



CIRCULAR ECONOMY LAB

2 YEARS ON...



COREO ACKNOWLEDGES THE FIRST AND CONTINUING CUSTODIANS OF THIS COUNTRY, THE GROUND UPON WHICH WE COLLECTIVELY WORK, CREATE, LIVE AND DREAM.

COREO RECOGNISES ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLES CONTINUING CONNECTION TO LANDS, WATERS, AND COMMUNITIES, AND PAY OUR RESPECT TO ABORIGINAL AND TORRES STRAIT ISLANDER CULTURES, AND TO ELDERS PAST, PRESENT AND FUTURE.



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* Kitchen as a subscription



UP IN LIGHTS



The environmental and economic savings of processing recycled aluminium are profound: Production of aluminum from recycled metal saves more than 90 percent of the energy that would otherwise be required by primary production.¹

TEAMS

United for Change

- Demonstrated a fully verifiable Australian closed loop for plastic beverage containers.
- Developed a Queensland based closed loop for aluminium beverage containers.

C Suite

- One of the project partners has fully embraced the circular economy and are now developing a service for their office clients to keep furniture and fit-outs out of landfill and at their highest value for as long as possible.

KAAS

- Project partners reported that their participation in the CE Lab demonstrated their circular economy leadership both internally and externally which in turn allowed their businesses to better understand and further invest in circular economy initiatives.

WHAT'S THE OPPORTUNITY?

It's estimated that each year corporate office refurbishments throughout Australia generate more than 30,000 tonnes of loose furniture waste. Yet, on average, only 2% of this furniture is reused.²

WHY DOES THIS MATTER?

Paper towels cannot be recycled the way other paper products are because the fibers are too short to be used again and in the oxygen-starved conditions of a landfill, paper towels break down and generate methane, a significant contributor to our warming climate.

3P

- \$50,000 further funding secured.
- A bioplastic bin liner initiative trialled by one of the partners led to 100 tonnes of previously landfilled paper towels being composted.

OVERALL?

The CE Lab provided the opportunity for organisations that would have otherwise never worked together to collaboratively solve complex challenges and unlock opportunities creating social, environmental, economic and reputational value.

The circular economy multi-party innovation programme that underpinned the CE Lab was a first for Queensland and Australia and demonstrated clear circular economy leadership from the Queensland Government and all participating organisations.

In short.... The CE Lab helped kick start it all.



¹ Sustainability of Recycling Aluminium, 2021 <https://www.aluminum.org>

² National Waste Report 2020, 4 November 2020, Department of Agriculture, Water and the Environment

<https://www.awe.gov.au/sites/default/files/env/pages/5a160ae2-d3a9-480e-9344-4eac42ef9001/files/national-waste-report-2020.pdf>

INTRODUCTION

The intent of this report is to provide an update on the projects that were borne from the Circular Economy Lab (CE Lab), an experimental and collaborative environment with a mission to accelerate the circular economy in Queensland.

Launched in 2019, designed by Coreo and Business Models Inc and supported by the Queensland Government, the CE Lab was a unique multi-party co-innovation programme where 26 organisations from large multinationals through to start-ups, local governments, and social enterprises, explored emerging opportunities and co-designed circular economy solutions.

A total of five project teams, each made of up to seven organisations, came together over four months to design solutions for entrenched industry challenges.

The final solutions were presented to a panel of judges on 18 June 2019, where participants were pitching for their share of the \$150K fund.

As the transition towards a circular economy requires systems level changes it is well understood that these changes won't happen overnight. To this end, this report seeks to follow up with each of the project teams to understand each project's progress to date as well as gather insights into each organisation's experience of the CE Lab and whether their participation catalysed further circular economy investment, research, staff allocation, and education.

Although still at an early stage in Australia in 2019, the CE Lab helped position the QLD Government, and Queensland more broadly, as a leader in the circular economy and helped catalyse further attention and action towards the circular economy nationally.



\$150k

QLD GOVERNMENT
SEED FUNDING

26

CE LAB
PARTICIPANTS



\$170BN

REPRESENTED
IN INDUSTRY

5

PROJECTS
PITCHED



CIRCULAR ECONOMY - A QUICK EXPLAINER



A circular economy aims to redefine growth, focusing on values and value creation.

It is an economic model that is designed to be restorative and regenerative, underpinned by gradually decoupling economic activity from the consumption of finite resources, designing waste and pollution out of the system and transitioning our energy to renewable energy sources.

In contrast to the linear, the circular economy is about integration so as to enable feedback loops and synergies. In a circular model things become multifunctional, which works to not just close loops but also create more resilient systems because they are more self-sufficient and less at risk of dependencies.

As powerfully stated by global leader for circular economy, Dame Ellen Macarthur

"The circular economy isn't about one manufacturer changing one product, it is about all of the interconnected companies and governments that form our infrastructure and economy coming together... it's about rethinking the operating system itself"

In 2019 the Ellen MacArthur Foundation, in collaboration with Material Economics, released a study highlighting that while moving to renewable energy and implementing energy efficiency measures can address 55% of global greenhouse gas emissions, to achieve the UN climate goals it is imperative that we implement the circular economy with a particular focus on how we produce and consume five key materials; aluminium, steel, cement, plastics and food

With three guiding principles and five supporting business models...

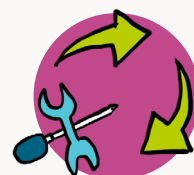
The circular economy provides a tangible and practical tool kit to achieve impact across social, economic and environmental realms.

CIRCULAR ECONOMY PRINCIPLES



CIRCULAR ECONOMY BUSINESS MODELS

- 1 Circular supplies**
Replace traditional material inputs with bio-based, renewable, or recovered materials. Reduce demand for virgin resource extraction in the long run.
- 2 Resource recovery**
Leverage technology to recover and reuse resource outputs. Aim to eliminate material leakage and maximise economic value.
- 3 Sharing platforms**
Sharing of underutilised products can reduce the demand for new products and their embedded raw materials.
- 4 Product life extension**
Extend the life cycle of products and assets to ensure they remain economically useful.
- 5 Product as a service**
Customers use products through a lease or pay-for-use arrangement versus the conventional approach to ownership.



Finally, it is important to note that the circular economy doesn't have one answer but rather it presents a set of possibilities and provides a trajectory for progress that demonstrates leadership, improves environmental performance, and strengthens social value - all key attributes the Queensland Government fostered through their support of the CE Lab.

THE CE LAB JOURNEY

WHERE DID WE START?

The Queensland CE Lab emerged from a desire to take the circular economy out of theory and put it into practice.

Where we once had to compete for resources to thrive in business and life, we now must collaborate to make better use of finite resources, make sense of the exponential growth of information, and create, deliver and capture value in line with the circular economy. Key to the CE Lab's success was the preparation up front. During the first phase of the project the Lab team (Coreo and Business models Inc.) identified five key areas of opportunity for Queensland.

The Lab team then engaged with leaders from these industries to understand specific challenges and opportunities. From this process, five foundation partners were selected: Brisbane Airport, Meat and Livestock Australia, Suez, Container Exchange (COEX), and Lendlease.

During multiple design meetings, the Lab team worked with each foundation partner to narrow down the challenge or opportunity that they wanted to focus on during the CE Lab. From this process, the Lab team was able to establish concrete "How Might We" questions and challenge briefs to take to wider stakeholders impacted by the challenge.

The Lab team engaged with a large number of corporates, start-ups, not-for-profits and local governments to identify the most suitable partners to join the foundation partners at the table and in the end, 26 organisations signed up and invested time and capital in Australia's first CE Lab.

The Queensland Government's investment of \$150,000 was met and exceeded by industry with over \$160,000 of industry funds raised. This made the CE Lab a truly collaborative environment where both public and private actors were invested in the creation of a circular economy for Queensland.



WHAT DID WE DO?

The CE Lab ran from January to June 2019 and was a co-innovation program that brought together Coreo's expertise in circular economy and Business Models Inc award-winning design thinking methodology.

The CE Lab provided a fast-paced environment for learning and ideation, designed to address entrenched industry challenges. Each CE Lab team worked through four workshops during the CE Lab program: **Understand; Ideate; Prototype/Validate; Prepare to scale.**

The final solutions were presented to a panel of judges on 18 June 2019, where participants were pitching for their share of the \$150K fund.



WHERE ARE THEY NOW?

Making demonstrable progress towards the circular economy rarely travels a straight line.

Each team's progress demonstrates the complexities of attempting to implement systems level changes as well as the need for effective collaboration.

DIGITAL-PHYSICAL SUPPLY CHAIN:

UNITED FOR CHANGE

PROJECT DESCRIPTION

United for Change's goal was to collect 100% of all sold PET bottles and aluminium cans to ensure they were 100% recycled, rebirthed and reused across Queensland and Australia.

Building on the successful Container Exchange scheme, United for Change was set to provide an alternative to the current offshoring practice of recycling and remanufacturing.

United for Change aimed to connect these recycled material streams with local Queensland manufacturers like Evolve Group, who are able to upcycle these materials and turn them into higher-value goods, creating new economic opportunities and restoring social trust in the recycling process.

The recycled materials were then sent to be tracked and traced through Everledger's sophisticated blockchain technology, providing full transparency into the provenance and chain of custody of containers throughout the value chain.

WHO WAS INVOLVED?



RioTinto



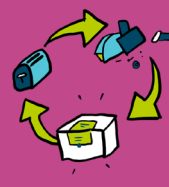
EVERLEDGER



WHAT WERE THE CE PRINCIPLES & BUSINESS MODELS APPLIED?



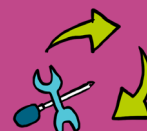
Design out waste



Keep materials in use



Resource recovery



Circular supplies

PERSIST, PIVOT, OR PAUSE?

PERSIST

On completion of the CE Lab, United for Change turned their immediate focus to investing in a trial to track and trace PET collected through the Containers for Change scheme.

For this trial, PET and glass products were traced using blockchain technology from partner Everledger. The trial was a roaring success and demonstrated that 100% of PET containers collected and returned in Queensland were recycled into other products and introduced back into the market. Queenslanders then used these materials again, demonstrating the circular economy in action. This trial demonstrated the viability of a closed-loop system for PET, collected through the Containers for Change scheme

and traced using blockchain technology to help rebuild trust in the recycling system.

Separate from the PET and glass trial, United for Change partners - COEX and Rio Tinto - continued their work together to connect the aluminium supply chain in Queensland through COEX collected aluminium cans being returned to the Boyne Smelter for reprocessing. Two years on, this partnership is still going strong*.

Overall, the CE Lab proved to be a very successful exercise for the United for Change team who were able to validate the viability and feasibility of their project. United for Change produced a video capturing this trial [which can be viewed here](#).

*Due to the ongoing nature of these projects they remain commercially sensitive but more is happening



TEAM INSIGHTS

Organisations for United for Change raised several points in regards to what could have helped progress the project further.

First, accountability as a result of receiving the funding. United for Change remarked that having a formal process to report progress made upon completion of the CE Lab could have helped create more momentum at a corporate level.

Secondly, having a government stakeholder as an advisor in each team with the purpose of understanding the opportunity was also raised.



"It would have been great to see where the government saw value and what they thought of the idea. That would have helped connect the policies, the project, and the funding to the ecosystem."

CERTIFIED CIRCULAR SPACES:

C-SUITE

PROJECT DESCRIPTION

C-Suite's idea was to build a digital tool to quantify the value of the circular economy in the built environment.

C-Suite's goal was to inform owners of new property projects and tenants of the value in pursuing circularity as a major driver in the design of their unique space, with due consideration of their business operations.

C-Suite was set to provide an overall circularity rating or score for property projects to enable owners and tenants to market their commitment to the Circular Economy.

WHO WAS INVOLVED?



EARTHCHECK

WHAT WERE THE CE PRINCIPLES & BUSINESS MODELS APPLIED?



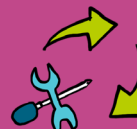
Design out waste



Keep materials in use



Resource recovery



Circular supplies



Product life extension

PERSIST, PIVOT, OR PAUSE?

PERSIST, THEN PIVOT

C-Suite progressed their project idea for just over nine months after the conclusion of the CE Lab; however, staff turnover and an inability to agree on direction hampered efforts to mature the idea beyond the initial concept stage.

Although C-Suite failed to make demonstrable progress, one of the participating organisations has taken the concept of circular economy and embraced it wholeheartedly after participating in the CE Lab.

This organisation is now developing an internal platform to offer their clients an option to participate in the circular economy. This platform would allow furniture and fitouts left in situ by exiting tenants to be analysed, catalogued, and stored for future resale to tenants who want to save costs or improve their environmental credentials. This concept is currently being worked up internally and is a direct result of this organisation's participation in the CE Lab.



TEAM INSIGHTS

The biggest barrier for C-Suite was staff turnover.

Several staff members from both the foundation partner and key industry partners left their positions shortly after the conclusion of the CE Lab.

This had significant consequences for C-Suite as there was limited continuity, and stability within the project team.



CIRCULAR CONNECTED COMMUNITIES:

KITCHEN-AS-A-SUBSCRIPTION

PROJECT DESCRIPTION

The Kitchen-as-a-Subscription (KAAS) project sought to create the most accessible home energy kitchen and appliances solution in the world.

Focused on how to transform behaviour of individuals and communities, associated with energy use through incentives and service models, the team in this project decided to concentrate their effort on the kitchen, the centre of today's home.

The model named KAAS was set to be tested at Lendlease's master planner community, Yarrabilba, and aimed to reimagine how first-home buyers would enter the housing market and undertake new behaviours of material and energy consumption.

In the model, Fisher & Paykel's most energy efficient appliances would be offered on a \$2 per week subscription for first-home buyers in the Lendlease community.



WHO WAS INVOLVED?



FISHER & PAYKEL



WHAT WERE THE CE PRINCIPLES & BUSINESS MODELS APPLIED?



Design out waste



Keep materials in use



Resource recovery



Product life extension



Product as a service

PERSIST, PIVOT, OR PAUSE?

PIVOT, THEN PERSIST

Upon completion of the CE Lab, months of exploratory work was undertaken by the foundation partner and a key industry partner to understand the contextual and technical requirements of piloting KAAS.

Through this work, it became apparent that a master planned community would not be the most appropriate context for the launch and trial of KAAS as the issue of scale and replicability could not be overcome.

To continue working through the identified challenges these two partners have both joined Business Model Inc's [Housing Action Lab](#) (HAL), another multi-party innovation lab focused on bringing together Queensland leaders to explore Australia's most pressing housing issues.

Through the HAL, these two partners hope to identify the most appropriate context to trial KAAS and increase the benefit that this model could deliver to vulnerable Queensland communities.



TEAM INSIGHTS

The greatest insights reported from this team were that through their participation in the CE Lab they were able to point to the KAAS project as a tangible step on their journey towards the circular economy.

This feedback was shared by several of the partners...



"Through our work in the CE Lab we were able to test and trial what circular economy meant in a collaborative setting and this, in turn, allowed us to demonstrate progress to our peers and the wider industry".

NEW WAYS OF PACKAGING:

3P

PROJECT DESCRIPTION

3P represented the ambition to eliminate plastic to landfill by replacing soft plastics in the meat packing supply chain with a circular alternative.

The outcome was a phased approach to eliminate soft plastic film from the food product manufacturing supply chain through the input of a PHA bioplastic film that would enable a closed loop process onsite at Inghams.

The closed loop material flow would then allow the PHA film to be used, collected and remade onsite through the co-location of a fermentation facility. Instead of seeing the contamination on the film as a challenge this team saw it as an opportunity to create higher value applications through composting and the fermentation facility.



WHO WAS INVOLVED?



WHAT WERE THE CE PRINCIPLES & BUSINESS MODELS APPLIED?



Design out Waste



Regenerate natural systems



Resource recovery



Product life extension

PERSIST, PIVOT, OR PAUSE?

PERSIST AND PIVOT

Upon completion of the CE Lab, 3P secured further funding from SUEZ (an additional \$50,000 added to the \$40,000 won during the CE Lab). In addition to the funding, SUEZ Global have offered 3P technical support via specialised labs internationally.

With this support 3P continued work on their solution, commencing with the validation of substituting bioplastics for virgin plastics on the factory floor. COVID presented challenges around sourcing appropriate materials and as such, one partner pivoted their approach and instead began validating the use of bioplastics for non-food grade use.

This initiative led to this partner recently trialing the use of bioplastic bin liners in their bathroom and kitchen bins which has allowed them to compost over 100 tonnes of previously landfilled paper towels.

The remaining members of 3P have continued to work together trialing different bioplastic models and compositions. This work has resulted in further collaborations between the partner companies outside of the original 3P project. In addition, one partner has had interest from clients who are also in the poultry sector and who are looking for solutions to contaminated bioplastics.



TEAM INSIGHTS

3P reported that COVID presented several challenges for the project idea including sourcing of materials as well as changing business priorities amongst the partners.

Despite COVID slowing progress over the past 12 months, 3P remains an active project team and are currently in regular dialogue to continue progressing elements of the project.



RIPPLE

PROJECT DESCRIPTION

As a regional investment platform, Ripple’s goal was to help identify waste in regional communities, enabling local communities to work together to identify new opportunities and businesses to use the waste.



WHO WAS INVOLVED?



WHAT WERE THE CE PRINCIPLES & BUSINESS MODELS APPLIED?



Design out waste



Regenerate natural systems



Resource recovery

PERSIST, PIVOT, OR PAUSE?

PAUSE

As the only team unsuccessful in securing seed funding at the conclusion of the CE Lab it is no surprise that this team chose not to continue working on their circular economy solution.



TEAM INSIGHTS

Ripple participant’s reported that they went into the CE Lab without clarity on what they were hoping to achieve which they believe contributed towards their idea being less developed than other CE Lab ideas presented.

However, on the positive side, Ripple participants reported that their participation in the CE Lab helped catalyse circular economy conversation and action with their individual clients.



OVERALL EXPERIENCE

The below insights were gathered from semi-structured interviews with participating organisations of the CE Lab. These insights serve to detail the experience and offer constructive feedback.

PIONEERING INITIATIVE

Several respondents highlighted that in an environment and time where the circular economy felt as though it was just emerging *“it was exciting to work together with other organisations around a particular challenge or problem and try to use circular economy principles and business models to unlock opportunities.”* Beyond this, respondents mentioned that it was even more promising to see such an initiative funded by the government.

Several interviewees highlighted the approach, tools and methods during the CE Lab were innovative, informative, and useful, especially *“in creating groups that could function together as a team but also in generating and prioritising ideas.”*

HIGH-QUALITY COLLABORATION

The opportunity for effective collaboration during the CE Lab was mentioned by all interviewees. Participants were particularly impressed by the high-quality participant audience and expressed that *“it was nice to be part of a dynamic group who were clearly mobilised to change and wanted to invest in exploring new opportunities around the circular economy.”*

Many interviewees shared that the CE Lab allowed them to meet and work with organisation's that they would have not had the opportunity to collaborate with otherwise. This has led to several long lasting relationships which have matured well beyond the confines of the CE Lab and have since morphed into more projects and business collaborations.

THE CE LAB REALLY DE-RISKED THE OPPORTUNITY OF TRYING SOMETHING NEW AND WORKING WITH UNLIKELY ORGANISATIONS TO DO SO.



INSPIRING & MOTIVATING

The CE lab proved to be a strong source of inspiration and motivation for the participating organisations. One interviewee stated that it was *“inspiring, beneficial and interesting to be surrounded by other organisations all pursuing change towards a circular economy”.*

Another added that *“the CE Lab really de-risked the opportunity of trying something new and working with unlikely organisations to do so”.*

Aside from providing inspiration, several participants reported that the CE Lab pushed them to explore different opportunities and *“edged them outside of their comfort zone whilst giving them something tangible to show and draw from.”*

OUTSTANDING ORGANISATION

Interviewees reported being impressed by the way the CE Lab was organised, both for the way it was conducted and for the quality of the delivery. One interviewee in particular highlighted that *“it was good to see a combination of large and small businesses, local government and social enterprises involved. It was not only about the big guys and this changed the dynamic.”*

References to the great energy in the room and the supportive approach, instilled by the organisers were made multiple times. Additionally, the change in venues was also highlighted and cited as a bonus in the experience.

THE RIGHT TIMING

Although still at an early stage in Australia in 2019, the CE Lab helped position the QLD Government, and Queensland more broadly, as a leader in the pursuit of the circular economy and this was shared as a source of pride for several of the interviewees.



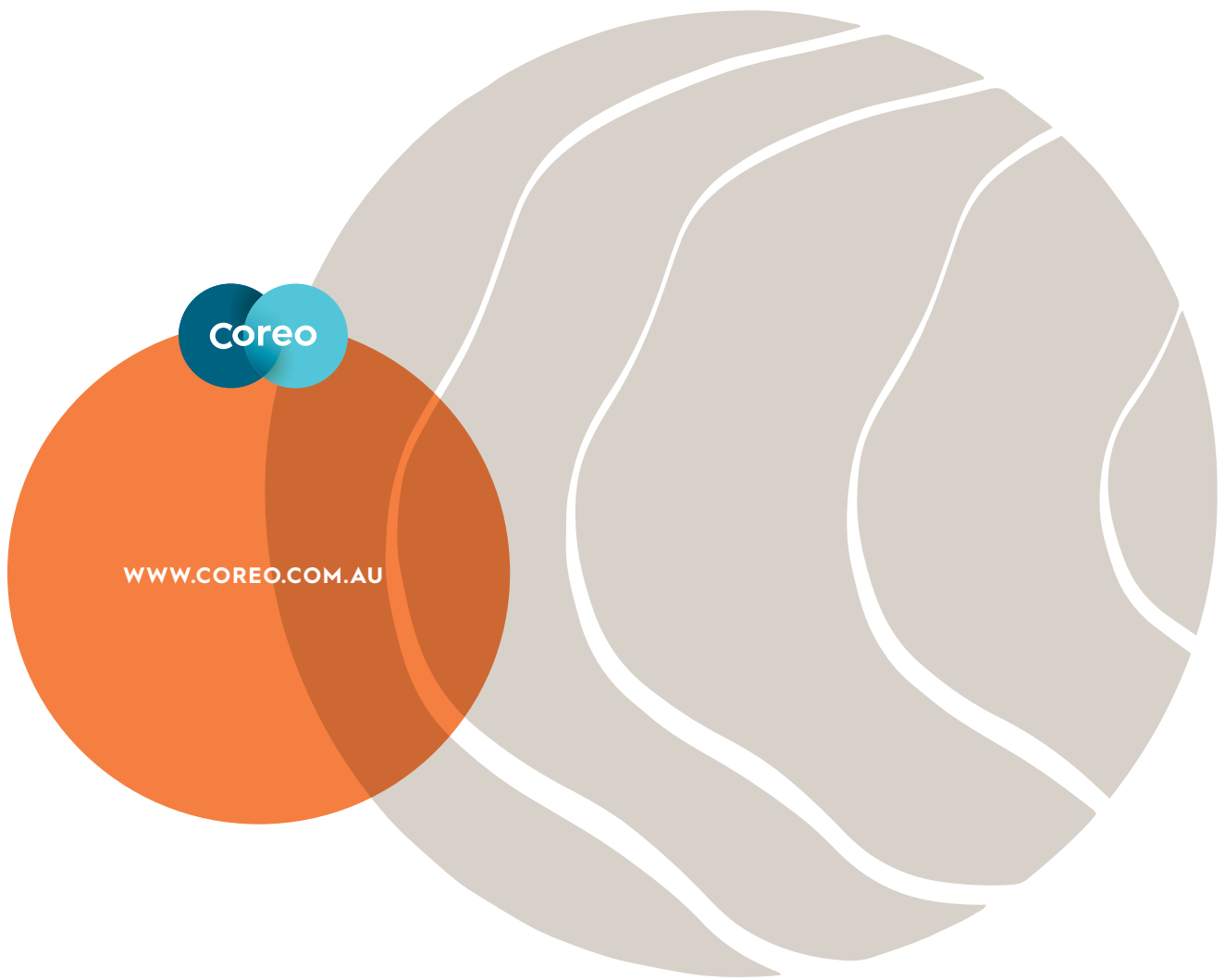
WHERE TO FROM HERE?

This report highlights that the journey towards implementing systems level circular economy changes requires effective collaboration, patience, and sustained energy.



It is incredibly encouraging to understand that four of the five teams from the CE Lab have continued to progress action towards the circular economy either directly through the projects ideated during the CE Lab or through projects pivoted to after new discoveries and opportunities were made.

The Queensland Government should be immensely proud of supporting this Australian first initiative and all of the direct and indirect benefits that have been borne from each of the organisation's making progress towards a more circular economy for Queensland.



**"UNLESS SOMEONE
LIKE YOU CARES
A WHOLE AWFUL
LOT, NOTHING IS
GOING TO GET
BETTER, IT'S NOT."**

Dr. Seuss, The Lorax