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leading sustainability

Effective opportunities to achieve Circular Economy in Africa

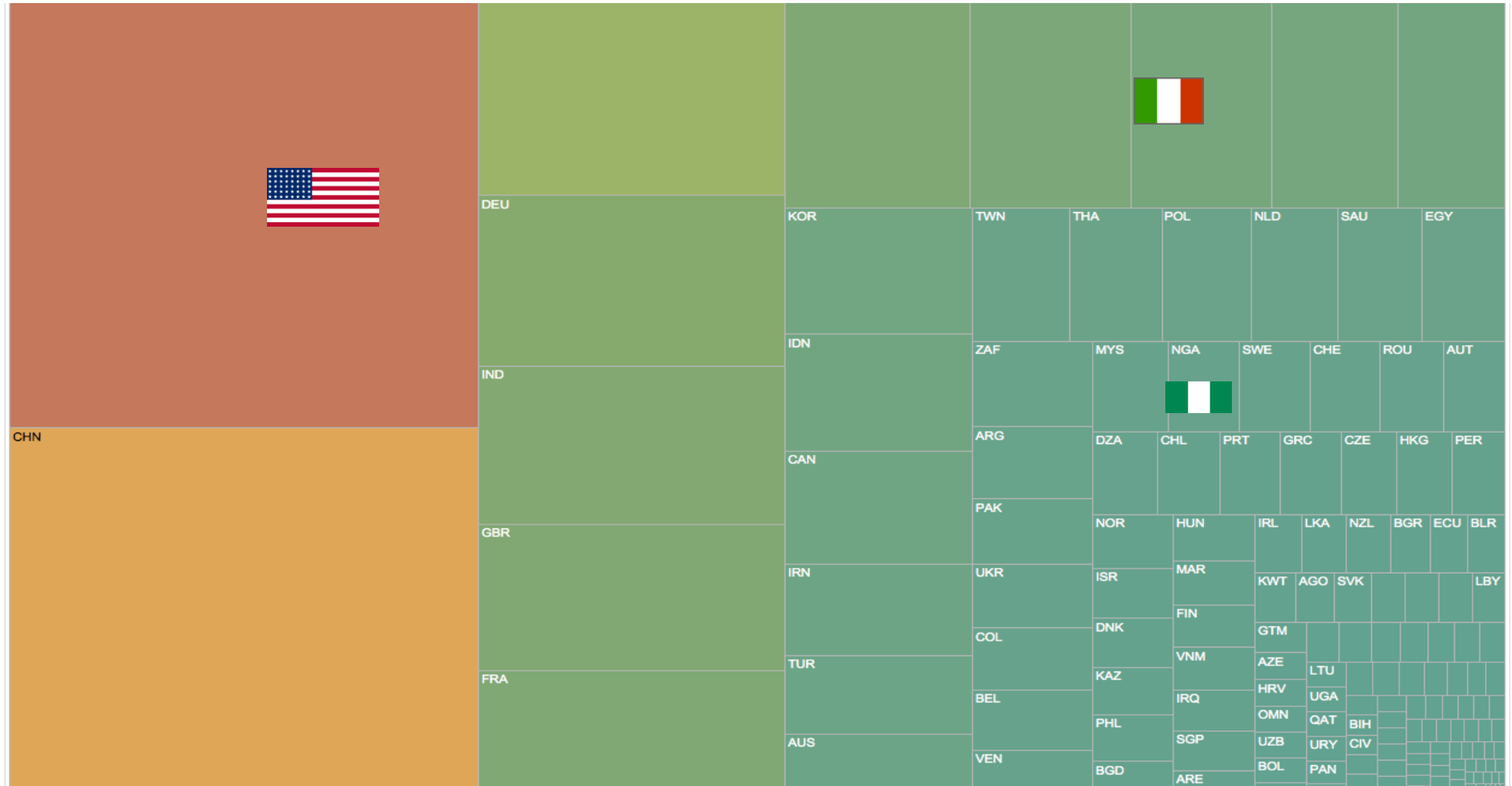
Federico Magalini

Overview legal developments

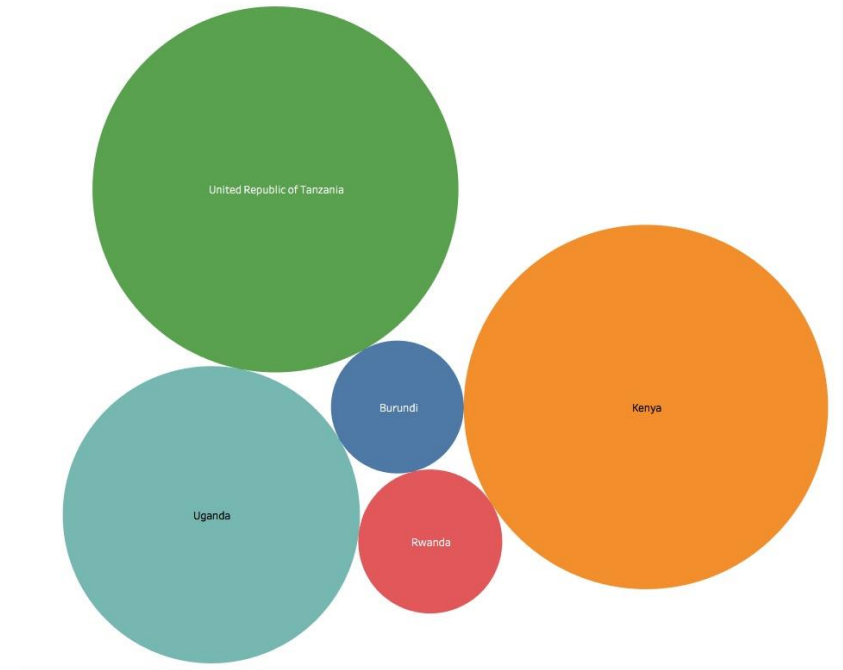
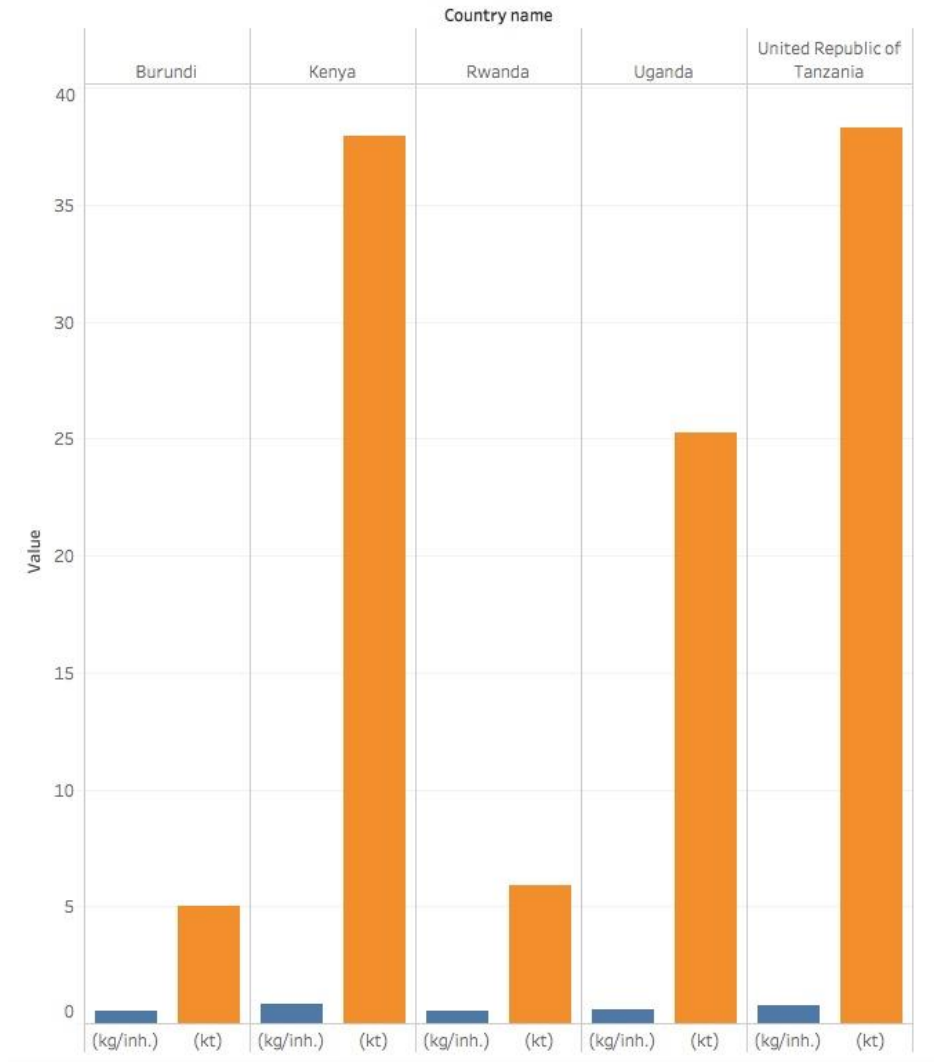
Country	E-waste legislation	Availability recycling infrastructure	Batteries in scope
BUR	First Draft	Fair/Poor	No
KEN	Draft, pending final approval	Fair/Good	Yes
TAN	Expected draft in 2019	Fair/Poor	N.A.
RWA	Published	Fair/Good	Yes
UGA	No Draft	Poor	No
GHA	Published, partially enforced (payment Eco-Levy)	Fair/Good	Yes
NGA	Published, not enforced	Fair/Good	N.A.
CDI	Published, soon partially enforced (payment Eco-Levy)	Poor	Yes

- E-waste legislation:
- Expected publications in EAC countries in 2019 most probably (RWA + KEN in particular)
- Recycling Infrastructure (excl. collection)
- Fair means:
 - one/few e-waste recyclers available, decent operations (mainly manual disassembly) with no “red flags”
 - Handling of lead-acid batteries fraction still a challenge in all countries
- Good means:
 - Some dedicated technologies for de-pollution or treatment available (CRT cutter, Degassing for CFC, cable strippers,...)

WEEE Generated (2014 total, worldwide*)



Overview East Africa



Types of electronics










WEEE flows & priority setting



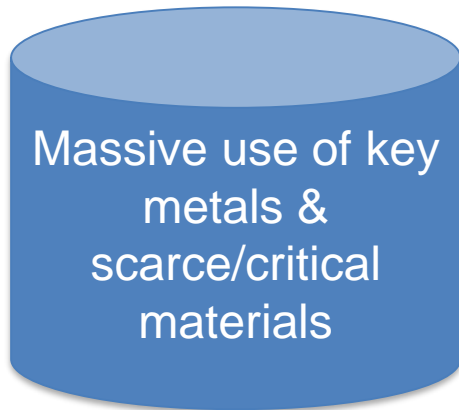
Policymakers / legislation focus

Business focus

Category	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
 7. Solar (Grid/Off-Grid)	High/Low	Medium	Low

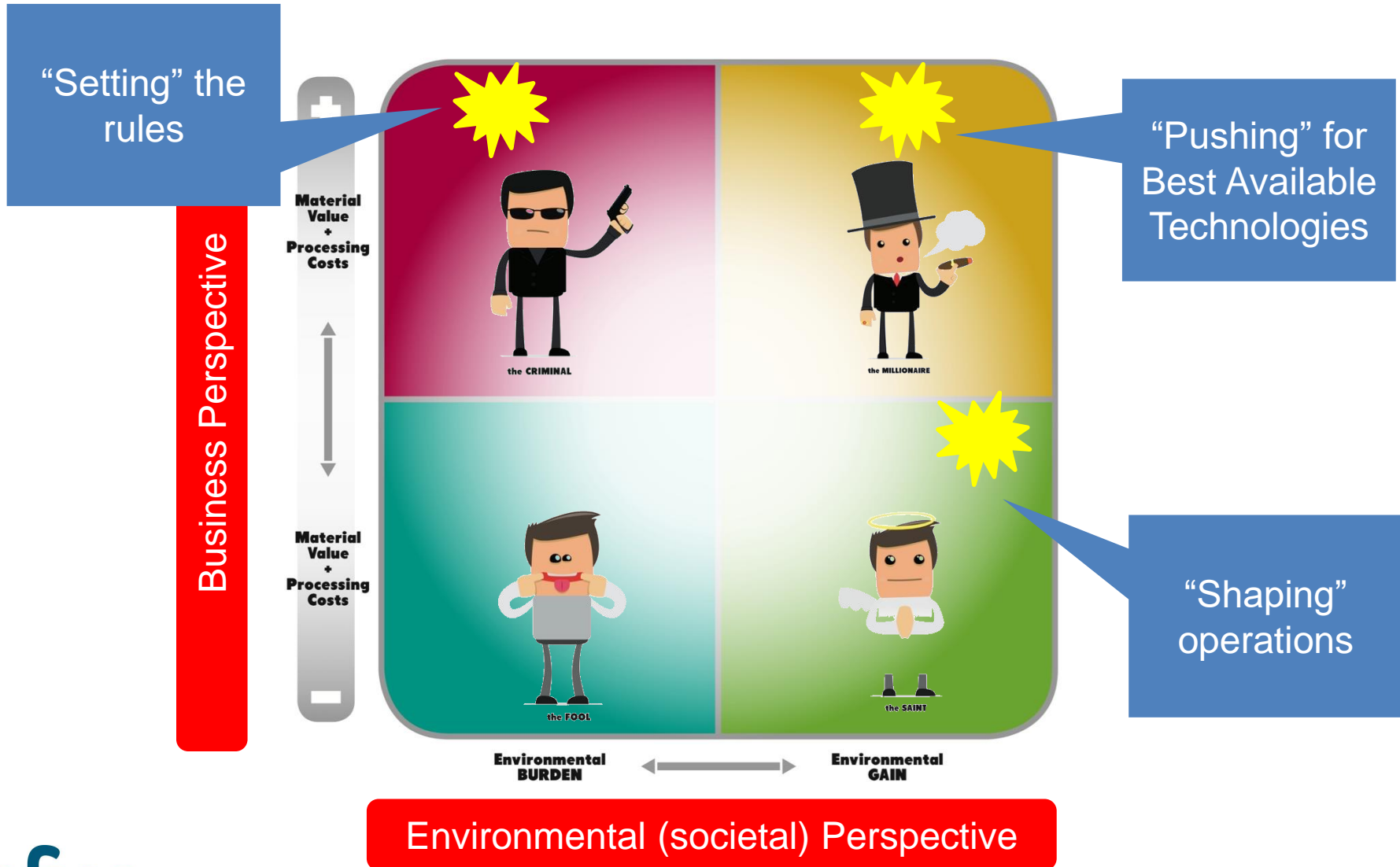
Why E-waste Management policy?

- Market penetration of electronic products is increasing worldwide
- Products are not lasting forever: sooner or later become waste (e-waste)
- 3 pillars characterize e-waste management:

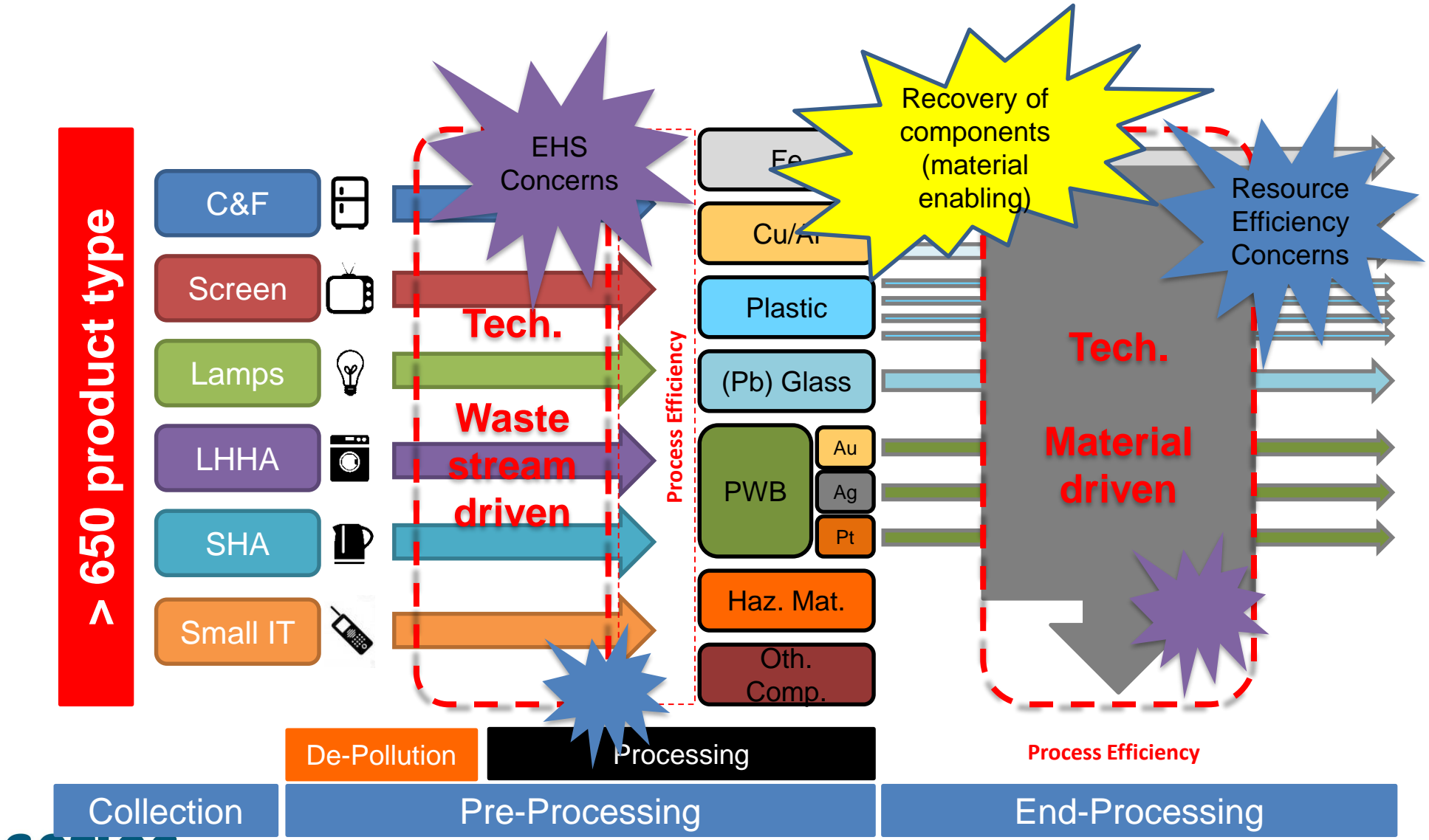


Self-regulation(s) & revenues from treatment not always lead to desired societal benefits

Where & why standards, rules & financing?



Role of Technology & Standards in e-waste treatment



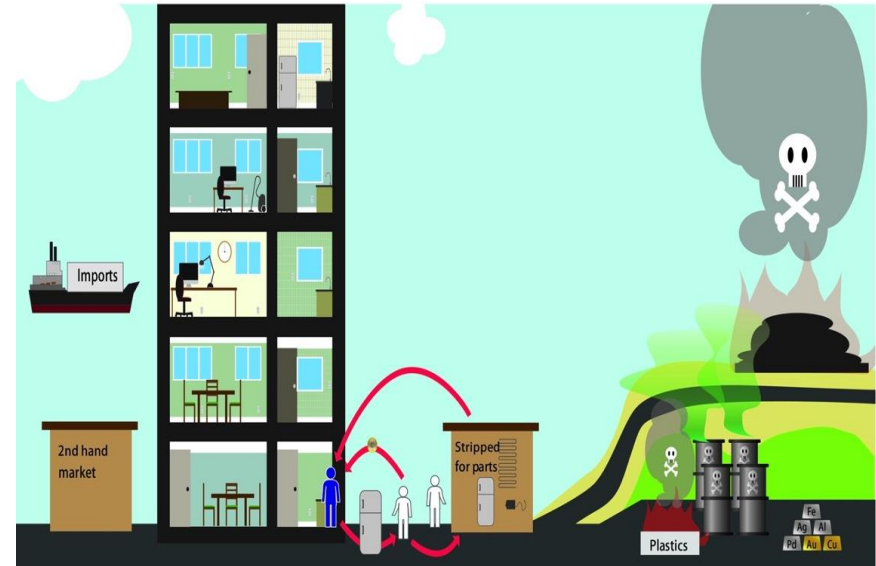
Formal vs Informal approach for e-waste management

Formal System



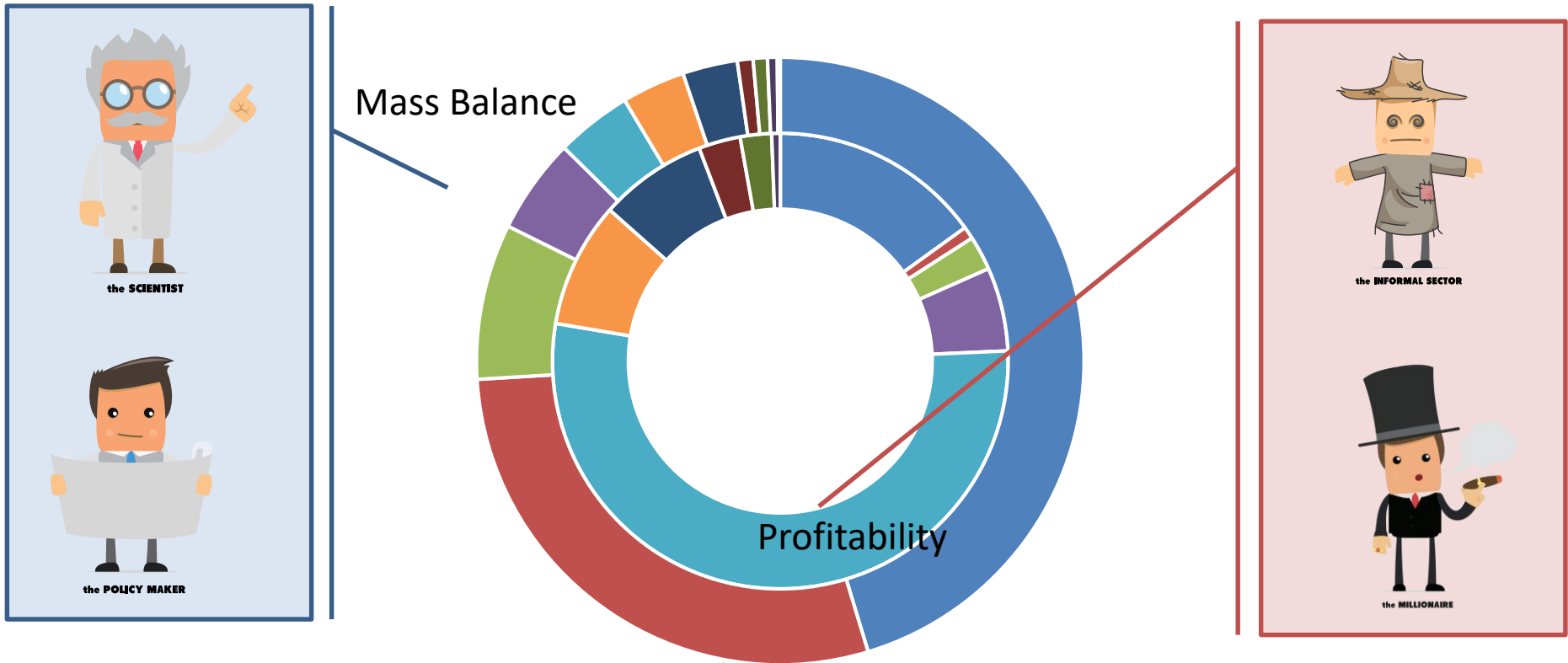
- E-waste management under ESM conditions
- Profit versus environmental & health aspects not decoupled
- Level playing field

Informal System



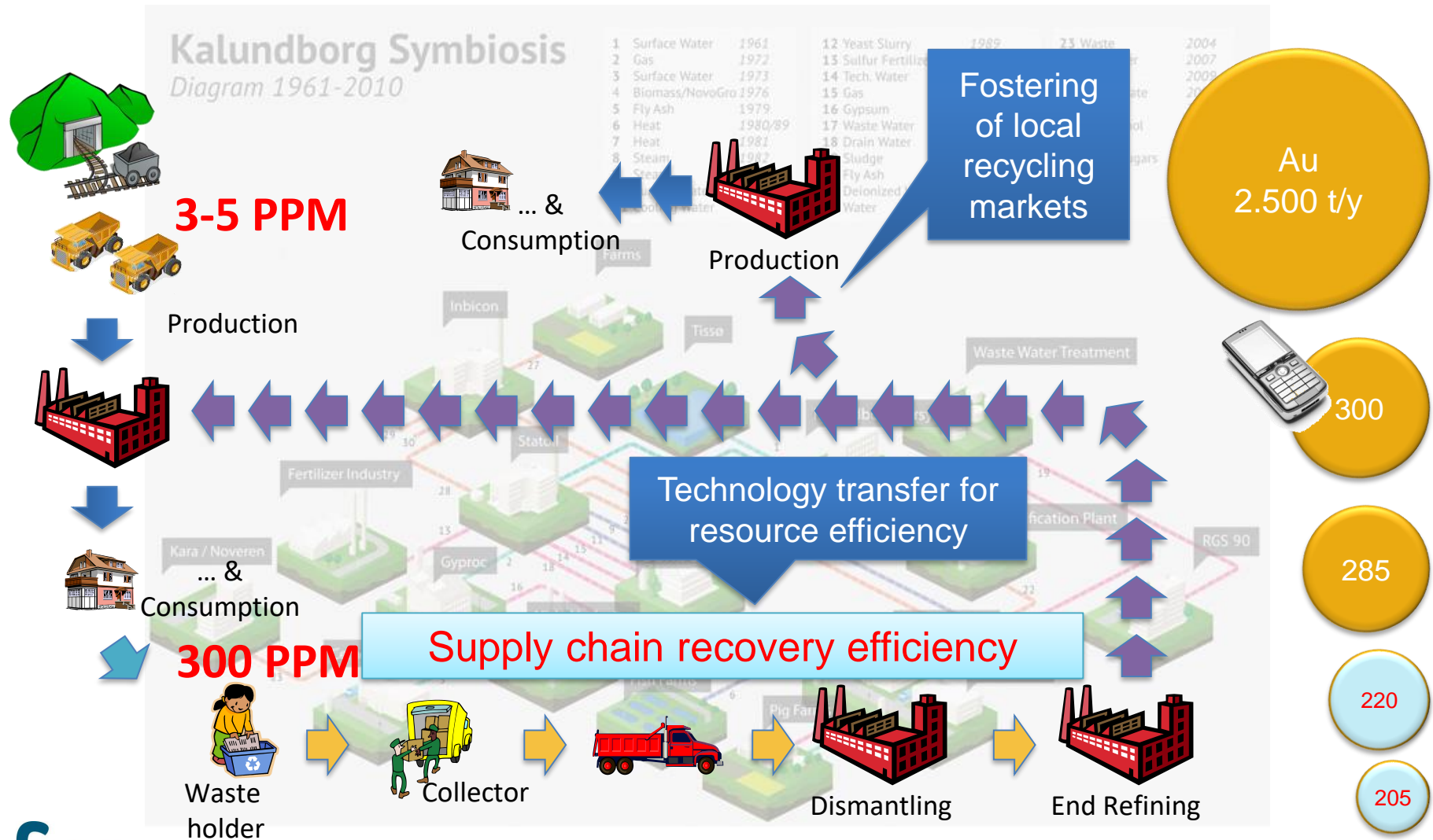
- Focus on value-carrier materials
- Loss of critical metals (low concentration, lack technologies)
- Severe societal impacts
- Barrier to formal players, unfair competition

The Wheels: mass balance & profitability (Mixed EEE)



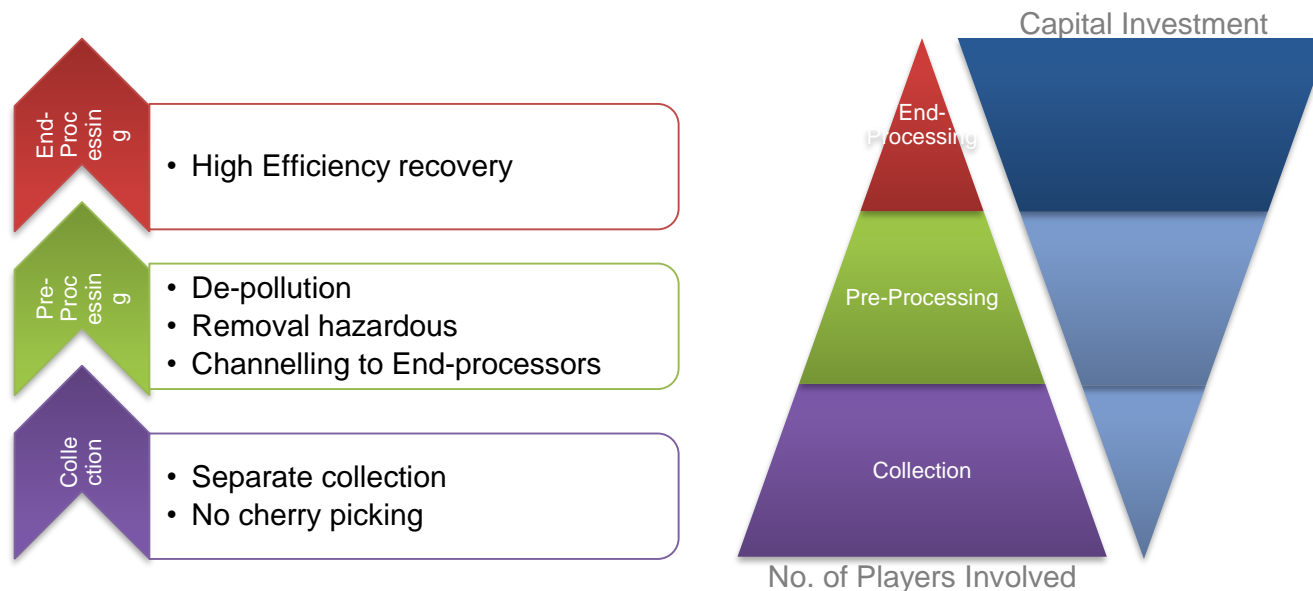
- Ferrous
- Plastics
- Shredder residue
- Motors
- PWB
- HDD & other drives
- Non-ferrous
- Cables (mixed)
- Hazardous waste
- Lead batteries
- Batteries

E-waste as centrepiece for circular & green economies proliferation

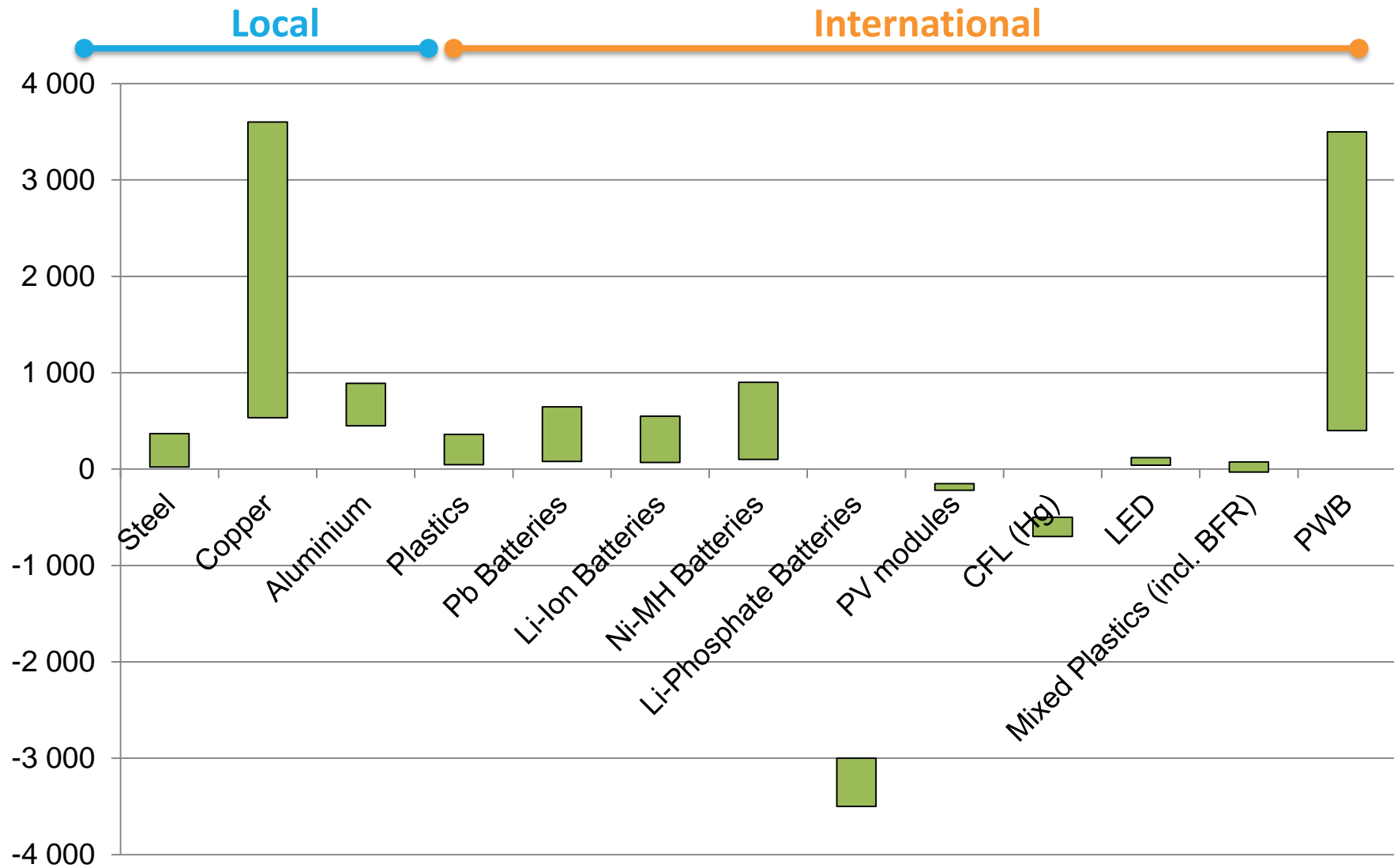


WEEE recycling chain

- Recycling Chain = Collection + Pre-Processing + End-Processing
- Operations are local, national, regional, global
- Not ALL operations can be local due to complex treatment and high investment cost = Leverage on best opportunities = access to the market where needed



The market dynamics (€/t)



Link to national and international markets

Au

Pd

Pt

Fe

Ag

Cu

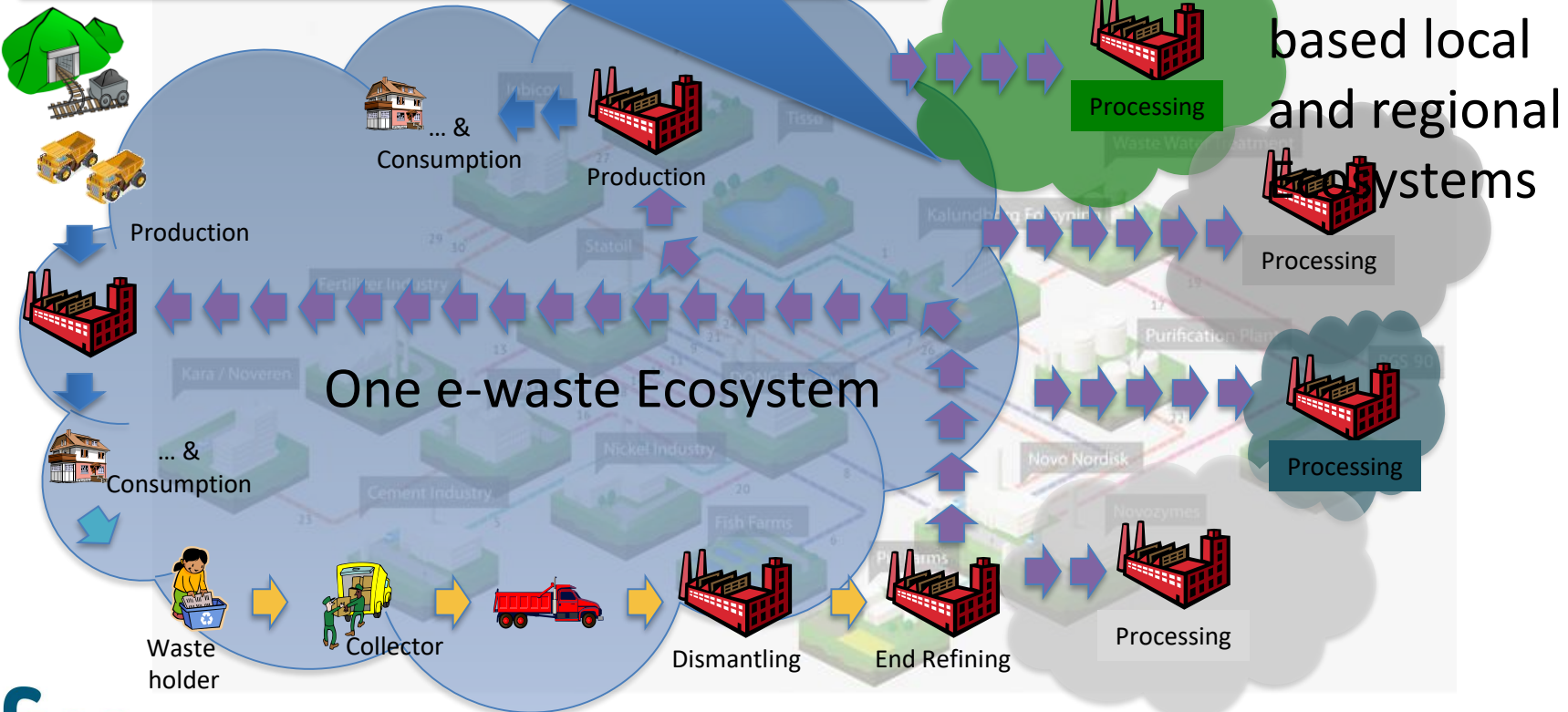
Al

Pb

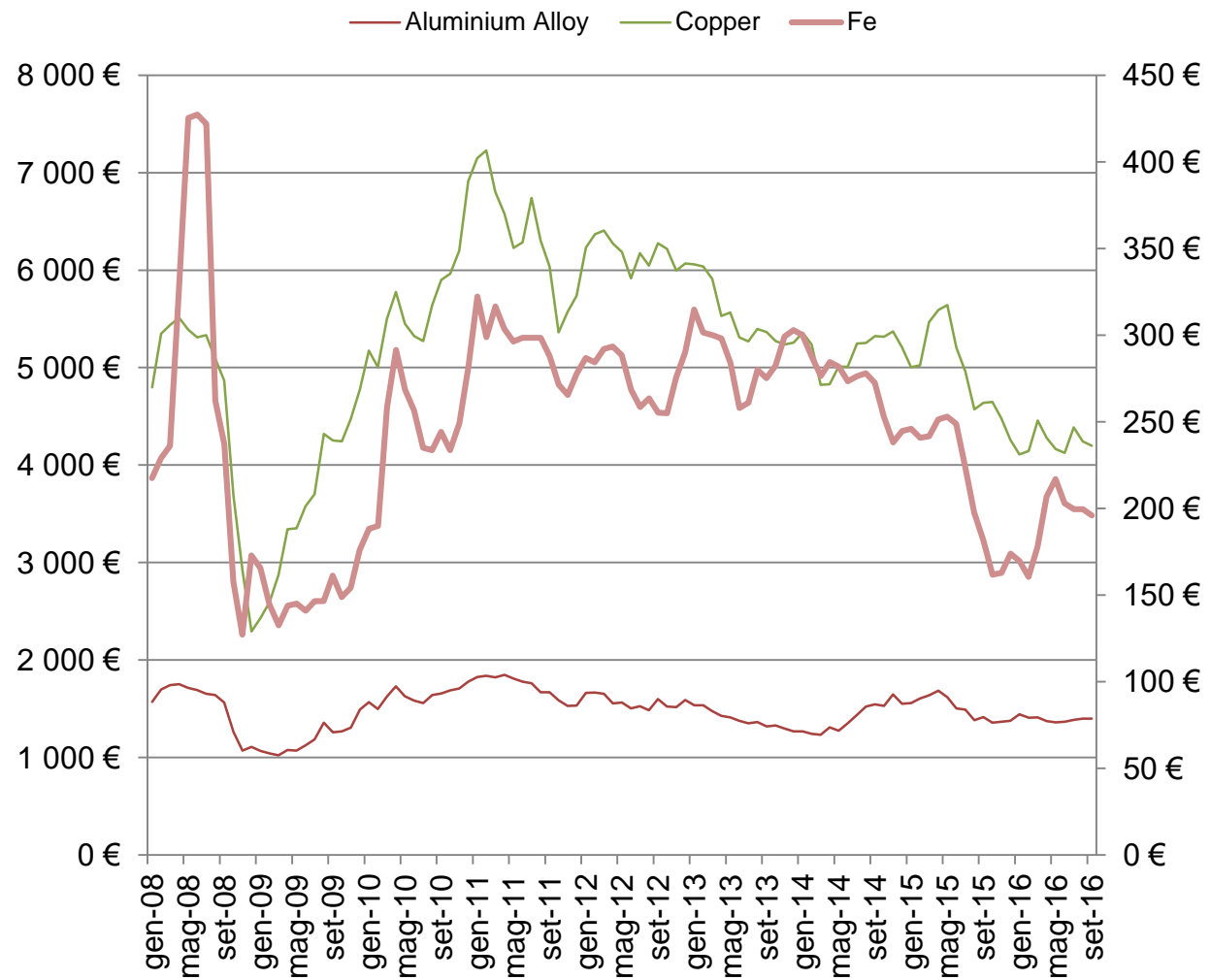
Plastics

Glass

ESM leverage on development of sound local & regional solutions to increase effectiveness



Downstream markets for fractions



- Fractions represent a relevant part of economic balance of recyclers (Fe mainly)
- Base metals/material
 - Fe, Al, Cu, Plastics
- High-value components
 - PWB, HDD,...
- PWB usually indexed on: Au, Ag, Cu
- Critical fractions (negative value)
 - Pb Glass
 - BFR Plastics (25-30% SHA)

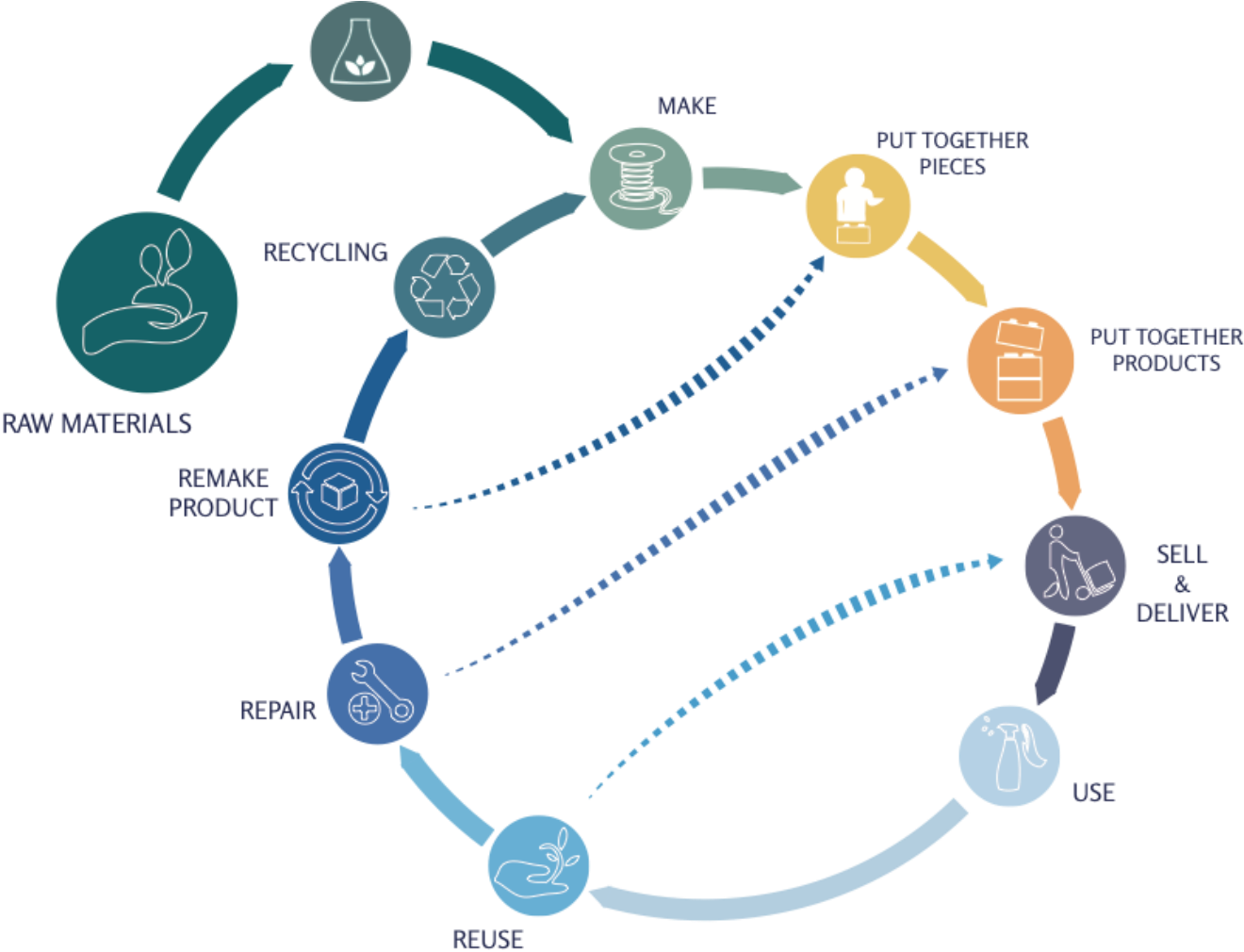
E-waste and various perspectives: example from Off-Grid solar sector

Product or Component	Presence of toxic/hazardous components	Relevant from resource management perspective	Relevant disposal costs	Main sources of potential revenues
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

Practical collection and end-of-life scenarios details

Reverse Logistics Scenario	Waste Stream		
	Small Appliances	Off-Grid SHS	EEE
Retailers & Distributors acting as reverse logistics players	More difficult as products are usually sold and they have low residual value	Easier, for PAYG stream	Never done before, as Industry waiting for legal obligations
Maintenance services	Probably not many products are repaired (low value) but network of repair centres can create a more spread network	Easier, for PAYG stream (also after warranty)	Never done before, as Industry waiting for legal obligations
Network of collection by recyclers	They might have incentive to set-up collection centres (consolidation) if more waste is being collected (e.g. plan in Rwanda, WEEE Center in Kenya); those might complement collection infrastructures from government (currently not available)		For B2B users agreeing to pay to dispose
Involvement/Leverage on informal collectors	Hard to collect in rural areas and for low-value products less appeal from informal sector (no valuable components, only spare parts)	Major risk for Pb-batteries	Hardly possible for formal recyclers, mainly done by informal recyclers or scrap dealers

CE & Africa: Yes, WEEE can



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