South Australian Department of Environment, Water and Natural Resources submission to the Climate Change Authority on the Action on the land: reducing emissions, conserving natural capital and improving farm profitability issues paper.

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Climate change provides Australia and its jurisdictions with one of the biggest economic opportunities of the 21st century. Low carbon economic development driven by ambitious and early action will allow jurisdictions to capitalise on the benefits that come from unlocking research and innovation, attracting investment, and creating jobs. In the context of land based action, the Department of Environment, Water and Natural Resources (DEWNR) supports the development of emissions reduction policies aimed at delivering multiple benefits on the land relating to farm profitability and the broader environment.

The 2016 Modelling and analysis of Australia's abatement opportunities Report to the Australian Government Department of the Environment found improved land management and improved low emissions farming practices to be by far the largest single carbon abatement potential group in Australia achieving its 2030 targets.

If this opportunity is to be realised under the ERF, the Australian Government should consider considerable investment in the timely development of further specific abatement methods. South Australian landholders from the land and agriculture sectors have had limited involvement in the ERF compared to some other states. This is partly due to current methodologies being better matched to management practices in other states (e.g. Savannah fire management, avoided clearing of native regrowth) and the price of carbon offered.

South Australian and Australian Government officers have been collaborating on developing new methodologies, in particular soil carbon. This requires significant research and policy input and can take years to develop a single approved method. These ERF development activities need to be resourced if the land sector is to contribute to this potential.

The high cost of participation in the ERF for farmers and other land managers has been at least partially addressed by aggregators, but this has resulted in around half of the cost of a project often built in for aggregators. Any modifications that can make project development and administration more cost effective can contribute to better take up.

Making it as easy as possible for landholders and their partners to deliver high volumes of emissions abatement, while maintaining the credibility of the abatement in accordance with International standards is a major challenge, however South Australia sees opportunities to enhance supply of abatement via such activities as:

- targeted extension investment;
- long-term policy stability that fosters gradual familiarisation and expanded take-up by project proponents;
- provision of key data and knowledge tools to compliment project proponents and extension efforts; and
- refinement of ERF methodologies and the development of new methodologies which facilitate participation by the land and agriculture sector.

There may also be opportunities to support multiple benefits through action on the land. The benefits of action on the land beyond reduced greenhouse gas emissions has been well recognised. For example, the 2014 White Paper for the Australian Government Emissions Reduction Fund stated "*The Emissions Reduction Fund will help reduce Australia's greenhouse gas emissions while delivering valuable co-benefits to Australian businesses, households and the environment. For example, households and businesses will save money by improving their energy efficiency. Revegetation will improve water quality, and reduce erosion and salinity. Replenishing the carbon content of soils will improve the health and productivity of Australian farms.*"

A key issue of relevance to this CCA research project, however, is not whether these valuable co-benefits are currently being delivered under the ERF, but whether and how policy or program changes can deliver 'additional' net social benefits.

Noting the joint product nature of land management in terms of agricultural output, ecosystem services and reducing greenhouse gas emissions, and the numerous state and Australian Government programs to support these specific outputs or services, policy research to investigate potential changes in any of these programs to deliver 'additional' net social benefits is welcomed.

The Climate Change Authority should take account of the potential of either the regulatory additionality or newness provisions of the ERF to constrain opportunities here, as well as the need to maintain the integrity of Australian climate change policy and associated reductions in greenhouse gas emissions.

There is considerable scope to explore cross-program funding leveraging and enhanced outcomes that could arise from the better integration of National NRM, water, agricultural and climate change policies. This concept is contemplated in the *South Australian Natural Resources Management Investment Strategy 2016*.

This strategy was developed to build on South Australia's track record of delivering improvements in the management of natural resources through collective action. The State has made a renewed commitment to bring together primary producers, local government, Aboriginal peoples, businesses, conservationists and other community representatives to deliver shared benefits. New priorities for investment are proposed that will deliver significant benefits for all South Australians, who can share in the economic success and greater wellbeing that will result. South Australia also puts forward the principles for co-investment that future collaborative investments should uphold.

We would welcome an opportunity to delve deeper into any aspect of this strategy with the Climate Change Authority and the Australian Government.

Further benefits from emissions reduction activities beyond carbon abatement can be realised through greater recognition of co-benefits such as improved soil, indigenous employment, improved water management. This could be done by enhanced investment in extension activities that favour ERF participation by proponents that typically deliver benefits in addition to emission reductions. Furthermore, potential negative impacts, for example on ground water, can be minimised by ensuring the appropriately valued, full consequences of carbon abatement strategies are included in the assessment of opportunities.

All policies in all sectors have consequences beyond those they are aiming to impact; some of these can be positive, others are negative. In the case of climate change, these impacts can be wide ranging, unpredictable, and can vary in both magnitude and direction. Any anecdotal evidence of relationships between climate change policy and other economy wide indicators needs to be considered within a rigorous framework before the contribution of climate change policy, amongst other influences, can be isolated and quantified. It would also be necessary for reviews of the impacts beyond emissions of climate change policies to be considered in conjunction with the evidence of the impact of these policies on emissions.

We recommend that the Australian Government modify existing methodologies and develop new ones, which better match South Australia's management practices, so as to increase South Australia's involvement in the ERF. We further recommend that the Australian Government develop and invest in a targeted extension program aimed at increasing awareness and participation in the ERF.

Projects

South Australia has taken an active role to investigate and promote the uptake of land based sequestration projects and we would welcome the opportunity of leveraging our collective resources to support this work further as detailed below.

New Horizons

South Australia has been active in its pursuit of significant opportunities to positively contribute to the environment, primary industries, regional and indigenous community development through land sector abatement. South Australia has been researching new science in soil modification techniques and demonstrated through the New Horizons program that we can significantly increase crop production (between 70 to 200%) and sequester large amounts of carbon. The techniques improve poorly performing soils and have application in increasing broad-acre crop, pasture production and horticultural crops.

Recent research and farmer experience has shown that crop productivity on infertile sandy soils can be greatly improved by incorporating organic matter, clay and nutrients deep into the soil. Other benefits of these techniques include long term improvement in the capacity and resilience of the soil resource and a reduction in soil erosion.

Importantly, soils that have been modified through the addition and mixing of subsoil clay to sandy topsoil have been identified as having a large carbon sequestration opportunity and the potential for long-term storage of additional soil carbon. Further work is required to validate this using soil carbon models and additional field testing. Additional research and development is required to test the practices in a wider range of conditions and further develop the practices to improve efficiency and cost-effectiveness.

River Murray Forest Project

The River Murray Forest project establishes local native trees and shrubs along the River Murray corridor, from the South Australian border to the Coorong, for biodiversity and carbon sequestration outcomes. The project has been initiated in 2008 and has established in excess of 3,400 hectares of habitat.

ERF registrations have been established for the Murray River Forest plantings to benefit from the creation of Australian Carbon Credit Units.

The project will further contribute to climate change adaptation by re-establishing and re-connecting large areas of native vegetation.

Florasearch

DEWNR's FloraSearch project (supported by Rural Industries Research and Development Corporation and Future Farm Industries CRC) provides a comprehensive review of a range of native plants species suitable for development as commercial woody crops (including wood fibres, eucalyptus oil, bioenergy, fodder shrubs and carbon crops). It also undertook a regional industry potential analysis to identify regions within southern Australia with the greatest potential for developing new woody crops.

Further information including reports can be found here.

Carbon Sequestration from Revegetation

DEWNR's Carbon Sequestration from Revegetation project (supported by State NRM Program, Australian Government Department of the Environment, Australian Government Department of Agriculture and the Future Farm Industries CRC) provides evaluations of the growth, productivity and carbon sequestration rates of native plants species planted in woodlots and environmental planting across several regions of South Australia. This research also details the development of allometric techniques for assessing plant biomass for carbon accounting and inputs into national Carbon Farming Initiative carbon accounting tools.

Further information including reports can be found here.

Goyder Institute Research

South Australia intends to undertake a project to assess the broader aspects of land based carbon abatement beyond emissions reduction. Led by the Goyder Institute for Water Research, the project will explore additional benefits and disbenefits of land based carbon abatement.

As one of a number of projects being delivered under the 'Climate Action' research focus area of the Goyder, the project will involve three components, including a SA carbon supply opportunity assessment, a co-benefit opportunity assessment and policy research.

The Department of Environment, Water and Natural Resources, together with relevant Government of South Australia agencies including the Department of Primary Industries and Regions SA, can provide further information or advice to CCA queries on its programs and research in this area to support their investigation.