



# Bega circular valley

15 March 2023

## Herd 23

Barry Irvin  
Executive Chairman  
Bega Group

# Natural Capital: Why it's vital to value nature

Not fully valuing nature is generating significant risks to our economy.



The global economy is rapidly approaching a 'planetary tipping' - the first of its kind induced by humans. It is a state of change so severe that we will be irreversibly pushed into a different way of living. This change will ripple through our globalised system and impact our economies and the ability of people, communities, and businesses to thrive.

## \$125tn

Nature's contribution to the global economy per year



Protecting natural capital will ensure that we have a sustainable foundation for a circular economy. A circular economy contributes to maintaining natural capital by ensuring that we operate within the planet's limits.



## Renewables are only part of the picture

45% of our emission reductions must come from re-thinking the way we make, consume and dispose of goods and products. We believe circularity is a key element of the decarbonisation agenda

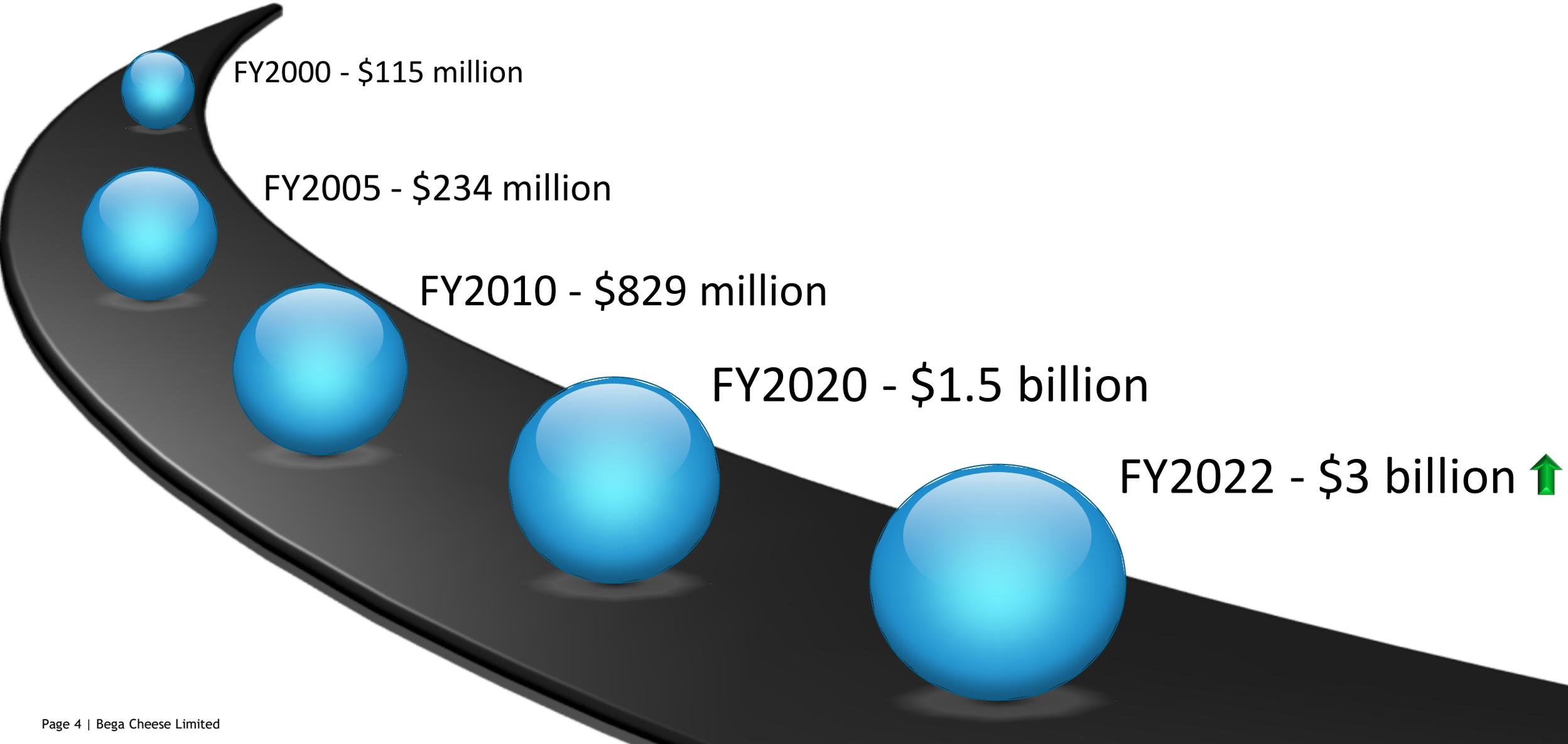


# A global perspective



Food & Energy  
Availability  
Affordability  
Nutritional/ Efficiency  
Net Zero

# Growth



FY2000 - \$115 million

FY2005 - \$234 million

FY2010 - \$829 million

FY2020 - \$1.5 billion

FY2022 - \$3 billion 

# Manufacturing footprint



- 7 ● White Milk and Milk Based Beverages
- 1 ● Milk Based Beverages Hub
- 3 ● Cheese
- 2 ● Dairy powder and fats
- 2 ● Peanuts
- 2 ● Juice
- 1 ● Yoghurt
- 1 ● Spreads

# Brand portfolio

  
Milk Based  
Beverages



Jacaranda

  
White Milk



PURA



Dairy Choice

  
Yoghurt



Bornhoffen

  
Juice and  
Drinks



KYNETON  
SPRINGS

  
Dairy Foods



  
Spreads and  
condiments



  
Water Ice



Culinary

PURA



  
Nutritionals

HAPPI



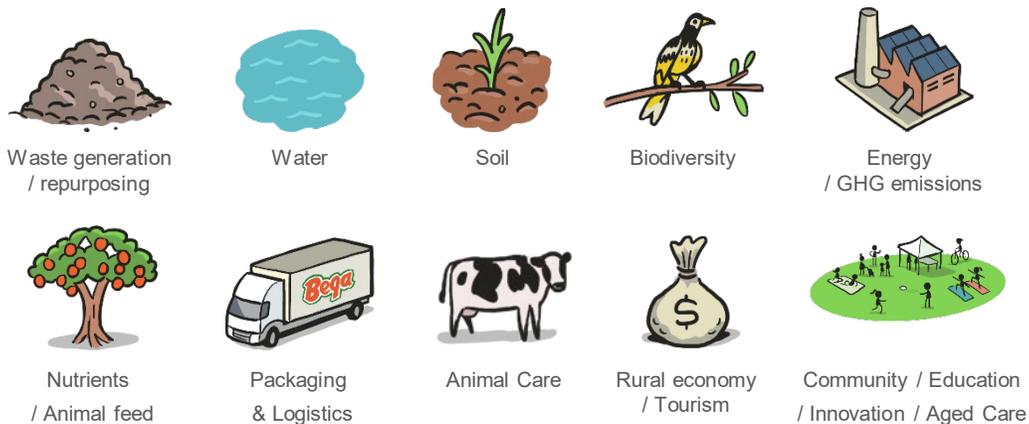
# Aligning with UN Sustainable Development Goals

## Bega Cheese carbon target

Scope 1 and 2 emissions targets established in support of Paris Agreement goals:

- 50% reduction in emissions intensity by 2030
- 40% reduction in absolute emissions by 2030
- Net zero emissions by 2050

## Circularity in the Bega Valley



# What is circular economy?

**The Circular Economy means that products no longer have a life cycle with a beginning, middle, and end. When materials stop being used, they go back into a useful cycle – hence the term 'circular economy'.**

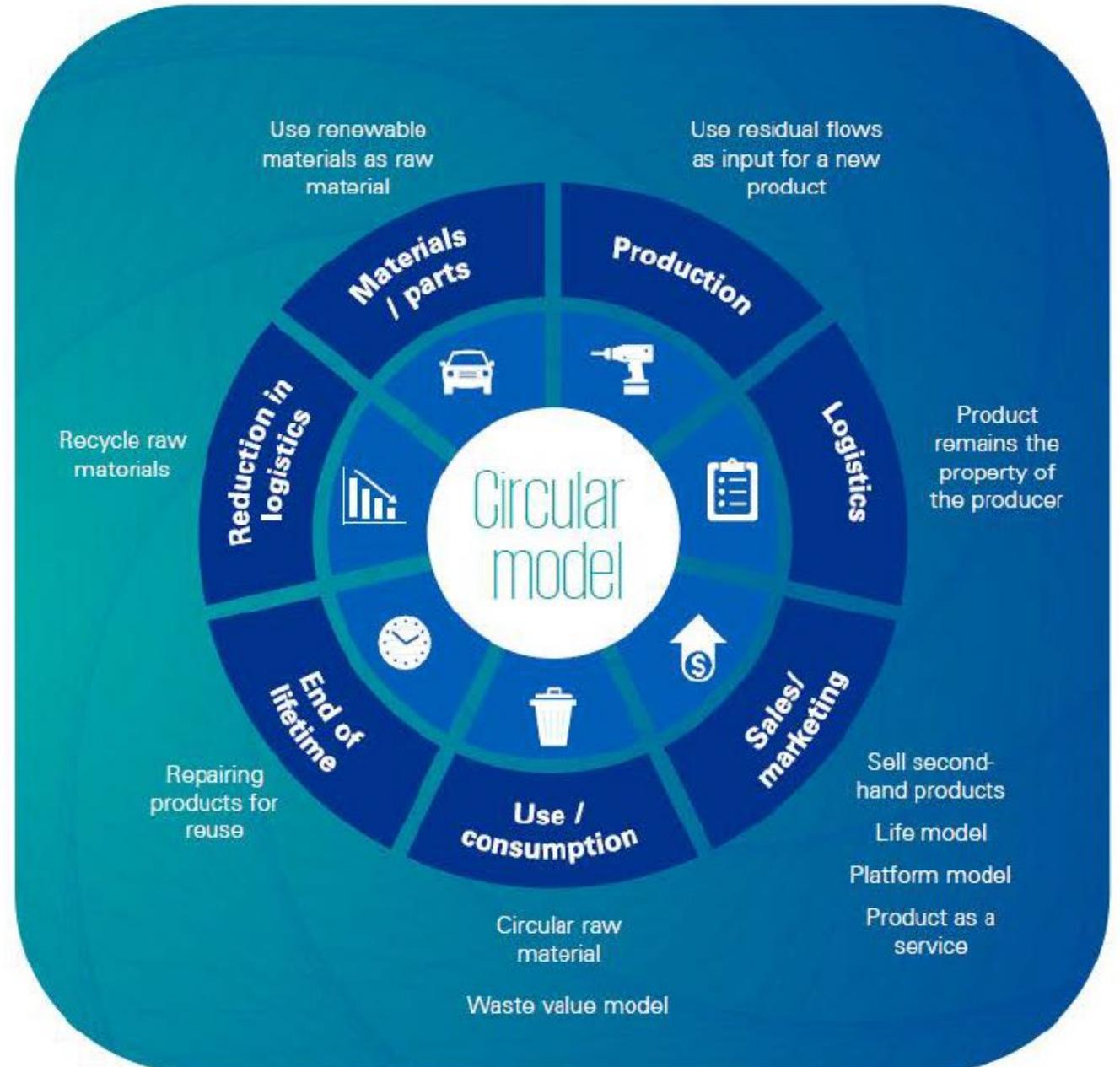
It has the potential to:

- enhance productivity and profitability;
- reduce resource costs;
- make manufacturing more competitive; and
- create new business offerings and jobs.

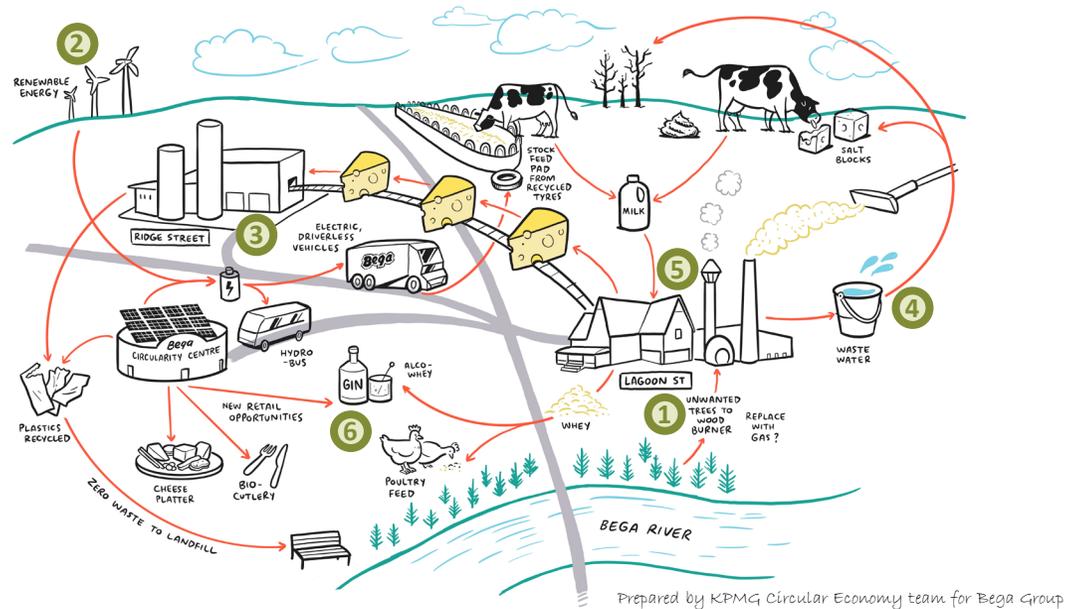
To achieve this, the circular economy is about closing the raw material cycles and therefore focuses primarily on cooperation within and between sectors.

It's about a system change. The circular economy is therefore more than "waste 3.0"; it is about commodities valued as high as possible. There are different business models within the circular economy to increase these values.

These models have an effect on the production process of products, as shown on the right.



# Working together to solve high impact problems



40+

Ideas from the Circular Economy workshops run by KPMG and Rabobank

21

Circular Economy projects pitched

6

Selected Circular Economy projects

1. Repurposing cardboard boxes and wooden pallets into seedlings nursery containers for flora revegetation
2. Solar energy as a substitute to butane gas
3. Ultrasonic sealing as a substitute to cheese plastic wraps
4. Membrane technology for chemical recovery in wastewater and environmental impact reduction
5. Waste heat recovery for reuse in the cheese factory
6. Ethanol from whey

# The journey towards the circular aspiration



# What would success look like?

Exploring the business case for Australia's first circular net-zero footprint region

## HORIZON 1 1 - 2 Years

| Waste generation/ repurposing   | Water   | Soil  | Biodiversity   | Energy / GHG emissions  | Nutrients / Animal feed   | Packaging & Logistics   | Animal Care   | Community/ Education/ Innovation/ Aged Care   | Rural economy/ Tourism  |
|---|---|---|--|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |

## HORIZON 2 3 - 5 Years

|  |  |  |  |  |   |   |   |  |   |
|--|--|--|--|--|---|---|---|--|---|
| Tonnes of waste to landfill<br>Tonnes of waste diverted from landfill<br>Recycling rate by waste stream<br>Circular inflows and outflows | kL water used<br>% water recovery, treatment and re-use (water circularity)<br>Water quality (e.g. eutrophication) | Soil acidification<br>Land productivity<br>Rejuvenated soil<br>No. farms with regenerative practices | Land productivity and efficiency<br>Land use per industry/nature<br>Local biodiversity<br>Threatened species | % renewables<br>GHG from landfill reduced<br>Biofuel/gas captured<br>Carbon offset | Soil fertility<br>Land productivity and efficiency<br>External nutrient input phase out | Scope 3 (Value chain) emissions decrease<br>Single use packaging phase out<br>% transport fleet using electric vehicles or biofuels | Reducing animal emissions<br>Reduced animal waste<br>Hormone-free/organic fed | Population growth<br>\$ community funding<br>Poverty rate<br>Homelessness rate<br>Local stakeholders engaged, circularity participation %<br>Domestic Violence rates | \$ Invested into economy from solution<br>No. jobs created<br>Unemployment rate<br>No./\$ training programs<br>Skills improvement<br>No. new businesses and industries<br>Private investment<br>Regional growth |
|--|--|--|--|--|---|---|---|--|---|

## HORIZON 3 5-10 Years

|   |  |  |  |  |   |  |  |  |   |
|---|--|--|--|--|---|--|--|--|---|
| <b>Closed loop</b><br>Close to zero waste to landfill<br>\$ Re-manufactured goods sold<br>\$ trade in recycled/reused materials<br>% Waste-to-Hydrogen energy | <b>Water recovery and reuse</b><br>% of water is recovered or reused (Waste-to-Hydrogen)<br>Recovered waterways<br>Water quality | <b>Soil and land preservation</b><br>Re-forestation<br>Re-wilded regions<br>Closed soil nutrient cycle<br>Land productivity<br># farms with regenerative practices | <b>Biodiversity in business model</b><br>Re-forestation<br>Re-wilded regions<br>Local biodiversity<br>Threatened species | <b>100% renewable electricity by 2030</b><br>% Renewable energy<br>Biofuels captured<br>Carbon sequestered | <b>Closed soil nutrient cycles</b><br>Limited input of external nutrients<br>Nutrient recycling | <b>Circular logistics</b><br>Scope 3 emissions minimised<br>% of transport fleet using electric vehicles or biofuels<br>No. companies with a circular business model | <b>Holistic animal care</b><br>No. credentials issued<br>No. patents for animal care initiatives | <b>Rural (mental) health Barometer</b><br>Population growth<br>\$ community funding<br>Poverty rate<br>Local stakeholders engaged circularity participation %<br>Mental and general healthcare costs | <b>No. 1 Food &amp; Agri Innovation Hub in Australia</b><br>No. jobs created<br>Unemployment rate<br>Training programs<br>Business innovation (start ups and social enterprises)<br>Private investment in regional growth 10<br>% circular revenue/growth |
|---|--|--|--|--|---|--|--|--|---|

# Steering Committee

Together for a  
*Stronger Bega Valley*



Rabobank



UNIVERSITY OF WOLLONGONG AUSTRALIA



The BCV Steering Committee was formed in October 2020 and has met weekly since to progress the establishment of the Regional Circularity Cooperative, advance program design, launch projects and engage stakeholders.



Barry Irvin AM  
Executive Chairman  
Bega Cheese



Hon. Niall Blair  
Executive Director  
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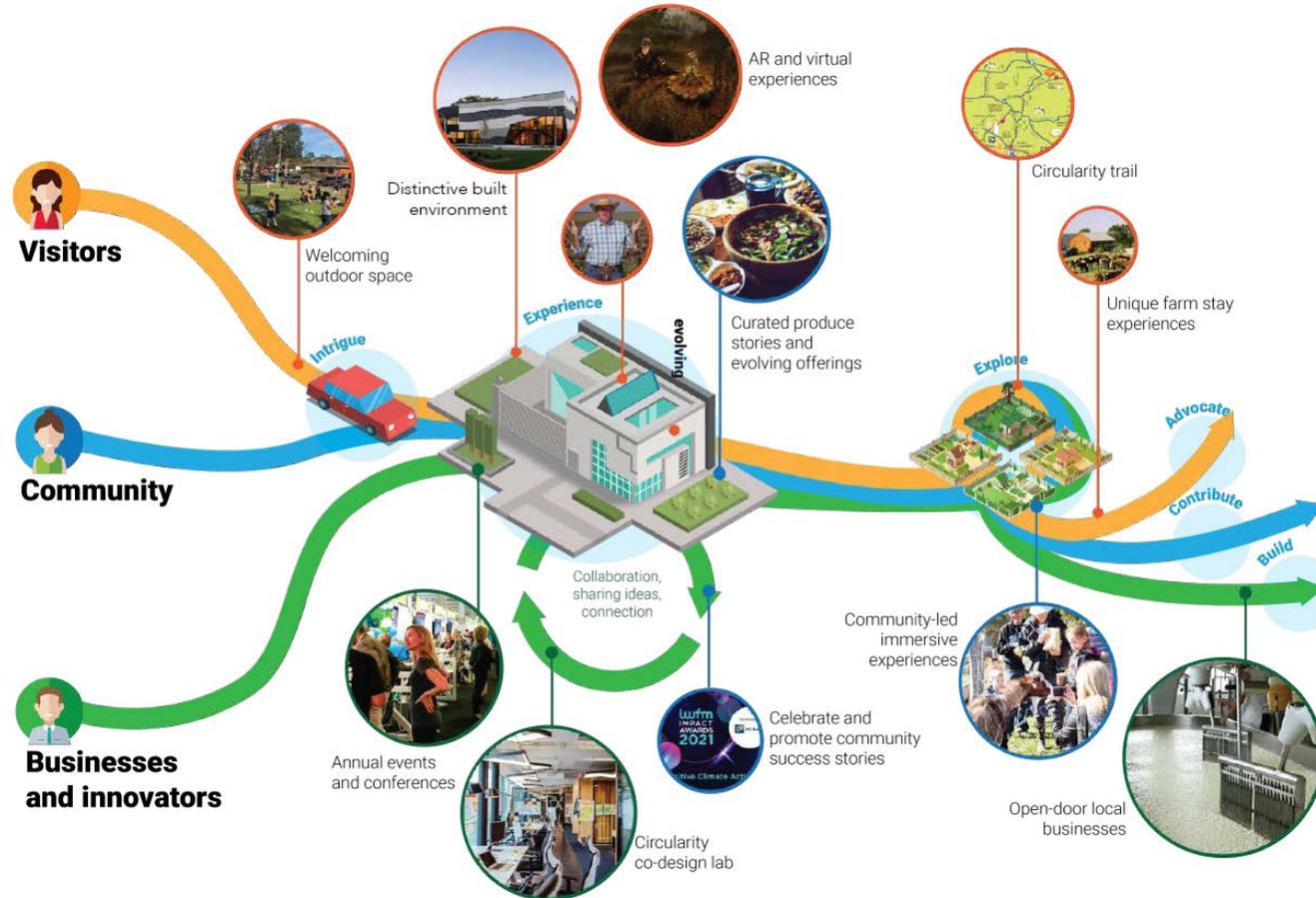
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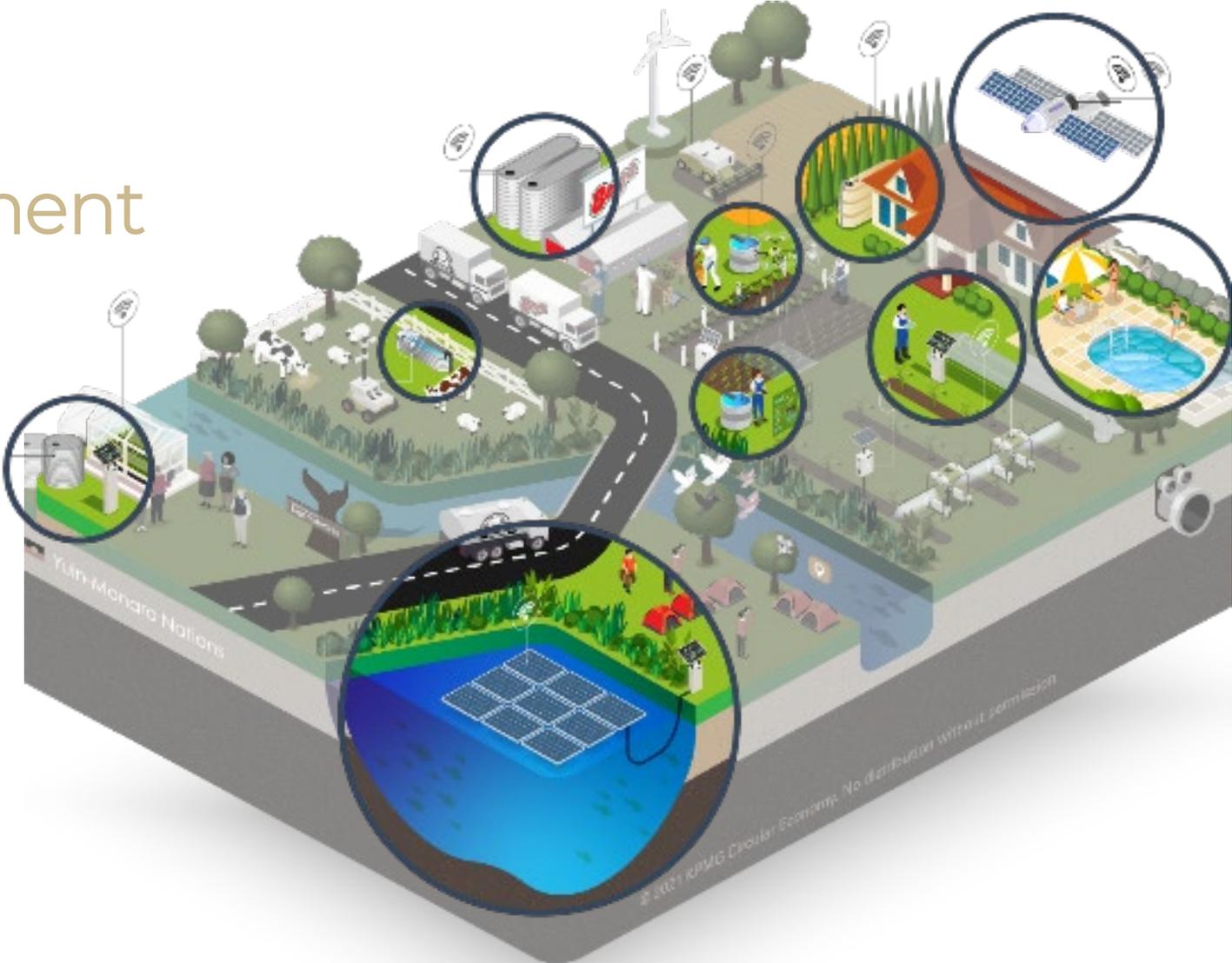


# National Circularity Centre



The convergence of collaboration, education and inspiration

# Enhance our water management and biodiversity



This illustration is extracted from an application currently underway for consideration by the BLERF. It highlights key water resource instrumentation proposed.



# Measuring circularity A regional baseline

Pillar 1: Map, Vision & Plan

Pillar 2: Innovate & Mobilise

## Baseline Bega Valley's level of circularity

### Description

Key to assessing the impact of the BCV program is having a clear baseline of how circular the Bega Valley Shire is today, so we have a fact base to monitor and evaluate the impact of the BCV programs over the next ten years.

Circular baselining has only been attempted at organisational or country level. We are attempting to develop a new methodology that will enable the measurement of material flow reuse at a regional level.

The proposed approach to measure how circular Bega Valley Shire is leverages the Circularity Transition Indicator (WBCSD's CTI) solution to support quick implementation of circularity measurement across a sample of representative industries, and The True Value methodology. True Value will enable us to establish a financial proxy to determine economic measure of circularity that can be reassessed periodically.

The project aims to create a repeatable efficient process of ingesting multiple data sources into the measurement into an Embedded ESG dashboard, as well as accelerating awareness of how organisations can become more circular in their own operations through coaching on CTI framework.

Priority ★★★★★ Impact ★★★★★ Cost \$2m

The project will provide an initial approach that will enable automation for year on year analysis. The methodology will also transform into a blueprint for other regions to implement.

### Available grants/funding

– N/A

### Potential partnerships/investors

- Rabobank, Bega Group, KPMG
- Microsoft
- Woolworths

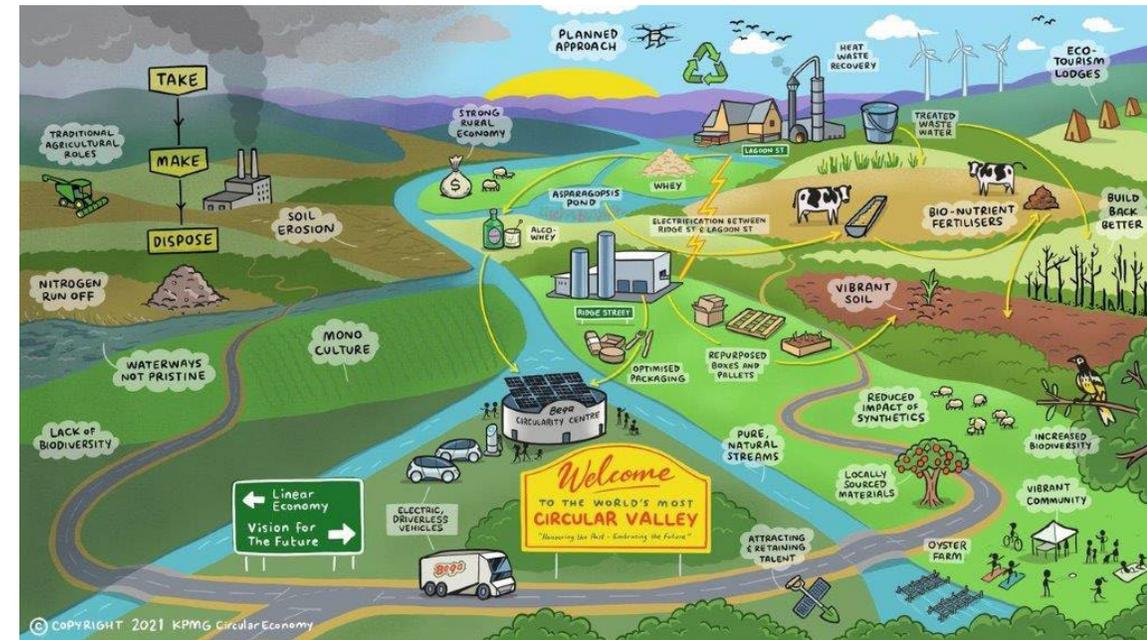
### Research partners

- Charles Sturt University & UOW
- CSIRO & NSW Circular

### Implementation partners

- KPMG Netherlands & Australia

### Benefits



## A THREE-STAGED APPROACH

- Assess the material impact based on **an effective methodology** and a robust data framework.
- **Automate the analysis** to automate the analysis between periods.
- The integration into a digital twin would support scenario modelling to **support effective decision-making**.

# Funding our ecosystem services

Foundational Pillar: Establish 'Bega Circular Valley Co-operative'

## Bega Biodiversity and Carbon Trading Scheme

### Description

Around 75% of the Bega Valley Shire has conservation values, with significant potential for carbon and biodiversity credits. In addition, agricultural land has the potential for on-farm carbon sequestration and biodiversity projects. Building economic and market systems that can support this long term stewardship provides a foundation for investment in effective environmental sustainability. This project aims to support effective governance and administration of a Shire-wide biodiversity and carbon trading program.

Priority  Impact  Cost \$3m

### Outcomes

- **Local economy** - Establishment of alternative income streams for farmers, other landholders and indigenous land management bodies. The opportunity to market local produce under a local biodiversity assurance scheme. Introduction of high skilled employment to the region resourcing the Carbon Desk.
- **Productivity** – Higher land and agricultural productivity through regenerative practices. Increased resilience of soils, biodiversity benefits and forest recovery.
- **Regional economies** – Creates the opportunity for farmers and landholders from other regions to access the benefits of the specialised Carbon Desk which include revenue opportunities, expertise and education services.
- **Education & Awareness** - Fast track the development, education and uptake of carbon and biodiversity projects. Contributing to moving carbon trading from a volatile and immature market to a stable and transparent market.
- **Technology** - Comprehensive data sets and audit mechanisms of local biodiversity and carbon banks that can link to State, Federal and international biodiversity and carbon programs.
- **Carbon neutrality** – Support international, national and industry emissions targets. Governance framework to support assurance, trading, monitoring and reporting for investing partners and agencies.

### Available grants/funding

Corporates (offsetting), Government (e.g. Federal CF announcement),

### Potential partnerships/investors

BCV Co-op, Rabobank, KPMG, Biodiversity Conservation Trust, carbon markets, Land to Market, farmers, LALCs, Forestry lands

### Benefits



# Develop new marine carbon sinks

## Tackling climate change and biodiversity loss through kelp farming

### Description

Kelp is able to absorb up to 20 times the amount of CO<sub>2</sub> than a forest and improve marine biodiversity. Bega Valley's strong coastal presence provide an ideal location for develop regenerative seaweed farming and carbon sinks.

This project aims to promote the development of a kelp nursery and kelp farming for applications within other industries.

Priority 

Impact 

Cost: \$  
Under consideration

### Outcomes

- **Carbon sequestration:** strengthen the region's environmental services through carbon offsets.
- **Biodiversity enhancements:** contribute to the restoration of marine biodiversity through the provision of habitat and shade.
- **Organic material:** tap into the potential of algae for the Circular Economy by supporting other industries to source regenerative products (e.g. as fertiliser, superfood or other, as discovered by our research partner).

### Available grants/funding

- No Grants identified

### Potential partnerships/investors

Bega Cheese, Participating seaweed farms, Bega Beef Coop, Far South Coast Dairy Development Group, Rabobank, UoW, KPMG.

### Benefits



# Drive equitable and feasible circularity

## Bega Circularity Program Feasibility Analysis

### Description

Once the opportunities for enhanced circularity are identified through the Bega Circular Valley Knowledge and Resource Enabler and Cultural Enabler, feasibility analyses will be undertaken for 10 specific projects. These projects will seek to cover the breadth of benefit categories, but will be prioritised based on potential benefit and buy-in of project partners. For those projects that are deemed feasible, concept plans will be developed to describe and quantify their implementation.

**Priority** ★★☆☆ **Impact** ★★★☆☆ **Cost** \$0.5m

### Outcomes

- **De risking investment** - This project will result in a suite of concept plans for the next tranche of circularity projects for the Bega Valley. It will provide further insight to improve the industrial ecology map of the Shire and will provide input to the commercialisation activity undertaken through the Bega Circularity Centre.

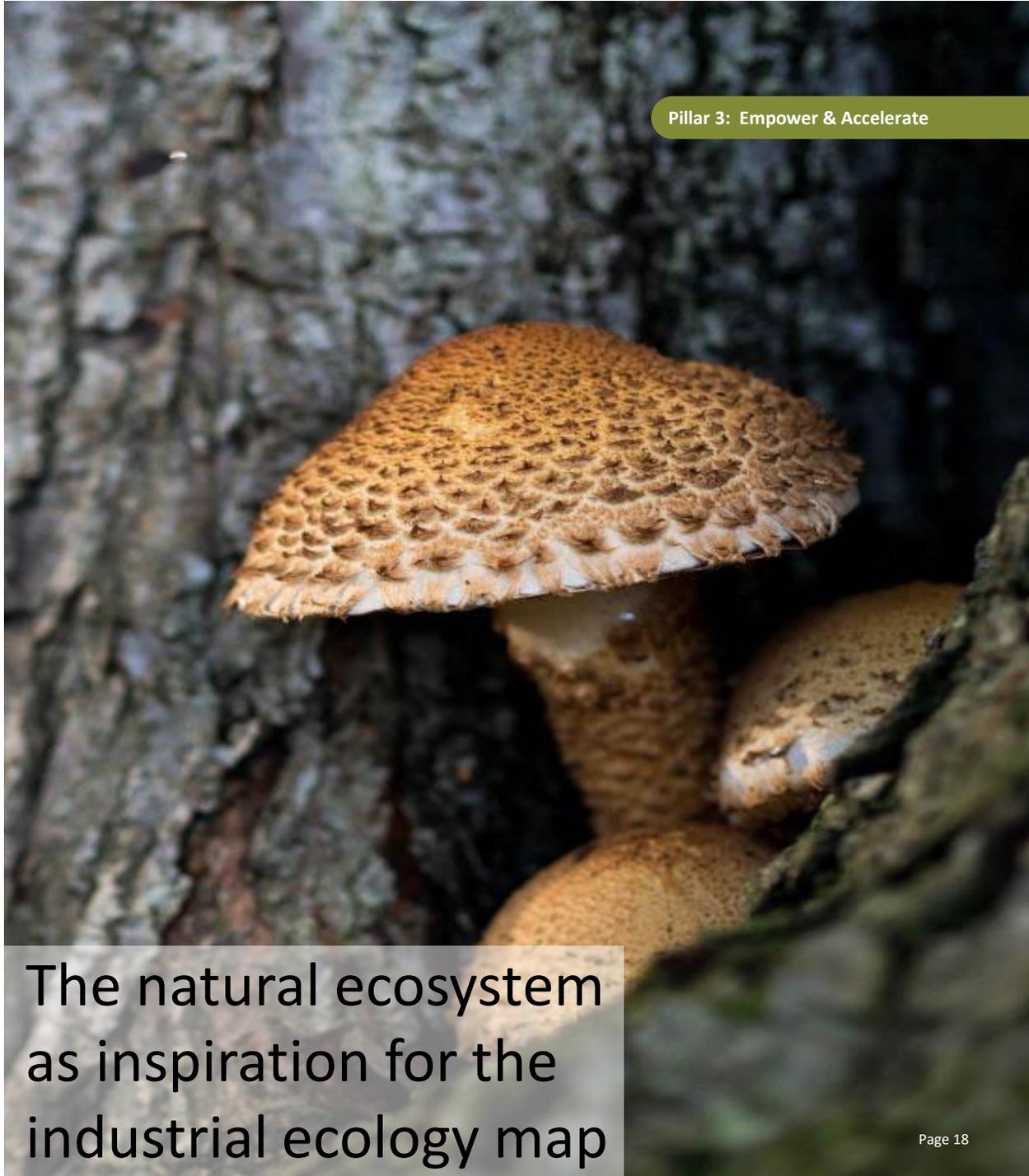
### Available grants/funding

- Partner matching funds
- No Grants identified

### Potential partnerships/investors

Bega Circularity Coop, Bega Cheese, Bega Council, UoW, Rabobank, KPMG

### Benefits



The natural ecosystem as inspiration for the industrial ecology map

# Strongly aligned to government and industry objectives



**Reduced Waste**



**Better Water Management**



**Better Soil Management**



**Restored Biodiversity**



**Lower GHG Emissions**



**Localised Food Systems**



**Greener Packaging & Logistics**



**Holistic Animal Care**



**Stronger Community**



**Stronger Rural Economies**

**National waste policy action plan:**

- Ban export of waste, plastic, paper, glass
- Reduce waste generated per person by 10% by 2030
- 80% average resource recover from all waste streams
- Halve amount of organic waste in landfill by 2030

**NSW Waste and Sustainable Materials Strategy 2041:**

- Triple plastics recycling rate by 2030
- Eliminate problematic and single use plastics by 2025

**NSW Water Strategy:**

- Improve water system connectivity and resilience
- Enable future-focused, capable and innovative water sector
- Recognise Aboriginal values and connection to water

**National Farmers Federation 2030 Roadmap:** 20% increase in water efficiency for irrigated agriculture

**National Soil Strategy:** \$196 million new commitment to improve soil health, productivity and sustainability, and strengthen soil knowledge and capability

**NSW Natural Capital Statement of Intent:** conserve, restore and enhance the State's natural environment and productive landscapes

**Biodiversity Conservation Act 2016:** maintain a healthy, productive and resilient environment for the greatest well-being of the community

**NSW Net Zero Plan Stage 1:** supporting innovative technologies to reach net zero emissions by 2050

**CN30 (MLA):** reaching net zero emissions from red meat production by 2030

**NSW Waste and Sustainable Materials Strategy 2041:** net zero emissions from organic waste by 2030

**NSW Healthy Eating Strategy:** creating healthy food and built environments to support healthy eating and active living

**National Freight and Supply Chain Strategy:**

- Provide regional Australia with infrastructure to connect regions
- Develop evidence base of key freight flows and supply chains

**National Farmers Federation 2030 Roadmap:** freight cost per tonne-km is competitive with major ag-exporters

**NSW Animal Welfare Action Plan:** ensure key stakeholders are engaged and views respected in developing policy and legislation

**Animalplan 2022 to 2027:**

- Improve the integrity of animal healthy systems
- Improve animal welfare outcomes
- Support implementation of industry frameworks and plans

**National Farmers Federation 2030 Roadmap:**

- Double tertiary and vocational agriculture graduates
- Increase workforce by 25%

**National Agreement on Closing the Gap (NSW Implementation Plan):**

- Fund Indigenous organisations
- Support Aboriginal people in jobs that align with their goals

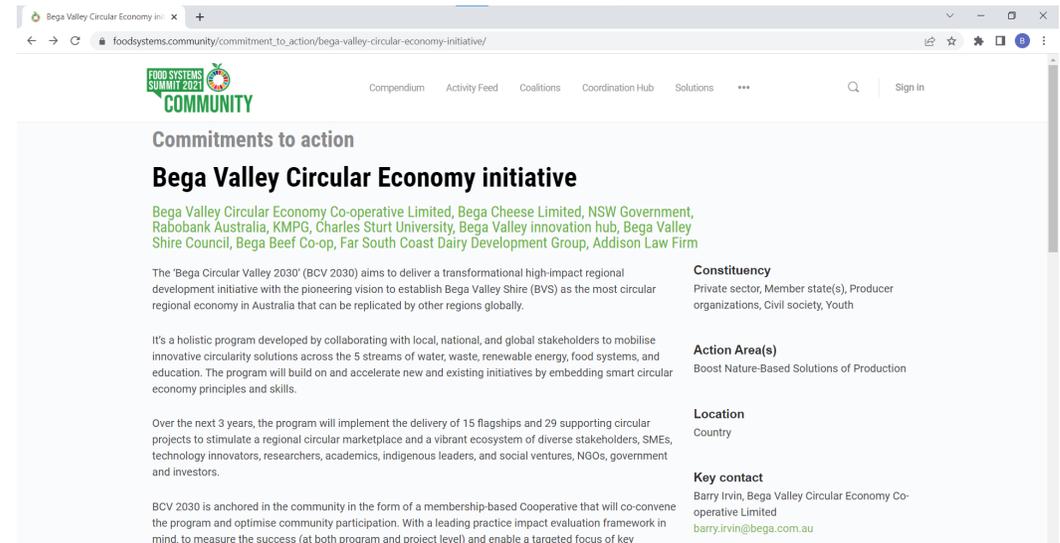
**Economic Development Strategy (Bega Valley):** growing local businesses and attracting new businesses

**20-Year Economic Vision for Regional NSW - Refresh:** supporting key identified emerging industries (advanced manufacturing, technology-enabled Primary Industries, renewable energy), and future industries (ecotourism, recycling and waste management, high-quality food products)

# UN Food Systems Summit Community

The Food Systems Summit sought to generate action and measurable progress towards the 2030 Agenda for Sustainable Development by identifying solutions and leaders, and issued a call for action at all levels of the food system, including national and local governments, companies and citizens.<sup>1</sup>

**Bega Circular Valley has joined the Community,** which convenes initiatives all working towards significant action towards the SDGs.



The screenshot shows a web browser displaying the 'Bega Valley Circular Economy initiative' page on the 'FOOD SYSTEMS SUMMIT 2021 COMMUNITY' website. The page features a navigation menu with 'Compendium', 'Activity Feed', 'Coalitions', 'Coordination Hub', and 'Solutions'. The main content area is titled 'Commitments to action' and 'Bega Valley Circular Economy initiative'. It lists participating organizations: Bega Valley Circular Economy Co-operative Limited, Bega Cheese Limited, NSW Government, Rabobank Australia, KMPG, Charles Sturt University, Bega Valley innovation hub, Bega Valley Shire Council, Bega Beef Co-op, Far South Coast Dairy Development Group, and Addison Law Firm. The text describes the 'Bega Circular Valley 2030' (BCV 2030) as a transformational high-impact regional development initiative. It details the program's goals, its holistic approach, and the implementation plan over the next 3 years. A 'Key contact' section identifies Barry Irvin at Bega Valley Circular Economy Co-operative Limited.



# Globally informed, locally developed



## Circular Friesland

*Leeuwarden region, the Netherlands*

The Circular Friesland Association was founded by 25 companies and organisations including the Province of Friesland and Municipality of Leeuwarden.

The first step was to analyse the flow of raw materials to identify which streams could be processed circularly and quickly transformed into a circular economy.

Five circular themes were identified: circular agriculture, circular plastic, organic waste streams, construction of the future, and saline agriculture.

Members of Circular Friesland are from the public and private sector, and collaborate with circular experts.

### Key initiatives:

- Collaboration between public and private sector
- Partnerships between different companies within material value chains

### Outcomes and value delivered:

- Circular collaborations between companies in the region
- National Test Centre Circular Plastics



## Circular Oslo

*Oslo, Norway*

The Circular Oslo initiative, part of Circular Regions, was created as a regional multi-stakeholder approach to accelerate the transition to a circular economy.

The initiative identifies and highlights solutions with the potential to be tested on a smaller scale in Oslo, then replicated internationally - including innovating business models through the adoption of circular design based strategies, building knowledge and experience for reduced material consumption, and enabling a regional access economy.

Circular Regions supports and maps initiatives, and connects cities to the broader region, and covers urban and rural solutions.

The multi-stakeholder collaboration environment includes government, industry, civil society and science bodies.

### Key initiatives:

- Tools and resources for the public sector, business, NGOs and individuals
- Circular workshops and events

### Outcomes and value delivered:

CIRCULAR @ Oslo Innovation Week event, September 2020



## Foodvalley

*The Netherlands*

Foodvalley's ambition is to achieve food production in balance with the living environment, while significantly reducing the use of raw materials and losses throughout the chain.

The Foodvalley ecosystem aims to accelerate circular innovation and growth by connecting a range of companies to resources, facilities, knowledge suppliers, and potential partners.

### Key innovation activities include:

- Robust cultivation of healthy soils and sustainable livestock farming
- Reduce the use of raw materials, combined with high quality processing of residual flows
- Scaling up alternative cultivation methods, such as vertical agriculture
- Innovative companies and knowledge suppliers working together

### Outcomes and value delivered:

Foodvalley Summit events for market trends, innovations, opportunities and challenges in Circular Agrifood

# The BCV 2030 Vision

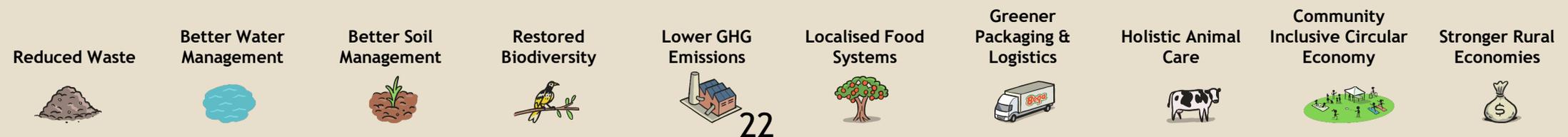
## Our vision is for the Bega Valley to become the most circular region in Australia by 2030

The BCV 2030 program isn't simply about zero waste to landfill and optimising recycling. It is about linking regenerative economic, environmental development with social equity across the region, underpinned by efficient and sustainable water and energy use.

### *Bega Circular Valley will:*

- **Enhance circular capability and economic development:** diversify and strengthen the region's capacity for systemic innovation, resource efficiency, diversification of industry, creation of new income streams, revenue models and meaningful jobs through the circular economy
- **Improve resilience:** instil greater economic and environmental resilience, regional regeneration and social cohesion post the devastating 2019 bushfires and coordinate public and private investment in critical infrastructure required to support the recovery and resilience of the region
- **Promote regional vision:** create a clear unifying sense of purpose for the Bega Valley: one that retains and attracts talent to the region, and improves the living standards of local people and the diversity of natural habitat of the region
- **Strengthen environmental management:** strengthen the biodiversity of this special corner of the world by weaving together the region's greenhouse gas emission reduction targets, environmental ecology improvement targets, water and energy security, and economic diversity ambitions, enable improved participation in education, sequestration and innovation activities, and grow a sense of community

## What success will look like by 2030



## How we plan to get there



1

**Circular-focused practices:** align localised, best-practice, evidence-based advice with policy frameworks and explore place-based differentiation, profit in provenance opportunities (Born in Bega) to instil pride in BVS's local produce and services that are exported

2

**Stakeholder management:** engage consumers and businesses as key enablers of the BCV 2030 program

3

**Skills:** lift the skills of the local community and incorporate circular business model training and support

4

**Collaboration:** build scale through collaboration and cooperation and share intelligence in order to overcome challenges together to reduce the risk of failure and economic dependency on a few major businesses by inspiring and incentivising collective effort to create the most circular valley in Australia

5

**Funding:** fund the delivery of critical community infrastructure assets that enable resource efficiency and community resilience

The time is

NOW

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