Dealing with the rechargeable battery problem

• With our close ties to the off-grid small home solar system sector, it became clear early on that batteries would be a problem fraction

• We have identified a few principles to guide us
  • Ensure reuse where possible
  • Identify battery sectors and prepare
    • E-Mobility and Commercial Storage longer term
  • Monitor the recycling options
  • Aim to process locally wherever possible
Promoting the reuse of batteries before recycling them is a sustainable approach that aligns with environmental conservation, resource efficiency, and economic considerations.

**Extended Product Life:**
- Reusing batteries in other applications can extend their overall lifespan, maximizing the value derived from the initial manufacturing process.

**Reduced Environmental Impact:**
- Reuse minimizes the environmental consequences of manufacturing by decreasing demand for new raw materials.
- Reusing batteries conserves energy and resources, making the process more sustainable and eco-friendly.

**Promotion of Circular Economy:**
- Reusing batteries aligns with this concept by keeping products and materials in circulation for as long as possible.

**Technological Innovation:**
- Stimulates innovation in refurbishment and repurposing technologies. This can lead to the development of new techniques and processes, fostering a more sustainable approach to battery management.

**Community Engagement:**
- Reuse initiatives can involve local communities in collecting, refurbishing, and redistributing batteries. This engagement can lead to the development of local economies and skills, promoting a sense of environmental responsibility.
Almost 50% of the cobalt used in batteries comes from countries like Congo. Challenges like illegal mining, environmental harm, armed conflicts, and human rights abuses have been rampant in these countries.

Recycling lithium-ion batteries helps reduce the dependency on these materials, improve the security of the supply chain, and reduce the human and environmental impact brought by these batteries.

• Regulation can have unintended consequences
  • Basel prevents regional movement
  • Possible restrictions on black powder shipment

• Competing with new
  • Huge capacity and declining production costs
  • Regular new chemistries and fluctuating material prices

• Result
  • Recycling is uncompetitive unless regulation is supportive and adaptable, complementing commercial approaches
Lithium-Ion Battery Reuse and Re-cycling

- Enviroserve has received over 30,000 kgs of batteries from the off grid solar, e-mobility and other energy storage companies
- Plan to grow to match the market requirements
- We have installed battery testing equipment which gives us the ability to identify faulty battery cells and facilitate the reintroduction of the working battery cells back into the market
- Enviroserve’s aim is to reduce the number of Lithium-Ion Batteries that will need to be shredded and recycled promoting the ability for our battery repurposing partners to grow and develop their businesses
- Enviroserve’s battery testing project comprises of
  - Supporting local entrepreneurs with reliable tested second life cells
  - Identifying cells for re use for manufacturing partners themselves and collaborating in reassembly of battery packs
  - Repurposing custom built batteries for different energy storage solutions
- Recycling
  - With the second life project well under way, focus is on end of life is ongoing to identify the most appropriate scalable solution for Kenya – avoid expensive obsolete plant
Final Thoughts - Outlook

• The business model will need to constantly change to reflect the dynamic battery market
• Volumes will keep increasing but unpredictably
• Regulation should be light touch and supportive
• Challenge to producers
  • Design for reuse
  • Design for recycling
  • Where possible, keep ownership of battery packs and build in end-of-life management – Sell power not hardware, Africa can redefine the game