

'Rapid Review'

Role of CE in Business case processes for Precincts & Infrastructure

NSW Circular Forum

21 March 2022

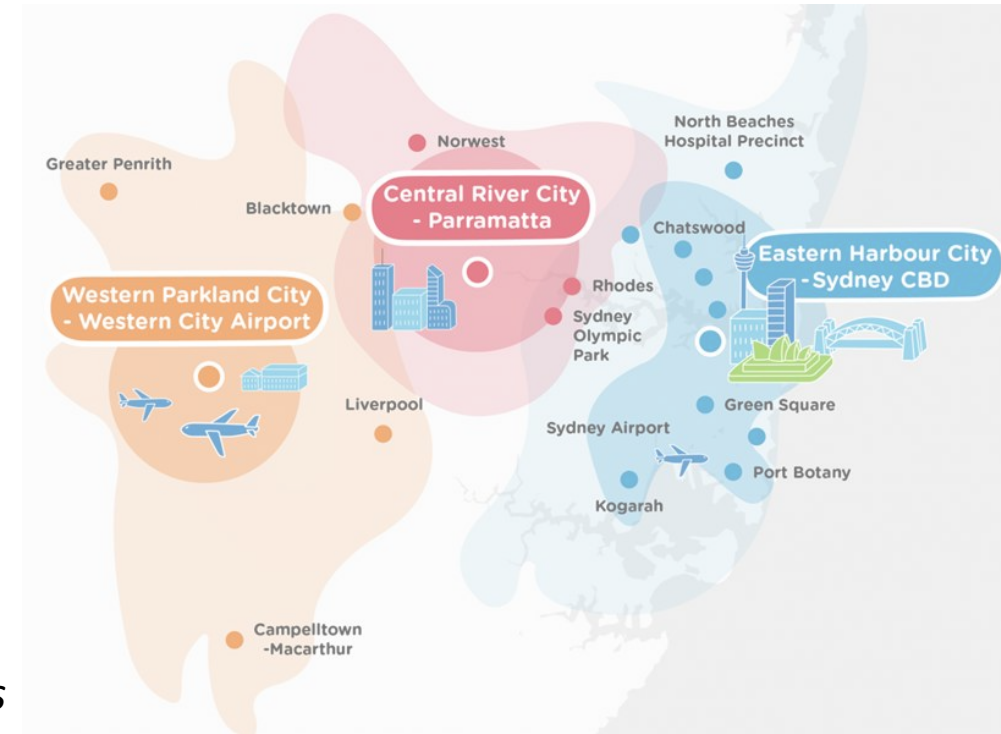


**Precincts and
Infrastructure
Taskforce**



Presentation Structure

1. Introduction to **team**
2. Rapid Review **Challenge Statement**
3. *Question for audience*
4. Structure of **written report**
5. Background / **definitions** –
*Circular economy & associated paradigm shifts,
NSW govt business case steps, infrastructure & precinct*
6. **Method** – *literature review, case studies, executive interviews*
7. **Findings** – *complexity, CE target?, policy/business mismatch, technological progress ...*
8. **Recommendations** – *target sectors, target outcomes, characterise digital potential*
9. *Questions for/from audience*



Rapid Review Research Funding

PRECINCTS & INFRASTRUCTURE CHALLENGE TEAM



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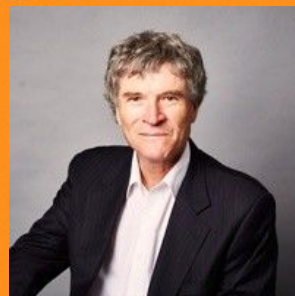
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THE UNIVERSITY OF
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clean core
development



MACQUARIE
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Regional Growth NSW
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Rapid Review: Challenge Statement

“... approaches and tools
to embed circular economy (CE) principles
within business case processes
for precincts and infrastructure in NSW ...”

“...notable gaps: policy, guidance, research or development,
and metrics and reporting frameworks ...”



NSW Govt: Business Case Stages

Stage 0 *Problem Definition*

Stage 1 *Strategic Business Case*

Stage 2 *Detailed Business Case*

Case for Change

- Define the business need/oppt'y
- Define objective of intervention
- Define strategic context
- Identify expected benefits and risks
- Identify relevant stakeholders
- Identify potential strategic responses/interventions
- Provide high level cost estimates

Cost Benefit Analysis

- Create options
- Assess and narrow down options

Financial Analysis

- Prepare Financial Appraisal
- Prepare Financial Impact Statement

Cost Benefit Analysis

- Select preferred options and conduct full CBA

Financial Analysis

- Refine Financial Appraisal
- Refine Financial Impact Statement

Commercial Analysis

- Analysis of how to conduct the project

Management Analysis

- Plans are developed to provide confidence that an economically and financially viable project can be completed

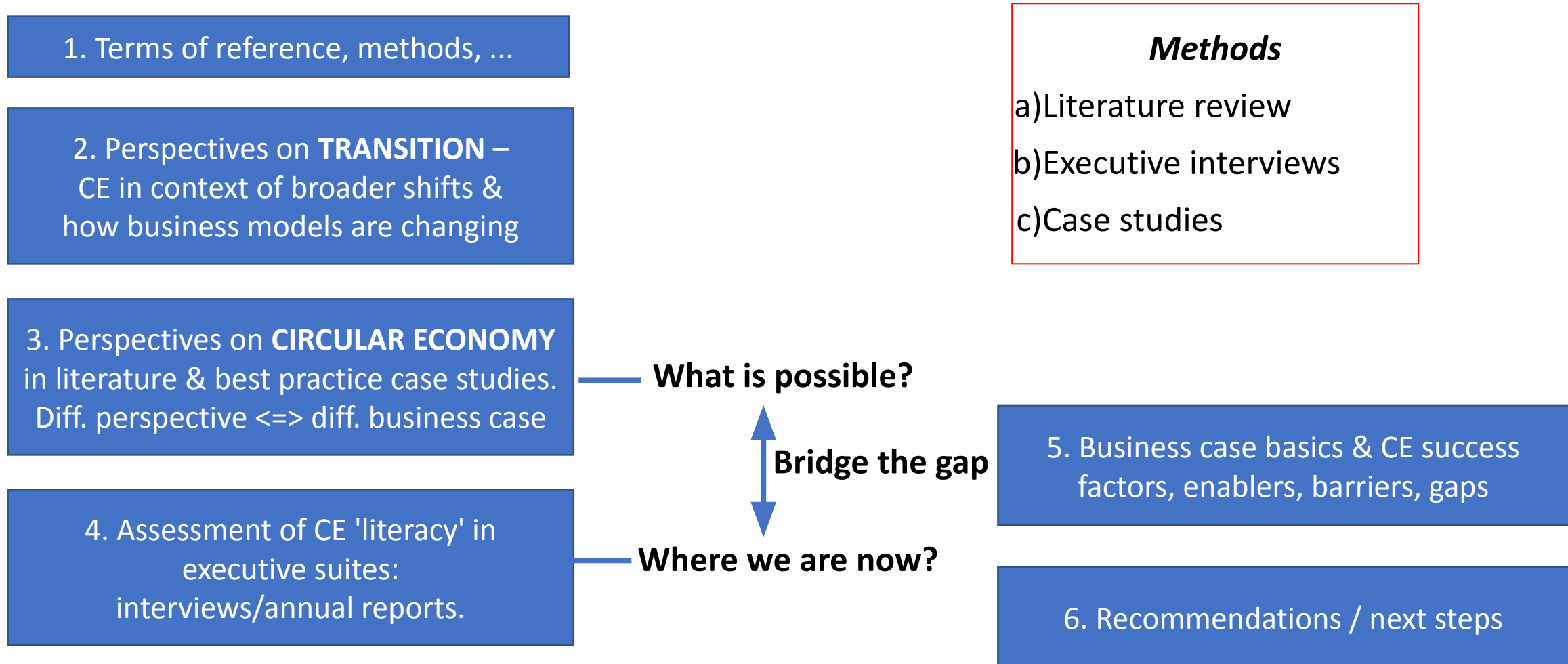
Question for Audience

**What precincts or infrastructure
do you think
could use more 'circularity'?**

Enter your input in *Zoom*'s 'chat' function

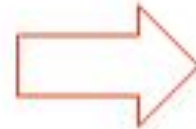
Take *1 minute* ...

Written Report: Structure



Circular Economy Definition

There is a lack of consensus of what is circular economy, the strategy and objective change between culture, nation, and organisation.



Almost 2/3rd of definitions focus solely on waste management rather than material resource maximisation.

Lack of link to sustainable growth/development (do not outline opportunity)

NSW A circular economy values resources by keeping products and materials **in use for as long as possible**. Maximising the use and value of resources brings major economic, social and environmental benefits. It contributes to innovation, growth and job creation, while reducing our impact on the environment.

EU A circular economy aims to **maintain the value of products**, materials and resources for as long as possible **by returning them into the product cycle** at the end of their use, while minimising the generation of waste. The fewer products we discard, the less materials we extract, the better for our environment.

China Circular economy (CE) is a sustainable development strategy proposed ..., aiming to improve the efficiency of materials and energy use...Successful enforcement of a CE can be seen as a way for China to tackle its urgent problem of environmental degradation and **source scarcity**

Literature review / discussion

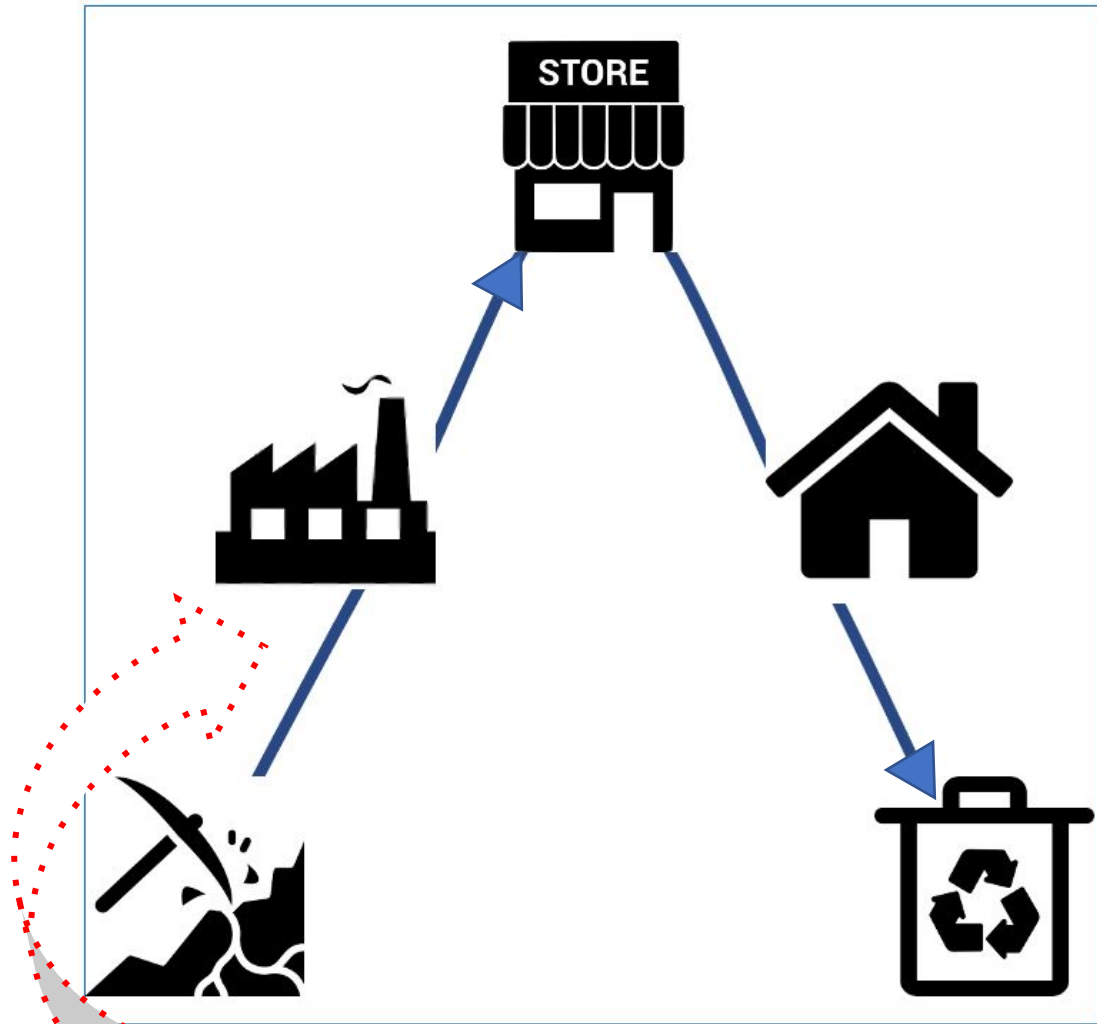
Different business case criteria depending on perspective

- 1) Adjust existing system **v** adopt new paradigm
- 2) New economic system based on circulation of resources
- 3) **Micro-, meso-** and **macro-level** circular economies
- 4) Maximise income **v** minimise costs
- 5) Products **v** service
- 6) Organic CE as foundation of economic system

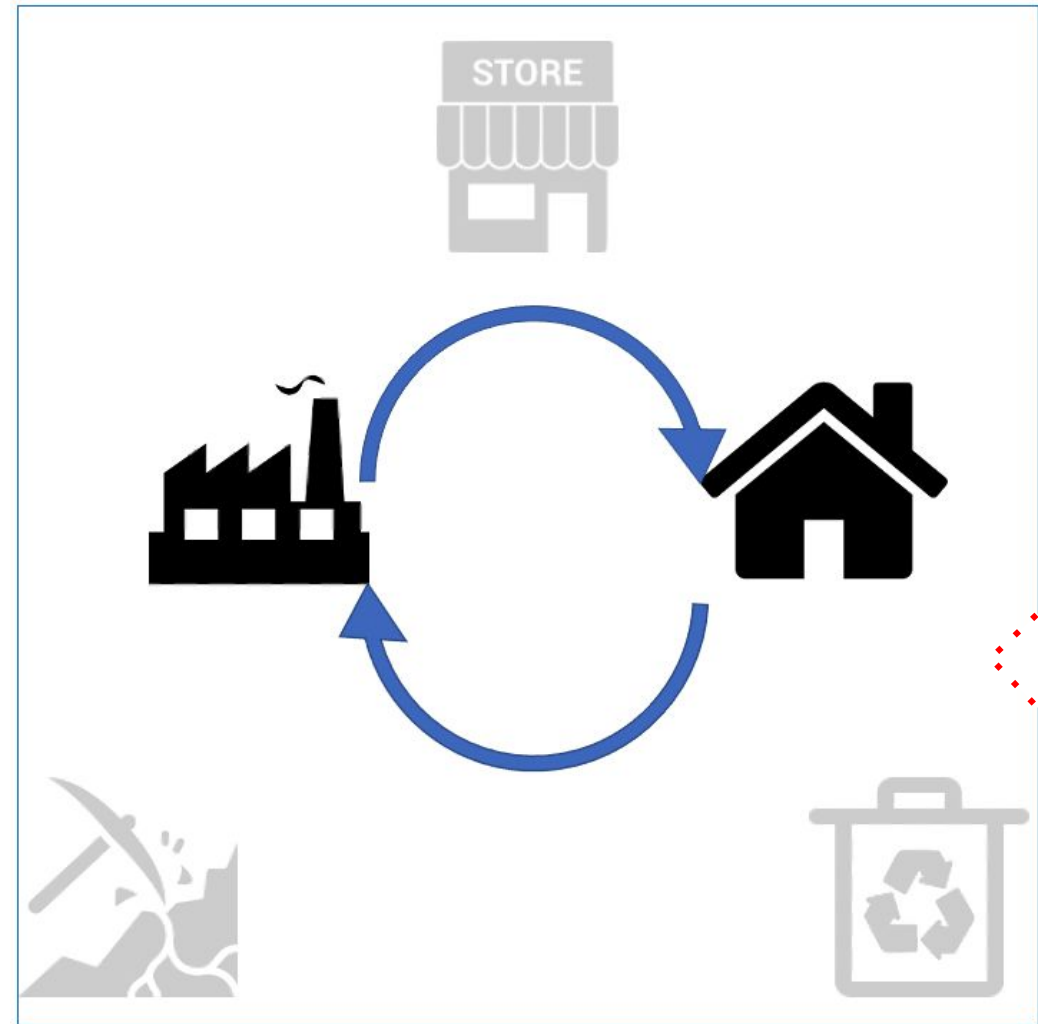
What infrastructure to build and where,
what *not* to build, what to *expand*, what to *close down*?
Questions not for a single infrastructure provider,
for public at large (cf. 'energy transition').



Precincts/Infra. = fixed assets, not material flow



Global supply chains



Localisation (*within a precinct*)

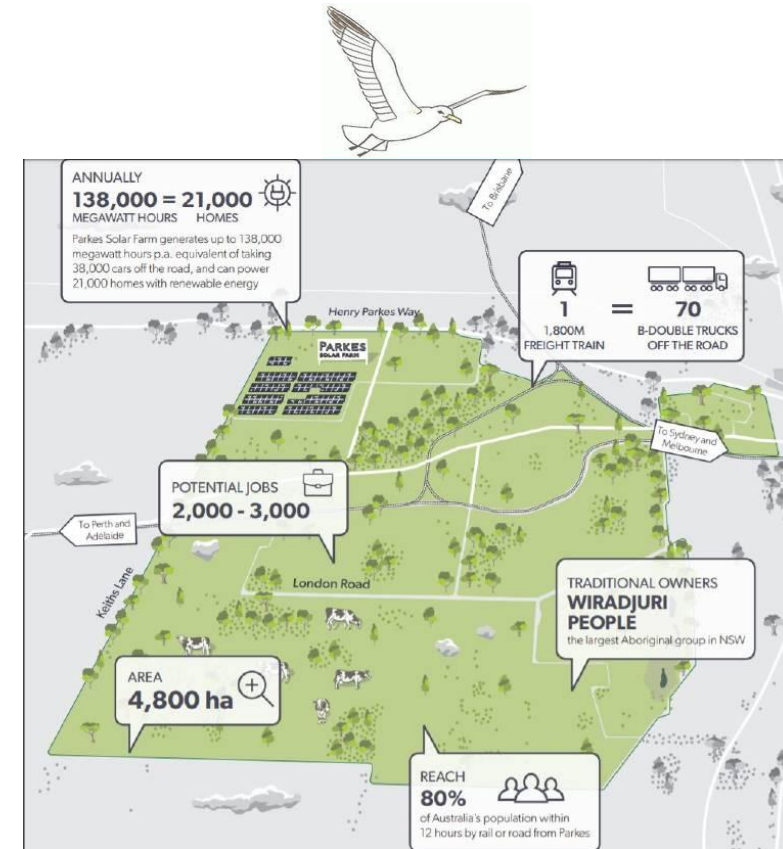
Case studies

Industrial precincts

- Kalundborg Eco-Industrial Precinct, 20+ years – Denmark
- Burnside Eco-Industrial Park – Canada
- Parkes Special Activation Precinct (SAP) - NSW

Residential precincts

- The Cape housing development – Cape Paterson, VIC
- LIV Mirvac's build-to-rent precinct – Sydney
- Circular Economy Villages – Bellingen, NSW



Parkes Special Activation Precinct

Problem definition

- **Leverage economic opportunities** associated with construction of the Inland Rail
- Build on existing strengths in **agriculture and freight logistics** in Parkes
- Explore opportunities to **activate recycling, manufacturing and renewable energy industries.**

Strategic alignment – NSW Government policy

- Job creation
- Regional economic development

Secondary Objectives

- Improved environmental outcomes
(UNIDO EIP with CE principles embedded)
- Promotion of industry clustering
- Reduced red tape
- Increased industry investment
- Increased business establishment and expansion
- Support the Government's 20-year Waste Strategy
have Parkes capitalise on first mover advantage associated with investment in sustainable waste generation, resource recovery and landfill diversion.

□ CE = **Enabler**, helps to achieve objectives
→ principles embedded in Master Plan.

□ Optimise resource flows (CE)
as a **primary objective** in business case
+ delivers other objectives?

□ Shift requires a **complete re-think**
of NSW govt business case process.

Why Parkes?

Strategic location at crossroads of the nation's Newell Highway, which runs north/south, and the east/west transcontinental rail line. Parkes is where Inland Rail - Brisbane to Melbourne - will intersect with east/west rail lines. 80% of Australia's population within reach overnight.



Shifting executive decisions - interviews

18x @ 20-90 minutes

Private sector

Urban Apostles
Sense Strategy Consulting
MRA Consulting Group
KMPG
Borg Group
Beveridge Williams
BECA

Public sector

Western Parkland City Authority
Western Parklands Councils
Lake Macquarie City Council
Dept of Regional NSW
'the Dept formerly known as DPIE'
NSW EPA
Transport for NSW
Sydney Water

Non-profit

MECLA
Narara Eco Village



Locations: metro Sydney, Western Sydney, Central Coast, Illawarra, Hunter region

Review: Annual reports/sustainability reports/executive surveys

How to drive change

Leadership

1. ***Hidden army*** – True believers (among the 27%), shifting the economic system, localisation, overcoming inequity.
2. ***Expanding scope*** – Beyond water/energy use to materials, regeneration, enhancing life in communities; assess benefits realised long term.
3. ***Impatience*** – Investment/private sector ‘ready to go’; see bottlenecks in govt regulations, processes, incentives, guidance documents, information gaps.



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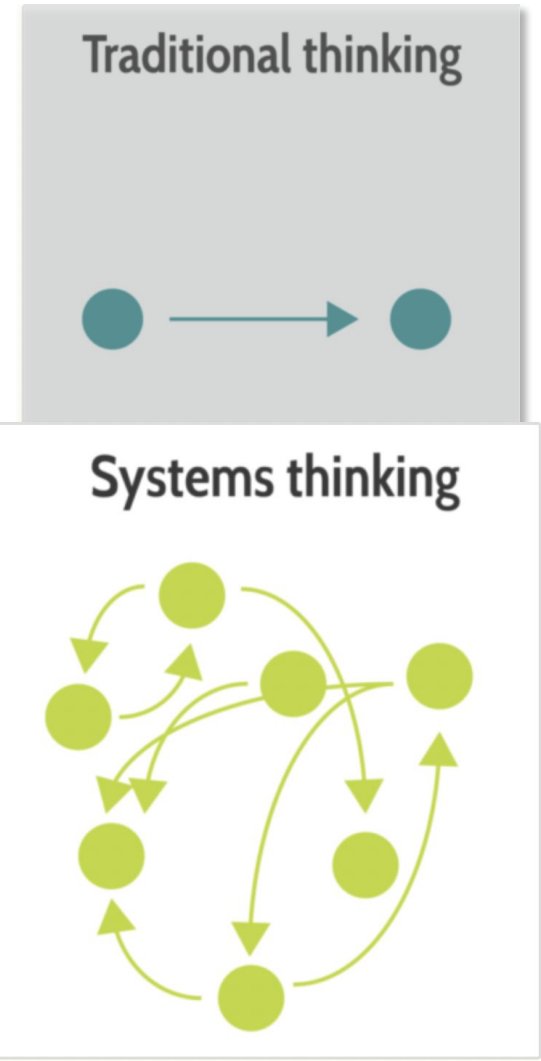
Executive literacy needed

'Threshold concepts'

A. ***Systems thinking***: industrial ecology & butterfly diagram; planning supports technical solutions; 5 capitals: financial, built, human, natural, social + interactions.

B. ***Frames of reference***: siloes in govt; different values in different professions; personal beliefs v professional practices: linear economy; stigma: 'waste'.

C. ***Knowledge***: cost to transport materials; scale; public salience of ESG; chemistry/technical feasibility.



What to do

Recognise complexity - Circular economy: complex array of considerations + unrecognised synergies in a precinct or along linking infrastructure for water, energy, transport and manufacturing. Differing objectives for industrial v residential precincts (max profit v min cost).

Silver buckshot - No 'silver bullets' but 'silver buckshot'. Array of strategies from financial and tax incentives to planning policy and education on CE opportunities (staff, mgrs, & executives).

Implementation opportunity – CE appears to some to be an afterthought in NSW govt's current business case processes for precincts and infrastructure. Changes afoot ...
CE objectives/KPIs can stimulate experimentation to help achieve CE *and* economic aspirations.

Benchmarks - NSW Circular benchmark reports – current & future – can help set KPIs for development of precincts & infrastructure and targets for 'benefits realisation' in long-term operation.

Data sharing – CE's technical constraint => data. Develop a value proposition for sharing data to enable optimising material flows among businesses and to/from residential sector.



Recommend ...

1. Identify ways to **focus on PLACE** in planning, design, development and ongoing management to **lower** govt **barriers** / **enhance enablers** for co-location & 'economic localisation' and highlight key industry sectors in NSW govt business case processes while including Indigenous concept of 'Country', regeneration, 5 capitals
2. Develop **KPIs** for NSW govt business case processes with CE as a primary objective for precinct/infrastructure development - reflecting **operations**, material flows and their governance (*i.e.*, 'soft infrastructure')
3. Review **planning instruments** (*including 'standard instrument' for all councils*) to create ways to incorporate CE vision, principles and definitions for single- and multi-party developments
4. **'Digitalisation'** -> better data, better data sharing, better forecasting.
Explore 'data availability' as a KPI in NSW govt business cases.
Smart city, smart precincts, smart infrastructure ...



Question

What else needs research for CE in precincts/infrastructure?

Your questions for us?

Type into *Zoom's* 'chat' function

Take *1 minute*

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