

Formalizing the Recycling Sector

To make CMR supplies more sustainable



RESOURCE MANAGEMENT WEEK 2021

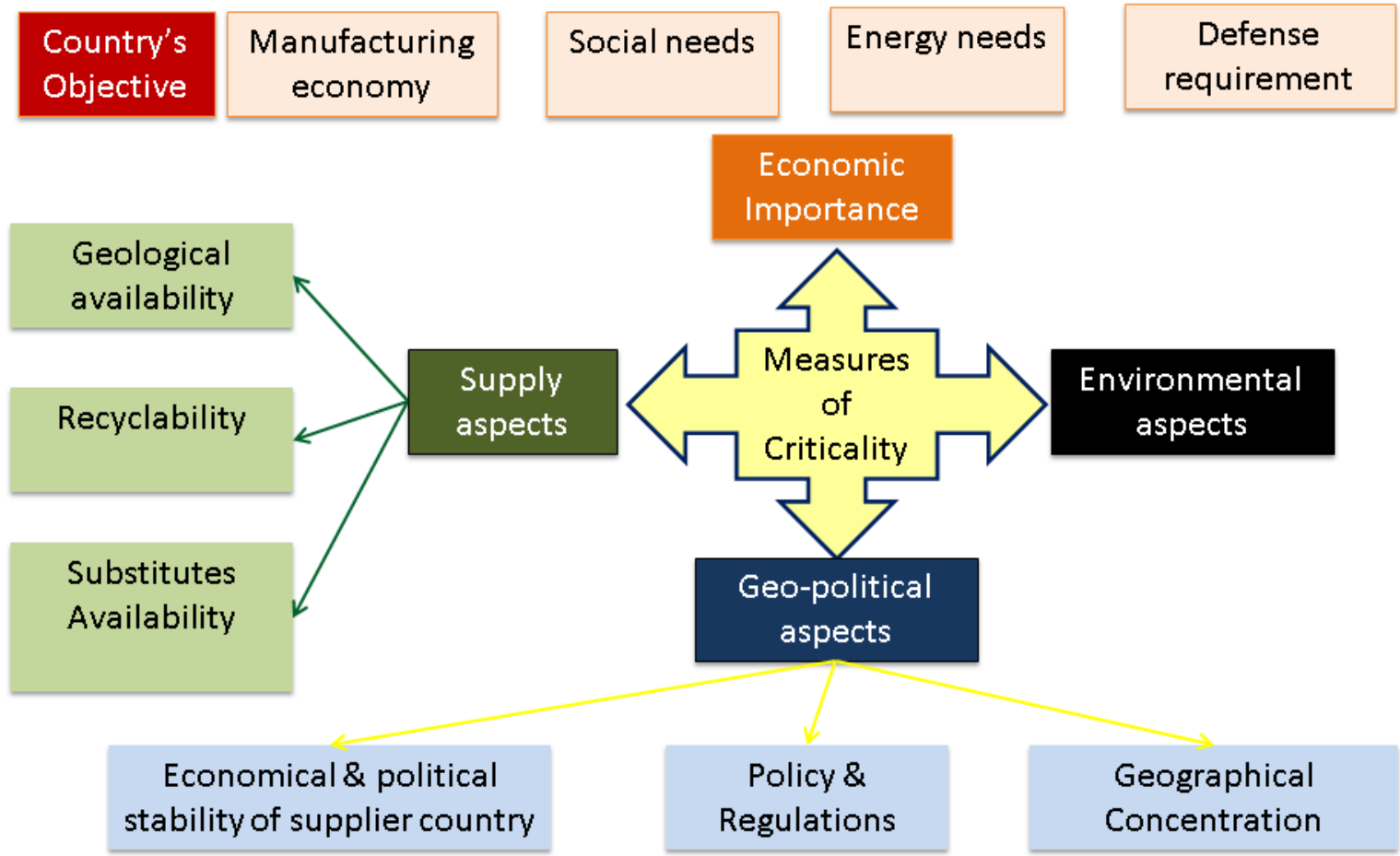
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Critical minerals assessment framework for India

CEEW's approach

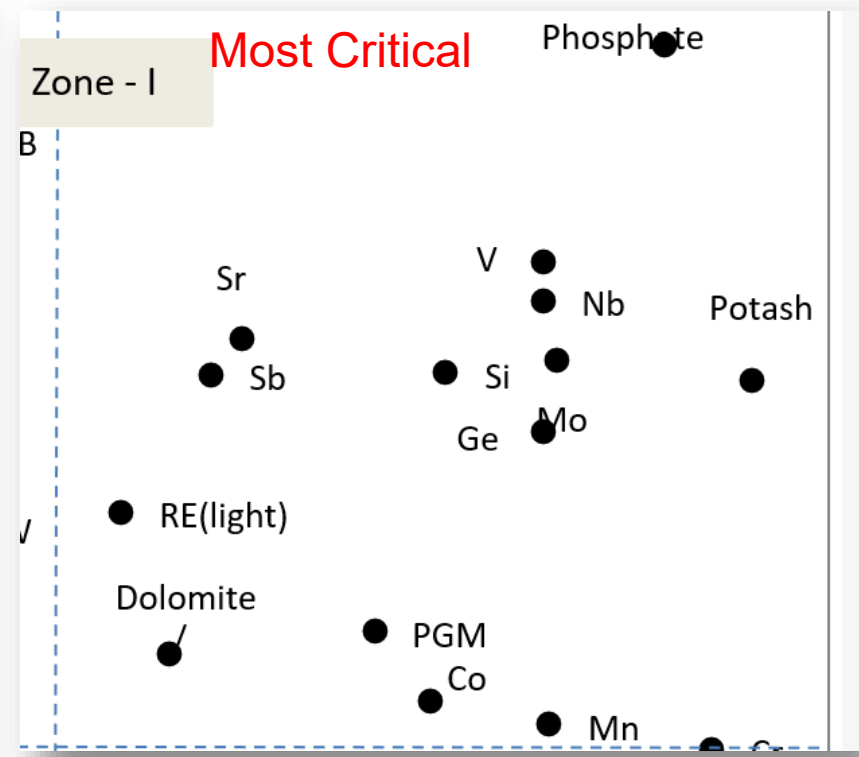
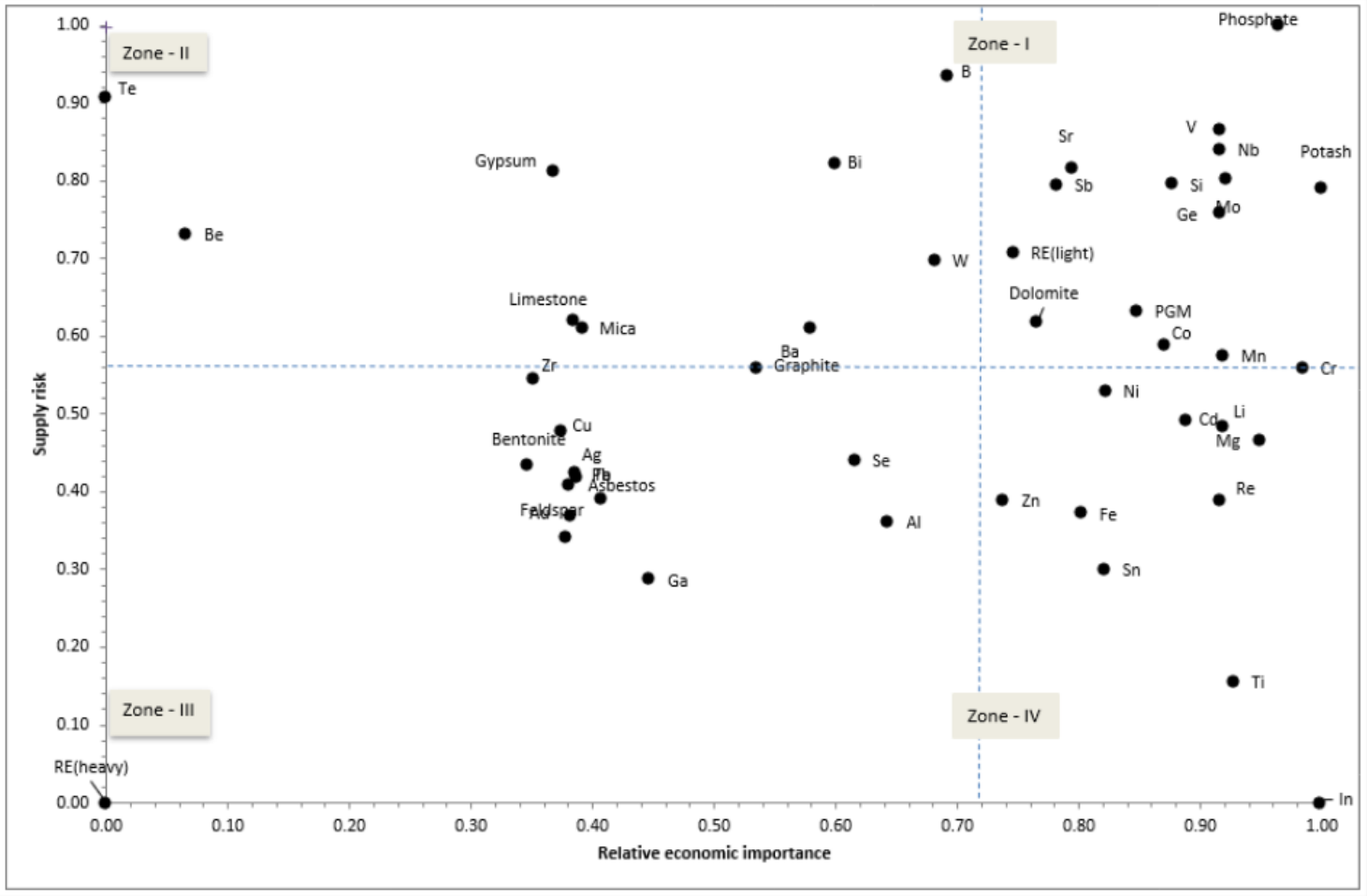
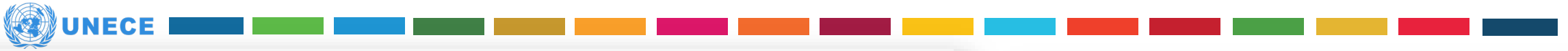


Examined 49 non-fuel minerals across 16 manufacturing sectors

Criticality evaluated against: economic importance and supply risk

Timeline: 2015 and 2030

A snapshot of critical minerals for India in 2030



Renewed focus on domestic value creation and self reliance



Industrial expansion and integration with global value chains

- Recovery support to Micro Small and Medium Enterprises (MSME) for revival and expansion
- Production Linked Incentive scheme to aid 10 critical sectors

Adopting a low-carbon approach

- Squaring between sustainability and energy security
- Decarbonising power and mobility sector

Supporting indigenization of low-carbon solutions

- Solar PV module manufacturing
- National Mission on Transformative Mobility and Battery Storage, 2019

Between 2019 and 2022, India would need about 178 GWh of storage for RE integration, stationary and mobile applications¹

Metal requirements/GWh²:

- 4600 tonnes Li
- 5200 tonnes Mn
- 7300 tonnes Co
- 25000 tonnes Ni

India's import dependency

Major metals commonly recycled



1.02 million ton
(2019-2020)



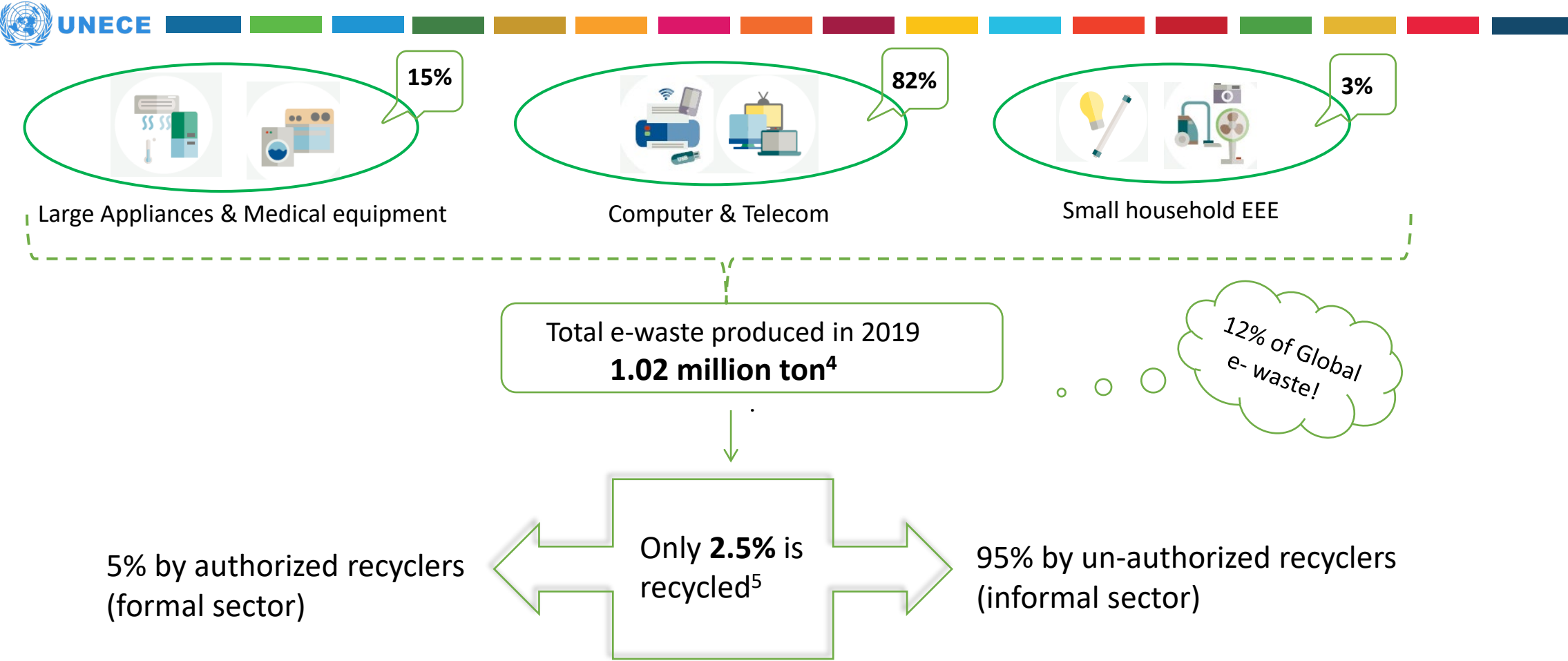
Typical metals collected during recycling:
Al, Cu, Fe, Co, Li, Au, Ag, Nb, Pd, Pt, Se, REL's

India's import of metals- 2019³

Aluminum	6%
Copper	31%
Iron	7%
Cobalt	100%
Lithium	100%
Selenium	100%
Gold	1%
Silver	8%
Rare Earth (L)	100%
Niobium	100%
Palladium	100%
Platinum	100%

India's e-waste value chain

FY 2019-2020



Embedded CMRs and Dependency

Metals we are 100% import dependent on



Minerals	Current Imports		Metals embedded in e-waste flows (ton) ⁷
	Value (\$)	Weight (ton)	
Cobalt	41.6m	1000	937
Indium	n/a	n/a	9
Lithium	11.7m	718	0
Tantalum	1.7m	18	80
Tungsten	17.4m	1400	64
Beryllium	1500	0.036	0.4
Gallium	n/a	n/a	75
Germanium	n/a	n/a	n/a
Palladium	66.5m	1	8
Ruthenium	3.9m	0.3037	0.21

In 2019, India imported **\$324m** of CMR metals

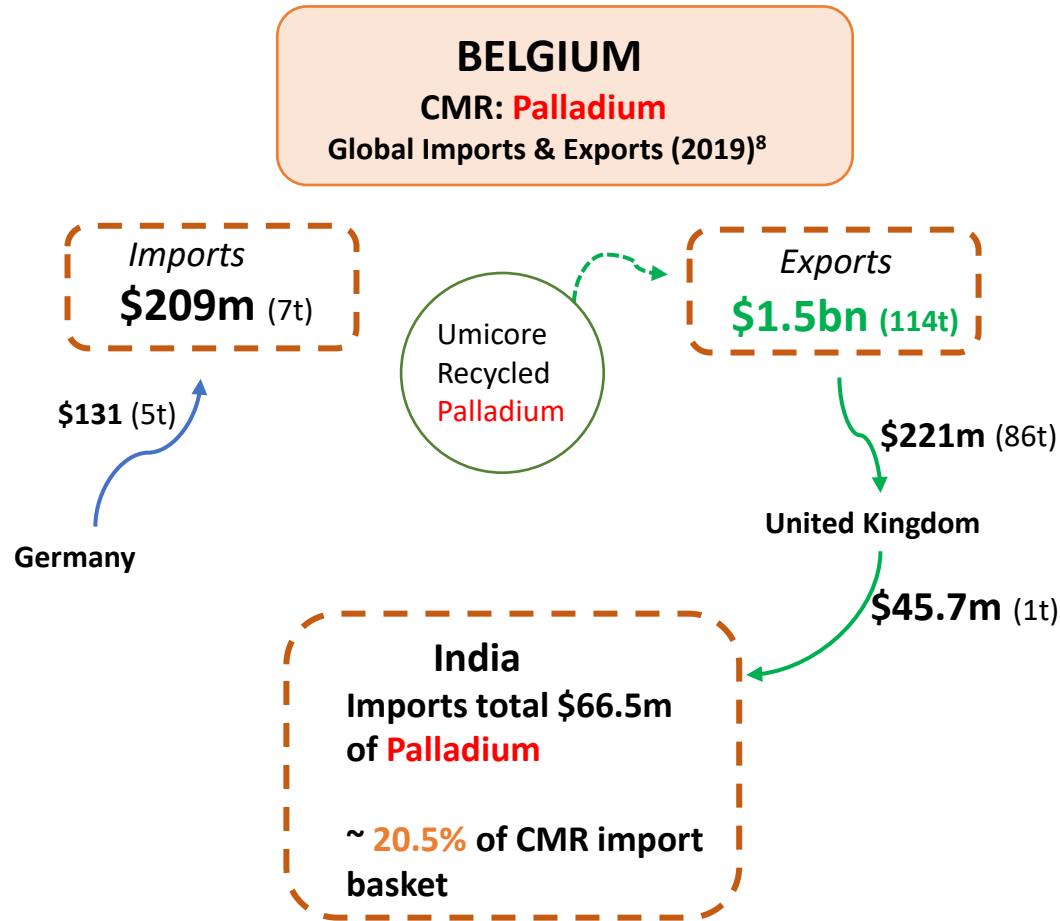
Total Metals in e-waste **44%** of total CMR import basket⁶

India's reliance on recycled CMR

Example: Belgium and Korea Republic

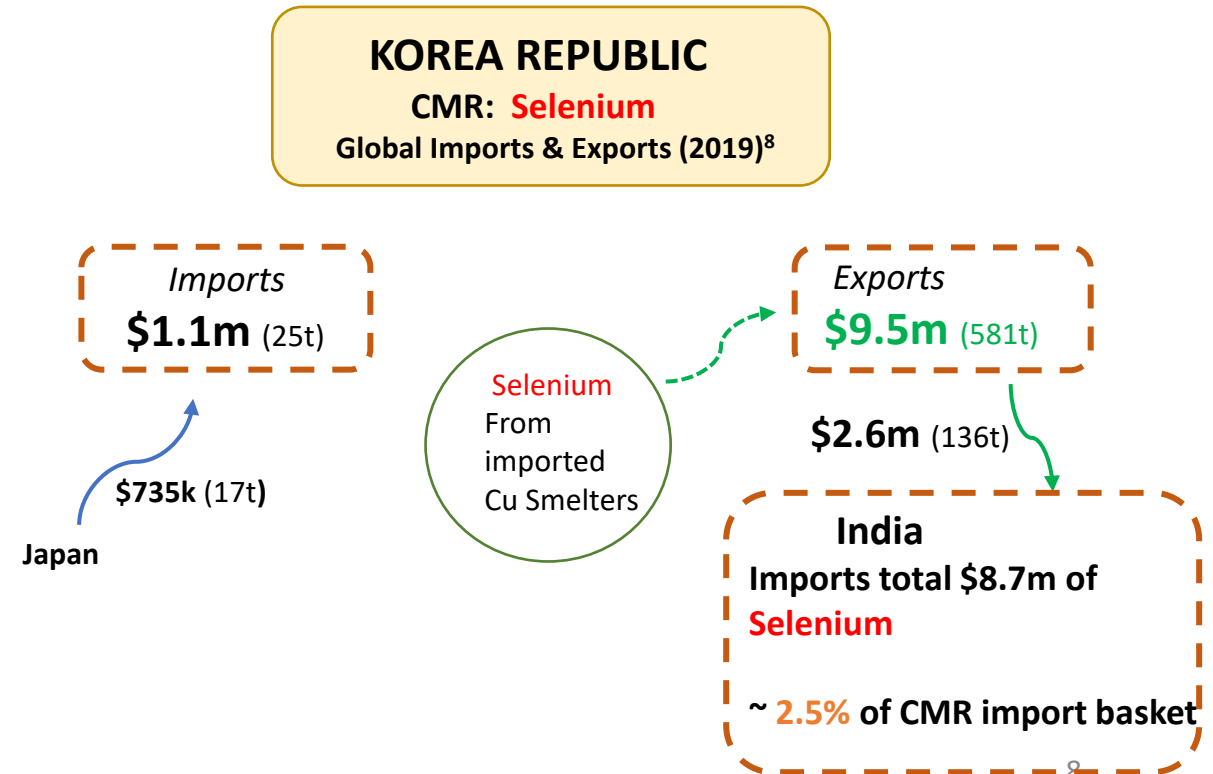


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Selenium is extracted majorly as by-product from Copper Smelters.

- Korean smelters are dependent on 100% imported ores
- Korea Republic is the 5th largest exporter of Selenium
- Two Indian smelters rank 5 and 6th amongst world largest refineries
- India stopped producing selenium since 2015.



Key policy recommendations

Strengthening national policies



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Moving away from collection based targets to recycling targets

- Anecdotal evidence indicates e-waste recycling sector in India is mainly handling mechanical separation of e-waste and chemical separation is exceptionally less.
- Between 2015 and 2019, electronics waste imports increased by 390%, while refining capacities remained marginally constant

Extending the scope of EPR

- Mandating take back of products, from the consumers, after their useful life. The supplier of the new appliances is legally obliged to take in used/old appliances for free.
- Such rules help authorized recyclers meet their collection and recycling targets and also pre-empts e-waste from reaching the informal sector flows.

Key policy recommendations

Prepare national inventory to track mineral flows



No estimates on value and quantity of e-waste minerals across the value chain

- Anecdotal evidences suggests, recyclers are only recovering visible gold (0.18 gms), silver (0.02 kgs) and copper (0.018 tonne) per tonne of e-waste processed

Strengthening existing reporting infrastructure

- Act mandates recyclers, dismantlers to maintain records of e-waste for the state and central pollution control boards
- However the reporting processes are infrequent with no standardized reporting structures

Map e-waste flows by triangulating information

- As of March 2021, a total of 51 producers responsibility organizations (PROs) are in operation
- PROs are financed collectively or individually by producers, who can take the responsibility for collection and channelization of e-waste generated from the 'end-of-life'
- PROs can aid in mapping flows between collection centres and recyclers or dismantlers

Key policy recommendations

Develop robust e-waste supply chains



Leverage complementing strengths and opportunities - informal sector have deep collection supply chains; formal sector have access to advanced recycling technologies

Formalizing the informal sector doesn't have to mean loss of jobs

- Retain the informal sector strength - by giving them incentives to work in better environmental conditions, less health risks and job security
- Creation of formal jobs can lead to safe recycling practices, higher income generation and possible higher levels of employment

Strengthening e-waste collection supply chains

- Broadcasting information about the usefulness of waste separation, easy access and information about collection points can lead to behavioral changes about inherent waste separation.
- Countries with advanced e-waste regulations have streamlined easy access to collection points which has made majority of the population to inherently separate the waste.

References



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Thank you!

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