



Coal India Limited
A Government of India Undertaking
A Maharatna Company

Strategy Roadmap for Investment in Critical Mineral Assets by CIL

Presented by

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New Delhi

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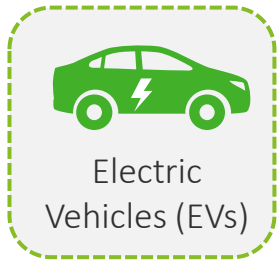


Why Critical Minerals?



India's proactive approach towards making the green transition has enabled the adoption of cleaner technologies by the industry — of which a major component is batteries

In order to achieve its climate change commitments, India has set ambitious EV and RE targets



Target: 30% EV sales penetration by 2030

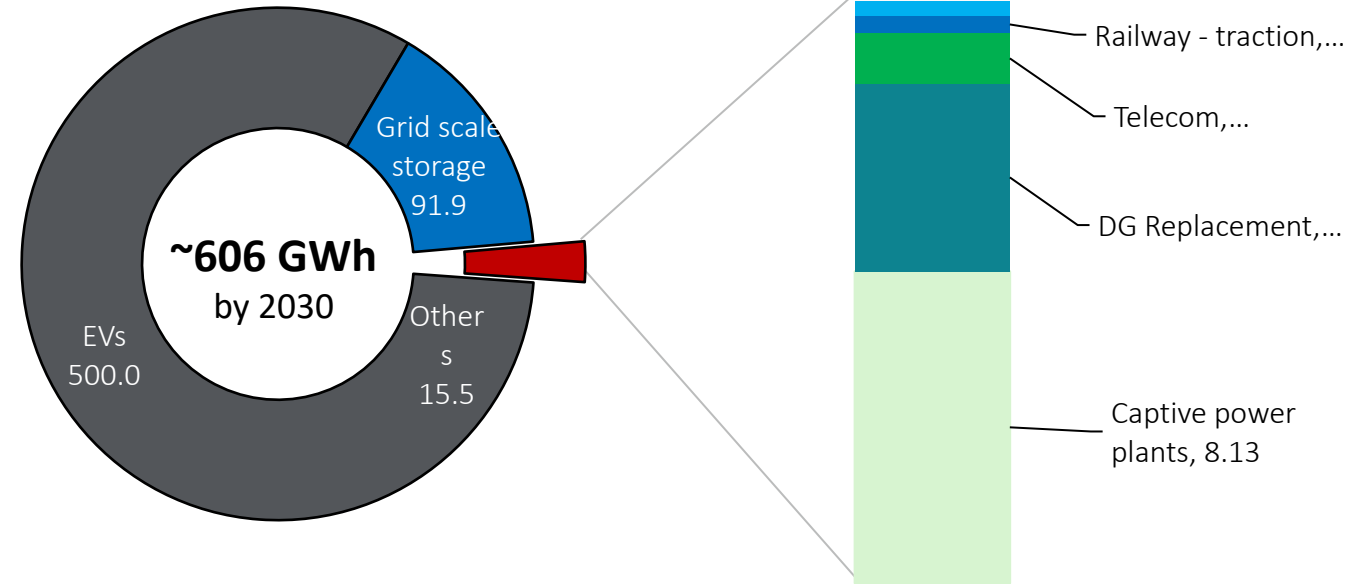
Present EV sales penetration: ~0.5%



Target: 450 GW RE installation by 2030

Present RE installed capacity: ~93 GW

Battery Demand in India – 2030 Esti.



Other estimates from NITI Aayog and ISGF are more optimistic

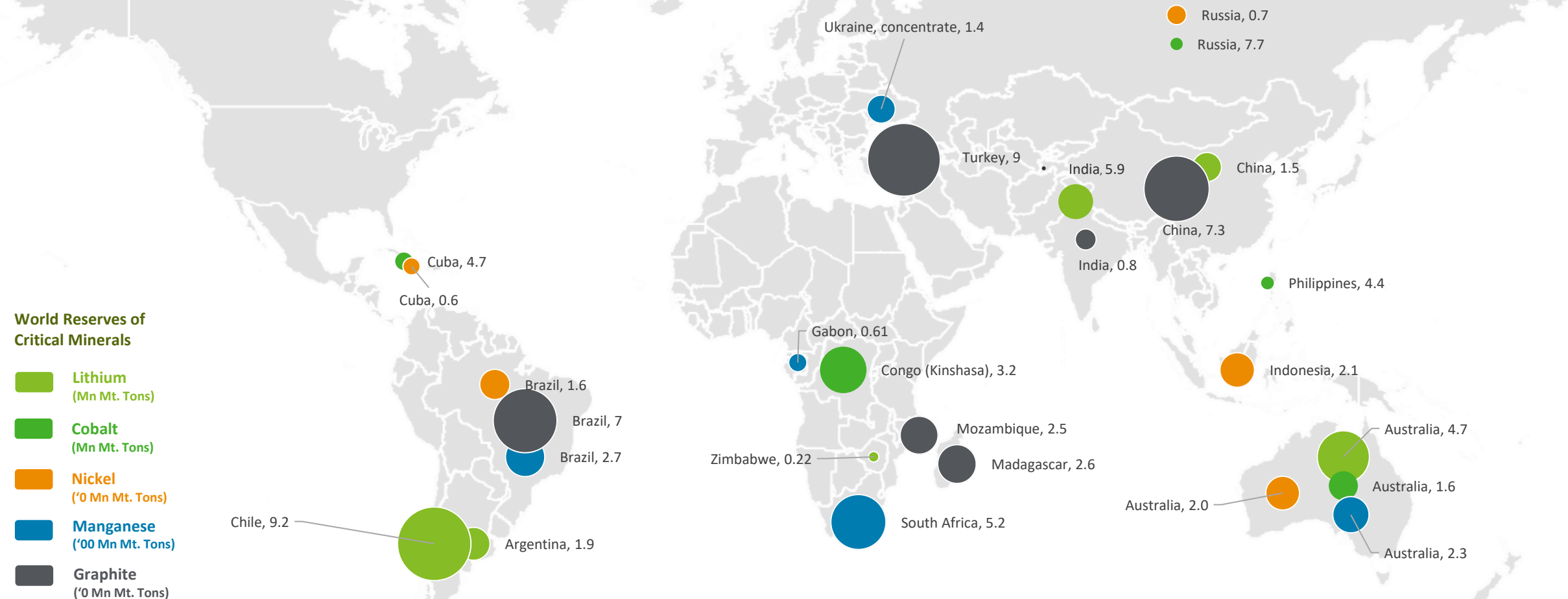
- NITI Aayog stated the need of **50 GWh of battery storage in next 2.5 years** to ensure EV transition, and **1,414 GWh of battery storage by 2032**, considering specific segment-wise penetration levels.
- India Smart Grid Forum (ISGF) projects total energy storage demand of **2416 GWh by 2032**

Overview of global Battery minerals scenario in terms of reserves



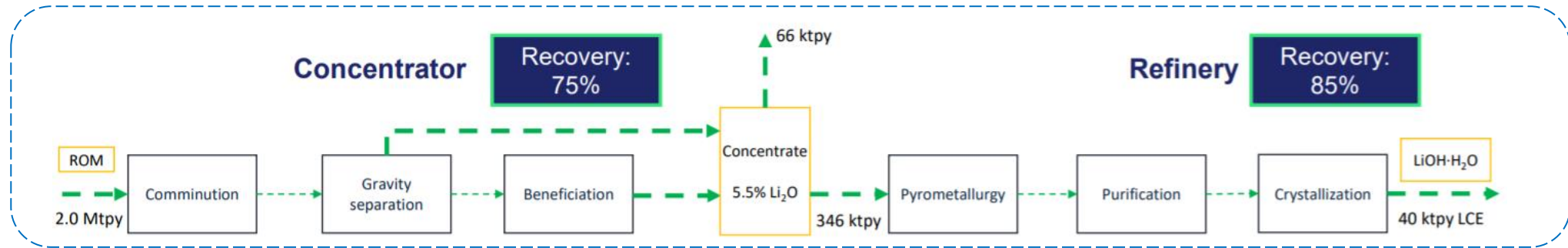
Significant opportunity exists for CIL to partner with countries having battery minerals deposits for sourcing minerals as well as mineral processing technologies

- **Australia** produces half of the world's Lithium and has 2nd largest Nickel reserves
- **Chile, Argentina and Bolivia** triangle accounts for collectively 58 % of the global lithium reserves
- **DRC** has 68 % of world's Cobalt reserves





Lithium Hydroxide from Hard Rock Mining Process Flow



48 Tonnes
Ore mined

- Consumables:**
- FeSi
 - Grinding/desliming reagents
 - Flotation reagents
 - others
- Outputs:**
- Reflux overflow
 - DMS overflow
 - Slimes
 - Magnetic concentrate
 - Flotation tail
 - others

- Consumables:**
- Sulfuric acid
 - Lime
 - Sodium hydroxide
 - Soda ash
 - others
- Outputs:**
- Leaching solids
 - Na₂SO₄
 - others

1 Tonne
LiOH Produced for Sales

2 MTPA
Ore mined
~1.5% Li₂O

6:1

346 KTPA
SC6 Concentrate Produced
for feeding into refinery
~6.2% Li₂O

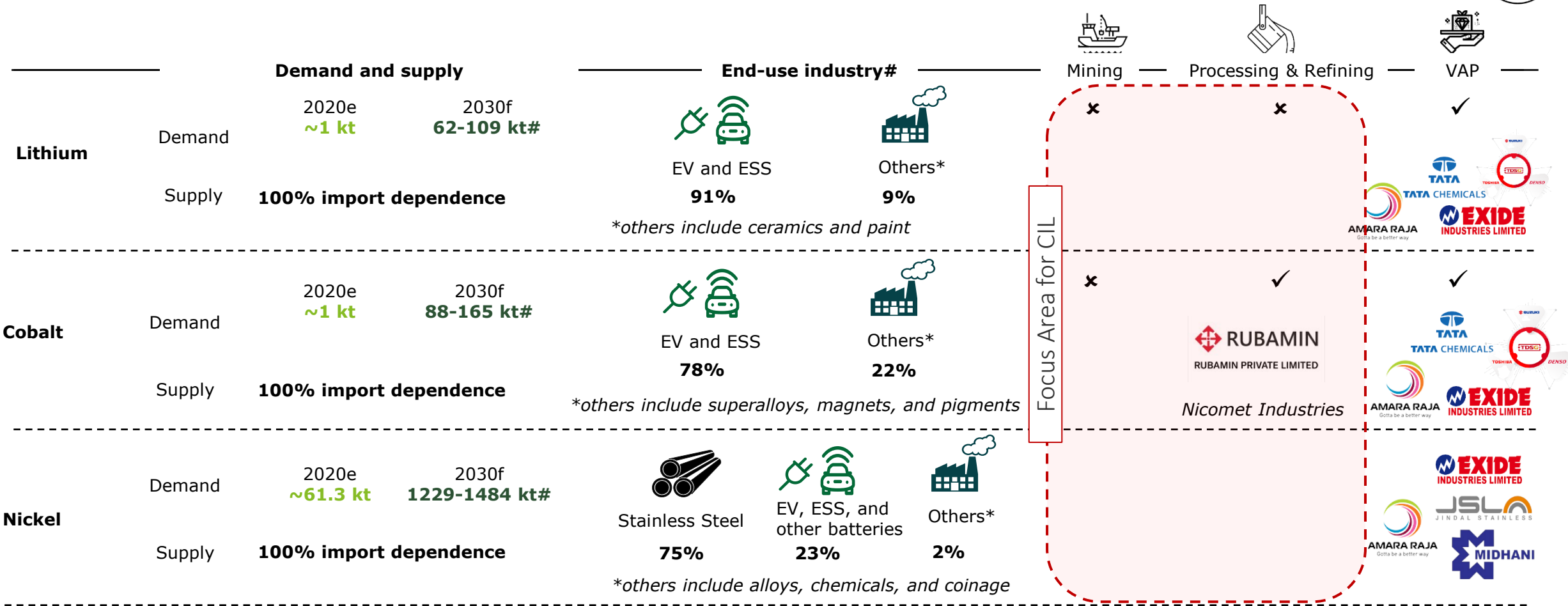
8:1

~45 KTPA
LiOH Produced for Sales
>99.5% Purity

~ 6 Tonnes Ore Required to Produce
~1 Tonne of Spodumene Concentrate

~ 8 Tonnes SC6 Required to Produce
~1 Tonne of Lithium Hydroxide

Key End Use Sectors for Critical Minerals



Focus Area for CIL

Global lithium mining projects are significantly financially attractive

Salars in Lithium Triangle



Upcoming Brine Assets in Lithium Triangle

~35%

Avg. Post-Tax IRR

~\$ 20.5 k

CAPEX Intensity/tpa

ILLUSTRATIVE

Upcoming Hard-Rock Assets in Australia

~34%

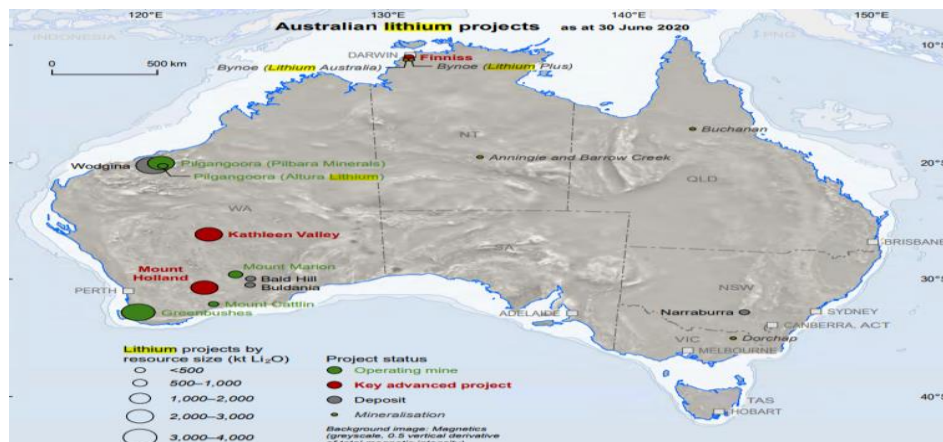
Avg. Post-Tax IRR

~\$15.9k

CAPEX Intensity/ton

ILLUSTRATIVE

Hard-Rock assets in Australia



Key Strengths of Coal India Limited



'Maharatna' Category
CPSU with a global
reputation for
trustworthiness

Strong Financials with
high Net Worth &
favorable Debt-to-
Equity Ratio

Robust association
with Central & State
Governments

Significant Market
Presence catering to
~80% of India's Coal
Supply

Strong domain
expertise for end-to-
end mining value
chain

Substantial y-o-y
growth in Capital
Investment
registering growth of
15.94% for FY22 as
compared to FY21

Substantial
international
experience through
one of the wholly-
owned subsidiaries

Thrust on leveraging
advanced digital
capabilities to
transform operations

Key challenges in the sector in India



Sourcing



Lead time



Technology



Policy



Supply Chain



Sourcing EV battery minerals in an ESG world

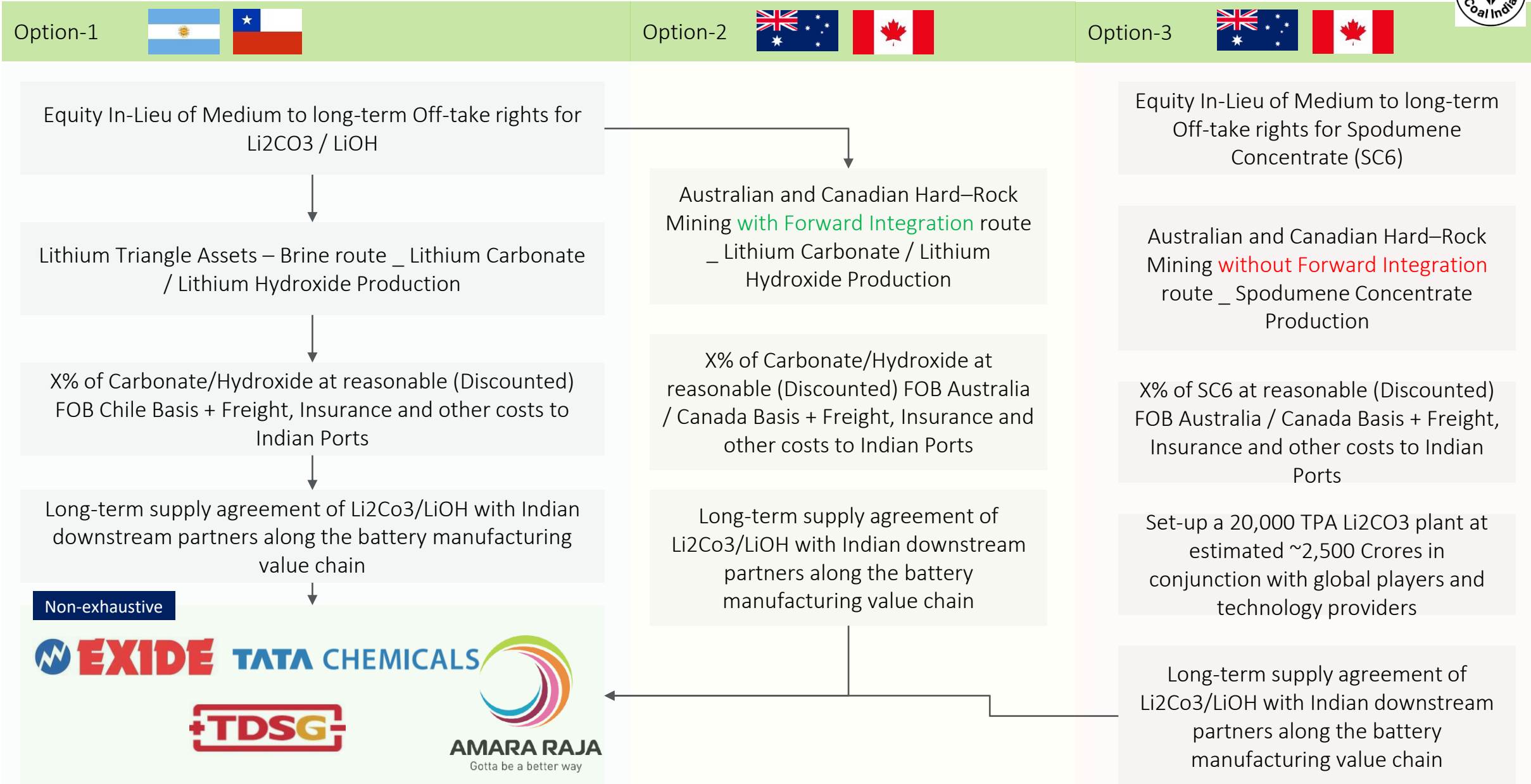
Lead time from discovery to production of battery mineral is around 15-20 years.

Adoption of new technology in this sector is challenging.

Policy makers have a crucial role in determining whether critical minerals are a vital enabler for clean energy transitions or a bottleneck

Lack of robust supply chain networks due to limited partnerships with other countries

Plausible Business Model Options for Coal India Limited to enter the Lithium business



Preparedness of CIL for acquiring critical mineral assets abroad



1. Interactions with Asset Owners ✓

- Key meetings with asset owners for alignment towards long-term strategy & business goals
- Scouting in progress for Li, Co, Ni assets globally to evince interest of prospective asset owners

2. Interactions with Government Representatives ✓

- Interactions with key representatives from the National and the Federal Governments
- First level due-diligence for submission of non-binding offer

3. Finalization of business modality for partnership

- Shortlisting and further evaluation of assets of Lithium, Cobalt & Nickel which are currently at operational stage/ advanced stages of exploration
- Detailed on-site due-diligence (Technical, Commercial, Legal)
- Based on outcome of due-diligence, investment approval shall be taken

Thank you



Shri. Debasish Nanda is presently serving as the Director – Business Development of Coal India Ltd. He was working as Executive Director (Gas) in Indian Oil before taking over as Director-BD at CIL.

A graduate in mechanical engineering from UCE Burla, Sambalpur University, Shri. Nanda is a Post Graduate in production engineering from REC Rourkela and has to his credit a Masters in International Business from IIFT, New Delhi.

Shri. Nanda joined Indian Oil in 1988 as a Management Trainee in the Marketing Division and spent 11 years in marketing of Servo lubricants. Thereafter, he moved to Business Development Group in 1999. He did a stint in Business Development activities comprising of expansion of lube business overseas, exports of POL, setting-up of Indian Oil's subsidiaries etc. before moving to Indian Oil's Gas Business in 2009.

Shri. Nanda headed the 'Natural Gas' business of Indian Oil which had a turnover of over Rs. 20,000 crores. He developed many robust strategies for increasing the penetration of Indian Oil in the natural gas business.

He has also handled various diverse positions for liaising with MoP&NG, PNGRB and other Industry bodies. He has chaired the US-India Energy Task Force, headed the work on pipeline RLNG exports to Bangladesh & Sri Lanka and was accorded status of aggregator of HP-HT domestic gas for urea plants.