



Investor
Group on
Climate
Change

Submission:

Climate Change Authority – Economic modelling
of potential Australian emissions reductions
pathways - Consultation Paper

September 2023

About the Investor Group on Climate Change

The Investor Group on Climate Change (IGCC) is a collaboration of Australian and New Zealand institutional investors focused on the impact of climate change on investments.

Our members manage more than \$30 trillion in assets under management (AUM), with beneficiaries including more than 7.5 million Australians and New Zealanders. Members include our countries' largest superannuation and retail funds, specialist investors and advisory groups.

We are a not-for-profit organisation. Our work is funded by members' fees, philanthropy, partnerships, and sponsorship from supporters who understand the power of capital to support climate action.

Summary of key points

CCA QUESTION	IGCC COMMENT
<p>What are your views on the two modelling questions? Are there other questions the authority should explore through economic modelling to inform its advice?</p>	<p>Broadly agree. Modelling should begin to incorporate physical climate change damages to avoid stranded assets and maladaptation (Box 1).</p>
<p>What are the strengths or limitations of these models the authority should keep in mind when interpreting their outputs? Are there other models that would provide valuable insights into the questions the authority is trying to answer?</p>	<p>IGCC welcomes the use of both top-down and bottom-up models. Investors recognise that sector pathways will need to be developed using both a top-down macro perspective and a bottom-up (sub)sector, location- and technology-specific approach.</p>
<p>Do you think the proposed global action pathways provide an appropriate context for assessing potential Australian emissions pathways? Are there alternatives you think are higher priority pathways to consider? Are the IPCC, IEA and GLOBIOM assumptions appropriate for the proposed scenarios?</p>	<p>Underlying assumptions and outputs should be broadly consistent with other major recognised transition pathways, such as those from the Network for Greening the Financial System (NGFS) and the IEA Net Zero scenario.</p> <p>Both NGFS and IEA scenarios are commonly used by national and global investors in assessing transition and physical risks of climate change. Using these global baselines will support comparability in the assessment of climate risks and opportunities across different markets (See Table 1) and therefore support investment in Australia.</p> <p>The global economy is not on track to achieve an orderly transition to net zero emissions and the</p>

	<p>Intergovernmental Panel on Climate Change (IPCC) has concluded we are on track for a disorderly transition¹.</p> <ul style="list-style-type: none"> • In this context the global baseline scenario should be aligned with the NGFS disorderly transition scenario. This scenario is increasingly being used by investors as the baseline to inform economic and capital formation forecasts over the long-term. • The NGFS orderly transition and IEA net zero scenarios should inform the 1.5°C global assumptions. • Current policy scenarios put us on track towards around 3°C of global warming. This scenario should also be included, including both chronic and acute physical climate change damages, to explore the costs and benefits of different emissions pathways and stress test against higher climate sensitivities.
<p>What potential Australian emissions pathways or scenarios do you think would provide the most valuable modelling insights and inputs to support the authority's advice?</p>	<p>Broadly supportive.</p>
<p>How do you think the authority should capture the potential benefits of stronger action to reduce national and global emissions in its modelling? Are some approaches better than others?</p>	<p>Climate modelling and scenarios (or sensitiveness) that incorporate technology cost forecast that technology learning rates tend to be significantly higher than what many modelling exercises anticipate.²</p>

<p>Consultation question: Are there any other issues the authority should consider as part of its modelling exercise?</p>	<p>Climate modelling and scenarios should consider:</p> <ul style="list-style-type: none"> • explicitly starting to include physical climate damages (Box 1). • that setting a target that is inconsistent with climate damages above 1.5°C is likely to increase the cost of capital for Australian businesses, further increasing the economic costs of a slow decarbonisation pathway relative to more ambitious pathways.
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Introduction

The Investor Group on Climate Change (IGCC) welcomes the opportunity to provide feedback on the Climate Change Authority's (the Authority) *Economic modelling of potential Australian emissions reductions pathways - Consultation Paper*.

IGCC strongly welcomes the Authority's role in the development of Australia's sector pathways and plans. Credibility is a core element of investable sector plans (Table 1). The organisation(s) that develop the sector decarbonisation pathways need to be credible and demonstrate no real or perceived conflicts of interest.

Investors will use economic analysis sector decarbonisation pathways to:

1. Understand the emission reduction targets at national, sector and sub-sector level and the allocation of the emission abatement task between (sub)sectors over time.
2. Understand macroeconomic and energy sector drivers and provide clarity on government policy goals needed to meet the emissions and other targets.
3. Identify and assess potential investment risks and opportunities in real assets, such as infrastructure and property.
4. Evaluate, and incorporate into investment decisions, climate change risks and opportunities facing listed companies and sovereign debt providers.
5. Evaluate and manage portfolio climate change risks.
6. Assist investors to meet regulatory climate change disclosure requirements.
7. Support investee companies in their climate change transition.
8. Engagement with governments on climate change policy.

Table 1 provides specific investor requirements for sector decarbonisation scenarios.

Overarching Requirement	Specific Requirements	Investor Relevance
Clearly aligned with International Climate Goals	<ul style="list-style-type: none">• In aggregate, sector decarbonisation pathways must meet the climate change goal of the Paris	<ul style="list-style-type: none">• Climate change is a material investment risk. The material economic, social and environmental impacts of the physical impacts that

	<p>Agreement of limiting global warming to 1.5°C, by setting an overall carbon budget.</p> <ul style="list-style-type: none"> • Pathways should extend to, at least, 2050 and demonstrate being net zero by 2050. • An overall least-cost approach should be the basis for identifying how the emission reduction budget is allocated between (sub)sectors, recognising the cost of the abatement opportunities and the capital life cycles in each sector. 	<p>warming has already caused highlight the need for ambitious climate action to minimise potential further impacts which will ultimately impact investment returns.</p> <ul style="list-style-type: none"> • Asset owners need to have a long-term investment focus, consistent with their member’s interest. Therefore, investors require long-term pathways. • Least-cost pathways can avoid the potential for stranded assets, provide clear signals on green investments, reduce transaction/deadweight costs and provide economically efficient solutions.
Credible	<ul style="list-style-type: none"> • The organisation(s) that develop the sector decarbonisation pathways need to be credible and demonstrate no real or perceived conflicts of interest, except for any necessary engagement with sector or industry associations as part of the pathway development. Any 	<ul style="list-style-type: none"> • While the government has responsibility for the development of the sector pathways, any outside organisation(s) that are used to assist in the development of the sector decarbonisation pathways need to be credible, by demonstrating a capability to undertake the top-down analysis and bottom-up analysis. They need to have no conflicts of interests. • The developers of the sector pathways need to engage sector

	<p>engagement should be transparent.</p> <ul style="list-style-type: none"> • (Sub) Sector decarbonisation pathways need to be realistic on the sustainability and commercial viability of negative emission technology, including carbon capture and storage; direct air capture land use-based sinks, biofuels and bioenergy with carbon capture and storage (BECCs). 	<p>companies, or industry associations, on important areas such as industry growth assumptions and potential emission abatement opportunities within the sector, including the costs of such abatement. Those developing the pathways also need to engage the finance sector to understand the potential sources and drivers of finance and expected investment returns to support capital flows. Any engagement should be transparent.</p> <ul style="list-style-type: none"> • Investors also recognise that other stakeholders will use sector decarbonisation pathways for a range of potentially different purposes. Buyin from a range of stakeholders, including affected workforces and communities, will be as critical to the successful implementation of sector decarbonisation pathways as the development and investment in new technologies. • Managing the systemic risk of climate change is critical for long term investors. Sector pathways must set out time-bound actions for the changes required, and not rely on other countries where Australia has
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		<p>agency. For example, winding down emissions-intensive Australian exports, including coal and natural gas, despite demand for these products in international markets.</p>
Comprehensive	<ul style="list-style-type: none"> • The sector decarbonisation pathways should cover all greenhouse gases and all sectors. • Sector pathways should cover Scope 1 and Scope 2 emissions, separately and combined. • Material Scope 3 emissions, associated with imports and exports, should also be quantified. • Incorporate the physical climate change impacts (Box 1). • Have assumptions about exports, in particular fossil fuel exports, aligned with the climate goal. • Recognise the interaction of sector pathways, in particular the impact of electrification of energy. 	<ul style="list-style-type: none"> • Asset owners are universal investors, i.e. they invest, or are exposed, to all sectors of the economy. They are conscious that lack of abatement in one sector or focussing on only one greenhouse gas will not be sufficient to address the climate change task or merely pushes the abatement task on to other sectors. Therefore, the Authority should take an economy wide view of the abatement task . • Investors recognise the potential for double counting if Scopes 1 & 2 emissions are not considered separately and are also aware that electrification will play an important role in most sector decarbonisation pathways. • The Australian economy is currently significantly exposed to fossil-fuel exports and the transition of the economy away from this dependency is a broader macro-economic factor for investors.

		<ul style="list-style-type: none"> • The physical impacts of climate change have, and will, affect some of the underlying assumptions used to model (sub)sector pathways, e.g. energy demand and building and infrastructure design requirements, which may impact capital costs. These should be incorporated into the model. • Australia’s fossil fuel export industries, while a significant source of domestic greenhouse gas emissions, are particularly exposed to the decarbonisation of export markets. Assumptions about fossil fuel demand from export markets needs to be consistent with the reductions needed in the Australian economy. • The pathway for decarbonisation is complex. The electrification or use of green hydrogen as a fuel, replacing current fossil-fuel use, and changes in demand will lead to investment risks and opportunities that investors will need to address.
Granular	<ul style="list-style-type: none"> • Sub-sector pathways should be developed for sub-sectors where the pathway 	<ul style="list-style-type: none"> • Investors engage with companies on their climate transition plans, including the credibility of targets,

	<p>is materially different from the broader sector due to unique emission abatement technology or policy requirements.</p> <ul style="list-style-type: none"> • The sector pathways should be determined to have, as a minimum, 5-year increments. 	<p>capital expenditure alignment with the targets and assumptions about external factors that underpin the company’s transition plan. Investors recognise that companies, even in the same sector(e.g. steel and cement), face different technical and market factors that need to be considered when developing their transition plans.</p> <ul style="list-style-type: none"> • Sub-sectors which rely on similar abatement technologies can be grouped together. Pathways for these sub-sectors can reflect assumptions about the implementation of energy efficiency opportunities and the development of technology to address.
Transparent	<p>The underlying assumptions and outcomes should be transparent, including:</p> <ul style="list-style-type: none"> • Underlying macro socioeconomic assumptions, e.g. GDP, population growth and the socioeconomic models used. 	<ul style="list-style-type: none"> • Investors need transparency on the underlying assumptions to have confidence in the relevance and robustness of the sector pathways developed, and to compare against their own macroeconomic assumptions, assumptions about future sector dynamics and technology developments. • Transparency also enables investors to undertake additional analysis on

	<ul style="list-style-type: none"> • Energy efficiency assumptions by (sub) sector. • Final energy demand and supply at a macro level. • Energy supply mix, including role of fossil fuels, renewables, green hydrogen and biofuels. • Effective carbon price for those sectors. • Greenhouse gas emissions and (sub) sector emissions by scope and type. • (Sub) sector production/demand over time by technology used. • Scope 1 and Scope 2 emissions intensity over time by technology used. • Assumptions about technology development. • Assumptions about climate solution exports 	<p>investment risks and opportunities, and to facilitate more effective company engagement.</p>
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	<p>like critical minerals and green hydrogen.</p> <p>There should be public access to methodology and underlying data.</p>	
Dynamic	<ul style="list-style-type: none"> Periodically updated to reflect changes in macroeconomic and sector market environment, climate science and technology developments, and effectiveness of policies. Any update should maintain the overall climate goal and may result in the need to accelerate emission reductions in some sectors if other sectors are not meeting decarbonisation expectations. 	<ul style="list-style-type: none"> Investors recognise that assumptions made about the future will vary from the ultimate reality (in some cases significantly). Economies and technologies are inherently dynamic, and models need to be recalibrated with the latest data for iterative modelling of future investment risks and opportunities. Investors also recognise that policies can vary in their effectiveness to attract capital and expected emission reductions in a sector may not be achieved. This may require changes to the overall burden and timing of emission reductions across sectors and changes to investment incentives.
Action Orientated	<p>Clearly identify the:</p> <ul style="list-style-type: none"> The speed of technology development and commercialisation required. 	<ul style="list-style-type: none"> Investors want sector decarbonisation pathways to be the basis of action by companies, government and themselves. The output data needs to be sufficient, granular, have appropriate coverage and is

	<ul style="list-style-type: none"> • Quantum and timing of investment. • Type, quantum and timing of infrastructure needed to support decarbonisation. • Type and quantity of the necessary people, skills and capabilities. • The location and timing for community transitions, both away from older technology and to support the uptake of new technology. 	<p>presented in a form that enables target setting, facilitates action and enables progress against targets to be assessed.</p> <ul style="list-style-type: none"> • To successfully transition, Australia needs to address more than emissions. It needs to address its exposure to fossil fuel exports, the potential opportunities from critical minerals, renewable energy, green hydrogen and downstream processing of minerals. It also needs to address the R&D required and commercialisation of new technology for decarbonisation of hard-to-abate sectors.
Comparable	<ul style="list-style-type: none"> • Underlying assumptions and outputs should be broadly consistent with other major recognised transition pathways, such as those from the NGFS and the IEA Net Zero scenario. 	<ul style="list-style-type: none"> • Investors will compare assumptions and outputs with the results of other transition pathway models to better understand the nuances of the model outputs, to understand the reason for differences and to help consider Australia’s transition within an international context, especially in a disorderly transition at a global level. • The recent vulnerability assessment of the nation’s largest banks, undertaken by the Australian Prudential

		<p>Regulation Authority (APRA) and the Reserve Bank of Australia (RBA), took this approach³. Both NGFS and IEA scenarios are commonly used by national and global investors in assessing transition and physical risks of climate change and using these global baselines will support comparability in the assessment of climate risks and opportunities across different markets.</p>
<p>Investment relevant</p>	<ul style="list-style-type: none"> • Transparency of assumed investment returns, expectations and length of capital investment cycles. • Limit policy and market uncertainty to facilitate the approval, construction and operation of new technology or facilities (a timeframe of at least 10 years). • The pathways should identify the quantum and timing of capital expenditure. • Quantum and timing of potential stranded assets by 	<ul style="list-style-type: none"> • Pathways should have a view on sources of capital that are realistic considering the flow of funds and the purpose of the investment institutions from which capital is sourced, with aligned return expectations.

	<p>(sub)sector to meet the climate goal.</p> <ul style="list-style-type: none"> • Minimising overall cost of transition should be one of the objectives of the allocation of emission budgets between (sub) sectors. • Express pathways both in absolute emission terms and sector-relevant emission intensity terms. 	
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Box 1: Starting to integrate physical climate risks is essential

Australia is a country highly vulnerable to physical climate damages. For example, the IPCC has concluded that the scale and scope of compounding climate damages from around 2°C of global warming put at 'high risk' the capacity of Australia's institutions, organisations and systems ability to address the socio-economic damages of this level of climate change.⁴

Modelling and scenarios should cover both transition and physical risks (including both chronic and acute physical impacts). Climate change is already inflicting significant macroeconomic costs on Australia and the rest of the world⁵. Failure to integrate climate change damage into economic analysis of future policy will lead to perverse outcomes and increase the risk of stranded assets.

For example, billions of dollars are currently being spent on infrastructure and projects in Australia to support exports to Asia. This is all being undertaken on the basis that climate change will not impact on the ability of Asia to develop over the coming decades.

However, it is well understood that Asia is highly vulnerable to climate change damages and will suffer substantial economic impacts, even under low warming scenarios that only include chronic physical impacts⁶. The Reserve Bank of India has recently warned that the physical risk of climate change threatens the national goal of becoming an advanced economy⁷.

Critically, even with emissions trajectory's consistent with limiting global warming to 1.5 to well below 2°C, there is still the potential for much higher warming in the real world. This is due to uncertainty around climate sensitivity to increased greenhouse gas concentrations in the atmosphere and positive feedbacks within the climate system.

Unless physical climate risks are included in national economic analysis, governments, companies and investors risk wasting substantial capital on investments that become stranded because of local, regional and global climate change damages.

Given current limitations in including all chronic and acute climate risks in modelling the economic damages of climate change, the Authority should include a statement outlining the physical risks not incorporated into the modelling. The upcoming National Climate Risk Assessment should provide the basis for the integration of physical climate risks into national economic modelling to avoid duplication and lack of comparability.

¹ https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter15.pdf

² <https://www.sciencedirect.com/science/article/pii/S254243512200410X>

³ https://igcc.org.au/wp-content/uploads/2023/03/IGCC_APRACVA_BriefingNote.pdf

⁴ https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter11.pdf.

⁵ https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter11.pdf

⁶ <https://www.ngfs.net/ngfs-scenarios-portal/>

⁷ https://rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=55622