Australian Dairy Industry Council and Dairy Australia submission to the consultation on the Agriculture and Land Sectoral Plan

On the 7 November 2023, released an Interim Report for the *Agriculture and Land Sectoral Plan* and called for submissions.

The Australian Dairy Industry Council (ADIC) and Dairy Australia (DA) appreciate the opportunity to provide input to this process and showcase the targets, research and extension work that the dairy industry has already committed to reduce on farm and processor emissions – along with showcasing other initiatives in reducing waste, packaging and water use.

While progress has been made, further investment and support from governments is needed to progress emissions reductions more quickly and achieve industry and government targets. This includes the need for building capacity and capability amongst both dairy farmers and processors, to better understand baseline GHG emissions and measures to reduce it.

We have consulted with our members in the development of our response.

Key points

Dairy is committed to delivering environmental outcomes

- The dairy industry has set an ambitious goal of reducing emissions intensity by 30 percent (expressed as CO_2 equivalent units per unit of fat and protein corrected milk) by 2030, from a 2015 baseline as outlined in the Australian Dairy Sustainability Framework.
- The emissions intensity of milk had already declined by 40 per cent between 1980 and 2016, reflecting advances in breeding and feeding adopted by Australian dairy farmers. Net emissions have declined by 14 per cent since 2007.
- Much of this reduction in emissions has come through improvements in on-farm and processing productivity, meaning a double payoff of improved environmental and business outcomes. There are significant further opportunities to align GHG mitigation objectives to the productivity agenda through further investment in R, D&E that delivers productivity gains for the dairy industry.
- As methane is an issue to be addressed in other industries, there may be collaboration opportunities with the waste and energy/mining sectors. This could include research and development with engineering and materials science professionals who are not currently well engaged in the agricultural emissions space.
- Dairy farmers are engaged and working to reduce their on-farm emissions. Dairy Australia's latest Land, Water and Carbon survey (attached) found that almost all respondents (96 percent, up from 94 percent in 2020) say that they have actively implemented at least one practice to reduce GHG emissions.
- Agriculture is potentially one of the sectors which will be most impacted by climate change, in terms of immediate impacts of temperature changes and extreme weather events on farming practices, as well as the impacts of increasing supply chain, credit and insurance climate related disclosure requirements on farm businesses.

Any move to low emissions economy must be a just transition

- Any move to low emissions economy must be a just transition, where the substantial benefits of a green economy transition are shared widely, while also supporting those who stand to lose economically or incur the cost burden of this transition. Government must state what principles will guide this just transition.

- This just transition includes incentivising actions that ensure farmers and processors do not bear the full cost of action across supply chains.
- A just transition is also one where the relative contributions of sectors is considered carefully – noting that agriculture and land is the first sector plan to be developed and ensuring this does not disadvantage the sector relative to other plans.
- Emissions reduction interventions that don't result in productivity pay-offs will need to be incentivised. Otherwise, there will not be a just transition, with public benefits and private costs.

Dairy has some particular abatement challenges

- Dairy farms have a lot of 'hard to abate' emissions – about 60 per cent of a dairy farm's emissions are enteric methane from cow rumination. There are limited options commercially available to mitigate this, and none with high efficacy.
- Given the difficulty of reducing enteric methane, net zero dairy farms by 2050 will be very unlikely without key investments in both research and adoption and the use of significant offsets.

Dairy industry consultation will be critical and maintain global competitiveness

- Any additional sector targets must be developed in consultation with industry and reflect the realistic technical and economically available options in the Australian market, be non-binding, and be accompanied by significant government support and funding as directed by the priorities of sectors themselves.
- The Australian Dairy Industry competes in a global market where different country or regional schemes are creating an uneven playing field for like products. Any new Australian scheme must not reduce the competitiveness of Australian products relative to export competitors.

Dairy has already invested heavily in reducing its carbon footprint

- Dairy Australia has developed a Roadmap (Appendix 3) of tools and investments to move the industry towards its Sustainability Framework emissions reduction target, based on the current state of knowledge and research. This Roadmap is based on research which is outlined and attached (Appendix 2) to this submission. The dairy industry is seeking to implement this roadmap through industry investment combined with leveraging funds and resources from Government and other livestock industries.
- Farmers and processors working collaboratively will need to engage all options available to achieve emissions reduction in line with government recommendations.

Agriculture can be part of the solution

- Agriculture can be a source of carbon credits for offsets, however dairy farms will likely need to retain any credits earned to inset on their own farms to meet supply chain requirements for emissions reductions.
- The current Emissions Reduction Fund process and Methods are too complex, costly and time consuming for many dairy farm businesses, and alternative incentive programs should be developed to ensure a variety of incentives are available to fit diverse farm businesses.
- A push to develop offsets projects through tree planting projects is potentially in direct competition for land and resources with ongoing productive agriculture and must be approached with caution given potential impacts on food security.

Recommended actions

The dairy industry has identified the following areas where government support is required:

1. The implications of Scope 3 emission reporting should be considered, noting the significance of this regulatory impost and cost on dairy businesses – with the accounting not yet a mature science, and a lack of associated time, expertise, resources and tools available. Immediate government support and investment is required to avoid regulatory failure by ensuring this capacity and capability amongst both dairy farmers and processors, and to amend the regulatory requirements and/or timelines accordingly.
2. Additional research on enteric methane reduction, capture and destruction that is not limited to feed additives and rumen microbiome manipulation, and mechanisms to incentivise the uptake of methane reduction interventions on farm. Ideally this research will align with methods that deliver productivity gains for industry.
3. Investment in on-farm extension with farmers in emissions reduction, including available emissions reduction technologies; 1:1 support in quantifying on-farm emissions using the Australian Dairy Carbon Calculator; and how to assess and implement viable emissions reduction measures.
4. Investment in easy-to-use, fit-for-purpose and free mechanisms to have dairy farmer emissions and reductions verified, recognised by all relevant stakeholders, and tracked through the supply chain. More work is required to increase the ease of emission baselining, data collection, privacy assurance, verification, sharing and transfer. This should be accompanied with a centralised system to access this information across the supply chain against strict privacy protocols.
5. Significant investment in the development and commercialisation of new clean energy, low emissions, and methane reduction technologies.
6. Investment in an appropriately skilled workforce, such as electricians to install and maintain new equipment and systems, agronomists to advise on options related to nutrition, soils and fertilisers, farm designers to advise on effluent management options, and trustworthy consultants to advise on carbon farming and nature repair market opportunities

A short response to each of the consultation questions is at **Attachment 1** and should be considered in tandem with the information included in the body of this submission.

Australian dairy industry structure

The **Australian Dairy Industry Council** (ADIC) is the peak national body of the Australian dairy industry, representing the interests of dairy farmers and processors through its two constituent bodies Australian Dairy Farmers and the Australian Dairy Products Federation.

Australian Dairy Farmers (ADF) is the peak national industry representative body that represents Australia's dairy farmers. ADF is the dairy industry representative body to organisations such as Dairy Australia and Animal Health Australia. ADF's members include state representative dairy bodies and dairy farmers from across the six dairying states of Australia.

Australian Dairy Products Federation (ADPF) is the national peak policy and advocacy body representing the post farm gate members of the Australian dairy supply chain, including processors, traders and marketers of Australian dairy. ADPF members process more than 90% of Australian milk volumes and provide dairy products to both domestic and export markets.

Dairy Australia (DA) is the national services body for dairy farmers and the industry. Its role is to help farmers adapt to a changing operating environment, and achieve a profitable, sustainable dairy industry. As the industry's research and development corporation (RDC), it is the 'investment arm' of the industry, investing in projects that cannot be done efficiently by individual farmers or companies. Working with DA are eight Regional Development Programs based in the dairying regions around Australia, each of which delivers extension and engagement programs for farmers in their region.

The ADIC and DA have also consulted with State Dairy Farming Organisations on the development of this submission.

Australian dairy industry

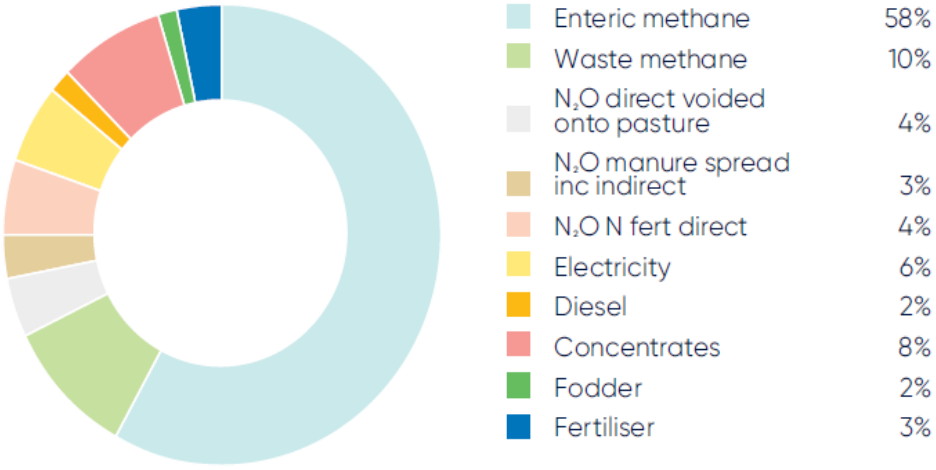
Dairy is the third largest Australian rural industry and a key sector of the agricultural economy, with a farmgate value of $6.1 billion - supporting a direct workforce of around 33,500 across farms and dairy processing.[1] Dairy companies generate about A$15.7 billion in sales.[2] In 2022/23, 30 per cent of milk production was exported, worth about $3.7 billion.

The Australian dairy industry contributes around 2 per cent of Australia's total greenhouse gas (GHG) emissions in the production of healthy nutritious food which is predominantly consumed by Australia's domestic population. Dairy represents around 12.5 per cent of total agricultural GHG emissions.

There are a range of pre- and post-farm gate activities that generate GHG emissions. (See **Figure 1** below, represented in CO2 equivalent units). The predominant source of emissions across the dairy supply chain is on farm, with the largest source of emissions coming from methane from livestock enteric (rumen) fermentation (58% of on-farm emissions), followed by methane and nitrous oxide from urine and dung (17%). Nitrogen fertilisers cause emissions, via nitrous oxide, (6%) through both their production and application in dairy farm systems. Farms also emit carbon dioxide through the on-farm use of fossil fuels and electricity (8% combined), purchased feeds and concentrates (8%) and purchased fertilisers (3%).

Many dairy processing companies operating in Australia are also subject to Australia's national legislation that requires public reporting of scope 1 and scope 2 emissions, with new regulations likely to require reporting on scope 3 emissions for some processing companies from 2026.[3]

Figure 1: Emissions profile of dairy farms



Dairy Industry Sustainability Framework

The dairy industry is committed to leaving the environment in better shape for the future.

Dairy was the first agricultural group to develop a whole of supply chain Australian Dairy Sustainability Framework (ADSF) with goals, targets, indicators, and metrics. Since 2012 we have measured progress and set targets to reduce GHG emissions intensity. The current whole of industry GHG reduction target is a 30 per cent reduction in emissions intensity by 2030 (based on 2015/16 levels).

[1] In Focus 2023, Dairy Australia
[2] ADPF commissioned Deloitte Report: Economic and Broader Contribution of the Australian Dairy Processing Industry (Sept 2021)
[3] Dairy Manufacturers Sustainability Council 2021. *Dairy Manufacturers Sustainability Council Environmental Performance Scorecard 2020-21*, published by Dairy Australia.

The Australian dairy industry publishes scorecards[4] each year articulating progress towards targets (including emissions reduction) in the ADSF. this way, the dairy industry is accountable for our actions. This assures markets of our progress as an industry while having the dual benefit of encouraging further practice change among dairy sector participants.

Australian dairy farms are among the lowest GHG intensity generators globally – with an average 0.93 kg CO^2e/kg Fat and Protein Corrected Milk (FPCM). This figure considers GHG emissions associated with meat production on dairy farms and the 0.93 figure relates to milk production only, while the industry continues to actively work on initiatives to reduce this figure.

Post-farmgate, dairy processing businesses continue to strengthen their understanding and commitment to sustainability and climate action through targeted goals and transition plans.

Collectively, they work together on pre-competitive projects to reduce their environmental impact through the Dairy Manufacturers Sustainability Council (DMSC) – a nationally recognised community of practice, comprised primarily of environmental and sustainability group managers.

The DMSC provides a yearly post farmgate environmental scorecard that underpins the reporting of the ADSF, called the Dairy Manufacturers Environmental Scorecard. The latest 2021-22 report showed a reduction in dairy manufacturers GHG emissions intensity by 25.5% between 2010/11 and 2020/21, equating to a 27% reduction in absolute GHG emissions.[5]

Dairy processors have also reduced solid waste sent to landfill by 6.5% per ML of raw milk processed (compared to 2019/2000), a 46% reduction since 2010/11.

A number of dairy manufacturers and global customers have also committed to reduce their emissions more aggressively and actively participate in global programs such as the Science-Based Targets Initiative, continually strengthening their understanding, measuring and managing sustainability through more targeted goals and transition plans.

There has been an increase in individual manufacturer sustainability reporting. Climate reporting is an area that demonstrates the dairy industry's commitment to continuous improvement. As an example, Fonterra Australia, The Bega Group, Lactalis Australia and Saputo Dairy Australia all produce sustainability reports that include carbon and climate-related information, alongside their Annual Reports.

Specific examples of dairy processors achievements to date, include:

- Bega has reduced emissions by 14.9 per cent on baseline year of 2021 and is working a towards target of 40 per cent by 2030.[6]
- Lactalis Australia reduced scope 1 and scope 2 emissions by 7 per cent since 2019.[7]
- Bulla has reduced GHG emissions intensity by 30 per cent, from 2014 to 2019.[8]

This is an area of focus and development for the dairy industry. For example, the dairy sector is developing tools through Dairy Australia such as the updated Australian Dairy Carbon Calculator (v5) – noting the need for government support to expand the capacity and capability amongst both dairy

[4] Dairy Manufacturers Sustainability Council 2021. *Dairy Manufacturers Sustainability Council Environmental Performance Scorecard 2020-21*, published by Dairy Australia. Also: https://www.dairy.com.au/sustainability/sustainability-framework-reports-and-scorecards
[5] Dairy Manufacturers Sustainability Council Environmental Scorecard 2020-21 (2021)
[6] Bega 2023 Sustainability Report
[7] Lactalis 2022 Sustainability Report
[8] Bulla website

farmers and processors to better understand, measure and reduce their operation's baseline emissions, and the significant resourcing and investment this will require.

Along with its own target, the Australian dairy industry has also signed onto the Global Dairy Platform Pathways to Dairy Net Zero pledge. Dairy Australia and the Australian dairy processing industry peak representative body, the Australian Dairy Products Federation, have signed the Declaration to support pathways to dairy net zero.[9]

Reporting Scope 1, 2 and 3 emissions

Reporting for dairy processors currently focusses on scope 1 and 2 emissions. Scope 3 emissions for dairy processors would include accounting for supplier emissions – including dairy farm emissions. Accounting, especially for scope 3 emissions, is not yet a mature science or marketplace in either regulation, practices, tools or service providers. Dairy farmers are concerned that the regulatory burden of reporting of scope 3 emissions, if not scope 1 and 2 emissions, will be directly and indirectly imposed upon farmers by passing these requirements down the supply chain from retailer to processor to farmer via contractual requirements or other means.

Furthermore, farmers are concerned that given the lack of maturity in the market, including lack of associated time, expertise, resources and tools to enable farmers to meet regulatory requirements, that this will have unintended consequences, such as stifling productivity and, more significantly, forcing unintended non-compliance given the inability of the market to comply – in addition to the significant cost impost of compliance (which will ultimately come out of the farmers' milk cheque, whether it will be scope 1, 2 or 3).This is an unreasonable regulatory burden.

Measurement of emissions at farm is an emerging area and needs significant investment to reach maturity. Likewise, there is no standardised methodology for reporting of scope 3 emissions amongst dairy processors.

Dairy investments towards carbon targets

The dairy sector is committed to climate action and continues to invest heavily in initiatives to support further deep cuts in emissions across the supply chain. Current investments utilising the dairy farm levy are summarised in **Appendix 2** below, including extensive new farmer resources published in August 2023, the updated Australian Dairy Carbon Calculator (ADCC) (v5), animal genetics and animal treatments that result in lower emissions. The dairy farm emissions roadmap is provided in **Appendix 3**.

Underpinned by the robust modelling behind a Marginal Abatement Cost Curve **(Appendix 4)**, Dairy Australia's frontline **advice to farmers** on emissions reduction at the current time is:

- **know your farm emissions baseline** (using the ADCC); compare your number to the industry benchmark (allowing you to understand your emissions intensity against your peers and thereby comparing your management efficiency)
- **select economically feasible available reduction measures that suit your farm profile** (as per the strategy provided for your farm in the ADCC); benefit from the efficiencies gained from these best management practices.
- **exercise caution in carbon markets** such that your carbon footprint accounts will suit your supply chain (exercise due diligence before selling credits)

While the 'state of knowledge' at the sector level about reducing GHG emissions on Australian dairy farms and in the milk processing sector should be considered high, there are limits on achievable enteric methane reductions pending global scientific and technical research.

[9] The global Declaration is a non-binding pledge to support pathways to dairy net zero by: 1) Taking direct action on greenhouse gas mitigation, and/or 2) Supporting and promoting its principles.

Until further work is done, significant questions remain regarding the economic feasibility of using feed supplements or other treatments, the timelines to commercialisation, and the ongoing reliability of supply. Reservations regarding the use of high impact feed additives to reduce emissions by dairy farmers in Australia are reinforced by the fact there are no current delivery mechanisms with proven sustained efficacy for the pasture-dominant systems most common here.

The risk and opportunity of carbon markets for dairy

Carbon Markets present an opportunity and a risk to dairy operations. As an industry with hard-to-abate emissions, it's anticipated that dairy farms are likely to need to offset some proportion of their on-farm emissions to meet supply chain and sector targets. Emissions reductions are increasingly being required by processors, banks, retailers, and insurance companies to meet supply chain emissions reduction targets. This will intensify over time as processors are required to report on their scope 3 emissions, which are on-farm emissions. This represents a future regulatory burden with associated costs that is being imposed upon the industry. Dairy Australia is currently advising farmers to consider their processors' supply chain emissions reduction targets before committing to selling credits on the market. Carbon markets provide an opportunity for farmers to help achieve these targets in cases where emissions cannot be reduced using available commercial technologies.

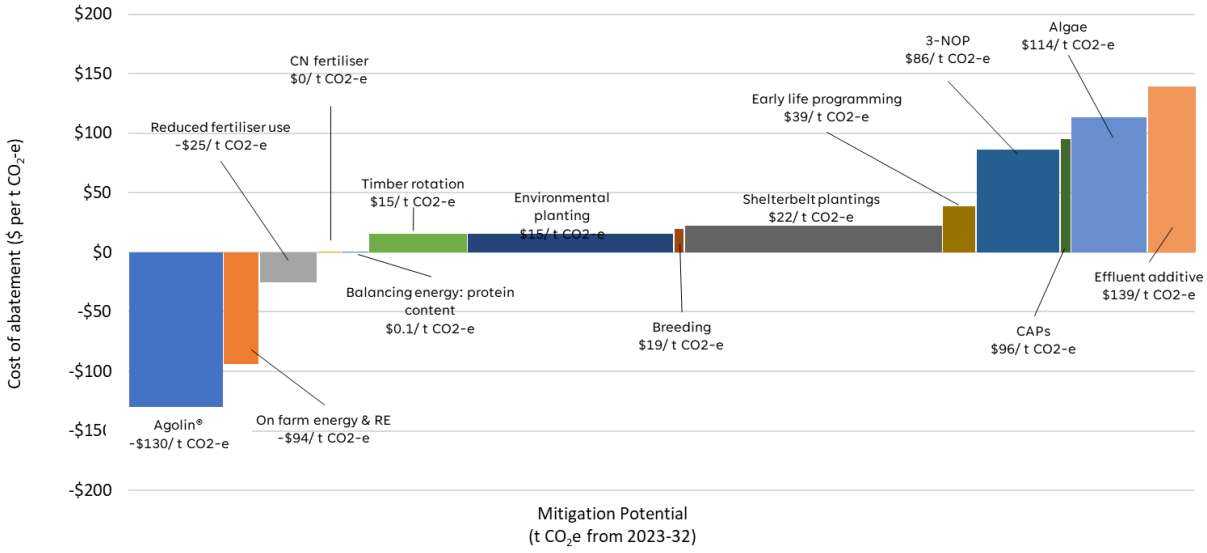
Participation in carbon markets also presents several significant risks for farmers. The first is that farmers sell their carbon credits off-farm and are then (a) unable to use them for insetting their own emissions, and (b) that farmers then have a long-term (often 25+ years) carbon liability on their farm, which affects land values and future planning. Secondly, some of the current Methods under the Emissions Reduction Fund are inherently risky for farmers. In particular, the soil carbon Method. Dairy farms have been found to have generally higher soil carbon (already at or near saturation concentrations) than other commodities due largely to land management practices common across dairy. Therefore, increasing soil carbon is not necessarily a viable option for dairy farms to reduce net emissions, despite the messaging from various agencies. Additionally, soil carbon is highly dependent on moisture, and drought is one factor that farmers cannot control.

There is also anecdotal evidence already emerging of competition for land and resources between farmers and organisations seeking to develop carbon projects, such as tree plantations. This issue will potentially be exacerbated as firms subject to the Safeguard Mechanism seek to secure credits to meet their yearly emissions reduction targets under the new arrangements This issue has also been highlighted by the NFF and in recent research by the Queensland University of Technology. For this reason, the ADIC requests that any programs that support land-based carbon storage programs include sufficient safeguards to ensure that these programs do not endanger food production capacity.

Where can government invest for emissions reduction in dairy?

The dairy industry has undertaken extensive research to understand the sources of dairy farm and processor emissions, as well as opportunities and barriers to reducing them. It's not going to be a case of doing one thing to reduce emissions, but rather, doing everything possible by strategically targeting all of the different emissions sources on dairy farms and in processing. Dairy Australia's Marginal Abatement Cost Curve (MACC) project (see Figure 3) has identified where the 'low hanging fruit' lies for dairy farm businesses, and programs have been targeted to address these opportunities.

Figure 3: Snapshot of Dairy Australia's Marginal Abatement Cost Curve (MACC)



Essentially, items underneath the $0 line are cost-negative and therefore are the 'low hanging fruit'. For example, while only constituting around 6 per cent of on-farm emissions, energy efficiency is an area where technological solutions to reduce emissions are available, and where investments are cost effective. Compare this to enteric methane emissions, which constitute approximately 60 per cent of farm emissions. The potential interventions to reduce this portion of emissions are all above the $0 line, meaning they are cost positive. The majority of feed additives under investigation are currently predicted to be very expensive. To ensure these options can be used successfully on farm, either the price needs to be reduced (through research, for example), or there needs to be a significant incentive paid to farmers to cover the cost (such as a subsidy, tax incentive or with a suitable ERF Method).

The full MACC report is attached (Attachment 4) for your information. As shown in Figure 4 below, more research and/or more assessment to understand suitability for individual businesses is required for many of these interventions, in addition to trying to bring costs down. Dairy Australia, with other research partners, is currently investing in multi-year studies to ascertain the methane reduction potential and associated co-effects (such as milk production changes) in a range of treatments which could be applied in a pasture-based farm system. The industry has been assessing GHG emissions from dairy manufacturers since 2004/2005[10] and from dairy farms since 2007.

Figure 4: Summary of dairy farm emissions interventions assessed by the MACC analysis:

[10] Prasad, P., 2006, *Australian Dairy Manufacturing Industry State of the Environment Report,* published by Dairy Australia

Based on DA analysis, the following areas for investment would potentially yield the greatest emissions reduction outcomes:

- Additional research on enteric methane reduction, capture and destruction that is not limited to feed additives and rumen microbiome manipulation.
    - Government should commit to exploring research global partnerships (working with industry to identify opportunities) that leverage our global commitments such as the Global Methane Pledge.
    - Much of the past reductions in GHG emissions have come through improvements in on-farm and processing productivity, meaning a double payoff of improved environmental and business outcomes. There are significant further opportunities to align GHG mitigation objectives to the productivity agenda through further investment in R,D&E that delivers productivity gains for the dairy industry.
    - As methane is an issue to be addressed in other industries, there may be collaboration opportunities with the waste and energy/mining sectors. This could include research and development with engineering and materials science professionals who are not currently well engaged in the agricultural emissions space. Current research and development are focused on manipulating the rumen microbiome within the animal to reduce methane production, but little is known about the long-term efficacy of this approach given the biological propensity to adapt over the long-term. While the ongoing development of these approaches is important, it should not describe the limit of R&D efforts to reduce the release of enteric methane into the atmosphere.
    - Investment in other approaches provides an alternative that may be resilient to the microbiological adaptation and/or enable stacking of treatments to further reduce methane emissions, without impacting on milk production, animal, or human health.
- Further development of mechanisms to incentivise uptake of new technology or practice change on farm.
    - For example, current research suggests that feed additives which significantly reduce enteric methane will likely NOT have a productivity benefit for the farmer, meaning the cost of the additive will be pure cost to the farmer. It's unlikely that the additional cost will be able to be passed on to consumers due to dairy market structures.
    - The current incentive program is focused on the Emissions Reduction Fund and development of new Methods. Dairy Australia and industry research suggests that the ERF is not going to be appropriate for many farmers, due to the high transaction costs, risks, and uncertainly, and so other options must be considered.
- Government support for dairy farmers understanding their carbon footprint and being able to act to reduce it, through a centralised approach.
    - It is important that dairy farmers get clear, well evidenced and fit for purpose advice, including to build their own knowledge, use appropriate tools and conduct emission reduction investment analysis.
    - Commercial expectations (in many instances driven by Government regulations) are pushing farmers to provide their carbon footprint.
    - Government should invest in a centralised system (ideally through DA's carbon calculator) that avoids a multitude of tools and separate audits from the ag supply chain that places a burden on farmers.
- More investment in extension to help dairy farmers understand the need for and options to reduce emissions, and a consistency of approach across jurisdictions.
    - The landscape of climate policy and programs can be confronting and complex for farmers who are running small businesses and focusing on food production.

Demystifying the key terms, issues and opportunities will greatly increase action on farm.

    - the Australian Government's Carbon Farming Outreach Program provides an excellent start to extending extension, however taken alone is unlikely to fulfill the significant need across farms and industries.

- Investment in the clean energy and low emissions workforce, including for example, electricians to install and maintain new equipment and systems, agronomists to advise on options related to nutrition, soils and fertilisers, farm designers to advise on effluent management options, and trustworthy consultants to advise on carbon farming and nature repair market opportunities.
    - Farmer feedback suggests that it's not just the upfront cost and payback period which are issues for farmers, but an inability to source trusted advice and servicing of expensive equipment. Ensuring a skilled supportive workforce would increase farmer confidence to invest in changed practice or equipment on farm.
- Ongoing investment to de-carbonise grid-supplied electricity and gas as well as improvements in the quality and reliability of the transmission network in regional Australia.
    - Dairy farmers and dairy processors will see emissions benefits from ongoing decarbonisation of the national energy supply mix. For processors, a significant reliance on natural gas for providing process heat and the projected long-term shortfall in Victorian/east coast supply provides a compelling case for investment in biogas projects which feed clean, renewable gas back into the grid.
    - Poor network quality and reliability in many regional communities also provides limitations on a business' ability to adopt renewable electricity projects which might otherwise be economically and environmentally favourable.
    - Care should be taken to ensure that infrastructure investments do not have negative impacts on farms (e.g.: the roll out of power lines). Consultation with local communities must be undertaken to ensure proposals do not create unforeseen impacts on farms.
- Additional support for smart metering and monitoring projects which allow dairy farm businesses and processors to track production efficiency, identify improvement opportunities, and provide evidence of progress.

Conclusion

Climate change is likely to have significant impacts on dairy farms and processing in Australia. The Australian dairy industry recognises that it has an important role to play in meeting Australia's emissions reduction targets, with its own ambitious targets and roadmap to get there, already well advanced. However, there is no silver bullet for dairy emissions, and to achieve deep cuts in dairy emissions requires further investment to develop, commercialise and incentivise uptake of technology with higher efficacy, particularly with regards to the issue of enteric methane. Even with the best technology, dairy farm emissions will be difficult to abate, and farmers will likely need to rely on insetting of carbon credits to achieve anything nearing net zero.

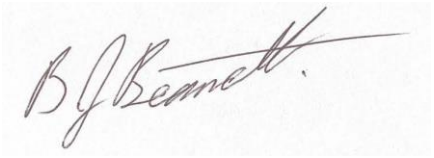
The industry accepts that carbon emissions must be curbed, and this can be done in a way that does not threaten the viability of Australian dairy production and local food security. Milk is a healthy and nutritious product and will be essential in feeding a growing global population.

To ensure this, DA and the ADIC seek ongoing dialogue with Government in developing the Agriculture and Land Sector Plan, as well as the following implementation plan and funding mechanisms. We have undertaken work to develop our data, target, and plans, and seek partnerships, training, and investment to roll these out to our dairy farmers and processors, and to continue to evolve them.

We look forward to being engaged with you and your department in policy discussions regarding the development of a just and achievable sector plan for agriculture, to ensure that agriculture is contributing to achieving Australia's overall international targets as set out under the Paris Accord.

We look forward to providing data and specialist input into the process as a plan develops, to ensure it recognises existing industry effort and works feasibly for dairy, reflecting dairy's important contribution to community nutrition.

Yours sincerely,



Ben Bennett
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Appendix 1. Response to Discussion Paper questions

The need for higher ambition

Climate change is already affecting Australia's producers and the environment. Reducing emissions is critical for reducing future climate risks for the agriculture and land sectors, as well as ensuring our industries are well-placed to compete in global markets. Australia is committed to taking action on emissions and both the agriculture and land sectors have an important role to play in supporting our national contribution to global efforts.

1. What are the opportunities to reduce emissions and build carbon stores in agriculture and the land? What are the main barriers to action?

Farm emissions can increase when a production system is not optimised. As shown in Appendix 2, many of DA's programs recognise this and focus on either reducing farm costs (i.e., energy efficiency) or increasing productivity (e.g., animal lifetime performance).

Focusing on interventions that reduce costs and/or improve productivity will be more attractive for farmer adoption. However, some potential interventions, including the most promising enteric methane reducing feed additives, may NOT have a cost saving or productivity benefit, and these will need to be incentivised in order to be adopted by farmers without negatively impacting on farm business financial sustainability. These incentives could be in the form of direct grants, subsidies, tax credits, low or zero-interest loans, or through the Emissions Reduction Fund.

There is some opportunity to increase carbon sequestration on dairy farms through tree planting areas such as shelter belts along paddocks. However, broader scale tree planting may be in competition with local food production and must be managed carefully to avoid impacts on Australia's food security.

There is limited opportunity to sequester carbon by increasing dairy farm soil carbon, due to the already high levels of soil carbon typically found on dairy farms. A possible exception to this is building carbon deeper in the soil profile, and this is an area of current research.

Accurately measuring, validating, and verifying enteric methane emissions reduction is not currently cost-effective or feasible at the individual farm and animal scale. Research projects and future ERF or other emission reduction tracking schemes and tools need to consider this in their design.

Ongoing and individual support to assess and implement emission reduction measures on farm is required. Implementing a change can have flow on effects on dairy farm businesses that need to be understood before investing.

2. How can we progress emission reduction efforts whilst also building resilience and adapting to climate change?

Reducing inefficiencies helps build profitability and sustainability of dairy businesses. These businesses will then be better positioned to invest in adaptation measures and manage the economic shocks and environmental challenges posed by climate change. Taking a focus on business sustainability will guide better decision making in terms of agriculture emissions reduction. Maintaining high levels of soil carbon assists with pasture resilience and water retention, also increasing resilience to climate change.

Building on existing effort and knowledge

There has already been significant action taken by industry, governments, First Nations peoples, local and regional communities to address climate change. This is explored in section 2.

3. Are there initiatives or innovative programs underway that could be applied or expanded on at a national scale?

A key step for dairy farmers is to 'know your number', that is, to know their farm emissions baseline. Extension investment is required to help farmers to understand their carbon footprint, and then to understand and act on reduction opportunities.

The second step, and this can be informed through a feedback loop with extension service providers, is to identify where the barriers to uptake of emissions reduction lie at an individual farm level. DA and other RDCs have already done extensive investigation to identifying these barriers and are a good source of information to develop programs. The barriers to uptake for some measures (e.g. energy efficiency and on-farm renewable energy) are more related to factors outside the industry such as a shortage of skills in system design, data optimisation and maintenance.

An industry agreed standard calculator is imperative – as per the latest Australian Dairy Carbon Calculator (v5) – with ideally a centralised systems to store and access this information across the supply chain.

4. How can the Australian Government bring together existing effort and new initiatives into one coordinated plan?

There are various research efforts underway across different organisations in Australia and overseas, including the newly announced CRC for Zero Net Emissions from Agriculture which has received $87 million in funding. It is imperative that this effort is coordinated to ensure that we are not duplicating effort.

A key focus of effort should be on ensuring dairy farms are able to accurately and cost effectively work out their farm emissions baseline.

The proliferation of carbon calculators should be avoided so that data can be gathered and used consistently for maximum efficacy of and confidence in emission reduction outcomes. The use of carbon calculators should be free for farmers as they have already paid for the development of these through their levies. Efforts should focus on ensuring these are maintained, fit for purpose, data collection is automated as much as possible, that farmers own their data and can share this with stakeholders with confidence. Farmers should only have to enter any data point once to achieve all required uses.

Emission reduction incentives should be flexible, technology agnostic to minimise supply and farm impact risk. That is, the Emissions Reduction Fund (ERF) *Methods* and any other incentive programs should enable new emission reduction technologies to be incorporated as they become proven by the science. Technology-specific and/or application method-specific information may need to be built into calculators as appropriate to enable individual farm businesses to account for and demonstrate their baseline emissions and reductions over time.

Following this, as mentioned above, there needs to be a focus on identifying and overcoming barriers to implementation, focus on upskilling dairy farmers through extension programs and a feedback loop to identify gaps in current programs.

Government needs to ensure that messaging and programs regarding carbon markets and soil carbon are focussed where there is good evidence and streamlined market design. These opportunities are negligible in dairy farming.

Evidence can be found by reviewing what is working internationally – what is the underlying value principle (to farmers and others in the supply chain), how is it funded, who/what is driving it, how is it resonating with farmers and the rest of the supply chain (e.g. Origin Green program), what is it delivering.

Opportunities to reduce emissions

Looking in more detail, there are technologies, practices and other measures that can reduce emissions and increase carbon stores. Some are established and others are still emerging.

5. What are the most important options to be further adopted or supported, looking in the short and longer term?

- More investment in extension to help farmers understand the need for and options to reduce emissions:
    - The landscape of climate policy and programs can be confronting and complex for farmers who are running small businesses and focusing on food production. Demystifying the key terms, issues, risks and opportunities will greatly increase action on farm.
- Investment in the clean energy and low emissions workforce, including for example, electricians to install and maintain new equipment and systems, agronomists to advise on options related to nutrition, soils and fertilisers, effluent management, designers to advise on effluent infrastructure options, and trustworthy consultants to advise on carbon farming and nature repair market opportunities:
    - Farmer feedback suggests that it's not just the upfront cost and payback period which are barriers to implementing systems of process changes on farm, but an inability to source trusted advice and servicing of expensive equipment. Ensuring a skilled supportive workforce would increase farmer confidence to invest in changed practice or equipment on farm.
- Additional research on enteric methane reduction, capture and destruction that is not limited to feed additives and rumen microbiome manipulation:
    - Current research and development are focused on manipulating the rumen microbiome or blocking enzymatic pathways within the animal to reduce methane production but little is known about the long-term efficacy of this approach given the biological propensity to adapt over the long-term.
    - Investment in other approaches provides an alternative that may be resilient to the microbiological adaptation and/or enable stacking of treatments to further reduce methane emissions, without impacting on milk production, animal or human health.
    - As methane is an issue to be addressed in other industries, there may be collaboration opportunities with the waste and energy/mining sectors. This could include research and development with engineering and materials science professionals who are not currently well engaged in the agricultural emissions space.

6. What are the practical solutions to increase uptake?

In the first instance, information is the main barrier to participation. DA's first priority is to roll out the 'Know your number' program, ensuring that dairy farmers can baseline their farm emissions. This requires investment and resources to provide guidance and education to farmers. Once this is complete, ongoing and individual support to assess and implement emission reduction measures on farm is required due to the complex nature of dairy farm systems. Implementing a change can have flow on effects that need to be understood before investing.

Mechanisms like tax incentives can assist to drive and accelerate capital investment for projects that have emissions reduction benefits but may be lower down a business's priority list. Ongoing energy market reform and investment in the reconfiguration of the network to enable decentralised renewable supply is essential to reducing fossil fuel use for both electricity and transport.

Developing emissions pathways

The plan will explore different ways for agriculture and land to contribute to whole-of-economy emission goals, whilst also delivering on national priorities that include a profitable and productive future for agriculture, and sustainable management of Australian landscapes, in section 4.

7. How do you see the agriculture and land sectors contributing over the medium and longer-term? What are the opportunities to deliver emission reductions in parallel with wider goals?

The primary focus of the dairy sector is on producing healthy and affordable food for Australians and export. However, as an industry that produces emissions and one of the sectors potentially most impacted by climate change, there is a role for dairy to play in emissions reduction. Where emissions reductions can improve profitability or productivity, it will also improve farm resilience against climate impacts by improving business sustainability and increasing farm ability to deal with shocks.

Dairy's role in producing carbon offsets to sell to other sectors is likely to be limited – this is because dairy emissions are themselves hard to abate, so any credits that dairy farmers can generate on farm, will likely need to be kept on farm and inset against farm emissions. Without doing this, it may be difficult for farms to meet supply chain emissions reduction targets of the dairy supply chain, particularly considering increased international and reporting expectations for scope 3 emissions.

Supporting and enabling change

The plan will explore ways in which the Australian Government can help to accelerate emissions reduction in agriculture and increase carbon storage in the land. This is considered in section 5.

8. How can the Australian Government better support agriculture and land sectors to:
   a. drive innovation,
   b. build capacity,
   c. ensure the system enables emissions reductions?

- Tap into and coordinate where the work is already happening – RDCs, research organisations and the newly announced CRC for Zero Net Emissions from Agriculture which has received $87 million in funding

- Don’t re-invent the wheel.
- Collaborate with other sectors with shared problems (e.g. the waste and energy/mining sectors for methane) and with the broader financing and supply chain to provide incentives and support for farmer adoption.
- Be technology agnostic in regulation, policy and market design – we need to maximise the number of emissions reduction technologies available to minimise supply and compatibility risks.

9. What new initiatives could the Australian Government design that would support emissions reduction and carbon storage in agriculture and land and help ensure a productive, profitable, resilient and sustainable future for the sectors?

New initiatives should be informed by feedback from programs already underway, as well as feedback from extension programs and baselining work. It’s important to collaborate with RDCs on this work. New incentives could include tax incentives, subsidies (potentially for feed additives), new Methods under the ERF, grants or low-or-zero-interest loans. A suite of these may be needed to ensure all farmers can access assistance and incentives for practice or equipment change, noting the concept of a ‘just transition’ and also noting that there is no silver bullet to reducing farm emissions.

10. A consistent and trusted approach for assessing and reporting emissions is often raised as a barrier to reducing emissions. Is there a role for the Australian Government in addressing this concern, and how can producers and land managers be supported?

The government should work with RDCs and the supply chain on this, rather than trying to intervene with something new. There is already significant work ongoing in this space. This needs to be approached from a pre-competitive mindset to meet the needs of all stakeholders efficiently.

11. What skills, knowledge and capabilities do you think producers and land managers need to implement change? What information and data would help them make decisions about emissions reductions and sustainable land management in the short and longer-term?

DA is already working on bespoke dairy industry programs in this space and looks forward to working with DCCEEW on the Carbon Farming Outreach Program. However, these programs need to be long-term and continuously evolving to meet future demand and to incorporate new technologies and practices as they arise.

Appendix 2. Key research strategies and investments that support Australian dairy farmers to assess and manage GHG emissions.[11]

Initiative or resource	Brief description	Timeline and Link
Australian Dairy Sustainability Framework (DSF) Environmental targets	The DSF is the Australian dairy sector roadmap for a sustainable industry. It is an active and evolving plan, guided by a steering committee with full industry ownership. The DSF has a single climate-related measure of success: 30% emissions intensity reduction by 2030. The data collected by the DairyBase Carbon Calculator and the Dairy Australia Land Water Carbon survey (*see below) are used to track progress against this target at the farm level. The Dairy Sustainability Manufacturing Council tracks progress at the milk processing level.	Scorecards here: https://www.dairy.com.au/sustainability/australian-dairy-sustainability-framework https://www.dairyaustralia.com.au/manufacturing-resources-and-support/manufacturing-sustainability#.YgBR8epBw2w Consumer facing info on emissions here: https://www.dairy.com.au/sustainability/reducing-environmental-impact/reducing-emissions
Saving energy on dairy farms Factsheets	Extensive new energy savings resources made available in August 2023.	Energy Saving Tips | Dairy Australia
Climate and Environment Online learning modules for farmers	Dairy Australia has developed and launched online learning modules on the following topics: Biodiversity, Water, Fundamentals of environment, Climate Change and dairy, Managing climate risk, Adapting to climate change, Dairy greenhouse gas emissions and Prioritising climate action. These self-paced modules take users through activities, videos, information, and resources in order to improve a farmer's overall knowledge of the environment and climate. The modules will be adapted into face-to-face extension packages delivered by regional extension officers.	https://enlight.dairyaustralia.com.au/course/view.php?id=110
Climate resilience research	5-year research project just commenced in partnership with Agriculture Victoria Research and Gardiner Foundation. This project will a) determine impact of stacking two or more methane mitigating agents on dairy cow methane emissions and production; b) lactation length methane reduction and production effects of selected treatments in a pasture basded system and c) seek to identify low cost, high throughput methane emission proxy measures for individual animals	2023-2028
30 Ways Australian dairy is tackling climate change	Although the carbon footprint of Australian dairying is one of the lowest internationally, there is still scope to improve efficiency. Significant progress is being made across dairy farms in Australia, as outlined in this report.	Source here: 30 Ways Australian dairy is tackling climate change | Dairy Australia - Dairy Australia

[11] Indicative not exhaustive; further detail can be provided on request.

Marginal abatement cost curve (MACC) assessment of existing and new emission reduction technology	The 2022 marginal abatement cost curve assessment is a process which has been previously used by Dairy Australia (2019) to assess the emissions reduction potential and cost of established and emerging technologies in this area. Given new technology and treatments are presented for review with reasonable frequency in this domain, the MACC is now being updated to make it easier for new technologies to be incorporated for assessment of applicability, efficacy and cost.	reducing-dairys-greenhouse-gas-emissions.pdf (dairyaustralia.com.au)
Australian Dairy Carbon Calculator (ADCC)	The Australian dairy industry has had a carbon calculator (to estimate the carbon footprint on an individual farm) for multiple years. It can be used as a stand-alone tool, or combined with the Dairy Base farm performance resource. Dairy Base is the industry standard platform for calculating and benchmarking farm annual physical and financial performance. The ADCC has allowed the Australian dairy industry to estimate is carbon footprint relative to other dairying countries. The current estimate is 1.03 kg CO2 eq per kg FPC milk. Approximately 11% of dairy farms currently calculate their GHG footprint using this the ADCC. We intend to invest to drive uptake to 60% of the milk pool by 2025. **With this data at hand, we will have a much more robust understanding of where further efficiencies can be made at the farm sector level.**	Australian Dairy Carbon Calculator | Dairy Australia
Carbon Emissions Reduction Strategies Factsheets	Extensive new farm emissions reduction resources available August 2023.	https://www.dairyaustralia.com.au/resource-repository/2023/08/30/carbon-emissions-reduction-fact-sheet
Feed saved Australian Breeding Value (ABV)	Australian dairy uses a genetic evaluation system of breeding values (called Australian Breeding Values (ABVs)) which enable farmers to choose bulls for artificial breeding based on over 40 measured traits. This mirrors genetic evaluation systems in other part of the world. The Australian system is overseen by DataGene which is an industry owned organisation. A new Feed Saved breeding value has been recently developed by the joint venture partners in DairyBio (Agriculture Victoria, Dairy Australia and the Gardiner Foundation) and released by DataGene for use by Australian farmers. This breeding value allows farmers to select bulls whose progeny produce the same milk but consume less feed. Because of this, these animals have a lower GHG emissions footprint per unit of milk produced compared to progeny from bulls with a lower Feed Saved ABV.	The ABV became available in Nov 2020 and is updated three times a year with each new ABV release. https://datagene.com.au/feed-saved https://dairybio.com.au/

The Sustainability Index	Breeding indexes are a way of combining multiple Australian Breeding Values based on their economic importance to produce a ranking for farmers to select bulls to sire their next generation of cows. Based on research undertaken by the joint venture partners in DairyBio, the Environmental Performance Index (working title) is a breeding index focused on reducing greenhouse gas emissions. It has been released by DataGene as a companion resource alongside the existing Balanced Performance and Health Weighted Indexes. This new index allows farmers to select bulls which produce daughters with increased survivability in the herd, increased feed efficiency and decreased GHG footprint overall. It allows a farmer to select bulls which, over time, reduce the GHG footprint of a herd through genetic selection. This improvement is compounding and permanent.	The initial breeding index published by DataGene in the first half of 2022. fact sheet 34 Sustainability index.pdf (datagene.com.au)
Land Water and Climate farmer (LWC) survey	Dairy Australia commissions a survey of dairy farmers, every 3 years dedicated to topics concerning land, water and carbon (LWC). Due to the survey design, DA are able to longitudinally track practice change. The survey is robust given the sample size of approximately 500 farmers (approximately 10% of the national dairy farmer population). The survey allows DA to assess topics such as applied technology to reduce energy use on farm and the percentage of farms who have assessed their carbon footprint. Prior surveys were conducted in 2006, 2012, 2015 and 2020. Next survey in field 2023.	Survey results available on request
RD&E projects to enhance cow production efficiency	Dairy Aust have created and run numerous projects and programs since 2003 with an aim to enhance individual cow longevity within a herd in addition to optimising milk production relative to liveweight. Examples of such programs and projects are InCalf (optimising cow reproductive performance, 2006-2019) and Adapting Farm Systems (2019-present). Adoption of resources from these programs on farm ultimately lead to cows that are more productive, within a lactation and have more lactations in their lifetime. Both outcomes reduce the carbon footprint of an individual dairy cow and the herd.	Example sources here: Plant Research | Improving Pasture Quality | Dairy Australia Animal Research & Technologies | Dairy Australia Adapting Dairy Farm Systems | Dairy Australia C4Milk Project | Dairy Australia
More Profit from Nitrogen project	Nitrogen containing fertilisers (e.g., Urea and DAP) are commonly used in the dairy industry to grow more kgs of pasture dry matter per year. However, their application can also result in the release of nitrous oxide, through volatilisation of the fertiliser. Nitrous oxide is a GHG with global warming potential that is significantly higher compared to methane. The More Profit from Nitrogen development and extension project provides farmers with resources required to maximise the efficiency of nitrogenous fertiliser outputs while reducing the risk of inadvertent release of nitrous oxide through suboptimal fertiliser application technique.	The More Profit from Nitrogen project was in development between 2016 to 2019 and was a Cwlth funded initiative. Resources from the project are free and available for use. http://www.dairyingfortomorrow.com.au/tackling-specific-issues/soils/more-profit-from-nitrogen-dairy/

Farm Environment Tracker	"Farm Environment Tracker" is an on-line tool and resource to enable a dairy farm to assess their natural capital status (soil, water, biodiversity, energy and GHG) in addition to planning for sustainable and optimal practice management. A simple example from this tool is its use to plan tree use for shade (thereby enhancing cow production efficiency in hot weather) and how tree planting can alter the carbon footprint of a farm. This is a Cwlth funded project through the National Landcare Program: Smart Farms.	Farm Environmental Tracker (dairyaustralia.com.au)
Lean and Moate review for the Australian Veterinary Journal	This invited scientific review aimed to assess options available to livestock producers to reduce GHG emissions in herds with an emphasis on enteric (biogenic) methane. From the paper abstract: Interventions to reduce GHG production: Reductions in land clearing and burning of grasslands and increased carbon sequestration in soils and trees have potential to substantially reduce GHG emissions. Increased efficiencies of production through intensified feeding and enteric modification have markedly reduced intensity of GHG emissions for cattle in Australia. Genetic selection for lower emissions has modest, but cumulative potential to reduce GHG (mostly CH4) emissions and intensity. Improved reproductive performance can reduce intensity of GHG emissions, especially in beef production. Feeds and technologies that reduce GHG production and intensity include improved 20 pastures, grain feeding, dietary lipids, nitrates, ionophores, seaweed, 3-NOP, hormonal growth promotants in beef, and improved diets for peri-parturient dairy cattle. There is considerable potential to further reduce emissions from cattle using the technologies reviewed.	Published May, 2021, in the Aust. Vet J. https://www.semanticscholar.org/paper/Cattle%2C-climate-and-complexity%3A-food-security%2C-and-Lean-Moate/c5cf6479c9bba0c1f2abc191baf1df8cd28ad44b
Soil carbon report Australia dairy: 2018 update	Current scholarly state of knowledge on the potential for carbon sequestration in dairy pasture soils. The report also discusses the risks and possible opportunities for farmers considering engaging in carbon markets to obtain income from soil carbon credits. From the report: Well-managed dairy pastures often have relatively high soil carbon levels. If the soil is close to the steady-state carbon content possible for the soil type and climate, the capacity to store more carbon will be small and the potential for the dairy farmer to gain carbon credits is limited.	https://www.dairyaustralia.com.au/resource-repository/2020/07/09/soil-carbon-sequestration-under-pasture--2018#.YgGvW7pBw2w
Technical research to reduce emissions underway in the	Collaborative research to improve the environmental performance of dairy manufacturing, e.g., energy efficiency and productivity.	Technical research studies in dairy manufacturing | Dairy Australia

milk processing sector		
Dairy Sector Food Waste Action Plan	The Dairy Food Waste Action Plan is the Australian dairy industry's response to the Australian Federal Government's goal of halving food waste by 2030. Launched in July 2023, the aim of the Action Plan was to assess and recommend commercial and practical food waste reduction opportunities across the dairy supply chain. Through development of the Action Plan, the industry has gained unique insights into where, what, and how much food waste is occurring and identified ten key actions to reduce waste, reduce environmental impacts, and reduce costs.	https://www.dairyaustralia.com.au/manufacturing-support/manufacturing-sustainability/dairy-sector-food-waste-action-plan
Australian Dairy Sustainable Packaging Roadmap	The Australian Dairy Sustainable Packaging Roadmap to 2025 (Roadmap) was developed by the Australian Packaging Covenant Organisation (APCO) in consultation with, and input from Australian dairy brands drawn from across the APCO Membership and Dairy Australia's industry-led Sustainable Packaging Working Group. The Roadmap offers a collaborative framework for delivering a more sustainable packaging system for the Australian dairy industry – improving resource efficiency, reducing waste, and supporting circular outcomes for packaging materials.	https://www.dairyaustralia.com.au/resource-repository/2021/12/23/australian-dairy-sustainable-packaging-roadmap
Assessing Co-Digestion Opportunities from Animal Industry Feedstocks in Regional Victoria	Dairy Australia is partnering with Australian Dairy Products Federation (ADPF), Australian Meat Processor Corporation (AMPC), Australian Pork Limited (APL), Agrifutures, Australian Alliance for Energy Productivity (A2EP) and Meat and Livestock Australia (MLA), to identify and assess the most promising opportunities within regional Victoria for the development of bioenergy projects based on anaerobic co-digestion of waste streams from the dairy, red meat, pork, and chicken meat industries. Potential waste streams include those that occur at the farm as well as the dairy/meat processing stage. This project is being partially supported by Sustainability Victoria's Waste to Energy – Bioenergy fund.	Project commenced August 2023 and will be completed by March 2025.
Silage Plastic Recycling Program	Fodder conservation, in the form of silage, is a vital component of modern dairy farming which has led to significant productivity gains. Unfortunately, large volumes of silage plastic waste are also derived from these farming practices which currently have poor end-of-life outcomes. With support from the Commonwealth Government's National Product Stewardship Investment Fund, Dairy Australia and industry stakeholders have sought to develop a circular economy silage plastic which reduces environmental pollution, improves resource efficiency, and reduces the carbon footprint associated with silage production.	https://www.dairyaustralia.com.au/climate-and-environment/environmental-management/silage-plastic-recycling-scheme

	A key stage of the scheme's development was a trial in Western Victoria that saw 90 farmers from dairy and other industries participate from April 2022 to March 2023. Through running the trial, local farmers were able to collect 64 tonnes of silage plastic, which may have otherwise gone to landfill, allowing it to be recovered and recycled. The learnings are now being used to work with private industry to develop a long-term solution for the responsible disposal of silage plastic wraps and covers on farms.	

Appendix 3: Dairy Farm Emissions Reduction Roadmap

*Note that this document is marked as 'draft' to signify that it is subject to change as further data and technology becomes available.