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C E L E B R A T I N G



*Talks Live*

**The real cost of carbon**

**15 November 2022**

A Marsden Jacob Presentation

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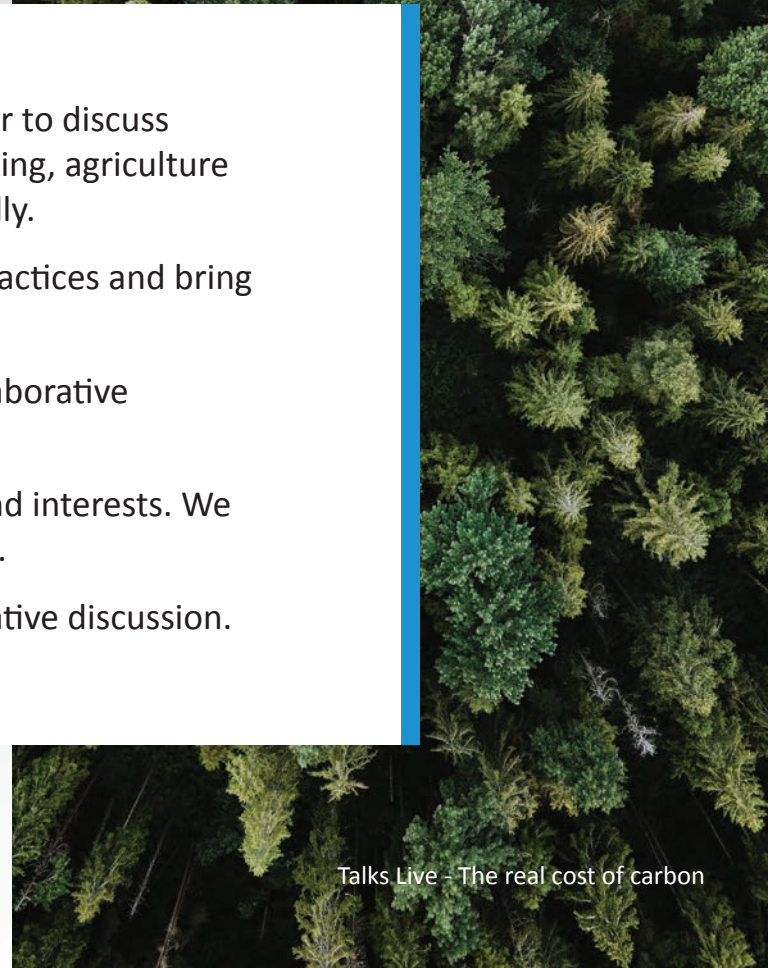
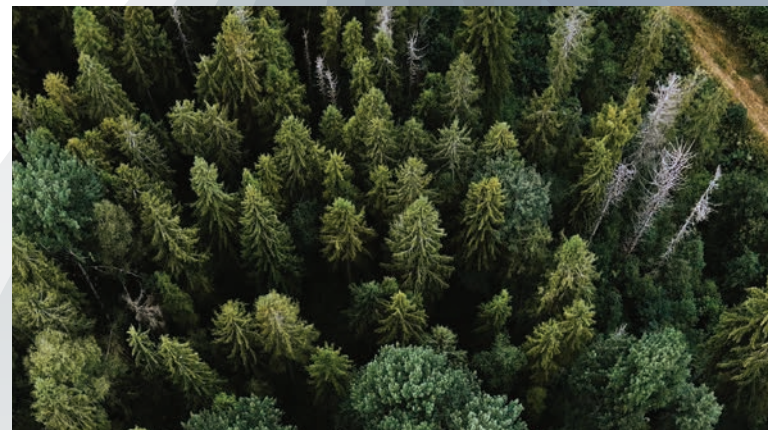
The **Marsden Jacob Talks Live** webinar series brings people together to discuss pressing issues across environment, energy, water, waste and recycling, agriculture and earth resources and other sectors in Australia and internationally.

These free webinars are open to everyone. We aim to share best practices and bring you the latest research and thinking.

Our focus in these events is on encouraging open, positive and collaborative discussion.

We encourage you to share your questions, opinions, experience and interests. We also welcome your thoughts on future topics for our webinar series.

Each live event includes a presentation, followed by open, collaborative discussion.



MARSDEN JACOB ASSOCIATES

Talks Live - The real cost of carbon

# Who are we?



**Dr Peter Kinrade**

Associate Director

PhD (Environmental Economics) (Melb.),  
MEnvSt (Tas.), BCom (Economics) (Melb.)

- 30+ years assessing the economics and policy of climate change and other environmental issues for governments, environment NGOs and private sector clients.
- Environmental advisory roles including non-government environment advisor on the Australian delegation to UN climate change negotiations, and National Greenhouse Advisory Panel.
- Recent work includes developing a carbon abatement cost curve for circular economy opportunities and economic analysis of fuel efficiency standards.

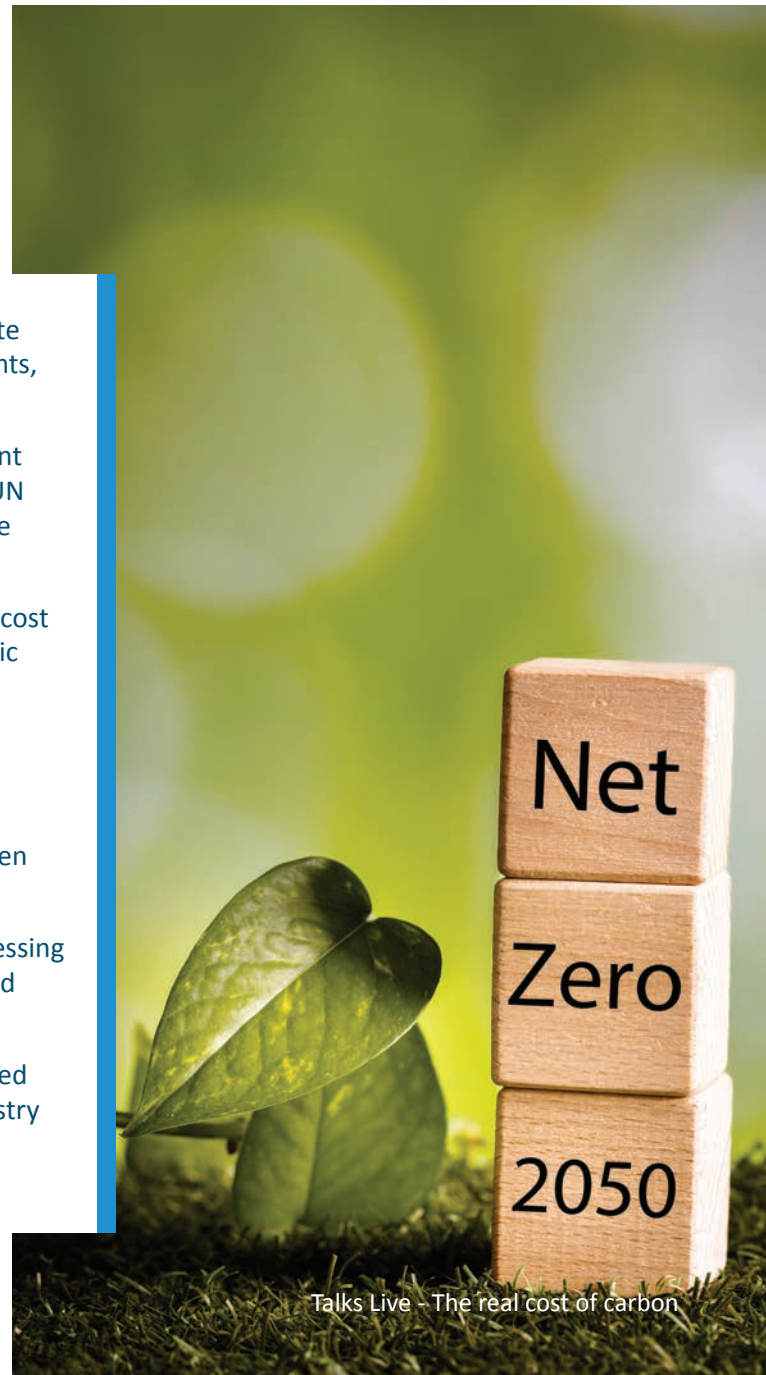


**Amy Rogers**

Senior Consultant

BCom (Macq.)

- Cross-sectoral economist focused on the nexus between society, environment and economics.
- Works with government and private sector clients assessing the economics of carbon emissions, carbon costing and climate change.
- Recent work includes assessing the emissions associated with grain transport and associated carbon costs industry needs to consider during valuation.



## In today's Talks Live we're going to cover:

The social cost of  
carbon

Why this topic,  
and why now?

State of the  
world's climate  
response

Where to from  
here?

Questions?

# Why this topic, and why now?

- Recent extreme events across Australia and internationally reveal that moving to a net-zero emissions economy is more urgent than ever.
- Australia needs to play its part. Good decision-making requires us to have an agreed position on the cost of carbon – or at least an understanding.
- At present, there is no agreed position, within or across governments, as to how carbon should be costed.
- A more consistent and accurate approach to carbon valuation can help you plan for and manage risks, and leverage future economic and environmental opportunities.



# Cost vs price: an important distinction

Before we consider how carbon emissions should be valued in economic analysis, it's important to draw a distinction between the **cost** of carbon and the **price** of carbon.

- **The cost of carbon.** In simple terms, this is the economic cost of emissions.
- **The price of carbon.** The price of carbon is traded in markets.





**The social cost of  
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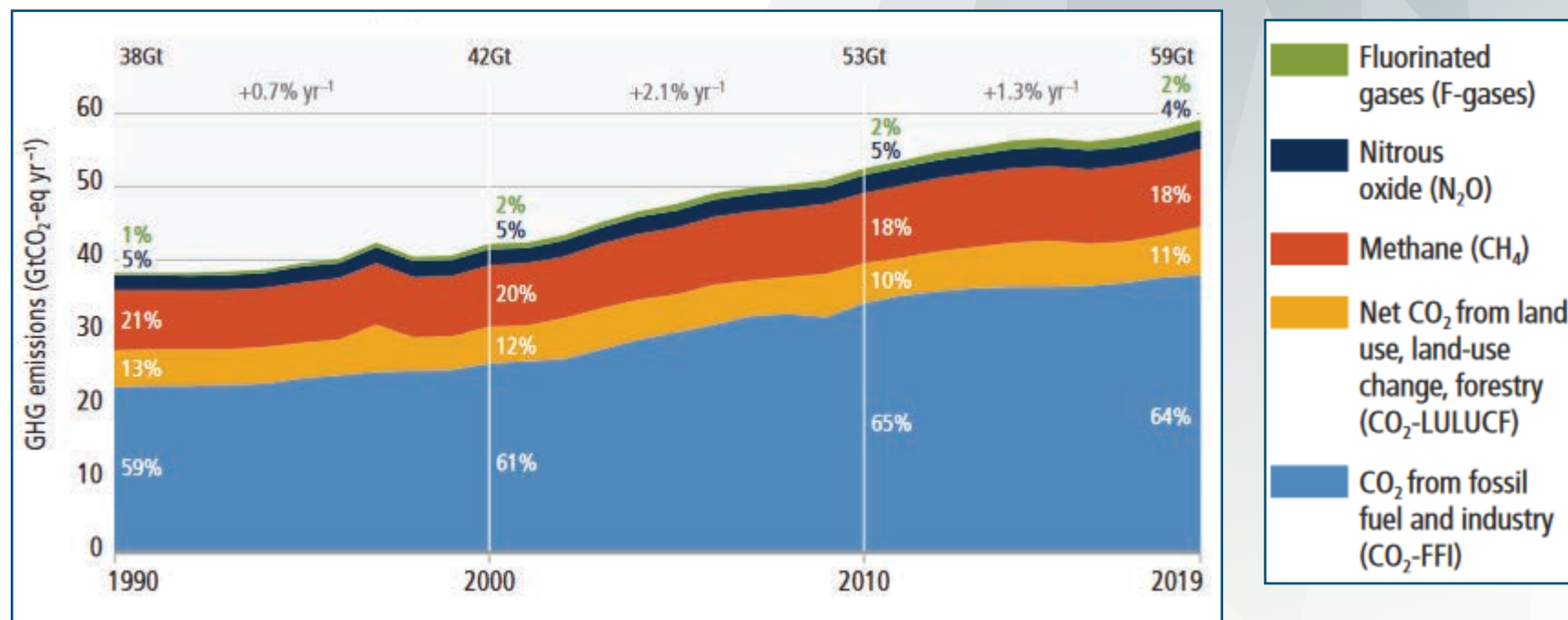
**Questions?**

# State of the world's climate response

## Where are emissions currently heading?

- In spite of government commitments, global emissions are still heading in the wrong direction.

### Global GHG emissions



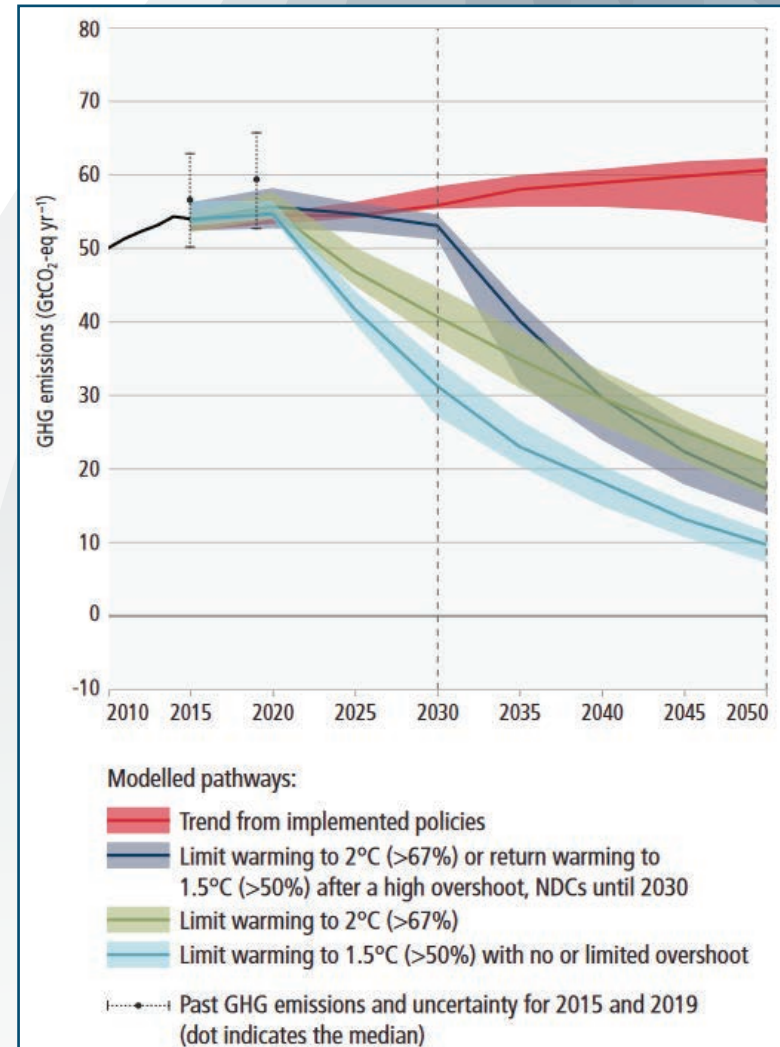
Source: IPCC 2022, WG III

# State of the world's climate response

## Global GHG emission projections

### Where do emissions *need* to be?

- Limiting the global temperature increases to  $<1.5^{\circ}$  will require dramatic cuts in emissions over the next decade. The window is rapidly closing.
- Even limiting global temperature increases to  $<2.0^{\circ}$  will require rapid and substantial cuts in emissions.

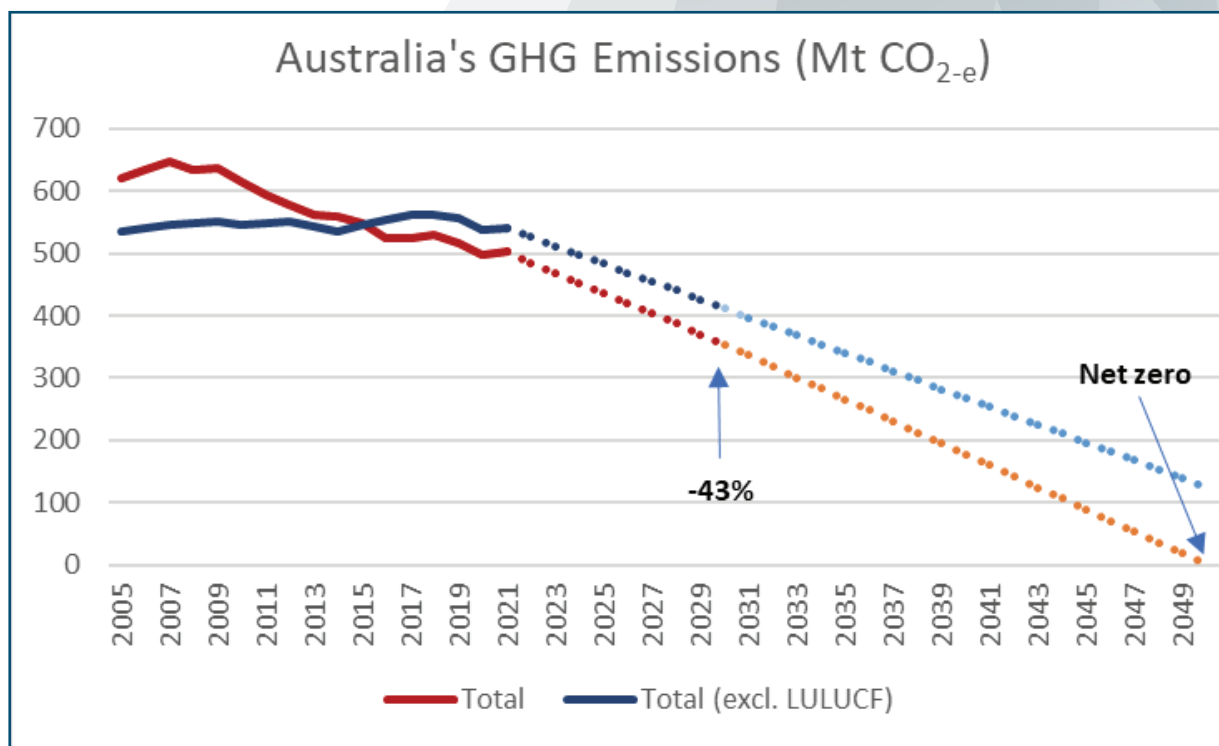


Source: IPCC 2022, WG III

# State of Australia's response

## What has Australia committed to, and where are emissions heading?

- Australia's national commitment is for 43% reduction below 2005 levels by 2030, and **net zero** emissions by 2050.



Source: Marsden Jacob drawing on National Greenhouse Gas Accounts

# The challenges for Australia

- As evidenced, Australia faces major challenges to meet both committed and required emission reductions in the coming years and decades.
- Meeting those challenges will require:
  - enhanced emission reduction policy development
  - more complete assessment of the emission impacts of proposed new policies, programs and investments (public and private sector).
- A good understanding of the **cost** of carbon will be crucial to assessing proposed policies and investments.





## The social cost of carbon

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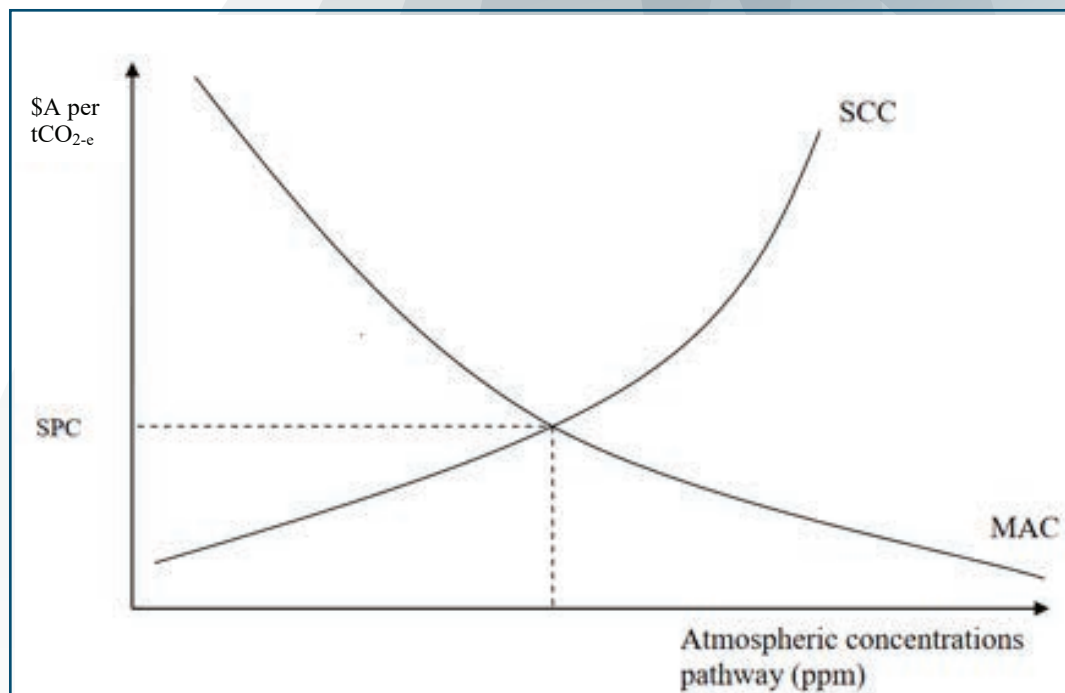
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# The social cost of carbon and economics

- Economic theory tells us that the price of carbon (SPC) should be set where the marginal cost of abatement (MAC) equals the marginal benefit of action (i.e. the SCC).
- This will enable decision makers to determine the optimal level of abatement.
- However, the real world is not that simple:
  - SCC is very **hard to quantify**.
  - SCC is a **dynamic** condition.
- In any case, a preferred level of abatement has already been determined (i.e net zero).



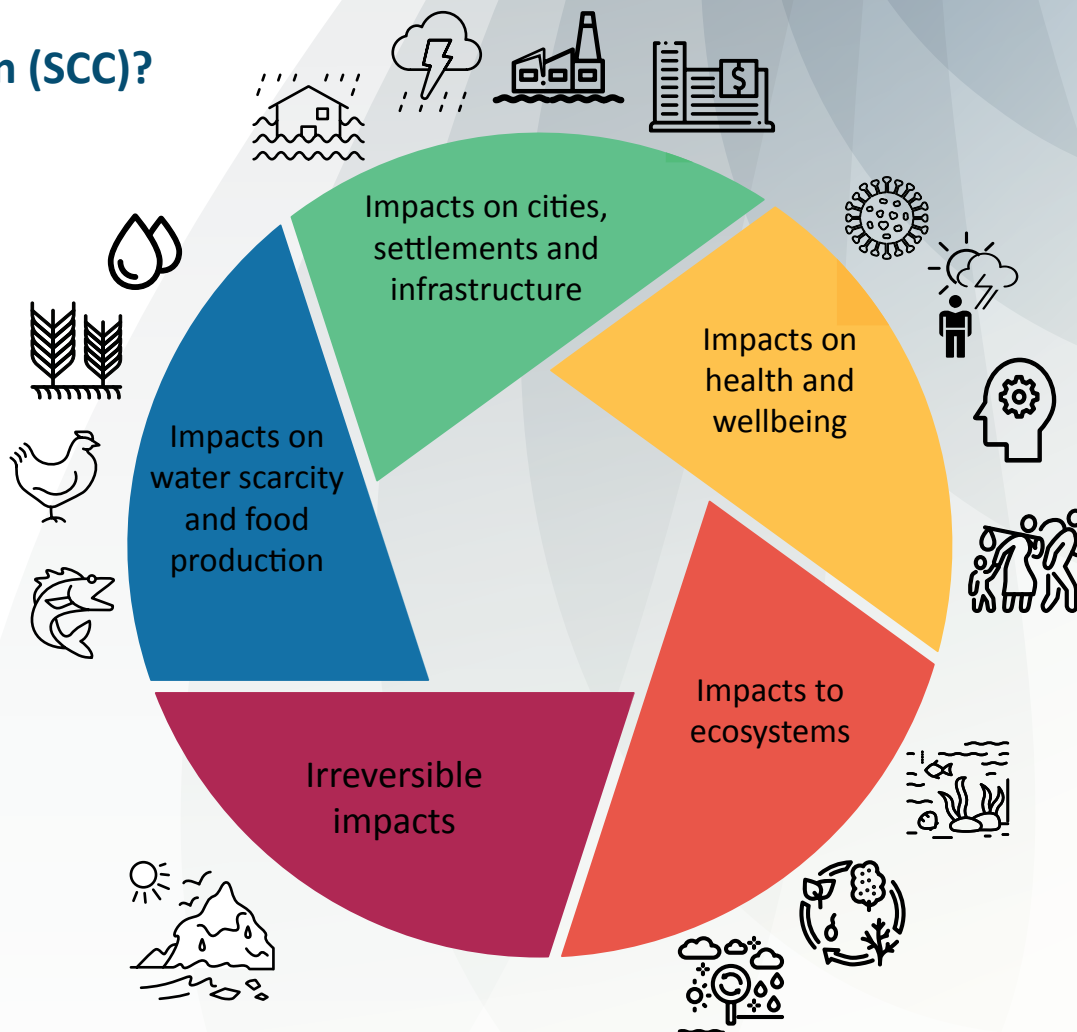
Source: Marsden Jacob drawing on UK DoECC 2011

*SCC = social cost of carbon*  
*MAC = marginal cost of abatement*  
*SPC = social price of carbon*

# The social cost of carbon

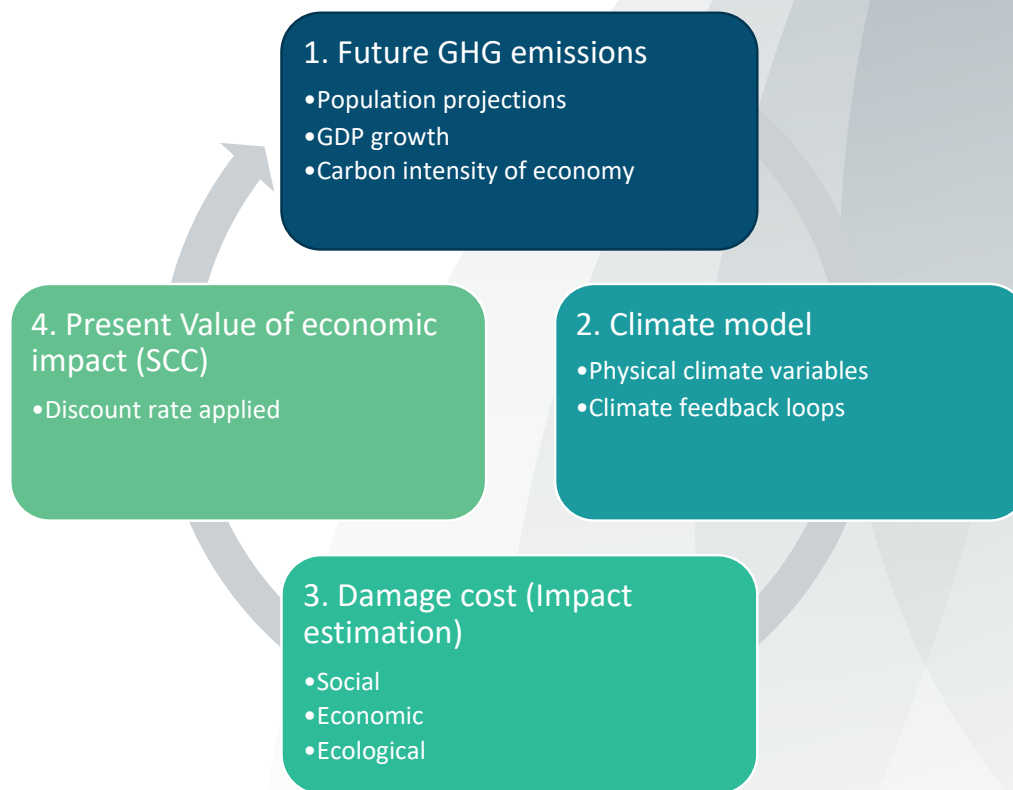
## What is the social cost of carbon (SCC)?

- Valuing the damages caused by incrementally increasing the release of carbon emissions into the atmosphere.
- The damages of carbon are the multitude of complex global issues summarised as climate change impacts.
- There is a high degree of uncertainty.



Source: IPCC 2022

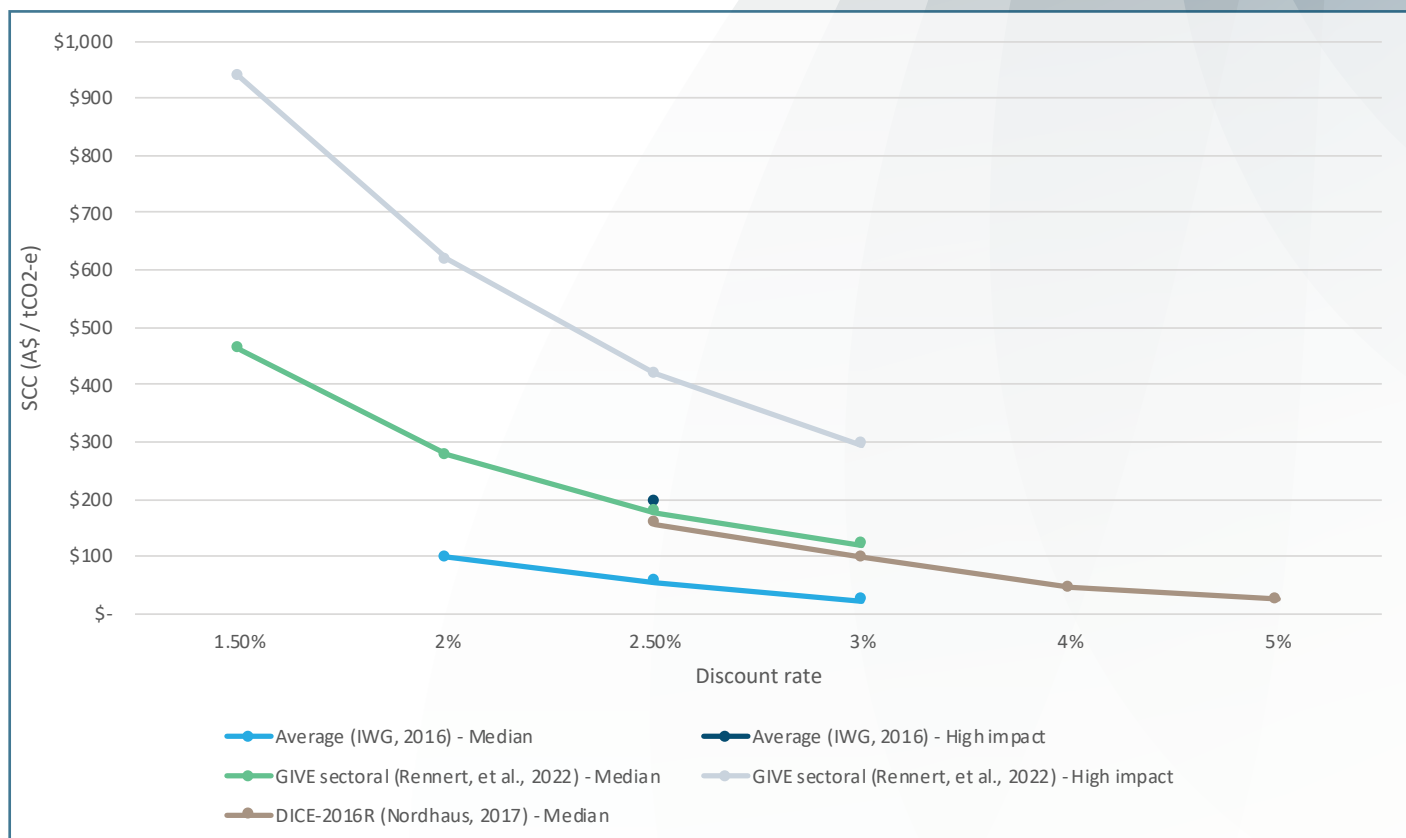
# How is the social cost of carbon being estimated?



Source: Marsden Jacob adaptation of Renner et al. (2021)

# What are the current social cost of carbon estimates?

Values in AUD 2022 dollars



Source: Marsden Jacob

# The social cost of carbon

## A note on the selection of discount rate

- When (possibly catastrophic) intergenerational impacts are at stake, is the selection of a discount rate an **economic** or an **ethical** choice?



Source: Marsden Jacob

## A note on global SCC vs regional SCC

- Some policy makers have proposed using a regional SCC in economic analyses over a global view. This is on the grounds that when considering the costs of damages from a tonne of CO<sub>2-e</sub> emitted in Australia, only damages in Australia are relevant.
- However, using a country-based (or even sub-regional-based) SCC ignores:
  - A tonne of CO<sub>2-e</sub> emitted in Australia is essentially indistinguishable from a tonne of CO<sub>2-e</sub> emitted elsewhere in the world.
  - If all countries adopted a regional SCC, 80% to 90% of damages globally would be overlooked.
  - The potential for coordinated global action would be curtailed.

*For this reason, Canadian, German and US decision-makers have chosen to use a global SCC.*





## The social cost of carbon

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# Where to from here?

## There are two alternatives:

1. Develop agreed estimates of SCC and apply sensitivity around different discount rates, e.g., 1%, 2%, 3%, 4%.

*This is the approach adopted by the US government.*

2. Use marginal cost of abatement (MAC) against agreed policy objective/s as shadow price, e.g.:
  - Marginal cost of abatement to achieve net zero by 2050.

*This is the approach adopted by the UK government.*



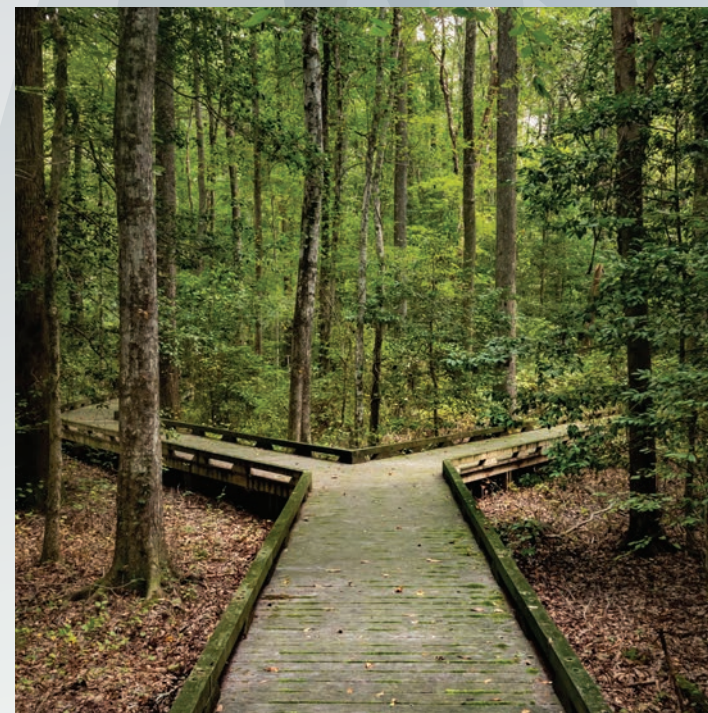
# Where to from here?

## The current situation in Australia

- In absence of an agreed SCC in Australia, the short marginal run cost (SRMC) of abatement is often used as shadow price for the cost of carbon.

### *Recommended by NSW and Victorian Treasuries.*

- However, SRMC is not an appropriate shadow price as it significantly understates cost of carbon:
  - The current SRMC is probably **less than \$20 per tonne** (e.g. the average price of Emissions Reduction Fund auctions, April 2022 - \$18/t).
  - However, the SCC is likely to be **\$60 to \$300+** per tonne (range of results from different Integrated Assessment Models with discount rates of 2% to 4%).
  - Alternatively, the marginal abatement cost (i.e. SCC) to achieve net zero is probably in the order of **\$60 to \$150 per tonne**.



# Why is this information important?

- There is significant risk associated with using the SRMC (<\$20 per tonne) as a default shadow price for the cost of carbon in economic analysis.
- Setting the cost of carbon at this level will significantly understate the cost of emission generating activities or avoided cost of emission abatement activities.

Better understanding of the cost of carbon will help you forward plan and make better decisions around:

- Costs and benefits of emission reduction strategies - how much and how fast we need to reduce emissions.
- The trade-offs between the cost of emission reductions and the cost of emissions.
- The risks and tradeoffs of current and future investments.



## Talks Live

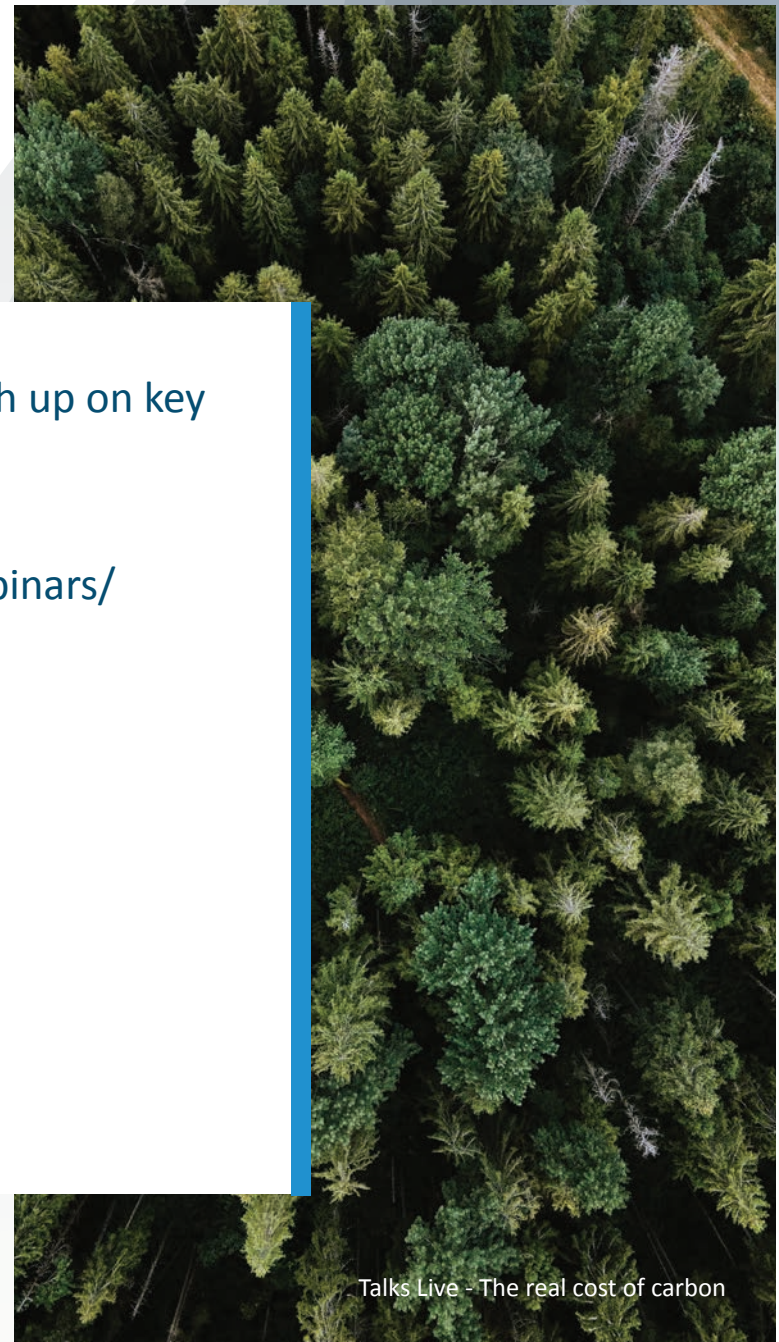
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2. Simplifying water markets
3. Constructing nature-positive RISs
4. European energy crisis: lessons for Australia
5. The real cost of carbon





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# Q&A and thank you

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