



F C A
FARMERS FOR
CLIMATE ACTION

Dear Mr Combet AM, Dr Whetton, and Dr Stephenson,

Farmers for Climate Action: Submission to the Victorian Independent Expert Panel Interim Emissions Reduction Targets, Issues Paper, March 2018

Farmers for Climate Action (FCA) welcomes this opportunity to contribute to the Expert Panel's advice to inform the setting of Victoria's Interim Emissions Reduction Targets.

FCA is a national, non-partisan organization of farmers and agricultural leaders actively working with their peers, the rural sector at large, and decision-makers to ensure Australia takes the actions necessary to address climate change—minimizing the risks to and managing the opportunities for farmers and other rural and regional Australians.

FCA aims to see farmers and agriculture get the support and investment needed to adapt to a changing climate, as well as be part of the solution to avoid dangerous climate change. FCA's work Victorian work focuses on advocating and building the capacity of farmers to advocate for action: on farm, in their industries, and across society more broadly.

This submission focuses on agriculture and the rural sector, including climate risks, mitigation of emissions from farming, and the development of renewable energy.

Climate Risks to Agriculture in Victoria

As the Issues Paper notes, Victoria's farmers are witness significant climate change at 'just' 1 °C warming, with impacts on agricultural productivity already evident. Work by CSIRO, for example, shows that, despite adaptation and even with recent record yields, climate change has compromised crop productivity growth in the country's south-east—including in Victoria's cropping country—since 1990.¹

While farming communities often demonstrate remarkable resilience, warming of even 1.5–2 °C is likely to prove very challenging, stretching farmers' capacity to cope—physically, financially, and mentally. Warming of 2–4 °C warming is likely to severely test the viability of agriculture and some farming communities, with consequences for the state as whole.

¹ Hochman, Z, Gobbett, D L & Horan, H. 'Climate trends account for stalled wheat yields in Australia since

The risks to agriculture are both direct and indirect, with potential knock-on effects on productivity arising from the impacts of climate change on supply chains, key infrastructure, human health, and ecosystem services. Moreover, these risks are emerging in the context of a global shift to a more carbon-constrained economy, with rapid developments in public policy, markets, community expectations, finance, and technology. Institutional investors, for example, are beginning to identify, disclose and manage their climate- and carbon-related risks and opportunities, including in the land sector.² There is a growing recognition by at least some industry groups (e.g. Dairy Australia) that access to capital and market performance is linked to management of climate risk.³

Victoria's interim emissions reduction targets

Australia's current national emissions targets are an inadequate contribution to the global effort to avoid dangerous climate change above 1.5–2° C. Moreover, a 2018 assessment by Climate Action Tracker suggests Australia will not meet its own 2030 Paris target.⁴

Victoria has already demonstrated a willingness to lead climate action. This via the Climate Change Act itself and the Victorian Renewable Energy Target, as well as the Agriculture Energy Investment Plan, the development of an adaptation plan for agriculture, and championing a national plan on climate and agriculture at the national level, among other initiatives.

Continued strong leadership will mean setting strong state emissions targets. These should be linked to the Climate Change Authority's recommendations: cutting total emissions by 45–65 per cent below 2005 levels by 2030, and reducing emissions from the National Electricity Market by 60 per cent by 2030 and to net zero by 2050. (Climate Action Tracker calculates Australia's 'Paris compatible' targets as: 46–67 per cent reduction on 2005 emissions by 2025 and 51–85 per cent reduction on 2005 by 2030.⁵) Note that any emissions target must act as a floor, not a ceiling. Moreover, flexibility should be built into the target-setting mechanism to allow ambition to be ratcheted up in the light of new information. This will drive the investment in clean energy and climate-smart agriculture, well in advance of coal closures—reducing the need for gas, ensuring long-term energy security, and ameliorating price shocks to farmers and others.

² Watts, C. *Connecting Commodities, Investors, Climate, and the Land: A Toolkit for Institutional Investors* (Sydney: The Asia Investor Group on Climate Change & The Investor Group on Climate Change, 2017). <https://igcc.org.au/wp-content/uploads/2016/04/IGCC-sustainable-land-use.pdf>

³ Dairy Australia, *Climate Toolkit: Managing for climate risk* (Melbourne: Dairy Australia, 2017) <http://www.dairyclimatetoolkit.com.au/adapting-to-climate-change/managing-for-climate-risk> (viewed 1 May, 2018)

⁴ Climate Action Tracker, *Australia* (20 April, 2018) <https://climateactiontracker.org/countries/australia/> (viewed 1 May, 2018).

⁵ *Ibid.*

Limiting global warming to 1.5–2 °C requires global carbon pollution peak by 2020 and to reach net-zero emissions within about 25 years.⁶ Victoria must do its fair share to cut emissions and, operating from that position of strength, use its negotiating power to encourage other Australian governments, especially the Commonwealth, to adopt stronger targets and mechanisms.

FCA notes that the failure to make deep cuts in electricity emissions places a much heavier burden on other sectors, including agriculture, which is, as yet, not as well equipped to make change.

The advantages and disadvantages of early vs. late action to reduce Victoria's emissions to reach net zero by 2050

The sooner Victoria acts to reduce emissions to net zero by 2050, the more time the state's industries, including agriculture, have to ready themselves for a zero-carbon world and the less costly and more orderly the transition is likely to be.⁷

Delay and backsliding will only make the inevitable task of cutting pollution much harder for government, communities, and industries to catch up. Moreover, delays to deep cuts in electricity emissions place a greater emissions-reduction burden on others, including agriculture. Conversely, without investment in strong industry and community engagement to reduce agricultural emissions, the sector's contribution rise proportionally, risking Victorian farmers' reputation.

By demonstrating strong ambition Victoria strengthens its hand in intergovernmental climate and energy negotiations, and hence the state's ability to minimize climate risk and the costs of adaptation. (Globally, early action is estimated to save agriculture more than 80 per cent of the projected negative impacts to 2100.⁸) Crucially, a long, loud, clear policy signal—with bipartisan support—will attract stronger investment, with benefits for rural and regional communities.

What are the most significant opportunities and technologies for reducing emissions in Victoria during the period 2021–2030, and to reach net zero emissions by 2050?

⁶ Figueres, C, et al. 'Three years to safeguard our climate.' *Nature* 546, 7660 (2017); *Science* 24 Mar 2017: Rockström, J, et al. 'A roadmap for rapid decarbonization, *Science* 355, 6331,1269–1271 (2017).

⁷ Kemp, L & Jotzo, F. Wait and pay: action on climate change is cheap, delay is costly.' *The Conversation* (28 May, 2015) <https://theconversation.com/wait-and-pay-action-on-climate-change-is-cheap-delay-is-costly-40539> (viewed 1 may, 2018).

⁸ Müller, C, et al. 'Implications of climate mitigation for future agricultural production.' *Environmental Research Letters*, 10, 12 (2015).

As the Issues Paper notes, the bulk of Victoria's emissions stem from energy generation and it is from this sector that is most capable of reducing emissions further. A combination of market, technology, and infrastructure factors are already driving electricity emissions down, but strong, long-term policy action—including a strong VRET—is required to reach net zero emissions by 2050.

The Issues Paper also notes that agriculture, particularly animal agriculture, contributes about 12 per cent of Victoria's total emissions. Yet, for a variety of reasons (see below) agriculture's potential to reduce emissions is more limited than that of other sector. There is scope to reduce emissions, however, and raise productivity at the same time.

More and more farmers and agribusinesses are already entering the low-carbon economy, adopting measures that effectively reduce emissions from livestock, pastures, and crops ('carbon farming'). These measures include, among many: avoiding stubble burning, reducing grazing pressures on soils, and generating energy from methane captured from piggeries. Farmers are increasingly tapping new energy opportunities: using rooftop solar and battery storage, as well as combining agriculture and large-scale wind and solar developments. New digital technologies, moreover, allow farmers to make energy and fuel efficiency gains, and hence savings. Farmers are protecting and regenerating bushland, establishing carbon plantings, and developing innovative ways to maintain and regenerate soil carbon. Farming are making these sorts of changes for a variety of reasons, including a preparedness to innovate and because such measures increasingly make financial sense.

Just as there are changes underway at farm scale, there are also highly significant changes occurring at the industry level. In 2017, Meat & Livestock Australia (MLA) announced that the body aspires for the industry to be carbon neutral by 2030.⁹ MLA's commitment is influenced by emerging carbon market opportunities, shifts in consumer expectations and investor policies, international competition, and availability—now or in the near future—of a diverse mix of techniques and practices that significantly reduce the carbon footprint of agriculture while lifting farm productivity. The Commonwealth's 2012–2017 Carbon Farming Futures programme demonstrated,¹⁰ for instance:

- It is possible to improve ruminant (cattle and sheep) growth and productivity by inhibiting methane emissions. Substantial reduction in methane production can be achieved via dietary, breeding, and other strategies available now.
- Careful manure application can cut emissions while maintaining productivity.

⁹ Meat & Livestock Australia. *Red meat industry can be carbon neutral by 2030* (22 November, 2017) <https://www.mla.com.au/news-and-events/industry-news/red-meat-industry-can-be-carbon-neutral-by-2030/> (viewed 1 May, 2018).

¹⁰ Department of Agriculture and Water Resources, *Boosting farm productivity—improved soils and reduced greenhouse gas emissions* (Canberra: Department of Agriculture and Water Resources, 2016).

- More strategic use of nitrogenous fertilizers can cut nitrogen losses by up to 80 per cent, and it is possible to halve fertilizer use in temperate cropping with no yield reduction.
- Application of compost and biochar can raise crop productivity and improve carbon sequestration in the soil.

Given the diversity and complexity of farming systems, it is difficult to estimate the abatement potential of these sorts of measures. A 2010 review by Eckard and colleagues suggest the cumulative impact of strategic dietary changes, changes in herd management, and nitrification inhibitors has the potential to cut emissions from a dairy farm, for example, by an indicative 30 to 40 per cent while lifting productivity and making efficiency gains.¹¹ Even without carbon sequestration in the landscape, ClimateWorks estimates an annual Australia-wide abatement of more than 14 MT annually by 2030, at relatively low cost, using crop and livestock management technologies available in 2010.¹² Recent R&D advances, together with investment in carbon plantings and soil carbon regeneration, could reasonably be expected to raise this potential significantly. Early work suggests that at least some Victorian grazing enterprises can be both profitable and carbon neutral (or even carbon positive), for at least 25 years, when sequestration in soils and particularly trees (20 per cent cover) is taken into account.¹³

Unless practical, economic, and social barriers to adoption can be addressed, however, the actual abatement potential is likely to be more limited than what is technically feasible (see below).¹⁴ Changes in markets and technology will continue to promote climate-smart agriculture, but at a slower rate than if government were to make a more concerted investment in research, development, extension, partnerships, and other drivers of adoption and innovation. By committing to strong emissions targets, setting clear expectations for industry, working with farmers and agribusinesses, and leveraging private finance, FCA believes that Victoria can help to accelerate the development of highly productive, low carbon agriculture

What are the key barriers to reducing Victoria’s emissions by 2025 and 2030?

¹¹ Eckard, R J, Grainger, C & de Klein, C A M ‘Options for the Abatement of Methane and Nitrous Oxide from Ruminant Production: A Review.’ *Livestock Science* 130, 47–56 (2010).

¹² ClimateWorks, *Low Carbon Growth Plan for Australia* (Melbourne: ClimateWorks, 2010).

¹³ Doran-Browne, N, et al. ‘Offsets required to reduce the carbon balance of sheep and beef farms through carbon sequestration in trees and soils.’ *Animal Production Science*, <https://doi.org/10.1071/AN16438>

¹⁴ Herrero, M, et al. ‘Greenhouse gas mitigation potentials in the livestock sector.’ *Nature Climate Change* 6, 452–461 (2016).

Notwithstanding the potential of Victorian agriculture to be a source of low-cost abatement—one likely to deliver considerable social and economic co-benefits for farmers and rural communities—there are hurdles¹⁵:

- While there are clear financial benefits associated with many on-farm mitigation measures, the start-up costs—including time—are not inconsiderable and sometimes prohibitive. Often, the benefits are unclear or poorly understood, with farmers feeling as though they bear the costs while the wider community benefits.
- Many individual ‘carbon farming’ projects in Victoria are too small to attract large-scale private finance, and there is a clear need to develop and mainstream aggregation models.
- Methods and carbon prices under the Emissions Reduction Fund do not make carbon farming projects economically viable for most Victorian farmers. There is also concern that methods do not take account of the practical realities of farming systems. (Of more than 600 current ERF projects Australia-wide Victoria has little more than 50—a mixture of landfill, piggery waste to energy, vegetation management, carbon plantings and soil carbon, and energy efficiency.¹⁶)
- Farmers have access to few financial products to incentivize investment. Among insurance and financial institutions, including agribusiness investors, there is still a poor understanding of ‘carbon farming’ strategies. (National Australia Bank, which has lately been exploring the potential to finance projects that improve the natural capital value of farms, is one notable exception.¹⁷)
- Carbon literacy among farmers and agribusinesses is generally low. That is, many lack an understanding of the carbon cycle, abatement options, and how agriculture can adapt to a carbon-constrained economy. Farmers often find it difficult to understand and navigate the complexities of government policies and programmes, and carbon and energy market developments.
- There is a dearth of credentialled people—those with the knowledge, skills, and trust—to help farmers navigate carbon and energy projects, markets, policies, risks, and uncertainties.
- In some cases, there are fears and uncertainties concerning land-use change for solar, wind, carbon planting and other low-carbon developments in agricultural communities.
- The inconsistency of climate change and energy policies and programmes has generated considerable uncertainty and fatigue.

¹⁵ Carbon Market Institute, *Carbon Farming Industry Roadmap* (Melbourne: CMI, 2017)

¹⁶ CMI, *op cit.*

¹⁷ National Australia Bank, *Environment: Natural Value*. <https://www.nab.com.au/about-us/corporate-responsibility/environment/natural-value> (Viewed 1 May, 2018)

- The end of the Carbon Farming Futures programme (2012–2017) leaves a substantial RD&E void.

What further steps can the Victorian Government take to support emissions reduction opportunities and the uptake of low-carbon technologies?

Strengthen specialist extension and education services

We are not aware of published data but FCA's experience suggests that farmer demand for knowledge and advice on on-farm mitigation and renewable energy is growing and remains largely unmet. There is a need to raise farmers' 'carbon literacy'—improving their understanding of the carbon cycle, on-farm solutions, business benefits, market developments, and so on. Agriculture Victoria currently maintains only a small group of skilled extension and policy personnel specializing in climate change and related areas. There is only a smattering of people in agricultural industries, Universities, Landcare, consultancies, and other organizations who have the time and training to work with farmers to promote uptake of low-carbon strategies.

There is an ongoing role for the State Government in helping to accelerate the uptake of mitigation measures in agriculture and rural communities. This will mean much more substantial investment in:

- Education, extension services and other kinds of information support—linking productivity and rural development to environmental and other benefits.
- Supporting the establishment of networks, partnerships, and innovative business models within agriculture and between farmers and other sectors.

For instance, Victoria could continue and expand the grants programme under the Virtual Centre for Climate Change Innovation (VCCCI) and/or establish a specialist programme for managing climate risk in agriculture and food systems. The programme, launched in 2017, generated overwhelming interest with more than 240 applications received, including many from rural and regional organizations.¹⁸ Only 24 projects (a mix of mitigation and adaptation projects) were funded under the \$4.3 million programme. Clearly, there is an appetite to innovate for a low-carbon world.

Renewable energy in rural communities

Energy security and price are of paramount importance for Victoria's farmers and agribusinesses, particularly those involved in irrigation and intensive agricultural

¹⁸ Department of Environment, Land, Water and Planning, *Virtual Centre for Climate Change Innovation* <https://www.climatechange.vic.gov.au/virtual-centre-for-climate-change-innovation/virtual-centre-for-climate-change-innovation> (viewed 1 May, 2017).

production. Recent price shocks and interruptions to supply are causing farming businesses and families considerable hardship.

FCA applauds the Victorian Government's Agriculture Energy Investment Plan and its recognition of the difficulties farmers face in accessing the clean energy economy. FCA notes that the chief causes of these is the failure to modernize Victoria's energy infrastructure and put in place a clear, bipartisan plan for the state's long-term energy security and sustainability. The last decade of policy instability, mainly at the federal level, has undermined investor confidence and the sustainability of agriculture in Victoria. Even so, renewable energy has made significant gains in recent years with a 150 per cent increase nationwide in 2017 alone, according to Bloomberg New Energy Finance.¹⁹

With sound policy settings, Victoria has the potential as a world leader in clean energy technology and uptake, noting that renewable energy supported by battery and smart grid technologies are rapidly becoming cost-effective options to meet farming communities' energy security challenges.

FCA notes that farmers and rural communities are deriving substantial economic benefits from the development of renewable energy. Already, in the last five years, wind power alone has boosted economic activity in regional Australia by \$4 billion.²⁰ The Australian Wind Alliance estimates that, over the next 25 years, existing and under-construction wind farms could inject \$10.5 billion into host communities. Wind, solar and other renewable energy developments offer farmers opportunities to diversify and build economic resilience, raising their capacity to invest further in climate-smart agriculture.

FCA believes that farmers and their communities are best served by benefit-sharing mechanisms (BSMs). BSMs are diverse, allowing for considerable creativity and local self-reliance. They include community enhancement funds, payments to host and neighbouring landowners, support for efficiency measures, co-ownership or co-investment of projects, gifting of shares, and one-off sponsorships.

While BSMs are referred to in some planning regulations, there is little to no legislative requirement. By more strongly encouraging BSMs, FCA believes Victoria can simultaneously cut emissions from electricity, boost sustainable regional development, and help to build a strong sense of ownership of and support for renewable energy in rural communities.

¹⁹ Chalmers, S. 'Renewable energy investment hits new high, but 'likely to fall off a cliff' under NEG' *ABC News* (18 January, 2018) <http://www.abc.net.au/news/2018-01-18/renewable-energy-investment-hits-new-high/9339482> (viewed 1 May, 2018).

²⁰ Australian Wind Alliance. *Building Stronger Communities: Wind's Growing Role in Regional Australia* (Canberra: AWA, 2018) http://www.windalliance.org.au/rural_communities_windfalls_from_wind_farms (viewed 1 May 2018).

Solar and wind farms offer farmers opportunities to diversify and build economic resilience. Landholders are usually best placed to make business decisions about their land, including its potential for other land-uses, including agriculture. It is very unlikely that the development of large-scale solar farming will compromise the state's agricultural potential. Nevertheless, concerns about land-use change should be taken seriously and guidelines developed by the State in consultation with the community. Moreover, a process to produce guidelines for solar power in Victoria is an opportunity to engage farming communities and others and to address any myths, misconceptions, and genuine concerns.

Victoria's role in shaping a national plan for agriculture and climate change

Victoria has shown good leadership, successfully petitioning the Agriculture Ministers' Forum to agree to a new national plan for agriculture and climate change. At this early stage, it is difficult to say whether the proposed plan will effectively help farmers manage climate risk and reduce emissions. Victoria is uniquely placed to lead the development of an effective plan, one that would:

- Identify direct and indirect risks climate change to Australian agri-food systems, including risks to primary production, biosecurity, food processing, food safety, farmer health, key infrastructure, equity, animal welfare, export markets, farm inputs, etc.
- Identify risks associated with likely changes in policy, technology, and market conditions in the transition to a low-carbon economy.
- Identify opportunities to:
 - Enhance the capacity of key agri-food stakeholders to manage risk and build resilience;
 - Reduce emissions from the agri-food system while lifting productivity; and
 - Promote the innovation, efficiency, and overall performance of the agri-food sector in a low-carbon economy and a changing climate.
- Identify priorities for research, development, and extension, and facilitate an augmented RD&E capacity.
- Build on existing state and federal climate-related policies and plans, identify gaps in the policy architecture, and strengthen governance arrangements.
- Include a long-term strategy for clean energy development and energy security in rural and regional Australia.
- Realise the long-term carbon sequestration and resilience potential of production landscapes.
- Build the climate and carbon literacy along with innovation and adaptive capacity of farmers and other key stakeholders, including by engaging them in the development of the National Plan.

- Set ambitious yet achievable short-, medium-, and long-term targets for emissions reduction and climate change adaptation in the agri-food sector in accordance with Australia's international commitments.

Coal and gas

FCA calls on all parties to rule out any further allocations of coal for new uses or the development of coal infrastructure. This includes the deployment of high-efficient, low-emissions (HELE) coal-fired power, noting that it is significantly more expensive than renewable energy technologies now available. Despite the name, HELE coal-fired power is still a very high source of emissions, especially compared to renewables or even gas.²¹ The average of emissions intensity of existing Australian HELE power stations is less than 10 per cent less than standard coal-fired power.²²

Coal seam gas on agricultural land is of significant concern to many Australian farmers and a source of methane emissions. FCA calls on all parties to maintain the ban on all onshore unconventional gas exploration and development, including hydraulic fracturing ('fracking') and coal-seam gas.

Sincerely yours,

[submitted via email]

Corey Watts

Victorian Coordinator

Australian Farmers for Climate Action

vic@farmersforclimateaction.org.au

²¹ Wong, L, de Jager, D & van Breevoort, P. *The incompatibility of high-efficient coal technology with 2°C scenarios* (Utrecht: Ecofys, 2016).

²² Holmes á Court, S. 'How clean are Australia's "clean coal" power stations?' *RenewEconomy* (24 May, 2017) <https://reneweconomy.com.au/clean-australias-clean-coal-power-stations-14224/> (viewed 1 May 2018).