



## Opportunities for agriculture to contribute to net zero emissions Emission Reduction Pathways

### Investigating the abatement potential for NSW primary industries

Primary industries make a substantial contribution to the emissions of NSW. In 2018 the agriculture sector contributed 14% of NSW total emissions of 131.7 Mt. By far the largest emissions source is methane from ruminant livestock (68%), followed by nitrous oxide associated with nitrogen application to soils (18%). Other important sources of emissions are manure handling, CO<sub>2</sub> from liming and urea application, and emissions from residue burning. Additional emissions from on-farm energy use and upstream activities such as fertiliser manufacture are reported in the energy sector. Land clearing is an additional source of emissions reported separately.

For NSW to meet its target of net zero by 2050, mitigation strategies must be developed and adopted to address the major sources of emissions. The good news is that the primary industries sector can reduce net emissions through carbon sequestration in vegetation and soil. It is likely that the sector can deliver greater sequestration than required to balance agricultural emissions, and therefore also offset emissions from other sectors that are unable to reach net zero.

NSW DPI has been conducting research into technologies and strategies to reduce agriculture sector emissions, and enhance carbon sequestration, for several decades. DPI also has expertise in greenhouse gas accounting, and development of measures to facilitate adoption of recommended practices.

This project will review the technical potential for emission reduction and sequestration measures across the primary industries of NSW, and identify economic and social barriers to adoption, along with measures to overcome them. It will identify strategies to incorporate emission reduction and carbon sequestration, while maintaining profitability and enhancing resilience of production systems. The project will devise plausible scenarios for emissions reduction pathways and recommend policies to facilitate their delivery.



## Goal of the project

The Emissions Reduction Pathways project will quantify the sustainable potential for emission reductions and carbon sequestration in the NSW primary industries sector to contribute to the NSW target of net zero emissions by 2050, and develop scenarios and policy recommendations to achieve this potential.

## Benefits

- Economic growth by ensuring sustainable use of and access to natural resources
- NSW landholders attract offsets funding to support emissions reduction and carbon sequestration
- Clean, green image of NSW produce enhanced
- Reduced costs, increased resilience due to modified production systems (eg increased soil organic matter, enhanced agrobiodiversity, stock shelter)
- NSW Primary industries sector delivers maximum abatement, assisting NSW to meet the net zero 2050 target.

## Deliverables

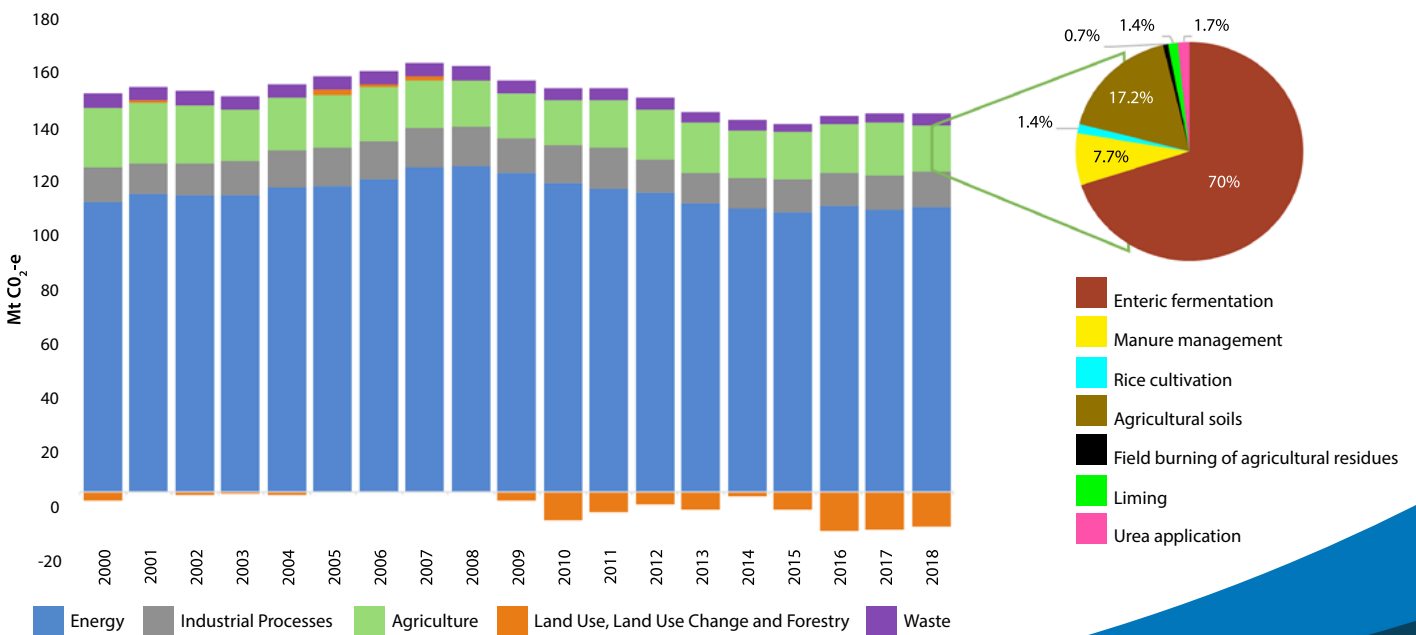
- Estimate of technical potential to reduce emissions and sequester carbon in NSW agriculture and forestry sectors
- Estimate of sustainable potential, considering economic and social barriers to adoption, impacts of climate change, and needs for climate change adaptation.

- Scenarios for emissions reduction pathways
- Input to carbon farming platform
- Recommendations on policy mechanisms to facilitate adoption of abatement options.

## How the project is being undertaken

- Evaluation of technical potential of on-farm abatement options, including those for which Emissions Reduction Fund methods are available or in development, and other methods supported by scientific literature
- Process-based modelling of representative farming systems including intensive and extensive grazing; cropping and mixed farming
- Spatial analysis to inform estimates of potential abatement across NSW
- Economic modelling to identify feasible abatement options and evaluation of barriers to adoption
- Consideration of all policy options and supporting measures including education & training, subsidies and other financial grants and loans; emissions trading; carbon price.

Figure 1. NSW emissions, highlighting the contribution of agriculture in 2018 (source: AGEIS, DISER)



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