
Lithium Valley: Establishing the case

June 2018



InfraNomics

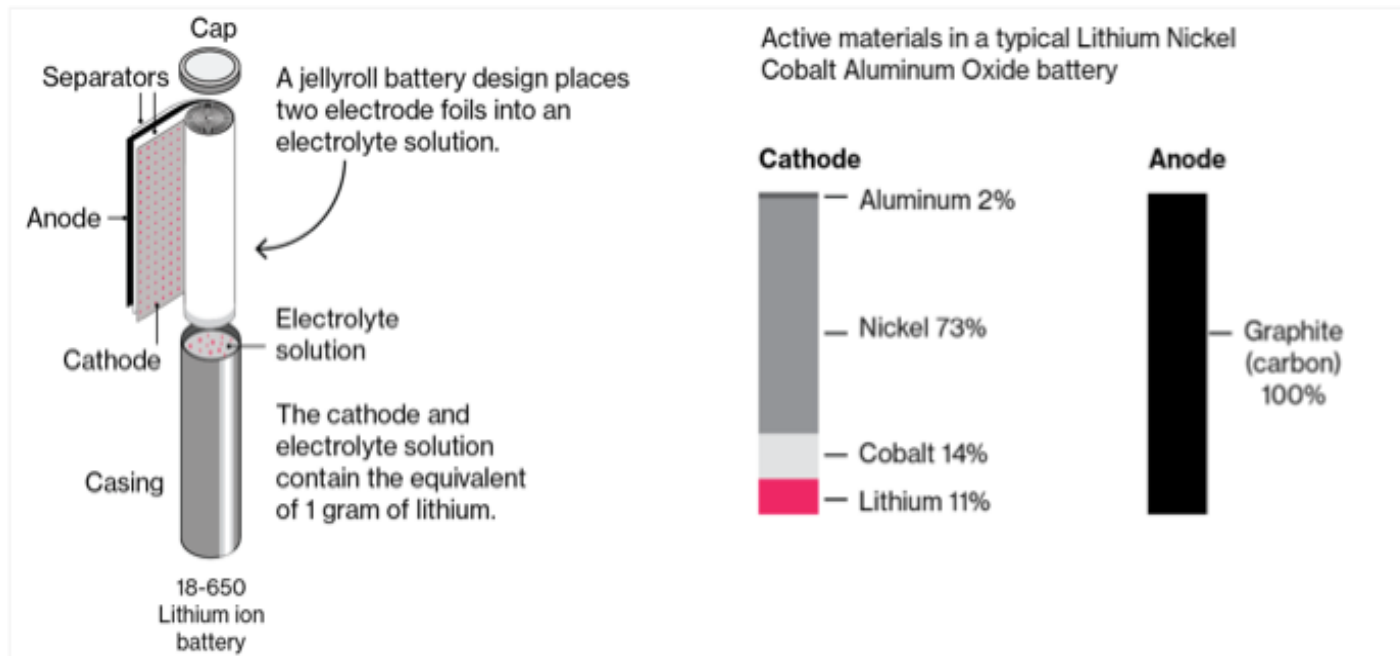
Infrastructure developer, advisor and financing

Projects

- Lithium Valley - Industrial Parks
- Commercial strategies
- Drones
- Train station overbuilds
- Integrated utilities
- Irrigation
- Renewables
- Co-housing schemes
- Water, transport, ports, power, waste etc



Materials/ Components - Tesla 18-650 Lithium Ion Battery Cell



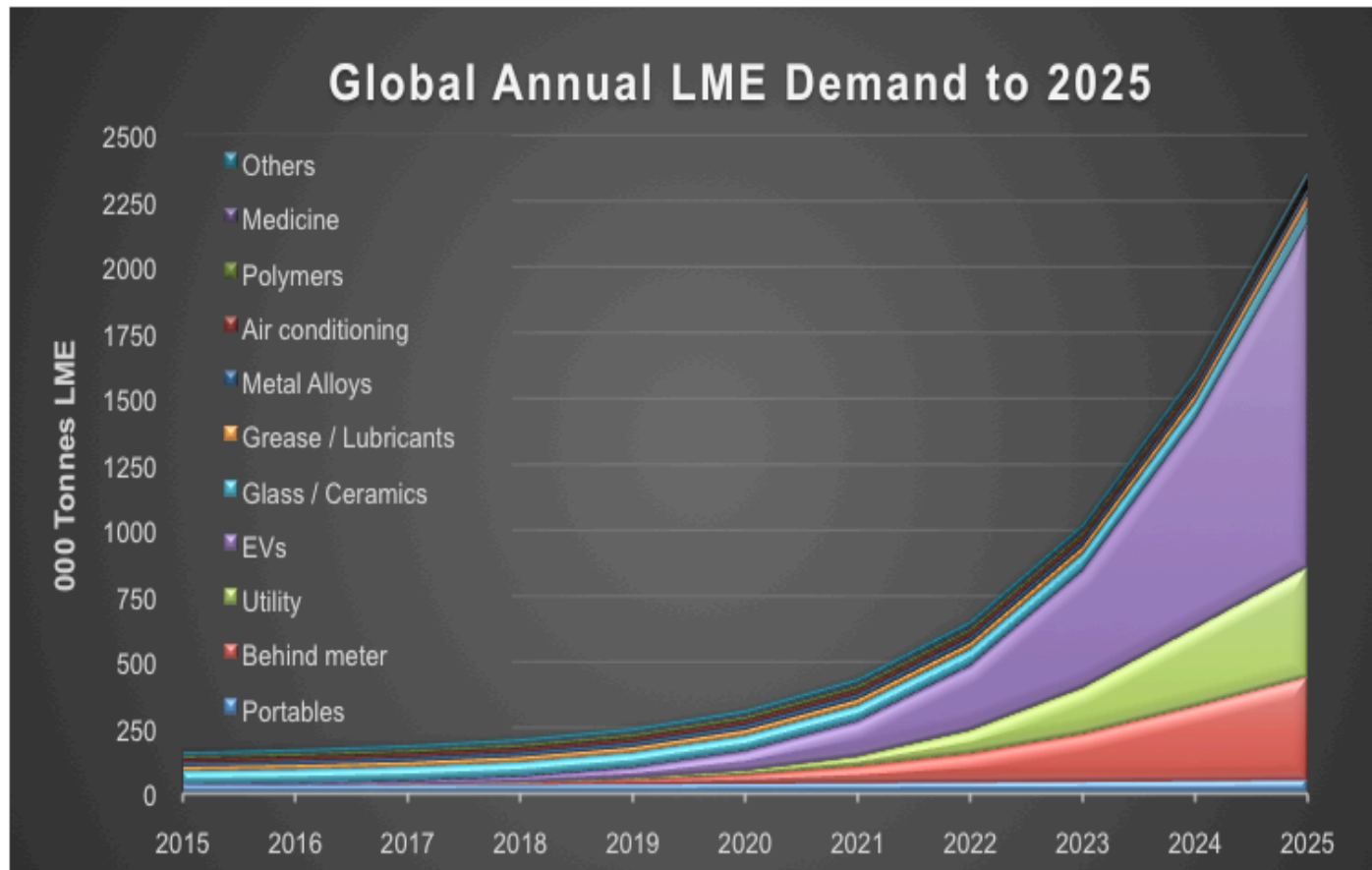
Anode - positively charged electrode by which electrons leave an electrical device.

Cathode - negatively charged electrode by which electrons enter an electrical device.

Lithium ions move from the negative electrode to the positive electrode during discharge and back when charging.



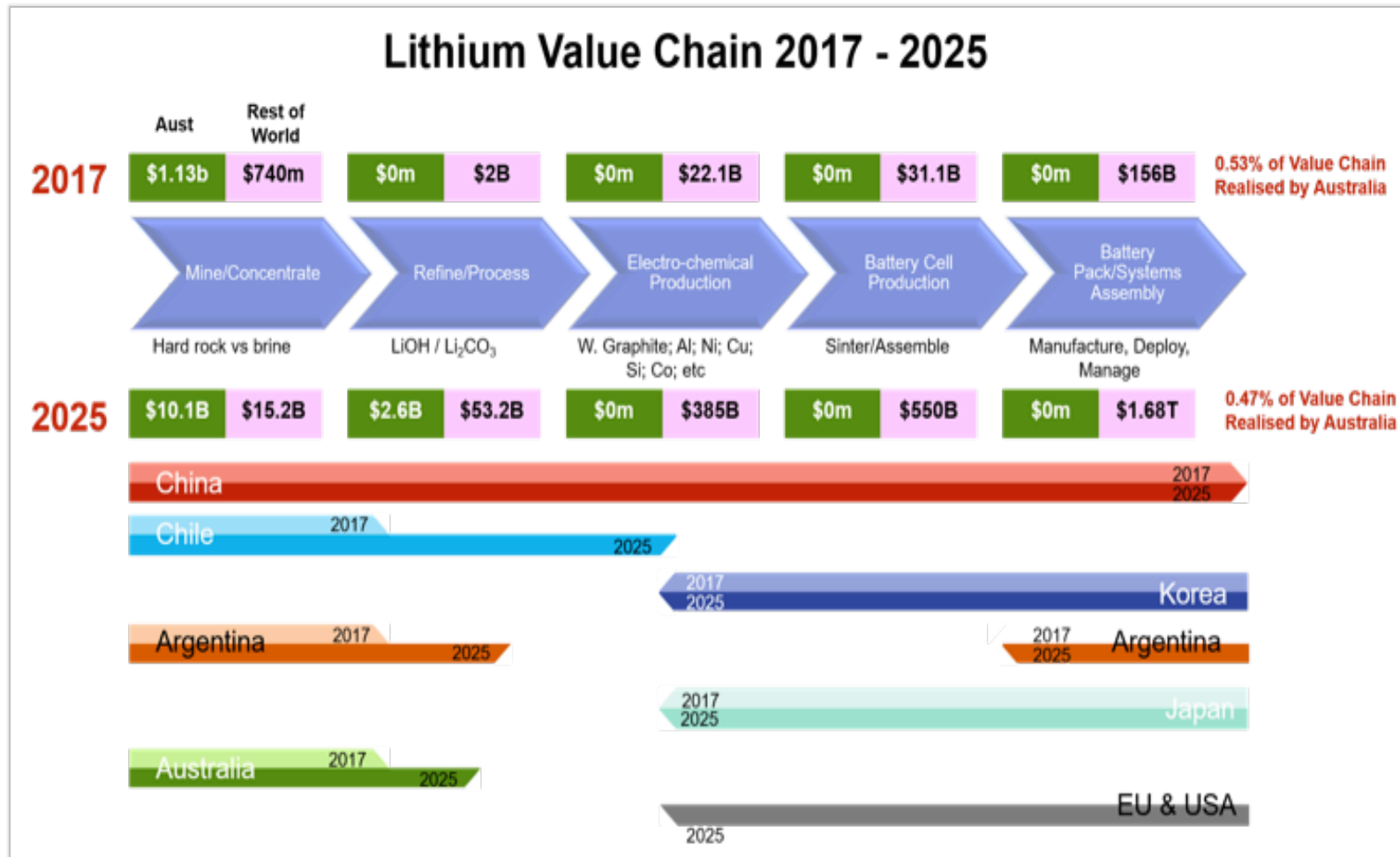
Global Annual Lithium Metal Equivalent Demand to 2025



Source : Future Smart Strategies 2018



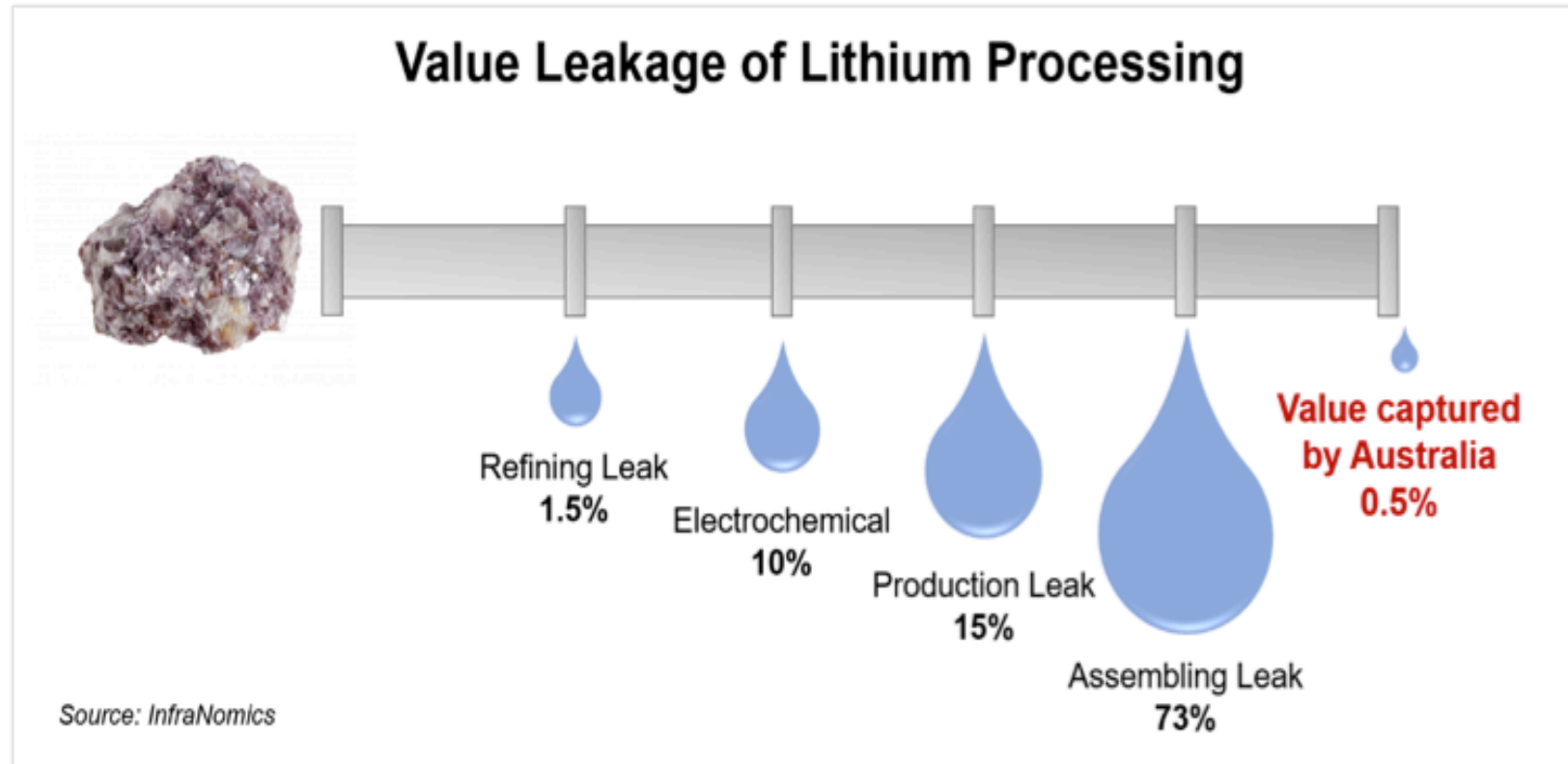
Lithium value chain



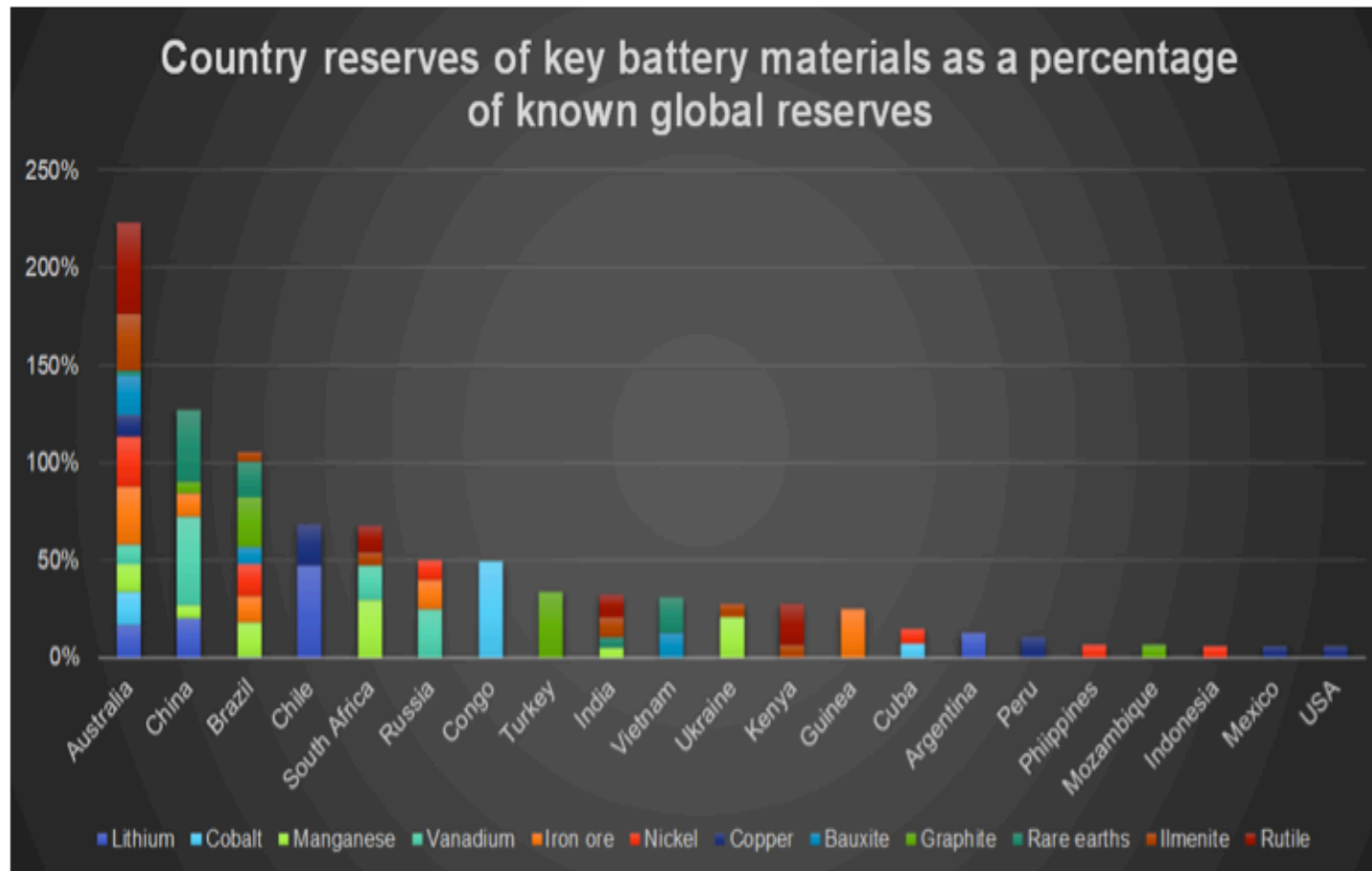
Source : Future Smart Strategies 2018



Lithium leakage



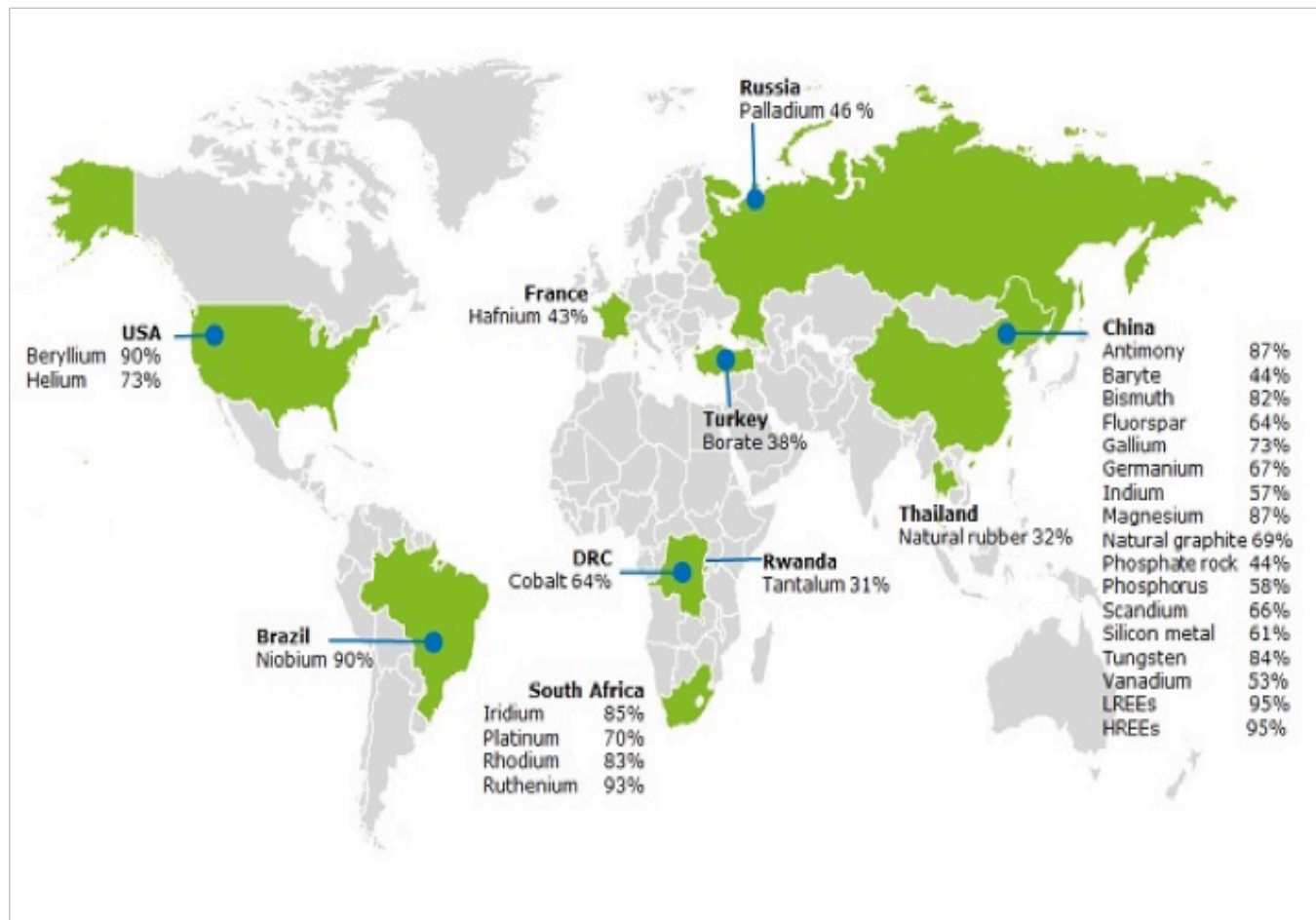
Global reserves of battery materials



Source : United States Geological Survey 2017



EU - 27 Critical Raw Materials 2017 worldwide major sources



Source : EU Critical Raw Materials



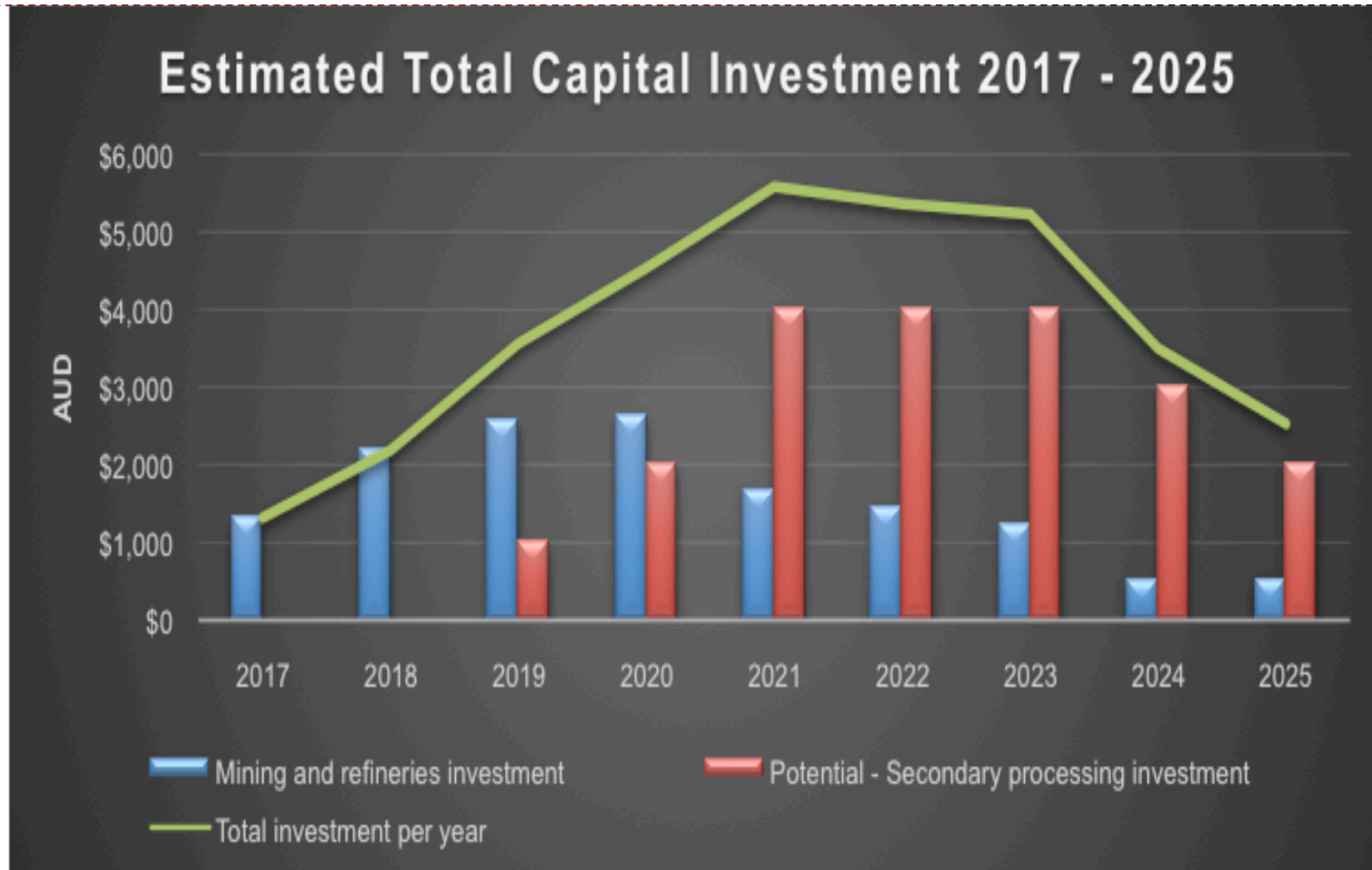
EU Critical Raw Materials and WA

Mineral	Deposit Location	Mineral	Deposit Location
Antimony	Local WA deposits	Beryllium	Local WA deposits
Borates	Local WA deposits	Cobalt	Local WA deposits
Coking Coal	Australian deposits	Fluorspar	Local WA deposits
Gallium	Local WA deposits	Germanium	Local WA deposits
Indium	Australian deposits	Magnesium	Local WA deposits
Natural Graphite	Local WA deposits	Niobium	Local WA deposits
Phosphate Rock	Local WA deposits	Silicon Metal	Local WA deposits
Tungsten	Local WA deposits	Platinum Group Metals	Local WA deposits
Light Rare Earths and Heavy Rare Earths	Local WA deposits	Baryte	Local WA deposits
Bismuth	Local WA deposits	Hafnium	Local WA deposits
Helium	Local WA deposits	Natural Rubber	CSIRO studies supported developing a local industry
Phosphorus	Local WA deposits	Scandium	Local WA deposits
Tantalum	Local WA deposits	Vanadium	Local WA deposits

Source : EU Critical Raw Materials & WA Department of Mines, Industry Regulation and Safety



Capital Investment – WA 2017 - 2025



Source : InfraNomics 2018



Top priorities

1. Quality priority in all steps in the value chain
2. Designation of strategic resources
3. Establishment of a Specialised Industrial Park (SIP) in Kwinana
4. Branding
5. Smart royalties
6. **Domestic reservation**
7. State strategic vision and strategy
8. Parliamentary Inquiry into New Energy Industry
9. Regional Lithium Valley



Specialised Industrial Park - Kwinana

- Specialised Industrial Park – allows imports, storage, exhibit, assemble or manufacture without customs entry procedures and duties.
- This will incentivize local WA for manufacturing and processing. Currently WA exports resources for other countries to process.
- Properly developed can be spectacularly successful and huge wealth generators
- Successful examples include New Orleans (US), Shenzhen (CN), DMCC Dubai (AE), Tanger Med Zones (MA), Mauritius Freeport (MU), Shannon Free Zone (IR), Katowice (PL)
- Kwinana would be an ideal location for the Indian Ocean region



Increased

- Economic activity
- International competitiveness
- Manufacturing and jobs
- Diversity & synergies
- Quality infrastructure access
- Productivity
- Integrated transport



Reduced

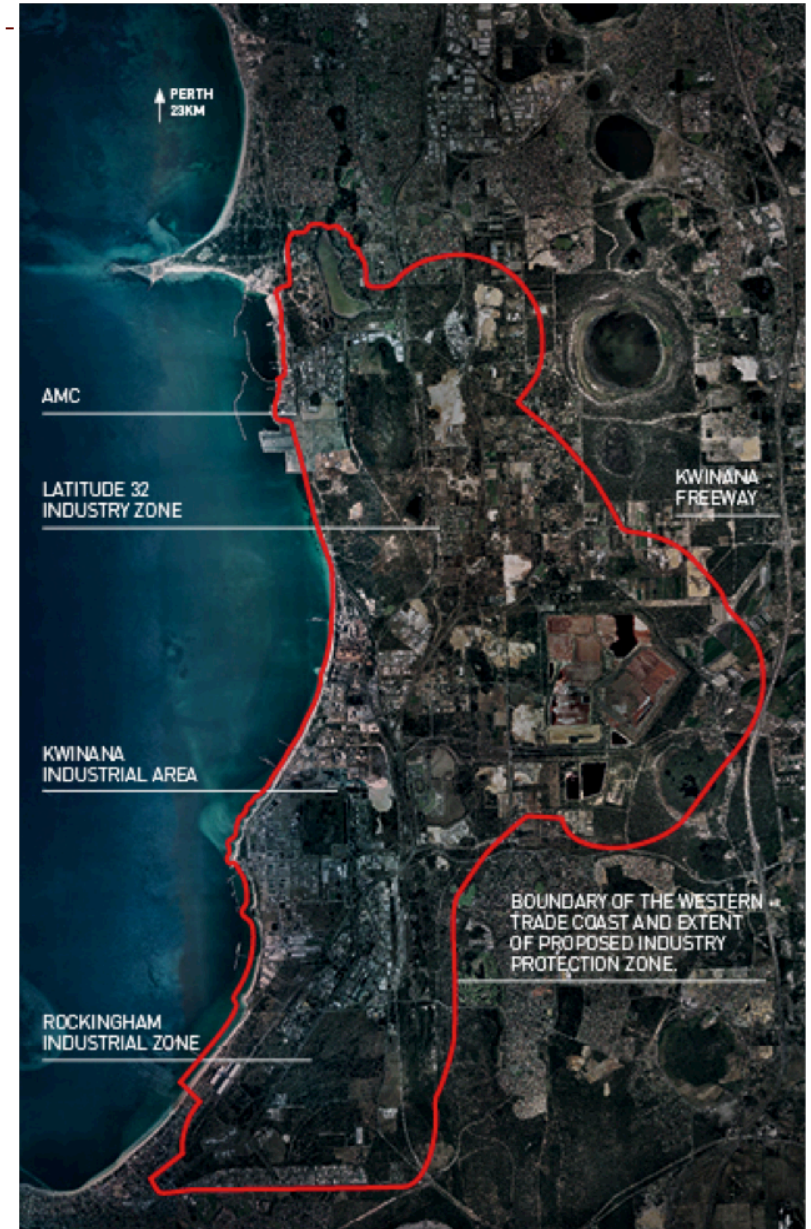
- Regulation
- Costs (Op costs 10-20% lower)
- Bureaucratic interference
- Approval times
- Urban encroachment
- Pollution (rail & electrification)



Specialised Industrial Park - The Golden Goose

Economic diversification

- A modern, efficient and integrated port can only be developed in Kwinana
- Provides the space and infrastructure and scale which means being internationally competitive
- Diversifies the economy. Increases our security
- The freight logistics and supply chains can be upgraded
- A bigger more powerful version of the AMC
- ‘Plug and play’ industrial park for foreign companies. Speeds up investment
- Develop a **Specialised Industrial Park** to stimulate economic growth and exports. Can avoid the problems in Fremantle and protect industry and the port from urban encroachment for future generations
- **Pre approvals** for building and development



Economic summary

Current direct employment in the energy metals sector - 2017	Actual	7,291
Forecast employment in the energy metals sector - Direct and indirect - 2025 (Multiplier 2.5) *	Estimate	100,698
Economic contribution of energy metals 2016/2017	Estimate billions per annum	\$2.97
Potential Economic contribution mine, refining and 10% of electrochemical production per annum 2024/2025 *	Estimate billions per annum	\$56.52

These estimates are dependant upon foreign companies relocating to WA and one of the critical factors is the ability to secure supply of a variety of raw materials.

Source : InfraNomics 2018





Contact:

Cameron Edwards

cameron@infranomics.com.au

+61 434714377

