

**e W A S A**

EPR Waste Association  
of South Africa



# eWASA Li-ion Battery Recycling Programme

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The **EPR Waste Association of South Africa (eWASA)** was established in 2008 to manage the establishment of a sustainable environmentally sound waste management system for the country

- ▶ **EWASA is a Level 2 BBBEE NPC** Producer Responsibility Organisation
- ▶ **Since inception** it has been working with manufacturers, vendors and distributors of Electronic and Electrical goods, Paper & Packaging, Lighting and Portable Batteries as well as waste handlers to manage waste effectively.
- ▶ **This entails:**
  - ▶ Education & Training
  - ▶ Enterprise Development
  - ▶ Research & Development
  - ▶ Beneficiation of waste
  - ▶ Job creation
  - ▶ Social compacts
  - ▶ Manage EPR schemes on behalf of Producers

**WHO IS eWASA?**

# PRODUCER RESPONSIBILITY ORGANISATION

eWASA is registered with SAWIC as the PRO for four sectors under the DFFE S18 Extended Producer Responsibility Registry.

Detailed below is our registration numbers for the individual sectors:

EEE: 19/7/6/E/PRO/20210512/00120210512/001

PACKAGING: 19/7/5/P/PRO/20211123/022

LIGHTING: 19/7/7/L/PRO/20211123/004

PORTABLE BATTERIES: 19/7/5/P/PRO/20230710/045



# Current Challenges for Li-ion Battery Recycling in SA

- ✓ **EXPENSIVE SOLUTIONS** FOR Li-ion Batteries Recycling  
Currently all Li-ion Batteries have to be exported to EU for final recycling/treatment
- ✓ **BASEL CONVENTION**  
Invoking Basel Convention PIC for Transportation of Hazardous Products Trans Boundary
- ✓ **COST NEGATIVE**  
Exorbitant costs paid for recycling of Li Batteries in EU Refineries
- ✓ **Current Recycling facilities locally** charging gate fees higher than producer EPR Levies



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# Current situation in South Africa

- Only 2 compliant facilities for the recycling of lithium-ion batteries in South Africa charging gate fees for recycling
- Lack of reliable data on:
  - the quantities of the waste LIB materials that are potentially available for recycling
  - the origins, the flows, intermediate and final markets of LIB fractions
- Such information is critical in informing the decisions on technology process selection, as well as determining the economics of the selection process

# Local Collaboration in finding Local Recycling solutions between eWASA and other stakeholders

- **eWASA** has engaged with various stakeholders under our EPR mandate to find and establish technology solutions for local recycling of Li-ion Batteries
- **Modular and less Capital-intensive** solutions are being developed locally to have smaller facilities established in main centres.
- **This equates to:**
  - Lower logistics costs
  - Lower critical mass volumes required
  - More economically viable
  - More economically sustainable
  - Ease of transporting various fractions to bigger centralized facilities for final treatment, once aggregated

# Current partnership



# International and transdisciplinary consortia

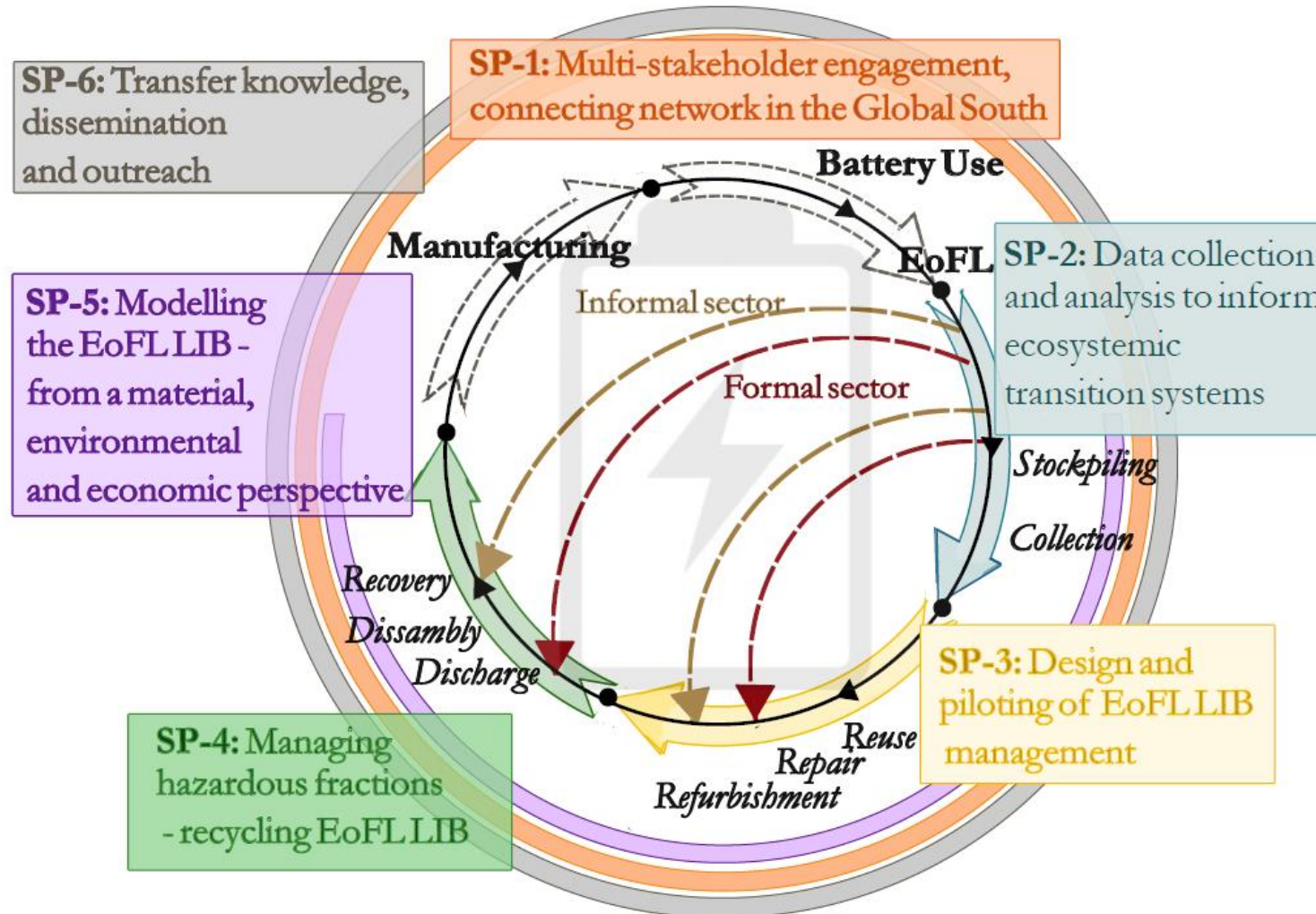
**\*= Minimum required composition of consortium**



Solution-oriented research for development (SORSD) programme



# Pre-proposal

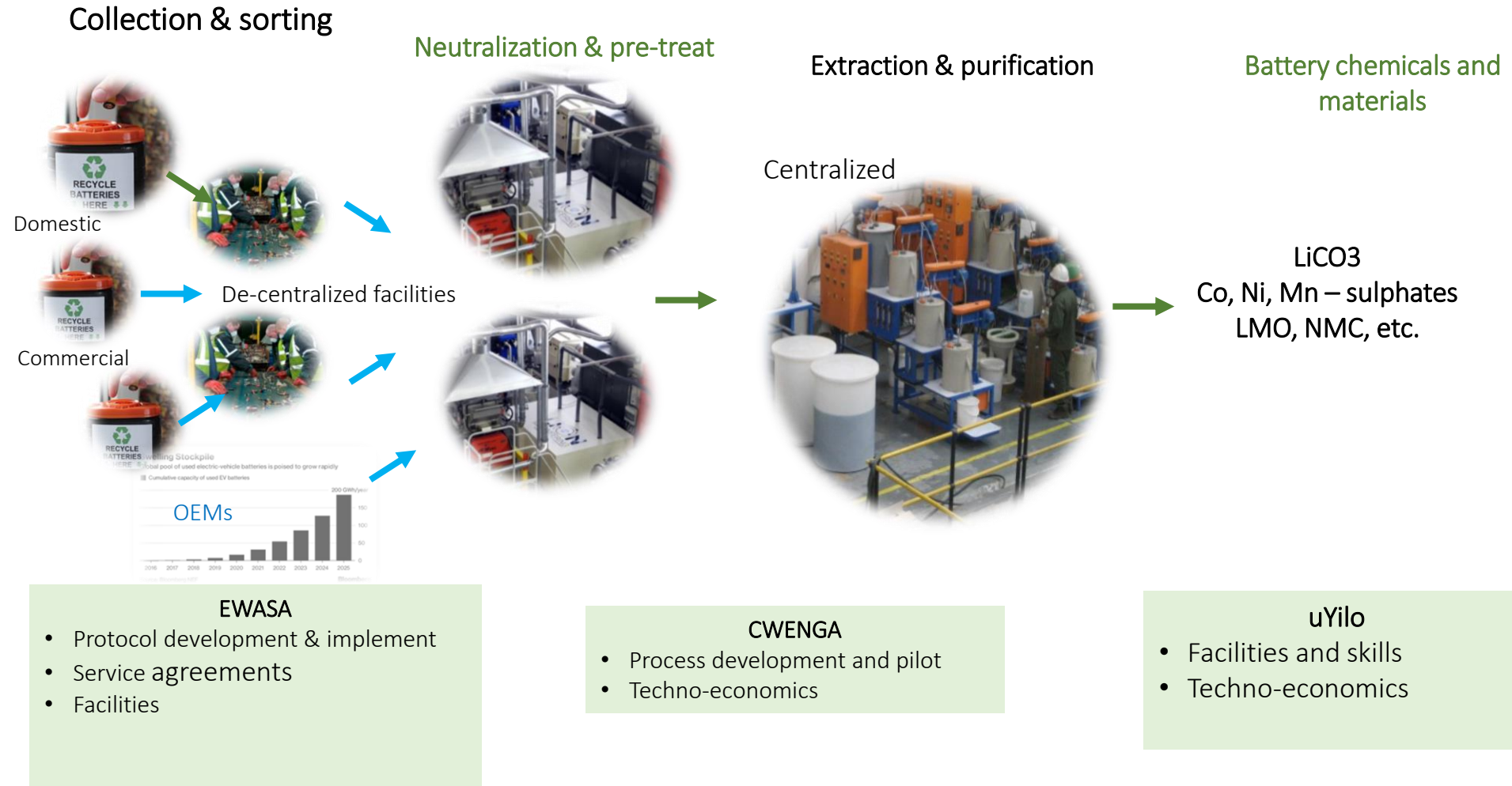


Solution-oriented research for development (SORSD) programme





# Building a Consortium for Li ion Battery Recycling Industry



• eWASA, CWENGA and uYilo are aiming to build a consortium around Li battery recycling in South Africa

# Drivers for recycling of Lithium-ion batteries

- Environmental considerations
- Need for critical raw materials
- Reducing reliance on primary mining activities
- Compliance with regulations
- Generation of local economic activities

# Technology Landscape and Business Case for the Recycling of LIB's in South Africa

## Key findings of Study completed by Mintek

### Low LIB waste collection volumes

- South Africa is estimated to have collected between 6 tons – 10 tons of LIB waste from WEEE recycling activities in 2019
- However, DFFE's banning of landfilling of LIBs (Aug 2012) can change this as was the case with lighting equipment in Aug 2016

### Laptops and mobile phones are the major source WEEE streams for LIB waste recovery

- Laptops and mobile phones are the major source WEEE streams for the recovery of LIB waste in South Africa. There is no evidence of LIB waste recovered from industrial equipment (forklifts, scooters) and electric vehicles joining the recycling value chain

### Storage and transportation of LIBs are major challenges for recyclers

- The storage of LIB waste to accumulate sufficient volumes onsite and transportation of the material to the market are major operational challenges for recycling companies in South Africa due to their highly flammable nature and low collection volumes

### Merchants from North Africa, Middle East and Asia buying LIBs from SA

- As is the case with WEEE plastics and PCBs, there is evidence of some merchants from North Africa, Middle East and Asia, that buy LIBs from South Africa for onward sale to their clients in Asia, but their purchasing patterns are erratic and unpredictable

### Electric Vehicles expected to be the game changer in South Africa's LIB recycling industry

- While Electric vehicles are anticipated to be the game changer in SA's LIB recycling industry, there are currently no end-of-life LIBs from electric vehicles joining the recycling value chain

# Main types of Li-ion battery cell chemistry

Type	Applications
Lithium cobalt oxide (LCO)	Mobile Phones, laptops
Lithium Manganese oxide (LMO)	Hybrid EV, cell phones, laptops
Lithium Nickel manganese cobalt oxide (NMC)	EV, industrial applications, power tools, home energy storage
Lithium iron phosphate (LFP)	Renewable energy storage, e-bikes, electric vehicles (PHEV)
Lithium nickel cobalt aluminium oxide (NCA)	EV, renewable energy storage
Lithium Titanate	EV, electronic devices



Technology landscape report and business case for the recycling of Li-ion batteries in South Africa



# THINGS ARE EASIER WHEN WE WORK TOGETHER.

- ▶ Partnerships and Service Level Agreements
- ▶ eWASA
- ▶ Producers
- ▶ Recyclers
- ▶ Academia
- ▶ Civil Society
- ▶ DFFE
- ▶ NGO's/NFP's



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# THANK YOU

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