MONASH University

MONASH SUSTAINABLE DEVELOPMENT INSTITUTE

# Circular Economy Labs

## Accelerating circular economy transitions and behaviour change

Sydney, 26 November 2024

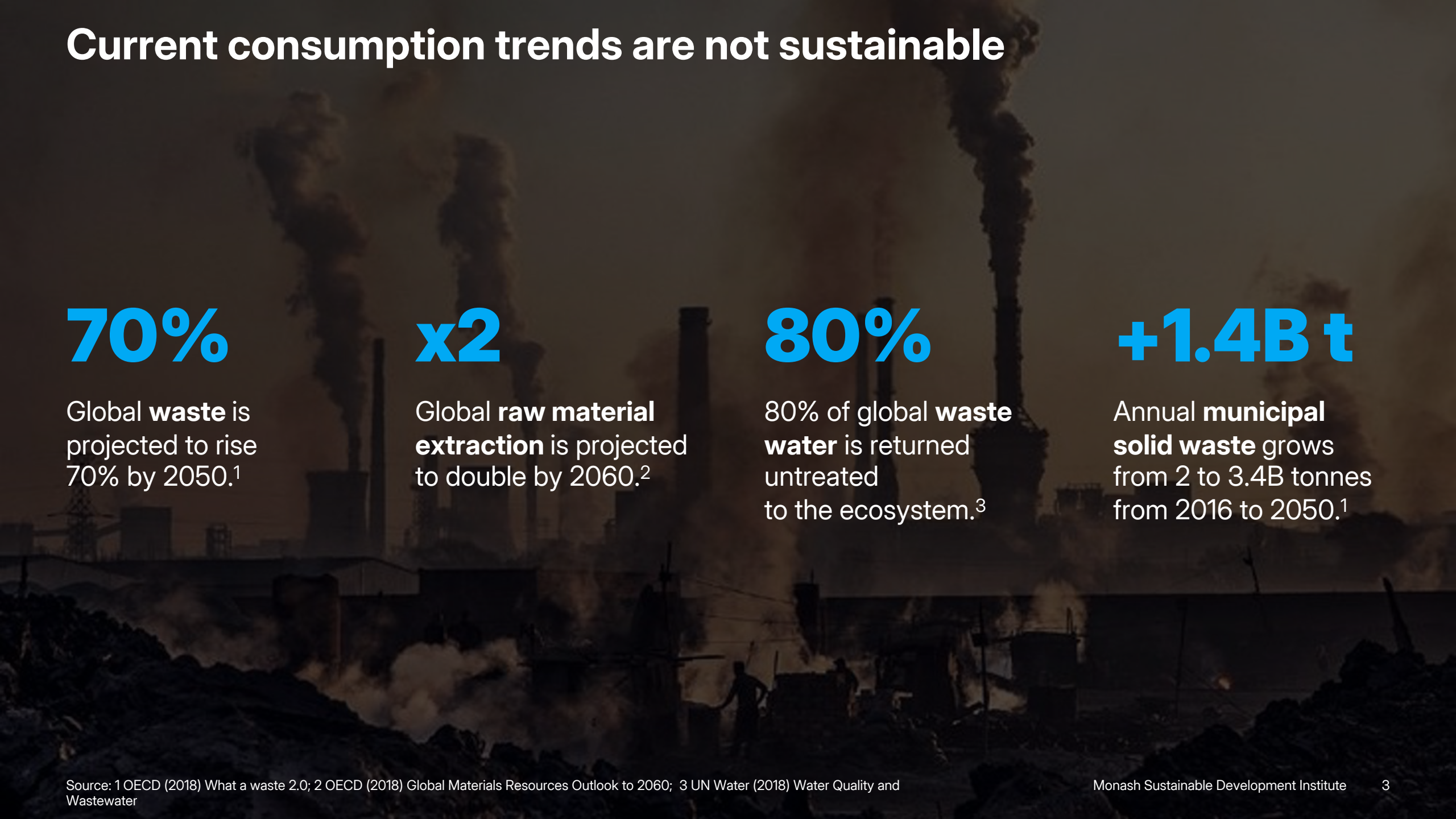
MONASH University

MONASH SUSTAINABLE DEVELOPMENT INSTITUTE

## Acknowledgement of Country

We acknowledge the Traditional Custodians of Country throughout Australia and their continuing connection to land, skies, waters, and community. We pay our respects to their cultures and their Elders past, present and emerging.

# Current consumption trends are not sustainable



**70%**

Global **waste** is projected to rise 70% by 2050.[1]

**x2**

Global **raw material extraction** is projected to double by 2060.[2]

**80%**

80% of global **waste water** is returned untreated to the ecosystem.[3]

**+1.4B t**

Annual **municipal solid waste** grows from 2 to 3.4B tonnes from 2016 to 2050.[1]

Source: 1 OECD (2018) What a waste 2.0; 2 OECD (2018) Global Materials Resources Outlook to 2060; 3 UN Water (2018) Water Quality and Wastewater

# The Circular Economy can be a key part of the solution

**39%**

Adopting circular economy principles can **reduce global greenhouse gas emissions** by 39% by 2050[1],

**32%**

**cut primary material consumption** by 32% by 2030[2],

**$ 4.5T**

unlock up to $4.5 trillion in **additional economic output** by 2030[3], and

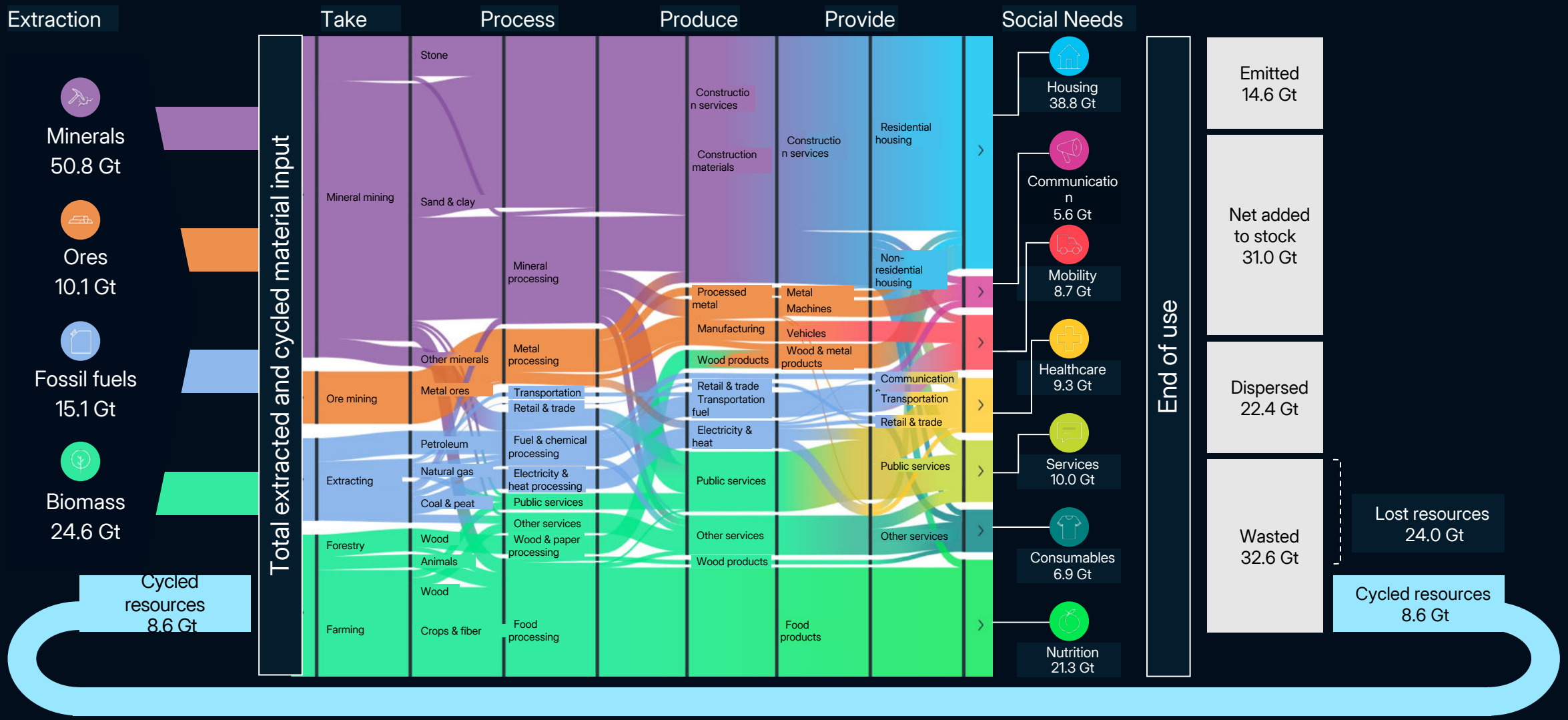
**6M**

**create additional jobs** for 6 million people.[4]

Source: 1 Circle Economy (2021) Circularity Gap report 2021; 2 Ellen MacArthur Foundation ; 3 Lacy and Rutqvis (2015) Waste to Wealth; 3 UNEP (2021) Policy Options To Eliminate Additional Marine Plastic Litter; 4 International Labour Organization (2018) World Employment and Social Outlook 2018

# But the Circular Economy is currently still in its infancy

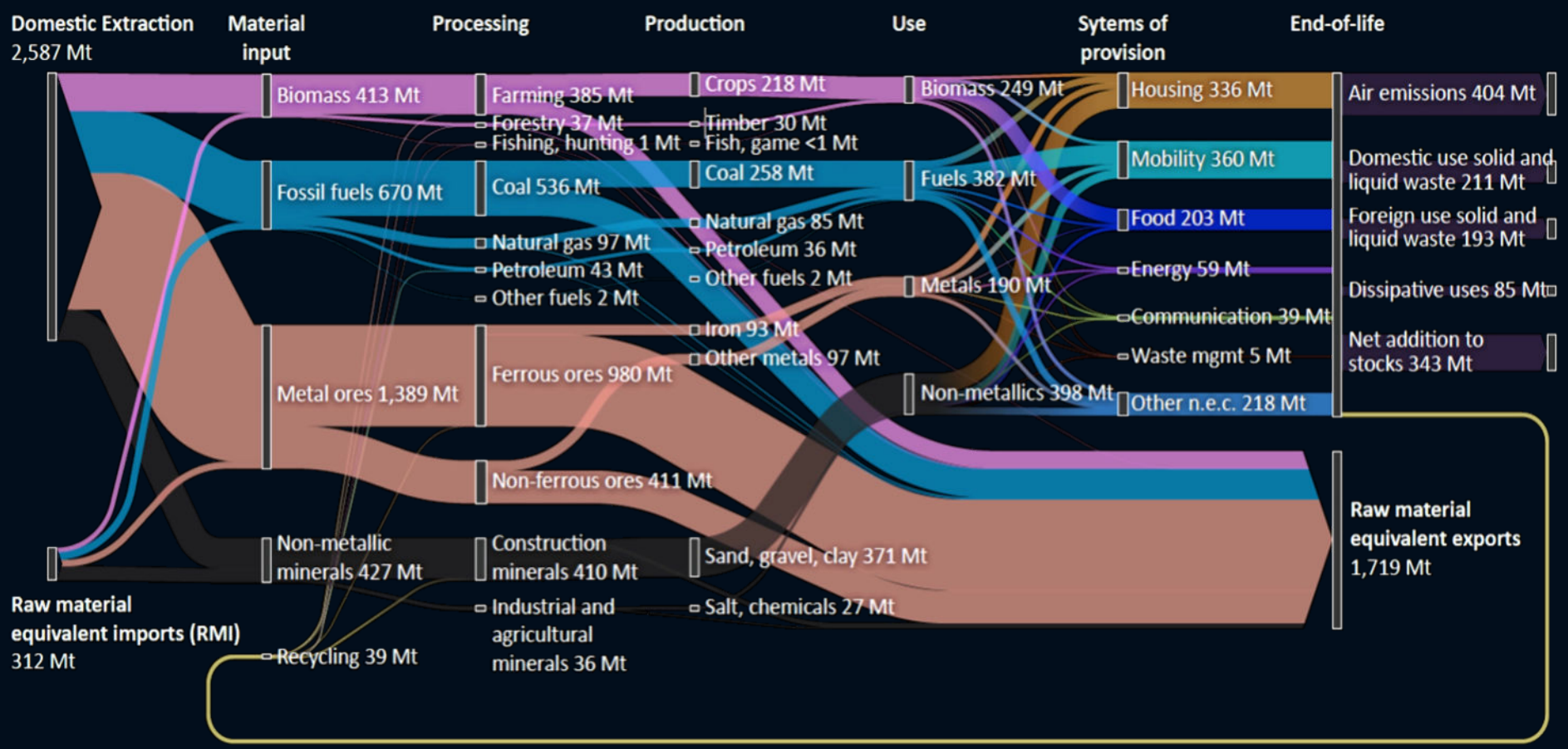
## Globally we only cycle 8.6% of what we use, which leaves a massive circularity gap of over 90%




Source: Circular Gap Report, 2020 numbers

# ...and Australia is only just embarking on the journey

## In Australia we only cycle ~4% of what we use, with a massive material footprint




### Australia's material footprint

**2,587 Mt**

material extraction in 2019, of which 917 Mt were consumed domestically, and only 39 Mt recycled

**3rd**

highest material footprint per capita in the OECD and the 4th lowest rate of material productivity

Source: CSIRO 2024, OECD 2024, CEMAG 2024, 2019 numbers

# We know it is possible: Different circular business models have already been successful

## You can follow 1 of 4 strategies

**Cycle**

Offers comprehensive **remanufactured parts portfolio**

**Extend**

**Marketplace** for **refurbished** consumer electronics

**Intensify**

**Rents unit-load equipment**, such as pallets, crates, and containers

**Dematerialise**

**Pay-per-use and subscription** models for health-care hard- & software

---

## ...or combine these

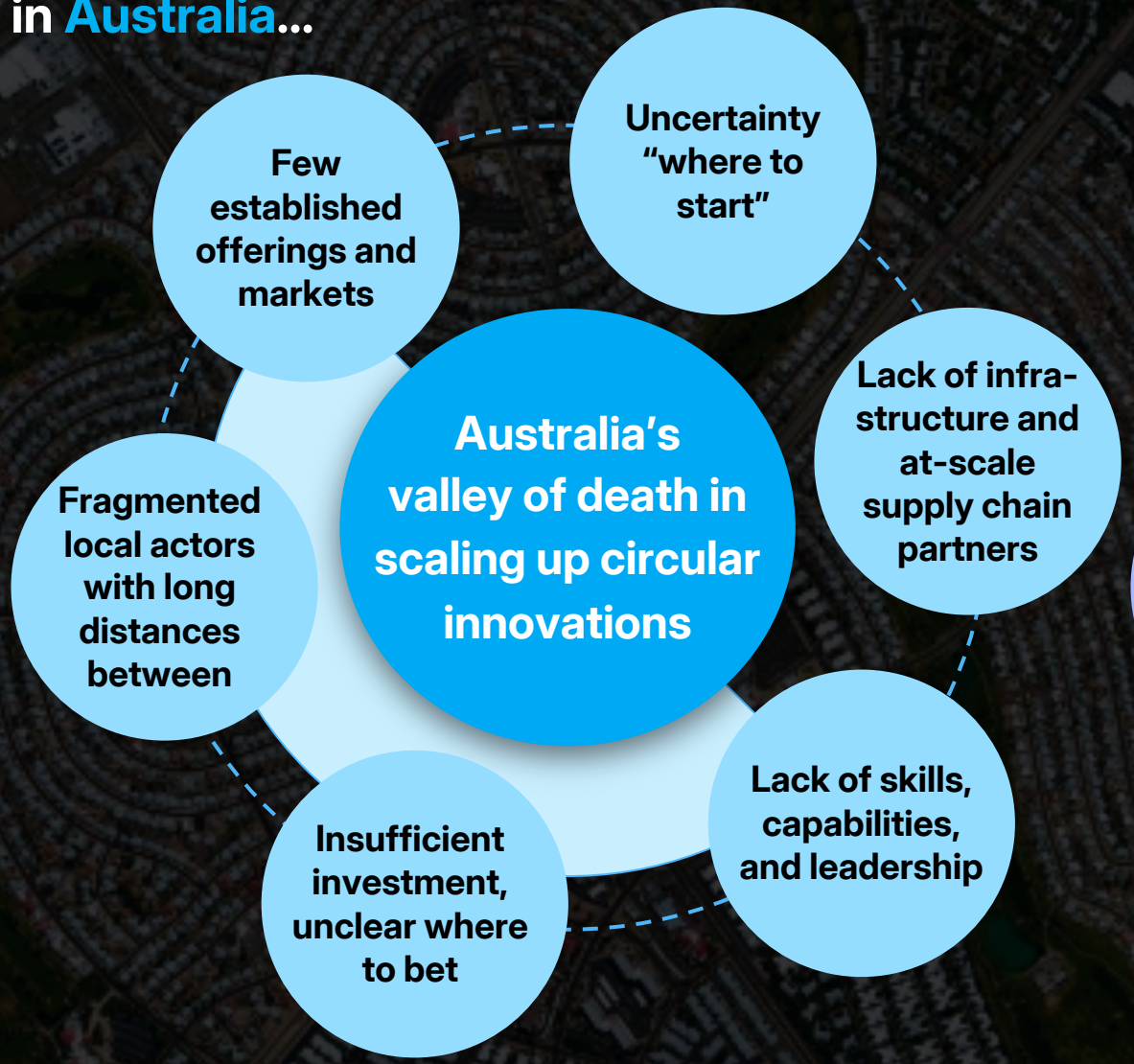
Uses **recycled materials**, provides **repair services** and **DYI guidance** and sells **used and refurbishes clothing** (Worn Wear program)

Uses **recycled materials**, offers **maintenance/repair solutions**, **pay-per-use models**, and **circular solutions consulting**

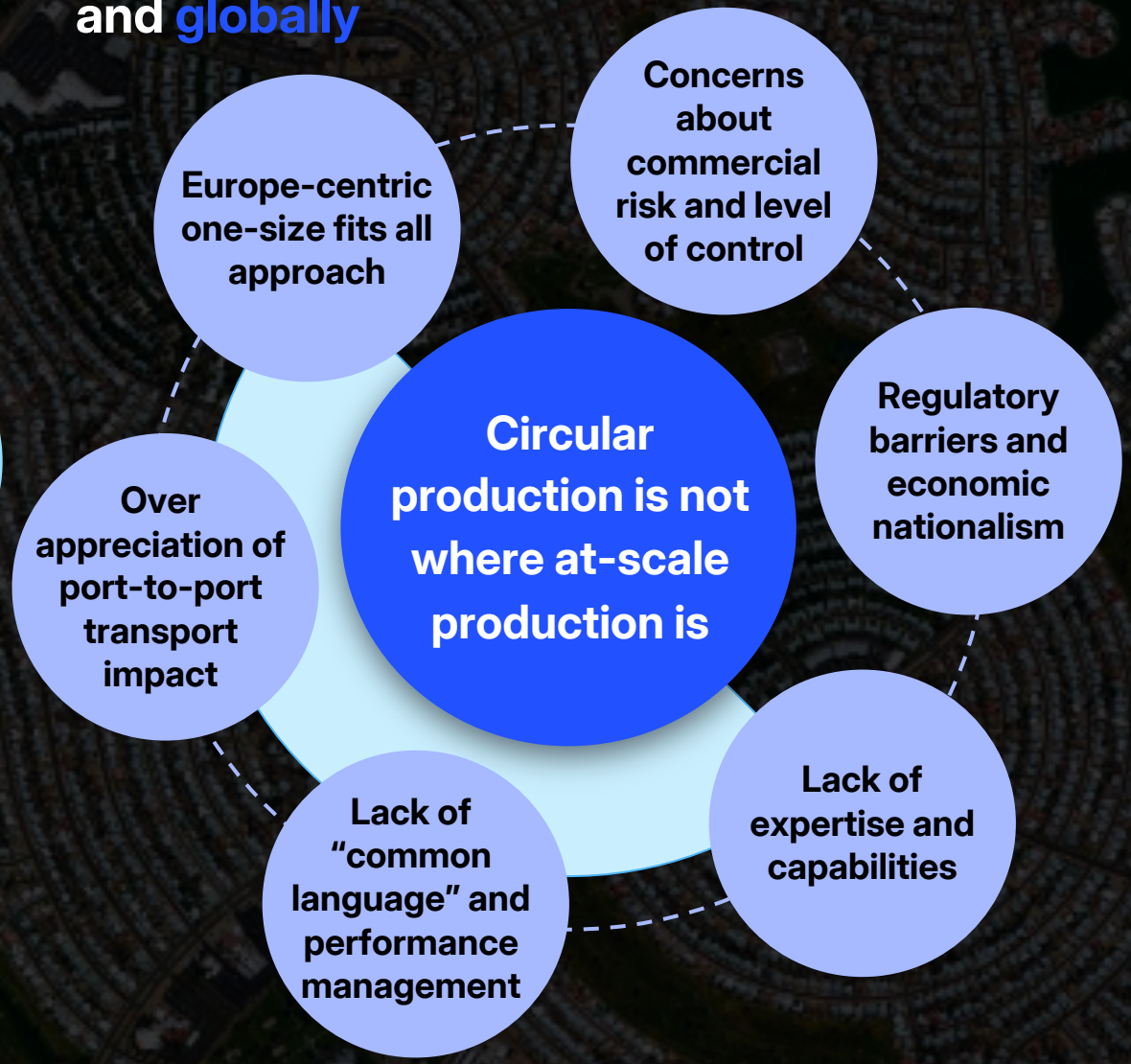
Source: Geissdoerfer et al. 2020, company websites

# To match the solution to the size of the problem, we need to scale up circular solutions considerably

## in Australia...




## and globally




Source: MSDI analysis

# Introducing Circular Economy Labs: Our mission

**Empowering a circular future.**
Facilitating key players to realise a circular, zero-waste future

**Cutting-edge knowledge creation.**
Outpacing the future together, foreseeing where the academic field moves and proactively shaping the key academic management and policy debates

## Empowering a circular future through cutting-edge knowledge creation, catalytic industrial and policy impact, and the development of visionary leaders

**Catalytic industrial and policy impact.**
Supporting decision makers in industry and policy with structuring complexity and providing the best available knowledge

**Development of visionary leaders.**
Teaching the industrial and policy leaders of tomorrow and developing the key circular economy thinkers

# Introducing Circular Economy Labs: Three pillars

## Circular ecosystem & strategy research

Driving **the scientific discourse** through **world-class research**

## Industrial engagement & tool development

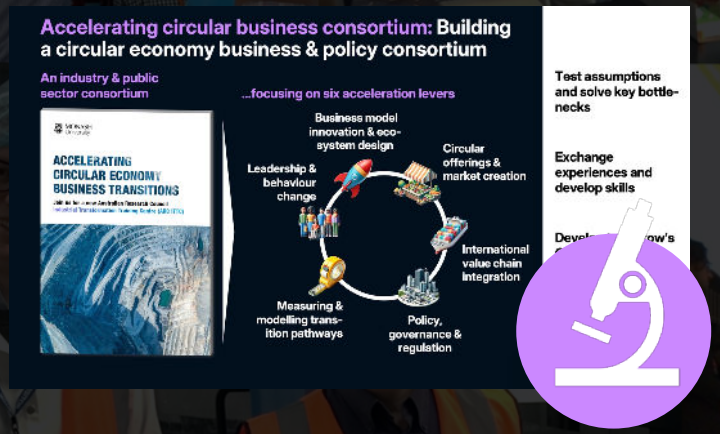
Creating impact through **action research** and **open-access tools**

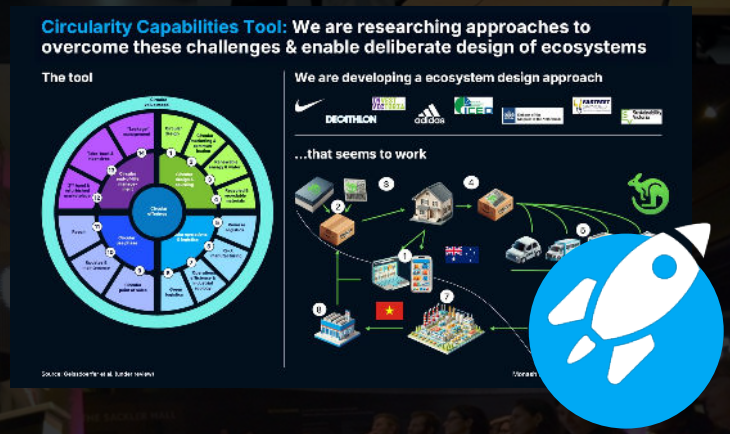
## Policy engagement & transition support

**Advising policymakers** on **CE transitions** and **behaviour change**

**Capability building:** Developing tomorrow's circular economy leaders in business and policy

# What we do: 3 example initiatives





## Flagship projects:
Accelerating circular business consortium

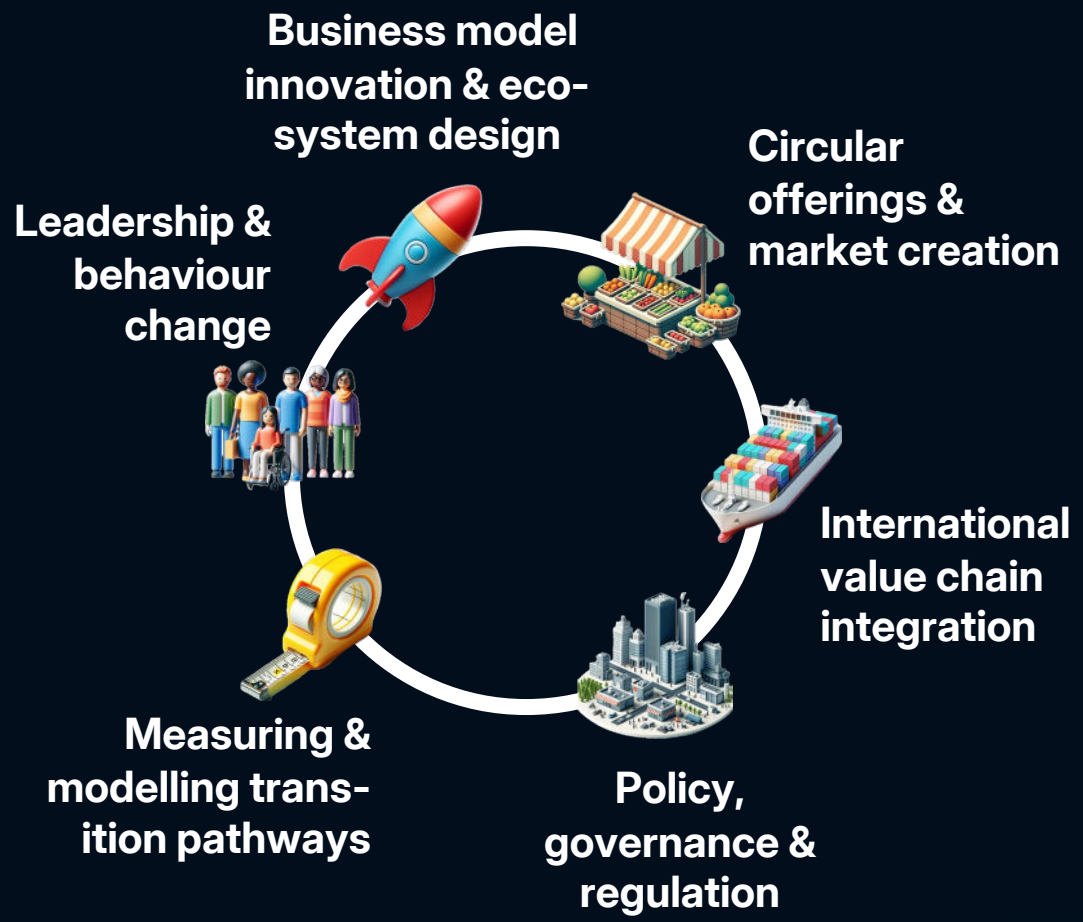
## Industry impact:
Circular Capabilities Tool

## Guiding the way:
Impact-oriented research missions

# Accelerating circular business consortium: Building a circular economy business & policy consortium

## An industry & public sector consortium


## ...focusing on six acceleration levers




**Test assumptions and solve key bottle-necks**

**Exchange experiences and develop skills**

**Develop tomorrow's CE leaders**

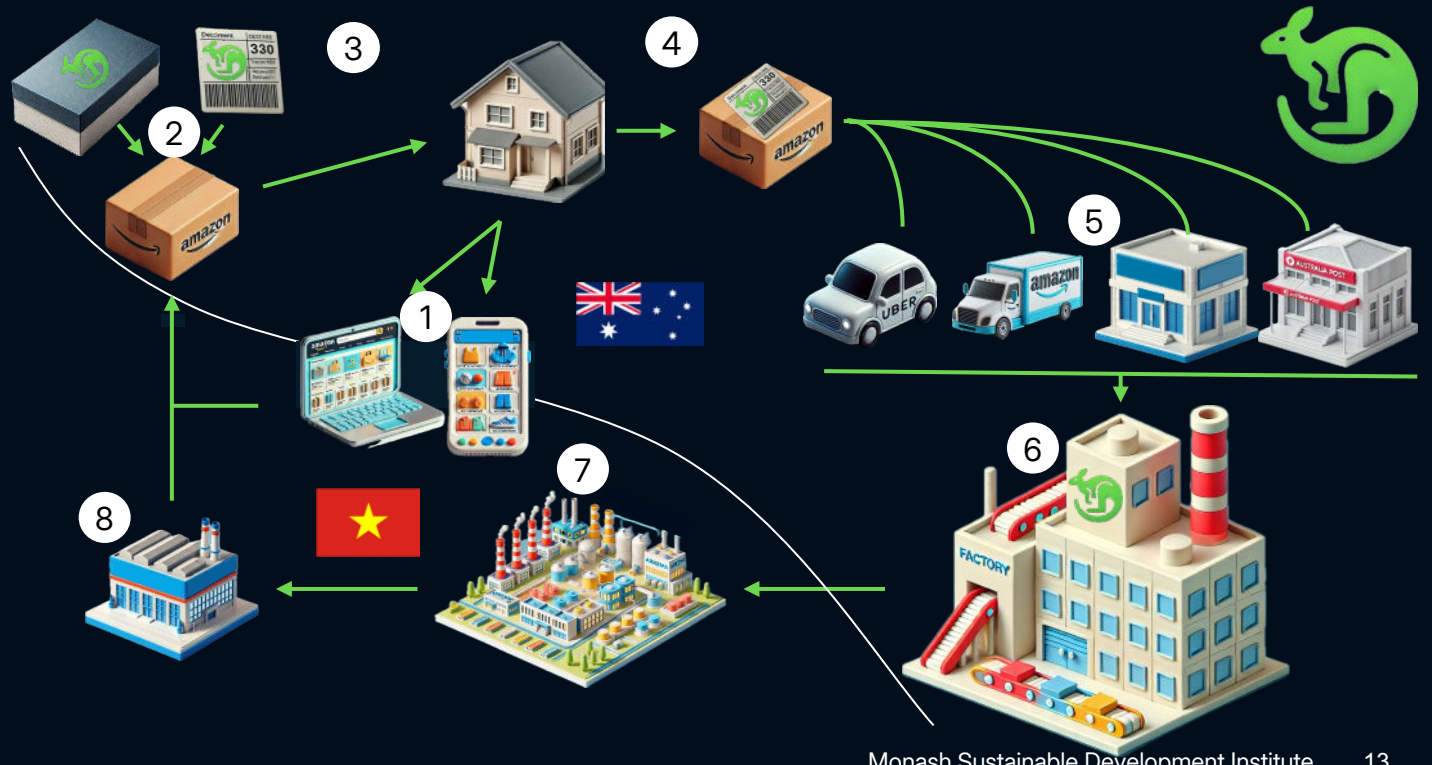
**Access a global network of the leading CE experts**

# Circularity Capabilities Tool: We are researching approaches to enable the deliberate design of ecosystems

## The tool


## We are developing an ecosystem design approach

## ...that seems to work




Source: Geissdoerfer et al. (under review)

# Impact-oriented research missions: We leverage Monash's potential for accelerating the circular economy, through large-scale missions






| | | | | | |
|---|---|---|---|---|---|
| **Mission** | **Circularity @Scale** | **Global circular precinct network** | **Abundant clean energy future** | **Circular pharma** | **Resilient & responsible critical minerals supply chains** |
| **2035 goal** | **1000 circular businesses** in Southeast-Asia | **Precincts** established in Clayton, Kuala Lumpur, Jakarta, and Prato | 5 special economic zones with **100% solar energy and 80% circular production** | **80% circular packaging** for Australian produced medicines | **75% of EU Green Industry materials** sourced responsibly |
| **Rationale** | Getting circular production to where **at-scale production** is | **Futureproofing AUS manufacturing** and developing Greater South East Melbourne | Rapidly decreasing renewable energy production cost will **unlock huge opportunities for CE** | Positioning Australia as the **leading innovator** in circular drug packaging | Building **responsible and resilient global supply chains** for critical minerals |


MONASH
University
MONASH
SUSTAINABLE
DEVELOPMENT
INSTITUTE

MONASH University

MONASH SUSTAINABLE DEVELOPMENT INSTITUTE

# MSDI Circular Economy Labs


**Martin Geissdoerfer**
Associate Professor,
Director Circular Economy Labs
martin.geissdoerfer@monash.edu

**Jennifer Macklin**
Senior Research Fellow,
Lead Circular Behaviour Lab
jennifer.macklin@monash.edu

**Aleasha McCallion**
Strategic Projects Manager,
Lead Circular Textiles Lab
aleasha.mccallion@monash.edu


monash.edu/msdi/initatives/circular-economy