



Investor Group on
Climate Change

Investor Group on Climate Change (IGCC)

Submission to:

Australia's Technology Investment Roadmap:
discussion paper

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ABOUT US

The Investor Group on Climate Change (IGCC) is a collaboration of Australian and New Zealand investors focused on the impact that climate change has on the financial value of investments. The IGCC represents institutional investors with total funds under management of over \$2 trillion, and others in the investment community interested in the impact of climate change. IGCC members cover over 7.5 million people in Australia and New Zealand.

Summary

The Investor Group on Climate Change (IGCC) welcomes the opportunity to make a submission to the *Australia's Technology Investment Roadmap: Discussion paper*. Institutional investors play a critical role in the long-term health of the economy and in the financial wellbeing of millions of Australians. Globally, investors have trillions of dollars of capital to deploy towards climate change solutions if the policy settings to support this investment are right.

Institutional investors have systemic exposure to climate change risks. A managed transition to net zero emissions and actions to build resilience to the impacts of climate change will reduce the cost of climate change and open up investment opportunities. Long-term investors have a critical role in delivering this more prosperous future and are increasingly changing their investment practices to align with a net zero emissions economy.

However, investors can't address climate change alone. Governments have an obligation to implement policies that are credible, durable and predictable. This will reduce financial risks and encourage investment in low and zero carbon opportunities. The key policy priorities for institutional investors over the next three years are establishing policy pathways to a net zero emissions by 2050, managing the energy sector transition, and building resilience to climate-related risks in communities and economies.

Overall comments on the technology roadmap

Technology development is an important component of Australia's long-term response to climate change. Australia is well placed to play a role in advancing technology to reduce the costs of achieving net zero emissions. The analysis underpinning the technology roadmap reveals the huge opportunities to reduce emissions right across the Australian economy via new technology development, including through projects that would attract fresh investment, and drive economic growth and job creation. Certain technologies present Australia with clear opportunities for significant export growth and for the development of new sectors.

The discussion paper largely considers policy options that would guide taxpayer investment in this technology development. However, equally important are options which would allow Australia to unlock further private capital for the commercialisation and deployment of net-zero emissions technologies.

Governments can support private sector investment in new technologies by ensuring the enabling environments to large-scale investment exist and that the well-recognised barriers to institutional investment in zero and low emissions technologies are overcome.

The fundamental challenge is to enable public and private investors to achieve a reasonable return on their investment given the perceived risks. This can be achieved by increasing returns but also by decreasing perceived risk. For example, at present the lack of demand certainty and the extent of technical guidance needed are key barriers for investment in new and essential technologies. The extent of technical due diligence needed and the wide array of possible future policy scenarios both increase the perceived risk for investors otherwise willing to zero emissions technologies. A lack of demand and market-access certainty is also a well discussed barrier for large scale investment, even for mature

technologies. Across all investment scales, the absence of an explicit carbon price causes misaligned risk assessment and incorrect market pricing.

These investment barriers and risks are more acute in Australia due to a history of ad hoc policy changes and the lack of a non-partisan long-term approach to climate policy. This has heightened policy risk derived from regulatory uncertainty considerably.

Note these barriers and risks are not only a consequence of the general challenge of technology development, as set out in the Technology Investment Roadmap, but are also a consequence of the enabling environment into which the technology is being deployed. It is not clear how the Roadmap aims to address these wider market risks in order to secure private sector investment.

Unlocking institutional capital in carbon solutions

The Government must embed the technology road map in a strategy designed to achieve net zero emissions by 2050 if it wants to unlock institutional capital in a broad range of low emissions technologies on the scale required.

The development of credible and investable long-term strategies will improve investors' ability to assess climate-related risks and opportunities, to measure and disclose portfolio exposure to the low carbon transition and to support the activities needed to further invest in opportunities to support the transition to a zero carbon, climate resilient world.

In addition, the Government can use a rigorous Technology Roadmap process to reduce uncertainties around new technologies and catalyse investment. The Government should:

1. Set a clear vision: Establish within the Technology Investment Roadmap a strong vision for Australia, including an ambition for net zero emissions by 2050, and an ambition to achieve global competitive advantage in a net zero emissions industries and exports;
2. Support public investment: Ensure greater funding and ongoing support for institutions such as ARENA and the CEFC that reduce technology and execution risk for private sector investors in new technologies;
3. Undertake scenario analysis: Undertake scenario analysis to ensure that public investment is well targeted, and to avoid the false sense of certainty that can emerge from focusing on a single scenario. Also, ensure any government technology investment, including those by ARENA and the CEFC, is tested against the physical impacts of climate change;
4. Bring private capital to the table: Include institutional investors as a central actor in Australia's long-term and technology strategy. Governments can drive more efficient and equitable outcomes by ensuring investors assist in designing emissions and technology roadmaps, and;
5. Target technology risks: Use the Technology Roadmap process to decrease technology uncertainty for investors, and to guide specific investment needs. For example, re-funding CSIRO's ON program to focus on zero emissions technologies, supporting existing innovation hubs focussed on zero emissions technology, and introducing mechanisms to reduce the technical due diligence barriers to early-stage investors in zero emissions technology.

IGCC would be happy to engage further on the issues set out in this submission.

Introduction

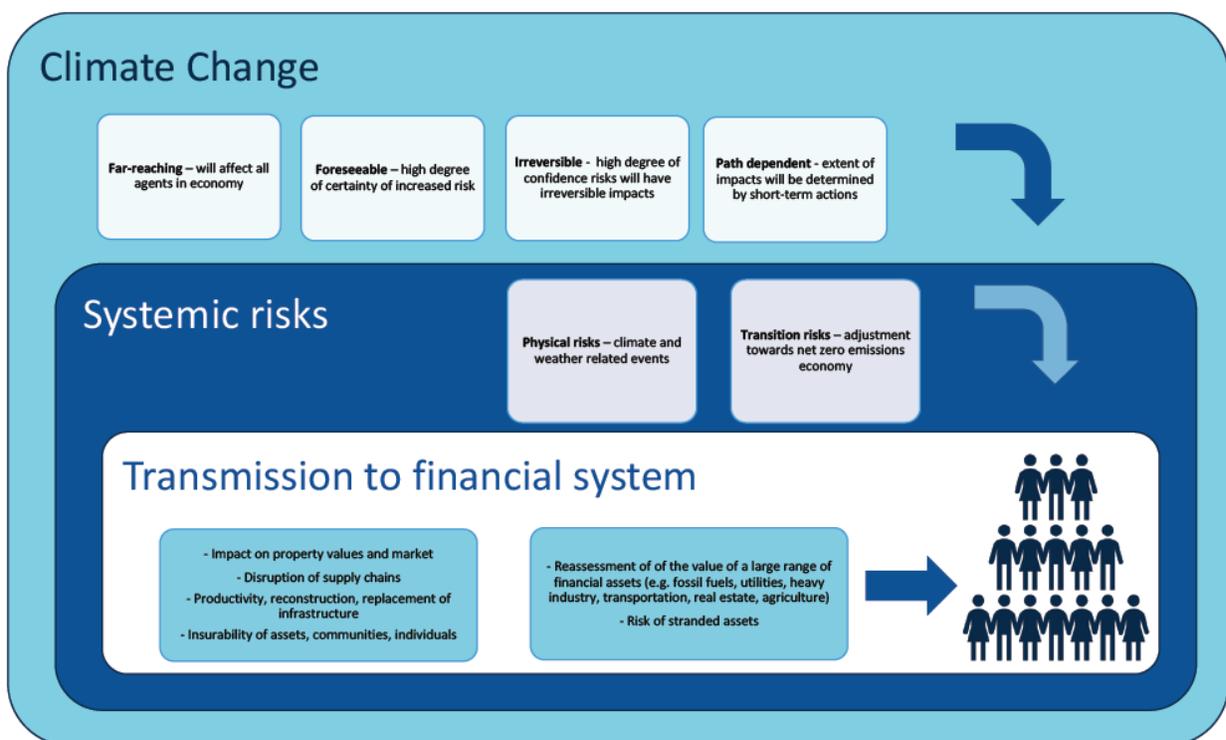
The Investor Group on Climate Change (IGCC) welcomes the opportunity to make a submission to the *Australia's Technology Investment Roadmap: discussion paper*.

Institutional investors play a critical role in the long-term health of the economy and in the financial wellbeing of millions of Australians. Globally, investors have trillions of dollars of capital to deploy towards climate change solutions if policy settings support this investment. This private capital will be critical, particularly as governments are likely to be fiscally constrained for some time due to the impacts of the COVID-19 pandemic.

Climate change is a systemic risk to the financial system

Climate change is recognised as a systemic threat to the financial system, requiring thoughtful and prudent management (Figure 1). These risks have been acknowledged by financial regulators globally,¹ and climate change has been characterised in Australia as 'material, foreseeable and actionable',² requiring robust governance and risk management approaches from institutional investors.

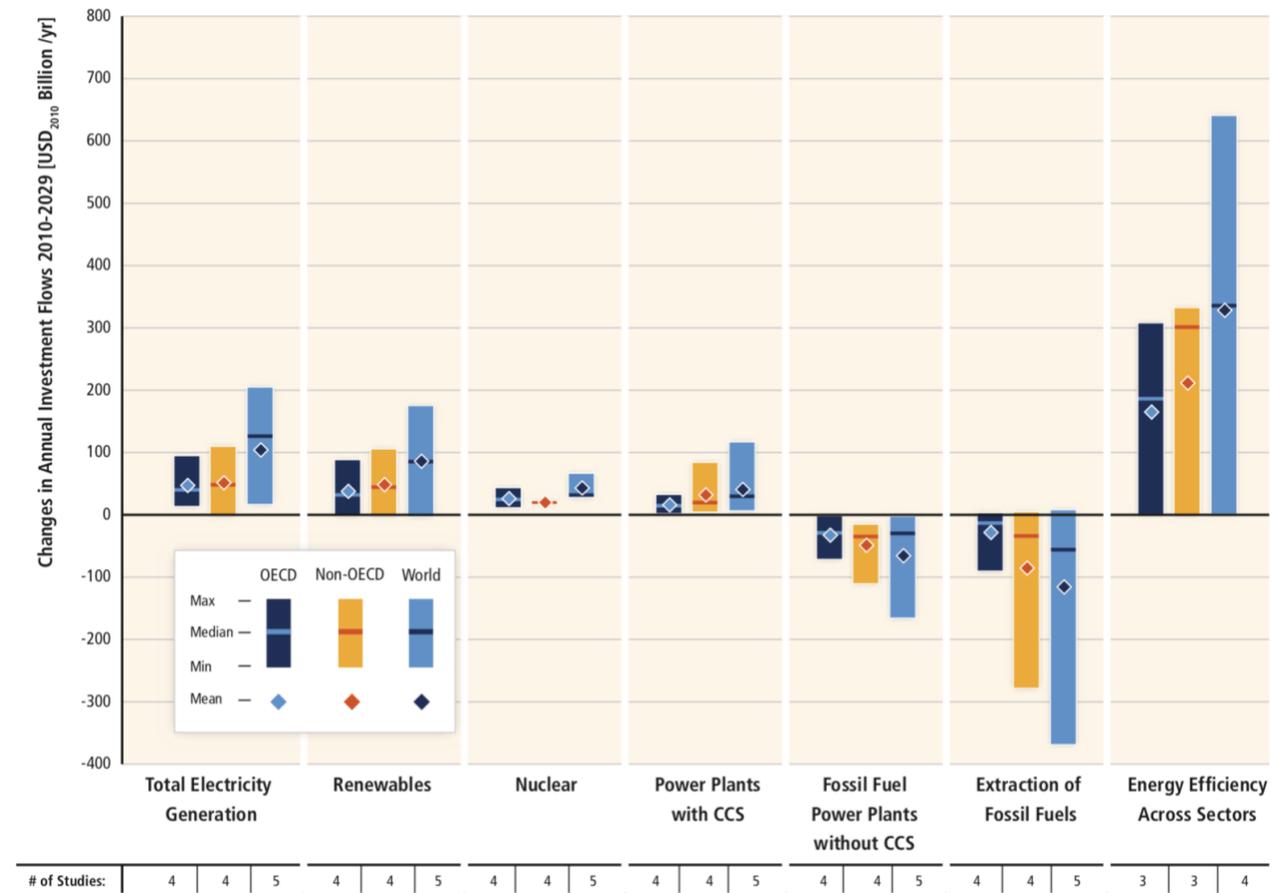
Figure 1: Climate change and macroeconomic and financial stability. Developed from Central Banks and Supervisors, Network for Greening the Financial System (2019)³



This economic transition to net zero emissions will also create significant potential investment opportunities for investors and for the Australian economy. Globally, studies indicate that to limit warming to below 2°C requires around USD (2010) 2.4 trillion per year to 2035 in the energy sector alone.⁴ This level of investment is achievable with the right enabling environments, and equates to around an additional 1.2 percent investment over and above what is projected to occur with no climate policy. It also requires a substantial change in energy investment patterns with a strong focus on energy

efficiency and renewable energy and a shift away from unabated fossil fuel energy and reductions in fossil fuel extraction (Figure 2).

Figure 2: Change of average annual investment in scenarios that limit global warming to below 2°C⁵



Climate change - Investing for the long-term

A managed transition to net zero emissions and actions to build resilience to the impacts of climate change will reduce the cost of climate change and open up investment opportunities. Long-term investors have a critical role in delivering this more prosperous future and are increasingly changing their investment practices to align with a net zero emissions economy.

For more than a decade now, leading investors have been developing strategies with the aim of limiting their contribution to global warming and transitioning toward a low carbon economy.

In 2015, the Paris Agreement set a clear goal of keeping the global temperature rise this century well below 2°C above preindustrial levels and to pursue efforts to limit the temperature increase to 1.5°C. This provided the global investment community with a specific target with which to align their portfolios. Since the finalisation of the Paris Agreement there has been significant growth in investor strategies seeking alignment with the Paris Agreement and this is set to continue.⁶

There has also been a growing shift from an ad hoc, opportunistic approach to climate-aligned investment to more holistic, long-term strategies to ensure portfolios are aligned with the targets set

out in the Paris Agreement. This is accelerating and reinforcing investor appetite for climate solutions, including technology which helps deliver on decarbonisation goals.

Institutional investors are also significant investors in, and owners of, many of the world's largest companies. Driven by the need to manage the financial risks of climate change, investors are increasing engagement with these companies to secure commitments from boards and senior management to take action to reduce emissions and disclose to investors their business plans to thrive in a resilient, net zero emissions economy.⁷ This includes collaborative engagement with companies to support RD&D into new technologies and setting Capex KPIs for investments in climate change solutions.

Government and investor partnerships to address climate change

Investors can't address climate change alone. Governments have an obligation to implement policies that are credible, durable and predictable. This will reduce financial risks and encourage investment in low and zero carbon opportunities.

In 2019, based on consultation with its members, IGCC published investor policy priorities for Australia and New Zealand.⁸ From an investor perspective, there are three core policy areas and specific actions that need to be prioritised by the Australian Government:

1. Pathways to a net zero emissions economy: Priorities are Paris Agreement- aligned national emissions and economic strategies, durable policy frameworks, and carbon pricing. A short-term and incremental approach to climate policy development risks locking countries into inefficient and costly policy outcomes. Long-term, durable and market-based policy design can enable deep emissions reductions, a steady economic transition and open up new investment opportunities in Australia.
2. A managed energy sector transition: The transition of the energy system from high carbon to zero emissions has been coming for some time, is predictable and needs to accelerate if the goals of the Paris Agreement are to be achieved. Governments have a critical role in ensuring that this transition is undertaken in a managed way and supports the communities impacted. The credible integration of climate change and energy policy, using public sector finance to crowd in private sector investment, and the implementation of strategies to support a just transition in the energy system are all critical. Decarbonising energy supply is also the key to decarbonising, and accelerating technology deployment opportunities in a range of other sectors such as transport.
3. Building resilient communities and economies: Governments can help unlock adaptation investment through coherent national adaptation plans and by facilitating better disclosure of climate related financial risks. National climate change adaptation strategies and strengthened climate-related disclosure requirements for companies and investors are central to increasing Australia's carbon competitiveness and resilience to the economic impacts of climate change. Technological solutions which promote resilience in property and infrastructure investments in particular across the community are also key.

Finally, as governments implement their recovery plans from COVID-19, governments should prioritise sustainability and equity, and accelerate the transition to a net zero emissions economy to mitigate climate risk, create new jobs and catalyse the sustainable deployment of private capital.⁹ Recovery plans that exacerbate climate change would expose investors and national economies to escalating financial, health and social risks in the coming years. Governments should avoid the prioritisation of risky, short-term emissions-intensive projects.

Overall comments on the technology roadmap

Comments on the discussion paper are informed by IGCC's policy priorities and recent analysis of investor practice in Australia and New Zealand.¹⁰

Technology development is an important component of Australia's long-term response to climate change. Australia is well placed to play a role in advancing technology to reduce the costs of achieving net zero emissions. The analysis underpinning the technology roadmap reveals the huge opportunities to reduce emissions right across the Australian economy via new technology development, including through projects that would attract fresh investment, and drive economic growth and job creation. Certain technologies present Australia with clear opportunities for significant export growth and for the development of new sectors.

The discussion paper largely considers policy options that would guide taxpayer investment in this technology development. However, equally important are options which would allow Australia to unlock further private capital for the commercialisation and deployment of net-zero emissions technologies.

Governments can support private sector investment in new technologies by ensuring the enabling environments to large-scale investment exist and that the well-recognised barriers to institutional investment in zero and low emissions technologies are overcome.

With governments likely to be more fiscally constrained in coming years due to the impact and response to the COVID-19 pandemic, private capital will be critical to ensuring a smooth transition to net-zero emissions.

Setting targets for particular technologies has an important role to play but without credible policies to deploy and commercialise technologies at scale, by themselves they are insufficient. Taking this a step further, large scale deployment of technology is a major driver of technology costs reductions. Without enabling environments and policies that support achieving the targets they are less likely to be achieved or be achieved at high cost to the Government.

The pathways from new technologies being developed to large-scale rollout in Australia are currently undeveloped. Institutional investors are best suited to making large investments in companies, projects and infrastructure after technology and execution risk has been reduced to a certain level. Other private sector investors such as high-net-worth individuals and venture capital firms play a crucial role in the early stages of new technology commercialisation and bringing the appropriate commercialisation vehicles to an acceptable level of risk and scale for institutional investors.

More early-stage commercialisation support of low and zero emissions technology is needed in Australia to unlock early-stage private sector investment. Institutions like ARENA and CEFC play an important role in this phase but more support is needed. Other solutions could involve re-funding CSIRO's ON program to focus on zero emissions technologies, supporting existing innovation hubs focussed on zero emissions technology, and introducing a Technology Validation Voucher Scheme¹¹ to reduce the technical due diligence barriers to early-stage investors in zero emissions technology.

Barriers to institutional investment in zero emission technology

Investment in zero emissions technologies are impacted by factors that long-term investors manage on a day-to-day basis (e.g. political instability, currency risk, financial risks). However, there are a number of well recognised barriers specific to institutional investment in zero and low emissions technologies.¹² As the Intergovernmental Panel on Climate Change have concluded:¹³

“Many factors pertaining to the general investment environment can have an enabling character or can act as a challenge [to low carbon investment]. However, there are also low-carbon specific factors—especially in absence of a clear price signal for carbon emissions—that, if they remain, may keep the market penetration of these technologies to low percentages.”

These investment risks are more acute in Australia due to a history of ad hoc policy changes and the lack of a non-partisan long-term approach to climate policy.

The fundamental challenge is to enable public and private investors to achieve a reasonable return on their investment given the perceived risks. These risks include:

- Investor capability: Understanding the risks specific to invest in pre-commercial technologies, and lack of data to assess this investment class is a substantial barrier to investments in new technologies. These risks exist for large projects but are exacerbated for many by small project sizes (e.g. less than \$50-100 million in scale) which incur much higher transaction costs than large conventional investments. These costs include feasibility and due diligence work, legal and engineering fees, consultants, and permitting costs. Lack of a proven track record for the technology operating at scale within the Australian market increases the need for detailed Due Diligence on every transaction. Lack of quantitative analytical methodologies for risk management may add to the perceived risk in the investment.
- Lack of carbon price and the presence of harmful fossil fuel subsidies: Lack of a carbon price causes misaligned risk assessment and incorrect market pricing. Subsidies lead to perverse outcomes which render new and emerging technologies uncompetitive compared to existing technologies - and the government is subsidising both side of the market which is inefficient.
- Policy risk derived from regulatory uncertainty: Recent analysis by IGCC shows that when faced with regulatory uncertainty, more than 40 per cent of Australian investors redirect investments to jurisdictions, sectors or markets with less uncertainty, and nearly 60 per cent increase company engagement to manage climate-risks across their portfolios.¹⁴
- Capital markets prefer a combination of long tenor with more secure risk adjusted returns: If investors finance high risk projects they will only tend to do so over a short-term horizon. While institutional investors are long-term investors, concerns about quality and reliability of cash flow projections, credit ratings of off-takers for power purchase agreements, short-term performance pressures, and financial market regulations often inhibit them from investing in long-term low-carbon assets or large-scale technology deployments.
- Technology specific risks: Investments in new technology carry risks which make it difficult to achieve investment grade ratings. For example, uncertainties related to performance of the

technology and demand for products, project delays, dependency of returns on expected future development and a pipeline of projects, supply chain scalability, and unreliable support infrastructure. These risks are not inherent in the technology itself, as set out in the Technology Investment Roadmap, but rather relate to the enabling environment into which the technology is being deployed. It is not clear how the Roadmap aims to address these wider market risks in order to secure private sector investment.

The Australian Sustainable Finance Initiative¹⁵, on which IGCC is a steering committee member, is also undertaking a review of potential interventions in the financial system to support zero emissions investment. For example, the financial services sector relies heavily on valuation of risk to underpin the investment, lending and insurance decisions being made on a daily basis. Yet limitations with existing valuation tools, mainstream practices and a lack of quality data on environmental and social risks challenge the sector in being able to respond to the new sets of risks and opportunities. These challenges need to be addressed so that the sector can properly value risk and make better informed decisions.

Unlocking institutional capital in carbon solutions

Large institutional investors invest in companies, projects and infrastructure across all sectors of the economy. Transition and physical climate change risks will affect a broad range of asset classes and sectors. This means that investors cannot simply avoid climate risks by moving from one asset class to another and cannot diversify away from climate risk. A visible, credible long-term economy-wide strategy would support them to manage the risks and opportunities across their entire portfolios, not just on a project by project basis.

The Government must embed the technology roadmap in a strategy to achieve net zero emissions by 2050 if it wants to unlock institutional capital in a broad range of low emissions technologies on the scale required.

The development of credible and investable long-term strategies will improve investors' ability to assess climate-related risks and opportunities, to measure and disclose portfolio exposure to the low carbon transition and to further invest in opportunities to support the transition to a zero carbon, climate resilient world.

Specifically, for institutional investors, a credible long-term strategy would support them in managing transition and physical risks and opportunities across their entire portfolios. Greater transparency around future policy direction enhances the efficient allocation of capital by supporting investors in better pricing current and future climate risks. It also reduces the risk that investments will be stranded as governments increase action through time or act abruptly with sharp policy interventions at a later date. Finally, it allows investors to identify investment opportunities across the economy and support new industries where Australia will have competitive advantage.

In addition, the Government should:

1. Set a strong vision: The Technology Roadmap, and other elements of the Government's evolving climate policy, will greatly benefit from a sharp guiding vision. This would, for example, inform choices and prioritisation by ARENA and CEFC in their ongoing work. A suitable vision would be for Australia to achieve both net zero emissions by 2050, and global competitive advantage in a

net zero emissions world. This is more specific, challenging and useful than currently proposed broad references to lower emissions or maximizing opportunity.

2. Increase public investment by ensuring greater funding for ARENA and ongoing support for the CEFC: This should include extending their mandates to ensure they can support investor practice and the investment in a broad range technology across the economy, as well as to building resilience to the impacts of climate change.

In addition, support organisations focussing on the early-stage commercialisation of zero emissions technologies. This could include providing financial or in-kind support to existing innovation hubs and is crucial to ensure new technologies developed by universities and CSIRO are translated into investible opportunities by private sector investors.

3. Undertake scenario analysis to avoid the false sense of certainty that can emerge from focusing on a single scenario: CSIRO's underlying analysis that supports the discussion paper includes a range of technology scenarios. None of these explicitly address action to achieve the objectives of the Paris Agreement, or scenarios that stress test against likely future policy responses (e.g. rapidly accelerated action in key markets to achieve net zero emissions). Technology statements should be based on Paris-aligned emissions scenarios and action to achieve net zero emissions by 2050. By testing investment against scenarios that fall short of the Paris Agreement's objectives, will give a false sense of confidence the technology roadmap is robust against future emissions reductions scenarios.

Also, in the face of growing climate change impacts, public concern around climate change, rapid technology development and/or geopolitical responses to climate change there is a strong likelihood a future government will accelerate action to reduce emissions significantly. Testing scenarios against more rapid future action to reduce emissions would strengthen the robustness of analysis and give greater confidence that the full range of possible technology scenarios are being considered.

This approach is consistent with emerging investor practice¹⁶ and the work being undertaken by financial regulators and central banks in Australia and internationally.¹⁷ These frameworks for reducing financial stability risks from climate change include three broad scenarios - high physical impacts from climate change, a smooth transition to the objectives of the Paris Agreement, and a delayed and disruptive transition towards the objectives of the Paris Agreement.

Finally, policy should ensure any government technology investment, including those by ARENA and the CEFC, is tested against the physical impacts of climate change. An assessment of how a technology or project is resilient to the impacts of climate change is emerging as mainstream investor practice in the private sector and can help build confidence that investment decisions are robust.

4. Bring private capital to the table and make institutional investors central to Australia's long-term and technology strategy: Governments will be more fiscally challenged after deploying relief to the COVID-19 pandemic. Unlocking private capital will therefore be critical to Australia meeting the long-term challenges of climate change. Governments can drive more efficient and equitable outcomes by ensuring investors assist in designing emissions and technology roadmaps.

5. Reduce specific technology investment risks: Use the Technology Roadmap process to decrease technology uncertainty for investors, and to guide specific investment needs. In addition to supporting ARENA and the CEFC, other solutions could involve re-funding CSIRO's ON program to focus on zero emissions technologies, supporting existing innovation hubs focussed on zero emissions technology, and introducing mechanisms such as a Technology Validation Voucher Scheme¹⁸ to reduce the technical due diligence barriers to early-stage investors in zero emissions technology.

Conclusion

Decarbonisation, and the resulting structural shifts this will bring to industry sectors and economies is clearly emerging as one of the dominant investment themes of the 21st Century. It is increasingly apparent that there is a global transition underway, aimed at reducing the emissions intensity of economic activity to limit global warming in line with the objectives of the Paris Agreement and move towards a net zero emissions economy by 2050.

The analysis underpinning the Australia's technology Investment Roadmap reveals the huge opportunities to reduce emissions right across the Australian economy via new technology development, including through projects that would attract fresh investment and drive economic growth and job creation. Certain technologies present Australia with clear opportunities for significant export growth and for the development of new sectors.

Leveraging private sector capital will be critical to delivering on the roadmap's stated goals.

Investors want to support low and zero carbon solutions. Awareness of the need to tackle climate risk across the portfolio and heightened appetite for exposure to emerging solutions are driving strong and growing investor appetite for climate solutions and clean technology. However, these investments must also deliver sustainable risk adjusted returns and are not without their difficulties.

The Government must embed the technology roadmap in a strategy to achieve net zero emissions by 2050 if it wants to unlock institutional capital in a broad range of low emissions technologies on the scale required.

Finally, as governments implement their recovery plans from COVID-19, governments should prioritise sustainability and equity, and accelerate the transition to a net zero emissions economy to mitigate climate risk, create new jobs and catalyse the sustainable deployment of private capital. Recovery plans that exacerbate climate change would expose investors and national economies to escalating financial, health and social risks in the coming years. Governments should avoid the prioritisation of risky, short-term emissions-intensive projects.

IGCC would be happy to engage further on the issues set out in this submission.

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- ¹ NGFS (2019): <https://www.ngfs.net/en/technical-supplement-first-ngfs-comprehensive-report>
- ² Summerhayes (2017): <https://www.apra.gov.au/news-and-publications/australias-new-horizon-climate-change-challenges-and-prudential-risk>
- ³ NGFS (2019): <https://www.ngfs.net/en/technical-supplement-first-ngfs-comprehensive-report>
- ⁴ IPCC (2018): https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_Low_Res.pdf
- ⁵ IPCC (2014): https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter16.pdf
- ⁶ IGCC (2019): https://igcc.org.au/wp-content/uploads/2016/04/Feb2020_IGCC-Zero-Emissions_FINAL-2.pdf
- ⁷ See for example, Climate Action 100+: <https://climateaction100.wordpress.com>
- ⁸ IGCC (2019): https://igcc.org.au/wp-content/uploads/2016/04/Policies-for-a-resilient-economy_FINALa.pdf
- ⁹ Investor Agenda (2020): <https://theinvestoragenda.org/focus-areas/policy-advocacy/>
- ¹⁰ IGCC (2019): <https://igcc.org.au/investor-survey-appetite-for-climate-investment-accelerating-diversifying-and-driving-engagement-with-companies/> and IGCC (2020): <https://igcc.org.au/new-igcc-report-zero-emissions-sustainable-returns-strategies-for-achieving-net-zero-emissions/>
- ¹¹ E.g., <https://vidaproject.eu/vida-voucher-scheme/validation-voucher-vv/>
- ¹² IPCC (2014): https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter16.pdf and OECD (2018): <https://www.oecd.org/cgfi/Investment-Governance-Integration-ESG-Factors.pdf>
- ¹³ IPCC (2014): https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter16.pdf
- ¹⁴ IGCC (2019): <https://igcc.org.au/investor-survey-appetite-for-climate-investment-accelerating-diversifying-and-driving-engagement-with-companies/>
- ¹⁵ ASFI: <https://www.sustainablefinance.org.au>
- ¹⁶ PRI (2019): <https://www.unpri.org/esg-issues/environmental-issues/climate-change/inevitable-policy-response>
- ¹⁷ NGFS (2020): <https://www.ngfs.net/en>
- ¹⁸ E.g., <https://vidaproject.eu/vida-voucher-scheme/validation-voucher-vv/>