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## ACF submission on the Australian Government's Technology Investment Roadmap Discussion Paper



The Australian Conservation Foundation Inc (ACF) would like to thank you for the opportunity to provide comment on the Australian Government's *Technology Investment Roadmap Discussion Paper*.

### About ACF

ACF is Australia's **national environment organisation**. We are 700,000 people who speak out for the air we breathe, the water we drink, and the places and wildlife we love. We are proudly independent, non-partisan and funded by donations from our community.

ACF believes that Australia and the world face an unprecedented climate and mass extinction crisis. At risk is everything: all of us and all life on Earth. Recent and growing impacts from catastrophic floods and bushfires to blistering heatwaves, reef bleaching and severe drought, are evidence that we are being thrown into climate chaos caused first and foremost by digging up and burning fossil fuels like coal, oil and gas. Technology provides critically important solutions, but priorities for technology investment cannot be disconnected from the need to address the climate and extinction crises.

### ACF recommendations:

ACF makes the following recommendations to ensure the Technology Investment Roadmap fulfils its role as the "cornerstone" of Australia's long-term emissions reduction strategy:

1. Include a long-term emissions reduction target of net zero climate pollution by 2050.
2. Set the Roadmap within a carbon budget consistent with the Paris Agreement goal of keeping global temperature rise below 2 degrees Celcius with an ambition for 1.5 degrees Celcius.
3. Set goals for technology adoption that are directly linked to reducing climate pollution in line with the carbon budget.
4. Establish clear and transparent criteria (e.g. filters) for investment priorities based primarily on reducing climate pollution and social, environmental and economic costs and benefits assessments. Roadmap criteria should include:
  - **Climate emissions:** Technology impact in context of a net zero emissions by 2050 target and carbon budget consistent with the Paris Agreement temperature goals.



- **Investability:** The Reserve Bank of Australia (RBA) has called for companies to incorporate climate change into their business plans, saying climate change poses material long term risks to the global economy and financial markets. Its financial stability review identified three main risks to financial stability from climate change: physical risk, transitional risk, and liability risk. The RBA has noted that some risks are becoming uninsurable. Investability that screens for climate risk will assist the broader investor community.
  - **Stranded assets:** Billions of taxpayer dollars will be spent to support priority technologies advanced through the Roadmap. It is critical to filter out investments supporting expensive long-lived assets that cannot see through their design life. Particular scrutiny must be applied to any technological developments inconsistent with commitments related to the Paris Agreement, including Australia's commitment to ratchet up Nationally Determined Contributions through 5-yearly reviews, and a requirement for all developed nations to achieve net zero emissions by 2050.
  - **Cost curves:** The projected cost curve of each considered technology should be factored into the priority-setting process to ensure additional investment will move them down the cost curve. For example, ARENA's solar funding round notably lowered the cost of large-scale solar and cost reductions are occurring for battery storage technologies, which could be accelerated.
5. Further develop enabling policy, legislation, infrastructure, investment and incentives to drive the rapid, widespread adoption of mature zero pollution technologies such as renewable energy, energy efficiency and sustainable transport in line with achieving net zero by 2050. ACF recommends the Roadmap include a specific goal for Australia's electricity to be 100% renewable energy by 2030.
  6. Provide additional funding and long-term certainty for the Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation (CEFC), maintaining their focus on renewable energy and zero emissions technologies. Their remits should not be diluted through the addition of carbon capture and storage (CCS) or any 'end of pipe' solutions for fossil fuel-based industries.
  7. Only provide support for 'hydrogen supply chain technologies' where hydrogen is produced with renewable energy.



8. Set clear commitments for Roadmap's development and Australia's long-term climate strategy development including transparent, regular sharing of information (e.g. technology criteria, goals and targets, abatement potential, underlying assumptions and data). Commit to further consultation on the long-term climate strategy.
9. Exclude the following technologies from Roadmap investment support:
  - Fossil fuel technologies or related infrastructure, such as 'technologies that increase the efficiency of the existing thermal generation fleet' and 'gas generation to firm renewables' (listed in Figure 7). These technologies will not reduce climate pollution, or position Australia's economy to benefit from a net zero carbon future.
  - Nuclear technologies such as 'small modular reactors' (Figure 7). Nuclear technologies are not legal in Australia. Nuclear power is prohibited in the federal Environment Protection and Biodiversity and Conservation and Australian Radiation Protection and Nuclear Safety Acts – as well as under state laws.
  - 'Carbon capture use and storage' where the use of this technology is linked to the continued use or extraction of fossil fuels (Figure 7).

#### **Response to Discussion Paper (above recommendations in response to questions)**

##### ***a) The challenges, global trends and competitive advantages that should be considered in setting Australia's technology priorities***

The Roadmap should clearly reflect the climate crisis and play a key role in reducing emissions, as well as global emissions reduction trends which will impact Australia's trade, exports, investors and economy. Equally relevant are the competitive advantages Australia holds in a zero net emissions future, particularly Australia's enormous wind and solar resources, which should be maximised and prioritised.

#### **1. Include a long-term emissions reduction target of net zero climate pollution by 2050.**

The Roadmap needs a clearly articulated target to increase certainty for investors, provide a basis for policy analysis and decision making, and to ensure it supports Australia's commitments under the Paris Agreement. In ratifying the Paris Agreement, the Australian Government committed to the goal of keeping global temperature rise below 2 degrees Celcius, and to pursue a limit of 1.5 degrees Celcius.



The Intergovernmental Panel on Climate Change (IPCC) has advised that global emissions will need to reach net zero emissions by around 2050 to be consistent with a 1.5-degree Celcius threshold.<sup>1</sup>

The government has further endorsed this target as signatory to the Pacific Island Forum Communiqué and it would be consistent with the goals set by all Australian states and territories to achieve net zero climate pollution by 2050 (or 2045 in the case of the Australian Capital Territory).

**2. Set a carbon budget for Australia consistent with the Paris Agreement goal of keeping global temperature rise below 2 degrees Celcius with an ambition for 1.5 degrees Celcius.**

The Climate Change Authority (CCA) conducted a carbon budget analysis for Australia in 2014 as part of their Targets Progress Review. That analysis and Climate Works' recent Decarbonisation Futures Report provide a useful foundation for an updated carbon budget. In setting a budget to 2050, CCA noted the trade-off between actions taken now and those necessary later, concluding that "weaker action now imposes a greater emissions reduction task on future generations."<sup>2</sup> The importance of early action should be an underlying principle of the Roadmap to avoid enormous future costs of unmitigated climate change on people and communities, infrastructure, businesses and the overall economy.

*b) The shortlist of technologies that Australia could prioritise for achieving scale in deployment through its technology investments*

See suggested criteria for investment (Rec. 4) above, including technologies that should not be supported (Rec. 9).

Further, ACF recommends that the Roadmap only support 'hydrogen supply chain technologies' where hydrogen is produced with renewable energy.

*c) Goals for leveraging private investment*

The recommendations above would provide the needed investment certainty by setting a long-term emissions reduction target, enabling policy, clear criteria for investment priorities that remove climate risk, and connect to existing climate policy commitments.

*d) What broader issues, including infrastructure, skills, regulation or planning, need to be worked through to enable priority technologies to be adopted at scale in Australia*

<sup>1</sup> [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15\\_SPM\\_version\\_report\\_HR.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_HR.pdf)

<sup>2</sup> <http://www.climatechangeauthority.gov.au/files/files/Target-Progress-Review/Targets%20and%20Progress%20Review%20Final%20Report.pdf>



**3. Further develop enabling policy, legislation, infrastructure, investment and incentives to drive the rapid, widespread adoption of mature zero pollution technologies such as renewable energy, energy efficiency and sustainable transport in line with a carbon budget.**

This should include specific targets (e.g. renewable energy, electric vehicle or mode shift targets), direct procurement (e.g. through reverse auctions or government purchasing), and infrastructure investment (e.g. to fast-track priority grid projects detailed in the Australian Energy Market Operator's Integrated System Plan).

ACF recommends the Roadmap include a specific goal for Australia's electricity to be 100% renewable energy by 2030. Transitioning to 100% renewable energy is a key step to reduce Australia's climate pollution. Electricity is the largest source of climate pollution and shifting to renewable power enables emissions reductions across other sectors including buildings, transport and industry.

**4. Provide additional funding and long-term certainty for the ARENA and the CEFC, maintaining their focus on renewable energy and zero emissions technologies. Their remits should not be diluted through addition of CCS or any 'end of pipe' solutions for fossil fuel-based industries.**

ARENA provides critical research, development, and demonstration of innovative renewable energy and zero pollution technologies. ARENA has been instrumental in driving down the cost of technologies such as large-scale solar, which has had a further benefit in reducing the cost of generating electricity in Australia.

ARENA is set to run out of funds in 2021/2022 and is already constrained by this short remaining timeframe. ACF recommends ARENA's remit be extended to 2030, and funding certainty be provided beyond the forward estimates so the organisation can continue its critical work, including to assist Australia in becoming a renewable energy export superpower. ACF would support expanding ARENA's remit to include energy efficiency, zero emissions transport and clean industrial technologies, but would strongly oppose any form of support for fossil fuels or 'end of pipeline' technologies.

The CEFC is an appropriate body to increase investment in mature technologies such as renewable energy, energy efficiency and sustainable transport. ACF recommends increasing CEFC funding to deliver on the goals of the Roadmap.



***e) Where Australia is well-placed to take advantage of future demand for low emissions technology and support global emissions reductions by helping to deepen trade, markets and global supply chains.***

Australia has a rich supply of renewable energy resources that can provide a low cost, clean and reliable source of energy to power clean energy exports.

Findings from leading energy experts show Australia is well-positioned to be a renewable energy superpower, exporting clean energy to our neighbours—transported directly by high voltage power lines, stored and transported as renewable ammonia or embodied in products like green steel. Australian renewable energy research, knowledge and expertise is also a valuable skills, training and knowledge-based export.

To fully embrace Australia’s renewable competitive advantage, the Roadmap should support accelerated deployment of renewable hydrogen technologies and the rapid development of large-scale renewable projects. A target for 100% renewable energy for domestic use would help drive these developments, combined with support for enabling technologies including large-scale storage (batteries and pumped hydro), accelerated deployment of transmission infrastructure, demand management, and significantly increased energy efficiency.

Energy efficiency investments can play a significant role in driving down electricity costs and reducing emissions with short pay back periods. Australia has not yet taken advantage of its enormous potential – for business, industry or households. The Roadmap should prioritise much greater investment in energy efficiency.

It is critical that technology support is sensitive to potential impacts on those most vulnerable in our communities and ensures that costs and risks are not born by those least able to manage them. Instead, the Roadmap should seek opportunities to assist those in need, for example energy efficiency upgrades and solar PV for public and social housing

CSIRO’s Australian National Outlook identified potential growth opportunities in hydrogen production and export, and the energy storage and batteries value chain (from mining and processing raw materials such as lithium, nickel and zinc, through to battery pack design, assembly and recycling).

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