

21 February 2023

1H FY23 Results – Calix accelerates industrial decarbonisation and sustainability solutions

Sydney, Australia | 21 February 2023 – Australian environmental technology company, Calix Limited (ASX: CXL) (“Calix” or “the Company”) is pleased to report its financial performance for the six months ended 31 December 2022 (“1H23”).

Highlights

- Total revenue and other income increased by 21% to \$12.7m (1H22: \$10.5m), including a sales gross margin of 30% (1H22: 28%), with continuing revenue and margin contribution in the US and Asia Pacific from the Water line of business.
- A strong balance sheet and cash position of \$88.8m (1H22: \$25.0m) continues to support acceleration of the Company’s commercialisation strategy.
- The Company’s cash position is underpinned by a \$60.0m institutional placement in October 2022 and \$21.6m from a Share Purchase Plan completed in November 2022.
- The Company undertook significant planned investment of \$13.1m (1H21: \$8.7m) in capability and capacity building to commercialise Calix’s technology, particularly in the CO₂ Mitigation and Sustainable Processing lines of business. This includes investment in additional research, development and engineering, which accounted for 66% of the total increase in operational expenditure.
- Including the addition of 11 new engineers to support research and development, as well as customer project development personnel, Calix concluded 1H23 with 100 full-time employees, compared with 72 full-time employees on 31 December 2022.
- Operational highlights since 1 July 2022, include:
 - **First licence agreement signed for cement:** Leilac, Calix’s 93% owned subsidiary focused on the decarbonisation of cement and lime, signed a first-of-a-kind perpetual global licence agreement with Heidelberg Materials (FWB: HEI).
 - **Calix awarded funding for Zero Emissions Steel Technology (“ZESTY”):** A \$0.947m Australian Renewable Energy Agency (“ARENA”) grant was awarded to Calix to help fund a Basis of Design (“BOD”) and Front-End Engineering and Design (“FEED”) study for a renewably powered 30,000 tonnes per annum (“tpa”) demonstration plant.
 - **Leilac and CEMEX announced new projects:** Three full-scale decarbonisation projects were announced by Leilac and CEMEX S.A.B. de C.V. (NYSE: CX) in Germany, Poland and the US. Progress was also made towards a global licence agreement with CEMEX.
 - **Joint venture executed with Pilbara Minerals (ASX: PLS):** Supported by a grant of \$20m under the Australian Government’s Modern Manufacturing Initiative, Calix’s joint venture with Pilbara Minerals aims to develop novel mid-stream lithium processing to produce low carbon, low waste, and high value concentrated lithium salt.
 - **Calix partner in methanol project for sustainable fuels from CO₂:** With funding from the German-Australian Hydrogen Innovation and Technology Incubator (“HyGATE”) initiative, the Solar Methanol Project aims to use renewable energy, green hydrogen and CO₂ captured by the Leilac technology at an Adbri (ASX: ABC) lime plant to produce sustainable fuels.
 - **Leilac partner with Windship Technologies Ltd. for zero emissions shipping:** Supported

by £5m (AU\$8.73m¹) in funding from the UK Government, the project aims to demonstrate a low-cost route to zero emissions shipping with a combination of renewably powered propulsion and lime-based carbon capture.

- **Leilac executed non-binding Memorandum of Understanding (“MOU”) outlining the key terms for a global licence agreement with Heirloom for Direct Air Capture:** Leilac announces a new application of its core kiln technology for Direct Air Capture (“DAC”) of atmospheric CO₂, and a non-binding MOU for a global licence and collaboration agreement with Heirloom.

Calix’s Managing Director and CEO, Phil Hodgson said:

“The first half of the financial year has seen the Company make significant progress as we accelerate commercialisation of our industrial decarbonisation solutions for cement and lime, iron and steel, and lithium.

“Low touch business models such as our licence agreement with Heidelberg Materials, one of the world’s largest building materials companies, and more recently our MOU with Heirloom, a Gates-backed direct air capture technology company are assisting us to deploy and scale our technology at speed.

“Similarly, our joint venture with Pilbara Minerals, which we also executed in the first half of the financial year, combines our capabilities to generate a more sustainable and valuable lithium product. If successful, the project will ultimately enable us to license the technology to the global spodumene processing industry.

“Alongside our industrial decarbonisation businesses, we’re seeing great progress in our Advanced Batteries, Biotech and Water lines of business as they also work towards addressing global sustainability challenges.

“We continue to invest heavily in capability and capacity building, including people, technology and professional support services. This investment, along with our ongoing fiscal prudence, and most importantly, the ingenuity from our dedicated and hardworking team are enabling Calix to successfully grow multiple lines of business simultaneously, each with large addressable markets being propelled by strong ESG tailwinds.”

CO₂ Mitigation

Leilac – Calix’s CO₂ Mitigation line of business – has continued a significant transformation in 1H23 as it commercialised and scaled its technology for cement and lime decarbonisation. This follows an investment in Leilac from one of the world’s leading decarbonisation investors, Carbon Direct, of €15m in September 2021 for a 6.98% stake to accelerate the deployment of the Leilac technology, and a successful Financial Investment Decision in March 2022 for its demonstration scale plant, Leilac-2.

In October 2022, Leilac executed a perpetual, non-exclusive global licence agreement with one of the world’s largest building materials companies, Heidelberg Materials (FWB: HEI). The licence agreement applies to any Heidelberg Materials facility where the Leilac technology is installed. Heidelberg Materials operates 149 cement plants across five continents. The technology licence fee is a first-of-a-kind for the industry, comprising: a royalty floor; a variable component linked to the European carbon price/value; and a royalty cap linked to costs versus alternative technologies. The agreement requires the royalty quantum to remain commercial-in-confidence. Calix will retain all improvements

¹ Based on an exchange rate of 1GBP = 1.75 AUD, as at 15 February 2023

to Calix IP.

In November 2022, Leilac announced three new decarbonisation projects in partnership with global building materials company, CEMEX S.A.B. de C.V. (NYSE: CX). The projects aim to deploy Leilac's unique technology to capture unavoidable process emissions released in the production of cement. Engineering studies are currently underway for the projects based at CEMEX plants in Germany, Poland and the USA. Leilac is working closely with CEMEX to progress the projects as well as a global licence agreement intended to cover CEMEX's global operations.

From August 2022 to February 2023, the Leilac project pipeline grew by 31%, with a number of projects also progressing through initial design and scoping work. Leilac's rapidly growing pipeline of projects is a testament to the significant demand for technically viable, low-cost decarbonisation solutions for cement and lime. This demand continues to grow, driven by increasingly ambitious net-zero commitments from industry and strong carbon pricing incentives in Europe, and carbon tax credits in the USA.

On 30 January 2023, Calix announced it was a member of an Australian-German consortium that aims to develop the production of sustainable fuels from renewable energy, green hydrogen and captured process CO₂ emissions. The HyGATE Solar Methanol Project was awarded AU\$19.48 million from ARENA and €13.2 million (~AU\$20.19m) from Germany's Federal Ministry of Education and Research ("BMBF") to develop a world-first green methanol demonstration plant in Port Augusta, South Australia. The clean and economical synthesis of methanol could help enable the decarbonisation of hard-to-abate transport sectors, such as aviation and shipping, responsible for 4.3% of global CO₂ emissions.²

On 16 February, Leilac and its partner Windship Technology Limited were awarded £5m (~AU\$8.7m) by Innovate UK to demonstrate a novel, low-cost route to zero carbon shipping. The project, led by Windship, combines renewably powered propulsion and a lime-based carbon capture solution for remaining emissions from conventional diesel engines. As part of the funding, Leilac will receive a grant of £1m (~AU\$1.75m) to demonstrate the delivery of lime to an exhaust gas scrubber for CO₂ capture.

On 21 February, Leilac and Heirloom, a direct air capture company, announced they had signed a non-binding MOU for the use of Leilac's kiln technology in Heirloom's DAC solution. The MOU outlines the key terms for a global licence and collaboration agreement. The collaborative partnership between Leilac and Heirloom, whose investors include Bill Gates-backed Breakthrough Energy Ventures, as well as existing Leilac shareholder Carbon Direct Capital Management, Ahren Innovation Capital and Microsoft, aims to deliver an innovative and highly efficient approach to atmospheric carbon dioxide removal by DAC, leveraging Leilac's core technology developed for the decarbonisation of cement and lime.

Sustainable Processing

Industrial decarbonisation tailwinds continue to drive demand for renewably powered, low waste processing solutions for the materials of our future economy. Renewably powered at-mine processing can enable both a significant reduction in the total CO₂ footprint of critical minerals, and the local creation and capture of significant additional value within the critical mineral value chain.

The indirect heating approach of Calix's patented core technology platform is ideally suited to help mineral and chemical processing transition to renewable sources of energy and alternative fuels, while separating the heat source from the chemical reaction enables the efficient use of green hydrogen in place of conventional, carbon intensive reducing agents. Calix is also developing

² <https://www.iea.org/reports/transport>

innovative refining solutions that enhance recovery of ore and create near zero-waste products.

In November 2023, Calix was awarded \$0.947m by ARENA to help fund a BOD and FEED study for a renewably powered 30,000 tpa demonstration plant for the production of direct reduced iron (“DRI”) with ZESTY.

Calix’s ZESTY uses hydrogen in a renewably powered reactor to produce green iron and ultimately, green steel. ZESTY can be electrically heated and is compatible with intermittent sources of renewable generation and grid load balancing applications. The unique, indirect heating approach not only enables efficient electrification, but also removes sources of combustion to allow a simpler design and processing at significantly lower temperatures than a conventional blast furnace. Unlike other DRI technologies, Calix’s indirect heating of the reduction reaction with renewable power means hydrogen is not consumed as a fuel, only as a reductant, and is easily recycled in the process. As such, ZESTY is targeting the minimum hydrogen use of 54 kilograms of hydrogen per tonne of iron, enabling more efficient and economical production of green iron and steel.

ZESTY is compatible with iron ore fines, reducing waste and removing the need for pelletisation. This ability to handle small particle sizes may also make it easier to remove impurities compared with other DRI processes that require pelletised and typically higher-grade iron ores. Further testing and validation of this potential is underway.

Australia’s combination of globally leading iron ore and renewable energy resources promises to provide a unique global competitive advantage for green iron production. Australia supplied over 53%³ of the world’s iron ore in 2021, contributing nearly 44% of Australia’s total export earnings⁴. Hematite, however, makes up 96% of Australia’s exported iron ore⁵ and is not suited to most electric arc furnace (“EAF”) methods. ZESTY is compatible with multiple iron ore types, including hematite, providing pathways for one of Australia’s most important exports to become sustainable in a low carbon world.

Also in November 2023, Calix executed final joint venture agreements with Pilbara Minerals (ASX: PLS) to develop novel mid-stream lithium processing to produce low carbon, low waste and high value concentrated lithium salt. The joint venture is supported by a grant of \$20m under the Australian Government’s Modern Manufacturing Initiative.

Australia currently produces nearly half the world’s lithium, with the global market for lithium carbonate and equivalents projected to grow six times by 2030⁶. Currently, Australia exports lithium as spodumene concentrate, typically containing approximately 6% lithia (Li₂O) and 94% waste. This process moves much of the lithium value chain offshore and creates significant economic and environmental cost.

The Calix and Pilbara Minerals joint venture aims to develop a renewably powered at-mine processing innovation via Calix’s calcination technology for sustainable processing of minerals. The proposed mid-stream process aims to produce a refined lithium salt product that greatly reduces the cost, waste, and CO₂ footprint of Australian lithium, creating a significantly higher value export product. The project includes the potential development of a demonstration plant at Pilbara Minerals’ Pilgangoora Project. A Financial Investment Decision on the proposed demonstration plant is planned before the end of the 2023 financial year. A successful mid-stream project will enable the joint

³ <https://www.statista.com/statistics/300328/top-exporting-countries-of-iron-ore/>

⁴ <https://www.minerals.org.au/news/record-high-resources-export-revenue>

⁵ [Iron Ore | Geoscience Australia](#)

⁶ Lithium mining: How new production technologies could fuel the global EV revolution - McKinsey Apr 2022

venture to license the technology to the global spodumene processing industry.

Advanced Batteries

Calix's unique kiln technology is capable of producing nano-structured materials with advanced properties tailored to a variety of applications. Using its BATMn reactor, Calix is developing high performance, lithium-ion hybrid batteries based on nano-active electrode materials. The batteries are designed to be more sustainable, affordable and recyclable.

Calix's Advanced Batteries research and development has transitioned from prototyping to pilot production of up to 200kg of lithium manganese oxide ("LMO") material. Testing has shown the novel material is suitable for high power applications.

Since 30 June 2022, Calix has commenced a commercial-scale trial production of its proprietary lithium battery cathode material with [AMTE](#) in the UK. It has also progressed research and development on new cathode and anode chemistries under the [FBI CRC](#), [StorEnergy ARC](#) and [EU Polystorage network](#).

Biotech

Calix's Biotech line of business is developing novel magnesium oxide materials with high surface area and bio-activity to target three applications: crop protection, advanced coatings, and antimicrobials. The benefits of a safe, effective and environmentally friendly bio-active magnesium oxide continue to be identified and validated, with progress across all three application areas.

In crop protection, BOOSTER-Mag has been adopted as part of recommended treatment protocol by a Netherlands farming co-operative. Discussions continue to progress regarding a third license agreement with another crop protection company. Trials of Calix's magnesium based marine coating continue to prove successful. Current projects include two trials with overseas marine coating manufacturers, and one trial with a significant local potential end-user. Project planning has also commenced for the next phase of anti-microbial studies under the CRC SAAFE program.

Water

Calix's magnesium hydroxide liquid ("MHL") is a safe alkali chemical that can provide a more environmentally friendly alternative to existing water treatment products, such as caustic soda. Calix's MHL based AQUA-Cal+ and ACTI-Mag products deliver more effective, economical and sustainable solutions for the treatment of water and wastewater.

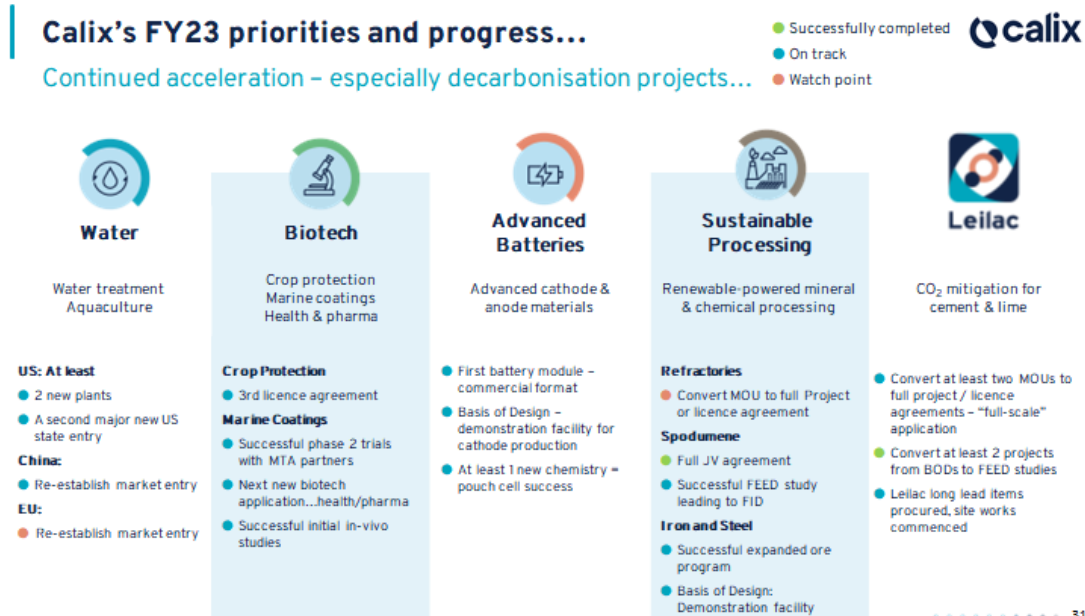
In H123, the Water line of business grew revenues to \$8.5m, a 9% increase (H122: \$7.8m) when excluding historical revenues from a coal fired power station customer that were driven by the now ceased coal emissions reduction tax credit in the USA. Gross margins also increased from 28% to 30%. Permit applications, engineering and procurement have commenced for two new US-based production facilities to support growth into new territories.

Calix's commercialisation strategy

Leveraging its core technology platform and a global network of research and development collaborations, Calix is urgently developing multiple environmental businesses that deliver positive global impact. Every application of our technology addresses a specific global environmental challenge consistent with our purpose, values and company ethos. They present significant opportunities to create shared value, economic growth and possess sustainable competitive advantages. Low touch business models such as licensing, joint ventures and spin-out strategies are helping to commercialise each new application at speed, seizing every opportunity to urgently address sustainability challenges.

Report card

The company has made significant progress against the key priorities identified for the 2023 financial year ("FY23").



Outlook

Calix will continue to work towards its FY23 key priorities, with a particular focus on accelerating commercialisation of its industrial decarbonisation solutions for cement and lime, iron and steel, and lithium. Low touch business models, including the conversion of existing relationships to licence agreements, will assist the Company to urgently address global sustainability challenges and achieve its growth strategies.

Investor webinar

Calix will host an investor webinar with Managing Director and CEO, Phil Hodgson, and Chief Financial Officer, Darren Charles, at 11.00 am AEDT today, 21 February 2023 to discuss the 1H23 results.

Register for the investor webinar at the link:

https://us02web.zoom.us/webinar/register/WN_zY3qWwv_RegKfi9ssf8meA

After registering, you will receive a confirmation email containing information about joining the webinar.

Investors can submit live questions during the webinar and are also invited to send questions prior to the webinar to simon@nwrcommunications.com.au.

–ENDS–

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

Phil Hodgson
Managing Director and CEO
Calix Limited
9-11 Bridge Street
Pymble
NSW 2073
Ph +61 2 8199 7400

About Calix

Calix Limited (ASX: CXL) is an environmental technology company solving global challenges in industrial decarbonisation and sustainability, including CO2 mitigation, sustainable processing, advanced batteries, biotechnology and water treatment.

Calix's patented core technology platform delivers efficient indirect heating of raw materials to enable electrification of industries, efficient capture of unavoidable emissions, and green industrial processing solutions. Its flash heating approach can also produce unique nanoporous materials with enhanced chemical and/or bio-activity.

Leveraging its core technology platform and a global network of research and development collaborations, Calix is urgently developing multiple environmental businesses that deliver positive global impact. Because there's only one Earth, and it's already ours.

Mars is for quitters.

Website: <https://www.calix.global/>
LinkedIn: <https://www.linkedin.com/company/calix-limited/>
Twitter: [@CalixLimited](https://twitter.com/CalixLimited)
YouTube: [CalixLimited](https://www.youtube.com/CalixLimited)

For more information:

Phil Hodgson
Managing Director and CEO
phodgson@calix.com.au
+61 2 8199 7400

Darren Charles
CFO and Company Secretary
dcharles@calix.com.au
+61 2 8199 7400

Investor enquiries

investorrelations@calix.global

Media enquiries

media@calix.global