



INVESTING IN AUSTRALIA'S FARMING SECTOR

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This is an exciting investment which demonstrates the very broad potential of a clean energy focus to make a positive difference right across the Australian economy

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CEFC CEO
Ian Learmonth

Agribusiness plays a critical role across the Australian economy, with a well-earned reputation for quality produce, innovative production methods and local employment opportunities – whether producing for the domestic market or extending into the highly competitive global market. This track record makes agribusinesses ideally-suited to capitalise on the growing wave of energy efficient and clean energy technology.

The Clean Energy Finance Corporation is targeting major clean energy benefits in Australian agriculture, committing \$100 million to the agricultural platform of Macquarie Infrastructure and Real Assets (MIRA). The investment will contribute to on-farm energy efficiency and sustainability.

MIRA will manage large-scale row cropping assets, such as wheat and other grains, and permanent crops including avocados. MIRA is targeting reduced energy intensity on a per unit of production basis, and the delivery of improved financial and environmental efficiency.

As part of the CEFC investment, the CSIRO will contribute expert analysis to enable clean energy learnings to be shared across the farming sector.

The MIRA investment complements the CEFC's well-established focus on helping agribusinesses and farmers invest in smaller-scale clean energy projects, as well as exploring bioenergy opportunities for the agriculture sector.



ENERGY, EMISSIONS AND EFFICIENCY ADVISORY COMMITTEE: 3EAC

Agricultural production covers 344 million hectares in Australia, almost half the national landmass of 769 hectares, according to the Australian Bureau of Statistics.

Agriculture accounts for 13 per cent of Australia's national emissions, with these emissions largely due to enteric fermentation in livestock, manure management, rice cultivation, agricultural soils, and field burning of agricultural residues.

With some 30 million hectares of land under cropping, Australia's cropping-related carbon emissions were 5.5 Mt co₂-e in 2017 and are forecast to fall to 4.7 Mt co₂-e by 2030 (Australia's Emissions Projections, 2017).

Working with MIRA and the CSIRO, the CEFC is aiming to encourage the widespread adoption of best practice clean energy farm management techniques and technologies beyond the cropping sector.

A key feature of the CEFC investment is the establishment of a specialist Energy, Emissions and Efficiency Advisory Committee – 3EAC – drawing on the skills of the CSIRO, MIRA and the CEFC. 3EAC will support new on-farm standards in energy efficiency and emissions reduction. It will also develop clean energy models targeted for broader use in the farming sector. Key initiatives include:

- Methodologies and timelines for the implementation of an Agricultural Energy Efficiency Ratio and an Agricultural Emissions Efficiency Ratio
- Baselines for each ratio, plus targeted annual improvements
- Details of the technologies used, or trialled, to meet the ratios.

The ratios will be used to develop a new benchmarking system around energy, emissions and efficiency, consistent with Science Based Targets (SBT), a global initiative to develop sector-specific pathways to emissions reduction.



We are delighted to be part of this pioneering initiative with the CEFC to pursue new methods of sustainable production in Australian agriculture. This is an important investment into research and development that will see us adopting various energy efficient technologies on the properties to make environmental savings, while maximising soil health and productivity.



MIRA Head of Agriculture
Elizabeth O'Leary

LOWERING EMISSIONS IN CROPPING ACTIVITIES

CEFC FINANCE IN ACTION



Technology-driven whole-of-farm approach



Comprehensive use of precision agriculture



Productivity gains with improved energy efficiency



Value creation through sustainable asset management



Investment across multiple climatic zones, regions, end markets

A STRONG COMMITMENT TO WORKING WITH LOCAL COMMUNITIES

MIRA has a strong record in agriculture, farm management and commodity production. It has managed a significant portfolio of farmland in Australia for more than a decade, across a range of production environments, to further energy efficiency and sustainability practices in the sector.

MIRA invests in the communities in which it operates, creating employment opportunities, both on and off-farm. As the cropping portfolio grows, farm management teams will be built across regional Australia with deep knowledge of local production environments, supported by a new business, Viridis Ag, based in Albury NSW.

THE BIOENERGY OPPORTUNITY

The CEFC has identified bioenergy as an important means of tackling methane emissions in the agriculture sector, through the use of energy-from-waste technology to recycle organic waste and capture and use biogas, creating alternative sources of renewable energy.

The CEFC is working with Foresight Group to identify and develop opportunities to invest equity in a range of bioenergy and energy from waste projects in the Australian market. Targeted technologies include:

- energy from agricultural waste
- anaerobic digestion, where microorganisms break down biodegradable material in the absence of oxygen
- sustainably sourced biomass to energy projects, such as plantation timber residues and sawmill waste
- landfill gas capture and destruction
- wood pelletisation, where forestry plantation waste is converted into pellets that can be burned as fuel

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The cropping sector is an important part of Australian agriculture and has the potential to lead the way in adopting new technologies and evolving farm practices to reduce overall sector emissions. There are substantial economic benefits for farmers through lower energy costs and greater operational efficiencies.



CEFC transactions lead
Rory Lonergan

EMISSIONS PATHWAY FOR RED MEAT

In November 2017, Meat and Livestock Australia (MLA) said it is working with the CSIRO to identify pathways for the red meat industry to become carbon neutral by 2030.

Potential innovation and farm management options include the expanded use of legumes and dung beetles in pastures, savannah fire management in northern Australia, feed supplements, feedlotting and vegetation management. Genetic selection and a potential vaccine to reduce methane production in rumen are also under consideration. Benefits include:

- increased productivity in the red meat industry
- additional farm income from carbon mitigation projects
- a major contribution to government targets on emissions reduction
- strong assurance for consumers of the quality and integrity of Australian red meat.

AUSTRALIA'S FARM SECTOR

~85,600 farming businesses **\$56b** gross value of production

TOP THREE CROPS



WHEAT
\$6.2B



FRUIT, NUTS,
GRAPES
\$5.6B



VEGETABLES
\$3.6B

AVERAGE FARM HERD SIZE (HEAD)



BEEF
805



DAIRY
412



SHEEP
2,857

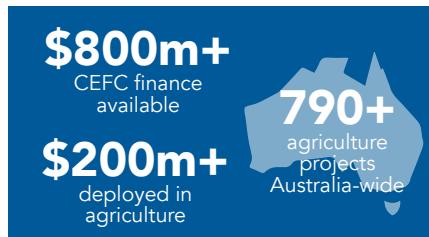
Source: ABS 2015-16 Agriculture Census



FLEXIBLE FINANCING TO SUIT A GROWING AGROBUSINESS SECTOR



Together with some of Australia's most well known banks, the CEFC is pleased to deliver cost-effective financing solutions to help agribusinesses to make energy efficient, low emissions and renewable energy investments so they can take advantage of the benefits of clean energy.



PRACTICES AND TECHNOLOGIES TO LOWER ON-FARM EMISSIONS

GPS GUIDED MACHINERY

which results in fewer passes of a field and reduced overlap to minimise inputs

ZERO TILLAGE AND STUBBLE RETENTION

to maintain soil health and increase water retention

SWATH CONTROL

featuring on board computing to prevent overlapping fertilizer application and planting

CONTROLLED TRAFFIC

such as uniform axle and machinery widths, to reduce crop and soil damage and fuel usage

VARIABLE RATE APPLICATION OF INPUTS

allowing precise seed, chemical and fertiliser application

REDUCED USE OF FERTILISERS

and associated nitrous oxide emissions through more accurate land mapping and GPS-enabled machinery

LOWER ENERGY CONSUMPTION

resulting in more efficient processes for key production inputs

IMPROVED ON FARM PRACTICES

including reduced energy, water and diesel consumption



ABOUT THE CEFC

The CEFC is a specialist clean energy financier, investing with commercial rigour to increase the flow of finance into renewable energy, energy efficiency and low emissions technologies. We invest in projects with the strongest potential for decarbonisation, including low carbon electricity, such as solar, wind, battery storage and bioenergy; ambitious energy efficiency, such as property, infrastructure, manufacturing and agribusiness; and electrification and fuel switching, such as vehicles and biofuels.

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WHAT YOU CAN DO

CHANGE
YOUR ENERGY USE

- Solar-powered irrigation pumps
- Solar hot water, heat pumps
- Rooftop solar systems
- Biomass energy-from-waste

CUT
YOUR ENERGY USE

- Farm reconfiguration
- Variable speed drives, high efficiency motors and pumps
- Smart monitoring and controls
- Machinery upgrades
- Efficient refrigeration
- Efficient lighting, heating, cooling

LOWER
YOUR EMISSIONS

- Equipment, vehicle upgrades
- Co-generation, tri-generation

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