Carbon Positive Australia

CARBONCARE™ VOICES

STAKEHOLDER VIEWS ON THE FURTHER DEVELOPMENT OF THE CARBON INDUSTRY

lotterywest

CARBON WEST

CLEAR SOUTH
project management

ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past, present and emerging.

CHAIR FOREWORD

Carbon emissions are directly contributing to our climate crisis, and many of us want to better understand and manage our impact. Organisations and groups, both large and small, are strategising on how they can reduce their emissions. Increasingly, we are seeing landholders considering or undertaking carbon projects to meet that demand.

CarbonCare™ is a five-year project which has several deliverables:

1. Undertake market research to better understand the opportunities and constraints to drive carbon farming participation;
2. Increase stakeholder engagement through consultation, case studies and peer review;
3. Ongoing research into the co-benefits of carbon planting in Western Australia and its broader application across Australia;
4. Planting demonstration sites;
5. Developing and refining educational information and tools, and research into developing a farm calculator

The first phase of the project has been to research stakeholder engagement and determine how carbon farming can be seen as a legitimate and standard farming practice. This report highlights the findings and recommendations of this research. It has been peer-reviewed by stakeholder groups, including landcare and industry groups.

When you begin a project such as CarbonCare™ one of the primary aims is to see how awareness and understanding can be increased. With new information and insights, industry peers and stakeholders can increase their investment and involvement.

The timeliness of the study became evident early in the engagement process. Stakeholders were interested in increasing their understanding of the carbon market and their part in it. We sincerely hope these results will be used by stakeholder groups to better understand the carbon market drivers across the whole supply chain and support decision-making, helping to provide solutions that increase participation.

At Carbon Positive Australia, we want to extend our thanks to everyone who has taken part in this research. In particular, we would like to thank the individuals, groups, and organisations who have taken the time to engage in surveys, interviews, and the report's peer review. We also wish to thank Lotterywest for supporting the project. Finally, this project would not have been possible without Carbon West and Clear South. We extend our sincere thanks to them for their contributions and for collaborating with us to refine the CarbonCare™ vision. The CarbonCare™ project is something we believe will benefit the whole community; across Australia and beyond.

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ACKNOWLEDGEMENTS

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Carbon Positive Australia is very grateful to the 110 Offset Buyers who completed the survey. On behalf of each participant, 10 trees will be planted at Eurardy Reserve, Western Australia. This will total 1,100 native trees, sequestering an estimated 120 tonnes of CO2e.

Carbon West, who completed the research component of the study, also donated $2,030 to five charitable organisations across Western Australia as a thank you to the landholders who completed one of the two WA landholder surveys. $970 went to the Royal Flying Doctor Service; $480 was paid to Wheatbelt Men's Health; $290 went to the Cancer Council of WA; $150 to the Wirrpanda Foundation; and $140 was paid to the Country Women's Association (CWA) of WA.

ABOUT CARBON POSITIVE AUSTRALIA

Carbon Positive Australia is a trading name of Carbon Neutral Charitable Fund. It is a not-for-profit organisation with charitable status based in Perth, Western Australia (Whadjuk Noongar Boodjar). Established in 2001, Carbon Positive Australia uses money raised from donations and carbon offsets to fund revegetation and plant endemic trees on degraded land across Australia. The organisation's mission is to:

- ***Restore*** Australia's unique, biodiverse natural habitat through planting trees;
- ***Encourage*** the understanding of the carbon cycle and benefits of carbon planting;
- ***Collaborate*** with other organisations and the wider community; and
- ***Empower*** everyone to take active steps to reduce and offset their carbon footprint.

Carbon Positive Australia takes a nature-led approach to planting and restoration. The organisation is passionate about providing ecologically-sensitive planting. This protects agricultural land and the environment from further degradation while increasing biodiversity outcomes.

Our History

Over a 20-year history, Carbon Positive Australia has restored almost 5,000 hectares of unused and degraded land across Australia.

Based on a concept initiated by Men of the Trees to use the emerging carbon market as a means of increasing native restoration, it began as a non-profit organisation called Carbon Neutral in 2001.

In 2013, in response to a growing need for corporate environmental and carbon advisory services, Carbon Neutral became Carbon Neutral Pty Ltd. – a 'profit for purpose' organisation – and the Carbon Neutral Charitable Fund continued as a not-for-profit – working with individuals and businesses to reduce and offset carbon emissions.

Carbon Positive Australia is the new name for the Carbon Neutral Charitable Fund.

ACRONYMS & ABBREVIATIONS

ACCU	Australian Carbon Credit Unit
CFI	Carbon Farming Initiative
CMI	Carbon Market Institute
CSIRO	The Commonwealth Scientific and Industrial Research Organisation
DPIRD	Department of Primary Industries and Regional Development
ERF	Emissions Reduction Fund
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MLA	Meat and Livestock Australia
OECD	Organisation for Economic Cooperation and Development
tCo2	Tonnes of carbon dioxide equivalent
VCM	Voluntary Carbon Market

GLOSSARY

TERM	DEFINITION FOR THE PURPOSE OF THIS REPORT
Adoption	Where a landholder has adopted practices resulting in carbon sequestration or abatement.
Australian Carbon Credit Unit (ACCU)	A regulated, tradable financial instrument issued under the ERF, commonly referred to as an “ACCU”. Each unit represents one tonne of carbon dioxide equivalent (tCO2e) stored or avoided and may be purchased for compliance or voluntary offsetting purposes.
Baseline level	In land-based carbon projects, the amount of carbon stored in vegetation or soil is measured at the start to determine a baseline level. From that point on, 1 carbon credit is earned for every 1 tonne of carbon dioxide equivalent (CO2e) that is stored in the project area.
Carbon	A naturally abundant, non-metallic element that occurs in all organic compounds and can be found in all known forms of life. Diamonds and graphite are pure forms, and carbon is a major constituent of coal, petroleum and natural gas.
Carbon credit	See “carbon offset”.
Carbon dioxide equivalent	A metric measure used to compare the emissions from various greenhouse gases on the basis of their global warming potential (GWP). This is done by converting amounts of other gases to the amount of carbon dioxide with the equivalent global warming potential. For example the GWP of methane is 28. This means that the emission of one metric tonne of methane is equivalent to 28 metric tonnes of carbon dioxide.
Carbon farming	The process of changing agricultural practices or land use to increase the amount of carbon stored in the soil and vegetation (sequestration) and to reduce greenhouse gas emissions from livestock, soil or vegetation (avoidance). Carbon farming can range from a single change in land management, such as fertiliser management, reducing livestock emissions or no-till cultivation, to developing and implementing a whole of farm integrated carbon farming plan.
Carbon footprint	Everyday activities often result in the release of greenhouse gas emissions (including carbon dioxide). Examples include heating, cooling and transport. The total volume of emissions produced by an organisation, individual or household is commonly referred to as their “carbon footprint”.

GLOSSARY (CONT.)

TERM	DEFINITION FOR THE PURPOSE OF THIS REPORT
Carbon market	A market in which carbon credits, representing emissions reductions, are exchanged within a defined framework. The purchase and/or trading of carbon credits between the demand side (compliance and voluntary) and supply side of the market sets a price for carbon and forms the basis of a carbon market.
Carbon offset	A unit generated from an activity that avoids or reduces the release of greenhouse gases into the atmosphere or removes carbon from the atmosphere (i.e., carbon sequestration). Each carbon offset is equivalent to the prevention or removal of 1 tonne of carbon dioxide equivalent (tCO2e). Carbon offsets are created through both natural and technical solutions. Common methods include initiatives such as native tree planting (reforestation), solar power, wind farms, methane capture and waste diversion. The term is often used interchangeably with “carbon credit”.
Carbon offset buyer	An entity which buys carbon credit units to offset their carbon footprint.
Carbon planting	Revegetation and restocking of trees for the purpose of removing carbon from the atmosphere (carbon sequestration).
Carbon project	Carbon credits are generated through 'carbon projects' which include activities such as tree planting, restoring native vegetation and increasing soil carbon levels. These projects must maintain the new level of stored carbon for a certain period known as the 'project permanence period'. This period can be 25 or 100 years. In land-based carbon projects, the amount of carbon stored in vegetation or soil is measured at the start to determine a baseline level. From that point on, 1 carbon credit is earned for every 1 tonne of carbon dioxide equivalent (CO2e) that is stored in the project area.
Carbon sequestration	The long-term removal or capture of carbon dioxide from the atmosphere typically into soils, vegetation or the ocean.
Carbon Farming Initiative	An integral component of the Australian Federal Government’s Emissions Reduction Fund which allows land managers to earn carbon credits by changing land use or management practices to store carbon or reduce greenhouse gas emissions.
Carbon service provider	An organisation or individual who works with landholders to develop carbon projects on their property. The carbon service provider manages all the carbon project administration requirements and, in some cases, funds the development of the project in return for taking a share of the carbon credits it generates.

GLOSSARY (CONT.)

TERM	DEFINITION FOR THE PURPOSE OF THIS REPORT
Carbon trading	A market-based system that aims to reduce the amount of greenhouse gases emitted by entities and individuals. It creates supply and demand for carbon and places a price on emissions, providing incentives for companies and entities to lower their contribution to global warming and to invent and adopt new clean technologies.
Climate change	The long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. This term is often used interchangeably with "global warming".
Co-benefits	The positive social, economic and environmental outcomes which are associated with carbon farming.
Compliance demand	Demand from companies or other entities that must purchase carbon credits to comply with restrictions on the total amount of carbon dioxide they are legally allowed to emit.
Emissions	Release of greenhouse gases including carbon dioxide, methane, nitrous oxide and ozone into the atmosphere.
Emissions Reduction Fund (ERF)	Australia's national carbon crediting mechanism and the centrepiece of the Federal Government's Direct Action Policy on Climate Change. The ERF is a voluntary scheme that aims to provide incentives for a range of organisations and individuals to adopt new practices and technologies to reduce their emissions. It is enacted through the *Carbon Credits (Carbon Farming Initiative) Act 2011*.
FullCAM	A calculation engine developed by the CSIRO to measure carbon abatement estimates for vegetation methods under the ERF.
Global warming	The long-term heating of Earth's climate system due to human activities which have increased the heat-trapping greenhouse gas levels in the Earth's atmosphere. This term is often used interchangeably with "climate change".
Gold Standard	One of the largest independent carbon crediting mechanisms in the world. Carbon credits issued under the standard are known as "Verified Emissions Reductions" and are predominantly used for voluntary offsetting purposes.
Greenhouse gases	Gases that contribute to the greenhouse effect by absorbing infrared radiation. Common examples include carbon dioxide, methane, nitrous oxide and ozone.
Low-carbon economy	An economy based on low-carbon power sources resulting in minimal greenhouse gas emissions. The term is used interchangeably with "low-fossil-fuel economy" and "decarbonised economy".
Participation	Where a landholder has adopted practices resulting in carbon sequestration or abatement.

GLOSSARY (CONT.)

TERM	DEFINITION FOR THE PURPOSE OF THIS REPORT
Permanence obligation	Refers to the requirement that the carbon stored by a project must be maintained for a chosen permanence period, either 25 or 100 years.
Registered project	A carbon project that is registered with the ERF.
Safeguard Mechanism	A policy mechanism within the ERF that places a legislated obligation on Australia's largest greenhouse gas emitters to keep net emissions at or below their emissions baseline. Facilities that exceed their baseline have several options to manage excess emissions, including purchasing and surrendering ACCUs to offset emissions.
Unverified offsets	Offsets from carbon projects which have not been validated and verified by an accredited third party. These offsets are issued directly by the carbon project developer and can be based on internal or external methodologies.
Verified Carbon Standard	The world's largest independent carbon crediting mechanism. Carbon credits issued under this mechanism are called "Verified Carbon Units" and are primarily traded in the voluntary market.
Verified offsets	Offsets for which the underlying carbon project has been validated and verified by an accredited third party. Examples include ACCUs issued under the ERF, Verified Emissions Reductions issued under the Gold Standard, and Verified Carbon Units issued under the Verified Carbon Standard.
Voluntary demand	Non-legislated demand for carbon credits/offsets from individuals, organisations and governments who voluntarily choose to offset their greenhouse gas emissions.

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CARBONCARE™ RESEARCH OBJECTIVES

Australia, including the agricultural sector, is moving to address the climate emergency and its threats. Together with State Governments, carbon industry players are keen to foster a vibrant carbon farming industry.

The goal of CarbonCare™ is to increase carbon farming participation, particularly projects implementing high conservation value revegetation. This research seeks to capture insights from across the carbon farming supply chain and raise awareness in the broader community. This research will be applicable to:

- individual landholders;
- landcare, natural resource management and grower groups;
- agricultural stakeholders; and
- those interested in increasing carbon farming participation.

The research will also be an important resource for both State and Federal governments and those looking to support and/or fund research and other initiatives that drive carbon market supply and demand.

The CarbonCare™ market research element aims to:

- profile farmers and landholders who have already undertaken carbon farming projects;
- provide broader agricultural industry insights into the conversations about carbon farming;
- identify how to increase carbon farming uptake by broadacre landholders across Western Australia (WA);
- explore the motivating factors of buyers purchasing carbon credits (offsets), particularly organisations and businesses;
- quantify the environmental and socioeconomic impacts and values of carbon farming (co-benefits); and
- identify educational resources required by the community on carbon farming.

EXECUTIVE SUMMARY

Overview

The CarbonCare™ report summarises a year's work looking to better understand the carbon market, particularly in Western Australia. It has found genuine interest in carbon farming and a desire for enhanced understanding from all stakeholder groups, including landholders, potential offset buyers and investors.

Farming communities are passionate about their land. Keeping the land productive and healthy is a major concern, and they trust their peers, grower groups, and NRM bodies to provide information to address this. They trust these same bodies to provide information on carbon farming. Information about where to access and visit demonstration sites is essential for landholders to see working examples of carbon farming. Landholders want to understand the onground practicalities. Therefore, opportunities to visit demonstration sites and talk to peers and existing project owners would assist in understanding and, in turn, may increase participation. The research shows this is particularly relevant to the younger demographic of next generation landholders (aged <39).

Landholders are motivated by various factors when considering participating in a carbon project. Historically, landholders with existing projects were proactive in researching methods to reduce environmental decline. The broader consequences of climate change are understood and the landholding community has genuine concerns about loss of habitat and environmental degradation. Whilst their motivations were primarily altruistic, financial aspects were undoubtedly still important.

Landholders recognise that co-benefits from carbon projects (such as increased biodiversity, reduced soil erosion, water quality improvements and social impacts) have genuine value, however these values are often unrecognised by financial institutions. Research is needed to understand and then assign economic value to these co-benefits. This will benefit the wider community, not just the project owner.

In speaking to indigenous landholders, a 'Country first' approach will ensure that new projects bring multiple benefits beyond, and including, carbon sequestration. Carbon projects with an ascribed co-benefits value can help place the needs of the land first.

The study showed that perceived barriers (highlighted by previous research in this area) are still relevant. This is particularly true of those elements beyond the control of landholders such as government policy changes and access to capital.

Development of the Australian carbon market requires further participation by offset buyers. To progress, information on carbon projects must be easily obtainable and address relevant concerns. Offset buyers need clear and consistent information explaining how carbon offsets are generated, and the different types of offsets available (i.e. verified vs unverified). They also need standardised tools that help measure emissions and establish baseline data to monitor progress against peers (i.e. market-certified carbon calculators).

The recommendations in this report represent the voices of the carbon market supply chain and provide an integrated perspective on how to increase participation and future market success.

The CarbonCare™ Voices study is relevant and timely to the carbon farming industry, particularly in Western Australia. It provides a snapshot of the WA carbon market's development through the lens of landholders, carbon offset buyers and agricultural industry stakeholders with over 322 insights captured during the research.

Key Discoveries

There is a high level of demand for information from all participant groups. Potential investors want clear and concise information regarding possible offset creation, including the risks and benefits of involvement before investment. The research indicated a preference for information through:

- Visiting and viewing local carbon farming project sites;
- Peer-to-peer learning opportunities, particularly with farmer organisations and demonstration sites;
- Grower / Natural Resource Management groups; and
- Self-motivated research from trusted third-party sources (i.e. online searches), which aren't necessarily government or carbon service providers.

Carbon footprint measurement levels are low across the carbon supply chain.

- All of the agricultural industry stakeholder groups recognise the importance of baseline measurements.
- Carbon footprint is difficult to quantify, as there is no market-certified tool.

'Carbon Influencers' are needed to normalise the perceptions of a 'carbon farmer' in the broader farming community.

- Awareness of key carbon terminology is generally well understood; however, there is a significant need to clarify the 'carbon farming industry' across the supply chain.
- Responses from the under 39-year-old age bracket indicated less interest in carbon farming participation than other age ranges. This was particularly relevant to carbon footprint assessment and future involvement.

Participation in carbon farming is low amongst survey participants.

- An existing predisposition to the adoption of carbon reduction and sequestration activities was identified in the research.
    - There were several **potential barriers** to carbon project uptake identified:
        - The lack of stable government policy;
        - The financial viability of project partners; and
        - Legal encumbrance on land titles. This is a concern to landholders, particularly generational farmers. These concerns are shared in the stakeholder interviews, particularly by banks.
    - **Key motivators** for potential carbon farming participants included earning a 'steady' income, restoring degraded land, improving property aesthetics and improving

biodiversity. Current project owners suggested that co-benefits were more important; however, an underlying economic expectation was identified.

    - Landholders will consider carbon footprint offsetting and participating in carbon farming in the future. There are expectations in the Industry that opportunities for carbon farming will increase.
    - Current offset purchasing is driven by internal factors generally linked to broader environmental objectives and leadership. Environmental responsibility and future marketing potential were indicated as motivators to increased participation, with vegetation and verified carbon offsets currently being favoured.

- **Concerns about the future impact of climate change amongst Australian organisations is high**.
- **The CarbonCare™ research has indicated a likely increase in demand for carbon offsets in the future.**

CARBONCARE™ VOICES: KEY RECOMMENDATIONS

01

Target investment into developing a standardised method of calculating the carbon footprint of farms and organisations. This calculation tool must be easy-to-use and endorsed by industry and government.

02

Adopt an accepted standard for natural capital accounting, with co-benefits accounted for within all carbon crediting mechanisms. This will ensure that land use decisions prioritise the value of land to people, ecosystems and economies.

03

Conduct further research to gauge consumer sentiment about carbon-neutral agricultural products. This aspect of the supply chain was not within the scope of this project. However, the results could have a significant impact on the adoption (rate and scope) of carbon footprint measurement and carbon offset purchasing by organisations within the agricultural industry.

04

Establish a peer-to-peer carbon farming networking group. Clear and consistent information about the carbon market and related opportunities must be delivered by sources that landholders trust.

CARBONCARE™ VOICES: KEY RECOMMENDATIONS

05

Establish a Carbon Farming Task Force across all levels of government. Federal and/or state governments need to appropriately review the current risks associated with program stability, carbon price, land encumbrance, and funding opportunities.

06

Continue to develop partnerships with a broad range of stakeholder groups to disseminate information about the carbon farming industry, engage landholders, and attract additional funding streams. Local grower, NRM and Landcare groups are trusted by landholders and are essential partners to enable industry growth.

07

Direct funds towards establishing and promoting carbon farming demonstration sites. Respected farmers, grower groups and corporate farms could be showcased as local carbon leaders or 'influencers' to help increase interest and engagement across the WA agricultural region.

08

Investigate and integrate a social science approach to increasing carbon farming participation across WA. The engagement of farmers, particularly those considered 'Next-Gen' (<39) , will be essential to the success of the industry.

The Carbon Landscape: An Overview

CLIMATE CHANGE AND AGRICULTURE

Australian agricultural activity is defined by climate, water availability, soil type and proximity to markets. The industry:

- accounts for a significant proportion of land and water use (58% and 59% respectively);
- represents more than 11% of exports;
- contributes 2.2% of value-added gross domestic product (GDP); and
- provides approximately 2.6% of employment (ABARES, 2020).

In a Western Australian context, the impact of climate change, combined with the State's natural climate variability, presents significant environmental, social and economic challenges and opportunities to the agricultural sector (Sudmeyer, 2014).

As an industry, agriculture accounted for 12.9% of Australia's national inventory of greenhouse gas emissions for the year to date to March 2020; Australia's fourth-largest emitter by sector (DISER, 2020). The opportunity for agriculture is that land is both a source and a sink of greenhouse gases. It plays a vital role in exchanging energy, water and aerosols between the land surface and earth's atmosphere (IPCC, 2020). Australia's current emissions reduction target under the Paris Agreement will require significant domestic abatement investment, which is expected to come primarily from the land sector (Carbon Market Institute, 2020).

Three key strategies available to agriculture are:

1. Emissions reduction: reducing greenhouse gas emissions.
2. Sequestration: removing CO2 from the atmosphere into permanent reservoirs (biological, geological or oceanic).
3. Adaptation: responding to and coping with climate change as it occurs, either proactively or reactively (Australian Academy of Science, 2015).

In response to a range of pressures and drivers, agricultural industry bodies are taking action on climate change. For example, Meat and Livestock Australia have identified a target to achieve carbon neutrality across Australian beef, lamb and goat industries by 2030 (Meat and Livestock Australia, 2020). Further, in October 2020 it was reported that WAFarmers, a Western Australia agricultural advocacy group (with a membership of over 3,500 farmers), are working to establish a net-zero carbon target policy. They "acknowledge the impact of climate change on Australian agriculture" (Farm Weekly, 2020).

A key aspect of the WAFarmers' policy development will be to recognise and determine the amount of carbon sequestered in standard and modern farming practices. This will include minimum tillage, stubble retention and improved pastures, and the development of an agricultural industry-specific carbon calculator (Farm Weekly, 2020).

Following the release of its first climate risk survey, the Australian Prudential Regulation Authority (APRA) announced in March 2019 that it will increase its scrutiny of how banks, insurers and superannuation trustees manage the financial risks of climate change to their businesses (APRA,

2020). The survey found that a "substantial majority of regulated entities were taking steps to increase their understanding of the threat" (APRA, 2020). Numerous media have reported banking and superannuation sectoral actions to address climate change, including:

- "AustralianSuper dumps Whitehaven Coal, commits to net zero by 2050" as reported by The Sydney Morning Herald, November 2020;
- "Sustainability: NAB joins race for emissions reduction" as reported by The Australian, November 2020;
- "Australia will lose more than $3 trillion and 880,000 jobs over 50 years if climate change is not addressed, Deloitte says" as reported by the ABC, November 2020.

These are only a few examples of the increasing activity across agricultural supply chains in response to climate change.

THE CARBON MARKET

The carbon market is a mechanism designed to increase the demand for emissions reduction and climate action by leveraging public policy frameworks to drive economic decarbonisation at lowest cost. It incentivises private sector investment in emissions reduction (Carbon Market Institute, 2020).

The purchase and/or trading of carbon credits between the demand side and supply side of the market sets a carbon price and forms the basis of the carbon market. Carbon markets are already operating worldwide and are growing in size and value (Carbon Market Institute, 2020).

THE ECONOMICS OF CARBON

Australia's carbon market has been designed to drive economic decarbonisation at the lowest cost, which is a commercial imperative for offset buyers.

Carbon pricing initiatives put a price on carbon with the aim of internalising the environmental and social costs of carbon pollution and encouraging investors to choose lower-carbon paths. A price on carbon helps shift the burden for the damage back to those who are responsible and who have the means to reduce it. A carbon price sends an economic signal whereby polluters decide whether to discontinue their polluting activity, reduce emissions, or continue these activities and pay for it. The premise is that the overall environmental goal is achieved in the most flexible and least-cost way to society.

Historically, there have been two main types of carbon pricing initiatives, Emissions Trading Systems (ETS) and carbon taxes, implemented at a regional, national or subnational level. The choice of initiative largely depends on national and economic circumstances. The 2015 Paris Agreement has introduced a third type of carbon pricing initiative in the form of an international voluntary scheme, defined in Article 6.2 of the Agreement. This scheme involves voluntary cooperation in the implementation of countries' Nationally Determined Contributions (NDCs) and allows for more ambitious targets. There are also more indirect ways of pricing carbon, such as through fuel taxes, the removal of fossil fuel subsidies, and regulations that may incorporate a 'social cost' of carbon.

Furthermore, there is a complementary body of work emerging related to natural capital accounting. The Australian Government is investing in developing an Australian Farm Biodiversity Certification Scheme Trial with the three-year project now delivering Phase 2 (National Farmers Federation, 2020).

Australia's domestic carbon market operates across all States and is underpinned by the Australian Government's Emissions Reduction Fund (Carbon Market Institute, 2020). The ERF is a voluntary scheme that aims to provide incentives for a range of organisations and individuals to adopt new practices and technologies to reduce their emissions. Several activities are eligible under the scheme, and participants can earn Australian Carbon Credit Units

(ACCUs) for emissions reductions. One ACCU is earned for each tonne of carbon dioxide equivalent (tCO2e) stored or avoided by a project.

The Australian carbon market has two main elements: the compliance market and the voluntary market.

1. The compliance market consists of the Emissions Reduction Fund (ERF) and the Safeguard Mechanism. Delivery of emissions reduction is required by legislation, and the only eligible units are ACCUs. Demand is driven by the Federal Government's international emissions reduction commitments and compliance obligations for heavy-emitters covered under the Safeguard Mechanism.
2. The voluntary market represents offset purchases by entities outside of the compliance market to meet non-legislated, voluntary reduction commitments. ACCUs, verified offsets and unverified offsets are traded in the voluntary market. This market is primarily driven by businesses, state governments and individuals seeking to offset their emissions.

Outside the ERF, there are several other types of carbon credit units available in Australia. They can be broadly classified as:

1. Verified offsets, which have been certified by an independent verification body and are recognised under the Climate Active Carbon Neutral Standard (e.g. Gold Standard offsets and Verified Carbon Standard offsets); or
2. Unverified offsets, which are sold directly by project owners and have not been certified by an independent verification body.

Carbon credit investors or providers (i.e., landholders) who register projects with the ERF can either hold or sell their ACCUs to generate income. They can sell to either the Australian Government through a reverse auction process or to businesses and individuals. The average price per tonne at the 11th ERF auction in September 2020 was $15.74 per ACCU (Clean Energy Regulator, 2020). The price of carbon in Australia (ERF option pricing and spot market pricing) is currently one of the lowest globally (Carbon Market Institute, 2020).

The demand for carbon offsets is related to the transition and acceleration to a global net-zero economy. The ERF has reported that demand for ERF contracts (carbon offsets) is rising each year (Clean Energy Regulator, 2020). Despite its landmass, and the opportunities that the carbon market currently represents in Australia, only 13% of registered and contracted ERF projects are in WA (Clean Energy Regulator, 2020).

CARBON FARMING

Carbon farming is the process of changing agricultural practices, or land use, to increase the amount of carbon stored in the soil and vegetation (sequestration). Carbon farming may also seek to reduce greenhouse gas emissions from livestock, soil or vegetation (abatement or avoidance) (DPIRD, 2020).

Carbon storage technologies include planting trees and shrubs that store carbon and can contribute to biodiversity depending on the carbon planting design. In Western Australia, woody perennials are widely considered the primary method to achieve or meet carbon storage demands, and the potential for carbon farming is significant.

A key pillar of the Western Australian Climate Policy is "storing carbon and caring for our landscapes”. The policy states that "in the Wheatbelt, there are opportunities to improve degraded land and provide additional revenue streams to farmers by integrating environmental plantings into existing farming systems" (WA Government, 2020).

A landholder’s involvement can vary from adopting a carbon farming practice through to participating in the carbon market by establishing a dedicated carbon farming project (Robinson, 2020). There are currently 81 ERF registered projects in Western Australia (Clean Energy Regulator, 2020). While this represents the third highest number of projects by state, participation levels are relatively low given the state’s land mass.

CARBON FARMING IN THE FARM PLAN

The CarbonCare™ research findings have indicated that broadacre landholders have an established predisposition to carbon reduction and sequestration activities evidenced by their exisiting farming practices. However, participation in carbon farming projects is currently low, as indicated in both the research findings presented within this report, and the current levels of ERF participation.

Our stakeholder interviews suggested that, for a carbon farming supply chain to be effectively established in Western Australia, and to achieve the associated co-benefits, projects need to be integrated into the farm plan. Carbon farming needs to be seen as a core part of the farming landscape and farm business. It must be a viable commercial reality, as landholders will compare the opportunity cost of carbon farming with other enterprises in their operations to see if it is a feasible addition to farm business.

Farmers have a wide range of expected outcomes from carbon farming projects, and financial returns are often at the forefront of these. In establishing a network of research, development, and extension (RD&E) sites, illustrating how carbon farming can be integrated into existing farming systems will be a step towards increasing participation.

For a project to be successful, the study identified that proper and thorough planning was critical. Assessing and identifying what support farmers need in their farm planning is also required. Further research is needed to identify who would provide this support.

Whatever the delivery method for support in farm planning, landholders prefer learning opportunities to be delivered in a peer-to-peer model. This will require a 'hands-on' involvement strategy demonstrated by current carbon project owners. It would be expected that future project owners (and the wider broadacre landholder community) would continue this level of involvement.

Another consideration for future program design is the increasing pressure for carbon neutrality on farmers. The reality is that many farmers may withhold selling their ACCUs to offset their own emissions. This will impact on the supply of carbon to the broader carbon market.

WIDER BENEFITS OF CARBON FARMING (CO-BENEFITS)

Climate change is inherently linked to many other global challenges. The positive social, economic and environmental outcomes associated with carbon farming are referred to as co-benefits. These co-benefits work globally to address other goals for sustainable development, representing a "shared vision of humanity and a social contract between the world's leaders and the people" (United Nations, 2020).

Examples of land or water-based co-benefits from carbon farming projects include:

- increasing biodiversity via protection and regeneration of native vegetation;
- salinity control and mitigation;
- improved water quality through restoring riparian vegetation;

- livestock shelter; and
- erosion mitigation.

There are also social benefits, including job creation from restoration work (Clean State Jobs Report, 2020).

The benefits of increasing vegetation and restoring degraded land cannot be underestimated. Taking care of 'Country' has positive impacts for everyone. In another component of the CarbonCare™ project, Carbon Positive Australia commissioned a study that aimed to quantify the environmental and socioeconomic effects and values of carbon farming in the Northern Wheatbelt. This summarised that:

"Co-benefits are often discussed and referred to, but rarely quantified rigorously. In the future, it is likely that investors will ask for more rigorous demonstration of the co-benefits to pay for a premium on carbon credits. Valuing co-benefits will inform better decisions..., which could create additional value for society, the economy and the environment" (CarbonCare™ Co-Benefits Assessment, Point Advisory, 2021).

Understanding the value of co-benefits will become increasingly relevant as businesses and governments work to address the United Nations Sustainable Development Goals. The opportunity to purchase carbon credits with co-benefits (carbon-plus) has already been incorporated into recommendations from the Emissions Reduction Fund.

PERSPECTIVES
WITH ORAL MCGUIRE

Oral yearns for (and tirelessly works toward) an understanding by leadership of the need to collaborate with Australia's First Peoples and the world's oldest living cultures. And he's angry about it, too. There are times when he throws his hands up and demands to know why the decision-makers in Agriculture don't put Country first. How can they not see that the very land they rely on is quantifiably hurt by current land management strategies and practices?

But he's also optimistic about what can be done to restore land. The farm at Avondale Park is his testing ground and his hypothesis was proven: strengthening biodiversity with native plants attracts the right bugs, creatures and birds. The soil is softening — making way for traditional practices. "The most powerful thing is that each year we do the work of healing Country and we see continued growth, change and improvement," Oral says.

When it comes to carbon farming, Oral sees restoration as a developing industry. Clearly, there are some common goals when it comes to carbon planting and regeneration of Country. The best way to bring them to fruition, according to Oral, is to include Noongar people in the biodiversity and restoration conversation.

Research Design & Delivery

LITERATURE REVIEW

CarbonCare™ aims to build on previous research relating to the development of the carbon farming industry and, in particular, the barriers and drivers relating to carbon farming. A desktop review was undertaken on research papers and reports spotlighting farming constraints and motivations. The review is summarised in Appendix A of this report.

MARKET RESEARCH DESIGN

To capture perspectives from across the carbon farming supply chain, four key market research groups were identified. They are defined as follows:

1. Western Australian Carbon Project Owners
2. Western Australian Broadacre Landholders
3. Offset Buyers
4. Agriculture Industry Stakeholders

1. Western Australian Carbon Project Owners

This group represents WA landholders who have, or have had, a registered carbon farming project on their land.

The primary research focus for this group was:

- carbon project beginnings and details;
- carbon project initiator and motivators;
- project management;
- level of 'hands-on' involvement;
- experiences with Carbon Service Providers;
- project success evaluation and success determinants;
- sources of carbon farming information;
- potential motivators for increased carbon farming participation; and
- carbon footprint measurement and offsetting.

The sample design was selective, targeting Western Australian landholders who have (currently or previously) implemented a carbon farming project on their property. The sample recruitment was based on a dataset provided by Carbon Positive Australia. Thirty-four respondents took part in the research.

All data was collected via telephone interview, with direct entry by interviewers into a professional online market research data-capture system.

A report was generated by the data collection software system; however, this was determined to be too simplistic for the research data needs. The data was exported into Statistical Package for Social Sciences (SPSS) and Microsoft Excel format, enabling use of a more powerful analytical

tool (SurveyCraft). This then delivered extensive cross-tabulations and open-ended coding for exploring responses in more detail.

Interviews took place between 1st October 2020 to 2nd November 2020. Detailed survey findings were produced in mid-November 2020.

2. Western Australian Broadacre Landholders

This group represented landholders from across the grain-growing regions of Western Australia. This area was defined utilising the Natural Resource Management Regions of WA. It included the Northern, Central, South Coast and South West NRM regions.

The primary research focus for this group was:

- familiarity with, and perceptions of, the success or otherwise of carbon farming in Western Australia;
- perceived image of the type of landholders involved in carbon farming;
- communications experience and the likelihood of accessing carbon farming information sources;
- perceived ways to measure success;
- potential concerns and barriers;
- evaluation of potential support activities and incentives;
- likelihood of future participation; and
- carbon footprint measurement and carbon offsetting.

The sample design was purposive, based on targeting a cross-section of Western Australian broadacre farmers. Recruitment and participation were primarily through 'farmer networks' including: grower groups, Landcare and NRM groups, local farming organisations, RegenWA networks, and the personal networks of the project team. Social media platforms such as Facebook, Twitter, LinkedIn and Instagram were also utilised to drive recruitment. Major media outlets that published material relating to the survey included WA ABC radio, Great Southern Herald, Albany Advertiser, and the Countryman.

More than 80% of survey responses were collected via telephone interview, with direct entry by interviewers into a professional online market research and data-capture system. The remaining 20% of responses were collected online. During interviews, the survey identified a small sample of current carbon project participants who were later directed to participate in the corresponding Carbon Project Owner survey.

A report was generated by the data collection software; however, this was determined to be too simplistic for the research data needs. The data was exported into Statistical Package for Social Sciences (SPSS) and Microsoft Excel format, enabling use of a more powerful analytical tool (SurveyCraft). This then delivered extensive cross-tabulations and open-ended coding for exploring responses in more detail.

The sample size was 166 landholder participants. The interview process took place between 30th August 2020 and 28th October 2020. Detailed survey findings were produced in early November 2020.

3. Carbon Offset Buyers

This group represents organisations from a range of industries operating within Australia who may, or may not, currently be purchasing carbon offsets.

The primary research focus was:

- perceived impacts of climate change (current and future);
- current environmental/sustainability practices and management;
- familiarity, involvement, current attitudes, and corporate intent concerning the organisation's carbon footprint;
- extent and incidence of any carbon footprint assessment;
- familiarity, incidence, practices and drivers of carbon offsetting participation;
- attitudes and motivations for carbon offsetting; and
- information sources and expectations to support carbon offsetting initiatives.

This sample design was purposive and targeted organisations in the following eight sectors:

1. agriculture;
2. mining;
3. construction;
4. food and beverage;
5. health;
6. education;
7. tourism; and
8. retail/wholesale/other.

The methodology adopted for this study was a two-stage approach:

1. A master list of potential target corporations was developed based on desktop research, primarily focusing on the eight key sectors above. This master list incorporated, where possible, names of primary interview targets within each organisation and contact details including telephone and email data.
2. A screening and targeting methodology was designed to identify the company's ideal spokesperson on the matters indicated in the research focus above. This often-required repeat call-backs to achieve an effective interview. Success rates were higher than expected (around a one in four incidence), assumedly a function of most corporations' growing interest in their environmental responsibility.

The majority of survey responses were collected by telephone interview with direct entry into a professional online market research data-capture system. A small number were collected online.

A report was generated by the data collection software; however, this was determined to be too simplistic for the research data needs. The data was exported into Statistical Package for Social Sciences (SPSS) and Microsoft Excel format, enabling use of a more powerful analytical tool (SurveyCraft). This then delivered extensive cross-tabulations and open-ended coding for exploring responses in more detail.

The total interview process began with target identification and target screening. The total size was 110. Final interviews were completed between 3rd August 2020 and 29th September 2020. Detailed survey findings were produced in October 2020.

4. Agricultural Industry Stakeholders

This group represents organisations providing goods or services integral to the agricultural supply chain.

The purpose was to:

- inform industry stakeholders about the CarbonCare™ project;
- ensure the CarbonCare™ research included input from a wide range of stakeholders in the agriculture industry to present a broad view of the carbon farming potential in Western Australia;
- capture insights from industry players around the role of carbon farming in Western Australian agriculture, including opportunities and constraints;
- identify and understand the information and knowledge gaps in carbon farming from other areas of the agriculture value chain;
- identify and understand the perceived barriers to adoption of other areas of the agriculture value chain;
- Identify understand stakeholder roles in the development of a carbon market in WA;
- identify other industry barriers and levers which will affect carbon markets development; and
- develop a sense of key communication and information requirements from agriculture industry stakeholders.

Twelve informal face-to-face interviews (in-person and via virtual methods) were conducted utilising exploratory questioning guided by the primary research focus. A purposive sampling approach was used to select the participants. Six industry areas were targeted for responses:

1. grain;
2. grower and natural resource management groups;
3. agronomy;
4. banking;
5. research; and
6. livestock.

Twenty-seven individuals participated, representing 12 agricultural-related industry organisations.

The interviews were deliberately designed to be informal, and as such, no formal data collection was undertaken. Responses to questioning and conversations were recorded with thematic analysis to establish central takeaways from the interviews. Recording the interviews also allowed for the identification of strong colloquial statements that clearly express industry viewpoints. The Agriculture Industry Stakeholder interviews were completed between August 2020 and January 2021.

Data Summary

CarbonCare™ has captured many insights from a range of Western Australian carbon farming stakeholders and potential carbon offset purchasers. These will be used to identify the gaps in current knowledge and awareness, and identify opportunities to further develop carbon farming. Each research groups' findings are outlined below. A more detailed analysis and results are contained in the appendix to this report.

WESTERN AUSTRALIAN CARBON PROJECT OWNERS

Carbon Farming Motivations

Carbon Project Owners are landholders who have already invested in carbon farming plantings. They have identified that biodiversity restoration and environmental objectives are strong motivations to consider undertaking a carbon farming planting project. The initial interest in carbon farming generally came from self-initiated research and, to a lesser degree, from contact with Carbon Service Providers.

The survey indicated that environmental influences such as “encouraging native plant and animal species to flourish” and “improving the aesthetic appearance of the property” rated very highly as specific motivators. In contrast, economic effects rated far behind.

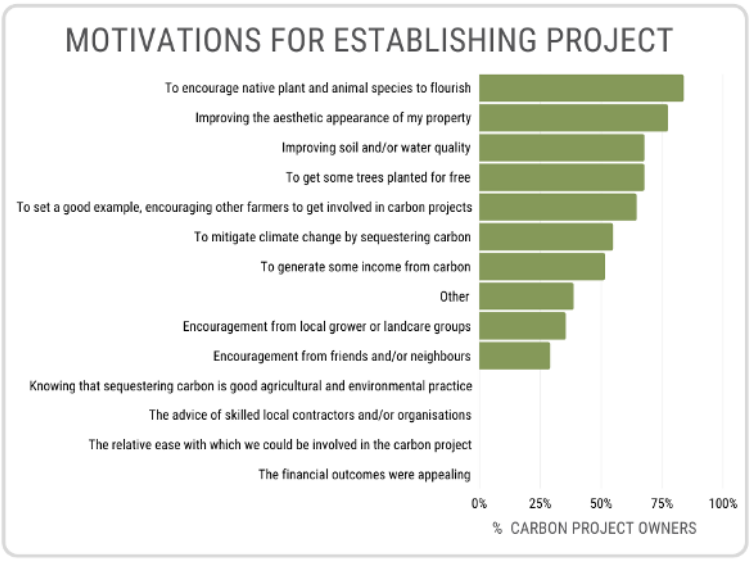

FIGURE 1: MotivatIons for establishing carbon project (Carbon Project Owners)

When considering the co-benefits of carbon farming, Carbon Project Owners readily agreed that carbon plantings are a valuable tool in addressing local environmental issues (i.e., erosion and salinity). Tackling global challenges (i.e., climate change and climate variations) was a secondary consideration. At the same time, the provisions for potential improvements to farm productivity and yields were seen as a lesser concern.

Project Owners indicated that a critical motivator for future involvement would be having observable carbon farming trials in their local area. This is especially relevant if trials are demonstrated to be financially successful and supported by the government (i.e., cover upfront costs). Another motivator was that the projects would complement a landholder’s current practices.

Carbon Project Success Factors

The majority of Carbon Project Owners indicated that their project experience was generally positive. Approximately half the respondents indicated that negative issues were related to the lack of communication by Carbon Service Providers. The financial rewards of their projects often did not meet expectations.

MORE THAN
80%
of Project Owners said having a project on their land has been a positive experience

MORE THAN
35%
of existing Project Owners said they would be likely to allocate more land to carbon projects in the future

There were several factors that participants considered key measures of success for a carbon farming project. These included: good project management; restoration of degraded land; high seedling survival rate; increasing biodiversity and low on-going maintenance cost. Generating income for the landholder was deemed to have the lowest importance when considering project success.

Generally, they saw their own projects as successful in terms of beautification of property, plant and tree growth and plant species suitability. Less than 30% of Carbon Project Owners ranked their project as successful when it came to income generation.

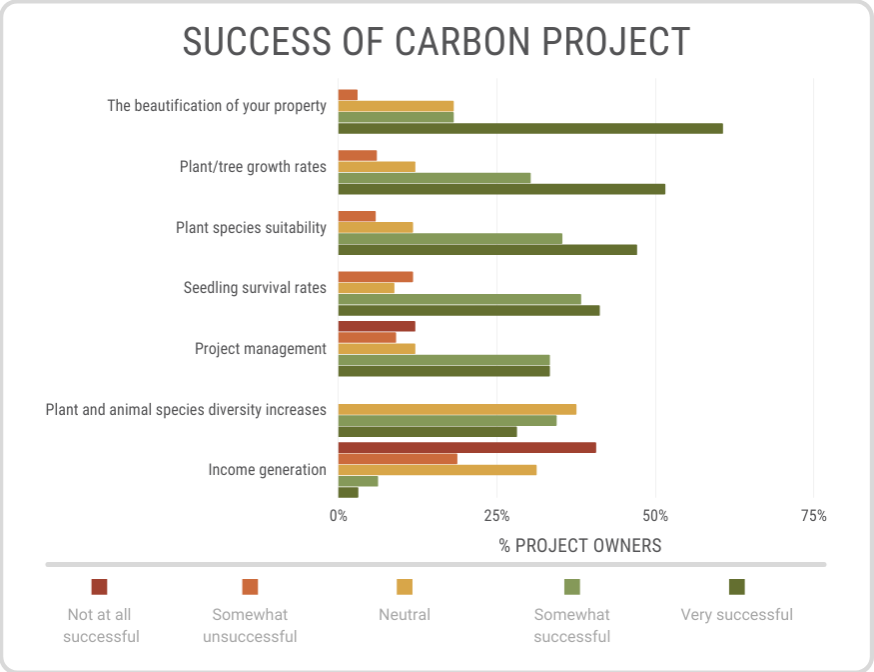

FIGURE 2: Perceptions of own project success (Carbon Project Owners)

Based on their own experiences, existing Project Owners highlighted several issues that will need to be considered by any future carbon farming participants. These focused on the farmer's long-term commitments towards the project and the need for good preparation and management (both of the carbon project planning and the subsequent planting). It was noted that there should be appropriate consideration given to correct species selection (based on the land needs of individual projects).

Carbon Information

Carbon Project Owners identified that key information sources (regarding carbon farming) were online searches and other participating landholders. Traditional media (radio, television, newspaper and magazines) also rated quite highly, whereas social media platforms rated very low.

Motivating Future Participation

More than half of the Carbon Project Owners agreed that demonstrations of financially successful carbon farming trials, along with government support for upfront cost, would increase future participation.

Carbon Footprint and Offsetting

The study highlighted that most Carbon Project Owners had not assessed or measured their carbon footprint despite previous investments into carbon plantings. This information infers that the early adoption of carbon projects was undertaken for altruistic and conservation reasons. In contrast, the WA Broadacre Landholder research highlighted this was also a lower priority for existing Project Owners. Project Owners indicated that there may be scope to offset their carbon footprint in the future.

WESTERN AUSTRALIAN BROADACRE LANDHOLDERS

Carbon Familiarity and Concerns

WA Broadacre Landholders (particularly those with holdings over 500 hectares) were shown to be familiar with the concept of carbon farming; however, the research highlighted opportunities to increase this. The Broadacre Landholder survey identified that participation in a range of carbon farming practices (i.e., no-till cropping, stubble retention) are high, but establishment of registered carbon projects is low.

Carbon Concerns

From a Broadacre Landholder perspective, the most significant concerns around carbon farming are government policy changes, financial stability of project partners, and legal encumbrances being placed on landholdings. All of these issues are outside of the control of landholders.

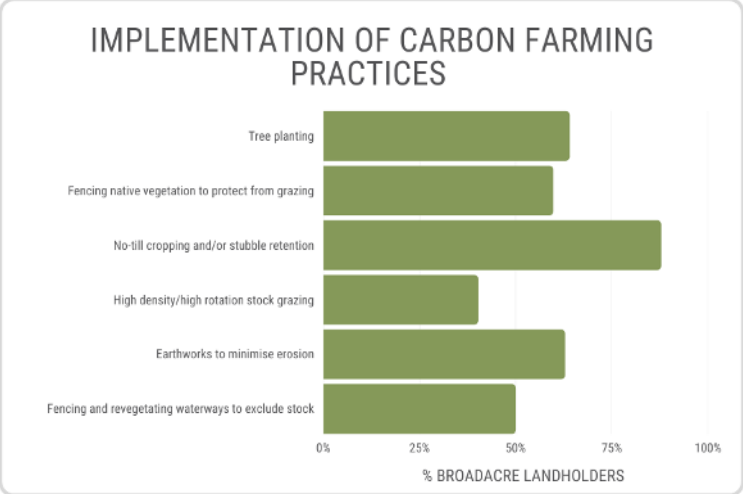

FIGURE 3: Implementation of carbon farming practices (Broadacre Landholders)

The Carbon Farmer

The study showed that the term 'carbon farmer' is perceived by Broadacre Landholders as a landowner who is primarily city-based and has additional income streams (supplementary to farm income). The sample of Western Australian Broadacre Landholders indicated that:

- 52% of the landholders did not live on the property where the carbon farming project was located; and
- 68% generated agricultural income from the landholding where the carbon project is located.

Few Broadacre Landholders identified the 'carbon farmer' as a landholder with extensive landholdings and/or set up for a large scale cropping program.

The Future of Carbon Farming

Broadacre Landholders recognise the opportunities of carbon farming; however, they have mixed opinions about the potential for carbon farming success. Generally, Broadacre Landholders believe that the uptake of carbon farming will be slow. Two-thirds of Broadacre Landholders indicated they are likely to participate in a carbon project in the next five years. The Next-Gen farmers (<39 years of age) suggested a more cautious view of future involvement.

Carbon Farming Motivations

From a Broadacre Landholder perspective, key motivators for adopting carbon farming are the ability to earn a steady income, restore degraded land, and increase the value of the land. The recognition of personal involvement in carbon farming was identified as the lowest motivator. Younger farmers (<39 years of age) indicated they were somewhat less motivated by environmental co-benefits, and as a demographic, were more highly motivated by increasing the value of the land, earning an annual income from carbon and seeing other carbon projects in the region achieve good results.

Carbon Information

Like the Carbon Project Owners, Broadacre Landholders identified that they have accessed information on carbon farming predominantly through their own initiatives. This was done by talking to other landholders and conducting their own research. Younger farmers more readily interacted with their peers. Broadacre Landholders showed a high demand for information relating to carbon farming, particularly the financial aspects.

Broadacre Landholders showed strong preferences for seeing carbon projects being demonstrated locally and sourcing information via farming organisations and local grower groups. There was a preference for information via online research and traditional means (radio, television, newspaper, and magazines). Social media platforms rated comparatively low as an information source, with the exception being Twitter. More than one-third of the Broadacre Landholders identified this as a preferred information source.

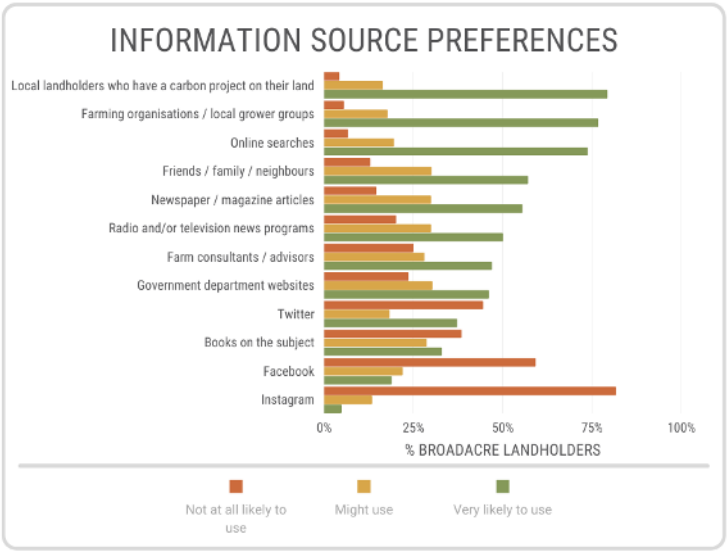

FIGURE 4: Future carbon farming information source preferences (Broadacre Landholders)

Carbon Footprint and Offsetting

Most Broadacre Landholders have never measured the carbon footprint of their farming operation, with a low 3% of 'Next'Gen' farmers having done so. In the instances where a carbon footprint had been investigated, it was highest in landholders with more than five employees, with online tools accessed and utilised. Almost half of the Broadacre Landholders indicated they would consider carbon offsetting in the future.

CARBON OFFSET BUYERS

Climate Change Impact

Three in ten organisations identified that climate change is already affecting their operations with expectations that these impacts will increase in the future. Larger employers, in particular, indicated current impact and concern for the future.

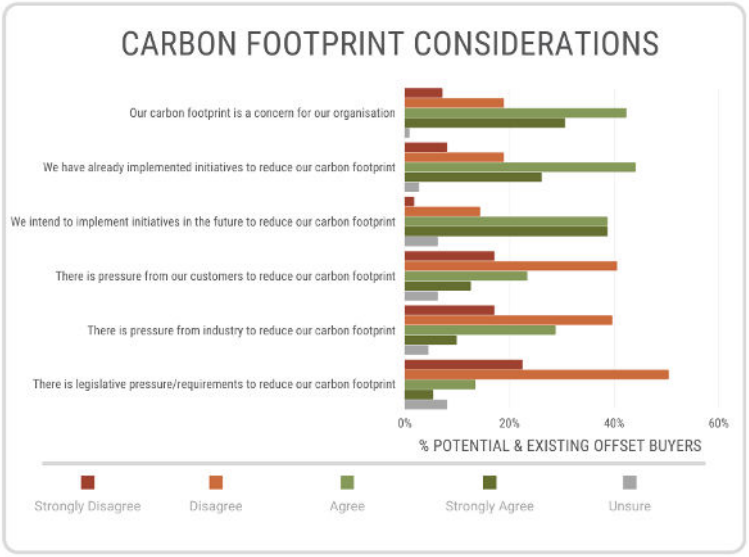

FIGURE 5: Carbon footprint considerations (potential & existing Carbon Offset Buyers)

Carbon Footprint

Despite high familiarity with the term 'carbon footprint', most organisations had not undertaken an analysis of their own carbon footprint, with this trend more marked in owner-managed organisations. Organisations with more than 200 employees, public companies, and charities had a markedly higher incidence of carbon footprint analysis. While carbon footprint analysis was identified as low, around 70% of organisations not currently engaging in footprint analysis suggested that they intend to do so in the future.

A high proportion of organisations indicated concern about their carbon footprint, with about 70% of organisations indicating that they have already implemented initiatives to reduce their footprint and almost 80% indicating their intent to implement initiatives in the future.

Three in ten organisations identified that they had experienced pressure from industry and/or customers to address and reduce their carbon footprint. It was shown that external influences were more relevant for larger organisations (with more than 200 employees), public companies and charities.

Generally, when addressing and measuring an organisation's carbon footprint, internal pressures were identified as the key drivers for change. Most organisations indicated a range of policies, systems, or initiatives to reduce carbon emissions, largely focusing on reducing energy consumption and recycling. Large businesses are most likely to allocate internal resources to managing their carbon footprint.

Less than a quarter of organisations had formal documents detailing objectives and policies in relation to reducing their carbon emissions. Organisations that had analysed their carbon footprint and used a carbon calculator were more likely to have initiatives to reduce carbon emissions.

Carbon Offsetting

While most organisations were familiar with the term 'carbon offset', only a quarter had purchased carbon offsets. Organisations that calculated their carbon footprint were more likely to have purchased carbon offsets. Those organisations that had previously purchased carbon offsets strongly indicated that they would continue to do so in the future.

Carbon Offset Purchase Motivators & Preferences

Environmental responsibility was the top motivation for the purchase of carbon offsets. Other motivating factors included attitudes of internal leadership and perceived marketing potential. With the exception of public company respondents, organisations that had purchased offsets had not undertaken carbon neutral certification through Climate Active. Offset purchases were generally linked to broader objectives such as mitigating climate change and demonstrating corporate social responsibility.

Offsets generated from revegetation projects were favoured, as were accredited offsets; however, many respondents were unsure of the accreditation status of the offsets they bought.

FIGURE 6: Motivations for carbon offset purchases (existing Carbon Offset Buyers)

Most organisations that are not currently purchasing carbon offsets indicated that they would want to communicate the purchase of offsets with their stakeholders. This external motivation is notably higher when compared to companies already investing in carbon offsets. Around 30% of non-purchasers indicated they were likely to purchase offsets in the future. The cost of offsetting was identified as a potential barrier with around 40% of respondents agreeing that they would only purchase carbon offsets if it were mandatory to do so.

Carbon Information

Organisations that had not purchased offsets strongly identified requiring further information before committing to purchase offsets. This included information about government incentives and support, the cost of carbon offsetting and how to calculate the organisation's footprint.

AGRICULTURAL INDUSTRY STAKEHOLDERS

Carbon in Agriculture

Considerable interest was observed in relation to the CarbonCare™ research. It was noted that there is a strong and increasing focus on sustainability across agricultural supply chains. Amongst the agricultural industry stakeholders interviewed, the involvement in the carbon industry was varied. It is apparent that these stakeholders require a greater understanding of carbon and the carbon industry. They need to actively undertake carbon/market research (own organisation and/or industry wide). They also need to establish their baseline carbon footprint, to effectively include carbon decisions strategically in policy development, especially when factoring in climate change impacts, mitigation, and adaptation into risk management.

Focus also needs to be given to carbon planting and working with carbon service providers.

Carbon Trends

The stakeholders acknowledged that carbon is receiving significant attention, both from a demand (offset purchasers) and supply (landholders) perspective. Regulatory reporting on carbon is increasing in the banking sector.

Carbon Information

The Agricultural Industry Stakeholders indicated a desire for clarity in relation to the carbon industry particularly for landholders. Information relating to participating in and registering carbon farming projects, co-benefits, and carbon sequestration through best management practice were particularly noted.

Carbon Concerns

Agricultural Industry Stakeholders genuinely want to support landholders and hold a number of concerns about the carbon market development and how it effects landholders. The perception of losing high-quality agricultural land to carbon plantings was considered an undesirable outcome.

The Agricultural Industry Stakeholders indicated that landholders need to be provided with a clear value proposition and appropriate economic incentive to increase carbon farming participation levels. Confidence in the carbon market was impacted by instances of revoking projects, and the unknown impact of government policy in the carbon market. This was relevant to carbon pricing, going forward.

The complexity and non-standardised way carbon is calculated was a concern, as was the potential cost and lack of current baseline data. Concerns were also raised regarding data collection and intellectual property ownership. Permanence requirements of registered carbon projects were also of concern.

The Future of Carbon

The Agricultural Industry Stakeholders indicated that a well-developed goal for Western Australian carbon farming needs to be defined. Emissions Reduction Fund (ERF) methodologies need to be revised to meet WA requirements and carbon capture opportunities.

The need for a standardised carbon calculator underpins the carbon industry, both in carbon accounting and outcome measurement. There needs to be a focus on sharing and communicating knowledge about the carbon industry which was acknowledged by the Agricultural Industry Stakeholders. In particular, mention was made about engaging Traditional Owners and building a support network for landholders who engage in the carbon market.

Carbon farming has an opportunity to fit into the farm and business plan, but that needs to be demonstrated to landholders; carbon plantings must be fit for purpose. Carbon farming must complement production, and it must be accompanied by good record keeping and due diligence.

Discussion of Key Findings and Recommendations

The CarbonCare™ research has identified strong indications that landholders will consider carbon offsetting and participate in carbon farming projects in the future. The study also showed that demand for carbon offsets will increase in the future. Currently, few of the potential carbon purchasers surveyed had purchased carbon offsets, but there was a reasonable interest to do so in the future with those who had calculated their carbon footprint indicating they were more likely to buy carbon offsets. These indicators are caveated by a range of issues impacting carbon farming participation including risk, uncertainty and lack of trusted information.

CARBON FOOTPRINT

All participants were interested to understand their carbon footprint. The CarbonCare™ research has indicated that across the carbon farming supply chain, most landholders and carbon offset buyers have not measured their operations' carbon emissions.

The research indicates that potential offset buyers have discussions around their carbon footprint and are taking steps to reduce it. The broadacre landholder research identified a future interest in offsetting the farm's carbon emissions. To support and progress this interest, landholders need access to tools to measure carbon emissions. This will enable the establishment of carbon footprint baselines and subsequent monitoring, evaluation, and reporting.

Baseline information is essential for all parties. This will allow for continual improvement processes in relation to carbon mitigation and sequestration on farms and organisations.

CARBON CALCULATORS

From the agricultural industry stakeholder interviews, and as identified in the broadacre landholder study, there are various carbon calculators currently available to landholders, including the Greenhouse Accounting Frameworks and CSIRO's LOOC-C.

During the CarbonCare™ research, agricultural stakeholders interviewed indicated concern around the lack of baseline carbon data in the farming sector, and landholders' need for quality data to feed into the calculator. Most stakeholders acknowledged that this would be a challenge.

In September 2020, GrainGrowers published their report, Carbon Calculators compared for Australian grain growers. It compared five tools for measuring greenhouse gas emissions, applicable to cereals, pulses and oilseeds (Grain Growers, 2020). The report acknowledges similar concerns to those identified during the stakeholders' research in that "determining the greenhouse gas emissions … from a farming scenario can have different approaches and results" (Grain Growers, 2020). The broadacre landholder study identified that one of the concerns about participating in a carbon project concerns the accuracy of the information and setting a carbon footprint baseline. Similarly, the GrainGrowers report illustrated a range of matters, including:

- Variance in information input and resulting in large variances in calculated CO2-e does question the confidence grain growers could have in the process";
- The importance of soil organic carbon in the models; and
- That there is a clear gap in the market concerning carbon calculators that can remove ambiguity and incorporate the ability to clearly identify and demonstrate the benefits of practice change (Grain Growers, 2020).

In terms of the social challenges relating to broadacre landholders, farming's autonomous nature means farmers often prefer different tools from one another. Any tool developed for calculating carbon would need to focus on functionality, usability, quality assurance of the output data, privacy aspects and user trust in the data. These are all fundamental aspects that require consideration. The role of carbon calculators will be increasingly crucial concerning carbon taxes, such as the European Union carbon border tax. This is causing concern for farmers, and agricultural supply chain participants globally (Toronto Sun, 2020; Farm Weekly, 2020; Financial Review, 2020).

RECOMMENDATION 1: Target investment into developing a standardised method of calculating the carbon footprint of farms and organisations. This calculation tool must be easy-to-use and endorsed by industry and government. Standardised baseline data for measuring carbon emissions is required. Currently, there is no "one size fits all" carbon calculator that is used.

DRIVERS OF CARBON OFFSET PURCHASES

The CarbonCare™ research identified carbon buyers were strongly driven by their climate change concerns and were predisposed to participating in schemes that focus on carbon reduction and improving the environment. While there is a high understanding of carbon offsets and carbon footprints, few organisations are taking the steps forward to purchase carbon offsets despite a desire to do so.

The research identified that internal drivers are currently the major motivators to purchase offsets (i.e., sense of environmental responsibility and organisational leadership influences). In contrast, external drivers are being recognised more readily by larger companies. Carbon offset purchases can be driven by several motivating factors. These include brand recognition and association, relationship building, and the marketability of purchasing carbon offsets– or aiming for carbon neutrality. Future purchases of offsets will likely be driven mainly by external forces like legislation.

The research highlights that increase in carbon offset purchasing will likely be driven by a greater understanding of carbon emissions. The utilisation of tools such as carbon calculators (as discussed earlier), and increased awareness of the carbon market are vital factors in increasing understanding. As in agriculture, organisational carbon footprint analysis requires a consolidated approach in all industry sectors.

With offsets from vegetation carbon projects strongly favoured by existing offsetters, producing them presents real opportunities in Western Australia and across Australia. The challenge will be developing projects to meet the carbon offset demand, that includes environmental co-benefits.

Buyers are motivated by environmental considerations– especially with an increasing demand for carbon projects that focus on conservation and restoration values. This is supported by developing projects offering carbon credits with co-benefits (Clean Energy Regulator, 2020).

While most organisations have systems in place to manage and operationalise carbon emission reductions, many are not formalised, especially in small firms and in the mining and agriculture sectors.

The organisational size was recognised as a general barrier for organisations to participate in carbon markets, which is likely linked directly to available resources. Efforts to drive carbon offset purchases will need to address the different challenges within sectors.

The major external driver for carbon offset participation seems to be how companies believe they can "enhance their image with stakeholders". Offsets are seen as a powerful, tangible expression of taking climate action and recognising their social responsibilities.

RECOMMENDATION 2: Adopt an accepted standard for natural capital accounting, with co-benefits accounted for within all carbon crediting mechanisms. This will ensure that land use decisions prioritise the value of land to people, ecosystems and economies.

RECOMMENDATION 3: Conduct further research to gauge consumer sentiment about carbon-neutral agricultural products. This aspect of the supply chain was not within the scope of this project. However, the results could have a significant impact on the adoption (rate and scope) of carbon footprint measurement and carbon offset purchasing by organisations within the agricultural industry.

CARBON FARMING ISSUES

The lack of stable government policy in relation to carbon farming is a major concern for broadacre landholders, along with the financial viability of project partners - both factors which are very much out of farmers' control. As many farmers already operate in a high-risk environment, effort to provide clarity, transparency, solid policy, supporting frameworks and clear communication throughout the supply chain, are critical in supporting carbon farming adoption in agricultural landscapes.

The development response by the global carbon market to climate action pressure rests in changes to government policy and some methodology rules. However, the continually changing "goalposts", because of the lack of stable government policy, and perceived penalisation of early adopters are factors contributing to the current low carbon farming participation levels.

Caveats and land titles encumbrances are a further major concern for broadacre landholders. This is a shared view also held by many of the agricultural industry stakeholders, particularly the credit departments of financial institutions.

The risk of permanent land-use change is very much a commercial decision. It incorporates exposure to risks such as market changes, technology, land values, capital gains and other tax implications. The permanence aspects of carbon farming participation are an identified barrier; however, it is understood that the rules in ERF methodologies have been updated more recently to address this. This needs to be effectively communicated through the supply chain.

The research identified that broadacre landowners are concerned about land and project planning risks. Weeds, pests, disease, and fire can all impact the success of carbon farming projects and sequestration. Drought, and the predicted impacts of climate change, are also of concern to landholders in terms of their potential impact on sequestration rates. The role of insurance companies in carbon farming, and how the current and future insurance products range, may facilitate increased carbon farming participation is an area of interest. The insurance sector was not engaged within the CarbonCare™ research and could be a potential future research area to address these concerns.

The lack of transparency, trust and communication with carbon service providers were identified in both landholder studies and the agricultural industry stakeholder interviews. This was reiterated with concerns over the lack of clarity regarding carbon stakeholder roles in the carbon farming supply chain.

The Carbon Market Institute has an established code of conduct: The Carbon Industry Code of Conduct, which provides guidance for project developers, agents, aggregators and advisers undertaking carbon projects (Carbon Market Institute, 2020). The code was not investigated in this research; however, it does raise the question of how widely adopted the code is amongst the carbon service providers operating in Western Australia. Does an existing accreditation process exist that provides evidence and assurances around the integrity and accountability of carbon service providers? Are there opportunities to strengthen and/enforce third parties to be signatories to the code of conduct? Will this provide assurance to landholders of an organisation's legitimacy and level of integrity of the operator?

RECOMMENDATION 4: Establish a peer-to-peer carbon farming networking group. Clear and consistent information about the carbon market and related opportunities must be delivered by sources that landholders trust.

RECOMMENDATION 5: Establish a Carbon Farming Task Force across all levels of government. Federal and/or state governments need to appropriately review the current risks associated with program stability, carbon price, land encumbrance, and funding opportunities.

CARBON FARMING MOTIVATORS

Motivations for involvement in carbon farming will likely vary significantly from landholder to landholder. The first involvement and interest in carbon farming (from the CarbonCare™ research/carbon project owner study) was claimed by participants to be mainly self-driven. However, some direct approaches and information sources also proved to be a stimulus. These landholders experienced with carbon projects also indicated that motivation came from their peer networks.

The carbon project owner study found that most of the strong motivators for participation in carbon farming projects were grounded in environmental benefits, emphasising the importance of co-benefits. From the carbon project owner's responses, income had not been the main driver of participation in carbon projects.

While the broadacre landholder study also identified environmental restoration as a motivator, this was equal to "earning a steady annual income from carbon". The motivator of the carbon project "increasing the value" of their land was also identified. There was a clear desire from most of the broadacre landholders that investing in carbon farming should come with a commercial benefit. While the project owners did display strong environmental motives, it was noted that expectations of financial benefits were not being met. There were moderate indications that carbon farming has some potential for becoming a source of income in the future.

It was identified that if government support were available to cover initial project costs, this could increase carbon farming participation. The recent Western Australian State Government's November 2020 announcement of the WA Carbon Farming and Land Restoration Program may assist in meeting this need.

One of the clearest findings, across all the CarbonCare™ market research elements, is that communication and education about carbon farming is critical as the current lack of understanding will impede carbon farming participation. Clarity is required in many areas but especially around the potential risks. Messages need to align with and address the concerns expressed about carbon farming in this market research.

The successful delivery of the Western Australian Climate Change Policy, and its associated carbon farming programs, relies on increasing specific knowledge bases and awareness. More generally, landholders need to be made aware of carbon farming opportunities and the associated co-benefits.

This research shows that familiarity with carbon farming is lacking. Landholders are showing initiative in accessing information, preferring locally developed and derived information. They often look to their peers and local farming/grower organisations for support and clarification. Without effective communication and engagement materials This finding is supported in the literature review. The CarbonCare™ findings highlighted that the effectiveness of communication and engagement material produced by the State and Federal governments was least valued by landholders.

CarbonCare™ research highlighted that local research and development are highly valued, and future carbon market developments should support local grower and NRM groups. These local groups are recognisable, and a trusted information source identified by landholders. They are typically the first point of contact for landholders about many NRM initiatives, particularly following the withdrawal of smaller State Government agency offices in regional areas. Support in the form of financial assistance and training programs would enable local carbon farming knowledge and awareness programs.

RECOMMENDATION 6: Continue to develop partnerships with a broad range of stakeholder groups to disseminate information about the carbon farming industry, engage landholders, and attract additional funding streams. Local grower, NRM and Landcare groups are trusted by landholders and are essential partners to enable industry growth.

CARBON FARMING EDUCATION & ENGAGEMENT

Western Australian landholders prefer peer-to-peer learning. The development of ‘carbon influencers’ within communities is a key strategy in carbon communication. For the purposes of this discussion we are identifying a Carbon Influencer as:

> “A landholder or organisation that champions the use of carbon farming and is open to sharing their practices and/or opening up their project site for others to view and take best practice inspiration from.”

Within their networks, these influencers can share local knowledge and best practice research. The use of demonstration and extension sites will allow landholders to see real-time carbon projects operating on the land.

In developing a demonstration site network, focus needs to be placed on best practice and ensuring a high carbon farming standard is reflected. This should highlight that the projects are well planned, developed, managed, maintained, monitored, and evaluated. Demonstration projects need to be established as collaborative long-term research/development sites. The selection of host farmers will be critical, as will partnerships with the local grower or NRM groups. Both bodies would enable dissemination of material to a wide range of stakeholders.

The research found that the typical ‘carbon farmer' was viewed as an ‘environmentalist’ who implemented innovative practices. They were perceived to be city-based and/or absentee landholders and to have sources of income outside of farming. There are real opportunities to expand the perception of the 'carbon influencer' by showing landowners that projects are established on working farms in their own areas. By establishing a network of local research sites and partnering with well-regarded farmers, negative stereotypes can be broken. Carbon farming is a valuable addition to whole farm planning and core farm business, and a practice with longevity and real value.

The broadacre landholder research findings revealed the under 39-year-old demographic had the highest degree of tertiary education. Key differences identified in this demographic when compared to the older demographics included:

- Lower familiarity with, and no experiences with 'carbon farming' projects on their own properties;
- Identified more strongly with waiting to 'see how (carbon farming) projects perform in other states before they consider participating' and learning from their peers;
- A lower incidence of being contacted by carbon service companies;
- Are more concerned about and more greatly want to know the costs of establishing a carbon project;
- Are less motivated by biodiversity benefits of carbon farming, ability to claim to be 'carbon neutral', being recognised as progressive and 'improving the look of your property';

- Are more motivated by potential increases in land value resulting from carbon farming;
- Want to see the potential financial value of carbon farming (100%);
- More greatly interested in the 'potential productivity co-benefits';
- Indicated the lowest level of assessment or measurement of carbon footprint (97%); and
- Indicated the lowest level of future (next five years) participation in carbon farming (55%, compared to average of 65%).

As 'Next-Gen farmers', it is imperative for stakeholders in the carbon market to identify and engage with this demographic across NRM aspects of land management. Peer-to-peer learning environments are a clear opportunity to engage with them. Establishing carbon influencers in this demographic group should be a priority.

Corporate landholders often have the most significant capacity to invest capital in longer-term projects (M. Battaglia, pers comms). The opportunity to develop carbon farming research, development, and extension sites across the WA agricultural region should include an investigation into the potential to partner with corporate and/or larger landholders.

Social sciences' opportunity to play a significant role in driving carbon farming adoption, best farm practice, and general NRM across WA's agricultural regions should be further investigated. The New Zealand Government is investing in embedding social scientists in agricultural and natural resource management agencies. Consideration of the Technology Adoption Life Cycle, and planning support for the various stages of this lifecycle, will benefit carbon market developments in Australia. Specifically, further research and funding should be dedicated to increasing young farmer engagement.

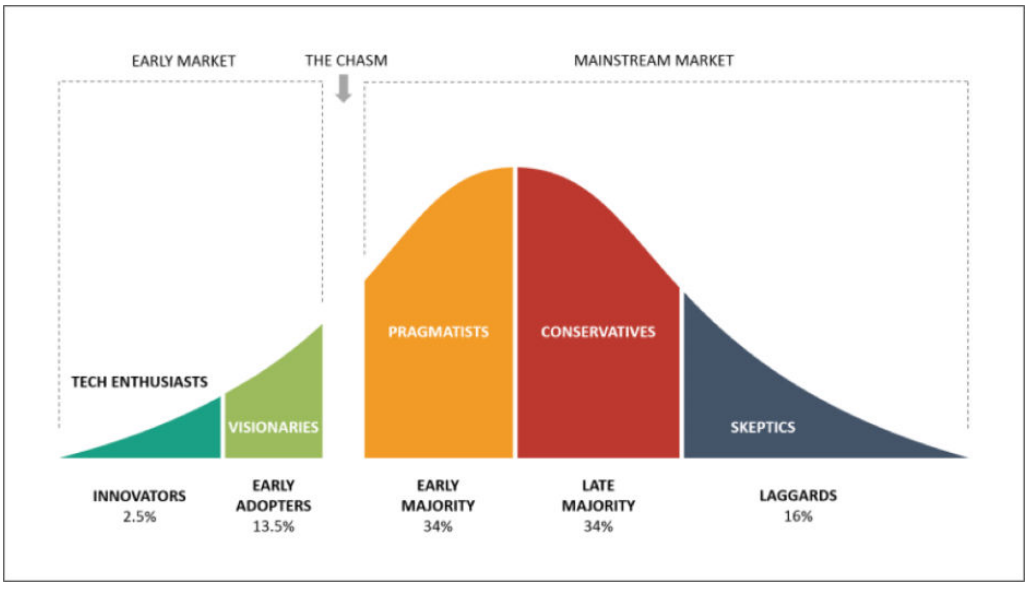

FIGURE 7: Technology adoption lifecycle (Business to You, 2020)

A dedicated communication program is required to support the knowledge and awareness growth in carbon farming across Western Australia's agricultural regions. The research findings identified the communication preferences of the supply chain participants; however, they will need to be integrated with a program that provides various learning styles. The program should also focus on people receiving messages numerous times through different platforms and

mediums. The focus should be on supporting peer-to-peer learning opportunities– particularly via local grower and NRM groups.

Furthermore, online information sources were identified as a preferred resource for learning and research. It is suggested that the development of a 'carbon knowledge bank' be purpose-built for WA stakeholders utilising existing resources and providing local context to carbon market opportunities. Developing and showcasing Western Australian case studies -from existing, to new carbon farming projects- should be a future focus in the Industry.

Given the preference for online information collection, social media platforms, combined with traditional information sources (farming newspapers, radio and/ or television) will be helpful. Reliable and consistent hyperlinks back to the main website would be needed to establish it as a trusted source of knowledge.

Farmers are inundated with information and marketing material, which makes extracting meaningful information a challenge. Carbon farming must take a more contemporary and proactive approach to communication while utilising the traditional grower networks/ communication channels.

The carbon market will also benefit from establishing impartial specialists and advisors who can guide growers and their networks. Expert guidance to assist with production and project success will reaffirm carbon farming as a legitimate and useful farming practice. This may be a potential role for the Government in the short term.

Transparent, concise, consistent, and accountable messaging is needed in order to increase carbon farming participation. The market research identified key content required by stakeholders, including:

- What carbon farming is and how to get involved;
- What the roles and responsibilities of carbon farming supply chain stakeholders are;
- Examples of successful carbon farming projects;
- Incentives for participation focusing on economic, social or environmental co-benefits; and
- Risk management of carbon farming projects.

RECOMMENDATION 7: Direct funds towards establishing and promoting carbon farming demonstration sites. Respected farmers, grower groups and corporate farms could be showcased as local carbon leaders or 'influencers' to help increase interest and engagement across the WA agricultural region.

RECOMMENDATION 8: Investigate and integrate a social science approach to increasing carbon farming participation across WA. The engagement of farmers, particularly those considered 'Next-Gen' (<39), will be essential to the success of the industry.

SUCCESS FACTORS

There is a wide and firmly held set of goals associated with the "success" of a carbon farming project that is both altruistic and performance-related. These include good project management, degraded land restoration, high seedling survival rates, achieving project carbon goals and increasing biodiversity. However, there are cost and/or revenue factors associated with successful carbon projects that include generating income for the landholder and expectations of low on-going maintenance costs. The carbon farming supply chain needs to appreciate that different stakeholders will view a carbon farming project differently depending on their original goals.

The owners of carbon farming projects in this research shared views that carbon farming projects provide many co-benefits. These include restoring degraded land, improving landscape amenity and supporting biodiversity as key objectives. For example, increasing the biodiversity on one landholding has positive flow-on effects for neighbouring farms and the wider area or catchment. Controlling and reducing salinity on one farm, impacts waterways that flow through other farms. Being able to measure these co-benefits will require monitoring and evaluation, especially when identifying the surrounding landscape's positive impacts. Co-benefits of carbon farming need to be shown to have flow-on effects. These economic values of the co-benefits require a deeper understanding, especially combined with how the broader community values them.

The effectiveness of carbon markets on climate change and localised environmental issues is a broader issue for discussion. As presented earlier, the CarbonCare™ research has identified the need to establish carbon footprint baselines and monitor and evaluate the impact.

FUTURE RESEARCH REQUIREMENTS

While not part of the scope of this research, the views of the end user -- the consumer, would further improve our understanding of the CarbonCare™ supply chain. Further research needs to be undertaken, and there are ample opportunities for collaboration in this space.

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Appendices

LIST OF TABLES IN APPENDICES

Appendix A – Literature Review

The literature review process was conducted prior to the market research design phase and informed the project's development and delivery.

KEY FINDINGS

The following sections outline the key findings from the literature review.

Defining Involvement in Carbon Farming

A landholder's involvement in carbon farming can involve adopting a carbon farming practice and/or participating in a carbon farming policy program. Adoption of carbon farming as a landholder means changing land use or management practices that can capture carbon in soils or vegetation for long periods of time. Adopting carbon farming does not necessarily entail participation in a formal carbon farming project.

Factors Driving Participation

Key factors that emerged from the literature review in respect to uptake of carbon farming practices were:

- The relative advantage these new practices offer compared to those practices they supersede;
- How easy it is for the landholder to trial the practices within their existing farming system; and
- Perceived relative advantages of the new versus old (e.g., productivity, financial gains, environmental improvements, etc).

In relation to their survey of Carbon Service Providers, the Macintosh et.al. study indicated the most important factors motivating farmer participation based on Carbon Service Provider perceptions were:

- Maximization of farm financial returns;
- Diversification of income sources for the farm;
- Environmental sustainability and outcomes;
- Participation in climate change reduction;
- Alignment of carbon projects with other farming activities;
- Lifestyles of the farmer and family; and
- Succession planning.

The Kragt et. al. study identified the key drivers of carbon farming participation as:

- Improving soil quality;
- Increased productivity/yields;
- Reduced erosion;
- Moisture capture;
- Improved fertiliser efficiency;
- Diversified income sources;
- Improved biodiversity;
- Resilience against climate change;

- Incentives from local bodies and grower groups;
- Moral responsibility; and
- Earning carbon credits (less than 20% mentions).

Barriers to Participation

The Macintosh et.al study indicated the greatest barriers to the adoption of carbon farming were:

- Most common mention was a lack of information;
- Followed by uncertainty about the impact on farming practices;
- A sense information was confusing/not specific to their practices and environment especially likely yield effects;
- Expected higher operating costs;
- Incompatibility with current farming practices;
- Unable to participate because of a lack of skills, technology; and
- Long term impact on farm saleability.

The same study indicated the greatest barriers to landholder participation in the Australian Federal Government's Carbon Farming Initiative were:

- Too much policy uncertainty;
- Carbon price uncertainty;
- Doubtful financial benefits;
- High participation costs;
- Lack of relevant information;
- Too much paperwork;
- Long commitment requirement; and
- Benefits poorer farming practitioners.

CARBON FARMING PARTICIPATION - CHARACTERISTICS

The Kragt et. al. study highlighted carbon farming participation characteristics and claimed drivers of participation. Participation characteristics were segmented into the following categories: Landholding characteristics; Landholder characteristics; Social, Geographic and Political Environment characteristics; and Program characteristics, each of which is outlined below.

Characteristics of the Landholding:

- Farm size;
- Mixed farming practices;
- Current profitability;
- Microclimatic conditions; and
- Natural resources.

Characteristics of the Landholder

- Education;
- Income;

- Perceptions of future financials and risks;
- Agricultural training;
- Participation in the industry;
- Years of farming experience;
- Children, ages of children; and
- Attitudes – to own knowledge and skills, to the environment, conservation, climate change, to advice of others (formal and informal).

Characteristics of the Social, Geographic and Political Environment

- Existence of strong social networks;
- Trusted colleague referencing;
- Localized collaboration and influence; and
- Formal farming influences (e.g., Ag events; Farmer Associations).

Characteristics of Formal Programs (Adoption or Non-Participation)

- Financial incentives;
- Complexity;
- Quality of advice and information;
- Trust issues;
- Program commitment requirements;
- Complexity;
- Penalties; and
- Political uncertainty.

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Appendix B – Key Survey Results & Analysis

The following sections provide a detailed summary of key results from the three surveys conducted as part of the CarbonCare™ research.

SURVEY 1 - CARBON PROJECT OWNERS

This group represents a sample of Western Australian landholders who have (or have had) a registered carbon farming project(s) on their land.

Table 1: Snapshot of Carbon Project Owner respondents (n=34)

CHARACTERISTIC	%
Age group (years)	
<30	0
30 – 39	3
40 – 49	18
50 – 64	52
65 and over	27
Landholding size (hectares)	
10 – 50 hectares	15
50 – 100 hectares	3
100 – 500 hectares	12
500 – 2,000 hectares	15
More than 2,000 hectares	55
Property ownership time frame	
<5 years	9
6 – 10 years	12
11 – 20 years	36
>20 years	43

CHARACTERISTIC	%
Income generation from land	
Yes	65
No	35
Reside on property	
Yes	48
No	52
Landholder at project initiation	
Yes	91
No	9
Carbon project owned by Carbon Positive Australia	
Yes	74
No	21
Unsure	6

Carbon Project Beginnings and Motivators

The research asked respondents to identify the initial motivators for establishing a carbon project on their land.

- *"Encouraging native plant and animal species"* was the most commonly cited motivation for establishing a carbon project (84%).

- Income generation (52%) was a less significant motivator compared to factors such as "*improving the aesthetic appearance of the property*" (77%) and "*improving soil and/or water quality*" (68%).
- Around one-third of respondents identified either encouragement from "*local grower or Landcare groups*" (35%) or "*friends and neighbours involved in carbon projects*" (29%) as motivators for involvement.
- Project Owners were asked to identify the strongest influence on their decision to establish a carbon project on their land.
- Environmental restoration was the key driver for 71% of respondents.
- Significantly fewer respondents indicated financial (13%) or aesthetic improvements to their property (10%), and fewer again indicated climate change action as the strongest influence (6%).

The research sought to identify what first stimulated respondents' interest in carbon farming.

- Respondents most commonly identified undertaking their "*own research into carbon farming opportunities*" as what initially stimulated their interest in the topic (39%).
- Around a quarter of respondents (28%) indicated their initial interest resulted from "*being contacted directly by a carbon service provider*" and 24% had their interest peaked through "*local grower group or farming organisations*".
- Less than 10% of respondents cited their initial interest as having come from "*State or Federal governments agencies*" (6%).

Respondents were asked about which information sources they were most likely to use to keep up to date with carbon farming matters.

- Carbon Project Owners identified "*online searches*" as the most preferred information source (70%).
- As was also evidenced in results from the Broadacre Landholders survey, the experiences of "*others who have a carbon project on their land*" was also a highly regarded source of information (64%).
- Carbon Project Owners indicated using "*farming organisations/ local grower groups*" as a source of information to a lesser extent than Broadacre Landholders did (39% compared to 77%).
- Social media platforms ranked lower than traditional media sources, a similar trend to that detected in the Broadacre Landholders survey. It is noted that the identified high level of "online searches" may include a proportion of social media content.

Project Involvement and Outcomes

The research asked respondents about the level and type of involvement they had had in the management of their project, and which (if any) areas they would have preferred to have been more involved in.

- Around 80% respondents said they had 'hands-on' involvement in the management of the carbon project(s), with involvement more highly indicated for activities such as "*fire risk management*", "*weed management*", "*planting*", "*pest management"* and "*fencing*" (all more than 59%).

- Some involvement with "*species selection*" and "*land preparation*" was evidenced (both 44%), while monitoring of "*tree growth*" and "*biodiversity*" was less common (33% and 22%, respectively).
- Most respondents (85%) were pleased with their level of involvement in the project.
- Of the 15% of respondents that would have liked to have been more involved, "*planting*" and "*species selection*" were the most commonly cited areas of interest.

Project owners were asked which outcomes they felt were most relevant when measuring the "success" of a carbon project, and whether they deemed their project a success based on a range of factors.

- *"Good project management"* was the most commonly identified measure of success (74% "Very Important").
- The majority of respondents also identified *"restoration of degraded land"* (68%), *"increasing biodiversity"* (52%) and *"engaging skilled contractors"* (52%) as "Very Important" measures.
- Over two-thirds of respondents indicated that *"achieving carbon sequestration goals"* was an important measurement of success (71% "Important" or "Very Important").
- *"Generating income for the landholder"* was deemed to be far less important (47% "Important" or "Very Important").
- Most respondents indicated that their project had been "Somewhat Successful" or "Very Successful" in terms of "*plant species suitability*", "*seedling survival rate*" and "*plant/tree growth rate*" (83%, 82% and 79%, respectively).
- 79% of respondents indicated that the "*beautification*" of their property had been a success, with 61% rating this as "Very Successful".
- Less than 10% of respondents indicated "*income generation*" from their project as having been a success (41% indicated "Not at all successful").

Experience as a Project Owner and Advice to Others

Respondents were asked to rate the performance of their Carbon Service Provider and their overall experience as a carbon project owner.

- More than two-thirds of respondents indicated they were satisfied with the way the Carbon Service Provider had managed the project (70%), with half of respondents providing positive feedback in relation to service and management of the projects.
- 33% of all respondents indicated that the Carbon Service Provider had done "*an excellent job*".
- Where a less than positive experience was received, feedback included communication issues, lack of follow up on the project, lack of flexibility in planting according to season, species selection issues and financial reward not meeting their expectations.
- Overall, the majority of respondents indicated their experience as a carbon project owner had been positive (82% "Very Positive" or "Somewhat Positive"). Almost half indicated the experience had been "Very Positive" (47%).

Respondents were asked about the advice and warnings they would give to other landholders in relation to participating in a carbon farming project, and what reasons they would give to encourage participation.

- Warnings around long-term commitment and/or legal matters in relation to caveats on land titles were common (e.g., encouragement to "follow up and be committed" and "get everything in writing").
- The need for "preparation" and "good management" was also commonly cited, with several comments highlighting the need for detailed planning; relating to both the carbon project and the plantation itself.
- The need for "appropriate species selection" was noted with the importance of species suitability and diversity as well as flexibility on planting time frames to account for seasons.
- More than half of the qualitative comments mentioned that they would encourage carbon project participation based on the environmental, land stewardship and beautification outcomes.

Carbon Farming Co-Benefits

The literature review highlighted the importance of carbon farming co-benefits. Respondents were asked about a range of potential co-benefits and whether these were likely to be achieved through the development of carbon farming in WA.

- Respondents most commonly identified land restoration and biodiversity conservation outcomes as likely co-benefits of carbon farming development in WA in the form of "*reduced soil erosion*" and "*conserving and improving biodiversity*" (91% and 88%, respectively).
- "Leaving an environmentally acceptable property for future generations" was identified as a co-benefit by 88% of respondents.
- Climate change resilience and reduction was also identified by respondents as a likely achievement in the form of *"meeting one's environmental responsibilities"* and *"contributing to climate change reduction"* (73% and 60%, respectively).
- More than 50% of respondents thought that "*increased farm productivity and yields*" were likely.
- Respondents did not feel that carbon credits were likely to "*offer a sustainable income*" or "*diversify farm income sources*" (18% and 36% "Yes", respectively).

The Future of Carbon Farming

Respondents were asked to indicate how impactful certain actions would be to motivate future participation in carbon farming and their assessment of the future of carbon farming in WA.

- "*Government support for up-front costs*" (50%), "*financially successful carbon farming trials in the local area*" (62%) and "*proof that projects could complement current practices*" (32%) were deemed to be the greatest motivators to encourage future participation.
- Respondents were asked if there were any other incentives or support that they believed would encourage future participation. Although written in various terms, around 65% of respondents indicated a need for carbon projects to prove financially successful in their local area to increase uptake. Other responses indicated an interest in demonstrating the value of the project through demonstration and information gathering.
- 41% of respondents felt that carbon farming is likely to become a source of income for landholders over the next 5-10 years.
- 36% of respondents indicated they were likely to allocate more of their land to carbon farming (carbon planting) in the future.

Farm Footprint and Carbon Offsetting

Finally, respondents were asked whether they had ever measured the carbon footprint of their family or business, and whether they would be likely to consider offsetting their footprint in the future.

- 88% of respondents had not assessed or measured the carbon footprint of their family or business, an equal proportion to results from the Broadacre Landholder survey.
- Less than half of the respondents indicated that they would consider offsetting their carbon footprint in the future (48%), with a further 18% indicating “Maybe”.
- The proportion of Carbon Project Owners that indicated “Maybe” or “Likely” to future carbon offsetting was less than the proportion of Broadacre Landholders (67% compared to 88%).

SURVEY 2 – BROADACRE LANDHOLDERS

This survey was targeted at landholders across the grain growing regions of Western Australia (including the northern, central, south coast, and south west natural resource regions). This group represents a sample of those with land potentially available for future carbon projects, and as such the potential future supply of carbon offsets.

Table 2: Snapshot of Broadacre Landholder respondents (n=166)

CHARACTERISTIC	%
Connection to farming	
Landholder	93
Senior decision maker	76
Other	5
Responses per Agricultural Region	
Northern	24
Central	38
South West	15
South Coast	23
Age group (years)	
<30	3
30 – 39	16
40 – 49	31
50 – 64	44
65 and over	6
Landholding size	
0 – 500 hectares	10
501 – 2,000 hectares	24
2,001 – 5,000 hectares	33
5,001 – 10,000 hectares	22
More than 10,000 hectares	11

CHARACTERISTIC	%
Enterprise mix	
Cropping only	21
Livestock only	8
Mixed cropping and livestock	64
Other	7
Average annual turnover	
Less than $1 million	29
$1 - $5 million	54
More than $5 million	17
Number of staff	
No employees	28
1 – 4 full time employees	61
5 – 10 full time employees	8
More than 10 full time employees	2
Tertiary qualifications	
Yes	63
No	37
Of those with tertiary qualification, percentage in agricultural field:	64

Carbon Farming Practices – Implementation and Familiarity

The research began by asking respondents whether they had undertaken any of the following practices on their land in the past 5 years:

- Tree planting;
- Fencing off native vegetation to protect it from grazing; and/or
- No till cropping and/or stubble retention;
- High density/high rotation stock grazing;
- Earthworks to minimise erosion; and/or
- Fencing and revegetating waterways to exclude stock;

These actions are all aligned with carbon emissions reduction/sequestration, and as such can be considered carbon farming practices.

- 99% of respondents indicated they had implemented at least one of the listed practices on their land.
- "*No-till cropping and/or stubble retention*" was the most widely adopted practice, with 88% of respondents indicating implementation.
- "*Tree planting*" and "*earthworks to minimise erosion*" were the next most common practices (64% and 63%, respectively).
- Younger decision makers (< 39 years of age; 71%), those with more than $5 million in turnover (70%), and those who indicated their farming system was "livestock only" (70%), more readily indicated fencing of native vegetation.
- Despite the high uptake of carbon farming practices, less than 8% of respondents had established a dedicated Carbon Project on their land.

The research then sought to determine the level of familiarity respondents had with the term 'carbon farming'.

- While 95% of total respondents indicated they were at least "Somewhat" familiar with the concept, only 40% claimed to be "Familiar" or "Very Familiar".
- Claimed familiarity was highest amongst smaller farm size operators (<500 ha; 71%) and larger employers (> 5 employees; 59%).
- Respondents operating "*Livestock Only*" claimed stronger familiarity (57%) than those operating "*Cropping Only*" (20%) and "*Mixed Cropping & Livestock*" (42%).

Attitudes Towards Carbon Farming

Participants were asked to provide their attitudes towards the potential success of carbon farming in Western Australia.

- 41% of respondents indicated their belief that carbon farming will have "Strong Success" in Western Australia, while the balance indicated "Limited" (57%) or "No Success" (2%).
- In general, these views were consistently held across all farm segments, except for "Cropping Only" respondents who had lower expectations (26% "Strong Success").
- 58% of all respondents agreed with the statement that "Carbon farming is an exciting new industry that has great potential for WA landholders". 32% were "Unsure" and 10% "Disagreed".

- Respondents with non-agricultural tertiary qualifications and those with landholdings under 500 ha more strongly agreed that the industry had "*great potential*" (70% and 76% respectively).
- "Livestock Only" respondents, and those with less than $1 million turnover, also showed stronger support than the average for the "*great potential*" of carbon farming (86% and 71% respectively, compared to overall average of 58%).
- Respondents with no employees indicated stronger positive support (68%) for the potential of carbon farming than those with employees (54%).
- "Cropping Only" respondents had lower expectations for the success of carbon farming in WA (49% compared to 58% overall).
- Despite the strong positivity about the industry's "*exciting potential*", 66% of respondents agreed with the statement that "*carbon farming could have potential, but the uptake will be slow amongst WA landholders*". This belief was more marked amongst respondents under 30, and between 40-49 years of age.
- 64% of respondents agreed that it was "realistic for WA landholders to expect to generate income from carbon".
- Respondents were relatively split when asked for their opinion on the likelihood that "WA landholders will wait to see how projects perform in other states before they consider participating"; 30% agreed, 37% were unsure, and 33% disagreed.

The research then sought to determine respondents' perceptions of those most likely to get involved in carbon farming.

- Respondents indicated that landholders who are "*passionate about the environment*" and those who like to "*explore new opportunities, regardless of what other people think*" are most likely to get involved in carbon farming (89% and 86% respectively).
- 65% of respondents indicated that participating landholders are likely to be those that "*like to keep up to date with new industry developments*".
- More than 50% of respondents indicated landholders with "*income from sources other than farming*" (56%) and "*city based, absentee landholders*" (57%) would be those most likely to get involved in carbon farming.
- 41% of respondents indicated that "*any type of farmer*" would be likely to get involved in carbon farming, a view more strongly held by large acreage farm operations (> 5,000 ha) and those with more than five employees.
- Amongst respondents, there was a far lower expectation that "*those with large landholdings"* (7%) and those "*set up for a big cropping programs*" (34%) would get involved in carbon farming.

Past and Future Information Sources

The research aimed to identify where respondents had sourced information relating to carbon farming in the past.

- Respondents indicated that carbon farming information accessed over the past 2-3 years had predominantly been through their own actions; *"talking to other landholders*" (78%) and "*undertaking own research into carbon farming opportunities*" (67%).

- Younger farmers (< 39 years) more strongly indicated sourcing information from peers (85%), and smaller landholders (< 2,000 hectares) more strongly indicated undertaking their own research.
- Less than 30% of total respondents recalled receiving carbon farming information from a carbon service provider (26%), State Government agency (22%) or Federal Government agency (13%).
- Only 14% of respondents indicated that they had spoken to their farm advisor about carbon farming in the past 2-3 years.

The research then aimed to identify where respondents would be likely to source carbon farming information from in the future.

- Overall, respondents indicated they would be most likely to source future information about carbon farming from their peers; 79% were "Very Likely" to source information from *"local landholders who have carbon projects on their land"* and 77% from *"farming organisations/ and local grower groups"*.
- Online searches were a highly rated (74%) information source, again indicating the initiative taken by respondents to source information themselves.
- Traditional media was identified as a more popular future information source than social media; 50% of respondents identified "*newspaper/magazine articles*" and "*radio and/or television news programs*" as "Very Likely", compared to Twitter (37%), Facebook (19%) and Instagram (5%).
- Farm consultants and government departments still play a part with more than 45% of respondents identifying these as potential future information sources.
- Facebook and Twitter were identified more often by respondents under the age of 50.
- Respondents under the age of 40 indicated a lower likelihood of accessing mainstream media for information, particularly radio and TV.

Carbon Farming Concerns

The research proceeded to gather information on participant's concerns relating to carbon farming.

- "*Government policy changes and their effect on the carbon market*" was the greatest concern for respondents (77% "Very Concerning"). This view was consistent across all respondent segments.
- Other top ranking concerns were "the financial stability of project partners" (65% "Very Concerning") and the "legal encumbrances being placed on landholdings" (63% "Very Concerning").
- Those most concerned about legal encumbrances came from the 40-49 age segment, as well as the "Livestock Only" segment, and respondents with greater staff numbers.
- 50% of respondents were "Very Concerned" about their potential "*responsibility for fire damage to projects*" and 43% about the "*long term commitment to a project*" (43%).
- Project establishment costs, maintenance costs, and return from investment were identified as "Very Concerning" by more than 37% of respondents.
- Lower ranked concerns included negative feedback from "*banks or financial advisors*", "*farm consultants*", and "*other farmers*" (25%, 14% and 8% "Very Concerned", respectively)

- Being a first mover did not present as a concern for the majority of respondents with 76% indicating that "*being the only landholder in the region with a carbon farming project*" would not concern them.
- The Qualitative enquiry also further expressed concerns about broader support for the industry by the Government. There was also concern with regards to risk from fire and third-party management and access to property. These did not appear as strongly in the quantitative data.
- The qualitative data also reiterated financial and legal concerns, particularly around additionality. Also identified were concerns in relation to the lack of, understanding and accuracy of carbon farming information.

Kick-Starting Carbon

The research sought to identify what factors would motivate respondents to establish a carbon farming project on their land.

- "*Earning a steady annual income from carbon*" (87%), "*restoring the health of degraded land*" (87%) and "*increasing land value*" (86%) were identified as the top motivators, or potential drivers, for establishing a carbon farming project. These were common across all segments.
- More than two-thirds of respondents expressed an interest in environmental co-benefits from carbon projects through: *"restoring the health of degraded land*", "*improving the look of the property*", and "*improving plant and animal biodiversity*".
- Younger farmers (<39 years of age) indicated they were somewhat less motivated by environmental co-benefits, and as a demographic, were more highly motivated by "*increasing the value of the land*" (94%), "*earning an annual income from carbon*" (90%) and "*seeing other carbon projects in the region achieve good results"* (87%).
- The "Cropping Only" segment had a consistently reduced appetite for the potential motivators provided in the survey compared to other segments.
- More than two-thirds of respondents indicated that "*WA State Government support for assessing the credibility and viability of carbon projects*" would motivate them to establish a carbon project on their land. This was particularly the case with the "Livestock Only" segment, and those with smaller operations (defined as operations with < $1 million turnover and those operating with no employees).

The research then sought to establish if an appetite for information about carbon farming exists, and which topics were of most interest.

- A high level of demand for information across a range of carbon farming related topics was indicated by respondents.
- Information around financial aspects *("potential financial value of projects"* and *"up-front establishment costs")* were most strongly indicated (92% and 91% respectively**)**.
- Respondents also strongly indicated a need for information about the *"types of projects they could get involved in"* (89%), and as previously identified, showed a desire to learn from their peers (*"Other landholders' experiences"*; 88%).
- Information around "government or industry initiatives being offered to support carbon project development" was also highly valued (84%).

- Information about "*potential environmental benefits (co-benefits)*" was desired by almost 80% of respondents, supporting the high ranking of *"restoring the health of degraded land"* as shown in the carbon motivator findings presented above.

Having identified key concerns, potential motivators, and information requirements, respondents were asked to indicate the likelihood of establishing a carbon project on their land in the future.

- Almost two-thirds of respondents indicated that it is either "Highly Likely" (21%) or *"*Likely*"* (44%) that they will participate in a carbon project in the next 5 years.
- Younger respondents (<39 years of age) indicated more cautious views, with 45% indicating they would be "Unlikely" or "Highly Unlikely" to participate (compared to 34% overall).
- Respondents farming "Livestock Only" and those with smaller holdings (< 500 ha) more readily indicated they would be "Highly Likely" to participate in a carbon project in the near future (54% and 38% respectively, compared to 21% overall).

Farm Footprint and Carbon Offsetting

The research sought to gauge the appetite amongst the broadacre farming community for measuring and offsetting the carbon footprint of their farming operations.

- Most respondents had never assessed or measured the carbon footprint of their farming operation (87%).
- Respondents holding tertiary qualifications in agriculture and those with a higher number of employees (> 5) were more likely to have measured their carbon footprint (19% and 24% respectively, compared to 11% overall).
- Only 3% of respondents under the age of 39 had measured the carbon footprint of their farming operation.
- Amongst the 11% of respondents who had carried out a carbon footprint assessment most were taking the initiative and accessing a variety of online tools. A lesser proportion of landholders indicated involvement by a consultant in measuring their carbon footprint or working with the WA Department of Primary Industries and Regional Development.
- Almost half of all respondents indicated that they would consider offsetting the carbon footprint of their farming operation in the future (47%), with a further 41% indicating "Maybe". This was a consistent finding across all respondent segments.

SURVEY 3 – CARBON OFFSET BUYERS

This survey was targeted at Australian organisations across all industries that may, or may not, be purchasing carbon offsets.

Table 3: Snapshot of Offset Buyer respondents (n=110)

CHARACTERISTIC	%
Number of employees	
0 - 9	41
10 - 49	29
50 - 199	12
200	18
Industry type	
Manufacturing	12
Agriculture, forestry, and fishing	10
Wholesale and retail trade	14
Construction, mining, and transport	12
Services (professional, IT, communications, financial)	20
Tourism, accommodation, and food services	11
Health care and social assistance	7
Education and training	5
Other	9

CHARACTERISTIC	%
State(s) of operation	
Western Australia	53
Queensland	28
Victoria	28
New South Wales	24
South Australia	15
Northern Territory	6
Tasmania	4
Australian Capital Territory	3
Ownership structure	
Private company	53
Partnership or trust	20
Sole trader	9
Public company	6
Charity organisation	5
Other	7

Climate Change Impacts

The research began by asking respondents to indicate the severity of current and future climate change impacts on their organisation. Impacts were classified as "*physical*", "*social*", and "*economic*".

- More than 75% of respondents indicated that climate change is currently having an *economic* and/or *social* impact on their organisation (77% and 76% respectively indicating "Some", "Significant" or "Severe" impacts).
- Overall, current *physical* impacts were indicated to a slightly lesser extent (64%).
- Larger organisations (> 200 employees) indicated that they were experiencing higher than average *physical* and *economic* impacts (89% and 84% respectively).

- Smaller organisations (<10 employees) indicated the highest experience of *social* impacts (89% compared to the overall average of 64%).
- Organisations in the "Wholesale/Retail" industry segment indicated the highest experience of *physical* climate change impacts, with 75% of respondents experiencing at least "Some" impacts, and 38% experiencing "Significant" or "Severe" impacts.
- Future expectations indicate that *physical*, *economic*, and *social* climate change impacts will worsen.
- 83% of respondents indicated that they expected their organisation to experience "Some", "Significant" or "Severe" *physical* impacts from climate change in the future. *Economic* and *social* impacts were also expected to worsen (91% and 88%, respectively.)
- Again, larger employers (> 200 employees) expressed the strongest concern for future impacts. 100% of this segment indicated the expectation that their organisation would experience future *economic* and *social* climate change impacts.
- 100% of respondents in the "Agriculture/Mining" and "Wholesale/Retail" industry segments expected their organisation to experience at least "Some" *physical* climate change impacts in the future.
- Respondents that indicated their organisation was currently experiencing climate change impacts more readily indicated future impacts.

Carbon Terminology and Carbon Footprint Analysis

The research sought to determine the level of familiarity with carbon market terminology and whether organisations had undertaken any analysis of their carbon footprint in the past.

- Most organisations were familiar with the term "*carbon footprint*" (96%) and a significant segment were familiar with the term "*carbon offsetting*" (87%).
- Despite this familiarity, the majority of organisations had not yet undertaken a carbon footprint analysis (64% "No" and 12% "Unsure").
- This was most marked amongst "owner managed" companies, with more than 85% of sole traders and partnerships indicating they had not evaluated their carbon footprint.
- Of the organisations that indicated their organisation *had* undertaken a carbon footprint analysis (25%), a marked increase was identified in organisations with over 200+ employees (42%).
- Those organisations who identified a concern around the *physical* impacts of climate change more readily indicated having undertaken analysis of their carbon footprint (34%).
- Public companies (43%) and charitable organisations (60%) showed a higher incidence of having had their carbon footprint evaluated.
- Of the organisations who had *not* previously undertaken a carbon footprint analysis, 33% indicated that the idea of measuring their carbon footprint had been suggested or discussed internally.
- The agriculture/mining sector (50%) and services sector (48%) claimed the highest incidence levels for internally discussing undertaking a carbon footprint measurement.
- There was also a higher incidence of interest in carrying out a carbon footprint analysis amongst organisations that indicated concerns about the future impact of climate change as *physical* (49%), *economic* (40%) and *social* (47%).

- Of the organisations that had undertaken a carbon footprint analysis, 44% indicated they had used an online emissions calculator to assist in the calculation. No one tool was favoured from those mentioned.

Carbon Footprint Concerns and Pressures

The research sought to identify whether organisations were concerned about their carbon footprint, whether they were experiencing pressure from stakeholders to reduce this footprint, and whether they had (or intended to in the future) introduced initiatives to do so.

- A high proportion of organisations indicated concern about their carbon footprint (73%), with 71% of organisations indicating that they have already implemented initiatives to reduce their carbon footprint and 77% indicating their intent to implement initiatives in the future.
- Organisations with 200+ employees more strongly indicated concern about their carbon footprint (95%) and that they have already implemented initiatives (95%) and intend to implement future initiatives (100%) to reduce their carbon footprint.
- External pressures to reduce the organisation's carbon footprint were less indicated as drivers than were internal concerns. Pressure from industry (39%) and consumers (36%) were seen as greater than pressure from legislative requirements (19%).
- Larger organisations (200+ employees) more strongly indicated the existence of all of types of pressures, particularly from industry (74%) and legislation (53%).
- Public companies and charity organisations are more aware of any perceived external environmental pressure to measure their organisation's carbon footprints than other types of organisations represented in the survey. Charity organisations more greatly identified pressures from industry (60%) and legislative pressure/ requirements to reduce their organisation's carbon footprint (40%).

Measuring and Reducing Carbon Emissions

Respondents were asked to identify policies, systems and/or initiatives currently in place within their organisation relating to measuring and/or reducing carbon emissions.

- Most organisations currently have a range of policies, systems and/or initiatives in place to measure and/or reduce carbon emissions. The most common of these were the implementation of "*recycling practices*" (91%), "*reduced paper consumption*" (87%), and practices to "*reduce energy consumption*" (69%).
- Less than a quarter (23%) of organisations had "formal documents in place detailing objectives and policies in relation to reducing carbon emissions".
- Initiatives were more readily put in place by larger organisations (i.e., 200+ employee companies), particularly those that have a "*dedicated person responsible for monitoring the organisations environmental impact*" (84%) and have "*formal documentation in place*" (63%).
- Agricultural and mining industry organisations more greatly identified "*maintenance of vehicles and equipment to deliver energy use efficiencies*" (as did 200+ employee organisations).
- Charity and sole trader organisations indicated implementation of several initiatives more than average. 100% of sole traders indicated that they "*considered the energy star rating of new appliances"* (compared to 68% average); and were more likely to have taken actions to "*reduce unnecessary business travel*" (70% compared to average of 52%).

- All public companies, sole traders and charities were "*implementing recycling practices where possible*" with all public companies and charities also "*reducing the use of paper*".
- Of those organisations which had measured their carbon footprint, and used a carbon calculator, all weighted significantly higher in terms of currently implementing initiatives to reduce carbon emissions.

Carbon Offset Purchases

Respondents were asked whether their organisation had ever purchased carbon offsets.

- Although most respondents had previously indicated they were familiar with the term carbon offsets (87%), only 25% of organisations represented had ever purchased offsets.
- 57% of respondents indicated that their organisation had not purchased offsets, and 18% were unsure.
- Organisations with 50-199 employees indicated the highest level of carbon offset purchasing incidence (38%).
- The industry sector that had the highest level of carbon offset purchasing was the wholesale/ retail sector (38%).
- Partnerships/ trusts indicated the lowest incidence of carbon offset purchase history (18%).
- Organisations which had "measured their carbon footprint" or had previously "used a carbon calculator" more greatly indicated that they had purchased carbon offsets (67% and 75% respectively).

Carbon Offset Purchasers – Behaviour, Motivations, Preferences, and Objectives

Respondents that identified having **previously purchased** offsets (n=27) were asked a series of questions focusing on their purchasing behaviour, motivations, offset preferences, and broader objectives.

In terms of offset purchasing **behaviour**:

- The majority of respondents indicated purchasing their first offsets sometime in the past 5 years (74%). 15% had purchased for the first time between 5 and 10 years ago, and 11% made their initial purchase more than 10 years ago.
- 63% of respondents had consistently purchased offsets since their initial purchase (i.e., annually).
- 48% of respondents indicated they had purchased offsets in order to "*offset a portion*" of their total carbon footprint. 33% had purchased to "*offset all of their footprint*", and 19% were "*unsure*".
- Only 19% of offset purchasers indicated that their organisation had undergone 'Carbon Neutral' certification through Climate Active. The majority had not (74%), and the remaining 7% were unsure.
- 81% of respondents indicated their intention to continue to purchase offsets in the future.
- No respondents indicated that their organisation trades carbon offsets (93% "No", 7% "Unsure").

In terms of **motivations** behind offset purchases:

- Respondents indicated that the organisation's "*sense of environmental responsibility*" was the greatest motivator to purchase carbon offsets (81%).

- Other key motivators were "the attitudes of an organisation's management" (56%) and the "potential marketing opportunity" (52%).
- Internal pressure to purchase offsets (from management and employees, 56% and 19% respectively) was higher than external pressure (customers, industry, and competitors less than 7% each).

In terms of offset **preferences**:

- The majority of carbon offsets purchased were generated from "*tree planting, reforestation and native grass plantings*" projects (70%). "*Alternative energy schemes*" were the next most favoured (40%).
- When asked about the accreditation of purchased offsets, 37% of respondents indicated that their organisation purchased "*accredited offsets only*" (e.g., ACCUs, Gold Standard and/or Verified Carbon Standard units). 15% indicated "*unaccredited offsets only*", and 15% indicated "*both accredited and unaccredited offsets*". 33% were "unsure".
- All public company respondents had purchased "*accredited offsets only*".

In terms of broader **objectives** from carbon offsetting:

- Respondents were asked to identify broader objectives their organisation hoped to achieve when purchasing carbon offsets. "*Mitigating the impact of climate change*" was the most commonly identified objective (85%).
- "*Aiding the transition to a low carbon economy*" (81%), and "*demonstrating corporate social responsibility*" (81%) were the next most commonly identified objectives.
- Smaller organisations (<10 employees) and respondents from the Agriculture/Mining industry more commonly cited "*mitigating soil erosion and salinity issues*" as a broader objective of offsetting (78% and 100% respectively, compared to the overall average of 56%).

Non-Offset Purchasers – Attitudes, Information Requirements, Preferences, and Objectives

Respondents who had **not** or were **unsure** about whether their organisation had previously purchased carbon offsets (n=83) were asked a series of questions focusing on their attitudes towards carbon offsetting, future information requirements, offset preferences, and potential broader objectives.

Respondents were asked to indicate their level of agreeance with a series of statements relating to carbon offsetting. Figures in the section below represent the sum of positive responses (i.e., "Agree" and "Strongly Agree"):

- 78% of respondents agreed that if their organisation purchased carbon offsets, they would want to "*communicate this to stakeholders*". Agreeance was indicated to a greater extent by large organisations (>200 employees) (100%), public companies (100%) and charities (100%).
- 73% of respondents agreed that if their organisation purchased carbon offsets, they would want to be able to "*communicate that they were 'carbon neutral' to their stakeholders*". Agreeance was indicated to a greater extent by organisations with 10-49 employees (87%), large organisations (>200 employees; 87%), and public companies (100%).
- 72% of respondents agreed that their "*employees would support the organisation's choice to purchase carbon offsets*". Agreeance was indicated to a greater extent by organisations in the Services/Education/Health/Arts industry segment (83%)

- 58% of respondents agreed that their organisation was "*focused on reducing their carbon footprint internally and are unlikely to purchase carbon offsets in the future* Agreeance was indicated to a greater extent by organisations in the Agriculture/Mining industry segment (70%) and organisations with a Partnership/Trust structure (72%).
- 49% of respondents agreed that "*finding the time/resources to investigate carbon offsetting would be a barrier for their organisation***"**. Agreeance was indicated to a greater extent by smaller organisations (<10 employees) (58%) and charity organisations (75%).
- 43% of respondents agreed that the "*cost of purchasing carbon offsets would be a barrier for their organisation***".** Agreeance was indicated to a slightly greater extent by smaller organisations (<10 employees) (47%).
- 43% of respondents agreed that their organisation would "*only purchase carbon offsets if it were mandatory to do so*". Agreeance was indicated to a greater extent by public companies (80%) and organisations with 10-49 employees (70%).
- 35% of respondents indicated that they "*would consider purchasing carbon offsets in the future*". Agreeance was indicated to a greater extent by charity organisations (50%) and partnership/trust organisations (43%).

Respondents were asked about what further information their organisation would need prior to any future purchase of carbon offsets.

- More than 50% of respondents indicated a desire for information regarding all areas of their potential interaction within the carbon market- from measurement to purchase.
- The most common information requirements identified were: "information about incentives and government support" (87%), "the costs of carbon offsetting" (82%), and "information about calculating the organisation's carbon footprint" (81%).
- Respondents from the Manufacturing, Energy and Construction industry segment indicated a relatively stronger desire for information about "*other organisations and their experience with carbon offsetting*" (65%), the "*importance of carbon offsetting to key stakeholders*" (71%) and "*information about using online carbon calculators*" (82%).
- Respondents from the Mining and Agriculture industry segment expressed the strongest desire for information about "*calculating the organisation's carbon footprint*" and "*the costs of carbon offsetting*" (both 89%).

Respondents were asked about their potential future purchasing behaviour and preferences.

- There was a high element of uncertainty amongst respondents about the type (accredited and/or unaccredited) of carbon offsets their organisation would be likely to purchase in the future, with 35% of all respondents indicating they were "Unsure".
- Respondents from the Wholesale/Retail industry segment and from organisations with 50-199 employees indicated the highest levels of uncertainty about offset types (60% and 63%, respectively).
- Almost one-third of respondents (28%) indicated their organisation would be most likely to purchase "*accredited offsets only*", compared to 13% indicating future purchases of "*unaccredited offsets only*".
- Respondents from larger organisations (>200 employees) and organisations in the Education/ Health/Arts industry segment were more inclined to indicate future purchases of "*accredited offsets only*" (60% and 48% respectively, compared to 28% overall).

- Organisations with less than 10 employees were more inclined to indicate future purchases of "*unaccredited offsets only*" (19% compared to 13% overall).
- 9% of respondents indicated a preference for a "*mix of accredited and unaccredited*" offsets and a further 15% indicated they "*would not buy either*".

Respondents were asked to identify any broader objectives their organisation might hope to achieve if they were to purchase carbon offsets in the future.

- "*Mitigating the impact of climate change*" and "*demonstrating corporate social responsibility*" were the most commonly identified responses (84% each).
- More altruistic goals were also strongly evidenced, such as "*protecting and increasing Australia's biodiversity*" (71%) and "*assisting in the development of renewable energy*" (70%).
- Respondents from organisations in the Agriculture/Mining industry segment were most likely to indicate support for objectives relating to environmental protection and rehabilitation such as "*mitigating soil erosion and salinity issues*" (90% compared to overall average of 63%) and "*protecting and increasing Australia's biodiversity*" (90% compared to overall average of 71%).
- Respondents from charitable organisations indicated the highest incidence of support for broader objectives overall.

Appendix C – Key Survey Data Tables

SURVEY 1 – CARBON PROJECT OWNERS

N.B. Due to low sample size, data tables have not been segmented by respondent characteristics. All figures have been rounded to the nearest whole number.

Table 4: Carbon Project Owner Survey Data - initial motivators (n=34)

Motivating factors	*% respondents "Agree"*
To mitigate climate change by sequestering carbon	55
Improving the aesthetic appearance of my property	77
To encourage native plant and animal species to flourish	84
Improving soil and/or water quality	68
To generate some income from carbon	52
To get some trees planted for free	67
To set a good example, encouraging other farmers to get involved in carbon projects	65
Knowing that sequestering carbon is good agricultural and environmental practice	0
Encouragement from friends and/or neighbours	29
Encouragement from local grower or Landcare groups	35
The advice of skilled local contractors and/or organisations	0
The relative ease with which we could be involved in the carbon project	0
The financial outcomes were appealing	0
Other	12

Table 5: Carbon Project Owner Survey Data - strongest influence to get involved (n=31)

Influence	*% respondents*
Environmental	71
Financial	13
Aesthetic	10
Climate change action	6

Table 6: Carbon Project Owner Survey Data - initial interest in carbon farming (n=33)

How interest was initiated	% respondents "Agree"
Receiving information from State or Federal government agencies on carbon farming opportunities	6
Being contacted directly by a carbon services company	27
Undertaking own research into carbon farming opportunities	39
Talking to other landholders about carbon farming	0
Information sent to you by your local grower group or farming organisation	18
Heard about other farming getting involved in carbon projects	24
Other	45

Table 7: Carbon Project Owner Survey Data - 'hands-on' involvement (n=34)

Hands-on involvement?	% respondents
Yes	79
No	21

Table 8: Carbon Project Owner Survey Data - involvement areas (sample group – respondents who answered "yes" to having had hands-on involvement) (n=27)

Area of involvement	% respondents "Agree"
Planting	59
Monitoring growth	33
Species selection	44
Fire management	67
Pest management	59
Weed management	67
Land preparation (e.g., ripping)	44
Biodiversity monitoring	22
Fencing	59
Other	22

Table 9: Carbon Project Owner Survey Data - preference for greater involvement (n=33)

Prefer greater involvement?	% respondents
Yes, more involved	15
No, I am happy with the existing arrangement	85

Table 10: Carbon Project Owner Survey Data - areas more involvement preferred (sample group - respondents who answered "yes, more involved" above) (n =6)

Area for greater involvement	% respondents "Agree"
Planting	33
Monitoring growth	0
Species selection	17
Fire management	0
Weed and/or pest management	0
Fencing	0
Other	67

Table 11: Carbon Project Owner Survey Data - rating of Carbon Service Provider (n=33)

Rating	% respondents
It did not do a very good job at all	6
It did not perform well in a few areas	12
It has done an average job	12
It has done most things well	36
It has done an excellent job	33

Table 12: Carbon Project Owner Survey Data - factors to measure success of a carbon project (n=34)

Success measurement	1 "Not at all successful"	2	3	4	5 "Very successful"	Weighted average
	% respondents					
High seedling survival rate	0	0	15	36	48	4.33
Good project management	0	3	6	18	74	4.62
Landholder involvement and oversight	0	3	15	35	47	4.26
Engaging skilled contractors	3	6	15	24	53	4.18
Achieving carbon sequestration goals	6	3	21	35	35	3.91
Generating income for the landholder	12	15	26	21	26	3.35
Increasing biodiversity	0	3	15	29	53	4.32
Restoration of degraded land (e.g., salinity, erosion)	0	3	9	21	68	4.53
Low ongoing maintenance costs	0	3	9	41	47	4.32
Timely access to suitable equipment	3	12	26	35	24	3.65
Good fire break management	3	3	25	31	38	3.97

Table 13: Carbon Project Owner Survey Data - overall experience (n=34)

Overall experience	% respondents
Very negative	9
Somewhat negative	6
Neutral	3
Somewhat positive	35
Very positive	47

Table 14: Carbon Project Owner Survey Data - actual project success (n=34)

Success measurement	1 "Not at all successful"	2	3	4	5 "Very successful"	Weighted average
	% respondents					
Project management	12	9	12	33	33	3.67
Seedling survival rates	0	12	9	38	41	4.09
Plant/tree growth	0	6	12	30	52	4.27
Plant species suitability	0	6	12	35	47	4.24
Income generation	41	19	31	6	3	2.13
Plant and animal species diversity increases	0	0	38	34	28	3.91
The beautification of your property	0	3	18	18	61	4.36

Table 15: Carbon Project Owner Survey Data - carbon farming information sources (n=33)

Information source	% respondents "Agree"
Online searches	38
Farm consultants/advisors	6
Newspaper/magazine articles	6
Radio or television news programs	9
Twitter	3
Instagram	0
Facebook	0
Friends/family/neighbours	3
Government department websites	12
Books on the subject	0
Farming organisations/local grower groups	0
Local landholders who have had a carbon project on their land	9
Local field days or workshops	3
Other	12

Table 16: Carbon Project Owner Survey Data - opinions on achievement of co-benefits from development of carbon farming in WA (n=33)

Potential co-benefit	"No"	"Maybe"	"Yes"	"Unsure"
	% respondents			
Help to reduce erosion	3	6	91	0
Improve soil quality and moisture retention capacity	12	15	70	3
Increase farm productivity and yields	15	15	55	15
Diversify farm income sources	24	27	36	12
Conserve and improve biodiversity on the property	3	9	88	0
Improve resilience against climate variations	15	24	55	6
Give landholders access to financial incentives from government, local organisations, and/or grower groups	21	12	48	18
Meet one's environmental responsibilities	3	18	73	6
Offer a sustainable income from carbon credits	30	27	18	24
Reduce salinity and achieve water quality improvements	6	15	79	0
Leave an environmentally acceptable property for future generations	3	9	88	0
Contribute to climate change reduction	12	24	61	3

Table 17: Carbon Project Owner Survey Data - opinions on ways to motivate future landholder participation in carbon farming (n=4)

Motivator	1 "No impact"	2	3	4	5 "Significant impact"	Weighted average
	% respondents					
Financially successful carbon farming trials in the local area	3	3	9	24	62	4.38
Access to clear, easily accessible data on exiting projects	0	6	29	41	24	3.82
Proof that projects would complement current practices	0	3	15	50	32	4.12
Strong evidence that land restoration and biodiversity gains would be achieved	0	0	24	41	35	4.12
Government support for up-front costs	0	0	9	41	50	4.41

Table 18: Carbon Project Owner Survey Data - opinion on potential for carbon farming to be source of income over next 5-10 years (n=34)

Carbon farming – a future income source?	% respondents
Definitely not	18
Unlikely	15
Unsure	26
Likely	26
Definitely	15

Table 19: Carbon Project Owner Survey Data - likelihood of allocating additional land to carbon projects (n=33)

Allocation of additional land	% respondents
Very unlikely	24
Unlikely	21
Unsure	18
Likely	21
Very likely	15

Table 20: Carbon Project Owner Survey Data - assessment of carbon footprint undertaken (n=34)

Previously measured carbon footprint?	% respondents
Yes	88
No	12

Table 21: Carbon Project Owner Survey Data - likelihood of offsetting carbon footprint of operations in future (n=33)

Consider offsetting carbon footprint?	% respondents
No	33
Maybe	18
Yes	48

SURVEY 2 – BROADACRE LANDHOLDERS

N.B. All figures have been rounded to the nearest whole number.

Table 22: Broadacre Landholder Survey Data - implementation of carbon farming practices in past 5 years (n=164)

Carbon farming practices (last 5 years)	% respondents "Agree"
Tree planting	64
Fencing off native vegetation to protect from grazing	60
No-till cropping and/or stubble retention	88
High density/high rotation stock grazing	40
Earthworks to minimise erosion	63
Fencing and revegetating waterways to exclude stock	50

Table 23: Broadacre Landholder Survey Data - familiarity with concept of "carbon farming" (n=165)

Familiarity	% respondents
Not at all familiar	5
Somewhat familiar	55
Familiar	22
Very familiar	18

Table 24: Broadacre Landholder Survey Data - likely carbon farming success in WA (n=164)

Success	% respondents
No success	2
Limited success	57
Strong success	41

Table 25: Broadacre Landholders Survey Data - attitudes towards carbon farming in WA (n=165)

Statement (% "Agree")	Total	Age	Tertiary Educated	Farm size	Farm type
		40-49	Not Agriculture	<500 ha	Livestock only
Carbon farming is an exciting new industry that has great potential for WA landholders	66	76	62	53	71
Carbon farming could have potential, but the uptake will be slow among WA landholders	58	61	70	76	86
WA landholders will wait to see how projects perform in other states before they consider participating	30	29	35	24	43
It is not realistic for WA landholders to expect to get income from carbon	10	8	14	18	7

Table 26: Broadacre Landholder Survey Data - perceptions of the "type of people" to get involved in carbon farming (n=165)

Characteristic	1 "No"	2 "Maybe"	3 "Yes"	Weighted Average
	% respondents			
A traditional farmer who is well respected by their peers	13	45	42	2.28
A landholder who likes to keep up to date with new industry developments	7	28	65	2.59
A farmer who likes to explore new opportunities, regardless of what other people think	2	12	86	2.84
A landholder set up for a big cropping program	25	41	34	2.08
A city-based, absentee landholder	14	29	57	2.43
Any type of landholder	22	38	40	2.19
Carbon farmers will be just your typical, average farmer	37	34	29	1.92
Someone who is passionate about the environment	1	10	89	2.88
A landholder with income from sources other than farming	5	39	56	2.51
A livestock producer	6	36	58	2.52
Only those with large landholdings	77	16	7	1.30

Table 27: Broadacre Landholder Survey Data - recollection of past carbon farming information (n=126)

Recollection	% respondents "Agree"
Receiving information from State government agencies on carbon farming opportunities	21
Receiving information from Federal government agencies on carbon farming opportunities	13
Being contacted directly by a carbon services company	26
Undertaking your own research into carbon farming opportunities	67
Talking to other landholders about carbon farming	78
Talking to your farm advisor about carbon farming	14

Table 28: Broadacre Landholder Survey Data - future carbon farming information sources (likelihood of accessing) (n=165)

Source	1 "Not at all"	2 "Maybe"	3 "Very Likely"	Weighted Average
	% respondents			
Online searches	7	19	74	2.67
Farm consultants/advisors	25	28	47	2.22
Newspaper / magazine articles	15	30	55	2.41
Radio or television news programs	20	30	50	2.30
Twitter	45	18	37	1.93
Instagram	82	13	5	1.23
Facebook	59	22	19	1.60
Friends / family / neighbours	13	30	57	2.44
Government department websites	24	30	46	2.22
Books on the subject	38	29	33	1.95
Farming organisations / local grower groups	6	18	77	2.71
Local landholders who have a carbon project on their land	4	16	79	2.75

Table 29: Broadacre Landholder Survey Data - carbon farming concerns (n=159)

Potential concern	1 "Not concerning"	2 "Of some concern"	3 "Very concerning"	Weighted Average
	% respondents			
Cost of establishing a project	16	44	40	2.23
Maintenance costs (weed, pest and fire management)	29	34	37	2.08
Legal encumbrances being placed on land (to protect carbon permanence)	9	28	63	2.54
Financial stability of project partners	5	30	65	2.60
Farm production goals would be at odds with the carbon project goals	42	36	22	1.80
Long term commitment to a project (at least 25 years)	25	33	43	2.18
Impact of the project on farm resale value or saleability	35	30	35	2.00
Government policy changes could affect the carbon market	3	20	77	2.74
Ability to sell the carbon credits generated by the project	31	30	40	2.09
Time and resources required to participate	27	49	24	1.97
Responsibility for damage to projects from a fire on my property	14	35	50	2.36
Hearing negative opinions from other farmers in my region	68	24	8	1.39
Hearing negative feedback from farm consultants	66	20	14	1.48
Negative reactions to carbon farming from banks or financial advisors	45	30	25	1.81
No one else in my region has a carbon project	76	18	6	1.30

Table 30: Broadacre Landholders Survey Data – factors to motivate carbon project uptake on land (n=160)

Motivating factor	1 "No"	2 "Maybe"	3 "Yes"	Weighted Average
	% respondents			
Bringing plant and animal species diversity back to your land	13	19	68	2.55
Earning a steady annual income from carbon	3	11	87	2.84
Being able to call your carbon farming operation "carbon neutral"	21	18	61	2.39
Increasing the value of your land	3	12	86	2.83
Being recognised as a progressive farmer involved in a good practice	33	25	43	2.10
Restoring the health of degraded land	1	11	87	2.86
An offer to establish a project which does not require any up-front investment from you	7	23	70	2.59
Seeing other carbon projects in your region achieving good results	4	17	79	2.75
Improving the look of your property	14	14	71	2.57

Table 31: Broadacre Landholder Survey Data - carbon farming topics of interest (n=161)

Topic	1 "No"	2 "Maybe"	3 "Yes"	Weighted Average
	% respondents			
The different types of carbon projects I could be involved in	2	9	89	2.87
Other landholders' experience	3	9	88	2.85
The potential financial value of projects	1	7	92	2.91
Potential environmental benefits	6	16	78	2.71
Up-front establishment costs	3	6	91	2.88
Any government or industry initiatives being offered to support carbon project development	3	12	84	2.81
The carbon service providers operating in WA	4	18	79	2.75
Results from other carbon projects	8	15	77	2.69
Potential productivity co-benefits	3	9	88	2.84

Table 32: Broadacre Landholder Survey Data - likelihood of future carbon farming participation (n=160)

Likelihood of future participation	% respondents
Highly unlikely	6
Unlikely	28
Likely	44
Highly Likely	21

Table 33: Broadacre Landholder Survey Data – carbon footprint of farming operation previously undertaken (n=164)

Previously measured carbon footprint?	% respondents
Yes	11
No	87
Unsure	2

Table 34: Broadacre Landholder Survey Data - likelihood of offsetting carbon footprint of operations in future (n=164)

Consider offsetting carbon footprint?	% respondents
No	12
Maybe	41
Yes	47

SURVEY 3 – OFFSET BUYERS

N.B. All figures have been rounded to the nearest whole number.

Table 35: Carbon Offset Buyer Survey Data - current and future climate change impacts (n=110)

Climate change impact	"Not at all"	"Somewhat"	"Significant"	"Severe"	"Unsure"
	% Respondents				
CURRENT IMPACT					
Physical	33	45	16	4	3
Economic	21	45	28	4	2
Social	21	49	19	8	3
EXPECTED FUTURE IMPACT					
Physical	16	36	36	12	1
Economic	8	31	50	9	2
Social	9	37	41	11	3

Table 36: Carbon Offset Buyer Survey Data – agreed current and future climate change impacts by organisation size (n=110)

Climate change impact (% "Somewhat", "Significant" or "Severe")	% Total respondents	Organisation Size (# employees)			
		0-9	10-49	50-199	200
		% respondents			
CURRENT IMPACT					
Physical	64	69	43	54	89
Economic	77	75	72	85	84
Social	76	89	57	85	74
EXPECTED FUTURE IMPACT					
Physical	83	93	76	54	94
Economic	91	98	71	100	100
Social	88	94	72	92	100

Table 37: Carbon Offset Buyer Survey Data - familiarity with term "carbon footprint" (n=110)

Familiar with term "carbon footprint"	% respondents
Yes	96
No	4
Unsure	0

Table 38: Carbon Offset Buyer Survey Data - carbon footprint analysis previously undertaken (n=110)

Carbon footprint analysis undertaken	% Total respondents (n=110)	Company Size (# employees)	Climate future "significantly" or "severely" affected		
		> 200	Physical	Economic	Social
		% respondents			
Yes	25	42	34	29	26
No	64	32	55	55	53
Unsure	12	26	11	17	21

Table 39: Carbon Offset Buyer Survey Data - use of online emissions calculator (sample group - respondents who answered "Yes" to having previously undertaken carbon footprint analysis) (n=28)

Used online emissions calculator?	% respondents
Yes	46
No	50
Unsure	4

Table 40: Carbon Offset Buyer Survey Data - carbon footprint analysis suggested or discussed (sample group - those who did not answer "Yes" to having previously undertaken carbon footprint analysis) (n=83)

Carbon footprint analysis suggested or discussed	% Total respondents (n=83)	Company Size (# employees)	Climate future "significantly" or "severely" affected		
		> 200	Physical	Economic	Social
		% respondents			
Yes	33	55	49	40	47
No	55	18	43	45	37
Unsure	12	17	9	15	16

Table 41: Carbon Offset Buyer Survey Data – organisation level of agreement with statements relating to internal and external carbon footprint pressures (n=110)

Statement	"Strongly Disagree"	"Disagree"	"Agree"	"Strongly Agree"	"Unsure"
	% respondents				
Our carbon footprint is a concern for our organisation	7	19	42	31	1
We have already implemented initiatives to reduce our carbon footprint	8	19	44	26	3
We intend to implement initiatives in the future to reduce our carbon footprint	2	14	39	39	6
There is pressure from our customers to reduce our carbon footprint	17	41	23	13	6
There is pressure from industry to reduce our carbon footprint	17	40	29	10	5
There is legislative pressure/requirements to reduce our carbon footprint	23	50	14	5	8

Table 42: Carbon Offset Buyer Survey Data - organisational policies, systems, and initiatives in place for measuring and/or reducing carbon emissions (n=110)

Policy, system and/or initiative	% respondents "Agree"
We have a dedicated person responsible for monitoring our organisation's environmental impacts	34
We have a formal document(s) that details the organisation's objectives and policies in relation to reducing our carbon footprint	23
We have a waste reduction and/or prevention program in place	61
We have reduced the amount of paper used in our operations by switching to electronic records where possible	87
We implement recycling practices where possible (e.g., cardboard, printer cartridges, photocopy ink)	91
We have introduced (or are introducing) practices to reduce our energy consumption on our premises (e.g., LED lighting, more efficient heating/ cooling)	69
We consider the energy star rating on new appliance purchases	68
We maintain vehicles and equipment to deliver energy usage efficiencies	49
We use alternative energy sources	37
We actively try to reduce unnecessary business travel	52
We actively encourage employees to reduce their personal carbon footprint	41
We do none of the above	2
Other	19

Table 43: Carbon Offset Buyer Survey Data - familiarity with term "carbon offset" (n=110)

Familiar with term "carbon offset"	% respondents
Yes	87
No	10
Unsure	3

Table 44: Carbon Offset Buyer Survey Data - previous offset purchases (n=110)

Organisation previously purchased offsets?	% respondents
Yes	25
No	57
Unsure	18

Table 45: Carbon Offset Buyer Survey Data – offset purchase behaviour (date of first offset purchase) (sample group - respondents who answered "Yes" to having purchased offsets in the past) (n=27)

First offset purchase	% respondents
Less than 1 year ago	15
1 – 5 years ago	59
5 – 10 years ago	15
More than 10 years ago	11

Table 46: Carbon Offset Buyer Survey Data – offset purchase behaviour (purchase consistency since first purchase) (sample group - respondents who answered "Yes" to having purchased offsets in the past) (n=27)

Annual purchase since initial?	% respondents
Yes	63
No	22
Unsure	15

Table 47: Carbon Offset Buyer Survey Data - offset purchase behaviour (extent of offsetting) (sample group - respondents who answered "Yes" to having purchased offsets in the past) (n=27)

Offset portion or total footprint?	% respondents
A portion of footprint	48
Total footprint	33
Unsure	19

Table 48: Carbon Offset Buyer Survey Data - offset purchase behaviour (offset trading) (sample group - respondents who answered "Yes" to having purchased offsets in the past) (n=27)

Organisation trading offsets?	% respondents
Yes	0
No	93
Unsure	7

Table 49: Carbon Offset Buyer Survey Data - motivations for offset purchases (sample group - respondents who answered "Yes" to having purchased offsets in the past) (n=27)

Offset purchase motivators	% respondents "Agree"
Our sense of environmental responsibility	81
The attitudes of organisation's management	56
Pressure from employees (internal)	19
Pressure from customers	7
Pressure from suppliers	0
Pressure from industry	4
Pressure from competitors	4
It is a legislative requirement for our organisation	11
We were approached by a carbon offsetting organisation	11
We saw it as a potential marketing opportunity	52
Unsure	11

Table 50: Carbon Offset Buyer Survey Data - offset type preferences (sample group - respondents who answered "Yes" to having purchased offsets in the past) (n=27)

Offset type	% respondents "Agree"
Tree planting, reforestation, native grassland planting	70
Alternative energy schemes (e.g., wind, wave, thermal)	44
Methane and other noxious gas reduction	15
Other	19

Table 51: Carbon Offset Buyer Survey Data - offset accreditation preferences (sample group - respondents who answered "Yes" to having purchased carbon offsets in the past) (n=27)

Accreditation type	% respondents
Accredited only	37
Unaccredited only	15
Both accredited and unaccredited	15
Unsure	33

Table 52: Carbon Offset Buyer Survey Data - Climate Active (carbon neutral) certification status (sample group - respondents who answered "Yes" to having purchased carbon offsets in the past) (n=27)

Climate Active certified?	% respondents
Yes	19
No	74
Unsure	7

Table 53: Carbon Offset Buyer Survey Data - pursuit of broader objectives from offset purchase (sample group - respondents who answered "Yes" to having purchased carbon offsets in the past) (n=27)

Objective	% respondents "Agree"
Gaining respect from our customers, suppliers, and other stakeholders	70
Demonstrating corporate social responsibility	81
Enhancing our brand and increasing stakeholder engagement	70
Aiding the transition to a low carbon economy	81
Mitigating the impact of climate change	85
Mitigating soil erosion and salinity issues	56
Protecting and increasing Australia's biodiversity	74
Assisting in the development of renewable energy	52
Other	0

Table 54: Carbon Offset Buyer Survey Data - intention to continue offset purchases (sample group - respondents who answered "Yes" to having purchased offsets in the past) (n=27)

Intend to purchase in future?	% respondents
Yes	81
No	11
Unsure	7

Table 55: Carbon Offset Buyer Survey Data - reasons for discontinuing offset purchases (sample group - respondents who answered "No" or "Unsure" as to intention to continue purchasing) (n=5)

Reason for discontinuing purchase	% respondents "Agree"
Our budget no longer allows for it	0
We no longer have the internal resources to dedicate to it	0
We are not satisfied with the claimed results	40
We feel stakeholder interest is too low to warrant it	20
We are directing funds to other sustainability practices/objectives	40
Other	80

Table 56: Carbon Offset Buyer Survey Data - organisation attitudes towards carbon offsetting (sample group - respondents who answered "No" or "Unsure" to having purchased carbon offsets in the past) (n=84)

Statement	"Strongly Disagree"	"Disagree"	"Agree"	"Strongly Agree"	"Unsure"
	% respondents				
We would consider calculating our organisation's carbon footprint in the future	6	11	45	26	12
We are focused on reducing our carbon footprint internally and are unlikely to purchase carbon offsets in the future	5	18	42	17	19
We would consider purchasing carbon offsets in the future	8	36	24	11	21
We would only purchase carbon offsets if it were mandatory to do so	10	33	30	13	14
The cost of purchasing carbon offsets would be a barrier for our organisation	7	23	31	12	27
Finding the time/resources to investigate carbon offsetting would be a barrier for our organisation	12	31	44	6	7
Our employees would support our organisation's choice to purchase carbon offsets	4	6	43	30	18
If we purchased carbon offsets, we would want to communicate this to our stakeholders	2	8	39	39	11
If we purchased carbon offsets, we would want to be able to communicate that we are "carbon neutral" to our stakeholders	1	13	32	42	12

Table 57: Carbon Offset Buyer Survey Data - information requirements prior to purchasing offsets (sample group - respondents who answered "No" or "Unsure" to having purchased offsets in the past) (n=78)

Information required	% respondents "Agree"
Information about calculating our carbon footprint	81
Information about using online carbon footprint calculators	69
Information about the cost of carbon offsetting	82
Information about other organisations and their experience with carbon offsetting	53
Information about what other organisations in our industry are doing in relation to carbon offsetting	71
Information about industry initiatives relating to carbon offsetting	66
Information about how important carbon offsetting is to our key stakeholders (e.g., customers, suppliers, employees)	56
Information about any incentives or government support for carbon offsetting	87
Information about carbon offsetting projects in Australia	57
Other	6

Table 58: Carbon Offset Buyer Survey Data - offset accreditation preferences for potential offset purchases (sample group - respondents who answered "No" or "Unsure" to having purchased offsets in the past) (n=81)

Accreditation type	% Total respondents (n=81)	Organisation Size (# employees)			
		0-9	10-49	50-199	200
		% respondents			
Accredited only	28	25	18	13	60
Unaccredited only	13	19	18	0	0
Mix of accredited and unaccredited	9	8	9	0	13
We wouldn't buy either	15	11	23	25	0
Unsure	35	36	32	63	27

Table 59: Carbon Offset Buyer Survey Data - pursuit of broader objectives from potential offset purchases (sample group - respondents who answered "No" or "Unsure" to having purchased carbon offsets in the past) (n=81)

Objective	% respondents "Agree"
Gaining respect from our customers, suppliers, and other stakeholders	65
Demonstrating corporate social responsibility	84
Enhancing our brand and increasing stakeholder engagement	65
Aiding the transition to a low carbon economy	64
Mitigating the impact of climate change	84
Mitigating soil erosion and salinity issues	63
Protecting and increasing Australia's biodiversity	71
Assisting in the development of renewable energy	70
Other	10

Appendix D

AGRICULTURAL STAKEHOLDER INSIGHTS

Twelve organisations were interviewed to capture agricultural industry stakeholder insights, as shown in Table 60, with 27 individual representatives participating in the conversations.

Table 60: Agricultural Industry Stakeholder participants (n = 12)

Stakeholder Group	*# of Organisations*
Grower/ natural resource management groups based in Western Australia	5
Grain organisation (logistics and trade) based in WA, working internationally	1
Agronomic service provider based in WA, servicing nationally	1
Agricultural goods and service provider (including agronomy)	1
Banks	2
Research body	1
Private fully integrated agricultural company	1

The Details

All of the stakeholders interviewed have been working on carbon at varying degrees and levels in their organisations with the intent of gaining a greater understanding.
This included:

1. Undertaking carbon research and market research around carbon (own organisation and/ or industry wide),
2. Working to establish their baseline carbon footprint, planting and working with carbon service providers,
3. The inclusion of carbon in strategic documents and policy development and factoring of climate change impacts mitigation and adaptation into risk management.

Several of the stakeholders have developed or are working to develop and deliver climate tools to landholders, as well as tools which will enable landholders to assess the opportunity to be carbon farming participants.

Half of the stakeholders interviewed have dedicated sustainability resources.

All the stakeholders interviewed are focused on their organisations own sustainability or supporting the agricultural industry's sustainability but are all also looking at how to support WA farmers in carbon developments and sustainability more broadly.

Most of the stakeholders have had exposure to carbon calculators; from development, through to recommending landholder use of these tools.

Communication with landholders around carbon is important to all the stakeholders interviewed. Stakeholders are wanting to engage with and support farmers in relation to carbon developments. There is a real sense of stakeholders wanting carbon clarity both for their own organisation, but also for the landholders.

Some of the stakeholders are working on partnership programs and supply chain projects. They are looking to set targets or have already set targets on carbon and assessing the impact throughout the agricultural supply chains.

There is ambition and push within the agricultural industry and carbon is receiving significant attention.

Carbon Trends Observed by Agricultural Stakeholders

- There is significant emerging demand for carbon.
- Carbon clarity is needed.
- Interest in carbon by landholders is increasing, particularly in the past three to four years.
- There is an increased demand for support around carbon farming projects in the following areas:
- Participating in and registering carbon farming projects (Emission Reduction Fund),
- Production benefits of carbon farming (co-benefits), and
- Carbon sequestration through best management practice.
- There are varying scales of involvement by farmers in carbon, from entry level, all the way through to marketing.
- Regulatory reporting on carbon is building in the banking sector.
- There are a range of calculators available which is contributing to carbon confusion.
- Landholders' values and concepts of land stewardship will influence carbon farming participation.

Stakeholder Concerns Around Carbon Market Developments

Land use:

- Losing high-quality agricultural land to carbon plantings is considered to not be in the best interest of WA agriculture, its economy, and the regional WA communities and additionally for national and global food security.
- The lack of baseline data on carbon in WA's agricultural sector.
- Carbon measurement difficulties. Linked to resource base variability and ERF methodologies.
- The high level of corporate ownership of farmland and how these companies may participate in carbon given between 20 and 30% of WA farmland is now owned by corporate interests.
- Carbon permanence requirements, particularly the impact of carbon covenants on property valuations and property sales.
- Third party involvement.
- Low biodiversity value if the market develops in support of monoculture plantings.

Knowledge:

- Intellectual property ownership of the carbon calculators and then the accuracy of data entered.
- Previously registered carbon farming projects (i.e.: oil mallee carbon plantings) being revoked.
- The lack of knowledge around carbon farming, particularly the costs of establishing and maintaining projects (soil testing, land management, auditing, and reporting).
- Cost of soil carbon analysis and the sheer complexity of measurement.
- Carbon market:
- It does not begin with a holistic view of what is best for “Country” and delivery of long term wellbeing for the land.
- Difficulty in registering projects using ERF and the methodologies and uncertainty around their appropriateness for the WA agricultural environment.
- Overselling of carbon market opportunities: the integrity of the carbon players is critical.
- There is a lack of a clear value proposition for landholders which is limiting participation.
- Carbon accounting is creating a level of anxiety and distrust in carbon more generally, notably carbon accounting concepts in relation to the longevity of carbon dioxide versus methane in the atmosphere.
- The market price of carbon credits and uncertainty in carbon pricing going forward.

Questions Raised by Stakeholder Interviews

The carbon market:

- What is the long game of carbon farming and the carbon market? The goals need to be defined and need to be relevant at the grass roots.
- What are the goals of the different stakeholders? What are their roles in the carbon market? What are the different incentives for different stakeholders?
- How stable and reliable is the future of the carbon market?
- What is the carbon planting opportunity for WA and what criteria will be/ have been used to establish this?
- What are the opportunities for growers to maintain the carbon credits generated by a project?
- Is the future of carbon going to meet the needs of WA broadscale agriculture?
- Will carbon farming provide market advantage and commercial benefits in agriculture?
- What do consumers and customers want?
- What is the potential for carbon to drive sustainability, restoration, regional communities, and economies?
- Where will natural capital accounting fit in? Will carbon development take the same approach as natural capital valuations?

Carbon leadership and influence:

- What influences will the different supply chain stakeholders have on landholders?
- Who will lead and drive carbon market developments in WA?

Carbon data:

- Of all the carbon calculators now existing, which system is going to be of most value and be widely adopted?
- What is the carbon baseline and the state of the environment baseline (locally, state-wide, nationally, and globally)?
- How will the confidentiality of the inputted data be maintained?

Carbon farming in the farm and business plan:

- How do business structures affect the motivators/ barriers and levers for carbon farming participation?
- How can carbon be integrated into the whole farm plan? What are the critical parts of the landscape that require the restoration?
- What are the financial benefits of carbon farming and what can it add in terms of farm production and profitability (i.e.: what is the return on investment, how do the gross margins compare to other enterprises)?
- What is true value of carbon? Is there a carbon market value and a co-benefit value?
- What is the transition approach for carbon farming?

Carbon farming: achieving the impact:

- What is the "impact proposition", that is and similar to the "value proposition", what are the environmental impacts (outcome) that will result from implementing carbon farming projects?
- What is the standard for biodiverse/ restoration carbon plantings? What are the restoration standards to achieve biodiversity co-benefits?
- At what scale will there be a positive impact on the environment, and can this be attributed to carbon farming projects (causality)? What scale is required to achieve positive impact locally and globally? What will the actual change be during a period; what is the impact?
- What are the carbon farming success factors?
- How can we better document and achieve the co-benefits? Importance of establishing baseline and ongoing monitoring and evaluation.

Stakeholder Opinions on WA Carbon Market Development

The carbon market:

- Revision of ERF methodologies required.
- Need to have a well-developed goal for carbon farming.
- Need to focus on what is best for WA.

Carbon data:

- The data required to input at a farm level is a challenge.
- Carbon calculators: Having the data to feed in is a big challenge. Calculators will need to be a balance between user experience and functionality.
- Carbon footprint baselines need to be established across agricultural supply chains.
- Utilising CSIRO Farm Print as a plug-in for other calculators to be built on from.
- What is the state of the environment (farms, catchments, regions, state): this will provide the benchmark?

Communication and education to support knowledge growth:

- Need to create an open-minded learning environment.
- Build a support network for landholders engaging in the carbon market.
- Engagement with traditional owners.
- Tailored information about carbon opportunities.
- Carbon needs more airtime, and more questions need to be asked and answered.
- Need consumer insights customers on climate change, emissions, and carbon market.
- Understand what carbon is and how it works: the science of carbon and how it relates to the carbon market opportunities.

- Need to empower the farmer. Landholders need to know the numbers – financial as well as resource condition.
- Credible sources of information needed.
- Need to look globally at what is happening with carbon, and more generally, sustainability movements of all the stakeholders in agricultural supply chains.

Carbon farming in the farm and business plan:

- Needs to fit into the farm and business plan (the physical landscape, the farming system, and the business model). Carbon must have a place in the overall farm plan.
- Support for farm planning required.
- Need to overlay a carbon accounting system.
- Carbon farming needs to complement production.
- Monitor, evaluate and adjust. Continual improvement process.
- Landholders need good record keeping.
- Carbon farming needs to satisfy the risk and credit departments of lenders (banks).
- Carbon farming needs to be an integrated approach. A whole of farm approach to sustainability.
- Landholders need to do their due diligence. They are responsible for this, across all areas.
- The carbon plantings need to be fit for purpose: they need to fit into the farm plan.
- Want to bring uniformity and qualitative assessment to assessing non-financial risk.
- Knowing how to get started and to assess the feasibility of a carbon project remains to be a challenge.
- The most significant hurdle is the carbon price; property valuations are linked to this.

Carbon farming: achieving the impact:

- National restoration standards need to be used to maximise the opportunity to achieve biodiversity co-benefits.
- Connectivity across the landscape will provide broader biodiversity benefits.
- A value frame that includes ‘Spirit’.
- Higher value ecological plantings.
- Agricultural areas need more people, not less. The potential social element of the carbon farming needs to be considered.