

31 May 2023

Calix Investor Presentation – May 2023

Sydney, Australia | 31 May 2023 – Australian environmental technology company, Calix Limited (ASX: CXL) (“Calix” or “the Company”) is pleased to provide a copy of its presentation to the NWR Vantage Point Conference.

Investors can register for the presentation using the link below:

https://us02web.zoom.us/webinar/register/WN_FLhbPZ0NRje5Wo7T9k9KFg

The following presentation is to be delivered by Managing Director and CEO, Phil Hodgson at 2:30pm on Wednesday 31 May 2023.

-ENDS-

This announcement has been authorised for release to the ASX by:

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About Calix

Calix is a team of dedicated people who are urgently developing great businesses, leveraging our patented technology, that deliver positive global impact.

The core technology is being used to develop more environmentally-friendly solutions for water treatment, CO₂ mitigation, biotechnology, advanced batteries, and more sustainable mineral and chemical processing.

Calix develops its technology via a global network of research and development collaborations, including governments, research institutes and universities, some of world's largest companies, and a growing customer base and distributor network for its commercialised products and processes.

Because there's only one Earth – Mars is for Quitters.

Website: <https://www.calix.global/>

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YouTube: [CalixLimited](#)

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Decarbonisation technology for multiple industries

NWR Vantage Point Conference
May 2023

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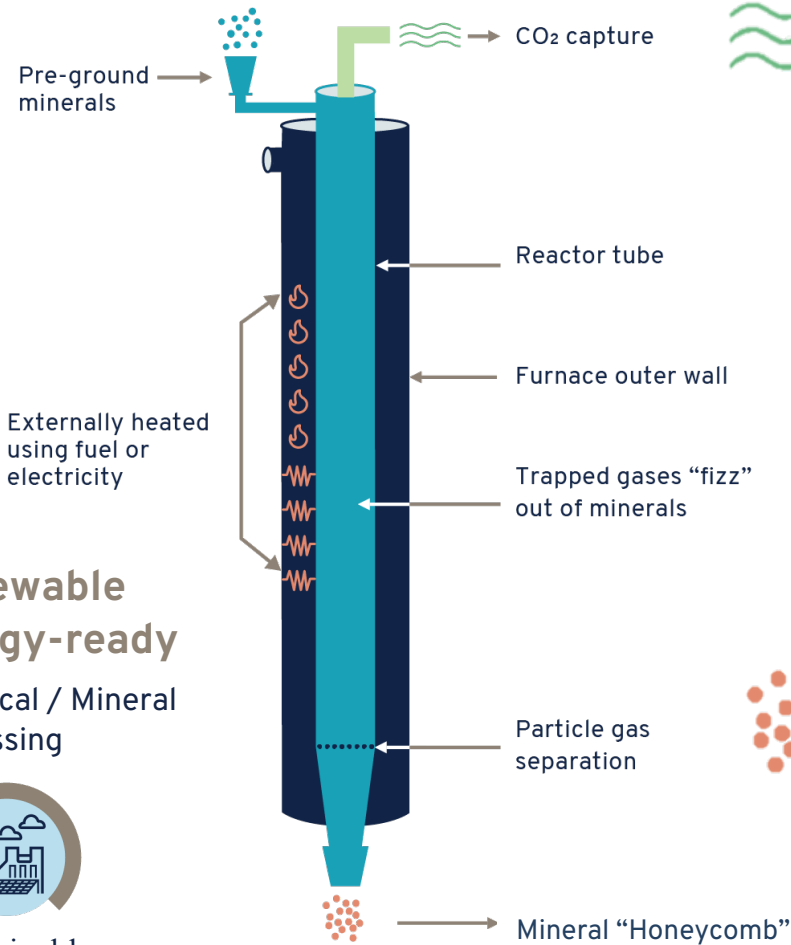
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Calix's core technology platform

A new way to heat stuff up...



CO₂ capture

Capture of high purity CO₂ when processing limestone



Leilac
Lime and
Cement

Highly-active materials

Highly porous "honeycomb" structure = more chemical- and/or bio-activity

Renewable energy-ready

Chemical / Mineral processing



Sustainable
Processing



Biotech



Battery
Materials



Water

An AUSTRALIAN invention...



28 patent families
covering core
technology and
applications



>A\$120m has been
invested to date in
developing the
technology

Industrial decarbonisation tailwinds

Calix's mission is being propelled by net zero commitments

Government policy

~90%

of global GDP now under net zero commitments.¹

Investor activity

US\$42tn

assets of signatories to the '2022 Global Investor Statement to Governments on the Climate Crisis'.²

Net zero spending

US\$275tn

Estimated spend required by 2050 to fund the global energy transition.³

1. <https://zerotracker.net/>
2. 2022 Global Investor Statement to Governments on the Climate Crisis. The Investor Agenda
3. The net-zero transition: What it would cost, what it could bring. McKinsey Sustainability.



Policies driving decarbonisation



Carbon penalties, value & support in Europe, US, & now Australia...

EUROPE

Emissions Trading Scheme

- €80 – 2022 average EU ETS price, up from €50 in 2021
- 2.2% year-on-year reduction in free CO₂ permits to 2030

Carbon Border Adjustment Mechanism

- A new carbon tariff, commencing in 2023
- Paves the way for phase out of exemptions for heavy industry

Innovation Fund

- Energy, CCU/S, Energy Storage
- €10b funding from 2020 to 2030
- Up to 60% project cost contribution

Net-Zero Industry Act

- CCS identified as a strategic priority
- 50 million tonnes of annual CO₂ storage capacity to be developed by 2030

US

Inflation Reduction Act

- US\$85 / tonne of CO₂ permanently stored
- US\$180 / tonne for DAC + permanent CO₂ storage
- US\$130 / tonne for DAC + used CO₂

US-Australia Climate, Critical Minerals & Clean Energy Transformation Compact

- Fast-track critical mineral supply chains
- Access to US capital and IRA benefits for Australian companies
- Australia to be a 'domestic source' under DPA, enabling financing and purchasing of Australian minerals

DAC hubs

- US\$3.5 billion to establish Regional Direct Air Capture hubs
- Develop networks to facilitate sequestration or carbon utilization

AUSTRALIA

Safeguard Mechanism

- A price on carbon, capped at AU\$75

AU\$15b National Reconstruction Fund

- Up to AU\$3b for renewables and low-emission technologies & AU\$1b for value-adding in resources.

AU\$1.9b Powering the Regions Fund

- AU\$400m over 3 years for Critical Inputs to Clean Energy Industries, such as steel, cement & lime, & alumina

Carbon Capture Technologies Program

- AU\$141m for hard-to-abate industries, such as cement

Critical Minerals Strategy

- Value-add, downstream processing & decarbonisation

Carbon Border Adjustment Mechanism

- Review of an Australian CBAM imminent

Largest single source of industrial emissions

- ~8% of global emissions¹
- Unavoidable process emissions released directly from limestone.

Net zero commitments

- GCCA member companies covering 40% of global cement production (80% outside of China) – have set a net zero by 2050 target.²
- 1.4 billion tonnes of CO₂ from cement needs to be captured and stored annually by 2050 to reach net zero.²

“Carbon Capture and Storage (CCS) plays a major role in decarbonizing the industry sector in the context of 1.5° C and 2° C pathways, especially in industries with higher process emissions, such as cement.” – IPCC³

Market drivers



Carbon pricing: 36 carbon taxes & 32 Emissions Trading Systems, covering 23% of global emissions & generating \$84bn in revenue⁴



>€80/tonne average EU carbon price for 2022



US\$85/tonne
US tax credit for stored CO₂

SDG Impact



1. Trends in global CO2 emissions; 2016 Report, The Hague: PBL Netherlands Environmental Assessment Agency
2. Global Cement & Concrete Association. Concrete Future Roadmap.

3. SR1.5 Chapter 2. IPCC. 2018
4. <https://zerotracker.net/>, <https://carbonpricingdashboard.worldbank.org/>



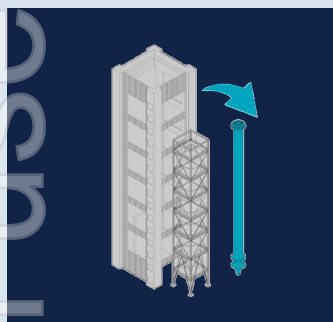
Leilac - Scaling up the Leilac technology



Leilac-1

Pilot plant
25,000 tpa CO₂

Lixhe, Belgium
Built
Operational 2019



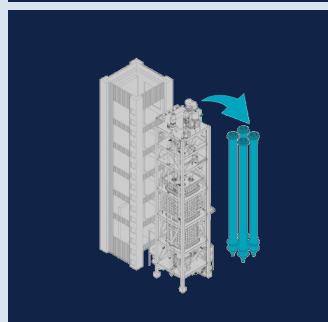
CAPTURE CO₂

TUBE
QTY
1

Leilac-2

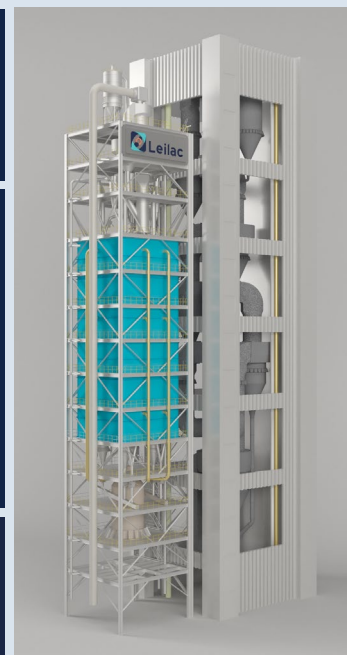
Demonstration plant
100,000 tpa CO₂

Hannover, Germany
4 tubes - 1 module
Passed FID



CAPTURE CO₂

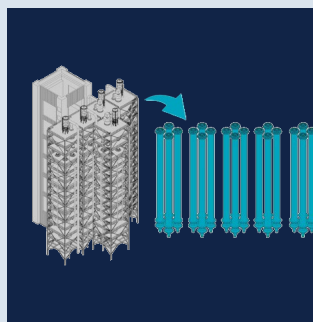
TUBE
QTY
4



Leilac-3

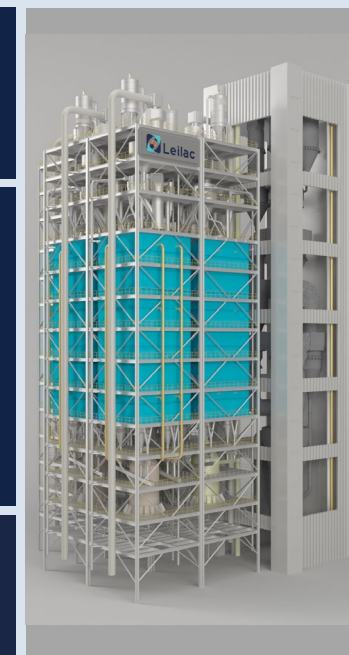
Full commercial scale
>500,000 tpa CO₂

Several multi-tube
modules
Multiple in planning



CAPTURE CO₂

TUBE
QTY
20



Leilac's full-scale vision

BUT...we need to mitigate
1.4 billion tonnes per
annum of process CO₂
emissions

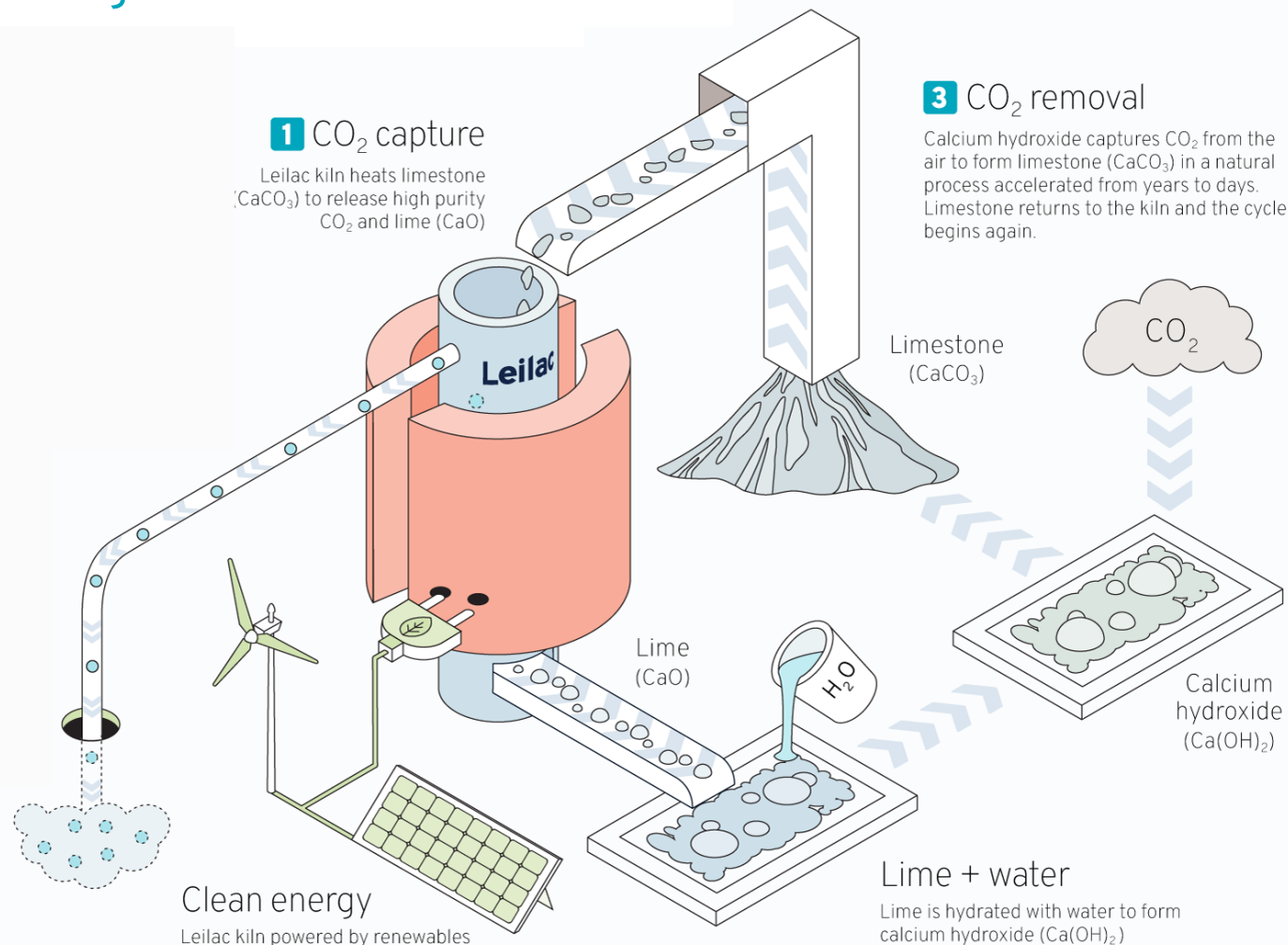
= up to 3,000 Leilac-3s

~2 built every week from
now until 2050 !!



Non-binding MOU for DAC global licence agreement with Heirloom

- Heirloom¹ is a Direct Air Capture company with an objective of capturing 1 billion tonnes of CO₂ by 2035.
- Heirloom's backers include Gates-led Breakthrough Energy Ventures, Carbon Direct and Microsoft.
- The MOU outlines key collaboration terms, including US\$3m in R&D contribution from Heirloom to advance Leilac calcium looping.
- The MOU also covers key terms for a global licence agreement, which once executed, will apply to any Heirloom facility.
- The technology licence fee comprises:
 - i. A royalty floor of US\$3 per tonne of CO₂ captured; and
 - ii. A variable royalty rate based on the prevailing CO₂ price for lime decarbonisation, less the amortised cost of capital of the Leilac kiln per tonne of CO₂ separated.



1. <https://www.heirloomcarbon.com/>

Decarbonising iron and steel

Indispensable, carbon-intensive & hard-to-abate.



Australian iron

- >A\$150b...44% of Australian export earnings in 2021⁴
- 96% of Australian iron ore is haematite⁵
- Value creation opportunity
 - 3-4x value add: iron ore → iron
 - Green Iron...

Decarbonisation solutions...ideally:

- Resource efficient
 - Compatible with multiple ore types
 - Low waste
- Minimal supply chain disruption
- Fast route to impact
- Economical
 - Leverage existing assets
 - Efficient use of energy, reductant & raw material



~7%
of global
emissions¹



~53%
of global iron ore
supplied by
Australia²



80-85%
CO₂ from iron ore
reduction³

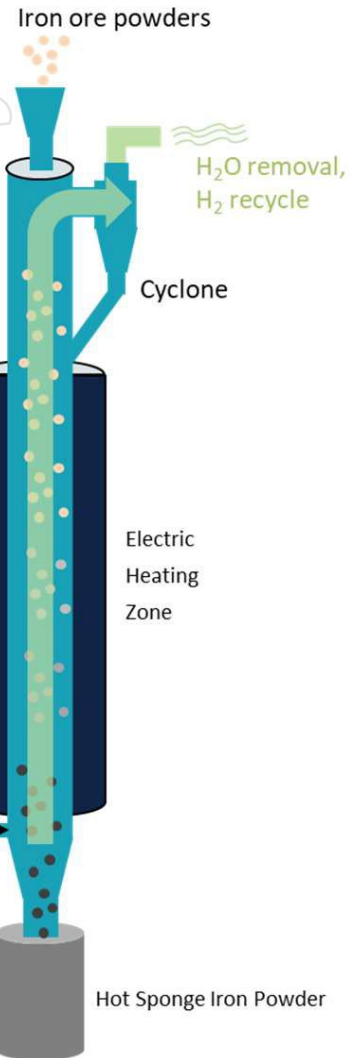
1. Climate change and the production of iron and steel. World Steel Association. 2021
2. www.statista.com
3. Climate change and the production of iron and steel. World Steel Association. 2021

4. <https://www.minerals.org.au/news/record-high-resources-export-revenue>
Global Cement & Concrete Association. Concrete Future Roadmap.
5. Iron Ore | Geoscience Australia
6. <https://zerotracker.net/>

Zero Emissions Steel Technology



Potential lowest cost zero emissions iron & steel



About ZESTY

- Hydrogen reduction of iron ore
- Can be easily and efficiently renewably powered
- Targeting theoretical minimum hydrogen use – simple gas recycle
- Processes fines <~0.3mm, no pelletisation
- Targeting zero emissions iron and steel*

	Simple process (low pressure / no fluid beds)	Compatible with fines & lower grade ores	No fossil fuel requirement	No CCS required	H ₂ not combusted / easily recycled
BF / BOF + H ₂	✓	✗	✗	✗	✗
DRI-MIDREX	✓	✗	✗	✗	✗
DRI-HISARNA	✓	✓	✗	✗	✗
FINMET	✗	✓	✗	✗	✗
HYBRIT	✓	✗	✓	✓	✗
DRI_MIDREX H ₂	✓	✗	✗	✗	✗
Flash iron making	✓	✓	✓	✓	✗
HYFOR	✗	✓	✓	✓	✗
ZESTY	✓	✓	✓	✓	✓

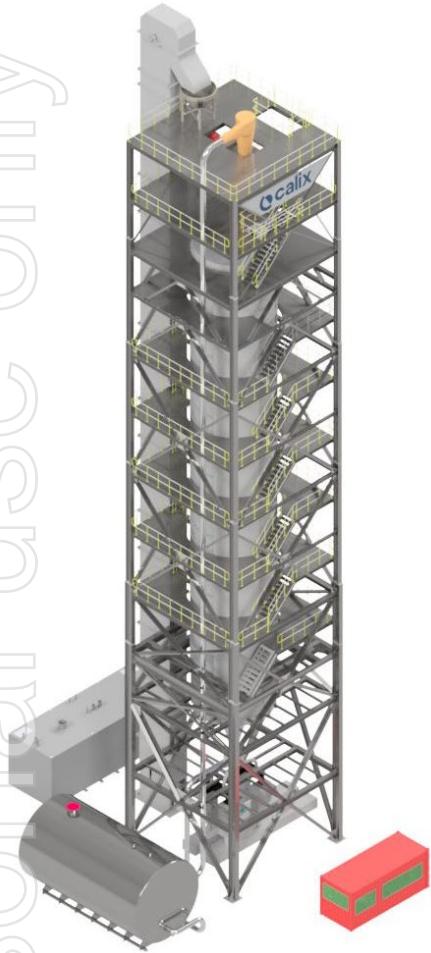
Calix's ZESTY Technology: pre-FEED / FEED study

Towards Financial Investment Decision by end-2023



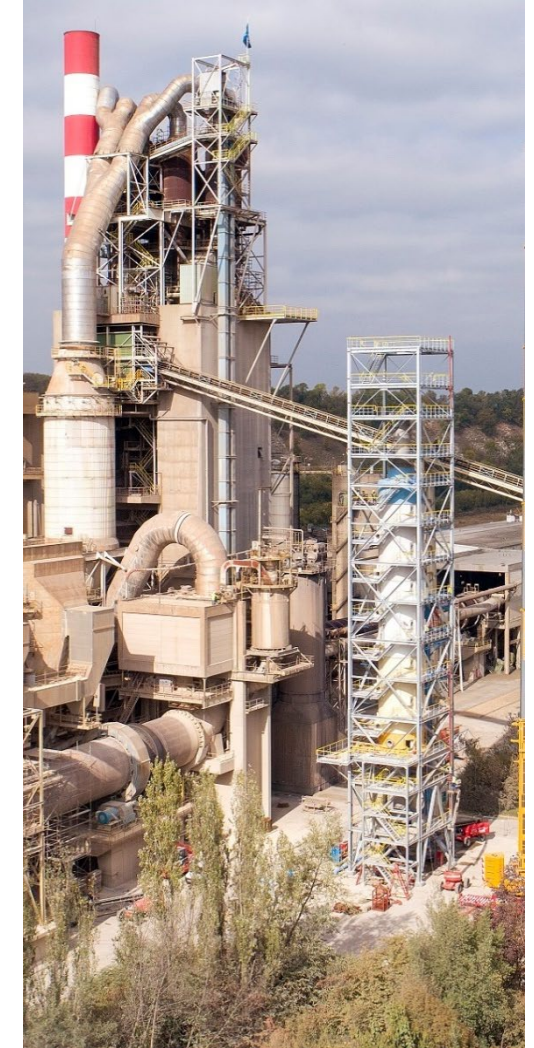
Pre-FEED / FEED study

- A\$947,035 ARENA grant.
- Proposed 30,000 tpa, zero CO₂ emissions ZESTY-iron demonstration plant.
- Study towards final investment decision, including:
 - Testing / confirmation / design input from pilot test runs
 - Beneficiation / passivation / briquetting / smelting trials
 - Multiple ore testing
 - Site determination
 - Knowledge sharing & partnership development



A render of the Calix fully electric ZESTY reactor rated for 30kTpa iron production

HILTCRC
Heavy Industry
Low-carbon Transition



The ZESTY reactor will be the same scale as Leilac-1 reactor for cement and lime

Sustainable lithium Joint Venture with Pilbara Minerals

Electrification and mid-stream mineral processing

Joint Venture Executed

- JV Full Documentation Executed with \$20m in Federal Government funding announced under the Modern Manufacturing Initiative¹
- Project CAPEX budget estimate from scoping study is \$50-70m
- Calix will own 45% of the JV and contribute 35% of the capital (10% free carry negotiated as per Calix IP contribution)
- Targeting an innovative mid-stream process:
 - Increase lithia concentration: ~6% → 35%
 - Reduce waste ~94% → 0
 - Reduce carbon intensity with solar-powered electrification of calcination
 - Increase ore recovery

1. Grant funding announced, contract executed with Federal Government in April 2023
2. Lithium mining: How new production technologies could fuel the global EV revolution – McKinsey April 2022
3. Electrification in Industrials. Deloitte Insights. August 2020



Sustainable lithium tailwinds

6x

6x growth in lithium carbonate & equivalents market by 2030²

45%

Electrification of industrial manufacturing target by 2035³



Increasing demand for sustainable & dependable supply of essential mineral products

SDG Impact



Calix's FY23 priorities and progress...

Continued acceleration – especially decarbonisation projects...

● Successfully completed

● On track

● Watch point

● Near-term focus



Water

Water treatment
Aquaculture

US: At least

- 2 new plants (1x June commissioning, 1x Q1 FY24 target)

- A second major new US state entry

China:

- Re-establish market entry

EU:

- Re-establish market entry



Biotech

Crop protection
Marine coatings
Health & pharma

Crop Protection

- 3rd licence agreement

Marine Coatings

- Successful phase 2 trials with MTA partners

Biotech

- Next new biotech application...health/pharma
- Successful initial in-vivo studies



Advanced Batteries

Advanced cathode &
anode materials

- First battery module – commercial format (commercial format pack June – testing Q1 FY24)
- Basis of Design – demonstration facility for cathode production
- At least 1 new chemistry = pouch cell success



Sustainable Processing

Renewable-powered mineral
& chemical processing

Refractories

- Convert MOU to full Project or licence agreement

Spodumene

- Full JV agreement
- Successful FEED study leading to FID

Iron and Steel

- Successful expanded ore program (commenced + even more ores to test, will continue into Q1 FY24)
- Basis of Design: Demonstration facility



Leilac

CO₂ mitigation for
cement & lime

- Convert at least two MOUs to full project / licence agreements – “full-scale” application
- Convert at least 2 projects from BODs to FEED studies
- Leilac long lead items procured, site works commenced (site demolition works proceeding, L2 permitting - critical path - on-going)



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