

Circular economy: A finance perspective

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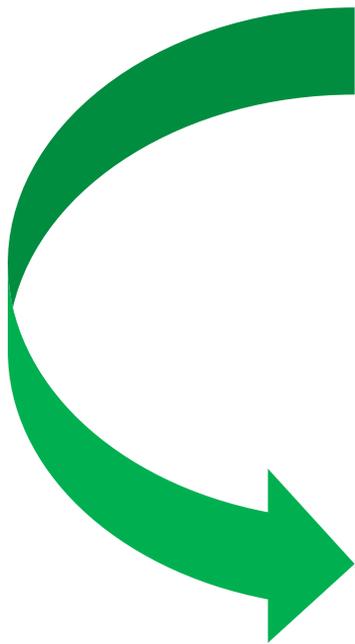
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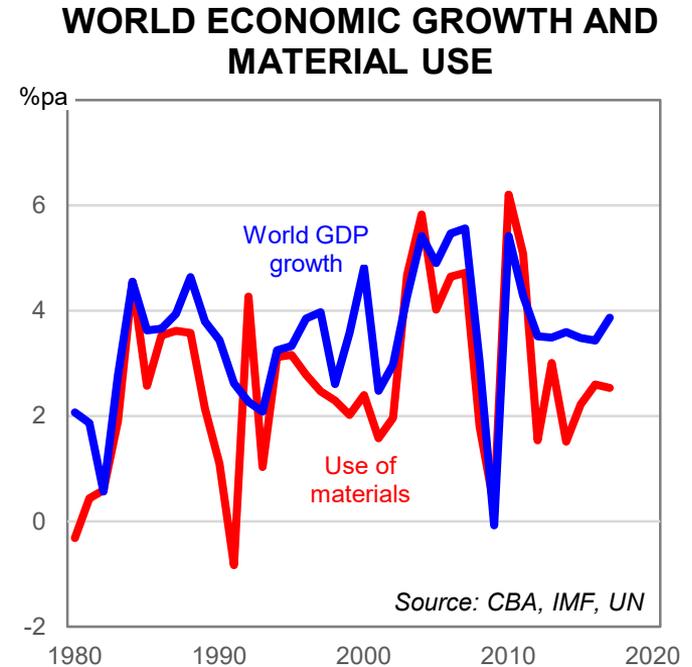
Environmental
sustainability

Economic
sustainability



The 'linear' and 'circular' economies

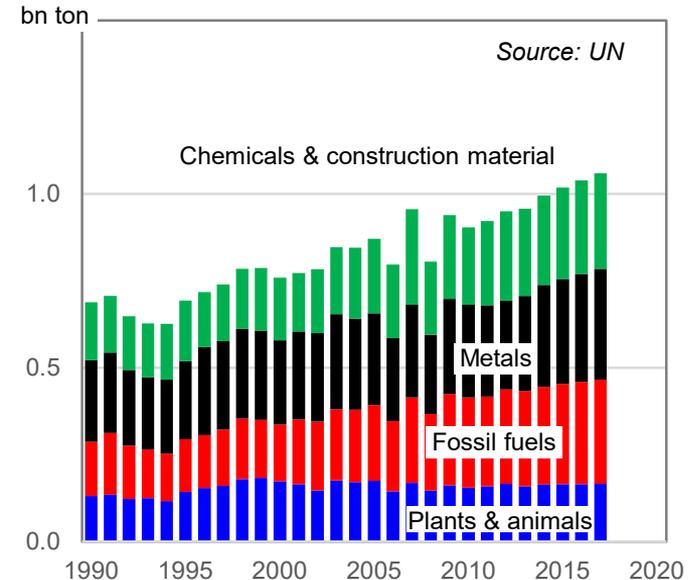
- In 'linear' economies, economic growth is strongly linked with material use.
- Circular economies *delink* economic growth and consumption from material use.
- The aim is *not* slower economic growth and consumption but less impact on the environment.



Is this sustainable?

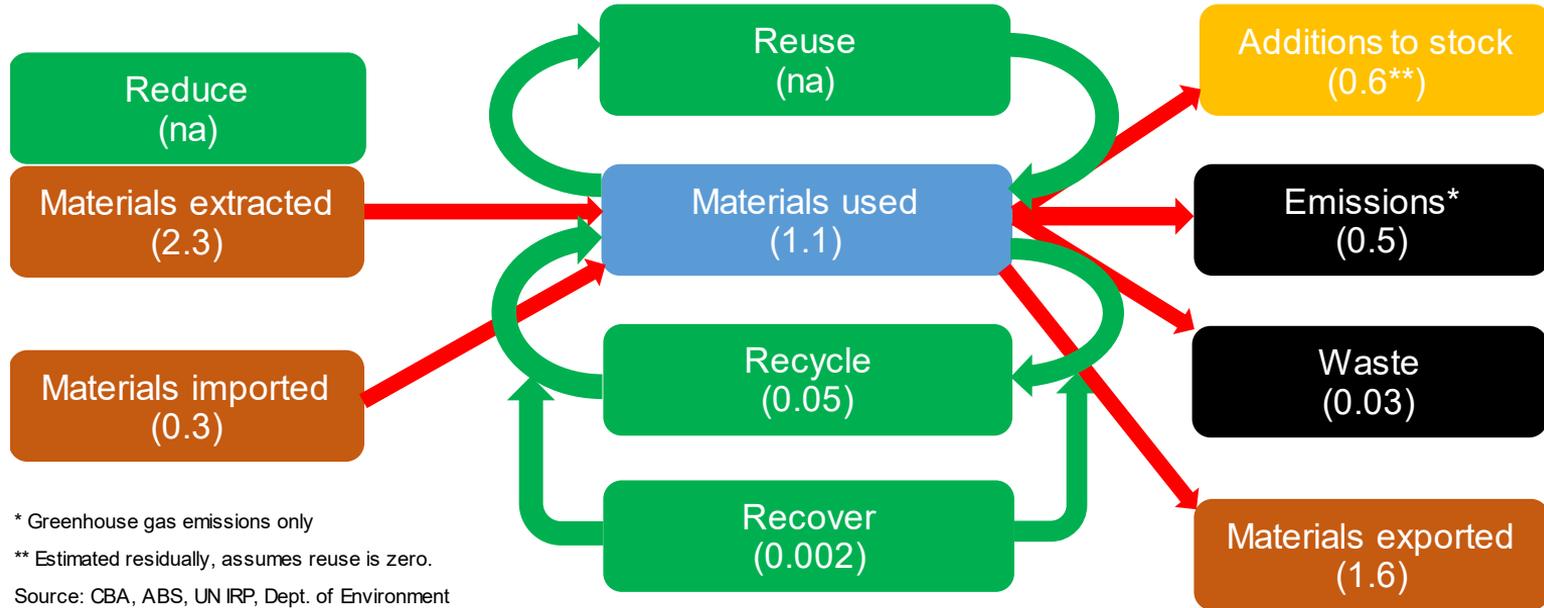
- Extracting, using and disposing of 'materials' damages the environment.
- Using fossil fuels for electricity and transport produces carbon dioxide – a gas that contributes to climate change.
- Metal use is associated with acidification, climate change, human toxicity, and ozone depletion.
- Concrete manufacturing also releases carbon dioxide.

AUST. MATERIAL FOOTPRINT



How circular is Australia?: The 4Rs

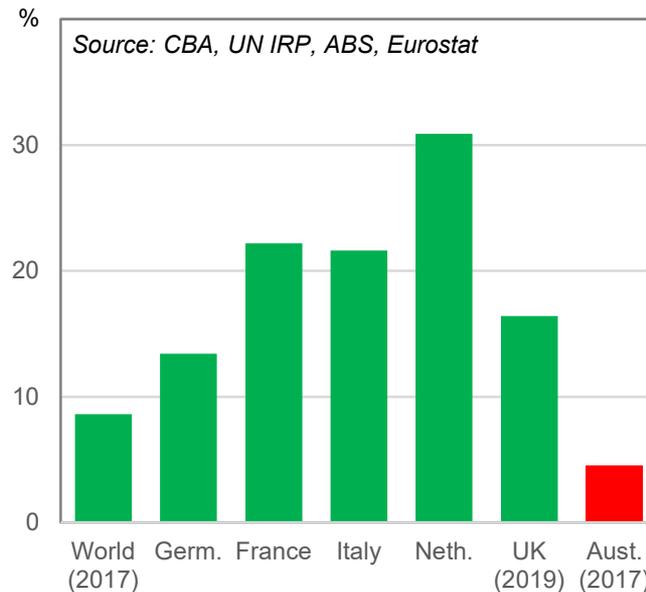
MATERIAL FLOWS IN THE AUSTRALIAN ECONOMY
(billions of tons in 2017)



Circularity compared

- We estimate Australia's circularity rate is 4-5%.
- According to Circle Economy, a consultancy, the world's 'circularity rate' was 8% in 2017. This means that 8% of all materials used were reused, recycled or recovered. The remaining 92% of materials used were newly extracted from the earth.

**CIRCULARITY RATE
(2020)**



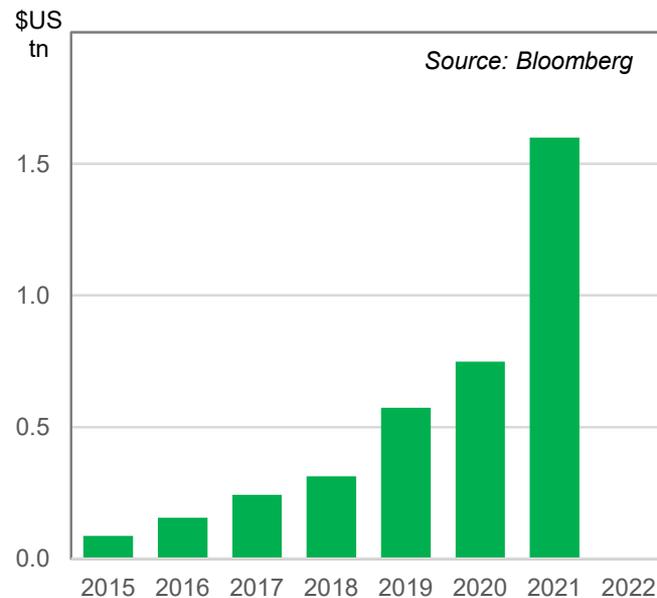
Transition to a circular economy

- There are three main players that can speed up the transition from linear to circular economies.
 - **Government:** introduce targets, enforce rules, discourage extraction and encourage the 4Rs (reduce, reuse, recycle and recover).
 - **Research:** design new products and processes to spread the 4Rs through all industries.
 - **Finance:** lend to and invest in new business models to put the 4Rs into action.

Growing interest by finance

- In finance, environmental, social and governance bonds and loans are expanding rapidly (average 60%+ growth per year).
- The call on government funding is immense. Governments are pulled in many different directions.

GLOBAL ESG FINANCE



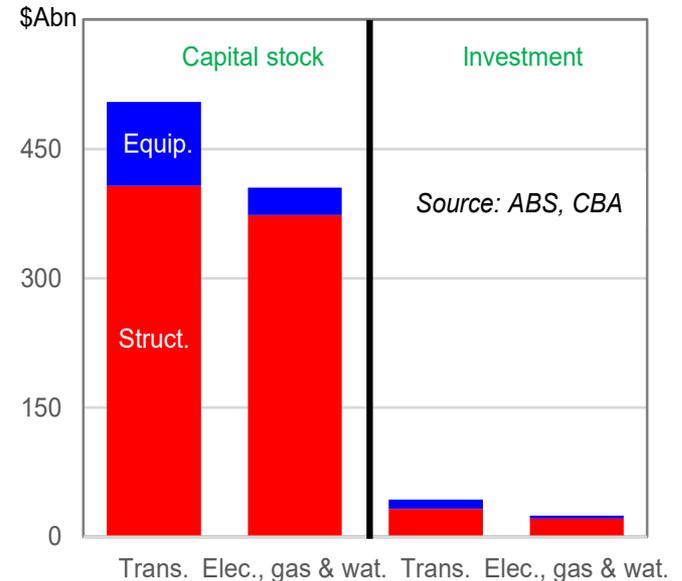
Lessons from addressing climate change

- Time limit – net zero emissions of greenhouse gases by 2050.
- Government sets up a market for the right to emit carbon dioxide, and an overall limit on carbon dioxide emissions.
- Markets set the price on the right to emit carbon dioxide. Those with the highest economic return are willing to pay the carbon price.
- The carbon price incentivises *changes in behaviour* to (i) avoid paying the carbon price (particularly for carbon-intensive goods), and (ii) invest and innovate new, cleaner technologies, processes and business models.

The transition will be drawn-out

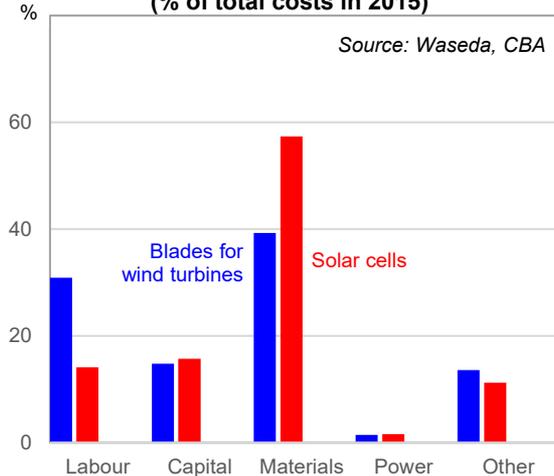
- The capital stock will need to be refurbished with a huge step-up in investment to replace the existing stock of capital with new sustainable structures and equipment.
- The capital stock in utilities and transport is \$A900bn while the annual rate of investment is \$A70bn. At the current rate of investment, it would take seven years to refurbish half (\$US450bn) of the utilities and transport capital stock.

AUST. TRANS. & UTILITIES IN 2019

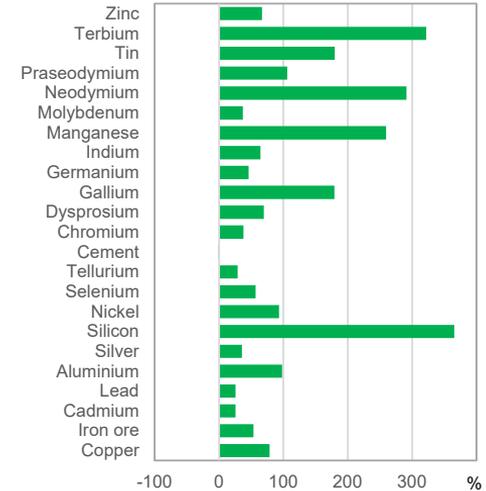


A bumpy road ahead

**COST STRUCTURE OF JAPANESE
BLADES & SOLAR CELL MODULES**
(% of total costs in 2015)



METAL PRICES SINCE JAN. 2020
(Index Jan. 2020 = 100)



- The price of metals and minerals used to make the production facilities and machinery for sustainable electricity and transport have surged.

Sustainable research

Carbon dioxide and climate change

1. Where does Australia fit into the world economy's carbon footprint?
2. Pricing greenhouse gas emissions: a global overview
3. The carbon neutrality promise can transform the Chinese economy
4. Will US climate policy result in a sea change for Australia?
5. Green is the new black in a post-COVID world
6. The EU's Carbon Border Adjustment Mechanism
7. COP26: Carbon markets, net zero and finance
8. COP26: A progress update as talks risk heading into overtime
9. Green central bank policy: People's Bank of China
10. Tracking Japan's decarbonisation plan and climate initiatives
11. COP26: Final thoughts
12. Corporate energy transition: Understanding the market
13. Australian Carbon Credit Units – a 101
14. The Carbon Capture and Storage opportunity

Sustainable research

Circular economy

- 15. Introducing the Circular Economy and the 4Rs
- 16. How 'circular' is Australia's economy?

Financial markets

- 17. The 'brown economy': A downside risk to AUD?
- 18. Government bonds: Is it time to turn Green?
- 19. Introducing Green monetary policy
- 20. Green central bank policy: People's Bank of China

Biodiversity

- 21. Biodiversity: Nature's diversified portfolio
- 22. G7 steps up to carbon and biodiversity challenges
- 23. Nature-related risks: The clock is ticking
- 24. Biodiversity: What happened at COP15 and COP26?

Sustainable research

Hydrogen

- 25. Australia's hydrogen dream
- 26. Australia's energy policy
- 27. Energy Transition – A global perspective

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