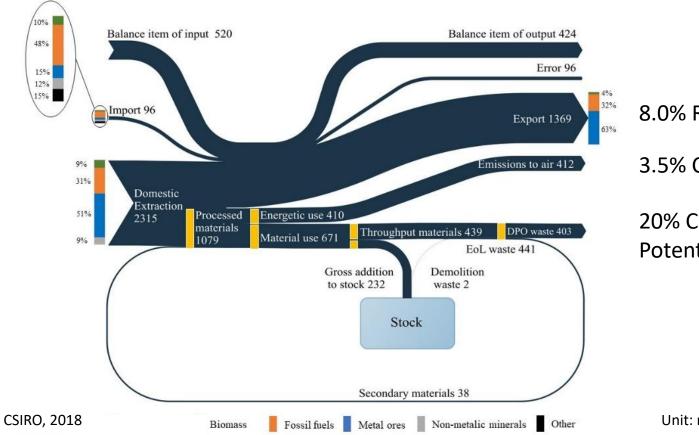


Australia's effort to transition to a net-zero circular economy: opportunities and challenges for cities and regions

Seventh Annual Session of the Global Forum on Human Settlements and Sustainable Cities

Heinz Schandl | 16 December 2022

Australian Material Flow Balance 2018



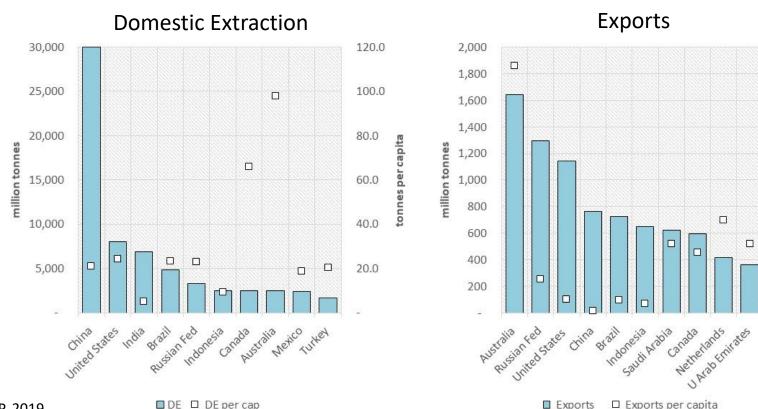
8.0% Recycling Rate

3.5% Circularity Rate

20% Circularity Potential



Top-10 primary material extractors and exporters





70.0

60.0

50.0

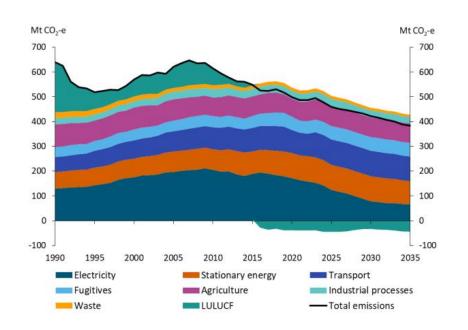
40.0

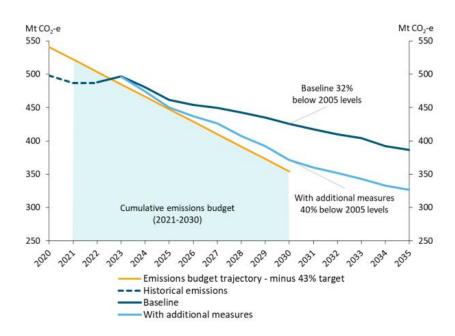
30.0

20.0

10.0

Australia's Emission Projections







National, State and Regional CE Policy Initiatives

- National Waste Policy (2018) and National Waste Policy Action Plan (2019) with seven national waste reduction targets enabled through circular economy
- Large investment in recycling infrastructure Recycling Modernisation Fund
- Recycling and Clean Energy one of six priorities of the Modern Manufacturing Initiative (2021)
- Circular Economy initiatives in Victoria, New South Wales and South Australia
- City deals for nine urban agglomerations aligning three levels of government
- New South Wales Special Activation Precincts advanced manufacturing, renewable energy and resource recovery



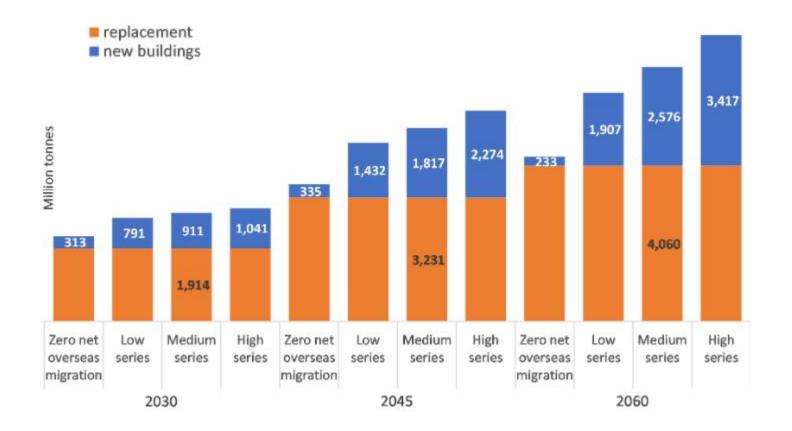
A national effort to transition to a low carbon circular economy



Australia's Environment ministers commit to work with the private sector to design out waste and pollution, keep materials in use and foster markets to achieve a circular economy by 2030



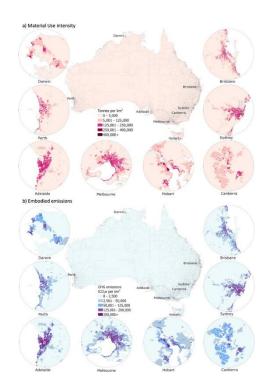
The role of cities for net-zero and circular





Cities material and emission intensity

- Metrics to measure the material and carbon intensity of the built environment
- Spatially explicit models of urban metabolism
- Identifying opportunities for low carbon and circular solutions in housing and mobility





Australia National Outlook 2019

Slow Decline

In Slow Decline, Australia drifts into the future. Economic growth, investment and education outcomes are all relatively weak. Australia's economy is increasingly vulnerable to external shocks. Total Factor Productivity (TFP) growth remains well below the global frontier and wage growth is relatively low.

Australia's cities sprawl outwards, making it more difficult for people in the outer suburbs to access jobs, education and services. Housing affordability remains a major concern. This deepens social divisions and polarisation. Trust in institutions remains low.

Although energy policy issues are resolved domestically, the low-emissions energy transition is stymied by a lack of global cooperation on climate change. Both energy and agricultural productivity remain relatively low.



40% higher in 2060 than today



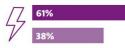
Cities sprawl with little change



Average urban vehicle kilometres travelled per capita falls by less than 25%



61% increase in total energy use by 2060 (on 2016 levels), with only a modest improvement in energy productivity



Households spend 38% less on electricity as a percentage of income



Net emissions decrease to 476 MtCO,e by 2060 (-11% on 2016 levels)

Returns to landholders increase by around

\$18 billion between 2016 and 2060





Minimal environmental plantings in 2060

Outlook Vision III



In the Outlook Vision, Australia reaches its full potential. Economic growth remains strong and inclusive as Australian companies use technology to move productivity towards the global frontier and create new globally competitive, export-facing industries. Improved educational outcomes give Australians the skills they need to compete in this technology-enabled workforce.

Australia's cities are dynamic and diverse global centres with higher-density populations, a diverse range of affordable housing options and equal access to high-quality jobs, recreation, education and other services.

Australia successfully transitions its energy system, with high reliability and affordability and lower emissions.

If the world cooperates to limit climate change to 2°C, Australia can go even further and reach 'net zero' emissions by 2050, driven by significant shifts in land use to carbon plantings.



GDP grows at

Real wages are 90% higher in 2060 than today



Average density of major cities increases 60-88%



Average urban vehicle kilometres travelled per capita reduced by 33-45% with greater uptake of mass transit

6-28% increase in total energy use by 2060 (on 2016 levels) with more than a doubling of energy productivity per unit of GDP



6-28% 58-64%

Households spend up to 64% less on

electricity as a percentage of income



Australia reaches net-zero emissions by 2050 under a cooperative global context, with the potential for net-negative emissions by 2060

Returns to landholders increase by

\$42-84 billion between 2016 and 2060





11-20 Mha of environmental plantings in 2060 under a cooperative global context (12-24% of intensive agricultural land)



Five Key Shifts



INDUSTRY

An INDUSTRY shift will enable a productive, inclusive and resilient economy, with new strengths in both the domestic and export sectors.

- Increase the adoption of technology to boost productivity in existing industries that have historically supported Australia's growth, as well as new industries.
- Invest in skills to ensure a globally competitive workforce that is prepared for technology-enabled jobs of the future.
- Develop export-facing growth industries that draw on Australia's strengths and build competitive advantage in global markets and value chains.



An URBAN shift will enable well-connected, affordable cities that offer more equal access to quality jobs, lifestyle amenities, education and other services.

- Plan for higher-density, multicentre and well-connected capital cities to reduce urban sprawl and congestion.
- Create mixed land use zones with diverse high-quality housing options to bring people closer to jobs, services and amenities.
- Invest in transportation infrastructure, including mass-transit, autonomous vehicles and active transit, such as walking and cycling.



ENERGY

An ENERGY shift will manage Australia's transition to a reliable, affordable, low-emissions energy economy that builds on Australia's existing sources of comparative advantage.

- Manage the transition to renewable sources of electricity, which will be driven by declining technology costs for generation, storage and grid support.
- Improve energy productivity using available technologies to reduce household and industrial energy use.
- Develop new low-emissions energy exports, such as hydrogen and high-voltage direct current power.



LAND

A LAND shift will create a profitable and sustainable mosaic of food, fibre and fuel production, carbon sequestration and biodiversity.

- Invest in food and fibre productivity by harnessing digital and genomic technology, as well as using natural assets more efficiently.
- Participate in new agricultural and environmental markets, such as carbon forestry, to capitalise on Australia's unique opportunities in global carbon markets.
- Maintain, restore and invest in biodiversity and ecosystem health, which will be necessary to achieve increased productivity.



CULTURE

A CULTURE shift will encourage more engagement, curiosity, collaboration and solutions, and should be supported by inclusive civic and political institutions.

- Rebuild trust and respect in Australia's political, business and social institutions.
- Encourage a healthy culture of risk taking, curiosity and an acceptance of fear of failure to support entrepreneurship and innovation.
- Recognise and include social and environmental outcomes in decision-making processes.





Thank you

Environment

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