

Rechargeable Battery Availability: *Consumer access*

This Market Intelligence Note presents the findings of a 2011 field study documenting the availability of rechargeable batteries in various regions of five African countries. The intention is to inform manufacturers about the types of rechargeable batteries (<12V) available at local retail shops in areas where off-grid lighting is prominent.

In the life of an off-grid lighting product the battery is often one of the earliest components to fail. Fortunately, the failure of the battery does not necessarily need to lead to the end of the product's life. With access to replacement batteries the consumer can continue using the lamp with minimal investment, provided that the product is designed to allow for easy battery replacement. However, for many of off-grid lighting users in Africa, local access to the replacement batteries required by their product is limited at best.

This briefing documents the presence of rechargeable batteries in five African countries: Kenya, Tanzania, Ghana, Senegal and Mali. Availability was recorded in mid-sized towns and nearby rural villages where off-grid lighting was prominent. We recorded the chemistry, size, and battery price in various retail shops. With one exception, batteries considered in the study had voltages below 12 VDC.

The goal is to inform manufacturers about the current market presence and price of rechargeable batteries. This Note may be used as a guide to, a) understand whether the batteries used in a product can be easily replaced within local retail markets, b) select battery types for product design if the goal is to rely on locally available replacement, and c) consider distributing replacement batteries to the local markets where a product is sold.



Highlights from the field

(see Table 1 and Figure 1 for details)

1. Lithium-ion mobile phone batteries were the most prevalent rechargeable battery in all 5 countries.
2. NiMH AA, Lead-acid (<12V), NiMh AAA, and NiCd AA were moderately available in some locations.
3. Rechargeable D-cell and 9V batteries had a very low presence in all five countries.
4. Battery availability was most limited in Mali. Only Li-ion and lead-acid batteries were observed.
5. Kenya, Tanzania and Ghana had very similar battery availability profiles.
6. At least some type of rechargeable battery was available in all mid-sized towns surveyed. They were not found in nearby villages except in some cases in Mali.



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Table 1 shows the types of batteries recorded and the number of towns and shops visited in each country. Under each country the first column refers to the number of shops that carried the indicated battery type. The second column shows the percentage of shops visited in the country that carried the battery type. Within each town visited the data collection team identified at least eight retail shops that sold batteries and purposefully targeted a range of shop types including electronic, hardware, solar specialist, photographic, cell phone, automotive, electrical, supermarkets, and general stores. This study is not meant to be representative of all the batteries available, but does provide a general description of market availability. More detailed data are available on request.

Table 1. Battery types available in towns and villages surveyed in the five countries.

	Kenya		Tanzania		Ghana		Senegal		Mali	
# of Towns	4		3		2		4		4	
# of Shops	31		26		16		32		36	
Li-ion ¹ : Generic ²	9	29%	3	12%	8	50%	12	38%	18	50%
Li-ion: Brand Name ³	2	6%	7	27%	10	63%	24	75%	27	75%
SLA 6V	0	0%	5	19%	4	25%	0	0%	0	0%
SLA 12V	9	29%	1	4%	0	0%	0	0%	2	6%
Lead Acid 6V	1	3%	0	0%	0	0%	0	0%	5	14%
Lead Acid 12V	0	0%	0	0%	0	0%	0	0%	7	19%
NiMH AA	14	45%	11	42%	6	38%	8	25%	0	0%
NiMH AAA	7	23%	4	15%	3	19%	4	13%	0	0%
NiMH 9V	0	0%	0	0%	4	25%	0	0%	0	0%
NiMH D	2	6%	1	4%	0	0%	0	0%	0	0%
NiCd AA	1	3%	1	4%	1	6%	9	28%	0	0%
NiCd AAA	1	3%	1	4%	0	0%	4	13%	0	0%
NiCd 9V	0	0%	0	0%	1	6%	0	0%	0	0%
Unkown battery	1	3%	0	0%	0	0%	0	0%	0	0%
# in Rural ⁴	0		0		0		0		5	

¹Battery type abbreviations: Li-ion = Lithium Ion; SLA = Sealed Lead-Acid; NiMH = Nickel Metal Hydride; NiCd = Nickel Cadmium

²Generic refers to the Li-ion cell phone batteries that are generic versions of the brand name battery types.

³Brand Name refers to the Li-ion cell phone batteries that shop keeps indicated were the original version, i.e. not imitation/generic. The most prevalent name brand Li-ion batteries found were Nokia, Samsung, LG, Sony, Ericson, and Motorola.

⁴This row indicates the number of shops found in the rural villages selling batteries.

Figure 1 reports the median price per milliamp-hour capacity of the five dominant rechargeable battery types observed in each of the five countries. Lead-acid batteries were the least expensive in all countries where they were present. In most cases, the prices for Li-ion and NiMH batteries were relatively similar. Key exceptions were Ghana, where NiMH AAA batteries were much more expensive than Li-ion or NiMH AA batteries (note: this was based on a small sample), and Senegal, where NiMH AA batteries were significantly less expensive. NiCd batteries were only found in significant quantities in Senegal, where they were priced at a level that was similar to NiMH and Li-ion batteries.

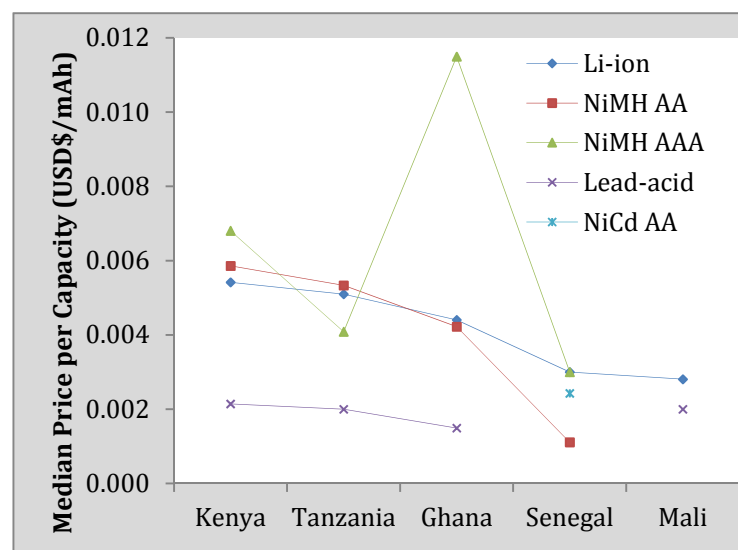


Figure 1. Median price (US\$) per unit storage capacity (mAh) for five battery types in the five countries.