



leading sustainability

# Baseline e-waste status in EAC, Ghana and India and implications for Off-Grid Industry

Federico Magalini – Managing Director Sofies UK








- >76 million people worldwide benefited from improved energy access
- >3.4 billion USD savings on lighting and phone charging costs
- Enabling livelihoods, through electrical and electronic equipment (EEE), with outcomes in education, health...

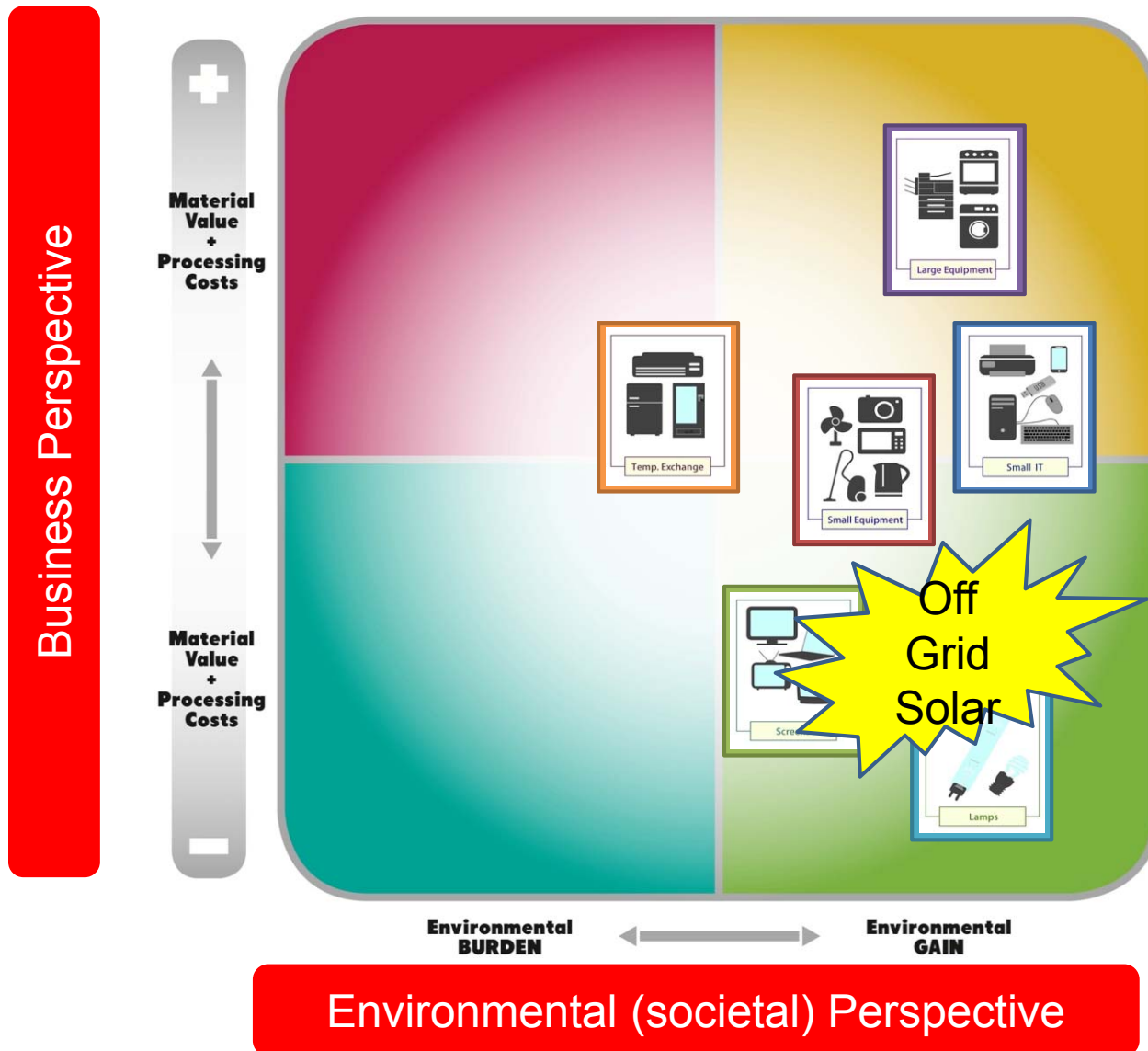
...and, as any other product sooner or later reach End-of-Life (EOL)

### What are the EOL implications?



- **Impact on volume of e-waste generated**
  - Direct (minor, up to 3-4% on total WEEE) Indirect (enabling more EEE)
  
- **Impact on the environment**
  - Few elements of environmental concerns
    - Mainly batteries
    - HG in CFL already substituted with LED
    - Plastics with Brominated flame retardants (?)
  
- **Impact on finances for waste management**
  
- **Impact on policy and legislation**

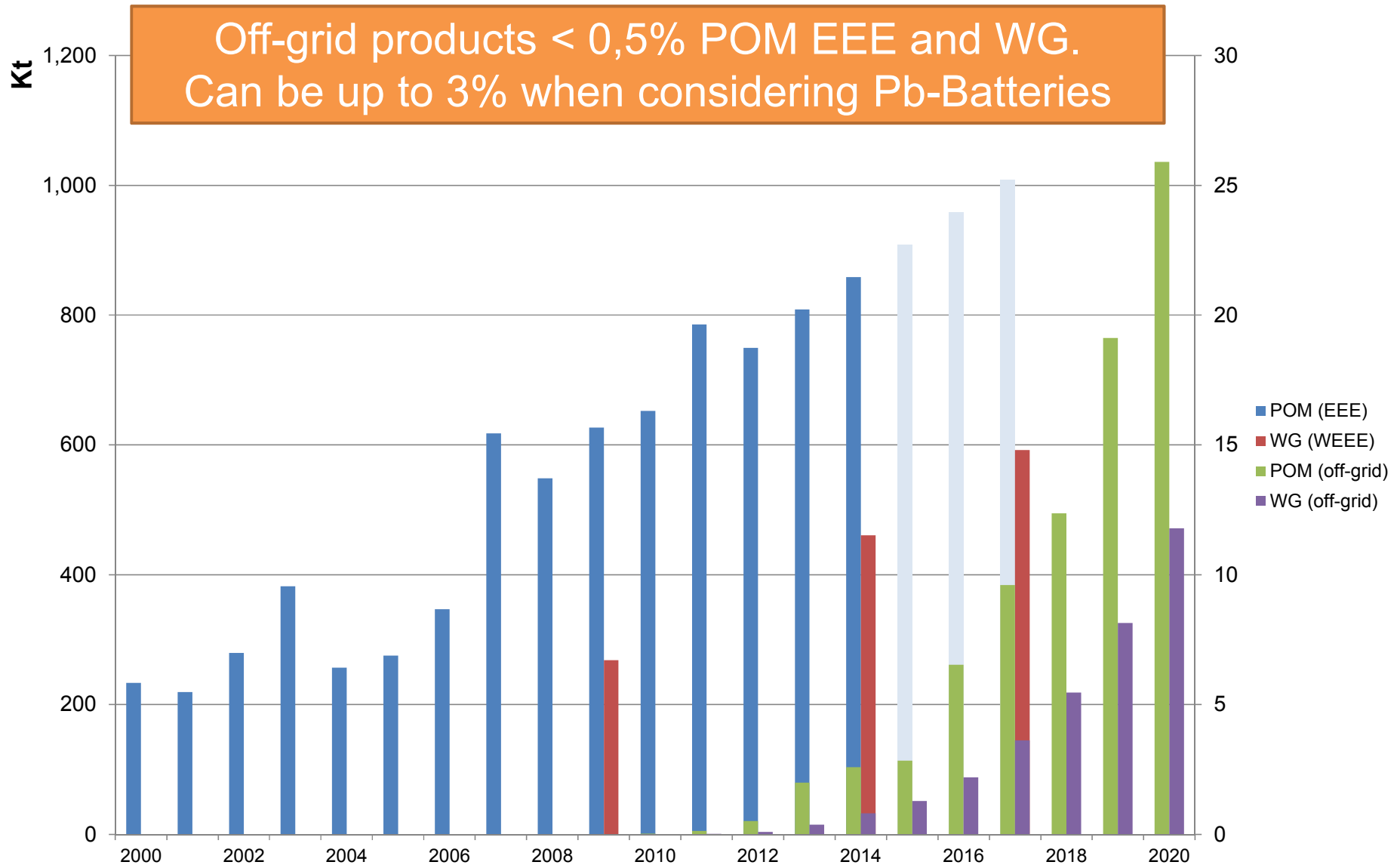
	Category	Policymakers / legislation focus		Business focus
		Weight / size	Environmental /health	Material value
	1. Cooling & Freezing (CFCs)	High	High	Medium
	2. Screen	High	High	Medium
	3. Lamps (with mercury)	Low	High	Low
	4. Large household appliances	High	Low	Medium / High
	5. Small household appliances	Medium	Low	Medium
	6. IT and Consumer Equipment	Medium	High	High
	Off-Grid Solar	Low	Medium	Low



Even within the same waste stream, NOT ALL PRODUCTS are equal:

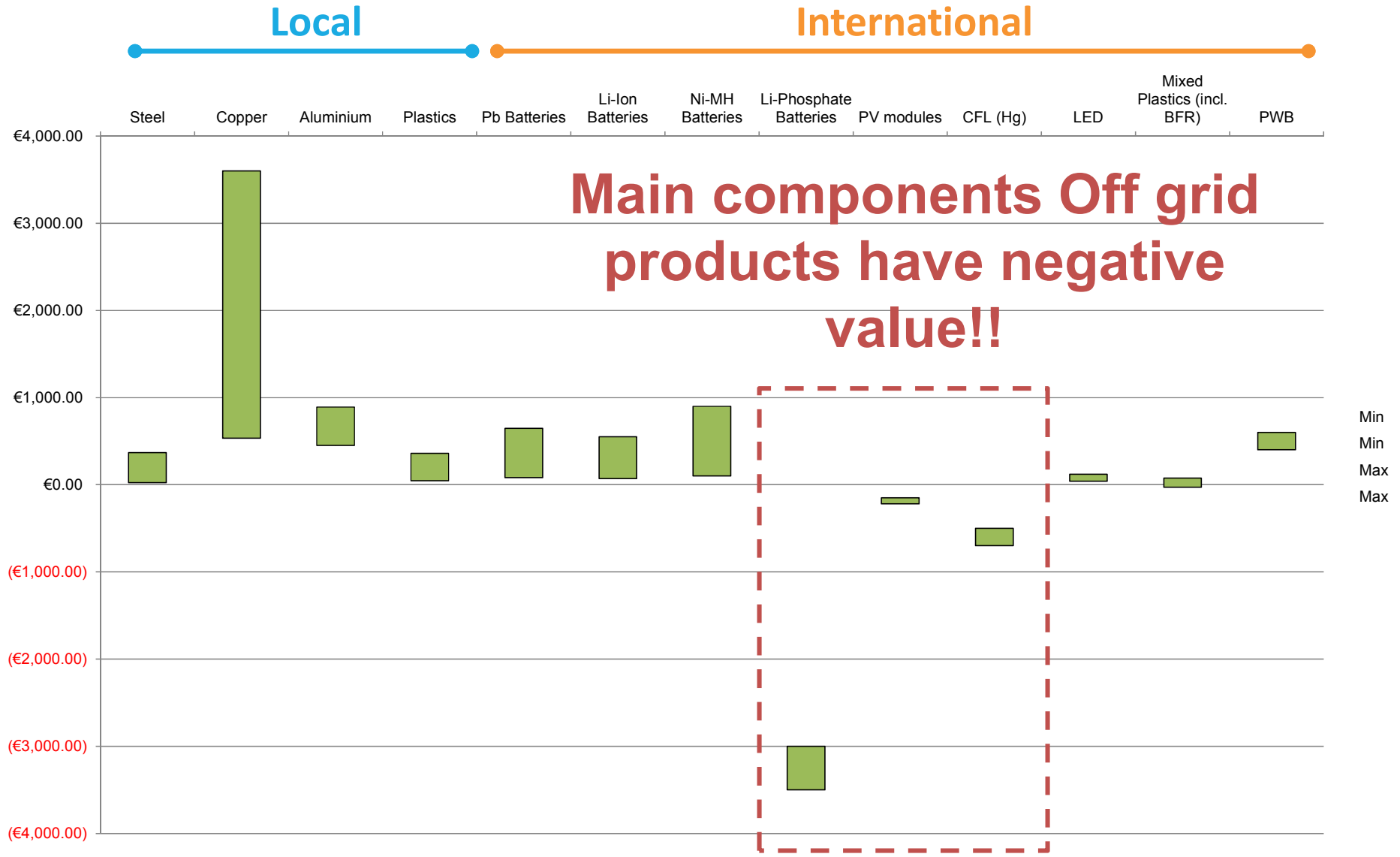
- C&F: Fridges (negative) vs AirCon (positive)
- Mixed WEEE: Mobile phones (very positive) vs small appliances (slightly positive) vs Desktop (very positive) vs Laptop (slightly positive)
- Screens: CRT (negative) vs FPD (close to zero)
- Off-Gird: various...

# EEE, WEEE and Off grid products (t) 14 African Countries



Source: Magalini et Al, DFID Report 2016

Product or Component	Presence of toxic/hazardous components	Relevant from resource management perspective	Relevant disposal costs	Main sources of potential revenues
SPL	CFL (Hg), if present		Plastics, especially if containing BFR	
SHS			Plastics, especially if containing BFR	Copper from cables PWB from control panels
Lamps	Mercury in CFL	Rare Earth in LED (mainly Y, Lu)	CFLs containing mercury	
PV modules	Cadmium and Tellurium	Gallium, Tellurium, Germanium and Indium	Eventually the Glass	Aluminium for larger frames
Batteries	Lead, Cadmium	Lead	Li-Phosphate, Ni-Cd	Lead, Li-Ion, Ni-MH



Source: Magalini et Al, DFID Report 2016



€/product	Worst Case Scenario			Best Case Scenario		
	PC1	PC2	PC4	PC1	PC2	PC4
Access to waste	-0.05 €	-0.05 €	-0.08 €	-0.05 €	-0.05 €	-0.08 €
Collection	-0.02 €	-0.12 €	-0.32 €	-0.00 €	-0.00 €	-0.00 €
Transport to plant	-0.01 €	-0.06 €	-0.17 €	-0.00 €	-0.00 €	-0.00 €
Treatment	-0.62 €	-0.88 €	-0.50 €	-0.54 €	-0.75 €	-0.04 €
<b>Total</b>	<b>-0.69 €</b>	<b>-1.16 €</b>	<b>-1.07 €</b>	<b>-0.59 €</b>	<b>-0.80 €</b>	<b>-0.12 €</b>
Market price	30 €	135 €	380 €	30 €	135 €	380 €
<b>Incidence EOL cost (%)</b>	2.3%	0.8%	0.3%	2.0%	0.6%	0.03%

Worst Case= dedicated collection, CFL, lowest material values  
 Best Case= shared collection, LED, highest material values

Source: Magalini et Al, DFID Report 2016

- **Develop set of criteria to create competitive advantage for compliant producers**
  - Create national focal groups with key stakeholders
- **Develop toolkit for EOL management of Off grid solar products**
  - Organize targeted events & integrate EOL management into energy-access programs
  - Develop campaigns targeting consumers and key players
- **Carry out pilot projects**
  - Map and leverage on existing infrastructures
  - Have baseline for take back cost based on operations

sofies

Background Sofies

# ➔ Who are we?



# ➤ *Our Company's Strengths*



# ➤ *Our Domains of Intervention*

## Smart territories

Making territories more sustainable through systemic and integrated approaches

## Secondary resource and urban mining

Turning wastes into resources

## Sustainable industrial zones

Making industrial areas more sustainable and attractive through industrial symbiosis

## Alternative Energy Systems

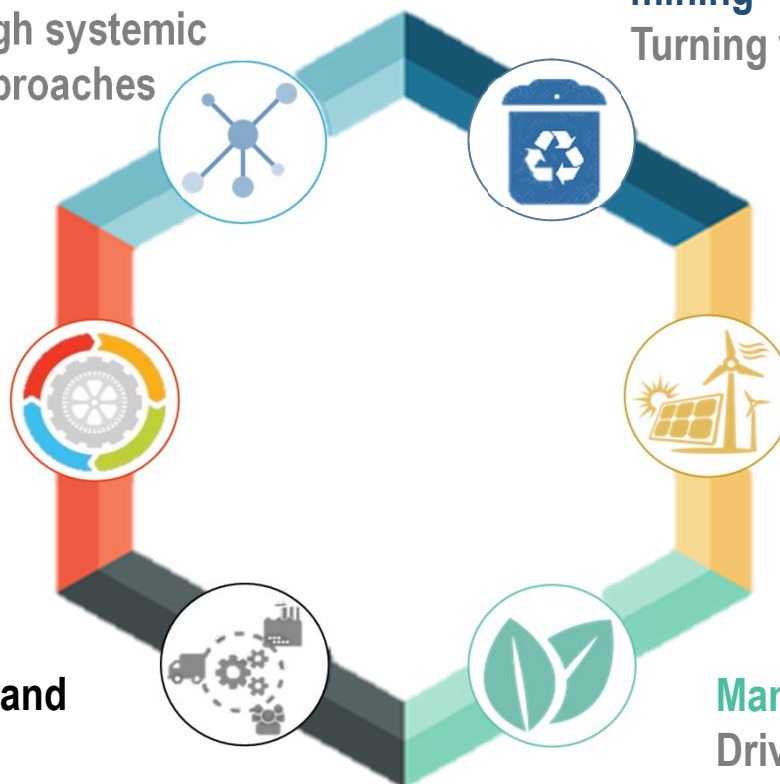
Developing alternative to fossil fuels with climate positive and renewable energies

## Sustainable production and processing

Ensuring competitive and long term business based on an optimal use of resources and energy

## Managing Sustainability

Driving sustainability: Innovate, manage, monitor, asses and report



sofies

Thank you

Q&A: [federico.magalini@sofiesgroup.com](mailto:federico.magalini@sofiesgroup.com)