Australian Dairy Industry Council Inc.

24 April 2015

UNFCCC Taskforce
Department of the Prime Minister and Cabinet
One National Circuit
Barton ACT 2600

Dear UNFCCC Taskforce,

RE: Submission on Australia's Post-2020 Emissions Reduction Target

The Australian Dairy Industry Council (ADIC) is the dairy industry's peak policy body. It co-ordinates industry's policy and represents all sectors of the industry on national and international issues through its two constituent bodies, Australian Dairy Farmers Ltd (ADF) and the Australian Dairy Products Federation (ADPF).

Thank you for the opportunity to provide input to the Department of the Prime Minister and Cabinet for the UNFCCC Taskforce on setting Australia's post-2020 target for greenhouse gas emissions.

Rather than addressing all questions raised in the issues paper, ADIC will concentrate on issues that are relevant to the dairy industry and the complex issues they face in seeking to reduce emissions while operating within an international dairy market. We have provided background on the unique emissions profile of the dairy industry as well as comments on the importance of the Government's policy package to support Australia's emissions targets.

Should you require any clarification on the submission, please contact the ADIC office at (03) 8621 4250.

Yours sincerely,

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Chairman, Australian Dairy Industry Council

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Australian Dairy Industry Council Inc.

Australian Dairy Industry response to

Setting Australia's post-2020 target for greenhouse gas emissions

24 April 2015

Submission to: UNFCCC Taskforce, Department of Prime Minister and Cabinet

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Contents

About the Australian dairy industry

Australian dairy is a $13 billion farm, manufacturing and export industry. Australia's 6,300 dairy farmers produce around 9.3 billion litres of milk a year, for a farm gate value of approximately $4.7 billion[1]. Based on farm gate value of production, it is ranked third behind the beef and wheat industries.

The Australian dairy industry directly employs 43,000 Australians on farms and in factories, while more than 100,000 Australians are indirectly employed in related service industries.

Our industry has the potential to grow substantially over the next decade to meet growing domestic and international demand. But to realise this potential, and remain competitive in the international dairy market, it will be critical to consider our emissions profile, and have appropriate policy settings in place to support industry growth, reduce our industry's emissions intensity, and retain competitiveness with our key global competitors. An important component of this will be to continue dairy research, development and extension, and drive innovation to reduce emissions while also increasing productivity and profitability.

The Australian Dairy Industry Council (ADIC) is the national peak policy body for the Australian dairy industry and represents all sectors of the industry on issues of national and international importance. Its constituent organisations – the Australian Dairy Farmers Limited (ADF) and the Australian Dairy Products Federation (ADPF) – represent the interests of dairy farmers, manufacturers, processors and traders across Australia.

Contact for submission

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[1] Dairy Australia *Australian Dairy Industry In Focus 2014*

1. Australian dairy industry emissions reduction target

Australian dairy recognises that its potential for growth may impact on its greenhouse gas (GHG) emissions. Even with its growth potential, the industry has an ambitious target to reduce emissions intensity by 30% below 2010 emissions by 2020[2]. The 2014 Progress Report for the Australian Dairy Industry Sustainability Framework shows that we have made progress in reducing GHG emissions with recorded reductions in emissions from dairy manufacturers.

There is a strong link between the industry's use of electricity and its drive to reduce emissions intensity. Achieving reductions to livestock emissions and other emissions on farm is more difficult as explained in the outline of the industry's emissions profile below.

2. The Australian dairy industry's emissions profile

Australian dairy farms account for around 1.6% of Australia's total GHG emissions, emitting an estimated 9.3 million tonnes of CO_2e a year[3]. Collectively, Australia's five largest milk processing companies account for around 80% of all milk manufacturing and emit around 1.4 million tonnes of CO_2e a year (435,094 t/CO_2e directly and 980,892 t/CO_2e indirectly)[4].

1. On-farm emissions

Almost two-thirds of dairy farm emissions are enteric (intestinal) methane. Dairy Australia in conjunction with the Victorian Department of Environment and Primary Industries, Meat and Livestock Australia, and the Federal Government is investing in research to identify practices to reduce enteric methane emissions.

As an example, experiments at the Centre for Dairy Excellence at Ellinbank in Victoria, have found that including crushed wheat in dairy cows' diets can increase milk yield while nearly halving methane emissions per kilogram of milk[5]. However, the challenge for dairy farmers is balancingany increased costs associated with reducing methane (for example, capital costs for feeding infrastructure and increased management complexity) against the potential production and environmental benefits.

Dairy Australia in partnership with the Federal Government also has a significant commitment into research to reduce nitrous oxide emissions from dairy pastures and urine patches. Nitrous oxide emissions, both direct and indirect, represent 25% of the GHG emissions from dairy farming systems. There is potential for reduced nitrous oxide emissions and improved profitability through greater adoption of current best practice of reactive nitrogen fertiliser management. Only a small percentage of Australian dairy farmers and their advisors currently understand and implement best practice for nitrogen management[6].

The future holds growing potential to achieve reduction in on-farm emissions as research progresses, financial support increases, and as technologies and policies evolve. However, this is not a short term scenario. Much of the research and development that will provide effective and profitable solutions requires long-term investment in comprehensive research programs.

[2] Australian Dairy Industry Sustainability Framework
[3] Christie, KM, *et al.* (2012). 'Whole-farm systems analysis of Australian dairy farm greenhouse emissions', *Animal Production Science, 2012,* 52, 998-1011.
[4] Clean Energy Regulator, 'Greenhouse and Energy information 2013-2014'.
[5] 'Wheat works wonders for Victorian dairy cows', media release, Victorian Agriculture Minister, Peter Walsh, 23 October 2013. http://www.premier.vic.gov.au/media-centre/media-releases/8189-wheat-works-wonders-for-victorian-dairy-cows.html
[6] Watson, P; Watson D. Dairying for Tomorrow survey of NRM practices of Australian dairy farmers. http://www.dairyingfortomorrow.com/index.php?id=27

2. Electricity consumption

Electricity consumption accounts for about 8% of GHG emissions linked to Australian dairy farms; this equates to about 740,000 t/CO_2e a year[7]. Compared to other primary producers, dairy is disproportionately exposed to electricity costs due to the industry's high power needs in milking machinery, cool milk storage, and intensive milk processing procedures.

ABARES[8] has identified that electricity accounts for 2.4% of total dairy farm operating costs, compared with 0.8% in livestock/cropping enterprises. This is because electricity is dairy farming's main energy source, not the transport fuels on which cropping, sheep and beef grazing rely.

Analysis[9] commissioned by Dairy Australia shows that some farmers, particularly in Victoria, have been able to reduce or negate the effects of the rising tariffs by joining group supplier schemes or directly negotiating a better deal with their power company. However, most Australian dairy farmers have seen their overall energy bills rise substantially, even when their energy consumption has remained much the same. Dairy farmers are now typically[10] spending between $35 and $75 a day on electricity to power their dairies, compared to between $20 and $45 a day in 2010[11]. Large dairy farms with milking herds of more than 600 cows[12] are paying between $75 and $300 a day for power at the dairy shed, up from between $50 and $150 in 2010.

Daily energy consumption over the period has remained fairly steady. Rising tariffs, rising network and service charges, environmental state levies, and renewable energy incentives schemes have contributed to daily electricity costs rising 33-100% for many farms since 2010[11].

The analysis also indicates that while some dairy farmers have been able to manage costs through negotiating better deals on tariffs, few have taken a comprehensive approach to significantly improve their energy efficiency. Large, up-front capital costs for equipment upgrades and renewable energy options, tight margins, and long payback periods are the main barriers.

These findings underline the potential for improved energy efficiency as the next big step-change for dairy farmers is to address rising energy costs and reduce the industry's carbon footprint.

Dairy manufacturers are a large user of both electricity and gas in manufacturing. Collectively, Australia's five largest milk processing companies account for around 80% of all milk manufacturing and emit around 1,415,986 t/CO_2e a year (435,094 t/CO_2e directly and 980,892 t/CO_2e indirectly)[13]. This places some dairy companies among the top 300 energy users in Australia, and therefore could significantly contribute to emissions reduction with supportive policy put into place.

Dairy farming and manufacturing, like most agriculture sectors, is a price taker in domestic and international markets and unable to pass any energy cost increases on to consumers.

3. An emissions intensity approach for agricultural industries

The dairy industry is focused on reducing emissions intensity. This approach is critical given the dairy industry's significant potential to grow and its economic contribution to Australia. The Australian Government has prioritised agriculture as one of the five pillars of the economy and is developing an

[7] Christie, KM, *et al.* (2012). 'Whole-farm systems analysis of Australian dairy farm greenhouse emissions', *Animal Production Science, 2012,* 52, 998-1011.
[8] ABARES (2011). Whittle, L, Hug, B, Heyhoe, E, Ahammad, H & Berry, P. 'Possible short-run effects of a carbon pricing scheme on Australian agriculture', ABARES research report 11.10, December, Canberra, p4.
[9] Dairy Australia, 2014: http://www.dairyaustralia.com.au/Environment-and-resources/Energy-costs-and-the-carbon-price.aspx
[10] Farm size in range of 250-400 milking cows, which is typical of around 50% of farms.
[11] Dairy Australia, 2013: 'Carbon Abatement Project, Section A: Analysis of dairy shed energy bills', NBA Consulting; 'Analysis of power price increases in Tasmanian Dairies 2008-2013, Vaurena Pty Ltd.
[12] Around 10% of Australian dairy farms have milking herds larger than 600 cows.
[13] Clean Energy Regulator, 'Greenhouse and Energy information 2013-2014'.

agricultural competitiveness White paper to reinforce the important role that agriculture plays in the economic and social fabric of Australia. Meeting objectives for growth, profitability, and competitiveness will be a challenge if the Government's policies for emissions reductions do not align with Government policies for agricultural competitiveness.

While absolute emissions reduction provides a measure of emissions activity at a particular time, an approach to reduce emissions intensity provides a measure of long-term impact relative to production. Sustainable intensification of agriculture with increased production over time is a realistic scenario for Australia. However, it is not possible to keep cutting back absolute emissions with a growing industry. The dairy industry is therefore focused on reducing emissions intensity throughout the supply chain, with the industry's current stated target to reduce emissions intensity by 30% below 2010 levels by 2020.

It is worth noting that the New Zealand Government has approached its coverage of agriculture in its Emissions Trading Scheme (ETS), using an emissions intensity approach. As the New Zealand dairy industry is a major competitor to the Australian dairy industry, ensuring that Australian industry can compete on a comparable basis is important to our global competitiveness.

4. The dairy industry within a global market

Australian dairy farmers operate in a deregulated and open market and have done so for over a decade. Consequently, international markets and prices are the major factors determining the price received by farmers for their milk.

At an average of US$50 per 100kg of milk last year, Australian dairy farmers generally received a price comparable to many of the major producing countries. Around half of Australia's milk production has been exported over the last decade, reflecting that Australia's production is highly competitive.

Remaining competitive in this global market has become increasingly difficult in recent years. Farm costs have increased, particularly as a result of drier conditions and the rising costs of feed. When costs increase however, the price of dairy product does not increase to compensate as this price is based on an international market, not domestic factors.

Any increase in costs of production threatens the competitiveness of dairy in the international market. We highlight this on the basis that emissions targets and the policy framework to action these targets could impose direct costs on the industry, for example through a carbon tax. The dairy industry opposed the carbon tax and continues to oppose any carbon pricing scheme, which puts the Australian industry at a competitive disadvantage to our major global dairy competitors. Any decisions on targets or policy must fully address the trade-exposed nature of industries such as dairy.

Dairy Australia analysis of representative dairy farms found that a carbon tax of $23/tonne CO_2 translated to a daily cost of $0.80- $6.40 or 1.5 - 13% of total bills for the cost of running the dairy shed on non-contestable electricity contracts. This range was between $7 and $20 per day or 8 - 15% of total bills for farmers on contestable electricity contracts[14]. On irrigated dairy farms, the electricity costs for irrigation are additional and also subject to the same order of magnitude of increases. In addition to the impact on electricity prices on-farm, dairy farmers were also subject to passback costs from dairy manufacturers of their direct liability and increased operational costs, as well as passback costs imposed on other essential inputs such as feed, fertiliser, chemicals and fuel supplies. This is direct cost impost which our international dairy competitors were not subject to, therefore impacting our competitiveness.

[14] Dairy Australia, 2014. http://www.dairyaustralia.com.au/~/media/Documents/Environment%20and%20Resources/22072014-Australian%20Dairy%20Shed%20Energy%20Costs-Fact%20Sheet-July14.pdf

5. The role of research, development and extension

Research, development and extension (RD&E) is essential to achieve a sustainable and profitable dairy industry and has provided the basis of significant productivity improvements over the last 30 years[15]. World leading RD&E that is easy for farmers to adopt is central to increasing returns at the farm gate. As recognised in the Agricultural Competitiveness Green Paper, the RDC model of industry and Government partnership remains a fundamentally sound and effective approach to investing in rural RD&E.

The dairy industry is strongly committed to the National RD&E Framework and the dairy industry response, Dairy Moving Forward (DMF) which aims to encourage greater collaboration and promote continuous improvement in RD&E investment across the dairy industry. This has led to reduction in duplication, efficiency gains and better outcomes for farmers.

However, recent years have seen both Federal and State Governments withdrawing funding for RD&E, particularly state government funding for extension. This is a significant concern given the critical role of RD&E in our agricultural industries are remaining competitive including the reduction of emissions while improving productivity and profitability.

Another important aspect of R&D in dairy has been the Cooperative Research Centres (CRCs) that have operated in the dairy sector, including the current Dairy Futures CRC. They have been the hub for pre-farm gate research and development, and have pro-actively established collaboration between government, an RDC and commercial entities. It would have been more difficult for the sector to have achieved this level of collaboration without the CRC grant program. A key challenge for the dairy industry is how to maintain the R&D capability created by successive CRCs post the cessation of the current dairy CRC. The current Dairy Futures CRC will cease on 30 June 2016 with no opportunity for further funding for dairy CRCs after that.

6. More productive and efficient use of energy

Energy efficiency is a significant opportunity for reducing energy costs as well as GHG emissions in the dairy industry, given the industry is a large user of electricity on farm and of electricity, gas and other fuel sources in manufacturing. On-site energy generation technologies can be used to supplement energy efficiency (such as cogeneration or solar PV or solar thermal).

Dairy farmers are already embracing renewable energy technologies, with 40% of farms in 2012 having installed some form of renewable energy installation. Renewable technologies installed on farms include heat pumps (18%), solar water heating (15%) and solar PV panels (15%)[16]. Dairy farmers have also been quick to take up 1700 energy assessments co-funded through Dairy Australia and the Federal Government's Energy Efficiency Information Program. The audits are identifying many zero or low cost energy efficiency and energy reduction opportunities, as well as options that are more expensive but have significant cost savings and GHG abatement.

Analysis commissioned by Dairy Australia[17] examined the opportunities for improved energy efficiency on a total of 109 dairy farms across all states and the associated potential $/tCO$_2$e cost for emissions savings. In the analysis commissioned by Dairy Australia, the potential $/tCO$_2$e for carbon credit associated with different options varied considerably across the states, depending on the National Greenhouse Accounts conversion factors for displaced electricity consumption. For example, the potential $/tCO$_2$e for carbon credits associated with energy efficient equipment in Tasmania are much

[15] Centre for International Economics, 2011. http://www.dairyaustralia.com.au/~/media/Documents/Industry%20overview/About%20the%20industry/Vic%20DPI%20-%20Mega%20evaluation%20report%20-%2011%20November%202011.pdf
[16] 2012 Dairying for Tomorrow Survey of Natural Resource Management on Dairy Farms. Dairy Australia.
[17] Dairy Australia, 2014. http://www.dairyaustralia.com.au/Environment-and-resources/Energy-costs-and-the-carbon-price.aspx

higher than on the mainland due to Tasmania's high reliance on hydro-electricity power compared with more GHG-intensive electricity generation sources on the mainland.

The review identified the projects most likely to be attractive to dairy farmers without any external funding incentives are those projects with a payback period less than five years. It found, for example, heat recovery units could be installed at 58 of the 101 mainland farms, with an average three-year payback and total savings of 919t/CO_2e per year. However, the analysis then considered the difference if farmers could access incentives up to 50% of project costs to a maximum $5000. It showed that heat recovery units became an attractive project for 89 of the 101 farms. The funding support reduced average payback to 2.7 years and generated total emissions savings of 1210t/CO_2e per year (or ~13t per farm). The total cost of the government contribution would be $385,500 translating to $21t/$CO_2$e saved. It is important to note the cost of this per tonne incentive in the context of the previous price of the carbon tax and the average price paid by the Government in the recent Emissions Reduction Fund auction. The value of the incentive will need to be adequate for farmers to be motivated to take action.

While the carbon abatement per project on each farm seems small, Australia has 6,300 dairy farms. If 20% of farms installed heat recovery units, the annual carbon savings collectively would be 16,640t per year, or more than 2% of total dairy farm energy-related emissions.

Unfortunately, the previous Clean Energy Policy did not provide much in the way of incentives for dairy farmers to invest in these energy efficiency measures and several state rebate programs are no longer being funded. At the same time, state 'white certificate' schemes to improve energy efficiency, such as the Victorian Energy Efficiency Target (VEET), have been of limited value because they do not include many dairy-relevant energy efficient technologies on their eligible discount lists. In addition, these schemes are now under review with uncertainty about their future.

Dairy manufacturers are embracing new technology. For example, dairy manufacturing projects that were part of the Clean Technology Food and Foundries Investment Program in the 2012- 13 year included more than $25 million of investment in equipment upgrades including installing heat exchange, solar PV and/or gas alternatives for water heating and power, and some major equipment upgrades for refrigeration and lighting.

These dairy factory projects can provide significant emissions reduction. For example, a Fonterra Australia project proposes to replace cheese vat heating equipment at Fonterra's Wynyard factory and this is expected to reduce the carbon emissions intensity of the cheese vat equipment by 90% and provide savings of $141,000 per year in energy costs. In another example, equipment upgrades at the Lion Dairy Chelsea facility are expected to reduce the air compressor emissions intensity by 34% and the chiller system emissions intensity by 25%.

Unfortunately, this Clean Technology program is now closed and comparable investment in these types of projects is unlikely to continue. In addition, the Emissions Reduction Fund (ERF) has not provided an adequate economic incentive for dairy manufacturers to consider involvement in this program.

7. Setting targets and the supporting policy framework

Once the Government has determined Australia's post-2020 emissions targets, an appropriate policy framework will need to be put in place in order to achieve the targets. Key considerations in both setting the targets and the supporting policy framework should be:

- Australia's emissions reduction commitments **must not undermine our trade exposed industry**. This means that voluntary climate policy initiatives aligned with our major competitors will remain the basis for any Government policy for the agriculture sector

- Australia's emissions reduction commitments **must recognise an emissions intensity approach** to agriculture to support the continued growth of dairy while reducing our carbon footprint
- Australia's emissions reduction commitments must be **supported by Government policy and actions** to underpin the dairy industry's contribution towards Australia's emissions reduction.

We acknowledge that the Government's Direct Action Policy and its Emissions Reduction Fund (ERF) is the focus of current Government policy for emissions. This provides opportunity for additional commitment in developing cost-effective methodologies in partnership with the dairy industry to sit within that framework. The Direct Action Policy can also be complemented by additional Government commitment. It is our submission that there are two areas that should be given priority for additional Government commitment. First, RD&E for on-farm emissions, and secondly energy productivity and efficiency.

1. Research development & extension for on-farm emissions

As noted above, the industry is already engaged in significant research programs that will contribute to reduced livestock emissions. There is a significant role for Government in partnering RD&E programs to reduce emissions.

This includes method development for the purpose of the current ERF. But importantly, it goes beyond method development to long-term opportunities to develop new solutions for both reducing emissions and improving profitability.

The ERF methodologies are focused on solutions we already know about and may have the potential to be cost-effective (although cost-effectiveness has not been a focus). Conversely, we need to support research into agriculture solutions that we do not yet know about and ensure they also contribute to profitability. This could require sustained investment into RD&E breeding programs over periods of 10-15 years to undertake robust research through to delivery as cost-effective options for farmers to both reduce emissions while also improving productivity and profitability.

For example, research underway on selection for lower methane emitting animals has been promising to date. The Dairy Futures CRC has this research underway with support of Australian Government funding with a focus on gene markers that are linked to feed conversion efficiency. Improved feed conversion efficiency equates to lower emissions intensity and increased profit. There have been some initial outcomes of the research, but it requires a much longer term to complete the research and understand full implications. For example, the research has not yet considered broader outcomes such as any changes to milk composition as a result of the improved feed conversion. These broader factors are critical in a solution that not only reduces emissions but also contributes to profitability. As noted above, the CRC will come to the end of its life shortly and the continuation of research such as this feed conversion project through to practical application on farm is not guaranteed.

Extension to achieve adoption of research is critical. However as noted above, State Government support for extension has reduced significantly and there is only so much that the dairy industry can invest to fill this gap. For example, the dairy industry with support of the Australian Government has developed Fert$mart and related tools for farmers to get the right nitrogen fertiliser strategy. Nitrogen fertiliser use is essential in most dairy systems but the low efficiency of its use means that more than 60% of nitrogen added to pasture systems does not contribute to plant production. This means both excess cost and excess nitrous oxide emissions. A continued commitment to develop these tools and work with farmers for their accelerated adoption could have significant results.

The dairy industry is committed to a collaborative approach to RD&E as evidenced by the DMF framework. Collaboration occurs both with other Australian research interests and internationally. For

example, Dairy Australia is involved in international research projects with like organisations in New Zealand, Ireland, the UK and Canada. This includes a number of projects that contribute to reduced emissions such as feedback and reproduction. We consider that international approaches to collaborative research are relevant in promoting Australia's contribution to the global effort to reduce emissions.

In terms of methodologies under the ERF, we consider there is a significant gap in the current on-farm methods. This is because the current methods are focused on specific individual practices. In contrast, farms are run as whole-farm-systems where farmers combine a large range of farm practices to run their farm as a productive operation and profitable business. We consider there is scope to develop a whole farm system emission intensity method, where farmers can consider, implement and calculate emissions reductions from a range of practices. Dairy Australia has developed the attached postcard "profitable dairying – good business management reduces greenhouse gases" which identifies a range of practices that contribute to both profit and reduced emissions. This publication also illustrates the dairy industry's finding that a link to profitability is required for farmer interest and education in issues such as reducing emissions.

In summary, there is an important opportunity for the Australian Government to take direct action by sustained investment in agriculture RD&E, including new solutions that both reduce emissions and improve profitability, international research collaboration, and ERF methodologies that support a whole-farm-systems approach.

2. Energy productivity and efficiency

As noted in section 6 above, energy efficiency is a significant opportunity for reducing energy costs as well as GHG emissions in the dairy industry. However, for all these opportunities, there are significant capital cost barriers. For example, installing heat recovery pre-heaters and variable speed drives on vacuum and milk pumps on dairy farms has an estimated capital cost of $5000-$17,000, with a 4-20 year payback period. The question is therefore how dairy farms and factories can best finance large, up-front capital costs for equipment upgrades and renewable energy options in tight economic conditions.

Previous federal and state programs have assisted farmers and manufacturers with the upfront capital costs, thereby increasing their participation. The loss of incentive schemes and government programs has increased the cost of adopting efficiency measures or renewable options. Further, the ERF is not a viable substitute for the dairy industry, as the carbon prices are too low to make this an attractive option. As noted in the Dairy Australia analysis discussed in section 6 above, a relatively small incentive can make a significant difference to adoption and therefore emissions reduction opportunity. We encourage the Government to reconsider how previous Government programs assisted uptake, and how this could be replicated through the right policy framework and actions.

As well as the approaches used in previous programs, there are other opportunities for the Federal Government to support the dairy industry in its energy efficiency opportunities. For example, a higher rate of accelerated depreciation on new energy equipment could assist in reducing the payback period while also spreading the Government support over a number of years.

We welcome the Government's commitment in the Energy White Paper to develop a National Energy Productivity Plan to improve how we use energy to reduce business and household costs. We would be pleased to contribute to the development of Federal and State Government options for a policy framework and actions to improve energy productivity in the dairy industry.