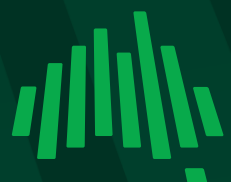


Climate Change Authority Issues Paper: 2025 Annual Progress Report

September 2025



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Operating under a federated structure, individual farmers join their respective state farm organisation and/or national commodity council. These organisations form the NFF.

The NFF represents Australian agriculture on national and foreign policy issues including workplace relations, trade, and natural resource management. Our members complement this work through the delivery of direct 'grass roots' member services as well as state-based policy and commodity-specific interests.

NFF Member Organisations



11 September 2025

Climate Change Authority
GPO Box 787
ACT 2600
Australia

Via Email: consultation@climatechangeauthority.gov.au

RE: Climate Change Authority Issues Paper: 2025 Annual Progress Report

Dear Sir/Madam,

Introduction

The National Farmers' Federation (NFF) welcomes the opportunity to provide a submission to the Climate Change Authority on its *Issues Paper: 2025 Annual Progress Report* to inform its 4th Annual Progress Report (APR), including assessment of the performance of the Safeguard Mechanism for the Australian Minister for Climate Change and Energy.

On the premise that the 2025 APR will continue to build on the Climate Change Authority's prior advice and given the imminence of Australia's next Nationally Determined Contribution under the Paris Agreement ahead of COP30, the NFF's submission to the Authority's *2024 Issues Paper: Targets, Pathways, and Progress* should be read in conjunction with this submission. This is attached as Attachment 1. That document outlines Australian agriculture's position on a 2035 emissions reduction target and how climate policy must not come at the detriment of food and fibre production and/or be imposed upon agriculture, consistent with Government's reaffirmed position on the Toowoomba Principles that will underpin the design of the Commonwealth's Net-Zero Plan for the agriculture and land sector.

The Toowoomba Principles that will guide the development of the *Agriculture and Land Sector Plan* outlined by Minister Bowen and Minister Watt (agriculture capacity) during the May 2024 *Sustainable Agriculture Summit*¹:

- 1. Agricultural decarbonisation must be achieved with the sector, not imposed on the sector. We're serious about making collaboration work. We won't be imposing arbitrary sector wide targets or top-down approaches.**
- 2. Action on climate change is necessary to ensure food security, and action on climate change won't come at the expense of food security. We are determined that the solutions and policies we propose will enhance food security, not damage it.**
- 3. Agricultural and land sector will not be taken for granted to do the heavy lifting to offset emissions from other sectors that carry on with business-as-usual.**

¹ May 2024, Australian Government: [Speech to Sustainable Agriculture Summit, Toowoomba, Queensland](#)

The NFF submission to the *Agriculture and Land Sector Plan* is attached at Attachment 2 and outlines a comprehensive list of technologies and emissions reduction pathways that can be progressed to support emissions reduction within the sector. This should be read in conjunction with this submission.

Supporting and Enabling the Transition to a Net-Zero Economy

“How well is the Australian Government supporting the transition to net-zero?”

Current Progress and Policy Environment

Progress against Australia’s legislated 2030 target is on-track, with current projections from the Commonwealth Department of Climate Change, Energy, the Environment, and Water (DCCEEW) indicating a 42.6-42.7% decrease below 2005 levels by 2030². While the national trajectory remains on-track, the underlying policy environment for agriculture remains fragmented.

NFF recognise that there is an extensive body of work currently being progressed to support and enable the agriculture sector to contribute toward Australia’s emissions reduction goals. Through the support of Commonwealth funding, Rural Development Corporations and the Zero Net Agriculture Cooperative Research Centre (CRC) are advancing several research streams and projects into low-emissions farming practices. This includes examining the viability and commercial applications of a range of emerging and novel solutions such as selective breeding, feed additives for cattle and sheep, nitrogen inhibitors, and emissions reducing plant varieties.

The Methane Emissions Reduction in Livestock Program administered under DCCEEW has provided, and continues to provide a valuable platform for trialling solutions across the beef, dairy, and sheep sectors. Extension support services operating under the Carbon Farming Outreach Program (CFOP) are also critical to communicating and driving uptake among producers. In this regard, NFF welcomes the Department of Agriculture, Fisheries, and Forestry’s commitment to deliver a centralised Knowledge Bank resource by Q3 and funding for additional training and outreach activities through trusted advisors. We look forward to the Zero Net Agriculture CRC’s leadership in progressing this work under the CFOP.

While these initiatives are encouraging, embracing and adoption new technological solutions at-scale to support adaptation and emissions reduction must be viable and not come at the individual cost and expense of farmers. Within the sector, industries are at varying stages of progress in reducing emissions as some technologies are more advanced than others. However, the sector as a whole remains unable to take advantage and capitalise on these emerging opportunities. Although initial research and trials have delivered promising results, technologies have either significantly underperformed in real-

² December 2024, Australian Government, DCCEEW: [Australia’s Emissions Projections 2024 November 2024](#)

world settings, are cost prohibitive at-scale, or have inherent adoption risks that create fundamental barriers to action.

Additionally, the broader policy environment for land access and competition is creating challenges for agriculture and eroding the sector's confidence and willingness to support change. The current approach to land access for renewable energy and transmission infrastructure by Governments is fragmented, inconsistent, and failing to deliver fair outcomes for farmers and regional communities. The absence of enforceable national codes has left landholders exposed to poor consultation, inadequate compensation, and unclear planning processes. This is a reality recognised by the Prime Minister during his remarks at the Wagga Wagga Bush Summit, specifically: *"We acknowledge, of course, that community consultation hasn't always been as good as it should be, and governments need to do better there and engage"*³. This is further reflected in the 2024 National Farmer Priorities Survey, which showed declining confidence in Government consultation and understanding of farm issues, alongside growing concern around energy developments on farmland and biosecurity policy.

To support a just transition, the Commonwealth needs to take national leadership by delivering clear, enforceable guidelines for energy project engagement that embed social licence from the outset. This means projects must secure the support and willingness of landholders to proceed, that consultation is genuine and ongoing, and that there is a guarantee on the free-flow of information through (and at the very-least) in-person dialogue. Critically, Commonwealth funding through the Clean Energy Finance Corporation, the Australian Renewable Energy Agency, and others must be tied to demonstrable landholder engagement outcomes. This is an entirely reasonable and common-sense measure given the billions of dollars that have and will continue to be invested.

NFF Position on 2050 Net-Zero

NFF's current policy position is to support an economy-wide aspiration of net-zero emissions by 2050 provided that the following conditions are met:

- *There are identifiable and economically viable pathways to net neutrality, including impacts from inputs such as energy;*
- *Commonwealth and State legislation is effective, equitable, and advantageous to deliver on ground programs that benefit agricultural interests and do not provide unnecessary regulatory impediment;*
- *No sector specific targets are imposed on agriculture; and*
- *Global and local food security is considered in conjunction with overarching goals, not separately.*

The *NFF Climate Change Policy* and *Energy Policy* are attached at Attachment 3 and 4.

NFF recognises that achieving net-zero by 2050 will require emissions reductions across the economy, including from the electricity sector which remains a substantial contributor to Australia's National Greenhouse Gas Account. While renewable and other low emissions

³ August 2025, Prime Minister of Australia, The Hon Anthony Albanese MP: [Bush Summit Q&A - Wagga Wagga](#)

energy sources resemble one pathway, their deployment must not come at the expense of the agriculture sector or the regional communities that underpin food and fibre production. Consistent with the Toowoomba Principles, what is required is a clear national energy plan that works with agriculture and enhances food security. Government must ensure rural, regional and remote Australia is not disadvantaged or left behind by the transition, while also recognising and rewarding landholders, communities and industries that contribute to national emissions reduction goals (including through benefit-sharing arrangements such as reduced electricity bills or rebates and additional methodologies under the Carbon Farming Initiative).

“What changes could the Australian Government make to improve the effectiveness of existing policies or address gaps in supporting Australia’s transition to a low emissions, climate resilient, and prosperous economy? In your response, you may wish to consider areas such as:

- **Delivering emissions reductions, including accelerating the deployment of low emissions technologies and practices.”**

The NFF is concerned by recent calls to accelerate renewable energy rollout through reforms to Commonwealth planning and environmental approval processes. While there is a view being promulgated that the timeframes associated with renewable energy infrastructure engagement are delaying deployment and hindering productivity, the reality is that there is no nationally consistent standard for best practice. The system is already fragmented and inconsistent, and reforms that provide special treatment of renewable energy projects and compress approval processes risk embedding poor and inequitable outcomes for agriculture into legislation. NFF therefore does not support calls to reform the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* to require the Minister to consider the needs of the energy transition when deciding whether to approve an energy project that will have a significant impact on a Matter of National Environmental Significance as recommended by the Productivity Commission. Proposed reforms to the EPBC Act must ensure that there are appropriate safeguards in place to protect communities. Again, we reiterate that it remains Government policy to work with the agriculture sector, and that climate policy enhances (and not adversely impacts) food security.

Appropriate safeguards must be established to avoid perverse impacts on regional communities given the scale and permanence of renewable energy infrastructure. Social licence cannot be treated as an afterthought; it must be built into planning from the outset. The Commonwealth has a key role to play here in ensuring this happens by setting clear expectations for engagement. Recent developments in Victoria for example, including new laws granting VicGrid coercive powers over landholders and criminalising the blocking of access to private land for transmission projects illustrate the risks of a top-down approach. Farmers cannot continue to be sidelined in a system where rural communities bear the burden while benefits are sent elsewhere. Such an approach undermines trust and confidence and will only serve to make a transition more difficult.

- **“Addressing socio-economic priorities for a just transition, and ensuring equitable outcomes for First Nations, rural, and regional communities.”**

There must be a stronger focus on ensuring that local communities benefit from renewable energy deployment through benefit-sharing arrangements that provide adequate recognition and compensation.

The Australian Energy Infrastructure Commissioner (AEIC) has a valuable role to play in this space. We understand that Government is focussed on ensuring the AEIC has a more active and visible role in investigating examples of poor engagement and mediating complaint resolution. We seek that this commitment is strengthened and maintained.

Deploying Renewable Energy Infrastructure

“What are the main challenges to deploying the renewable energy and related infrastructure needed to reach Australia’s targets, including:

- **The 82% renewable energy target by 2030.**
- **The Capacity Investment Scheme targets (at least 26GW of renewable generation capacity and 14 GW of clean dispatchable capacity by 2030).**
- **Net-zero by 2050.”**

Decommissioning plans must be mandatory components of project approvals and embedded in agreements with landholders (this is also recognised by the AEIC). The Queensland Farmers’ Federation’s *Landholder Toolkit for Renewable Energy* provides one model and requires obligations to be endorsed by landholders and financial security for decommissioning arrangements to be guaranteed. A practical solution involves creating State-based decommissioning funds into which proponents contribute funds toward decommissioning arrangements. This approach reduces residual risk and ensures that if companies fail or exit the market, landholders and communities are not left to carry the burden. There is a mounting case to require a fidelity fund or equivalent model to mitigate risk of company bankruptcy near end of life of projects.

The Safeguard Mechanism

“How effective is the Safeguard Mechanism in driving onsite emissions reductions at Australia’s largest industrial facilities since its 2023 reform?”

The Government has stated that the reformed Safeguard Mechanism is operating as intended. Compliance data showed a 2.7 Mt CO₂-e or 1.94% decline in the year 2023-24 for Safeguard entities, marginally ahead of the national average of a 1.3% decline. While some facilities over-achieved as a total of 8.3 million Safeguard Mechanism Credits (SMCs) were issued, most compliance was achieved through offsets rather than genuine abatement as demonstrated by the large number of ACCUs (7.1 million) and SMCs (1.4 million) surrendered.

Land-based offsets currently dominate ACCU supply. However, this dependence is not sustainable. Agricultural land is finite, and sequestration potential is limited. Emissions reduction must first focus on inseting rather than offsetting – agriculture cannot continue to be the source for offsets to maintain business-as-usual for other sectors in accordance with Toowoomba Principle 3.

To address this, new methodologies should be prioritised that enable farmers to reduce emissions while at least maintaining productivity. These include developing methodologies including but not limited to feed additives, animal effluent management, farm forestry, and the Integrated Farm and Land Management Methodology. Such an approach would enable the agriculture sector to reduce its own emissions to no detriment of food and fibre production while also providing high-integrity ACCUs to contribute toward Australia's broader climate objectives.

“What changes could the Australian Government make to the mechanism to help achieve Australia's emissions reductions targets, considering for example:

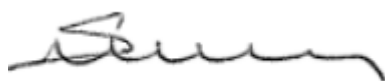
- **Coverage.**
- **Baseline settings.**
- **Decline rates.**
- **Flexibility mechanisms.**
- **Rules on ACCU use?”**

NFF supports reforms to the *Carbon Credits (Carbon Farming Initiative) Rule* 2015 to extend the 30% threshold for Ministerial intervention to all revegetation methodologies (regeneration and planting) on agricultural land where there are no other mechanisms in place. Such a measure is consistent with Toowoomba Principle 3 and ensures food and fibre production is not adversely impacted and displaced by carbon projects. It also encourages Safeguard facilities and other corporate entities to prioritise insetting over offsetting, an outcome that delivers sustainable and sustained emissions reduction.

Conclusion

Please do not hesitate to contact Warwick Ragg, General Manager, Natural Resource Management, via e-mail: WRagg@nff.org.au at the first instance to progress this discussion.

Yours sincerely,



SU MCCLUSKEY

Interim Chief Executive

Attachments List

1. *NFF Submission to the Climate Change Authority 2024 Issues Paper: Targets, Pathways, and Progress*
2. *NFF Submission to the Agriculture and Land Sectoral Decarbonisation Plan*
3. *NFF Climate Change Policy*
4. *NFF Energy Policy*



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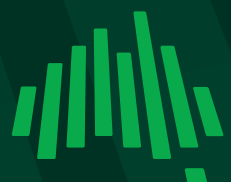
National Farmers Federation



@NationalFarmers

Climate Change Authority: 2024 Issues Paper: Targets, Pathways, and Progress

May 2024



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NFF Member Organisations



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21 May 2024

Climate Change Authority
King Edward Terrace
Parkes ACT 2600

Via email: consultation@climatechangeauthority.gov.au

Dear Sir / Madam,

RE: Climate Change Authority: 2024 Issues Paper: Targets, Pathways, and Progress

The NFF welcomes the opportunity to provide a submission to the Climate Change Authority (CCA) 2024 Issues Paper.

The NFF understands that in mid- to late-2024, the CCA will be providing a series of reports to the Commonwealth regarding national emission reduction targets and the transition to a net-zero economy. The NFF continue to be actively engaged in discussions regarding feasibility of a national net-zero target and development of sectoral decarbonisation plans for the Agriculture and Land Sector. The NFF submission to the Department of Agriculture, Fisheries, and Forestry (DAFF) public consultation on the *Agriculture and Land Sectoral Plan* is available at Attachment 1 and should be read as background material to this submission. This submission articulates a range of policy concerns and issues regarding a sectoral approach to national decarbonisation. It outlines a comprehensive list of potential technologies and solutions that exist within the sector to support a national low-emissions future. This must be considered by the CCA as a component of this consultation and its ongoing Sectoral Pathways Review.

Contextualising National Climate Policy

The NFF is aware that the Commonwealth has communicated an ambitious climate policy encompassing all sections of the national economy to drive a low-emissions future. NFF continue to remain significantly engaged in public consultation processes to ensure Australian agriculture's voice and concerns are appropriately recognised and incorporated into policy design. We have engaged in consultations such as Australia's Strategy for Nature, the National Adaptation Plan, Sectoral Plans, and Climate-Related Financial Disclosure (CRFD). NFF recognises the importance of Climate Change adaption, a failure to support a transition will result in unacceptable impacts on food and feed security both in Australia and globally. Government ambition to reduce agriculture's emissions, however, must not infringe upon our capability and responsibility to produce the nutritious food and fibre needed to feed and clothe the world. This is consistent with reports from the Food and Agriculture Organisation (FAO)¹ and Organisation for Economic Co-operation and Development (OECD) which recognise the challenges for agriculture in meeting food and fibre requirements while maintaining a downward emission trajectory.

¹ FAO, 2023: [Achieving SDG2 Without Breaching the 1.5C Threshold: A Global Roadmap – How agrifood systems transformation through accelerated climate actions will help achieving food security and nutrition, today and tomorrow.](#)

The establishment of a national 2035 target must be underpinned by robust science, it is inappropriate for targets to be framed upon high ambition without being backed by a diverse range of technology deliverables. We also note that to-date, few nations have submitted a new NDC to the Paris Agreement.

The NFF Climate Change Policy is available at Attachment 2 and should be read in conjunction with this submission.

The NFF Climate Change Policy states:

‘The NFF supports an economy-wide aspiration of net-zero emissions by 2050 provided that:

- There are identifiable and economically viable pathways to net neutrality, including impacts from inputs such as energy;***
- Commonwealth and State legislation is effective, equitable and advantageous to deliver on ground programs that benefit agricultural interests and do not provide unnecessary regulatory impediment;***
- Global and local food security is considered in conjunction with overarching goals, not separately; and***
- No sector specific targets are imposed.’***

The view of the Commonwealth as reflected public statements made by Agriculture Minister Watt during a Senate Estimates appearance on 13 February 2024² seem to support this:

- “There’s no policy being considered or implemented by the Australian government around herd reduction. Both Minister Bowen and I have already made clear that we are not proposing to introduce an emissions reduction target specifically for the ag sector.”***
- “We are not talking about setting any binding targets around methane (CH₄) reduction or anything like that.”***
- “What we’re talking about is working with the sector, which already has its own emissions reduction plans, to take them forward and help the ag sector become more sustainable.”***

We seek to ensure that this position is maintained. CCA’s advice to Federal Government and the Minister for Climate Change and Energy regarding agriculture’s contribution to a broader 2035 target and Australia’s next NDC to the Paris Agreement must be framed to align with and not conflict against this backdrop. While the Issues Paper does not explicitly refer to sector targets, the gate does appear to be ajar to do so, we would oppose such a pathway.

Maintaining a Pathway Approach

² Commonwealth of Australia, 2024: [Official Committee Hansard, Senate, Rural and Regional Affairs and Transport Legislation Committee](#)

On 11 September 2023, the Australian Parliament requested the CCA review the potential technology transition and emissions pathways that best support Australia's transition to net-zero by 2050 for six sectors; including the Agriculture and Land Sector.

The referral from Australian Parliament states in part:

1. *'The following matter be referred to the Climate Change Authority for review, in accordance with section 59(1)(a)(ii) of the Climate Change Authority Act 2011:*
 - a. *The potential technology transition and emission pathways that best support Australia's transition to net zero emissions by 2050 for the following sectors:*
 - (i) *electricity and energy;*
 - (ii) *transport;*
 - (iii) *industry and waste;*
 - (iv) *agriculture and land;*
 - (v) *resources; and*
 - (vi) *built environment'.*

The design of a national 2035 emissions reduction target to support Australia's transition to net-zero by 2050, therefore, must be framed by a pathways approach to achievement as opposed to an individual sector target approach.

The NFF would reiterate our concern that the CCA might be tempted to propose specific sector targets. This is opposed. It will be difficult and confronting enough to digest a NDC proposal with a 6 or 7 in front of it without putting a hard-to-abate sector like agriculture under direct performance pressure where it does not have a viable pathway currently available.

Targets lock sectors into specific action and ignore the complexities of on-ground circumstances. Despite an overall declining trajectory, agricultural emissions fluctuate due to variable climatic factors. A whole-of-economy approach to emissions reduction holds significant more value than an individual target sector approach. A sector-based target approach will inherently struggle to recognise, let alone predict the interrelationship between the sectors. The stark example for agriculture is the impact of landscape sequestration which inherently excludes that performance from the agricultural sector.

Australian Agriculture's Contribution

It is important to recognise that Australia agriculture actively emits and sequesters carbon-dioxide (CO₂). This is a unique attribute that not shared by other sectors of the economy. Greenhouse Gas (GHG) emissions sequestered on-farm through pastures, cropping, and trees for example are not reflected in the National Greenhouse Accounts for agriculture as this is attributed to Land-Use, Land-Use Change, and Forestry, or LULUCF, totals.

It is unclear whether this attribution has been factored into the CCA's estimation of 2020–21 agriculture's emissions (based upon 2021 Paris Agreement Inventory data) in Figure 5 of the Issues Paper. This is an important distinction, while the CCA have estimated agriculture's emissions it has not published the methodology or assumptions it has used to arrive at this conclusion. We note that the Paris Agreement Inventory records 76 Mt CO₂-e for agriculture in 2021 as opposed to 86 Mt CO₂-e by the CCA. **Agriculture's impact to national emissions must be fairly measured and reported to ensure the sector is treated**

equitably. As data utilised in this Issues Paper will presumably drive the CCA's approach to reaching its 2035 target determination and by extension what sectors should wear a greater responsibility for action, it is critical that agriculture's impact to the national GHG account is accurately understood.

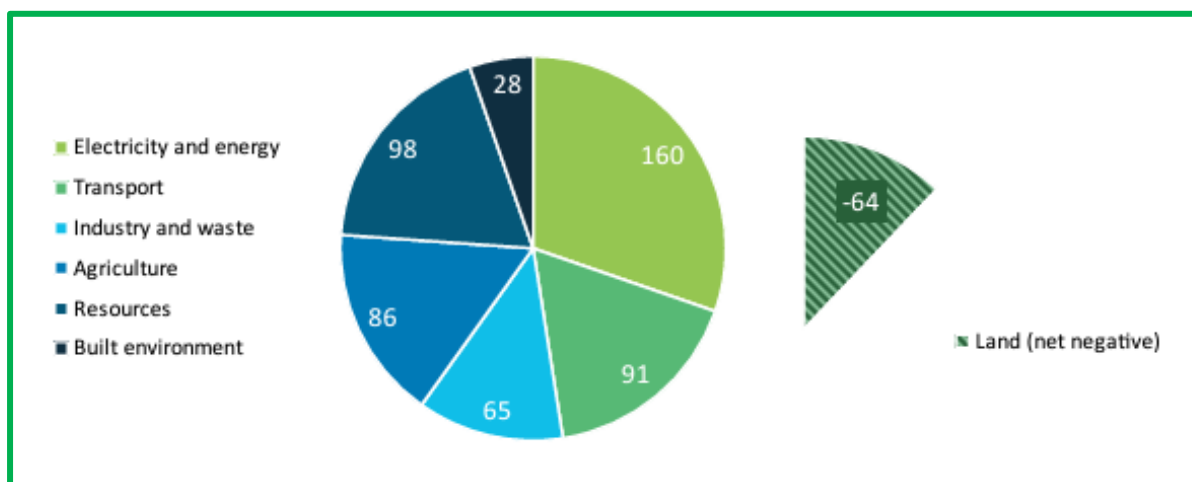


Figure 1: Figure 5 excerpt from the 2024 Issues Paper; sectoral share of Australia's emissions (Mt CO₂-e), 2020-21.

Unlike fugitive fossil fuel emissions, agricultural emissions are predominantly biological, are a natural process, and broadly cyclical in nature as they are heavily influenced by seasonal conditions favourable for production. **The Australian agriculture sector is extremely complex; the NFF highlights the following complexities below – concerning these do not appear to have been captured or recognised by the CCA in its Issues Paper:**

- Australian agriculture is a complex biological system. Unlike other sectors, there will always be an inherent carbon footprint associated with the agriculture sector to ensure we are producing nutritious food and fibre for domestic and international consumption, while contributing to global food security. FAO estimates there will be 360 million people food insecure by 2030, we cannot ignore this need and only focus on reducing emissions;
- If the total number (herd) of livestock in Australia remains constant, farmers' contribution to additional global heating through CH₄ emissions will not contribute to additional warming. If farmers reduce emissions beyond such a baseline, it will have the effect of actively reducing warming from the atmosphere;
- Animal-sourced foods contain greater quantities of high-quality protein and micro-nutrients essential for growth and cognitive development that are difficult to obtain in adequate quantities from plant-based foods alone. Cattle also provide co-benefit environmental outcomes such as fire-hazard reduction through grazing; and
- While the electrification of existing heavy machinery on-farm is one pathway towards supporting emissions reduction. There are currently few genuine electric vehicle alternatives that satisfy key operating requirements for versatility, carrying capacity, durability, extended fuel range, and on-farm servicing capabilities required to support primary production and farming families. Agricultural investment in machinery and equipment is a long-term strategy and there are no commercially

available alternatives to diesel in the short-term or foreseeable future. Farm businesses make long-term investments in machinery, the concept of switching machinery is not a short-term viable alternative.

High-Level Summary of Key Issues

- **In recognition of Australian agriculture’s unique contribution to productive landscape management, food security, and emissions reduction, climate policy (and any emissions reduction target) must provide a pathway for a profitable, productive, and sustainable agriculture sector into the future;**
- **Agriculture must not and cannot become the solution to other sector’s problems via too much focus and reliance on offsets in the agricultural landscape. The task of national emissions reduction is a shared responsibility for all sectors, agriculture will continue to play our part, we cannot be singled out as the only or primary solution to this complex problem;**
- **As stated in our Climate Change Policy, NFF recognises the importance of Climate Change adaption; *‘failure to support a transition will result in unacceptable impacts on food and feed security both in Australia and globally’*. Government ambition to reduce agriculture’s emissions, however, must not infringe upon our capability and responsibility to produce nutritious food and fibre to feed and clothe the world;**
- **Agricultural emissions are complex hard-to-abate. The complexity of the operating landscape means measurement and reporting of emissions is complex and has adoption challenges;**
- **The ambition of the 2035 national target must appropriately balance ambition with achievability. Net-zero remains an unrealistic challenge given the above commentary on food and fibre and that we do not have commercially viable and proven technologies for enteric CH₄ mitigation nor for managing volatilisation of nitrogen, let alone developed methodologies to reward farmers for their action;**
- **Critically the intrusion of offsets into the agricultural landscape, inherently attributable to the ACCU purchaser, renders that benefit ‘outside agriculture’;**
- **Alternative fuels sources would also require the roll out of large-scale commercial or Government funded transformation of alternative energy supply systems. The planning and funding of this is not even at concept stage; and**
- **The NFF supports an economy-wide aspiration of net-zero emissions by 2050 provided that and including but not limited to no sector specific targets are imposed and that there are identifiable and economically viable pathways to net-neutrality.**

Consultation Questions

Question 1:

‘How should the authority take account of climate science and Australia’s international obligations in considering possible emissions reductions targets for 2035?’

A national 2035 emissions reduction target ranging between a 65-75% reduction below 2005 levels has been floated by the CCA as a target that is both ambitious and potentially achievable if additional action is undertaken by Governments, business, investors, and households. Several reports from the FAO and OECD³ outline the challenges for agriculture in meeting food and fibre requirements to support food security, nutrition, and dependent livelihoods while maintaining a downward emission trajectory. FAO estimates there will be 360 million food insecure persons by 2030, we cannot ignore this need and only focus on reducing emissions. This is clearly outlined in the FAO *Achieving SDG2 Without Breaching the 1.5C Threshold: A Global Roadmap Report*¹ which states; “carbon sequestration efforts should not conflict with long-term growth of agricultural income by smallholders”.

Currently, Australia has an established 2030 emissions reduction target of a 43% reduction below 2005 levels. Each year, the Department of Climate Change, Energy, the Environment, and Water (DCCEEW) publishes an annual *Australia’s Emissions Projection Report* mapping the latest estimates of national GHG emissions and projected progress against the 2030 target. In its 2023 Report, DCCEEW projects that Australia will fall short of reaching the 2030 target under both the baseline and ‘with additional measures’ modelling scenarios by 6% and 1% respectively. Using 2023 projections, the following graphic (Figure 2) can be created to track Australia’s progress and assess the feasibility of the 65-75% 2035 emissions reduction target as floated by the CCA. While there does appear room for further progress under the ‘with additional measures’ scenario as several Government policies, initiatives, and measures that contribute to emissions reduction are not included in the 2023 projections, the achievability of the proposed 2035 national target appears highly unlikely – even when factoring in the following programs:

- Powering the Regions Fund;
- National Reconstruction Fund;
- Hydrogen Headstart Program;
- Expansion of the Capacity Investment Scheme; and
- Renewable Energy Transformation Agreements.

We note that the CCA has also developed its own version of this tracking graph, however it is based on limited actual data to assess achievability (2020-22), it does not capture the background context concerning historical emission trends between 2005-2020. This level of ambition is far too high, it must be reduced to appropriately account for what is achievable in the national context and reflect the limited subset of viable technological

³ OECD, 2023: [Feeding a Net-Zero World: Background paper prepared for the 44th Round Table on Sustainable Development 8 September 2023](#)

options to drive emissions reduction that are currently available to all sectors of the national economy as outlined in Appendix 3.

2005 baseline (609.44 Mt CO₂-e, Paris Agreement inventory)

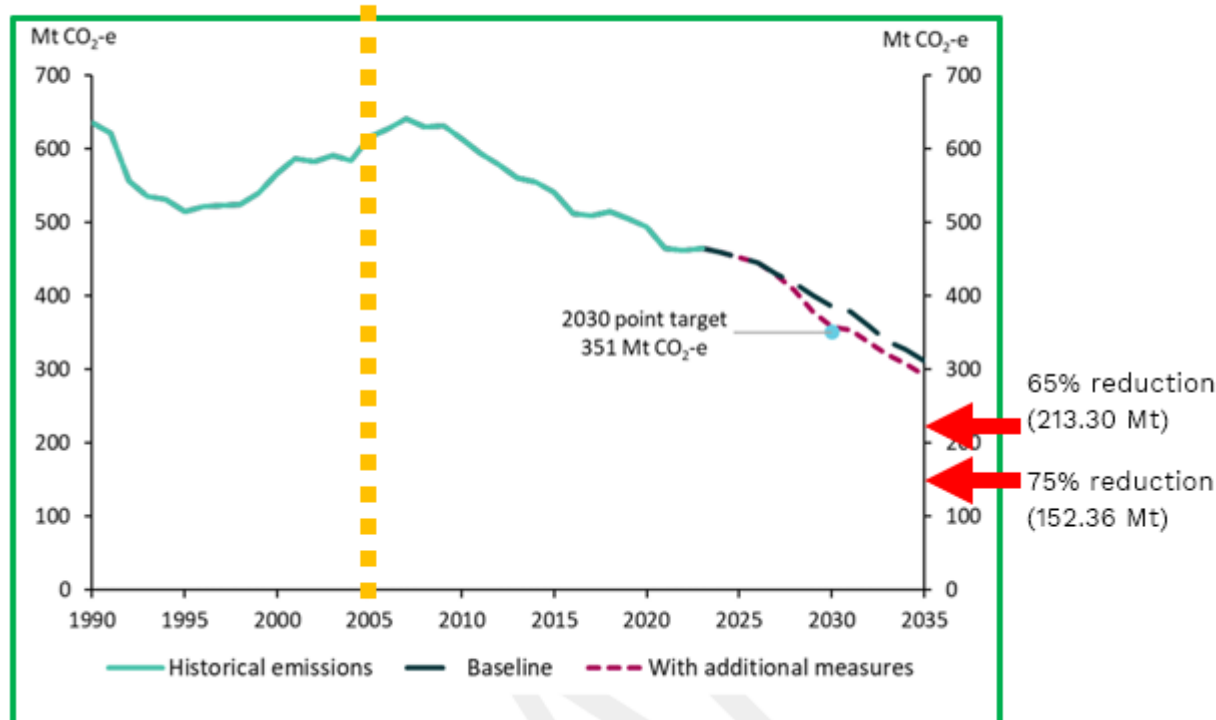


Figure 2: Australia's emissions projects baseline and 'with additional measures' scenario tracking against the 2030-emissions point target, 1990 to 2035, in Mt CO₂-e as published by DCCEEW.

- Red arrows signify a national 2035 emissions reduction target ranging between a 65-75% reduction below 2005 levels as floated by the CCA.
- The orange dotted vertical line represents the 2005 baseline.

Under Article 2 of the Paris Agreement, Parties agreed that the Agreement 'will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances'⁴.

The establishment of a national 2035 emissions reduction target must be carefully balanced to ensure there is no socio-economic disruption to the Australian community, primary producers, and farming families. The achievability of a 2035 target must not become a precursor for its adoption and driving action, the full context of anticipated impacts must be considered in equal balance with national circumstances and Australia's impact on global climate emissions in line with Article 2 of the Paris Agreement. Australia's NDC needs to be fair and equitable and supported by the appropriate level of ambition.

⁴ [United Nations, 2015: The Paris Agreement](#)

Question 2:

'How should the authority weigh the goals of ambition and achievability in considering possible emissions reductions targets for 2035?'

The NFF holds the position that the level of ambition setting for a national target must be driven by national circumstances. **Australia's national target must be designed by what is achievable in Australia. A target that would have negative impacts on elements of the economy should be avoided.**

Question 3:

'How can Australia further support other countries to decarbonise and develop sustainably?'

The NFF supports the prospect of exporting renewable technology to support other nations decarbonise. This must have no adverse impacts on agricultural production, demand for export products, or the opportunity to trade carbon credits internationally with appropriate resolution to Article 6 discussions under the Paris Agreement.

Question 4:

'What technologies are important for each sector's pathway to net-zero and why?'

A comprehensive list and analysis of the readiness, abatement potential, and adoption barriers involving technologies across all sectors of the national economy (including Agriculture and Land) to support a low-emissions future have been outlined in Appendix 3. The NFF Agriculture and Land Sectoral Plan submission details and explores the viability and barriers to adoption of the following potential technologies and solutions to support the sector contribute to national emissions reduction:

- Low-emission, commercially viable, efficient, accessible, and safe anti-methanogenic feed supplements (e.g., *Asparagopsis*, *3-Nitrooxypropanol*);
- Methanotrophs bacteria;
- Improved genetics;
- Soil carbon sequestration (i.e., carbon storage in the land);
- Slow-release and/or coated fertilisers;
- Electrification and biofuels once economically and logistically viable (i.e., fuel and energy);
- Precision agriculture (i.e., maximising on-farm efficiencies by minimising inputs); and
- Methane inhibiting pastures.

The NFF notes that the newly funded Zero Net Agriculture CRC has a comprehensive program of work outlined which will underpin the development of many of these solutions and test their viability and commercial application.

We refer the CCA to comments articulated in our prior submission which are comprehensive, in addition we also note that:

- Soil carbon is complex; there exists much variability in soil types and suitability across an agricultural landscape, including at the micro-level, and there also are saturation points which need to be considered. The strict permeance requirements for soil carbon projects (i.e., 25 to 100 years) will be increasingly threatened by natural hazard events tied to a changing climate, this is a complexity and barrier to adoption; and
- As published by the FAO, enhancing productivity in agrifood systems by increasing resource-use efficiencies under existing farm applications and methodologies can drive notable emissions reduction from livestock⁵. NFF supports these measures.

Agriculture and Land Sector

Agriculture plays a significant role in managing Australia's natural landscape. Farmers are Australia's at the forefront of sustainable land-use of over 55% of the Australian land mass (427 million hectares), 356 million hectares of which is used for agricultural production. Several industry sector ambitions have been developed, with significant progress and achievement. For example, the national red meat sector has reduced its emissions by 78% since 2005, and grains and grass-fed beef fall well below the global median for emissions intensity. As enteric fermentation from livestock represents 69% of agricultural emissions in 2023, this is a significant achievement that must be acknowledged and celebrated, and one that demonstrates the sector's steadfast commitment to climate action. **Embracing and adopting new emerging technological solutions that support further emissions reduction from the sector must be commercially viable, safe, and fit-for-purpose.**

The NFF is concerned that national climate policy is operating under the assumption that the Australian agriculture sector has the capacity to significantly reduce its emissions output beyond the current trajectory. This is clear as there has been a consultation on a proposed sectoral decarbonisation plan for the Agriculture and Land Sector and legislation seeking to introduce mandatory reporting requirements for CRFD in Australia has been tabled in the House of Representatives, and the Australian Accounting Standards Board (AASB) is currently finalising development of new Australian Sustainability Reporting Standards for CRFD.

Currently, there exists a multitude of potential solutions and technologies to support the agriculture sector reduce its emissions, these have been summarised and outlined in Appendix 3. **Although initial research and trials involving technologies such anti-methanogenic feed supplements (e.g., *Asparagopsis* and *3-Nitrooxypropanol*) appear promising, these technologies have either significantly underperformed, are cost-prohibitive to implement at-scale, do not maintain or increase productivity, or have inherent adoption risks.** It is therefore encouraging to see that this Issues Paper recognises and acknowledges that there exist several barriers of adoption within the sector for emissions reduction.

⁵ FAO, 2023: [Pathways Towards Lower Emissions: A global assessment of the greenhouse gas emissions and mitigation options from livestock agrifood systems](#)

Electricity and Energy Sector: Nuclear Energy Prohibition

The NFF seeks to ensure existing legislative prohibitions on nuclear power generation in Australia are removed from the *Environment Protection and Biodiversity Conservation Act 1999* and *Australian Radiation Protection and Nuclear Safety Act 1998*. A removal of these prohibitions will not greenlight nuclear power developments, rather it will enable the low-emissions technology to be equally considered and assessed against other existing technologies.

The NFF Energy Policy is available as Attachment 3; and states, in part:

‘Government must deliver a national energy plan that:

- ***Is technology-neutral, market-based and economy-wide, delivering affordable, reliable, and secure energy’.***

Question 5:

‘How can governments use mandates, rules, and standards to accelerate Australia’s decarbonisation? Is more planning by governments needed? If so, how should this be coordinated, and how can this be done while making the transition inclusive, adaptive, and innovative?’

As previously articulated, the NFF supports an economy-wide aspiration of net-zero emissions by 2050 provided that no sector specific targets, mandates or rules are imposed and there are identifiable and economically viable pathways to net neutrality, including impacts from inputs such as energy. We understand that this is the current intention by Government. An example is the development of Australian Sustainability Reporting Standards (ASRS) by the AASB, ASRS must be developed in an efficient manner with appropriate support from key stakeholder groups including agribusinesses who are likely to be captured. Agriculture is not accustomed to developing risk matrixes and novel approaches to estimating individual on-farm emissions to support disclosures against impending ASRS for CRFD for example. It is important to understand that standards are likely to capture all elements and levels of the national economy whether unintentional or in line with the policy intent. Therefore, thresholds must be appropriately designed and tested to ensure, whether practical or commercially viable, non-target entities such as small- and medium-sized agribusinesses which contribute very small contributions to national emissions for example are not unfairly burdened by reporting requirements. It is also noted that the US Securities and Exchange Commission have revised their reporting requirements to remove the scope 3 reporting requirement. A design feature that Australia should adopt so that we can participate globally on an equal footing.

Question 6:

‘How can governments stimulate private finance needed for the net-zero transition – are there innovative instruments that could be deployed or new business models that governments could support? Is there a bigger role for governments to play in coordinating the investment needed to transition the economy?’

Agriculture will play a contributory role in the pursuit of a 2035 and 2050 national emissions reduction target. Targeted Research and Development (R&D) to support further

innovation of new technologies is critical to navigate the sector's unique emissions challenges while ensuring continued productivity. As such, to support drive innovation within the sector, Government must invest an additional \$50 million over four years in climate-related R&D that provides robust baseline innovation, drives innovation, builds resilience, and supports communication, adoption, and extension. This is a key NFF recommendation in our 2024-25 Pre-Budget Submission to the Department of Treasury. After taking into consideration funding for research grants, programs, and initiatives like the MERiL Program (which must be continued through further funding arrangements and expanded to support and benefit primary producers and farming businesses of various scale) and the recently established Nature Repair Market, Government must consider a minimum investment of \$100 million to avoid the perception of inaction.

Question 7:

'How can governments better support markets, including carbon markets, to deliver emissions reduction outcomes?'

There needs to be a collaborative approach with primary producers that includes investment from Governments to build awareness and bring promising technologies to the commercial market. Ensuring farmers are supported by continued Government investment and extension assistance will increase awareness and attractiveness amongst participants, ensuring positive outcomes are realised at-scale.

Carbon markets must not rely on agricultural landscapes to offset Australia's emissions policies. Carbon markets must also enable co-investment and partnerships in development and roll-out of energy alternatives and mixed energy options. This may be the most viable and practical option for Australia meeting its emissions targets.

The current pricing of Australian Carbon Credit Units (ACCUs) is insufficient to support the at-scale adoption of low-emission technologies and practices (manufacturing, innovative energy transformation and delivery) in the land sector. Landholders share a widespread concern that the capital costs attributed to undertaking a long-term land management intervention will exceed prices gained from the selling of generated ACCUs, rendering any intervention economically unfeasible. While projections from DCCEEW anticipate a two-fold increase in ACCU prices, resulting in a significant increase in the issuance of ACCUs across the land sector, prices are projected to peak and plateau by 2031. A projected increase in ACCU prices from approximately \$48 to \$85 (not including other barriers to adoption outlined in Question 4) will be insufficient to incentivise agribusinesses to adopt long-term management interventions to substitute conventional forms of on-farm income. Carbon markets, therefore, cannot be viewed as the only solution to support emissions reduction for the sector. A current example is that initial commercial piloting of *Asparagopsis* revealed no productive gain meaning the full cost of the mitigation would need to be met by a carbon payment. At a cost of \$2 per head per day that extrapolated to a carbon price needing to be in the \$200-400 range.

Question 8:

'What further actions can be taken by governments (e.g., through public funding), the private sector, and households to accelerate emissions reductions, including in relation to

the deployment of technologies and access to new opportunities in the transition to net-zero? What barriers stand in the way and how could they be overcome?’

Refer to NFF responses to consultation Question 4 and 13.

NFF also highlights the importance of looking beyond a focus on agriculture and/or its various sectors in its production systems.

Public or private funding and partnerships could meet multiple objectives for Australia’s social and economic future. These could not only help Australia meet net-zero by 2050 but also significant socio-economic benefits. For example, funded partnerships can roll-out investments in power supply systems across rural landscapes. This includes transition away from single phase power poles to three phase power supply across rural regions.

Funding investments and partnerships could be further developed for solar conversion to replace diesel fuel driven pumps and/or create mutual benefits for energy transformation.

Question 9:

‘How should governments decide upon the appropriate allocation of resources towards reducing emissions, removing carbon from the atmosphere, and adapting to climate change impacts?’

Government should recognise that agriculture is a hard-to-abate sector and a complex biophysical asset. Aside from previous narratives around the limitations on agriculture’s progress, recognising and correctly attributing emissions in an equitable manner will be of assistance. For example, in two paradigms agriculture’s emissions as they relate to enteric CH₄ are poorly reported. Reporting (in parallel if necessary with GWP100) enteric CH₄ under GWP* would give a more realistic view of those emissions as would additional reporting under the IPCC’s AR6 GWP values which have been specifically adjusted to treat enteric CH₄ relatively more fairly than AR5 does against fossil driven CH₄. Such practices would align with Article 2 of the Paris Agreement relating to equitable reporting and will add a further layer of evidence that would be available to resist ongoing demands for herd reduction and other pressures on agriculture.

Table 1: Comparison of IPCC GHG GWP across AR4, AR5, and AR6 Assessment Reports for key GHGs.

Greenhouse Gas	100-Year Time Period			
	AR4 2007	AR5 2014	AR6 2021	
	Feedback Not Included		Feedback Included	
CO ₂	1	1	1	1
CH ₄ fossil origin	25	28	34	29.8
CH ₄ non-fossil origin				27.2
N ₂ O	298	265	298	273

Question 10:

'How can governments, businesses and people, including First Nations people, help ensure the benefits and burdens of the net-zero transition are equitably shared?'

No comment.

Question 11:

'How can governments better ensure First Nations people are empowered to play a leading role in the development and implementation of climate change policies and actions, including as they relate to the ongoing curation of the Indigenous estate?'

NFF recognises the role First Nations people have and continue to play in managing Australia's land resources, including work currently undertaken in Indigenous Protected Areas and the Indigenous estate. First Nations will play an important complementary role in the development and implementation of climate policy and action in the Agriculture and Land Sector; this needs to be supported by appropriate Government engagement in parallel with primary producers.

Question 12:

'How can Australian governments support the wellbeing of workers, communities, and regions as the nation decarbonises, including in relation to cost of living, workforce, and industry transition and access to low-emissions technologies and services?'

Government ambition to establish a 2035 national emission reduction target including the agriculture sector must not come to the detriment of food and fibre production and security. It is the position of NFF that if a national target is appropriately balanced with national circumstances and sectoral complexities (i.e., potential technologies are commercially viable, reporting and disclosure of emissions is not subject to unreasonable cost, and there are robust privacy protections for data), the wellbeing of industry and farming families will be protected.

The cost burden of meeting emissions trajectories and associated reporting must be a shared responsibility. It is insufficient to have reporting or performance requirements that focus on outcomes from the agricultural sector that patient capital providers and shareholders advocates fail to recognise as a cost. Shareholder and equity returns must acknowledge the costs of climate performance, be explicitly willing to contribute to that cost. Ethical or responsible investment must come with an acknowledgment that returns will be diminished, otherwise it is just massive cost shifting that adversely impacts the already tight margins agriculture operates under.

Question 13:

'How can governments help Australians prepare for and respond to the impacts of climate change?'

There is a strong need for enhanced guidance by Australian Governments on how to manage and incentivise the adoption of low-emissions projects that have multiple co-

benefits. The NFF envisage a future whereby both the public and private sectors are providing R&D assistance to support national climate adaptation. Adaptation must be supported, and not come to the individual expense or detriment of primary producers and farming families. This could be enabled by offering a variety of entry-points developed in consultation with landholders and market operators. Focussed pilots for developing measurement technologies, utilising 'no regrets' test beds of new technologies for trialists, and ensuring that designed solutions are farmer-centric, not a burden on farmers are key actions for Governments.

The NFF is also aware that a new national heat index mapping tool designed to assist local communities and decision-makers make improved management decisions as it relates to extreme heat has been recently released. The development and public accessibility of such information databases will play can be a useful mechanism to support primary producers prepare for the impacts of a changing climate (i.e., through early-prevention and informed farm management practices). NFF supports such measures by Government to this effect as long as these resources remain an informative tool only and do not become an enabling process to influence or prohibit financial flows for operating agribusinesses.

Question 14:

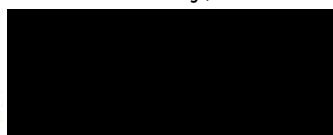
'What else should the authority be considering in its advice to government?'

This is discussed elsewhere in the submission.

Conclusion

The NFF thanks the CCA for the opportunity to provide a formal submission to this Issues Paper and drive the ongoing development of Australia's next NDC to the Paris Agreement. We look forward to further engagement opportunities throughout the 2024 period. Please do not hesitate to contact Warwick Ragg, General Manager, Natural Resource Management, via e-mail: WRagg@nff.org.au at the first instance to progress this discussion.

Yours sincerely,



TONY MAHAR

Chief Executive Officer

Attachments List:

- **Attachment 1: NFF Agriculture and Land Sectoral Plan Submission**
- **Attachment 2: NFF Climate Change Policy**
- **Attachment 3: NFF Energy Policy**



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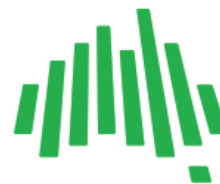
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National Farmers Federation



@NationalFarmers



20 December 2023

Department of Agriculture, Fisheries, and Forestry
Climate Policy Branch
Marcus Clarke St
Canberra ACT 2601

Dear Sir/Madam,

RE: Agriculture, Land, and Emissions Discussion Paper

The National Farmers' Federation (NFF) is the voice of Australian farmers.

The NFF was established in 1979 as the national peak body representing farmers and more broadly, agriculture across Australia. The NFF's membership comprises all of Australia's major agricultural commodities across the breadth and the length of the supply chain.

Operating under a federated structure, individual farmers join their respective state farm organisation and/or national commodity council. These organisations form the NFF.

The NFF represents Australian agriculture on national and foreign policy issues including workplace relations, trade, and natural resource management. Our members complement this work through the delivery of direct 'grass roots' member services as well as state-based policy and commodity-specific interests.

Overview

Government must recognise Australian agriculture's unique contribution to productive landscape management, food security, and emissions reduction. Agriculture must not and cannot become the solution to other sector's problems via too much focus and reliance on offsets in the agricultural landscape. The task of national emissions reduction is a shared responsibility for all sectors, agriculture will continue to play our part, we cannot be singled out as the only or primary solution to this complex problem.

The NFF welcomes the opportunity to provide strategic comment to further shape the direction of Government's proposed Agriculture and Land Plan to guide Australia's 2050 net-zero ambition. We thank the Department for their proactive, extensive, and ongoing outreach with industry on this critical issue, and we appreciate that the proposed Plan has been developed without prefabricated assumptions. NFF have so far experienced little engagement with DCCEEW who is responsible for drafting the 'Land' component of the proposed Plan. Agriculture, and by extension the NFF, is the key impacted stakeholder in this process. We therefore seek that DCCEEW be more proactive in its engagement with NFF in the ongoing consultation process.



The NFF has carefully reviewed and considered the questions raised in the Agriculture, Land, and Emissions Discussion Paper, and we have provided responses where relevant. The Discussion Paper has been segmented into five key sections; our submission has been structured accordingly.

Background

Agriculture and Food Security

Agriculture is a complex sector as emissions output is fundamentally and inextricably linked to the production and supply of nutritious food and fibre for domestic and international consumers. It is critical that the sector continues down the pathway of emissions reduction, and, that in a transition to a national low-carbon economy, we adequately acknowledge and remember the need to strike the right balance between feeding and clothing the population and minimising agriculture's impact.

The Australian agriculture sector has established a vision to become a \$100 billion industry by 2030¹. We have made significant progress to-date, reaching a record valuation of \$92 billion during the 2022-23 financial year. \$83 billion was attributed to exports, and approximately 72% of total production was exported to the international market². As global hunger is forecast to reach 600 million by 2030³. Australian agriculture will play an increasingly important role in producing the nutritious food and fibre required to safeguard global food security. Each Australian farmer produces enough food to feed 600 people each year, 150 at home and 450 abroad.

It is clear, therefore, that agriculture has an imperative to feed and clothe the world. Government ambition to reduce agriculture's emissions must not come to the detriment of food and fibre production and the economic prosperity of the 300,000 Australians that it employs⁴.

Industry Complexities

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?

In recognition of Australian agriculture's unique contribution to productive landscape management, food security, and emissions reduction, climate policy must provide a

¹ NFF 2030 Roadmap: Australian Agriculture's Plan for a \$100 Billion Industry

² ABARES Insights March 2023: Snapshot of Australian Agriculture 2023

³ FAO 2023: The State of Food Security and Nutrition in the World: Urbanisation, Agrifood Systems, Transformation and Health Diets Across the Regional-Urban Continuum

⁴ <https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia-detailed/latest-release>

pathway for a profitable, productive, and sustainable agriculture sector into the future. Agriculture is a complex sector, and it remains difficult for us assess the full scope of our achievement, Government must recognise this into the design of the Plan to ensure the sector is treated equitably.

NFF's 2023 Climate Change Policy is attached as Appendix Item 1.

Agriculture plays a significant role in managing Australia's natural landscape. Farmers are Australia's frontline environmentalists and oversee the sustainable use of over 55% of the Australian land mass (427 million hectares), 356 million hectares of which is used for agricultural production. 7.6 million hectares of cattle producing land has been identified for conservation or protection purposes⁵, and the sector remains at the forefront of climate action, having reduced emissions by 4.4% (3.8 Mt CO₂-e) since 2005 levels⁶. Several industry sector ambitions have also been developed, with significant progress and achievement. For example, the national red-meat industry has reduced its emissions by 65% since 2005, and grains and grass-fed beef fall well below the global median for emissions intensity⁶. As enteric fermentation from livestock represents 69% of agricultural emissions in 2023⁷, this is a significant achievement that must be acknowledged and celebrated, and one that demonstrates the sector's steadfast commitment to climate action, often at the individual cost and expense of farmers.

Agriculture is also distinctly unique as it the only sector that actively sequesters carbon from the atmosphere. GHG emissions sequestered on-farm through pastures, cropping, and trees for example are not reflected in the National Greenhouse Accounts for agriculture as this is attributed to LULUCF totals. Carbon is also embedded in all agricultural produce; these are complexities that make it difficult to assess agriculture's contribution to emissions reduction, and ones that must be recognised in the ongoing design process of the Plan.

Unlike fugitive fossil fuel emissions, agricultural emissions are predominantly biological, are a natural process, and broadly cyclical in nature. Recognising that CH₄ has a significantly lower atmospheric lifetime (12 years) than CO₂ which can persist for decades longer, CH₄ emissions from livestock are not as persistent or damaging as CO₂ emitted from fossil fuels. Furthermore, if the total number of livestock in Australia remains constant, farmers' contribution to additional global heating through CH₄ emissions from the national herd will not contribute to additional warming. Prof. Mitloehner and Prof. Allen, two livestock experts in the field agree there is a task for ruminant agriculture, but it must be viewed through an appropriate prism of a need for innovation, realistic ambition, and more accurate reporting. If farmers reduce emissions beyond this baseline, it will have the equivalent effect of actively reducing warming from the atmosphere, and hence must be rewarded. Agriculture

⁵ FAO Global Conference on Sustainable Livestock Transformation

⁶ DCCEEW 2023: Quarterly Update of Australia's National Greenhouse Gas Inventory: June 2023

⁷ DCCEEW November 2023: Australia's Emissions Projections 2023

will continue to contribute; other sectors will appropriately achieve reductions much more sharply.

Developing Emissions Pathways

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?

Unlike the fossil fuel sector, agriculture is not captured under existing frameworks or regulatory frameworks to reduce its emissions (i.e., Safeguard Mechanism). Subsequently, as the Safeguard Mechanism begins to take effect, over the medium- and longer-term, agriculture's share of total emissions, while declining as a trajectory share, will increase as a proportion of the National Inventory. This will place additional focus on the sector. This must not be taken as a reason to demand greater performance from agriculture which has been previously articulated in this submission.

Agriculture Cannot Reach 2050 'Net-Zero'

Unlike other sectors where sectoral plans are also in development, net-zero remains a distinct impossibility for agriculture. While technological innovation has and will continue to support ongoing emissions reduction, food and fibre cannot be produced without emissions.

The recently published DCCEEW '*Emissions Projection 2023 Report*' forecasts future emissions from the agriculture sector. Between 2025-35, emissions are projected to remain constant at approximately 80 Mt CO₂-e. This trend can be extrapolated outward to 2050, and paints a clear, unambiguous picture: agriculture is highly unlikely to reach net-zero by 2050.

Furthermore, NFF recognises that the IPCC propose to achieve climate neutral outcomes for methane (a 50% reduction from 2005 levels is required) and for N₂O (a 20% reduction by 2050). While ambitious, the transformation required to achieve climate-neutrality is constrained by significant barriers (i.e., introducing new technologies and innovation at-scale) and as such, there is an expectation that agriculture is unlikely to reach net-zero.

The Need for Higher Ambition

While the agriculture sector recognises that climate change can negatively impact agricultural productivity and profitability, and emissions reduction will mitigate the extent of this risk, action should be built around a trajectory approach rather than a hard target. The NFF supports an economy-wide aspiration of net-zero emissions by 2050 provided that no sector specific targets or taxes are imposed. We understand that this is the current intention by Government, and we stress that this remains the case. It is our position that

targets are the least attractive mechanism of choice, they lock sectors into specific action and ignore the complexities of on-ground circumstances. Despite an overall declining trajectory, year-over-year agricultural emissions fluctuate due to variable climatic factors favourable to production – this makes achievement of a hard target difficult and generates uncertainty.

To account for the variable nature of emissions reporting and fact that technological development is ongoing and rapidly evolving, we recommend that a routine review process on a proposed basis of five-years is established for the Agriculture and Land Plan. This will ensure the Plan is aligned to established science and technological developments.

Opportunities for First Nations

NFF recognises the role indigenous peoples have and continue to play in managing Australia's land resources including biodiversity conservation work undertaken in Indigenous Protected Areas. Utilising First Nations knowledge in land management are important attributes, they need to be viewed in collaboration and conjunction with a number of contemporary farming practices and mechanisms that are already contributing to sustainable and resilient landscapes.

Building on Existing Effort and Knowledge

Significant progress on emissions has already been achieved by the agriculture sector through its focus on productivity, investment in technology and innovation, and its implementation of improved land management practices. We remain committed to continued improvement.

Industry Leadership

A range of actions have been undertaken by the sector to address climate change. There exist several industry climate ambitions of varying scope, these have been represented in the Discussion Paper.

In addition to industry climate commitments, several frameworks, and models to demonstrate agricultural sustainability and on-farm natural capital are also being developed. These include the Australian Agricultural Sustainability Framework, Farming for the Future, and AgCarE model which all need continued support.

Environmental Offsets

Carbon offsets, specifically vegetative sinks, are likely to be one of several mechanisms of choice to support Government's ambition towards a national 2050 net-zero target. The intersection between offsets and agriculture is a point of concern to the NFF. Offsets in an agricultural landscape risk compromising the availability of productive land. Any mechanism

must focus on less productive (or most suitable) land for establishment. Otherwise, offsets will create perverse social, economic, and environmental outcomes to the sector and natural environment. These include:

- Diminished capability to produce nutritious food and fibre for domestic and international consumers;
- Diminished farm income earnings potential and business resilience;
- Diminished regional employment opportunities;
- Creating greater fire risk;
- Using agriculture as a solution for other sectors rather than them resolving their own challenges in more persistent ways; and
- The creation of refuges and safe harbors for invasive plants, weed, and animal species. Impacts include destruction of crops and pastures, damaged fence infrastructure, spreading of disease to livestock and humans, and predation of livestock and native species (i.e., biodiversity decline).

The fundamental issue is that vegetative offsets are not a medium- or long-term solution for polluting sectors. If they are simply balancing their emissions by creating offsets, then we very quickly run out of land and the permanence of the sequestration via woody perennials exacerbates that problem.

The Importance of Technological Innovation and Research and Development

Unlike other sectors, agricultural emissions are complex and notoriously hard-to-abate. It is NFFs position that technological innovation will play a critical role in continued achievement. Government must continue to support the sector to reduce its emissions through a continuation and strengthening of investment to drive and incentivise innovation and increase the commercial viability of emerging technologies. The benefits of targeted Government investment and schemes must be shared amongst all farm producers. This will allow the entire sector to continue reducing its emissions whilst building adaptive capacity and improved resilience to climate change.

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

What are the practical solutions to increase uptake?

There exists a suite of opportunities currently employed by and undergoing exploration by the sector to reduce emissions at the direct source (point), site, or atmospheric level, and build carbon stores on land. A comprehensive list is detailed:

- Low-emission anti-methanogenic feed supplements (i.e., *Asparagopsis*, 3-Nitrooxypropanol);
- Methanotrophs bacteria;

- Improved genetics;
- Soil carbon sequestration;
- Slow-release and coated fertilisers;
- Conservation tillage;
- Electrification and biofuels;
- Precision agriculture (i.e., maximising on-farm efficiencies by minimising inputs); and
- Other novel approaches not yet developed.

Anti-Methanogenic Feed Additives

A significant body of research and commercial trials into the viability of anti-methanogenic feed additives across ruminant systems for *Asparagopsis* seaweed and 3-Nitrooxypropanol (3-NOP) is ongoing. Research has primarily been conducted in confined animal settings, and there exists a strong need to conduct further research to develop, adapt, and evaluate anti-methanogenic strategies for extensive grazing systems. To-date, results have largely produced encouraging results, however the extent of observed successes appear dose and geographical dependent. Anti-methanogenic feed additives nevertheless appear to be the dominant mechanism of interest by Government and International Organisations in supporting agriculture reduce its emissions. However, it does have attached its own challenges, complexities, and barriers of adoption. This will be explored in the proceeding section.

Asparagopsis

Two red seaweeds (*Asparagopsis Taxiformis* and *Asparagopsis Armata*) have demonstrable real-world high-inhibitory effects on CH₄ production. Other seaweeds with a high CH₄ mitigation potential are also identified, and include⁸:

1. *Cladophora patentiramea* (green);
2. *Cystoseira tri-nodis* (brown);
3. *Dictyota bartayresii* (brown);
4. *Gigartina* spp. (red);
5. *Padina australis* (brown); and
6. *Ulva* spp. (green).

Studies involving sheep, beef, and dairy cows report dose-dependent decreases of CH₄ production ranging between 9-98% when diet is supplemented with *Asparagopsis*. For instance, a University of New England study recorded emission reductions of 95% amongst cattle fed a feedlot diet of *Asparagopsis* oil – other studies reported a more subdued outcome of 28% (however at lower dosages)⁹. Research regarding body mass gain and the safety aspect of *Asparagopsis* remains vexed. While several studies indicate bromoform

⁸ FAO 2023: Methane Emissions in Livestock and Rice Systems: Sources, Quantification, Mitigation and Metrics

⁹ MLA July 2023: Final Report: Effect of Asparagopsis Extract in a Canola Oil Carrier for Long-Fed Wagyu Cattle

residues are not detected in the meat or fat of sheep and beef fed *Asparagopsis*, an accumulation of iodine and bromide in dairy milk and health problems observed in sheep accustomed to consuming large amounts of seaweed in coastal regions is reported. This marks a significant hurdle. In alignment with FAO recommendations, Government (through the administration of the MERiL Program) must prioritise research projects in the following key areas:

- Research to determine CH₄ mitigation and productivity changes under different diet and management conditions;
- Research to determine what concentration thresholds are to be established to safeguard animal health and human safety; and
- Effective methods for growing, processing, and storing *Asparagopsis* including how to improve its palatability and efficient delivery methods (especially in extensive grazing systems).

3-Nitrooxypropanol (3-NOP)

Several meta-analyses that control for the effect of diet composition indicate a decrease in CH₄ production attributed to 3-NOP dosage greater in dairy (-23.9% and -38.2%) than beef cattle (-21.1% and -26.1%). Models that include a 3-NOP only dosage indicate a 32.7% decrease in CH₄ production at an average dose of 70.5 mg/kg DM. A more recent 2023 Australian trial conducted by the University of New England in Armidale; Northern NSW, generated promising results. Over a 112-day period feeding period (barley-based diet) where dosage was increased through time, a 90% inhibition of CH₄ was recorded, reaching 99% at selected times¹⁰. This research supports 3-NOP to be a viable anti-methanogenic feed additive, one with proven real-world inhibitory effects. Research must focus on the need to develop a stable form of 3-NOP for grazing animals, or a slow-release form that could be fed less frequently.

Anti-Methanogenic Feed Additives: Barriers to Adoption

The CO₂ emissions of producing, harvesting, processing (drying), storing, and transporting seaweed at scale must be considered to determine the viability and net GHG intensity impact of adoption.

Despite technological advancements, economically affordable enteric CH₄ mitigation solutions remain scarce. There exists a cost-prohibitive barrier to action, one that cannot be overcome unless an incremental increase in the price of animal products produced with a lower carbon footprint, a consistent improvement in animal performance, and/or a substantive carbon mitigation payment, is achieved. Other risks include potential for altered meat and milk flavour and odour, the rapid time required to dry seaweed to prevent

¹⁰ <https://www.abc.net.au/news/2023-10-12/dutch-feed-additive-bovatear-cattle-methane-emissions-australia/102905724>

mould development (which is energy intensive), and the poor activation of biochemical compounds⁸.

The development of new ACCU methodologies may address the cost-prohibitive barrier to adoption (this is discussed in greater detail in the below sections). Although projected increases in ACCU prices from \$38 a tonne to approximately \$48 to \$85 a tonne by 2035 will increase the viability of *Asparagopsis* uptake, studies show ACCU prices may need to reach \$400 to \$600 a tonne for *Asparagopsis* to be viable. This will be dependent on processing delivery and utilisation efficiency outcomes. As such, additional and ongoing Government investment into initiatives like the MERiL Program that help address this shortfall are critical.

Feeding cattle seaweed is not a straightforward process as commended by the environment and green sector, it cannot be viewed as the single solution toward reducing emissions from agriculture. Based on available industry data and projections, 1.25 million cattle are currently in feedlot (equating to approximately 4.36% of the national herd). On average, livestock cattle spend an average of 50 to 120 days in feedlot. While some studies demonstrate an inhibition of methanogenesis of 50% or greater is possible with 1% or less *Asparagopsis* in the diet, dietary supplementation can only be done in feedlot as the current science dictates doses need be administered on a routine daily basis to maximise inhibitory effects. These factors (herd potential and time spent in feedlot) diminish the beneficial impact of this technology. There also exist supply and logistical issues on how to get the product to farm in substantial quantities at an affordable price. This is a major limitation of feed additives, and one unlikely to be adequately addressed in a timely manner by market forces alone, this will require Government support and targeted investment.

Carbon Storage in the Land

Australian farmers are global leaders in adopting practices and technologies that decrease soil emissions and maximise soil sequestration. Improved soil carbon storage through conservation grazing and minimum tillage are notable examples.

Barriers to action around soil carbon mainly stem around permanence risks, and a lack of supporting ACCU methodologies and Government incentives to offset input and lost production costs and encourage uptake. There also exist several challenges for soil carbon to become a tradable product. 15-year trials for soil carbon conducted by DPIE confirm major variances in soil types across landscapes, and a multitude of factors that have the potential to diminish established gains (i.e., climate, fire regimes, pasture type). As such, Government must ensure soil carbon projects are adequately rewarded, and appropriate prices are established and incorporated into methodologies. In doing so, Government must recognise and soil carbon for all its attributes, not just exclusively for ACCUs, and that

projects do not conflict with the “long-term growth of agricultural income and production” as stated in the FAO Global Roadmap on SDG2 unveiled during COP28¹¹.

To increase uptake of soil carbon storage on land, Government must work to improve community knowledge and understanding of the benefits of soil carbon, including its natural capital benefits, and mobilise financial support and investment. All options for sequestration should be under consideration. Limiting methodologies to, for example, only native species, or only for timber outcomes risks lost opportunities.

Slow-Release Fertilisers

Nitrogen fertilisers are essential for crop growth and yield, and they underpin farm productivity for cropping and horticulture enterprises and grazing systems with improved pastures. It is imperative that nitrogen fertilisers remain available and affordable. Equally measures to minimise losses or maximise utilisation of highly volatile nitrogen products such as urea need continued assessment and innovation to optimise efficiency with limited loss.

Policies that attempt to reduce the use of nitrogen fertilisers will create negative consequences for agricultural productivity, profitability, regional employment, and food security. Experiences in Europe highlight the extent to which these impacts can cause socially, economically, and politically.

While nitrification inhibitors are proven effective at reducing N₂O emissions, they remain cost-ineffective for growers to implement. The cost of urea fertiliser coated with a nitrification inhibitor is around 14% more expensive per unit of nitrogen applied compared to its conventional non-coated counterpart. A public good outcome can therefore be achieved through Government action, potentially via the creation of a pre-farm treated fertiliser aggregation payment method as commended by Prof. Richard Eckard and Prof. Peter Grace. As detailed in their White Paper, the proposed aggregation payment method could work as follows:

- Government to engage in a pre-farm aggregation of N₂O abatement where a limited number of fertiliser manufacturers engage directly with Government to precoat fertiliser products (i.e., urea) at an agreed price per tonne;
- Agreed price is established with the aim of neutralising the cost differential between standard and treated nitrogen fertiliser; and
- Payment is then passed down to the individual grower (e.g., reduced price for treated nitrogen fertiliser).

NFF recognises this proposal and requests Government direct its attention towards its assessment. Such an action could address and help overcome the cost prohibitive barrier

¹¹ FAO 2023: Achieving SDG2 Without Breaching the 1.5C Threshold: A Global Roadmap

preventing the widespread adoption of nitrification inhibitors. This proposal is attached as Appendix Item 2. Assessment must include risk analyses including for price transparency and biophysical impacts.

Fuel and Energy

The NFF recognises that fuel and energy use by the agriculture sector represent a small, yet significant addition source of emissions. While the electrification of existing heavy machinery on-farm is one pathway towards emissions reduction, progress will be significantly constrained by the high torque and intense duty cycle requirements for heavy machinery and vehicles and higher cost compared to conventional alternatives. As over 80% of energy consumed on farm comes from diesel, electrification may not be the most viable solution. Other pathways like low- or zero-carbon fuels also require consideration. The Discussion Paper must recognise that biofuels from sugar bagasse and other agricultural waste are considered as carbon-neutral fuels and represent a simple yet rapid path to decarbonisation for heavy transport sectors, as transition requires minimal changes to existing equipment and infrastructure. Government assistance and incentives to encourage biofuel projects that use agricultural waste and residues must be provided.

There are range of other opportunities such as closed loop solar/batteries for grain handling equipment, renewable sources for watering systems, and renewable power for refrigeration systems that will all benefit from broader economy innovation and efficiencies that can then be applied to agriculture systems.

It is important to recognise that similarly to the mining sector, most utilisation will be remote and logistics systems for, for example, fuel cells will need to be well thought through for viability and economic equivalence as a policy pre-requisite for implementation. A legitimate transition timeframe will also need to be developed with industry.

Building a National Coordinated Plan: Bringing Together Existing Effort and New Initiatives

When bringing together existing effort and new initiatives into one coordinate plan to map and drive forward emissions reduction from agriculture, Government consultation with industry must be genuine, proactive, and ongoing. Any new regulatory development must be cross-referenced with existing state and national initiatives, and where necessary, new, and existing regulation adjusted to ensure coherence, alignment, and simplicity. Reducing the complexity of new regulatory processes and ensuring consistency with existing processes will build industry confidence and trust in the process and encourage participation.

Additional Opportunities to Reduce Emissions

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

In the immediate term, the most important options to be further adopted or supported mainly centre around getting feed additives to the farm-gate and developing new incentives to reward farmers who reduce their emissions (real progress on a broadly adoptable Integrated Farm Methodology). While R&D into other promising technologies is ongoing (i.e., direct-fed microbials, chemical inhibitors like *Sodium 2-bromoethanesulfonate*, methanotrophic bacterium), they lack the sufficient research base or industry support to warrant a redirection of Government focus. Government must also recognise and support the ongoing access to herbicides (e.g., glyphosate) which enable conservation tillage and soil carbon storage.

The MERiL Program is a Commonwealth initiative designed to make agriculture more sustainable by investing in low-emission feedstock technologies. To-date the program has invested nearly \$10 million in supporting farmers undertake R&D into technologies that deliver low-emission on-farm outcomes (i.e., feed additives), with the available pool of funding increase in each Stage. The NFF is a strong advocate of this Program, and the promising research and literature that has emerged from this process for *Asparagopsis* and 3-NOP specifically showcases what is possible if Government partner with and adequately support industry demonstrate technology solutions that reduce on-farm emissions. Additional funding to support new grant recipients beyond Stage 3 will be a key industry need, as well as the development of new Commonwealth initiatives targeted in different industry areas (i.e., nitrification inhibition).

Total Funding MERiL Program – Grant Recipients		
Stage 1	Stage 2	Stage 3
\$4 million	\$4.98 million	TBD

Development of ACCU Methodologies

Extensive research into emerging technologies will ensure sufficient, robust data can be collected and analysed to inform the future development of ACCU methodologies for methane mitigation. In alignment with the FAO Roadmap, Government must mobilise support and investment (including private sector investment and financial incentives linked to climate change initiatives), the development of methodologies is one pathway. It is essential that the development of relevant ACCU methodologies is process driven and scientifically informed. Barriers to action can be distinguished into two main areas:

1. ACCU method generation can take several years, even under the proponent-led process; and
2. Getting the product on-ground to the herd.

Given the significance of ACCU methods, it is essential that sufficient time is provided to ensure that the design process is scientifically informed, and simply done 'right'. This means that the development of new methodologies can take a significant amount of time to develop (i.e., several years), particularly when they generate high levels of stakeholder interest as anticipated for methane. This creates the first barrier to action. Until relevant methodologies are developed, industry will be required to bear the cost burden of adoption (especially small individual landholders that are not the target of the MERiL Program). Without adequate Government support, the cost of adoption for farmers will be extensive and ongoing, this does not factor into likely supply chain issues of getting a novel product to the farm-gate. As such, NFF supports greater ambition to reduce the development timeframe of new method development, and the period for developers to submit a draft method for consideration by the Integrity Committee after EOI approval could be reduced substantially. An expansion of the MERiL Scheme should also be considered.

NFF's 'ACCU Review Discussion Paper' submission is attached below as Appendix Item 3.

Supporting and Enabling Change

Government's role in supporting drive innovation, emissions reduction, and build capacity while supporting profitable production.

Agriculture will play an important role in the pursuit of 2050 national net-zero. Targeted R&D is critical to navigate the sector's unique emissions challenges while ensuring continued productivity. As such, to support drive innovation within the sector, Government must invest an additional \$50 million over four years in climate-related R&D that provides robust baseline innovation, drives innovation, builds resilience, and supports communication, adoption, and extension. After taking into consideration funding for research grants, programs, and initiatives like the MERiL Program and the recently established Nature Repair Market, Government must consider a minimum investment of \$100 million to avoid the perception of inaction.

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?

Given risk is a major barrier to innovation, Government must improve the attractiveness and feasibility of the 'trialability' of new technologies to incentivise participation. This could be enabled by offering a variety of entry-points developed in consultation with landholders and market operators. Focussed pilots for developing measurement technologies, utilising

‘nor regrets’ test beds for new technologies that to not prevent proven technologies to be unavailable to trialists (a clear threat with potential new grazing feedstocks) and ensuring that designed solutions are farmer centric, not a burden on farmers.

Future industry consultation on the development of this Plan must be centred around and gravitate toward the following priorities:

1. How and where can industry find the skills for a range of needs such as tradespersons, accountants, and lawyers, as Government engages in repairs and advice in the carbon field? (i.e., fixing solar pumps or advising on carbon contracts).
2. How do we turn the carbon outreach program into a more permanent solution?
3. How do we get agronomy and other courses to incorporate carbon farming skills?
4. How do we ensure carbon calculators can be benchmarked to provide credible output estimations?
5. How do we maintain momentum on technology development?
6. How do we leverage existing R&D capacity?
7. How do we build capacity in the (physical and financial) supply chain?
8. Increase accessibility of precision agriculture knowledge and skills to minimise nutrient surplus to crop requirements (this will optimise farmers’ financial return and reduce potential for offsite impacts); and
9. Harness clean energy sources to produce low-emission fertilisers like Green Ammonia as a viable method to reduce Scope 3 agricultural emissions. This will require significant Government support.

Extract from NFF Climate Change Policy

What the Industry Needs

Policy

Economic

- Clear assurances that targets and taxes will not be placed on agriculture. This will provide certainty around what we can expect from the government in the future;
- Appropriate restrictions are placed on the Safeguard Mechanism such that agricultural enterprises are not adversely impacted by offset purchases that substantially diminish agricultural productivity;
- Acknowledge that mandatory cap and trade policies are not suited to the farm sector, and specifically excluding the sector from such schemes;
- Recognise that more than 75% of Australian agriculture produce is exported, and that as a trade-exposed sector we must remain competitive within domestic and international markets;

- Reintroduce legislation that would see carbon and biodiversity income treated as primary production income for all typical farm business models to ensure that eligible business input deductions can be appropriately offset against farm income;
- Engage in or facilitate the review valuation methodologies at least to the extent that those methodologies are not adequately acknowledging the income or capital growth attributable to carbon and other non-core commodities;
- Ensure eligibility for the instant tax/asset write off includes climate action investments;
- Compensate farmers and/or give ongoing recognition for lost productive capacity due to land clearing legislation imposed on land managers;
- Recognise the significant contribution agriculture has made to emissions reduction since the 1990s, including acknowledging MLAs CN30 target and that the Australian red meat industry has already decreased annual emissions by 57% or 133.36-54.61 Mt; and
- Introduce a new Regional Investment Corporation (RIC) loan to assist farmers undertake emissions reduction activities.

Emissions Reduction Fund

- Acknowledge the role of vegetation and soil carbon in carbon sequestration and overall soil health via full commercial/compensation systems for agricultural land sequestration (both historical and current);
- Ensure that Australia's climate change strategies encourage economy wide action to reduce GHG emissions and impact on the climate;
- In consultation with the agricultural sector ensure that the most equitable, defensible and appropriate reporting mechanisms are used that recognise international reporting obligations, improved or more accurate measurement systems, and apply principles of equity and balance for the agricultural sector;
- Ensuring that vegetation management policies do not burden farmers with the cost of achieving emissions reduction goals, nor unreasonably restrict development;
- Prioritise development of ERF methodologies that encourage and provide ACCUs for adoption of methane reducing livestock feed technologies as soon as they are available. We recognise incentives in the Budget for this, but more needs to be done to support further innovation, methodology efficiency and adoption;
- More encouragement for the agricultural industry towards emissions reduction/efficiency. Models for adaptation should be an investment focus;
- Ensure that the Climate Active certification system is able to keep pace with technology developments coming from industry and ensure that the system rewards the work that producers have already done to make their land a valuable carbon sink;
- All market-based policies that seek to incentivise climate outcomes must have mechanisms such as standardised contract terms, dispute resolution processes, and clear pricing mechanisms; and

- Primary producers need harmonisation of methodologies, reporting frameworks, and schemes across all jurisdictions.

Education & Awareness

- Recognise it may be more beneficial for farmers to identify carbon and use this within their own business (insetting) rather than sell to other sectors (as offsets), and that care is needed to prevent market and regulatory distortions which have perverse impacts; and
- Recognise emissions of (the GHG) nitrous oxide are a specific area for the agricultural industry to address. The nature and impact of nitrous oxide are different to other GHGs, meaning that a net zero target is appropriate for carbon dioxide emissions but not to other GHGs.

Incentives

- Allocate a component of the Building Better Regions Fund to fast-track viability assessment of regional low emissions fertiliser manufacturing capability in regional Australia and ensure funding under the Modern Manufacturing Strategy is directly allocated to improving domestic manufacturing for critical agricultural inputs. We understand a portion from this Fund has been redirected to support economic growth and development across regional Australia, but more must be done regarding domestic low emissions manufacturing for critical agricultural inputs;
- Recognise that embedded emissions are significant and that low/no emission manufacturing technology and alternative inputs are needed as a priority and at a lower cost;
- Provide refundable tax offsets on equipment which reduces emissions such as that use in zero till and controlled traffic systems; and
- Ensure that biodiversity payments are accessible for all farmers, not just in pastoral settings. This could be achieved by incorporating agricultural specific criteria under the Carbon & Biodiversity scheme and future programs and publicly reporting the number of successful projects by farm type.

Coordination

- AGMIN and its Climate Change Task Group to engage with industry on its national action plan as a matter of urgency and commit to publicly reporting on progress;
- The Commonwealth must ensure that the complexity of agriculture's climate change interaction are considered in the development of all relevant sector plans especially the Agriculture and Land sector plan; and
- That the National Greenhouse and Energy Reporting Scheme continues to only focus on fugitive emissions and does not incorporate agriculture.

Operational

Economic

- Support adaptation and ensure that agricultural productivity and farm business profitability can be sustained with changing climatic conditions;
- Focus on innovation and investment in climate research and development that provides robust baseline information, drives innovation and builds resilience, and supports communication, adoption and extension;
- Embrace the opportunities for emissions reduction and sequestration in the farm and forestry sectors and facilitate participation of farmers and foresters in carbon markets and natural capital markets;
- Expand and fund practical on farm extension programs like the Victorian Government's [On-Farm Action Plan Pilot](#), which aims to empower producers to understand, measure and reduce on-farm emissions and provides grants for implementation of the recommended actions; and
- Understand that Australian agriculture is on a trajectory towards climate neutrality. Support and fund programs or schemes to assist Australian agriculture in getting to this goal. Recognising that key areas of focus will be methane and nitrous oxide emissions through the development of for example, methane inhibitors and coating, and/or slow-release fertilisers.

Education & Awareness

- On-farm extension programs should be developed regarding the support of natural capital measurement and markets – as key facilitator of climate change mitigation. Support investment in education decision support tools and awareness programs to assist farmers' understanding of carbon emissions, sequestration, offsets, insetting, and carbon markets. What we would like to see could include:
 - a) support for what producers at the farm level are currently doing;
 - b) support for navigating current articulating system of markets and incentives;
 - c) on farm support to engage in new and emerging practices to increase emissions reductions; and
 - d) the need for a positive, constructive and overarching climate policy for the agriculture sector, along with providing incentives and subsidies to farmers, including for batteries.

This needs to be supported in the short, medium, and longer term.

- Partner with industry to deliver public education initiatives that combat misinformation about livestock production and help people understand the most impactful ways they can reduce their impact on the climate.

Incentives

- Partner with industry to introduce initiatives which lower key on farm emissions and transition to low emissions inputs which are manufactured in Australia.

Coordination

- Ensure a consistent approach to carbon accounting and measurement across agricultural sectors to enable accurate measurement and assist with calculating mitigation efforts and offsets, including through the National Soils Strategy; and
- Develop a comprehensive strategy to address climate change which incorporates the AGMIN National Action Plan.

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?

In addition to funding existing and emerging schemes, programs, and methodologies, Government must also help farmers navigate the regulatory and economic environment and access new markets and customers. This could be achieved through extension support (i.e., the provision of trusted agents who can answer queries and guide them through the process). Markets will need to be designed for long-term operation and have robust legislative and governance underpinnings to establish the confidence necessary to support prolonged participation.

Conclusion

The NFF thanks the Department for the opportunity to provide strategic input to shape the development of the proposed Agriculture and Land Plan. We look forward to ongoing discussion on this critical issue as we approach the next phase of the consultation process. Please do not hesitate to contact Warwick Ragg, General Manager NRM via e-mail: WRagg@nff.org.au to progress this discussion.

Yours sincerely,



TONY MAHAR

Chief Executive Officer



Climate Change Policy

Policy Position

The Australian agricultural sector has already reduced its net emissions more than any other sector and remains at the forefront of climate adaptation and action in Australia. Australia's climate policies must recognise producers for the role they play in managing Australia's landscapes, their contribution to food security, and must provide a pathway for a profitable, productive, and sustainable agricultural sector into the future.

The purpose of this policy is to provide a set of principles to reaffirm Australian agriculture's place in the global economy by positioning the sector to take advantage of the social, environmental, cultural, and economic opportunities presented by a low emissions future.

The National Farmers' Federation (NFF) supports Australia's efforts to address climate change. The agricultural sector is focused on ensuring we are contributing to a significant downward trajectory. The agriculture sector understands and expects other sectors across the economy will play their part in reducing emissions rather than expecting agriculture to be the source of significant offsets.

The NFF supports an economy-wide aspiration of net zero emissions by 2050
Provided that:

- There are identifiable and economically viable pathways to net neutrality, including impacts from inputs such as energy;
- Commonwealth and State legislation is effective, equitable and advantageous to deliver on ground programs that benefit agricultural interests and do not provide unnecessary regulatory impediment;
- No sector specific targets are imposed; and

- Global and local food security is considered in conjunction with overarching goals, not separately.

The NFF have not determined a position on a 2030 ambition and recognise many individual commodities have, or are in the process of, setting targets for reductions. However, we recognise that government policy is also a reasonable trajectory towards the 2050 ambition and that there is complexity of how this applies to the agricultural sector. It is best couched as looking for a positive set of outcomes that include a range of policy benchmarks, as outlined below.

Further, as we now move to operationalising climate policy in a productive and sustainable agriculture sector, there are a number of opportunities that we believe should be considered by government to make good on undertakings via the *Powering Australia* policy document and subsequently in government.

For agriculture, the scope 1 and 2 priorities will continue to reduce greenhouse gas (GHG) emissions and seek more efficient and cost-effective ways to address emissions of enteric methane and nitrous oxide. Carbon dioxide emissions in agriculture are already negligible, and where they exist, there will be change as renewable fuel sources become scalable, affordable, and widely available.

In line with trajectories from the Intergovernmental Panel on Climate Change (IPCC), agriculture recognises that the global targets to different GHG are not the same. NFF recognises the IPCC propose to achieve climate neutral outcomes: for methane a 50% reduction from 2005 levels is required and for nitrous oxide, 20% reductions by 2050. The transformation required to underpin these still has significant barriers and requires introducing technologies and innovation at scale to ensure no cost nor productivity impacts on the sector. Failure to support transition will result in unacceptable impacts on food and feed security both in Australia and globally. Government needs to ensure, should it seek to make international agreements, that agriculture is closely consulted on:

- How these agreements will translate;
- How and what assurances will be provided;
- How appropriate reporting metrics can be incorporated to better reflect agriculture's impact and achievement for example including dual reporting of emissions in both GWP* or another suitable metric and existing GWP100 for agriculture;
- Ensuring that they will not unfairly or unnecessarily target agriculture; and
- That the achievements that agriculture has already made are clearly recognised.

Continued investment, including by government, in assisting agriculture to innovate and adapt economically, transition justly and recognise the unique role that agriculture plays through both being an emitter, a sequestor and a food and fibre supplier to the world, are critical drivers and recognised by the Commonwealth Government investment and policy commitments including in *Powering Australia*. The Research and Development Corporations (RDCs) must continue to support industry to progress low emissions pathways which underpin \$100 billion growth, particularly as the impacts of climate change are already and very directly impacting farmers. Government should support coordinated research through RDCs and other research organisations to further the ability of Australian agriculture to continue to progress and promote the leading position in growing low emissions agricultural products it holds. This narrative should enable the government, in conjunction with industry, to ambitiously leverage the low emissions status to secure access to markets.

Governments and industry service providers must have the tools, systems and knowledge required to establish an industry baseline, and be able to communicate this to farm businesses.

As more is understood about the accuracy and viability of alternate reporting metrics, especially for methane from livestock and cropping systems, then ways to utilise those so that agriculture is treated equitably must be progressed.

The NFF will review its position regularly to ascertain if technological and economically credible pathways to achieve this target remain evident. The NFF's position will be informed by robust science from RDCs and other credible sources which allows producers, industry bodies and agriculture as a whole to establish credible baselines and assess the implications of the policy. This policy statement is complementary to the NFF policy positions on Natural Capital, Electricity, Climate-Related Financial Disclosure, Energy and Industry Engagement Guidelines for On Farm Activities.

Issue

Australian agriculture has always operated in a varied and challenging climate. The continued success of the Australian agriculture sector will depend on our ability to build on this foundation and continue to innovate and adapt to best manage future climatic risks and to further reduce the emissions intensity of our production systems. We note the important need for Australian agriculture to continue adapting into the future and welcome investments in technology adoption.

There is a great opportunity for Australian agriculture to contribute to our national emissions reduction goals. This opportunity requires innovation to reduce the

emissions intensity and to enable farmers to efficiently participate in emerging markets, including carbon and natural capital markets.

A transition to a low emissions economy will require transformation across a number of sectors, especially energy and transport. It is critical that the suite of government policies that seek to address the challenge of climate change are fully examined, to ensure that the policy levers of government work cohesively to achieve our national objectives, while minimising the risk of unintended or perverse outcomes. A just transition and equitable commitment for all sectors of the economy is critical. While emissions reduction is one goal in climate change policy, broader social, environmental and (particularly regional) community benefits should also be considered. There is a strong need for enhanced guidance on how to manage and incentivise new projects that have multiple co-benefits. This would facilitate a range of technology options and land-based activities which can deliver cost-effective outcomes for emissions reduction and broader economic, social, and environmental outcomes.

The NFF recognises that a number of agricultural sectors will be on a more rapid implementation trajectory. For example, the red meat sector is already substantially investing in its carbon neutral by 2030 (CN30) program and other sectors are committing to outcomes as early as 2030.

In meeting Australia's emissions reduction goals, Australian farmers expect a greater focus on industry and government investment in integrating climate change solutions for the sector. This can be delivered by:

- Focusing on carbon neutral technologies that provide a competitive advantage for existing products;
- Developing new markets, domestic and export, that benefit from innovative carbon neutral technology;
- Collaborating across all of industry to make the greatest gains from the adoption of the latest research and development;
- Adapting and adopting proven and defensible alternate metrics in the National Greenhouse Gas Inventory;
- Enhancing partnerships with private institutions, government, and other industries outside of agriculture; and
- Developing an Australian Agricultural Sustainability Framework to integrate strategies across the whole of agriculture.

Background

The NFF recognises that climate change presents both significant challenges and opportunities for Australian farmers.

The world's population is forecast to exceed 9 billion people by 2050, and demand for food and fibre is on track to increase by 60 per cent in that timeframe. There is no doubt meeting this demand in the context of a changing environment while at the same time contributing to global action to reduce emissions is a global challenge which requires a global response.

In December 2015, 195 countries including Australia, under the banner of the United Nations Framework Convention negotiated the "Paris Agreement" which aims to hold the increase in the global average temperature to well below 2°C and pursuing efforts to limit it to 1.5°C above pre-industrial levels and to increase the ability to adapt to climate change. There is bipartisan support for net zero by 2050 and there is a legislated ambition of 43% reduction from 2005 levels by 2030.

The Paris Agreement specified that to achieve the long-term temperature goal, countries should aim to reach global peaking of GHG emissions as soon as possible to achieve a balance between anthropogenic emissions by sources and removals by sinks in the second half of the century. In 2018, the IPCC issued a scientific report on the potential impacts of global warming and identified that global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. The agriculture sector contributes to our national emissions profile by both sequestering carbon in soils and vegetation and the emissions of GHG from farming practices such as livestock production, cropping practices, the use of fertilisers and the burning of savanna grasslands. Combined, agriculture accounts for about 13 per cent of Australia's National Greenhouse Gas Inventory.

Australian agriculture has been the single biggest contributor to emissions reduction since the 1990s, primarily due to the land clearing legislation imposed on farmers to meet Kyoto Protocol emissions reduction targets and the role of land use, land-use change and forestry (LULUCF). As a result, Australia has a stock of Kyoto 'carryover credits' that are able to be used to contribute to meeting Australia's emissions reduction targets.

The sector continues to make significant voluntary industry led contributions to emissions reduction. Between 1996 and 2016, agriculture has reduced its GHG emissions intensity by 63 per cent.

The Emissions Reduction Fund (ERF) and methodologies under the Carbon Farming Initiative continues to be the primary mechanism under which farmers have reduced emissions. Australian farmers make up over half the projects, and carbon credits delivered through the ERF. Renewable energy technologies have also seen a significant reduction in price over the past decade and has been significant uptake on farms. Australian Carbon Credit Units (ACCUs) must be robust and internationally

recognised for their integrity. Should the Chubb *et al* review find technical concerns, they should be addressed and where farmers are impacted, they should be justly compensated including for the lost opportunity. Care must be taken to ensure that philosophical drivers do not compromise the scope and opportunity in delivering methodologies.

Australia is not only bound by its commitment to the Paris agreement, but by the growing expectations of our community and customers about Australia's environmental credentials. Australian agriculture has a role to play in meeting climate responsibilities and moving towards an economy-wide climate neutral goal by 2050 whilst maintaining productivity and profitability.

What the Industry Needs

Policy

Economic

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- Recognise that embedded emissions are significant and that low/no emission manufacturing technology and alternative inputs are needed as a priority and at a lower cost;
- Provide refundable tax offsets on equipment which reduces emissions such as that use in zero till and controlled traffic systems; and
- Ensure that biodiversity payments are accessible for all farmers, not just in pastoral settings. This could be achieved by incorporating agricultural specific criteria under the Carbon & Biodiversity scheme and future programs and publicly reporting the number of successful projects by farm type.

Coordination

- AGMIN and its Climate Change Task Group to engage with industry on its national action plan as a matter of urgency and commit to publicly reporting on progress;
- The Commonwealth must ensure that the complexity of agriculture's climate change interaction are considered in the development of all relevant sector plans especially the Agriculture and Land sector plan; and
- That the National Greenhouse and Energy Reporting Scheme continues to only focus on fugitive emissions and does not incorporate agriculture.

Operational

Economic

- Support adaptation and ensure that agricultural productivity and farm business profitability can be sustained with changing climatic conditions;
- Focus on innovation and investment in climate research and development that provides robust baseline information, drives innovation and builds resilience, and supports communication, adoption and extension;
- Embrace the opportunities for emissions reduction and sequestration in the farm and forestry sectors and facilitate participation of farmers and foresters in carbon markets and natural capital markets;

- Expand and fund practical on farm extension programs like the Victorian Government's [On-Farm Action Plan Pilot](#), which aims to empower producers to understand, measure and reduce on-farm emissions and provides grants for implementation of the recommended actions; and
- Understand that Australian agriculture is on a trajectory towards climate neutrality. Support and fund programs or schemes to assist Australian agriculture in getting to this goal. Recognising that key areas of focus will be methane and nitrous oxide emissions through the development of for example, methane inhibitors and coating, and/or slow-release fertilisers.

Education & Awareness

- On-farm extension programs should be developed regarding the support of natural capital measurement and markets - as key facilitator of climate change mitigation. Support investment in education decision support tools and awareness programs to assist farmers' understanding of carbon emissions, sequestration, offsets, insetting, and carbon markets. What we would like to see could include:
 - a) support for what producers at the farm level are currently doing;
 - b) support for navigating current articulating system of markets and incentives;
 - c) on farm support to engage in new and emerging practices to increase emissions reductions; and
 - d) the need for a positive, constructive and overarching climate policy for the agriculture sector, along with providing incentives and subsidies to farmers, including for batteries.

This needs to be supported in the short, medium, and longer term.

- Partner with industry to deliver public education initiatives that combat misinformation about livestock production and help people understand the most impactful ways they can reduce their impact on the climate.

Incentives

- Partner with industry to introduce initiatives which lower key on farm emissions and transition to low emissions inputs which are manufactured in Australia.

Coordination

- Ensure a consistent approach to carbon accounting and measurement across agricultural sectors to enable accurate measurement and assist with calculating mitigation efforts and offsets, including through the National Soils Strategy; and

- Develop a comprehensive strategy to address climate change which incorporates the AGMIN National Action Plan.

October 2023



NFF ENERGY POLICY

Policy Position

Australia's national energy policies must deliver affordable, reliable, secure and increasingly lower emission energy to households, businesses and industries. Energy policy needs to be focused on an efficient and smooth transition through a period of significant technological change. This policy statement is complementary to the three NFF policy positions Climate, Electricity and Mining and Onshore Gas.

Background and issue

Australian households, businesses and industries are experiencing record high energy prices for a variety of reasons, placing financial pressure on energy users of all levels and threatening the international competitiveness of our trade-oriented economy. The state of the energy generation mix is in significant flux. As fossil fuel based facilities age and as new builds are increasingly less competitive compared to renewable energy technologies, it is crucial to provide the policy environment that allows all technologies to evenly compete in order to deliver affordable, reliable and secure energy in the short term while providing a stable and transitional pathway to a low emission energy future.

A country as large, climatically diverse and resource rich as Australia requires a national energy plan that reflects all opportunities for energy generation and is realistic about the manner in which energy is supplied. There is significant potential for regional communities to take part in the future of Australia's energy generation mix, building stronger and more resilient communities in the process. At the same time, those landholders and industries who continue to contribute to Australia's emissions reductions goals must be recognised and rewarded for their actions.

What industry needs

Government must deliver a national energy plan that:

- is technology-neutral, market-based and economy-wide, delivering affordable, reliable and secure energy;
- supports increased competition across all aspects of the electricity and gas markets;

- ensures sound economic regulation of networks through the Australian Competition and Consumer Commission where competition is low, especially in regional and rural Australia;
- supports innovation to capture the full range of opportunities to improve energy productivity, energy efficiency and low emissions energy generation, including renewable, thermal and kinetic energy;
- recognises the potential of regional Australia to take part in the revolution of energy generation and supply and ensures that the regulatory settings enable this change, rather than create barriers for change;
- empowers and builds capacity in regional, rural and remote communities to contribute to secure and reliable energy supply and storage;
- ensures that rural, regional and remote Australia is not disadvantaged or left behind by the disruption, and that the policy solutions are designed for all Australians, not just those in metropolitan areas;
- recognises and rewards landholders, communities and industries that contribute to Australia's emissions reductions goals.

What industry needs regarding the transition to renewable energy

- commonwealth to facilitate an enforceable code to ensure future transmission lines are placed in the landscape with proper consultation, appropriate compensation and do not adversely impact existing land use;
- consistent with the above, deliver the government's commitment to comprehensive early consultation through delivery of Rewiring the Nation including a focus on local communities with respect to new electricity infrastructure. Along with reducing the need for new transmission lines to be built, it would provide farmers with the opportunity to earn a secondary income;
- investment in exploring, credible, cost-effective alternative energies. Options include electric vehicles, hydrogen fuel and biodiesel, as a direct substitute for diesel. These need to be assessed against the range of options with a particular focus on portability, logistical access for rural and remote areas and cost benefit;
- should farm machinery move to electrification, there will need to be repair networks for this machinery and confidence that regional networks can handle this new load will be critical;
- governments need to do more to encourage small-scale renewables and allow farmers to share power with their neighbours and local communities. This can be done by investment in progressing technology and renewable energy in agriculture;
- establish mid-scale community and farmer 'informal REZs' (outside of declared REZs) which identify under-utilised hosting capacity in the network and encourage dispersed 1-5MW solar developments, making the electricity distribution work for farmers and regional communities;
- the Federal Government fund pilot small-scale renewable powered hubs that share infrastructure and supply a local region with products and

services such as green ammonia to urea processing to ensure affordable and reliable supply of essential farm inputs.

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