

13 December 2023

Department of Agriculture, Fisheries and Forestry

Dear Sir or Madam

**RE: Agriculture, land and emissions discussion paper**

Australian Pork Limited (APL) welcomes the opportunity to provide input into the discussion on a decarbonisation plan for agriculture and land to mitigate the effects of climate change on this critical sector.

**Australian Pork Ltd**

APL is the peak national representative body for Australian pork producers. It is a producer-owned company combining marketing, export development, research and innovation and strategic policy development to assist in securing a profitable and sustainable future for the Australian pork industry.

The domestic pork industry is a vital part of Australia's food supply chain, with pork the second most consumed meat in Australia and all fresh pork consumed in Australia domestically sourced. In 2022/23, the Australian pork industry produced 453,426 metric tonnes of pork. The largest volume of production is sourced from Queensland, Victoria and South Australia from an Australian domestic commercial sow herd, as at 1 July 2023 of 285,538 sows.

A recent industry-first study<sup>1</sup> discovered that the Net Protein Contribution (NPC) of Australian pork is 3.26, demonstrating that the quality and efficiency of Australia's pork supply chains can generate three times the human-edible protein it consumes.

This value compares to global published values that range from 0.50 to 1.23.

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<sup>1</sup> <https://www.publish.csiro.au/AN/pdf/AN23057>

If an NPC value is greater than 1.0 for a farming system, then there are net benefits for human populations. This is important in demonstrating the positive impact that livestock farming systems have on human food supply.

The Australian pork industry contributes around \$5.5 billion in gross domestic product to the economy and supports a diverse range of careers across the food supply chain. The industry is domestically focused with around 90% of our production supporting food security for Australians. The value of the 10% exported in 2022/23 was around \$182 million.

More than 31,000 jobs are supported by the industry nationally, predominantly in regional Australia, supporting the economic and social prosperity of communities and the wellbeing of individuals. The Australian pork industry's workforce is skilled, specialised and generally engaged on a permanent basis.

Like many rural industries, the pork industry is currently being impacted by staff shortages with the industry willing and able to support more than 36,000 jobs nationwide and opportunity for growth up to 38,000 as Australian pork replaces imported pork in the domestic production of smallgoods.

Australian pork is a low emissions protein. The industry is committed to creating a more sustainable industry for future. Australian pork producers and farmers are employing innovative methods to reduce waste and minimise the industry's carbon footprint:

- Over the last four decades, greenhouse gas emissions reduced by 69%,
- Over the last four decades, water consumption for the production of pork has reduced by 80%,
- Over the last four decades the industry has reduced fossil fuel use by 58%,
- 60% of the pork industry aims to use waste recycling and renewable energy by 2030.

APL holds several roles on behalf of the Australian pork industry. APL is:

- The pork Research, Development and Extension organisation leading climate research and extension in partnership with the Australian government and the research community,
- The marketing arm of the Australian pork industry managing national campaigns such as "Get some pork on your fork" and the Valuable Provenance campaign raising awareness of how to support the growth of high-quality smallgoods made from Australian pork,
- The peak body for the Australian pork industry, representing pork within the National Farmers' Federation and other representative frameworks,
- Leading the pork industry's Sustainability Framework implementation,
- Part of the sector-wide collaborative effort to develop an Australian Agricultural Sustainability Framework, coordinated by the National Farmers' Federation on behalf of the Federal Department of Agriculture, and
- The industry signatory to the Emergency Animal Disease Response Deed (EADRA).

## Summary of APL response to the Discussion paper

The issues paper raised a broad range of questions, for detailed answers to specific areas, please refer to Attachment I.

The pork industry through our sustainability framework<sup>2</sup> have committed to being a low emissions protein by 2030. We are currently tracking well, with an average emissions intensity of 3.3 kg CO<sub>2</sub>-e per kilo of liveweight in 2020, which has decreased by 69% (from 10.6 kg CO<sub>2</sub>-e per kilo of liveweight) since 1980. We acknowledge there is more to do, both in further reducing intensity of emissions and overall emissions.

APL currently invests in research and extension to promote opportunities for the pork industry to understand, measure and mitigate the effects of climate change and greenhouse gas emissions on the industry.

APL has invested in a low carbon roadmap and full attributional lifecycle assessment of the industry to understand the options available and support producers to make changes now as well as identify what areas still require further investigation.

As an example, APL identified 50 of our member producers across Australia to investigate the feasibility of anaerobic digestion of piggery manure either through digestion in covered anaerobic lagoons or in manufactured digester tanks. From this I I have been progressed to full feasibility assessments. This is in addition to over 29 per cent of production currently utilising biodigesters to reduce methane emissions, with 16 per cent of production completely powered off-grid using piggery by-products and renewable energy technologies. We are aiming for an increased adoption of anaerobic digestion by industry which in turn will deliver further significant emissions reductions for the pork industry. This goes to show that actions don't have to be 'innovative' or 'new' to make a significant improvement in emissions, anaerobic digestion has been used for over 30 years, but it remains the greatest opportunity for the pork industry to make large emissions reductions.

APL welcomes the opportunity to provide producer input into the decarbonisation plan for agriculture and land. It is important that impact assessments which combine on farm practicalities with technical modelling are considered, particularly in the emissions reduction space, to be able to understand the full scope of opportunities and benefits for sectors like agriculture. This is important as agriculture has the potential to both reduce our own emissions as well as provide offset options for other hard-to-abate sectors. This is across the sector, as there may be industries where total abatement of emissions is not possible with our current technologies and knowledge.

Plans to support the industry to decarbonise must be inclusive of all the sector. There is a need to look at the challenge from a systems perspective that includes whole farm planning, landscape planning, natural resource stewardship and biodiversity as this supports resilience and adaptation beyond emissions. Farms operate at different scales and intensities across multiple commodities and there is a need for a flexible approach to reflect this. Over 60% of pork producers are mixed farmers so while land-based carbon sequestration is not an option for most pig businesses, there can be opportunities to offset within the wider business.

There are other elements of the system that need to be considered when looking at decarbonisation including future workforce and food security. Agriculture currently has a shortage of skilled workers, and this extends to other service industries that are needed to support decarbonisation including trades like electricians and plumbers to animal nutritionists to veterinarians. Animal health is just as important in the conversation as healthy productive

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<sup>2</sup> [https://australianpork.com.au/sites/default/files/2022-03/APL%20Sustainability%20Framework\\_Web.pdf](https://australianpork.com.au/sites/default/files/2022-03/APL%20Sustainability%20Framework_Web.pdf)

animals will generate less wasted emissions than those that do not make it into the food supply. In pursuing the goal of a net zero economy, Australia also cannot afford to reduce food security through actions such as limiting livestock numbers or moving to low efficiency production methods. Supporting producers to make emissions reductions without losing productivity is key. The focus on emissions cannot come at the expense of the greater system including other environmental outcomes as well as social and economic stability.

This understanding of the whole system is important when considering how emissions reduction can be affected by other factors such as access to capital, market pressure and the impacts of climate change itself. While the pork industry is less exposed to climate risks than some other agricultural sectors, there are still a number of areas where the pork industry is impacted by climate change and climate variability.

Climate change is expected to impact the pork industry in a number of ways:

- Impact on productivity: Heat stress has an impact on both fertility and lactation capacity in breeding sows.
- Increased biosecurity threats: Animal health specialists are predicting increased temperatures due to climate change, combined with biodiversity and species migratory changes, will lead to an increased risk of zoonotic diseases. The pork industry has responded to a range of animal disease threats; Swine influenza 2009, Japanese encephalitis virus (JEV) 2022 while keeping a watchful eye on the potential threats from near neighbours such as Foot and mouth disease (FMD) and African swine fever (ASF).
- Flood, heavy rainfall and fire impact. Greater potential for natural disasters to:
  - Impact human and animal welfare,
  - Damage on-farm facilities and infrastructure, and
  - Create significant supply chain disruptions.
- Availability of stock feed: The grains industry will be particularly susceptible to the impacts of climate change. The quality and quantity of Australian grain produced and available as stock feed is expected to be impacted by:
  - Changes to the length of growing seasons impacting the varieties able to be successfully grown,
  - Erratic weather impacting the sowing or harvest periods,
  - Weather damage reducing the quality of the grain,
  - Greater potential for flood or heavy rainfall events to cause soil and crop damage, and
  - Increased frequency of droughts or below average rainfall.

APL makes the following overarching recommendations for consideration in the further development of this plan:

**APL Recommendation 1:** That the agriculture and land decarbonisation plan needs to recognise and celebrate the broad range of commodities that make up the Australian agricultural sector. It must recognise the differences between production of different commodities, scale of farm and style of production. The

differences between intensive and extensive systems should also be acknowledged.

**Recommendation 2:** The agriculture and land decarbonisation plan needs to recognise the contributions of the pork industry and the amount of emissions reduction that has already occurred. It should also recognise the likely impacts of climate change and other events on farm inputs and how this impacts the ability for producers to take action to reduce emissions.

**Recommendation 3:** The Government should look to engage with all agricultural industries to understand what work is already in progress to decarbonise the sector. These existing initiatives, such as the pork low GHG emissions roadmap, should be linked to and supported before new initiatives are developed to reduce the risks of duplication or ineffective programs being rolled out.

**Recommendation 4:** That the Government works closely with the pork industry to understand current activities and work with us to build capacity to further reduce emissions.

**APL Recommendation 5:** That the Government acknowledge the significant investment producers have already made in reducing emissions and recognise future emissions reductions may be challenging.

**APL Recommendation 6:** That existing programs like APL's sustainability extension program and the Victorian On Farm Emissions Action Plan should be supported to allow investment in increased resources and facilitate a national roll out.

**Recommendation 7:** Any new funding or grants programs developed should be flexible and not prescriptive to ensure maximum potential to generate emissions reductions. Programs should not be limited to one part of agriculture, be dependent on a large farm size or limited to 'new innovations'.

**Recommendation 8:** The Government should consider grants or tax incentives to support investment in capital intensive options for emissions reduction in agriculture. This could also include reducing the costs associated with engaging with the carbon market to enable smaller producers to engage in taking action on emissions.

**Recommendation 9:** Federal, State and Territory commitments and regulations to carbon emissions action should be streamlined to avoid confusion and duplication for calculation, reporting and mitigation activities requirements.

**Recommendation 10:** Options presented by the decarbonisation plan need to be flexible and not prescriptive.

**Recommendation 11:** That the plan acknowledge there is a shift from offsetting to insetting and that agricultural and land sequestration credits are not a solution for other sectors' decarbonisation.

**Recommendation 12:** The Government should continue to update the National Greenhouse Gas Inventory methods to better reflect the realities and diversity of agricultural production including differentiating between different pork production and manure management options.

**Recommendation 13:** Support for verifying, benchmarking and supporting of existing calculation methods and tools to ensure producers can be confident in

engaging with these to obtain consistent results and see the impacts of actions taken would greatly assist current producer trust, knowledge and ability to take emissions reduction action. The Government should develop a way of supporting and recognising well researched methods and calculators already available or in development such as those by AIA for the agricultural industry.

**Recommendation 14:** That the Government develop a system to value achievements in the emissions reduction space beyond ACCUs to enable producers to be rewarded for their efforts and incentivise further action.

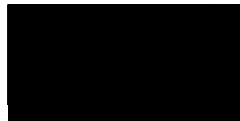
**Recommendation 15:** That the Government commit to continued investment in climate related R&D and emissions reduction over the long term. The Government should also invest in demonstrations of implementation to support peer-to-peer learning and increase producer adoption of emissions reduction activities.

**Recommendation 16:** The Government should continue to work to support the agricultural industry to be able to access needed labour and materials to enable decarbonisation.

**Recommendation 17:** That the Government establish a long-term program to provide producers with specialist, unbiased advice on emissions reduction and integrate key concepts into training programs and qualifications at all levels.

In conclusion, APL looks forward to working with the Department to share the pork industry's perspective and input into the setting of Australia's future climate and greenhouse emissions ambitions, please don't hesitate to contact Tanya Pittard, General Manager Policy and Industry on [REDACTED]

Yours sincerely,

A black rectangular box redacting the signature of Margo Andrae.

Margo Andrae  
Chief Executive Officer

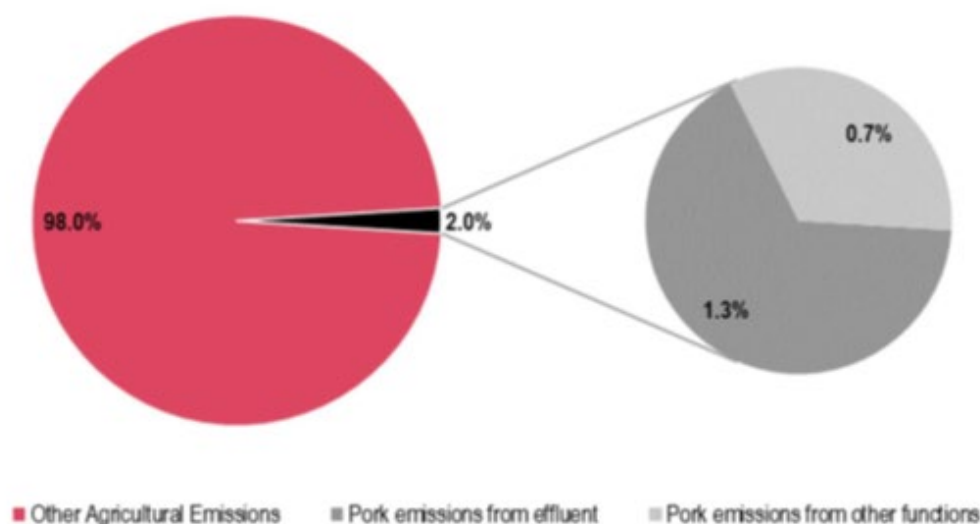
## Attachment I – APL responses to specific questions posed in the Agriculture, Land and Emissions Discussion Paper

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

APL has developed a low Greenhouse Gas (GHG) emissions roadmap for the pork industry that outlines the key opportunities to reduce emissions in pork production.<sup>3</sup> Options include:

- Improving feed conversion (reduces feed waste and improves growth rates),
- Using by-products in feed and investigating low GHG diets,
- Methane capture from manure – for destruction or use as a renewable energy source,
- Manure solids separation, minimum stockpiling of waste, land application for fertilizer,
- Improving energy efficiency and increasing use of renewables, and
- Some potential for carbon storage in trees and soil if land is available.

FIGURE I Australian Pork industry emissions as a percentage of total Australian agricultural emissions.



In 2023 APL commissioned ACIL Allen to prepare “*Contributing to a Sustainable Planet*” a case study looking at the opportunities and barriers to the use of biogas extractors on farm (included as Appendix I).

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<sup>3</sup> <https://australianpork.com.au/sites/default/files/2022-05/031722%20-%20APL%20-%20Low%20GHG%20Emission%20Roadmap%20-%20V3.pdf>

Although pork has worked to decrease its emissions over time (a 69% decline since 1980)<sup>1</sup> and is a low emissions protein relative to other sources (emitting just 3.3kg of greenhouse gases per kilo of liveweight) and accounting for just 2% of total agricultural emissions, there is further work that can be done. A significant proportion (as high as 66%)<sup>2</sup> of emissions come from pig effluent (a waste mixture containing faeces, water, wasted feed).

There are a number of options pig farmers can investigate to help reduce emissions from effluent ponds which represent the biggest proportion of emissions on a conventional piggery. A 2009 APL funded project<sup>4</sup> analysed these options and demonstrated that emissions from effluent treatment may be reduced by 62-80%. The mixture of methane and carbon dioxide emitted from ponds (known as biogas) has a moderate energy content, which can be used to generate heat or electricity. At the simplest level, the biogas from effluent ponds can be captured and burned, to destroy the methane and eliminate the global warming contribution.

One solution to emissions from effluent is biogas.

Biogas systems are strongly tied to APL's sustainability focus areas 'Carbon cycling and nutrient accounting' and 'Closing the loop to reduce waste' (Figure 1) and contribute to APL's target of "60% of production utilising waste recycling and renewable energy technology".<sup>3</sup>

Using biogas in a combined heat and power unit provided the largest reduction in GHG for the on-farm systems. While this is the most expensive system to install, it offers the best utilisation of the energy in biogas and may provide reasonable payback periods for investment.

Piggery effluent contains nutrients as well as carbon. Managing these nutrients is the other key to improving environmental performance of piggeries. Because nutrients are valuable crop and pasture inputs, beneficial utilisation will help improve sustainability of both piggery and cropping or pasture systems. Additionally, using nutrients from effluent (particularly nitrogen) in an efficient and sustainable way will further lower GHG emissions because it can offset the use of energy intensive synthetic fertilisers like urea. Best practice utilisation of effluent nutrients resulted in up to 18% lower GHG emissions for combined heat and power treatment systems.

Clear guidance on the process for reducing emissions (measurement, benchmarking) and information and guides on specific actions that can be taken (mitigation planning) is needed. Pork producers are time poor and may not know where to start in terms of reducing their emissions for their specific production set up. Key opportunities are known for the pork industry but can be hard to action. For example, with biogas capture and use, access to capital as well as time and technical know-how are known barriers. For those looking to reduce emissions through reducing imported soy content in diets there are barriers around access to alternatives and currently limited local low GHG alternatives and while by-products in feed can assist, there is difficulty in measuring the true impact of diverting these from landfill and they can require a specific type of feed system which is not common. Other factors that can act as barriers to action include access to labour (both on farm and for specific emissions reduction activities), access to technologies and building materials, inflation increasing the cost of action and land sizes which can reduce the possibilities to engage in sequestration activities.

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<sup>4</sup> Wiedemann, S.G. and McGahan, E.J. 2011. Environmental impacts of alternative waste treatment systems for Australian piggeries using LCA. Report prepared for Australian Pork Limited. APL Project No. 2009/1011.336.



**APL Recommendation 2:** That the agriculture and land decarbonisation plan needs to recognise the contributions of the pork industry and the significant percentage of emissions reduction that has already occurred. It should also recognise the likely impacts of climate change and other events on farm inputs and how this impacts the ability for producers to take action to reduce emissions.

**APL Recommendation 3:** The Government should look to engage with all agricultural industries to understand what work is already in progress to decarbonise the sector. These existing initiatives, such as the pork low GHG emissions roadmap, should be linked to and supported before new initiatives are developed to reduce the risks of duplication or ineffective programs being rolled out.

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

It is really important to acknowledge the realities of what is achievable for agriculture. Agriculture is a hard-to-abate sector and there is likely to be residue emissions in some commodities or within individual enterprises that may need to be offset elsewhere. There is also a need to acknowledge what has already been achieved by the sector. For example, the pork industry has reduced its emissions by over 70% since 1980<sup>5</sup>. This has been a combination of things including improved production efficiencies such as better herd feed conversion efficiencies, changes in housing design and the move to deep litter housing and improvement in feed grain production systems. This means the majority of the easy to abate emissions have already been significantly reduced and many additional actions will be required to make the remaining small incremental gains.

In 2021 APL launched its first-ever pork industry Sustainability Framework<sup>6</sup>. The Sustainability Framework set goals, targets, and measures to demonstrate the industry's commitments across four key areas:

- **People** – Producing our products in a way that supports both our industry's people and our local communities.
- **Pigs** - A world leader in animal welfare and health.
- **Planet** - A world leader in environmental best practice.
- **Prosperity** - A revolutionary contributor to Australia's economy and those who work within the sector.

These commitments aim to reflect the agreed principles of the majority of recognised sustainability frameworks. The Australian Pork Industry Framework will be reported on, updated and will track the industry's ongoing sustainability achievements and progress.

The Australian pork industry framework is aligned to the UN Sustainable Development Goals (SDGs) and we see a strong opportunity for pork to assist in meeting the overarching global goals – particularly goal 12 (responsible consumption and production). The Australian pork industry has the potential to be a key domestic provider of safe, affordable, sustainable low emissions protein.

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<sup>5</sup> Watson, K., Wiedemann, S.; Biggs, L. and McGahn E. 2018 Trends in environmental impacts from the pork industry. APL Project Number 2017/2212

<sup>6</sup> Available at: [https://australianpork.com.au/sites/default/files/2022-03/APL%20Sustainability%20Framework\\_Web.pdf](https://australianpork.com.au/sites/default/files/2022-03/APL%20Sustainability%20Framework_Web.pdf)

The APL Sustainability Framework was established to support the pork industry to adapt and mitigate the impacts of climate change, support activities being undertaken to mitigate current labour shortages, reinforce the importance of animal welfare and biosecurity and support the pork industry's ability to thrive.

Within the planet pillar we have three focus areas:

1. Carbon cycling and nutrient accounting.
2. Farm biodiversity and natural resource stewardship.
3. Closing the loop to reduce waste.

Pork is already a low emissions protein, emitting only 3.3kg of greenhouse gas emission per kilo of liveweight produced<sup>7</sup>, second only behind chicken meat. The industry is making further reductions in overall emissions through significant investment in decarbonisation actions such as renewable energy technologies and better use of waste.

The pork industry has been actively mitigating climate change risks for decades and must be provided with opportunities to demonstrate the contribution they can make to meeting national climate change targets.

To maximise this effort, the Government should look to support the industry by facilitating access to activities and models already in place such as the Future Drought Fund and the Carbon Outreach Program. Activities would need to be targeted to the pork industry around mitigating and adapting to climate change. This could be through providing support on the specific areas of pork production where climate change is expected to have large ongoing impacts such as:

- Increased biosecurity threats: Animal health specialists are predicting that increased temperatures due to climate change, combined with biodiversity and species migratory changes, will lead to an increased risk of zoonotic diseases. The pork industry has responded to a range of animal disease threats (Swine influenza 2009, Japanese encephalitis virus 2022) while keeping a watchful eye on the potential threats from key exotic diseases such as Foot and mouth disease and African swine fever.
- Availability of stock feed: The grains industry will be particularly susceptible to the impacts of climate change. The quality and quantity of Australian grain produced and available as stock feed is expected to be impacted by:
  - Changes to the length of growing seasons impacting the varieties able to be successfully grown,
  - Erratic weather impacting the sowing or harvest periods,
  - Weather damage reducing the quality of the grain,
  - Greater potential for flood or heavy rainfall events to cause soil and crop damage, and
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<sup>7</sup> Watson, K., Wiedemann, S.; Biggs, L. and McGahn E. 2018 Trends in environmental impacts from the pork industry. APL Project Number 2017/2212

Over 29 per cent of production is currently carried out on farms utilising biodigesters to reduce methane emissions, with 16 per cent of production completely powered off-grid using piggery by-products and renewable energy technologies.

While our environmental story is strong, APL continues to work with industry to significantly increase uptake of emissions reduction technology and manure management opportunities. Industry research is also investigating opportunities to reduce waste by maximising the value of non-edible food and agricultural waste as pig food or feedstock to optimise performance of digesters.

Our industry remains committed to further improving our already strong environmental credentials, maintaining our focus on carbon abatement strategies and technologies, along with circular economy approaches to waste reduction and energy production. Australian pig producers were among the earliest participants in Australian government agriculture emissions reduction initiatives. APL continues to work closely with the Clean Energy Regulator at a Commonwealth level, along with jurisdictional regulators, to ensure policy settings and programs are aligned, and regulation is outcomes and risk based, responsive and proportionate. Getting these settings right is critical for ensuring our producers continue to play a key role in delivering environmentally sustainable protein to Australians every day. In order to support long-term investment in on-farm innovations, farmers need confidence they are working within clear and consistent parameters. Investment in innovations such as biogas are capital intensive, and the cost benefit analysis can easily be skewed if the regulatory environment is inconsistent. This supported activity will not only help to reduce emissions but will build resilience for the pork industry's long term climate adaptation.

**APL Recommendation 2: The agriculture and land decarbonisation plan needs to recognise the contributions of the pork industry and the amount of emissions reduction that has already occurred. That the Government recognise the likely impacts of climate change and other events on farm inputs and how this impacts the ability for producers to take action to reduce all emissions.**

**APL Recommendation 5: That the Government acknowledge the significant investment producers have already made in reducing emissions and recognise future emissions reductions may be challenging.**

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

As noted in the previous question, APL has already invested heavily on behalf of producers to develop and optimise emissions reduction options for the pork industry. While we are continuing to invest, it would benefit both the industry and the wider economy's goals to have this work extended in a focused way across industry.

One of the ways APL has done this is to hire a dedicated Sustainability Extension Officer. This role is currently focused on driving adoption of key actions to reduce emissions including energy efficiency, solar installations and biogas adoption. APL identified 50 of our member producers across Australia to investigate the feasibility of anaerobic digestion of piggery manure either through digestion in covered anaerobic lagoons or in manufactured digester tanks. From this 11 have been progressed to full feasibility assessments. We are aiming for an increased adoption of anaerobic digestion by industry which in turn will deliver further significant emissions reductions for the pork industry. This approach is proving successful in helping to reduce the barriers for adoption such as lack of time or technical expertise by working with producers to develop specific feasibility studies that use data and analysis taken from their specific farm. APL would welcome the opportunity to further discuss this program and its learnings to determine if it can be better supported, resourced and expanded across other key areas of emissions reduction.

Programs such as the Victorian On Farm Emissions Action Plan Pilot<sup>8</sup> is an excellent example of a targeted program that should be considered for national roll out. The program is currently in Round 5, working with a small number of pig and poultry producers (other commodities have been targeted in previous rounds) to help producers understand and 'know their number' when it comes to emissions. The program involves a consultant providing participants with an emissions assessment as well as a tailored action plan with opportunities to reduce emissions on their farm. The participants are also able to access funding to support implementation of a priority action identified in their plan. This tailored approach helps to remove the barriers around technical knowledge and not knowing where to start as well as provides access to funding to take action. By being specific to an individual farm, the action plans are helping to drive real change and improvement in emissions on the ground and is something that should be supported and rolled out nationally.

Other programs such as ARENA<sup>9</sup> and MERiL<sup>10</sup> are great options for helping test, develop and implement options for producers to reduce emissions. However, these programs both have narrow scopes in either large industry who are NGERs reporters (ARENA) or are focused on ruminants (MERiL). While it is understandable to focus on the big areas for potential emissions reduction, there is no smaller scale or more open program for pork producers to be involved in. If a similar program could be adapted, such as one focused on emissions and circularity, and offered to smaller industries or farms this could further drive action and show commitment to improving all areas of emissions.

**APL Recommendation 6: That existing programs like APL's sustainability extension program and the Victorian On Farm Emissions Action Plan should be supported to allow investment in increased resources and facilitate a national roll out.**

**APL Recommendation 7: Any new funding or grants programs developed should be flexible rather than highly prescriptive to facilitate maximum potential to generate emissions reductions. Programs should not be limited to one sector of agriculture, be dependent on a large farm size or limited to 'new innovations'.**

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

There has already been considerable research within the agricultural industries to understand emissions and the practical options for reduction. By acknowledging this work and linking to current plans and initiatives at both Federal, State and Territory level, the Government can build a coordinated plan. The Government can bring together all of agriculture, along with all State, Territory and Federal agencies that operate in this space including departments of agriculture, environment, circularity initiatives and environmental regulators to understand current efforts and ensure all are acknowledged and coordinated into a federal plan.

In looking to bring together existing effort there is a need to acknowledge both what has been achieved as well as the differences that occur across different commodities, farm types, sizes and locations. For example, pork and beef are different industries, and face different approaches and issues with climate change. What works for beef, will not work for pork and vice versa. In bringing together existing effort into one coordinated plan, there is a need to acknowledge these differences as the nuances can be lost in high level plans which can unintentionally alienate specific industries or producers. This is important to action as the current discussion paper does not specifically mention the pork industry or even intensive

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<sup>8</sup> <https://agriculture.vic.gov.au/climate-and-weather/policy-programs-action/on-farm-action-plan-pilot-program>

<sup>9</sup> <https://arena.gov.au/funding/>

<sup>10</sup> <https://business.gov.au/grants-and-programs/methane-emission-reduction-in-livestock>

animal industries and their unique operating environments and focuses more on cropping and ruminant production.

When considering options and regulatory approaches, the Government must recognise the pork industry has been an early mover on climate change mitigation, adaptation and resilience. Significant emissions reductions have already been achieved and there is an opportunity to support the pork industry to bridge the remaining gap.<sup>11</sup> Specific detail on this is provided in Question 2.

**APL Recommendation 1: That the agriculture and land decarbonisation plan needs to recognise and celebrate the broad range of commodities that make up the Australian agricultural sector. It must recognise the differences between production of different commodities, scale of farm and style of production. The differences between intensive and extensive systems should also be acknowledged.**

**APL Recommendation 9: Federal, State and Territory commitments and regulations on carbon emissions action should be streamlined to avoid confusion and duplication for calculation, reporting and mitigation activities requirements.**

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

**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?**

APL has chosen to answer Questions 5 and 7 together, as they cover the same ground and the differing timescales can be relative depending on factors such as access to capital, planning approvals and alternative feeds to name a few. Some actions could be undertaken in very quick time if barriers were removed but the same action may take longer for a different producer with different circumstances.

The APL Low GHG emissions roadmap for the pork industry<sup>12</sup>, highlights what actions the industry can take, including the easy ones to do now and those which may require more longer term action. The key actions that can be further adopted and supported from this roadmap are outlined in Question 1. For the pork industry, the reduction of emissions from manure management is critical as this is our largest source of emissions. Further support on researching alternative low capital options for reduced emissions from manure would greatly assist in driving adoption.

APL is currently seeking proposals around this area but additional support to facilitate the extension and adoption activities required to have research findings implemented on farm and case studies developed would drive more adoption of current and emerging solutions. Options for emissions reduction need to be flexible and not prescriptive in order to ensure they can be implemented in all production types.

In the medium to longer term, agriculture will likely shift from a source of offsets available to other industries to focusing more on insetting within our own operations and supply chains. The pork industry was an early participant in the carbon market through the generation of ACCUs with the animal effluent method. As interest increases in understanding emissions

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<sup>11</sup> <https://documents.parliament.qld.gov.au/com/SDRIC-F506/IQ-81CF/submissions/00000017.pdf>

<sup>12</sup> <https://australianpork.com.au/sites/default/files/2022-05/031722%20-%20APL%20-%20Low%20GHG%20Emission%20Roadmap%20-%20V3.pdf>

throughout the supply chain these ACCUs are more likely to be held by producers to manage their own obligations rather than offered to the government or private markets. It is critical agricultural land is not further fragmented and removed from productive use through other sectors seeking to establish tree plantations to offset their own emissions – a economy wide understanding of what is achievable in mitigation is needed before sectors and companies look to sequestration to offset. This is true for sequestration activities as well where soil carbon is managed not for emissions benefits but for soil health which may change the availability of offsets expected from other sectors of the economy.

Across this timeframe it is likely the focus of agriculture will shift to a wider range of environmental sustainability activities. Already there is growing interest in managing biodiversity, which the Government is supporting through the establishment of the Nature Repair laws and market. It is likely an holistic approach to water, soil, biodiversity and air (including greenhouse gas emissions) will become the focus of the industry to meet broader goals around natural resource stewardship, productivity, circularity, cultural heritage and food security.

The focus on the circular economy will be a key goal where agriculture and land can work in partnership to both eliminate, reduce and utilise waste in conjunction with reducing emissions. The pork industry is already well established in this space, using our manure and bedding materials as fertilisers and composts to support other agricultural commodities. When coupled with reduced emissions manure management, this not only keeps these valuable nutrients in circulation but can also help to reduce the environmental impacts and emissions that arise from synthetic fertiliser use.

**APL Recommendation 10: Options presented by the decarbonisation plan need to be flexible and not prescriptive.**

**APL Recommendation 11: That the plan acknowledge there is a shift from offsetting to insetting and that agricultural and land sequestration credits are not a solution for other sectors' decarbonisation.**

## **6. What are the practical solutions to increase uptake?**

There are a number of practical solutions the Government can take to assist current activities and increase uptake. A key solution is to provide focused extension and implementation support as outlined in our response to Question 3 such as supporting specialised extension staff or expanding the Victorian On Farm Emissions Action Plan model to a national scheme.

A key barrier to action for many pork producers is conflicting State, Territory and Federal regulations. This is particularly problematic for those larger businesses that operate piggeries across several states. Having consistent and stable regulation across the States and Territories enables farming businesses to plan their activities with certainty which is crucial when looking to undertake capital heavy emissions reduction activities such as biogas capture from effluent. This could be supported through the Government's provision of an ongoing Agricultural Ministers and Environmental Ministers forum which would provide a mechanism to substantially reduce the inconsistency currently inhibiting growth of pork and other intensive livestock sectors which have low emissions.<sup>13</sup>

Regulatory requirements need to be considered in the broader landscape, as regulation of activity can become an investment hurdle. For example, mandating the covering of ponds are often investments of more than \$1 million. Some of the cost can be offset by carbon credits

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<sup>13</sup> <https://documents.parliament.qld.gov.au/com/SDRIC-F506/IQ-81CF/submissions/00000017.pdf>



offered by the Emissions Reduction Scheme, however if it is state-mandated, the offset option is removed. By ensuring that State, Territory and Federal regulations are aligned and remain solution agnostic in the pursuit of reduced emissions would greatly assist in driving uptake of solutions.

Another known barrier to uptake of emission reduction action for the pork industry is having access to financial support to enable investment into technologies like biogas and alternative feeds that may require significant infrastructure changes on farm. Options like grants, tax incentives or other financial support would greatly assist in uptake as the costs of implementing these options continue to increase at a time when margins are tight thanks to inflation, restricted supply chains (both global and local) and multiple pressure points like biosecurity requiring finance. These funding mechanisms should not limit research or investment to 'new or innovative' activities. There are many opportunities to support on farm investment in proven technology which delivers the benefits of long-term emissions reduction.<sup>14</sup>

Many producers are still at the beginning of their emissions reduction journeys and are seeking to calculate and understand their emissions. Once this knowledge is obtained, they are then able to take steps to implement solutions. Support can be given to provide unbiased advice, planning support, mitigation planning and feasibility assessments, such as what APL's Sustainability Extension Officer provides which is known to drive uptake. This all relies on a stable and accepted method for calculating and reporting emissions. Providing clear guidance on accepted or standardised calculations would be of great benefit so that producers do not have to spend large amounts of money on in-depth life cycle assessments to get a clear answer, money which can then be used to fund emissions reduction activities.

**APL Recommendation 8:** The Government should consider grants or tax incentives to support investment in capital intensive options for emissions reduction in agriculture. This could also include reducing the costs associated with engaging with the carbon market to enable smaller producers to engage in taking action on emissions.

**APL Recommendation 9:** Federal, State and Territory commitments and regulations to carbon emissions action should be streamlined to avoid confusion and duplication for calculation, reporting and mitigation activities requirements.

**APL Recommendations 12:** The Government should continue to update the National Greenhouse Gas Inventory methods to better reflect the realities and diversity of agricultural production including differentiating between different pork production and manure management options.

**APL Recommendation 13:** Support for verifying, benchmarking and supporting of existing calculation methods and tools to ensure producers can be confident in engaging with these to obtain consistent results and see the impacts of actions taken would greatly assist current producer trust, knowledge and ability to take emissions reduction action. The Government should develop a way of supporting and recognising well researched methods and calculators already available or in development such as those by AIA for the agricultural industry.

**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?**

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<sup>14</sup> <https://documents.parliament.qld.gov.au/com/SDRIC-F506/IQ-81CF/submissions/00000017.pdf>

Please see answers to Questions 1, 2, 3, 4 and 6 for opportunities that can be considered by the Government to support the pork industry to drive change and reduce emissions.

A wide definition of innovation is encouraged by the pork industry as this varies across farms and industries. Something can be innovative to a particular farm but is well known in the industry and vice versa. Similarly building capacity to enable emissions reduction is critical and this includes both access to labour to enable activities to be undertaken as well as improving producer knowledge on what actions can be taken. APL would welcome the opportunity to work closely with the Government to share current activities and look for opportunities to build on existing programs to enable emissions reductions.

**APL Recommendation 4: That the Government works closely with the pork industry to understand current activities and work with us to build capacity to further reduce emissions.**

**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?**

There are many great programs and initiatives already in existence which could be expanded to help ensure a sustainable future for the pork industry. We have outlined some of these in Question 3.

An initiative the Government could consider developing is a means of valuing the actions and sustainability of the industry and helping producers to better share their achievements in order to gain either a cost reduction or a premium for those that can demonstrate they have undertaken significant action to improve environmental outcomes. This would complement existing and new markets such as the carbon and biodiversity markets and ensure that producers are properly recognised for their actions through supply chains. Through providing a means to value their actions (particularly those that aren't covered by an ACCU or biodiversity method), this initiative could help through further incentivising emissions reduction activities by providing a financial benefit to do so. This would also help in having a consistent way to demonstrate action to those in supply chains who are increasingly looking to the sector to make improvements as it affects their own Scope 3 emissions.

The Government should also continue to invest in climate related R&D for the sector that provides robust baseline knowledge, drives innovation, builds resilience and supports communication, adoption and extension. Some ideas for where this could be developed can be located in the NFF 2023-24 Pre-Budget Asks Submission<sup>15</sup>. This funding, as previously mentioned in Question 3 should not be limited to large enterprises or specific industries (unless all industries have their own funding streams) to allow the maximum potential for emissions reduction and improved sustainability across the whole of the sector.

**APL Recommendation 14: That the Government develop a system to value achievements in the emissions reduction space beyond ACCUs to enable producers to be rewarded for their efforts and incentivise further action.**

**APL Recommendation: That the Government commit to continued investment in climate related R&D and emissions reduction over the long term. The Government should also invest in demonstrations of implementation to support peer-to-peer learning and increase producer adoption of emissions reduction activities.**

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<sup>15</sup> <https://nff.org.au/submission/2023-24-pre-budget-submission/>



**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?**

There is a need for a consistent and trusted approach for assessing emissions. As noted in Question 6, many producers are still at the beginning of their emissions reduction journeys and are seeking to calculate and understand their emissions. Once this knowledge is obtained, they are then able to take steps to implement solutions. Support can be given to provide unbiased advice, planning support, mitigation planning and feasibility assessments, such as what APL's Sustainability Extension Officer provides which is known to drive uptake. This all relies on a stable and accepted method for calculating and reporting emissions. Providing clear guidance on accepted or standardised calculations would be of great benefit so that producers do not have to spend large amounts of money on in-depth life cycle assessments to get a clear answer, money which can then be used to fund emissions reduction activities.

The Government also oversees the National Greenhouse Gas Inventory methods and calculations. There is an opportunity to improve these calculations to provide better information back to producers on where their emissions are arising. While not all producers are required to report their emissions under the NGERs scheme, it could help to drive action if there was a voluntary way of using the same methodology to assess impacts. This methodology would need to be updated to be more specific to the agricultural industries. For example the standard calculations which are taken from the Inventory methods and used in tools such as the University of Melbourne Greenhouse Accounting Framework calculators do not differentiate between an outdoor pork farm or an conventional one. It also doesn't differentiate between manure management methods. This is critical if pork producers are to utilise such tools to benchmark emissions as the emissions difference between an uncovered lagoon, covered pond generating biogas or deep litter piggeries in terms of emissions is quite stark.<sup>16</sup>

In the development of any approach to addressing this area there needs to be strong engagement with the agricultural industry, which APL would be happy to participate to ensure industry specific examples and guidance are able to be developed and there are options supported by the Government to meet the needs of the pork industry. There is also a need to recognise the state of knowledge of industry groups does not reflect individual producer state of knowledge and should not be used as a base assumption for overarching regulation. While the pork industry has the low emissions roadmap<sup>17</sup>, the level of awareness and adoption among pork producers of this specific document and the actions remain an opportunity for additional extension and broader adoption.

There is an opportunity for the Government to support an already established approach to building a strong calculation method for the agricultural industry. The RDCs, including APL, have invested through Agricultural Innovation Australia (AIA) on two projects that can be recognised by the Government and assessed to support producers. The first is the common methods for greenhouse gas accounting framework<sup>18</sup> which provides a detailed method on sector level accounting. This was developed by the CSIRO with leading emissions accounting specialists to ensure a rigorous framework for sector level accounting.

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<sup>16</sup> Watson, K., Wiedemann, S., Biggs, L. and McGahn E. 2018 Trends in environmental impacts from the pork industry. APL Project Number 2017/2212

<sup>17</sup> <https://australianpork.com.au/sites/default/files/2021-12/Pig%20Industry%20Low%20Emission%20Roadmap%20final%20report.pdf>

<sup>18</sup> <https://aginnovationaustralia.com.au/ghg-accounting/>

The second is the development of the Environmental Accounting Platform through the ongoing Know and Show your Carbon Footprint project<sup>19</sup>. This is developing the University of Melbourne tools into an online platform that enables mixed farmers to get a full picture of their emissions profile. This project is supported by a technical advisory panel that also includes experts across this field. If the Government is to assess these tools and support them as a 'one source of truth' for calculating emissions outside of the National Inventory method and encourage State and Territory governments to do the same, that would go a long way to reducing the concerns producers have in this area. This would support producers by providing a trusted solution to calculating, measuring and monitoring emissions which is not currently available.

**APL Recommendation 12: The Government should continue to update the National Greenhouse Gas Inventory methods to better reflect the realities and diversity of agricultural production including differentiating between different pork production and manure management options.**

**APL Recommendation 13: Support for verifying, benchmarking and supporting of existing calculation methods and tools to ensure producers can be confident in engaging with these to obtain consistent results and see the impacts of actions taken would greatly assist current producer trust, knowledge and ability to take emissions reduction action. The Government should develop a way of supporting and recognising well researched methods and calculators already available or in development such as those by AIA for the agricultural industry.**

**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?**

The costs of implementing emission reducing technology, like biogas, and the cost of sourcing specialised labour in regional areas either for installation or maintenance is high and exacerbated by the current labour shortages in regional areas is an ongoing and contributing barrier limiting pork producers capabilities to implement change regarding emissions reductions. For example, biogas was initially considered as an option for dealing with effluent back in 2010, the technology was well established, and had been tried and tested (in Europe).

Overtime the technology has become more expensive, because of the cost of materials (e.g., generators are dependent on steel and the lagoon covers require heavy duty plastics). This has been further exacerbated by supply chain disruptions and inflation following the COVID-19 pandemic. The costs of generators have increased two-fold since the early 2010s. Furthermore, available technicians, electricians, and other specialised labourers necessary for installation or maintenance is low, due to ongoing labour shortages. Labour shortages is an ongoing issue which not only impacts the pork industry, but the whole of the agriculture. Knowing that there is schemes in place to improve access to these specialist skills and materials would assist in making decisions on whether to invest time and effort in emissions reduction activities.

Access to trusted sources of knowledge in the carbon space is critical for producers to implement change. While the carbon outreach program goes some way to improving this, as a temporary program it is unlikely to see long term outcomes achieved. A more permanent solution is needed to ensure reputable knowledge exchange is maintained and that those offering advice in the emissions reduction space are appropriately trained. For those currently engaging in education, there is a need to ensure that courses at all levels of the AQF, but

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<sup>19</sup> <https://aginnovationaustralia.com.au/ea-platform/>

particularly short courses aimed at producers and university degrees such as agronomy and animal science, incorporate carbon farming skills, emissions calculation and emissions reduction knowledge. This will help to future proof the system and ensure that producers will be able to access key knowledge to implement change.

Data and information on specific success stories and emissions reduction projects that didn't go as planned on farms is critical for supporting producers to make decisions, both short term and long term. Producers learn best through peer-to-peer learning so facilitating local, placed based discussions and case studies on methods to reduce emissions would enable this. This could be built upon the actions of the Future Drought Hubs and the RDCs which are already active in the space and provide more specific funding for proof-of-concept and implementation activities that have strong communications plans and assistance associated with them would be a great way to ensure that this information is more accessible to producers.

Continuing to invest in R&D and demonstrations of implementation would help drive greater confidence in decision making. Demonstrations in particular need to be flexible and not rely solely on things like field days on farm as for intensive industries like pork this is not possible due to biosecurity concerns. Alternative means such as off farm workshops with producer presenters and data, video and documentation on projects as well as access to expert, unbiased advice would also be a good way to improve decision making capacity for producers to engage in emissions reduction.

**APL Recommendation 15:** That the Government commit to continued investment in climate related R&D and emissions reduction over the long term. The Government should also invest in demonstrations of implementation to support peer-to-peer learning and increase producer adoption of emissions reduction activities.

**APL Recommendation 16:** The Government should continue to work to support the agricultural industry to be able to access needed labour and materials to enable decarbonisation.

**APL Recommendation 17:** That the Government establish a long-term program to provide producers with specialist, unbiased advice on emissions reduction and integrate key concepts into training programs and qualifications at all levels.