Ghana, where coverage of electricity and piped water nationally were slightly higher than that of mobile phones in 2008.

In the four countries, poorer households in urban areas are the least likely to have access. Mobile phones are the only service in this study where poorer rural households are more likely to have access than their urban counterparts but the difference is minimal overall.

In Rwanda, a language barrier was identified as being a constraint on increasing access because imported phones cannot be operated in the local language so people have to be able to use English or French for their phone interface.

Expanding networks requires large capital investment but those costs are borne by the private operators who want to attract more customers to their network. The initial cost of the handset was highlighted as the main barrier to gaining access along with the cost of calls. However, in all four countries the mobile telephone networks are operated by private companies who compete for subscribers through price and service. The costs of handsets are also decreasing as new, cheaper imported models become available. Gaining access will become easier in the future as costs reduce further.

### **Trends in access to services**

The trends presented here are based on DHS surveys conducted at, or as close as possible to, ten year intervals. The DHS surveys used are as follows; Cameroon 1998 and 2011; Ghana 1998 and 2008; Rwanda 2000 and 2010; Tanzania 1999 and 2010. Given that the DHS surveys were completed in different years, the

trends analysed focus on changes in access to different services within each individual country, rather than a comparison of changes in access to services between the four case study countries.

### **Sanitation**

In Cameroon, Rwanda and Tanzania, coverage of improved latrines is similar between urban and rural areas. However, in Ghana, coverage of improved latrines is much higher in urban areas than it is in rural ones. From a national perspective, access to improved latrines has decreased in urban areas of Cameroon and Rwanda but has increased in urban areas of Ghana and Tanzania.

In Cameroon and Rwanda the decrease is more severe in wealthier households because they had far higher levels of coverage to begin with. Access to improved latrines for the poorer households was already close to zero in both cases. For the poorest households in Cameroon, rates of open defecation increased dramatically, as did the reliance on unimproved latrines.

In Tanzania, the growth in improved latrines was only 3% overall over a period of 11 years (1999 – 2010) with richer households benefitting the most. The coverage of improved latrines in Ghana increased dramatically between surveys, even for the poorest households, but the levels of open defecation are much higher than those for any other country. In Cameroon, Rwanda and Tanzania the poorest households rely on the use of unimproved latrines, whereas in Ghana, the choice seems to be between an improved latrine and open defecation with more than 60% of the poorest households practising open defecation in 2008.

In all cases, the use of shared latrines is higher in urban areas than rural ones and levels of sharing have increased overall. This could represent a continuing trend for the future. Access to improved sanitation is varied but overall, there continues to be a heavy reliance on the use of unimproved latrines for the urban poor and open defecation is still a problem in all cases but more so in Ghana and Cameroon.

### **Water**

In the cases of Rwanda and Tanzania, access to improved water is twice as high in urban areas as it is in rural ones. In Cameroon and Ghana, the difference is over four times as high. Those from the poorest households are the least likely to have access to improved water with those in rural areas being the worst off. However in all cases, coverage of improved water in the poorest urban households has increased over time, despite there being an overall decrease in the percentage of households with access to improved water in urban areas. In Cameroon and Ghana the decrease is just 1% but that still means that increases in coverage are barely keeping pace with population growth. In Rwanda and Tanzania the decrease was 10% and 20% respectively which means either population growth has significantly outstripped increases in coverage or the supply system has been severely compromised and is no longer able to keep pace with demand. In all cases, the most significant decreases in coverage occurred for the richer urban households.

Where piped access is not available, the use of groundwater has increased with a corresponding decrease in the reliance on surface water sources across the four countries. The use of surface water is higher in urban Cameroon and Ghana than it is in Rwanda and Tanzania. In Rwanda and Tanzania there has been more than a 50% reduction in surface water use by households between surveys (2000 – 2010 for Rwanda and 1999-2010 for Tanzania). In all cases, urban residents are closer to a water source than their rural counterparts with a majority spending less than 30 minutes collecting water.

One of the biggest challenges in increasing access is being able to expand the supply network. Supply networks rarely extend to the peripheries of urban areas which means that residents living in those areas have to purchase water from alternative sources including water vendors. The cost of water from a water vendor is higher than it would be if purchased from the public supplier. In Ghana, although households are reported as having access to piped water, supply is rarely constant and daily consumption of water has decreased. The problem of sporadic supply was also identified in Rwanda. Whilst some improvements in access to improved water have been achieved for the poorest households, levels of access are still far below those of wealthier households and the problem of expanding supply networks to meet a growing demand for water is going to remain a significant challenge for the foreseeable future.

### **Electricity**

Access to electricity is defined as having an electricity connection in the house but only legal connections are counted. In all four cases, the percentage of urban households with access to electricity has increased and levels of access remain higher in urban areas than rural ones.

Levels of access vary from country to country. In Rwanda and Tanzania, access to electricity nationally is much lower than in Cameroon and Ghana. In Rwanda and Tanzania, only the wealthiest households in urban

areas have an electricity connection in the house. In Cameroon and Ghana, even some of the poorest urban households have access to electricity but in Ghana only those with building permits are allowed to legally connect to the network. Poorer households are more likely to have a shared connection and consequently end up paying more for their electricity than a single household. In many cases electricity tariffs are structured so that those with the lowest consumption pay the least but in the case of a shared connection, consumption is artificially high resulting in the application of a more expensive tariff.

Expanding the generation and transmission capacity of a network requires large capital investments and in all four countries, demand for electricity is outstripping existing generation capacities, which leads to power cuts. Illegal connections and non-payment of bills, including those of corporate clients, leads to additional losses which were highlighted as a particular challenge in Cameroon and Ghana. The cost of finding and cutting illegal connections is high and the process is time consuming, consequently, the costs of operating and maintaining the network are increased.

For wealthier households, national generation capacity and the availability of a transmission network is more of a constraint in gaining access to electricity than the financial cost. For poorer households, both the lack of infrastructure and the cost of the electricity will determine the ability of households to gain legal, formalised access rather than relying on an illegal connection.

## Lessons learned

Table 1 presents how the services compare to each other in relation to their percentage coverage in each country. The percentages are taken from the most recent DHS survey for each country and represent the coverage of households in urban areas.

<b>Service ranking in urban households</b>	<b>Cameroon (DHS 2011)</b>	<b>Ghana (DHS 2008)</b>	<b>Rwanda (DHS 2010)</b>	<b>Tanzania (DHS 2010)</b>
1st	Improved water (91.1%)	Electricity (84.8%)	Improved water (89.6%)	Improved water (80.0%)
2nd	Mobile phones (87.8%)	Mobile phones (78.5%)	Mobile phones (71.8%)	Mobile phones (77.5%)
3rd	Electricity (87.5%)	Improved water (76.8%)	Improved latrine (49.6%) <i>(of which non-flush = 44.1% and flush=5.1%)</i>	Electricity (45.4%)
4th	Improved latrine (46.4%) <i>(of which non-flush = 28.0 and flush= 18.4%)</i>	Improved latrine (15.6%) <i>(of which non-flush= 2.6%and flush=13.0%)</i>	Electricity (44.5%)	Improved latrine (21.6%) <i>(of which non-flush= 6.3% and flush=15.3%)</i>

For the improved latrines, two additional percentages are given in addition to the total coverage. These are the percentage of non-flush improved latrines (e.g. VIP, ecosan) and the percentage of flush latrines/toilets (e.g. pour flush, sewer) in urban areas. Flush toilets are considered as an 'improved' type of toilet for DHS surveys but when flush toilets are removed from the totals of 'improved' figures in Ghana and Tanzania the alternative types of improved technologies represent small percentages of coverage.

Table 1 highlights the significant disparities between the coverage levels of different services within each country, relative to each other. For example, despite being a 'new' service, mobiles phones are already the service with the second highest levels of coverage in all cases and levels are significantly higher than those for improved latrines. In all cases coverage of mobile phones is over 70% whereas coverage of improved latrines is below 50% in all cases. In Cameroon, Rwanda and Tanzania improved water has higher levels of coverage than electricity. However, the service that stands out as being the most challenging is gaining access to an improved latrine. In Rwanda and Cameroon the higher levels of improved coverage are

attributed almost entirely to the use of a pit latrine with a slab which is the lowest type of improved latrine on the sanitation ladder. The use of other types of improved latrine is still very low in all cases. In both Cameroon and Rwanda levels of improved latrine coverage have decreased between DHS surveys.

In conclusion, in all cases, except mobile phones, access to the services studied for this project is better in urban areas than in rural ones, but the poorest households are always the least likely to have access. Closing these gaps in access to services presents major challenges for the governments of these countries and improving access to sanitation should be looked at as a matter of urgency. Open defecation and sharing of latrines remains very high in Ghana and in Tanzania, despite improvements over recent year, most of the gains have been made by wealthier households, not the poorest.

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### References

- Ghana Statistical Service (2012). *Population and Housing Census: summary report of final results*. Accra: Sakoa Press Limited
- ILE (1990). *A manual of road lighting in developing countries*, Institution of Lighting Engineers, Rugby.
- Medland, L, Amekudzie, S, Smout, I, Fisher, J, Cotton, A, Sansom, K, Ngouanet, C, Oteng-Ababio, M, Twarabamenye, E & Lazaro E (2014). "Mapping of Service Provision in low-income areas – Volume 1: Main Report". *RurbanAfrica Deliverable D4.1*, Department of Geosciences and Natural Resource Management, University of Copenhagen, Denmark
- National Bureau of Statistics (2013). *2012 Population and Housing Census*. United Republic of Tanzania
- National Institute of Statistics (2012). *Statistical Yearbook 2012*. Republic of Rwanda
- National Institute of Statistics (2011). *Annuaire Statistique du Cameroun*. Yaounde: Institut National De La Statistique.
- Ngouanet, C, Oteng-Ababio, M, Twarabamenye, E, Lazaro E, Mishili F & Mgeni D (2014). "Mapping of Service Provision in low-income areas – Volume 2: Country Reports". *RurbanAfrica Deliverable D4.1*, Department of Geosciences and Natural Resource Management, University of Copenhagen, Denmark
- UNEP (2014). *En.lighten: Efficient lighting for developing and emerging countries*. Available at: <http://www.enlighten-initiative.org/> (accessed 4<sup>th</sup> March 2014)

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