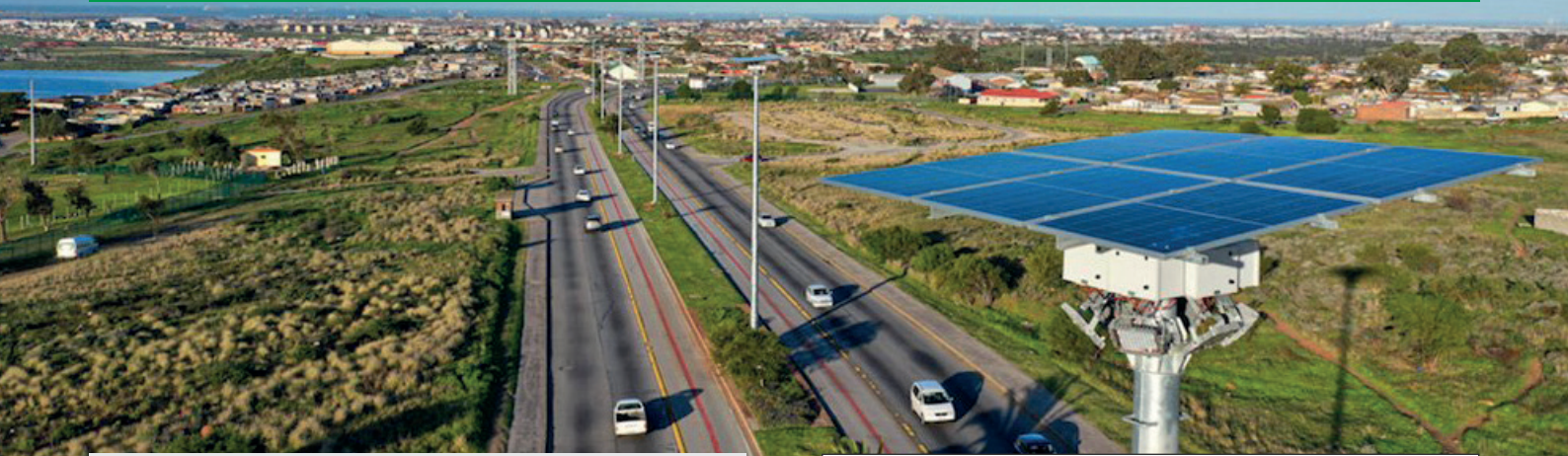


CASE STUDY: ADVANCING SOLAR STREETLIGHTS AND DOMESTIC ENERGY STORAGE IN AFRICA WITH SODIUM-ION BATTERIES



CHALLENGE:

Many African communities rely on solar-powered streetlights and home energy storage to compensate for unstable grid access or off-grid living conditions. However, existing battery technologies present major drawbacks:

- Lead-Acid Batteries: Short lifespan, low efficiency, and require frequent replacement.
- Lithium-Ion Batteries: Expensive, prone to overheating, and depend on scarce, high-cost materials.

A scalable, cost-effective, and reliable energy storage solution is needed to make solar lighting and domestic solar power more accessible and long-lasting.

SOLUTION:

- Solar streetlights equipped with sodium-ion batteries to store energy during the day and power LED lights at night.
- Residential solar systems paired with sodium-ion batteries to provide stable household electricity in off-grid areas.

CONCLUSION

Sodium-ion batteries offer a safe, durable, and cost-effective solution for solar streetlights and home energy storage in Africa. With longer lifespans, better heat resistance, and lower costs, they can boost solar adoption, reduce import dependence, and support sustainable development. As the technology scales, it has the potential to transform off-grid energy access, bringing clean, reliable power to millions.

KEY BENEFITS OF SODIUM-ION BATTERIES FOR THE AFRICAN MARKET

1. Lower Cost for Widespread Adoption

Challenge: Lithium-ion batteries are expensive limiting deployment in underserved areas.

Solution: Sodium-ion batteries are made from abundant, low-cost materials (sodium, iron, carbon), making them a cheaper alternative while maintaining strong performance.

2. Reliable Performance in Hot Climates

Challenge: High temperatures in Africa reduce lithium-ion efficiency and accelerate lead-acid battery degradation.

Solution: Sodium-ion batteries operate efficiently from -30°C to +60°C, making them ideal for extreme heat without performance loss.

3. Safer Energy Storage for Communities

Challenge: Lithium-ion batteries can overheat and catch fire, while lead-acid contains toxic chemicals harmful to the environment.

Solution: Sodium-ion batteries have limited fire or explosion risk and use non-toxic materials, making them safe for residential and public use.

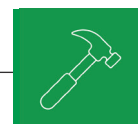
4. Longer Lifespan & Lower Maintenance Costs

Challenge: Lead-acid batteries require frequent replacements, increasing maintenance costs for governments and homeowners.

Solution: Sodium-ion batteries last 3-5x longer than lead-acid, reducing replacement and long-term maintenance costs.



Cost efficient



Resilient



Safer



Durable

Batri design, develop, and manufacture battery materials and cells targeted at the sodium-ion battery industry. The materials utilise locally sourced supply chains and reduce the reliance on imported materials.



Batri's Composite Carbon anode material engineered for sodium-ion batteries

Offering higher power performance while remaining cost effective. Our anode material delivers outstanding:

- initial capacity
- superior initial coulombic efficiency (ICE)
- extended cycle life
- impressive capacity retention and exceptional stability across a wide range of currents



BATRI MATERIALS



We are pioneering a new era of energy storage with our sodium-ion battery cells

Using locally sourced, abundant, and sustainable resources like sodium, carbon, aluminium, our cells deliver exceptional performance while reducing reliance on imports and scarce materials.

Our cells are safer than lithium due to non-toxic and non-flammable electrolyte systems. Due to differing cell chemistries sodium batteries can be fully discharged to 0 V allowing for safer transportation.



BATRI CELLS

Supported by:

