

PROJECT HIGHLIGHTS



Assessing supply and policy for co-beneficial carbon offsets in South Australia

This research outlines the key carbon policy drivers and barriers that are preventing South Australian businesses from capitalising on opportunities to decarbonise the economy. The research will help inform the Government of South Australia's objective of achieving a carbon neutral Adelaide

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South Australia is well positioned to increase its contribution to carbon abatement through land-based sequestration to offset carbon emissions from Australia and overseas. International markets are rapidly adopting carbon prices in business planning and through a burgeoning suite of carbon pricing mechanisms being developed at national, sub-national and industry specific scales. This research project investigated the potential for developing a viable industry of carbon offsets including sequestering carbon as a co-benefit of other activities.

KEY FINDINGS

The physical potential for South Australian agricultural lands to sequester carbon under two Commonwealth approved methods is estimated at 130 MtCO_{2e} by 2050 at a price of \$50 per tCO_{2e}. The annual abatement (4 MtCO_{2e}) is equal to about 15% of South Australia's (SA) 2015 total emissions.

Three types of co-benefits that could contribute to the development of a viable industry of carbon offsets include: pollination services delivered to lucerne farming as a co-benefit to revegetation projects; reductions in lambing mortality arising from tree shelter belts along the perimeters of sheep grazing paddocks; and water quality benefits in public water supply catchments from revegetation of currently cleared riparian areas.

Of these, riparian plantings have the greatest viability: under methods approved by the Australian Government's Emissions Reduction Fund (ERF), it is viable to replant 15% of the potentially available stream lengths located in amenity and lifestyle properties in the Mount Lofty Ranges region at a carbon price of \$33/tCO_{2e} or 88% of the potential buffer area at \$50/tCO_{2e}.

Current South Australian involvement in carbon abatement projects is small, with fewer than 1% of carbon credits issued through ERF auctions coming from projects in the state. Recent auction prices are \$11-13 /tCO_{2e} which means that carbon sequestration projects in SA are mostly uneconomical and limited to for 'niche' segments of the market. Trading in the voluntary market offers a higher price premium of \$15-\$25 /tCO_{2e} for carbon with co-benefits of various types.

There are many reasons why the gap between the price being offered by the regulated and voluntary markets and the supply side can and will be narrowed. Policy drivers at jurisdictional level are stimulating forecasts of increased prices, and institutional risk management and investor expectations are converging to raise price expectations as a response to international pressure to honour Paris Agreement commitments. The institutional arrangements are quickly developing for international trade in carbon credits and standards for offsets.

The main issues that are currently impeding the development of a larger land-based carbon sequestration industry in SA are price, information availability and policy settings. Intangible public good type social and ecological co-benefits associated with carbon abatement through revegetation are not being sufficiently captured but could be better incorporated to ensure opportunities in carbon abatement benefit the South Australian economy.

These barriers can be overcome by:

- Proactively engaging with the generation of carbon abatement projects where they are currently economic, are near to economic, or can reasonably be forecast to be economic should carbon prices rise in line with reasonable scenarios for demand and trading opportunities;
- Better supporting projects which sequester carbon as a co-benefit of other activities;
- Continuing to contribute to the development of methods for accreditation of carbon and assist trials on small sites that can be observed but also where the carbon can be aggregated;
- Clarifying carbon property rights on pastoral leases to enable carbon crediting from positive land management changes;
- Undertaking additional research on the economics of projects with co-benefits for agriculture and coastal restoration and conservation.

WHAT GLOBAL INITIATIVES ARE CREATING DEMAND FOR CARBON OFFSETS AND TRADE?

Australia is a signatory to several international agreements that have created demand for carbon offsets and trade.

- **United Nations Framework Convention on Climate Change (UNFCCC)** (1994) – ratified by 197 parties, its main aim (for developed countries) is to return or stabilise anthropogenic greenhouse gas (GHG) emissions to 1990 levels.
- **Kyoto Protocol** (1997) – the first international agreement under the UNFCCC, it commits signatories to internationally-binding emissions reduction targets based on their economic development. Australia committed to an emission limitation of 108% of 1990 emissions and can meet these commitments by implementing emission reduction projects in developing countries (the Clean Development Mechanism (CDM)) and by selling emissions reductions to countries unable to make the reductions within their own efforts once a country's initial commitment has been exceeded (International Emissions Trading (IET)). This mechanism is the major global initiative driving demand for global offsets and trade.
- **Paris Agreement** – this expands on the IET mechanism and acts as a framework for a global carbon market. Its central aim is to keep global temperature rise to less than 2°C (and preferably less than 1.5°C) above pre-industrial levels and it allows parties to nominate their Nationally Determined Contributions (NDC). Australia's NDC is set as an "economy-wide target to reduce greenhouse gas emissions by 26 to 28 per cent below 2005 levels by 2030".

The international framework outlined by these agreements encourages the formation of international and national carbon agreements and trading schemes.

WHAT DRIVES CARBON OFFSET PROJECTS IN AUSTRALIA?

Australia does not currently operate a carbon cap and trade scheme. Australia's framework for emissions reduction is the Emissions Reduction Fund (ERF). Participation is voluntary and this is the primary mechanism for climate change mitigation currently supported by the Australian Government. The ERF covers crediting, purchasing, and safeguarding emissions reductions and the land sector participates in the ERF through storing carbon (e.g. in woody biomass or in the soil) or avoiding emissions (e.g. avoided land clearance) from agricultural activities. Activities can include reforestation, revegetation, restoring rangelands, and protecting native forest or vegetation that is at imminent risk of clearing.

ERF participants earn an Australian carbon credit unit (ACCU) for every tonne of carbon dioxide equivalent (tCO₂e) that is stored or avoided from release. These credits can be sold domestically to the Australian Government or on the international carbon market. Although ACCUs may be sold internationally, there are no specific international agreements in place for this purpose and so international sales must be specifically sought out by individual ERF participants.

WHAT'S THE CURRENT STATE OF SOUTH AUSTRALIA'S LAND-BASED CARBON SEQUESTRATION INDUSTRY?

Low participation by South Australia in carbon offset projects is mostly due to the low carbon price (around \$12 /tCO₂e) posted by the ERF. The growth and scope of carbon pricing schemes around the world may drive a higher price for carbon sequestration than shown within the ERF auctions. Businesses around the world are factoring international prices for carbon abatement into their planning in the order of AUD\$32–53 /tCO₂e by 2020 and AUD\$40–135 /tCO₂e by 2030. But at current ERF prices, South Australian projects appear to be uneconomic because supply would not be economically viable across its agricultural zone below \$50 /tCO₂e. In other words, for farmers to make money 'growing' carbon they would need to make more than \$50 /tCO₂e before they would be better off than if they maintained traditional, business-as-usual agricultural practices.

Trading in the Australian voluntary market (used by businesses, governments and other entities for compliance, branding and reputational purposes) offers a higher price premium of \$15–\$25 /tCO₂e for carbon with co-beneficial offsets of various types.

WHAT ARE CO-BENEFICIAL OFFSETS AND HOW COULD THEY HELP GROW SA'S CARBON INDUSTRY?

Co-beneficial offsets, or co-benefits, are described as the positive effects that a policy or measure aimed at one objective might have on other objectives. In the carbon context, they are often the social, environmental and economic outcomes associated with an offset project that are additional to the carbon stored or avoided emissions. For example, revegetation in water catchment and riparian areas has the potential to sequester high volumes of carbon per hectare and can provide co-benefits like improved water quality through reducing phosphorus levels and algal blooms. Carbon credits from tree planting alone may not be enough to cover the expected project costs but the project could become viable if costs savings associated with avoided water treatment are considered.

Carbon projects in SA will become feasible more rapidly where appropriate arrangements have been made to recognise, measure and allow investment in co-benefits. Where land-based carbon offset projects are active in SA, they appear to be primarily driven by the desire for other benefits (biodiversity enhancement or agricultural productivity) and the carbon accrued is a co-benefit. It is probably in the context of achieving other benefits that projects which sequester carbon for offset markets are of greatest interest and are most economical. Projects which sequester carbon as a co-benefit (where it is additional under carbon crediting rules) are the priority for efforts to increase carbon supply from South Australia.

WHAT DOES INDUSTRY SEE AS THE OPPORTUNITIES AND BARRIERS FOR LAND-BASED CARBON PROGRAMS?

The project team interviewed 19 people working in or associated with carbon offset projects and policy in SA to gather intelligence on what has happened, what is happening and what the main hurdles are to increasing carbon supply SA.

Interviewees reported a suite of reasons for low carbon offset supply in SA, including policy uncertainty, low carbon prices, project risk, technical supply limitations and general information barriers. However, they expected carbon supply projects in SA to increase as these barriers are reduced over the next few years.

Carbon project uptake is also limited by factors that often reduce uptake of new technologies or market opportunities – relative advantage, compatibility, complexity, trialability and observability. The interviews indicated that there are some methods available that are compatible with current practice but project initiation needs to be simplified for participants; project trials and methods for carbon sequestration need to be improved; and information sharing also needs to be improved to make successes more observable. Increasing the carbon supply from near economical projects in SA may be beneficial where it readies business and sectors for future opportunities.

HOW CAN WE HELP GET SA BUSINESSES MORE INVOLVED IN LAND-BASED CARBON OFFSET MARKETS?

Our interviews and our review of global, national and sub-national carbon offset policy and barriers to carbon supply have led us to a series of recommendations to help increase South Australia's participation in land-based carbon offset markets.

Portfolio strategy – A portfolio strategy would involve undertaking some projects now even if they are sub-economic in the short term, as by the time they are yielding significant numbers of credits they could be profitable. Projects that provide valuable, but not easily marketed co-benefits, could also be justified even if anticipated higher carbon prices never materialise.

An evaluation strategy – Assessing the financial and accounting project risks with a clear evaluation strategy will allow for transparent communication and risk management. Currently, project proponents can be left holding liabilities if the full sequestration committed to in an agreement doesn't materialise, e.g. if it's been prevented or delayed as a result of climate change or wildfire. Transparent methods to evaluate and communicate such risks will help encourage realistic and informed transactions.

Governance of carbon offset service providers (brokers) – Broker governance would build confidence in the market for different methods of carbon offsets; provide potential project proponents with low-cost and fairly-priced services; and manage risks that projects will provide real and effective sequestration.

Scrutiny of the voluntary market – Most current transactions in voluntary markets are firm to firm transactions and do not always use well documented or highly creditable (verifiable) standards. It is important to scrutinise the size of the voluntary market for carbon with co-benefits in SA.

Examine the economics of additional co-benefits – The economics of additional co-benefit types should be examined for potential opportunities (e.g. 'blue carbon', biodiversity) and for emerging carbon sequestration methods under the ERF (e.g. woodland restoration). Further economic analysis of the direct measurement methods may allow opportunities to be recognised where actual carbon sequestration is likely to be significantly greater than levels conservatively estimated by convenient and lower transactions cost ERF default methods.

Prioritise near-economic carbon abatement projects – Carbon abatement projects which are near to economically feasible based on current carbon prices should be prioritised for co-investment by the South Australian Government where they provide significant co-benefits. The South Australian Government could in effect act as a 'bundler' of benefits, some of which could be on-sold to other markets (e.g. carbon into the ERF or voluntary markets). This strategy could be particularly applicable where co-benefits are aligned with other natural resource management objectives that are high priority for the South Australian Government (e.g. landscape restoration projects).

The following technical reports associated with the research program are located at www.goyderinstitute.org/publications/technical-reports/:

Supply & cost analysis:

- [Assessing South Australian Carbon Offset Supply and Cost](#)
- [Economic Methods for Assessing Carbon Offset Supply Cost](#)
- [Technical Estimation of Carbon Supply](#)

Policy analysis:

- [Policy context](#)
- [Barriers to supply](#)

Co-benefit studies:

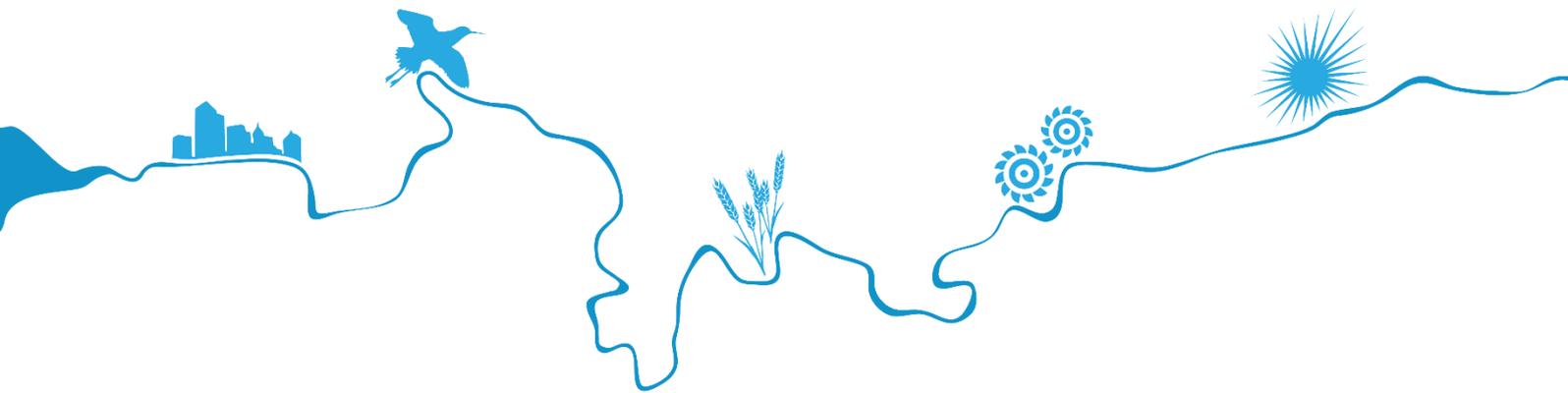
- [Riparian plantings for carbon and water quality benefit in the Mount Lofty Ranges](#)
- [Pollination service supply in lucerne seed production](#)
- [Shelter belts for lamb mortality reduction](#)

MORE INFORMATION



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