



SILEX
WORLD

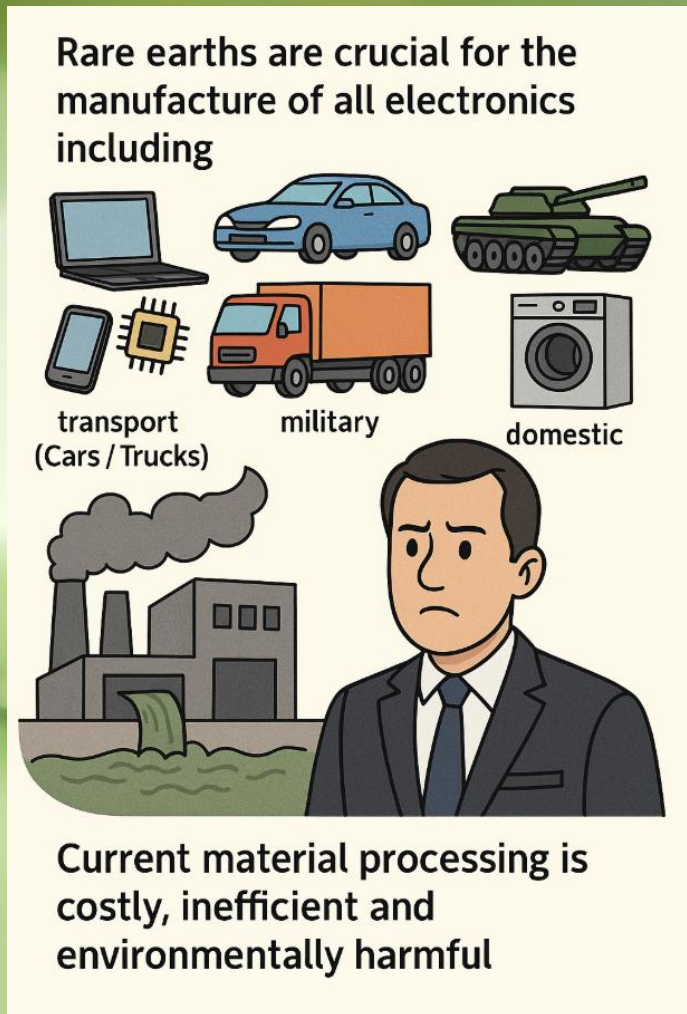
Silex World Turning Waste into Critical Value

- Securing rare earth supply chains for Industry
- UK–India partnership case study



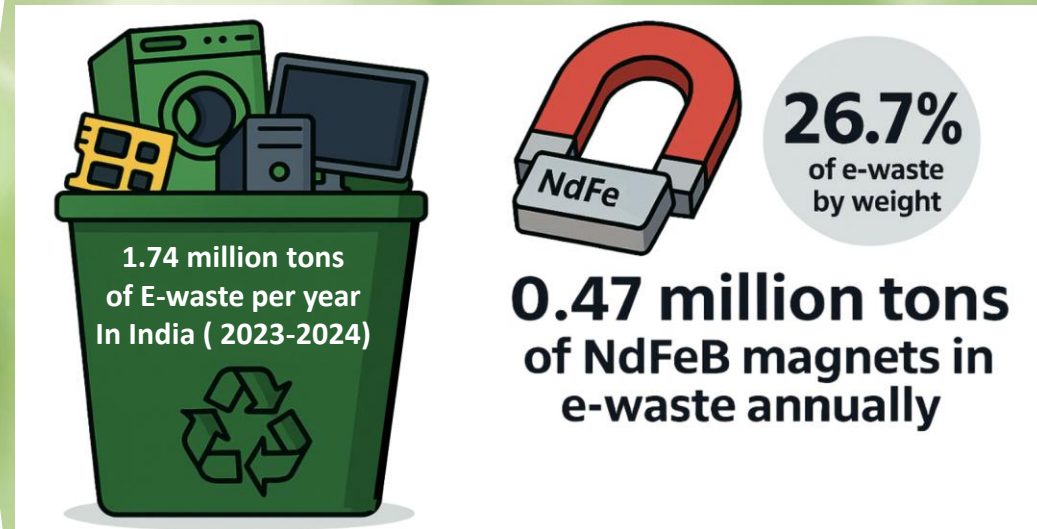
Strategic Context

- Rare earths are mission-critical: radars, guidance, electric drives
- >85% of global processing controlled by China
- UK & India face shared supply risks



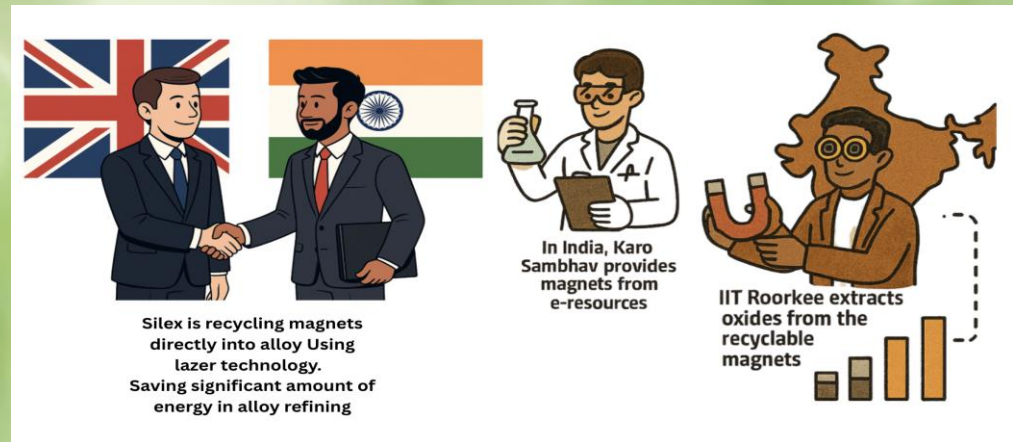
India's E-Waste Challenge

- 1.7 Mt e-waste annually (2023–24)
- Export bans → informal, polluting local processing
- Strategic magnet value lost, re-imported at high cost



Silex World JV Approach

- UK–India collaboration with Tier-1 recyclers
- Chose NdFeB magnets as high-value stream
- Abundant supply, previously un-processable locally



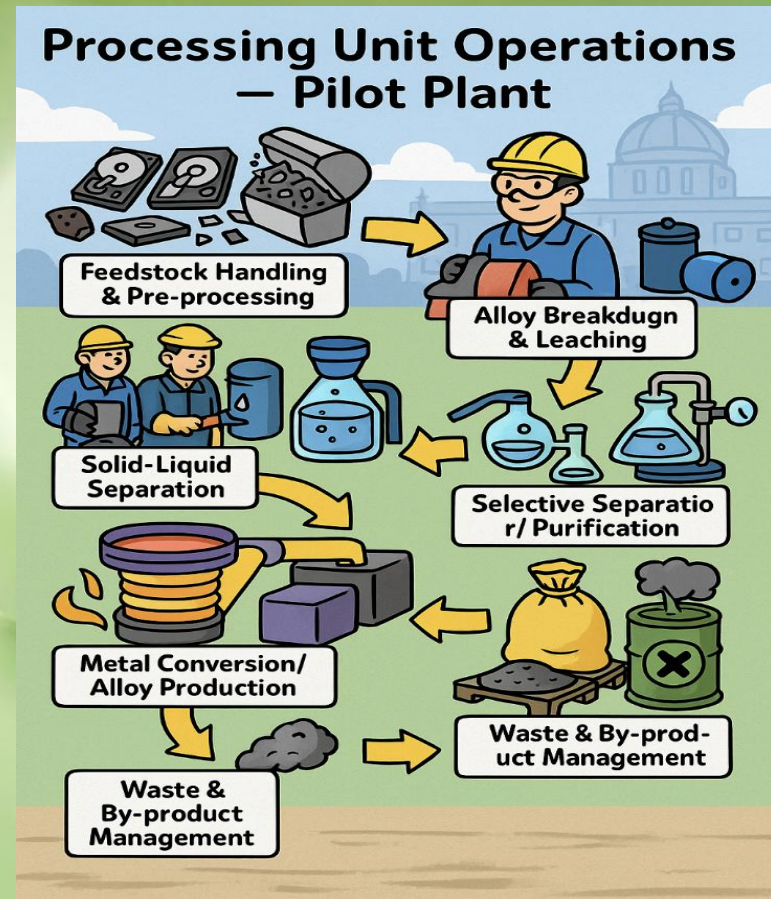
What we avoided

- Mixed, low-grade residues = uneconomic
- Lab-only solutions dependent on China reagents
- Subsidy-dependent, not scalable



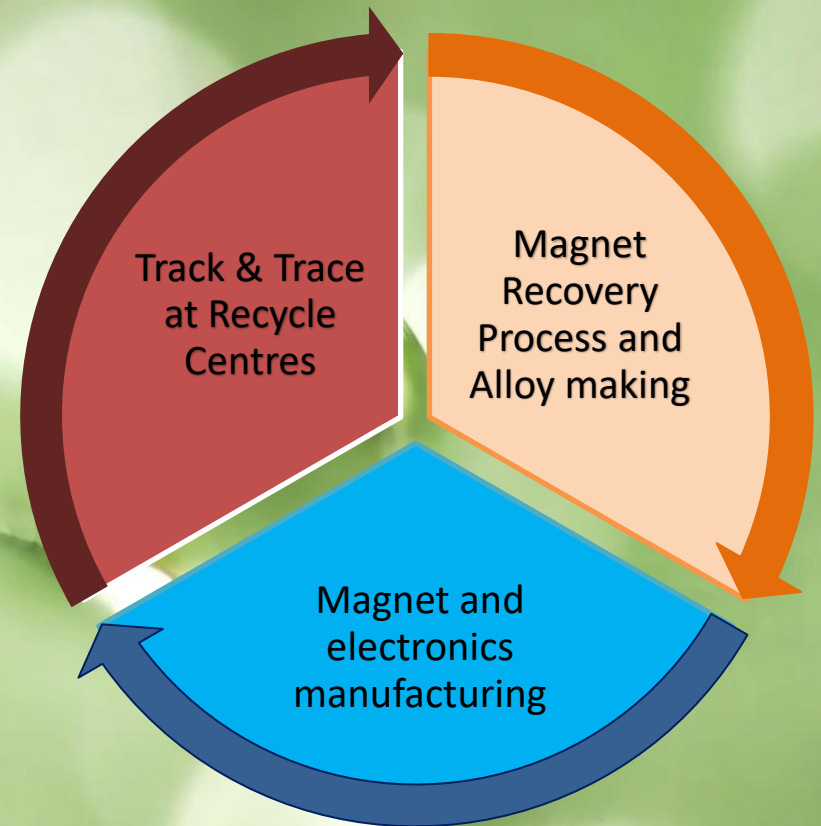
Our Technology Platform

- University of Leeds patented chemistry
- Non-acidic, low-temp separation
- No solvent extraction, no China inputs
- Alloy-to-alloy recycling via laser-induced reduction



Outcomes to Date

- Enabled India's first Tier-1 magnet recycling track & Trace pathway
- Recovery of RE oxides without China-sourced inputs
- Established replicable urban mining protocol
- Monetised local pre-processing infrastructure



Lessons Learned

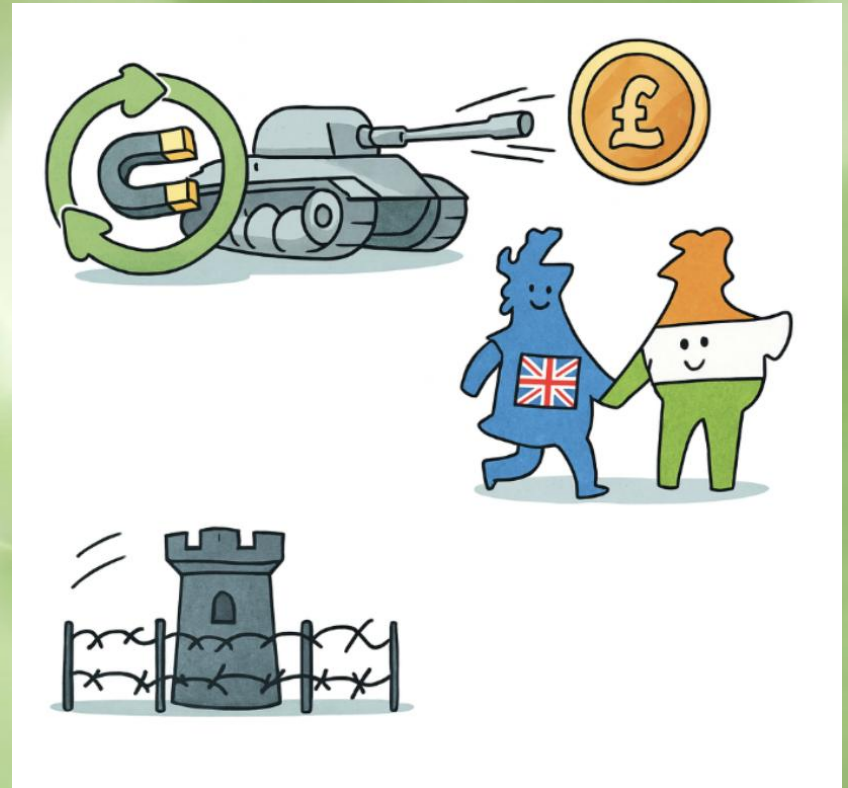
- Asia racing to secure e-waste streams
- China-independent processes still rare
- Market tension: 'caviar supply at fish & chip prices'
- Need for government-backed resilience incentives



Western nations need an alternative to China. They are seeking to take control of the domestic & industrial supply of chains

Defence Implications

- Circular magnet supply = strategic resilience
- Reduces exposure to hostile supply chains
- UK–India defence technology collaboration potential
- Supports MOD critical raw materials strategy



What works in practice

- Co-locating with existing recyclers
- Partnering with OEMs exposed to supply shocks
- Aligning with national security & autonomy goals



Next Steps

- Scale pilot capacity in India (1000 t/year target)
- Explore replication in UK & Europe
- Build defence-grade supply chain into magnet flows / production

