The Evolution of Industrial Ecology in Australia

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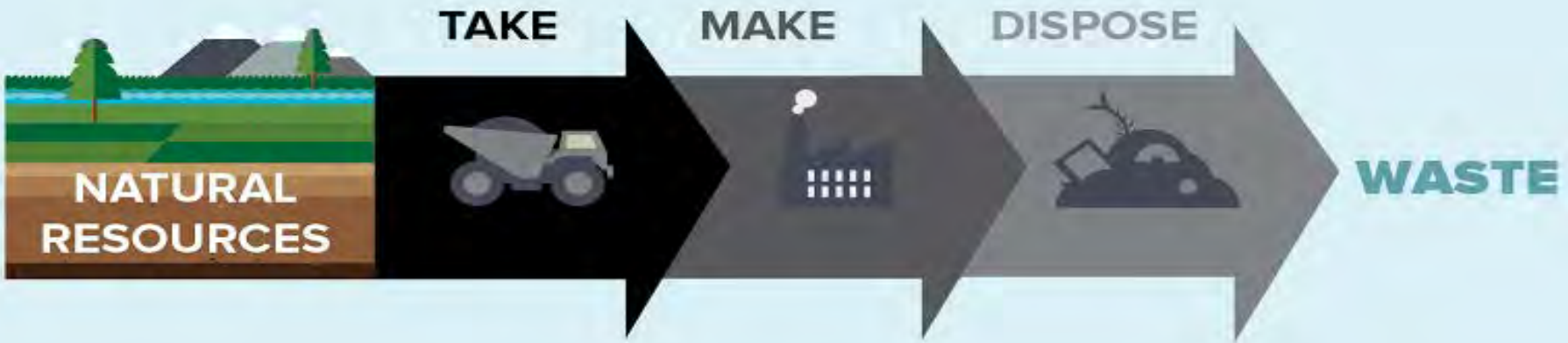
On average, Australians generate 2.2t of waste every year.

Waste generation is increasing 40% faster than population

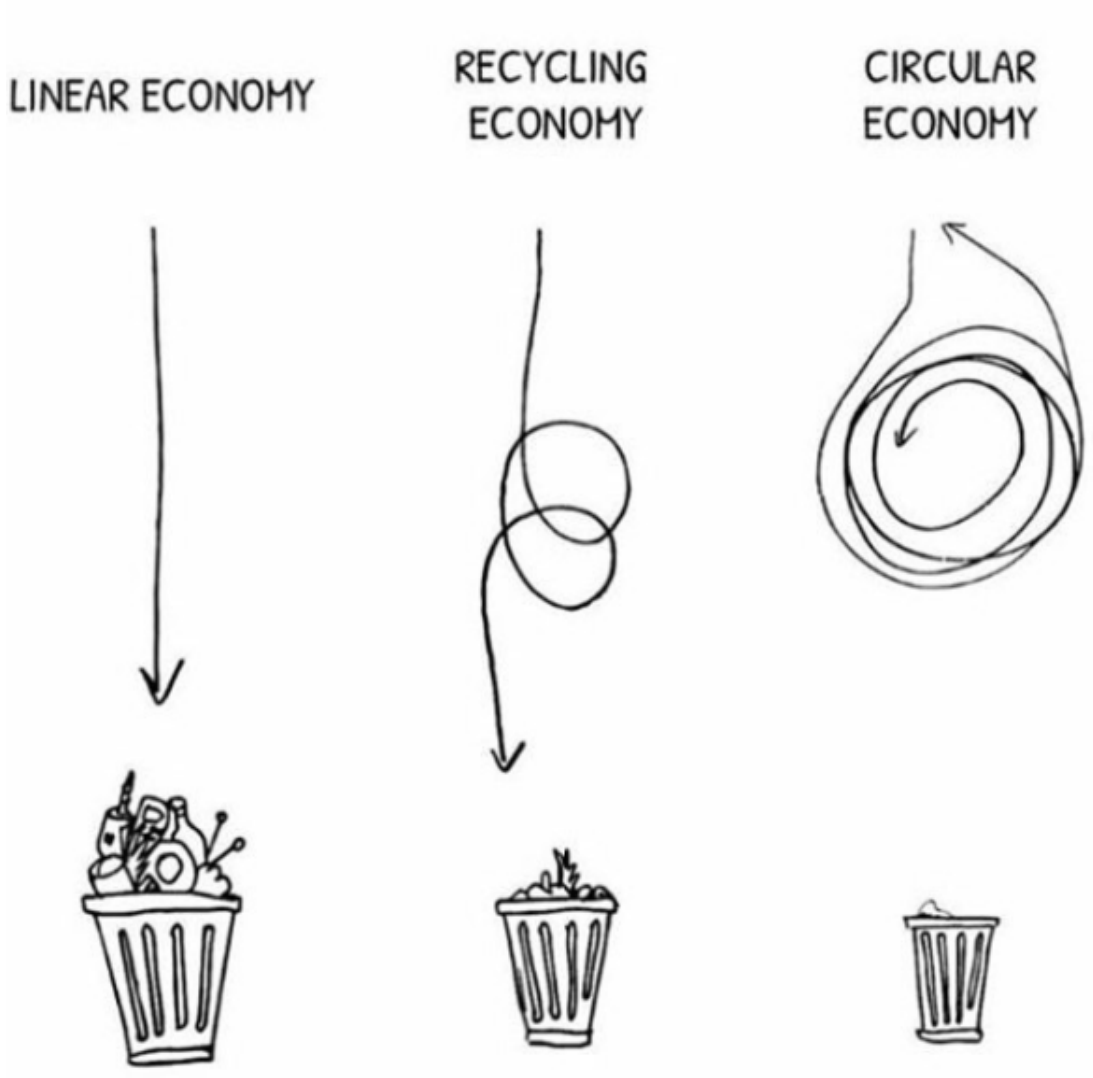
MARKETS AND PRODUCTS ARE CHANGING FASTER THAN EVER BEFORE.

Source: Circular Economy Australia

Source: Greenpeace



Source: Ellen MacArthur Foundation


LINEAR ECONOMY
RECYCLING ECONOMY
CIRCULAR ECONOMY

Up ahead

1. A brief history of Industrial Ecology in Australia
2. Industrial Ecology in practice
3. Successes & Failures

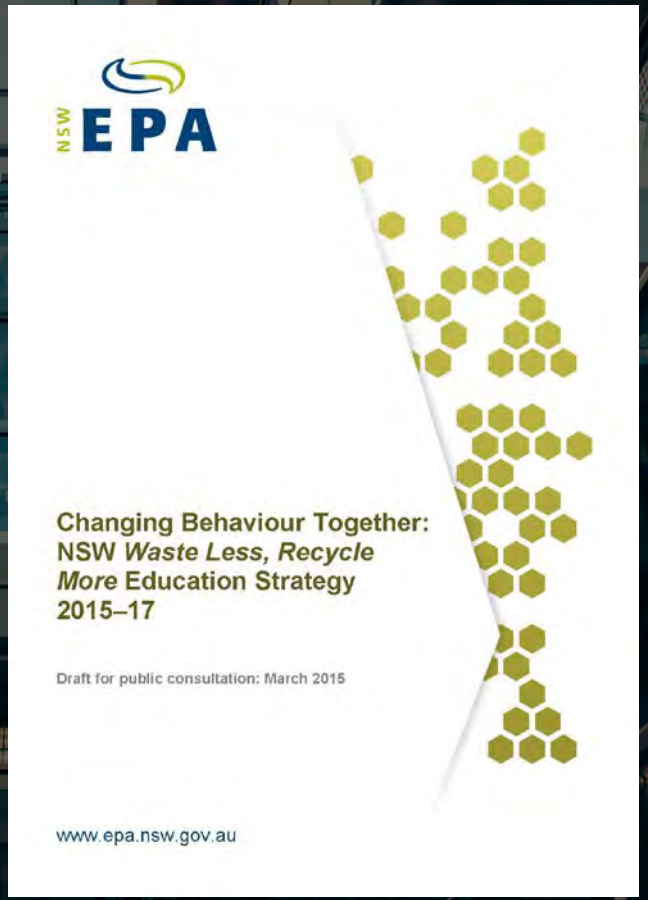
A brief history of Industrial Ecology

- Early days…limited business to business byproduct exchanges
- Government intervention (State based and Nationally through Product Stewardship Scheme)
- Industry network

AUSTRALIAN INDUSTRIAL ECOLOGY NETWORK
Promoting industrial ecology to achieve sustainable development
AIEN

- Business as usual – integration into business practices (driven by high waste levy in NSW)

Bringing businesses together across NSW to foster reuse of C&I waste



NSW EPA Circulate

An experiment that turned into an AUD $9 million program to implement industrial ecology over 8 years.

A plan to explore and transition the economy toward circular practice.

Grants initially awarded on the basis of tonnes diverted – incentivised a transactional approach.

Changing perception and understanding of Industrial Ecology over the course of the program – moving from a transactional approach.

Implementing Industrial Ecology

The role and responsibilities of facilitators. To understand/overcome:

- **Technical aspects**
- **Contractual aspects**
- **Personal issues**
- **The sell**
- **Financial concerns**
- **Staff turnover**

How can the government seed Industrial Ecology without creating a precedent to industry for this service to be provided?

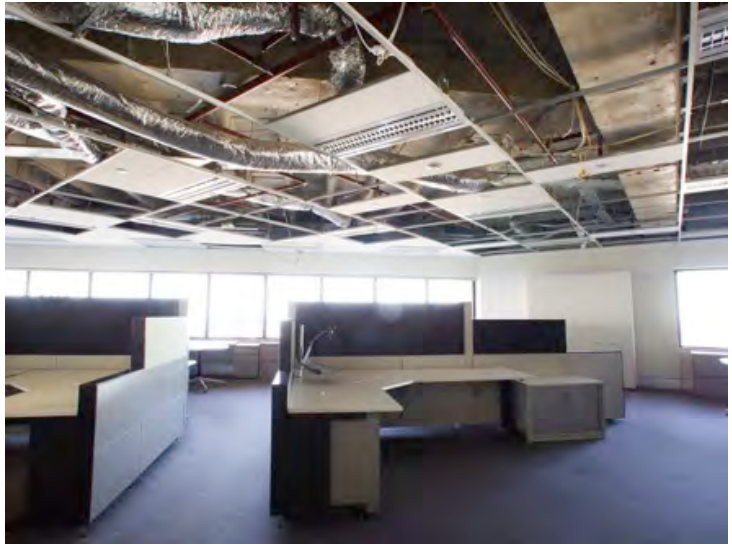
How can industry be influenced to change their perceptions and expectations of resource management?

Building Defit Industrial Ecology

- In Sydney CBD, **400,000 sqm** of office space churns each year.
- 1,000 sqm of office space creates 63t of material, or **25,000 tonnes of material being generated every year**
- With an average 20% diversion rate (2014), that’s 20,000 tonnes of material going to landfill every year.

Building Defit Industrial Ecology

Improve recovery rates from 20-60% in 3 years



Multi-stakeholder engagement:

Inc. tenants, property owners, demolition contractors, project managers, recycling facilities, contract lawyers, Green Building Council of Australia.

Transition from transactional involvement to strategic incentivisation

BETTER BUILDINGS PARTNERSHIP

11 commercial landlords | 3 education institutions | 3 industry bodies | 5 property managers | 2 government entities

Commercial landlord members control 2.5m sqm of Sydney CBD (50%)

AMP CAPITAL · Brookfield · Colliers International · NSW Sydney Harbour Foreshore Authority · City of Sydney · DEXUS Property Group · Charter Hall · Knight Frank · australand · lendlease · The University of Sydney · NSW Office of Environment & Heritage · mirvac · GPT The GPT Group · INVESTA · UTS · Property Council of Australia · savills · Stockland · Sydney TAFE · JLL · CBRE CB Richard Ellis · green building council australia

Source separation

Contractors Maximizing Recycling Onsite

New products from old…industrial ecology evolving

UNSW research and experiments into new timber products from office defit

Waste engineered timber coming from demolition sites and remanufactured panels from UNSW research.

Auspost Pallets

- 1000 tonnes of timber pallets going to landfill per year
- Due to: site set up problems; lack of motivation/oversight; lax waste contractor making $ off sending to landfill
- Pallets collected by 3rd party contractor; either refurbished and resold as pallets, or chipped and made into new products.

KFC uniforms - carpet

- KFC changes uniforms every 3 years or so.
- 60,000 uniforms to recover
- Uniforms were collected in each store and backhauled by salad supplier
- Reprocessed into 25,000 sqm carpet underlay

- The beginnings of a larger body of work: Circular Threads

Successes

- Partnerships between government and industry (BBP and Stripout Waste Guidelines)
- Working from the top down (Aldi Resource Recovery Targets in Waste Tender)
- Redefining business as usual
- Content is King – blogs, media, events

Failures (Opportunities)

- Engagement with waste service providers – still working to effectively crack this; Aldi tender a big step
- Tonnage focus – results in transactional focus rather than systemic change
- Short funding rounds
- Competition between government programs/departments

Barriers to wider adoption

In an Australian Context:

- **Distance**
- **Economy of scale**
- **Archaic waste industry**
- **Disparity in waste levy**
- **Data availability**
- **Reporting transparency**

Primary data collection and big data treatment becomes essential – build awareness, manage as contaminant free stream, understand the technology and then demonstrate the importance of investment.

With financial levers in place – the role of a facilitator becomes business development, bringing new recycling capacity to the state.

Creating systemic change

Practicing and implementing systems thinking on an economy wide scale.

- **How can we assess the best environmental outcome?**
- **Perhaps glass shouldn't be recycled?**

Focus on industry leaders and leadership groups – provide exploratory funding to review and practically demonstrate an issue

Significant complexity in designing these systems.

- Creating long-term financial incentive for parties
- Inclusion in green building (or other) assessment criteria
- Look for the win / win / win situations

To action an industrial ecology network:

IE has evolved through partnerships between private and public so work with both

Government seeding is key, but industry can achieve big wins without relying on government to act

Dedicated resources to overcome barriers and embed into business is key – facilitator model works


“The integration of IE and wider concepts of circularity in government policy and along supply chains will see long-term positive change for business productivity, resource management and environmental outcomes.”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