Carbon Storage and Trading through Farm Forestry: A Survey of Farmers in Tasmania

Final Report

Don Defenderfer

1 December 2010

Level 4, 29 Elizabeth Street
HOBART TAS 7000

Carbon Storage and Trading through Farm Forestry: A Survey of Farmers in Tasmania

Rural Development Services exists to enhance individual and organisational capacity in rural and regional Australia.

We do this by partnering agriculture, aquaculture and fisheries organisations in research, development and training.

We specialise in industry development, industry research, rural social research, sustainable business development and people development.

Contact:

RDS Partners Pty Ltd
ABN 33 125 001 452

Level 4, 29 Elizabeth Street

HOBART TAS 7000

P: +61 3 6231 9033

F: +61 3 6231 1419

E: info@ruraldevelopmentservices.com

Table of contents

FOREWORD ..... **V**

ACKNOWLEDGEMENTS ..... **VI**

EXECUTIVE SUMMARY **1**

1 WHAT THIS REPORT IS ABOUT 1

2 WHO THIS REPORT IS TARGETED AT 1

3 BACKGROUND 1

4 METHODS USED 2

5 KEY FINDINGS 2

1. Farmer Awareness *2*

2. Attitudes and Motivations *3*

3. Information and Training Needs *4*

4. Future Opportunities for Farmers *6*

5. Barriers and Risks *7*

6. Climate Change *8*

RECOMMENDATIONS 9

1. Increasing Awareness Level of Farmers *9*

2. Understanding of Emissions and Storage Options on Farms *9*

3. Increasing the Engagement of Farmers *10*

4. Understanding Economic, Social and Environmental Motivations of Farmer *10*

5. Carbon Branding *10*

6. National Carbon Policy Framework *10*

7. Carbon Incentives for Pre-1990 Vegetation *11*

8. Climate Change *11*

INTRODUCTION **12**

OBJECTIVES **14**

METHODOLOGY **15**

SURVEY RESULTS **19**

1 FARMER AWARENESS 19

1.1 Awareness Levels of Farmers of Carbon Storage Issues *19*

1.2 Sources of Greenhouse Gas Emissions *19*

1.3 Level of Greenhouse Gas Emissions on Farms *20*

1.4 Level of Understanding of Carbon Storage Levels on Farms *20*

1.5 Are Farmers Net Storers or Emitters of Emissions? *21*

2 ATTITUDES AND MOTIVATIONS 22
2.1 Actions to Reduce Greenhouse Gas Emissions 22
2.2 Motivations to reduce greenhouse gas emissions 23
2.3 Emission Reduction Motivations 23
2.4 Farmers believe they have a Social Responsibility 24
2.5 Future Motivations: Disincentives 24
2.6 Future intentions: Motivational Benefits of Carbon Storage and Trading 25
2.7 Brand Recognition for Carbon Farming 25
2.8 Carbon Brokers 26
2.9 Need for Emission Trading Scheme Rules 26
3 INFORMATION AND TRAINING NEEDS 28
3.1 Current Information and Materials 28
3.2 Information and Training Needs 29
3.3 Types of Information 30
3.4 Level of Farmer Interest in the Carbon Economy 31
4 FUTURE OPPORTUNITIES FOR FARMERS 32
4.1 Opportunities to Increase the Engagement of Farmers in the Carbon Economy 32
4.2 Future Intentions: for Established Farm Forestry Areas on Farm 33
4.3 Future Intentions: Carbon Rights 34
4.4 Future Intensions: Plantations and Investments Sources 34
4.5 Future Intensions: Offering Land to External Investors 34
4.6 Future Intentions: Farm Forestry for Carbon Storage and Trading 35
5 BARRIERS AND RISKS 36
5.1 Barriers to Participating in Carbon Storage and Trading 36
5.2 Risk Perception 37
5.3 Emissions Rule Changes and Liabilities 37
6 CLIMATE CHANGE 38
6.1 Farmer Belief in Global Climate Change 38
6.2 Greenhouse Gas Emissions and Global Climate Change 39
6.3 Government and Industry Actions to Address Climate Change 40
7 DEMOGRAPHICS 41
7.1 Location of Farmers, Age and Gender 41
7.2 Income Earned On Farm 41
7.3 Farm Enterprises 42
7.4 Farm Forestry Enterprises 42

APPENDIX 1 – SURVEY QUESTIONS **44**

APPENDIX 2 - SURVEY DESCRIPTION **45**

REFERENCES **46**

TABLES

TABLE 1 SOURCES OF GREENHOUSE GASES 20

TABLE 2 I BELIEVE CLIMATE CHANGE IS A SERIOUS PROBLEM 40

FIGURES

FIGURE 1 GENERAL LOCALITY OF CASE STUDY FARMS 17

FIGURE 2 HOW WOULD YOU RATE YOUR UNDERSTANDING OF CARBON STORAGE AND TRADING ISSUES AS THEY RELATE TO FARM FORESTRY? 19

FIGURE 3 HOW WOULD YOU DESCRIBE YOUR FARM'S ANNUAL GREENHOUSE GAS EMISSIONS, I AM: 22

FIGURE 4 THERE IS NO BENEFIT FOR ME TO REDUCE OR OFFSET MY FARM GREENHOUSE GAS EMISSIONS THROUGH FARM FORESTRY UNTIL I KNOW THE RULES OF AN EMISSIONS TRADING SCHEME 27

FIGURE 5 MY INTEREST IN LEARNING MORE ABOUT CARBON STORAGE AND TRADING ISSUES RELATED TO FARM FORESTRY IS: 32

FIGURE 6 FARM FORESTRY AREAS ALREADY ESTABLISHED ON MY FARM ARE GOING TO BE MOST USEFUL TO MY BUSINESS IN THE FUTURE FOR WHICH OF THE FOLLOWING. YOU MAY CHOOSE MORE THAN ONE. 34

FIGURE 7 FARM FORESTRY CARBON STORAGE AND TRADING CAN BE ACHIEVED THROUGH FOUR MAIN WAYS. IF YOU WERE TO PARTICIPATE IN CARBON STORAGE AND TRADING IN THE FUTURE, WHICH OF THE OPTIONS BELOW WOULD YOU MOST LIKELY CHOOSE? 35

FIGURE 8 ONE OF THE MAIN REASONS I HAVE NOT GOT INVOLVED IN CARBON STORAGE AND TRADING THROUGH FARM FORESTRY IS BECAUSE I AM CONCERNED ABOUT FUTURE EMISSION TRADING RULE CHANGES AND THE POSSIBILITY THAT MY OFFSET OPERATIONS COULD BECOME A LIABILITY IN THE FUTURE 38

FIGURE 9 I BELIEVE THAT GLOBAL CLIMATE CHANGE IS AFFECTING MY LOCAL CLIMATE 38

FIGURE 10 PERCENTAGE OF FAMILY INCOME EARNED ON-FARM 42

FIGURE 11 FARM FORESTRY ENTERPRISES 42

FIGURE 12 APPROXIMATE NUMBER OF HECTARES OF FARM FORESTRY ENTERPRISES 43

Foreword

The survey and report was conducted by Rural Development Services for Private Forests Tasmania (PFT) as part of a project entitled "*Carbon Plantations – Extending R&D to best management practices for carbon sequestration, wood production and new investment opportunities on private land in Tasmania*."

The results of the survey are illuminating. They will assist Private Forests Tasmania to develop an informed Tool Kit to assist farmers to better understand, engage with and make more informed decisions about the potential involvement of their farms and farm forestry in the new carbon economy.

The report reveals for the first time the level of understanding, attitudes and motivations of Tasmanian farmers regarding carbon storage and trading issues in relation to farm forestry. It presents important insights into the knowledge gaps that farmers are interested in addressing and the values that drive their interest in participating in the carbon economy – and these values are not always as financially oriented as one might assume.

The analysis in this report will assist policy makers to understand the needs and perspectives of farmers about how they see the complex world of carbon production and storage.

This report will enable farmers to understand what their peers are saying about carbon issues and to know that they are not alone – whatever their involvement, interest or knowledge about carbon farming.

With all new enterprises or endeavours there is always inside shop talk, jargon and hype - and the new world of carbon accounting, storage and trading is replete with it. This report shows that farmers seek a pathway through the hype. They want clear information and a consistent national framework so they can make informed choices.

The subsequent carbon plantations materials produced for farmers will be targeted, clear and useful; a calm voice that does not add to the hawking and hollering that is so prevalent in carbon circles at the moment.

The carbon economy is a brave new world. International and national policies and regulations are emerging, changing and being revised on a daily basis. This report will 'serve as a mark in time' when the carbon economy was still 'new' and few people, institutions or government really knew its potential or how farmers can take advantage of its emerging opportunities.

What we know is that greenhouse gas emissions, carbon sequestration and storage issues are real and that one way or another, farmers will play a key role in a carbon-based future. (As I write, the Australian Government is seeking comment on its new draft Carbon Farming Initiative that will lead to farmers creating tradable carbon credits.)

We are pleased this report and the project outcomes will assist Tasmanian farmers to take advantage of emerging opportunities in the carbon economy.

Arthur Lyons
Project Manager
Carbon Plantations Project
Private Forests Tasmania

Acknowledgements

This report is part of the project "*Carbon Plantations – Extending R&D to best management practices for carbon sequestration, wood production and new investment opportunities on private land in Tasmania.*"

Private Forests Tasmania, under the Australian Government's Forest Industries Climate Change Research Fund, received a grant of $255,671 to undertake this 12 month project.

The grant funds have been matched by $129,684 from the project consortia which consists of AFG-TreeSmart, AK Consultants, CSIRO Sustainable Agriculture Flagship, Livingston Natural Resource Services, Private Forests Tasmania (PFT) and Rural Development Services.

A steering group was established for the project that includes all the project partners.

Rural Development Services has been responsible for the production of this report and we would like to thank Arthur Lyons from PFT for his scrutiny of the survey (in its formative stages) and his insightful comments on drafts of this report.

Thanks also to Donna Lucas at Rural Development Services and Peter Taylor at PFT, both of whom assisted in the initial formation of the survey questions. Morag Anderson and Ray Murphy both assisted in applying the survey to Survey Monkey and its accessibility on-line.

Morag Anderson played a key role in editing the final report and designing the tables and figures.

Thanks go especially, and most importantly, to the farmers who took the time to complete the survey (either by themselves on the web or through phone and face to face interviews) – without the support and interest of farmers, this project would not have been possible.

Promotion of the survey was also assisted by the Tasmanian media, Private Forests Tasmania, NRM Regional bodies, Tamar NRM, DPIPWE's FarmPoint, and by the Tasmanian Farmers & Graziers Association through their efficient TFGA FastNews email newsletter.

This project is supported by funding from the Australian Government Department of Agriculture, Fisheries and Forestry under its Forest Industries Climate Change Research Fund program.

Executive Summary

1 What this report is about

This report presents the findings of a survey of Tasmanian farmers regarding their awareness levels and attitudes about carbon storage and trading issues as they relate to farm forestry on their properties. The case study region for the survey was north east Tasmania (however additional landowners from outside the region completed an on-line survey which was available to any farmer in Tasmania.)

The survey was designed to provide information to help identify how farmers can participate effectively in the emerging carbon economy. The survey is seen as a key step in understanding what farmers know and don't know about carbon issues, what motivates them about the issues, and the types of assistance they need to get more involved.

2 Who this report is targeted at

The report is targeted at Private Forests Tasmania, industry (including agriculture and farm forestry), farm advisors, government policy makers and farmers that may already be involved in or considering their participation in carbon storage and trading opportunities through farm forestry. (The definition of farm forestry used for this project includes plantations, plantings of native vegetation for biodiversity and/or production benefits, and retained areas of native bush.)

3 Background

This report and the survey it is based upon is part of a larger project (*Carbon Plantations – Extending R&D to best management practices for carbon sequestration, wood production and new investment opportunities on private land in Tasmania*), the overall goal of which is to develop products and services for landholders to help them make more informed decisions about participating in carbon storage activities on their farms and to help prepare them for potential carbon trading opportunities.

The overall project is focused on four farms with dairy, beef, sheep and cropping enterprises. Farm greenhouse gas emissions, carbon sequestration and wood production options under future climate and economic conditions have been modelled at each farm as part of the wider project. The wider project will also develop a Carbon Plantations Toolkit that will be released at four field days in autumn 2011.

This is the first project in Tasmania aimed at empowering farmers to make informed choices about managing their greenhouse gas emissions through growing more trees on their farms and/or managing existing trees. Farmers may also be able to *trade* carbon in their plantation trees and/or sell plantation-grown wood products.

The Carbon Plantations Project is funded by a grant of over $255,000 from the Australian Government through its Forest Industries Climate Change Research Fund and supplemented by contributions from project partners including: AFG-TreeSmart, AK Consultants, CSIRO Sustainable Agriculture Flagship, Livingston Natural Resource Services, Private Forests Tasmania and Rural Development Services.

4 Methods Used

Both quantitative and qualitative social research methods were used to generate data for this report. (See Appendix 1 for copy of the survey questions.)

Sixty four landholders in Tasmania completed the survey, either through phone interviews (30), on-line self-completion (30) or through four in-depth semi-structured interviews which were conducted with key landholders whose farms were established as demonstration properties for the overall project.

The surveys were conducted between the 9th of August and the 8th October 2010.

A reference was established for the overall project and this group provided comments on the formation of the survey questions which were developed by Rural Development Services in consultation with Private Forests Tasmania.

5 Key Findings

1. Farmer Awareness

1.1 Carbon Storage and Emission Issues

Farmers have a medium to low level awareness of carbon storage and greenhouse gas emissions issues on their farms. 81% of farmers rated their awareness level as medium to very low, with only 19% rating their understanding as high or very high.

Farmers have a good understanding of two major sources of greenhouse gas emissions on their farms (livestock and energy use) but have less awareness of the full range of the sources of greenhouse gas emissions on their properties (e.g. soils, fertiliser).

Farmers are divided about whether they believe they are net emitters or storers of greenhouse gas emissions on their farms:

- 34% of farmers surveyed believe they are a net emitter
- 26% believe their emissions are about neutral
- 16% believe they are a net storer
- 23% are unsure of their net emissions.

1.2 Level of Engagement of Farmers in Carbon Farming

Only 36% of farmers stated that carbon storage and trading is a regular topic of discussion with their family, fellow farmers or farm business advisors.

While farmers are *aware* of carbon and greenhouse gas related issues in general, there has not been a deep level of engagement with the issues as yet. Farmers see the issue as a low farm management priority at the moment.

Uncertainties about future carbon markets and trading schemes and the low price of carbon, as well as the current financial challenges facing many commodity based farmers in Tasmania, were given as major contributing factors to the current low level of farmer engagement in the issue.

1.3 Level of Interest of Farmers

Although the level of farmer engagement is low, there is a high level of interest from farmers in learning more about the carbon economy: 83% responded that they had a medium to very high interest in learning more about carbon farming.

Only 17% of respondents said they had a low or very low interest in learning more.

2. Attitudes and Motivations

2.1 Greenhouse Gas Reduction Activities on Farm

Nearly half (49%) of farmers surveyed have taken actions to reduce greenhouse gas emissions or store carbon on their farms.

Major actions taken in order of highest take-up include: establishment of shelterbelts (including riparian zone re-vegetation), soil management, and changed agricultural management practices.

2.2 Financial Motivations

The major reasons *why* farmers have taken actions to reduce their greenhouse gas emissions or store carbon on their farms (in order of preference) include:

- financial gain
- social responsibility
- biodiversity benefits
- personal interest.

Financial gain was nominated by 88% as a key motivator for farmers to get involved in carbon storage and trading through farm forestry. However, it should be noted, that uptake of actions involving carbon or greenhouse gas emissions are only occurring when they align with perceived good farming management practices.

63% of farmers indicated they would participate because of the overall benefits to the environment and 50% said they would most likely participate in carbon storage and trading because of the overall benefits to society.

71% of farmers said they were likely to consider farm forestry as a means to offset their emissions in the future.

2.3 Social responsibility

78% of farmers agreed that they have a social responsibility as landholders to take action on their farms to reduce greenhouse gas emissions.

Farmers communicated that while they feel a strong sense of social responsibility to reduce farm emissions, the wider community should assist them to do this and not penalise them for being productive farmers.

2.4 Disincentives

Farmers indicated that cost (73%) and lack of financial gain (59%) were the main reasons they would *not* consider offsetting their greenhouse gas emissions in the future.

Some farmers noted that a disincentive to adopt farm forestry as a means to reduce greenhouse gas emissions was because they had high value agricultural land and they did not want to see this land go into plantations that would be less economically productive for them.

2.5 Brand Recognition

Half of those surveyed (50%) agreed that there would be brand recognition or marketing advantages for them in the future through carbon storage activities.

Many of those who disagreed about the benefits of carbon branding commented that they believe Tasmanian farmers will not benefit because they sell into bulk commodity markets and that if there were any market advantages in the future it will only be the supermarkets that will gain any advantage.

2.6 Carbon Brokers

Forty two per cent of farmers said employing a carbon broker was likely in the future; 25% said it was highly unlikely and 32% said they didn't know.

Those that did not want to employ a carbon broker gave reasons such as the need to understand carbon trading themselves before considering paying someone else; paying unnecessary fees; and a general scepticism of 'middle men' taking profits out of a 'tight' system.

2.7 Need for Emission Trading Scheme Rules

Approximately two thirds of farmers (67%) agreed that there was no benefit for them in reducing or offseting their farm greenhouse gas emissions through farm forestry until they knew the rules of an emissions trading scheme. Approximately one third (35%) strongly agreed with this statement and just under one third of farmers disagreed.

Farmers want to know the rules of a trading scheme and the current lack of rules was cited as a frustration and a major reason for them not participating in carbon storage through farm forestry.

Farmers are also concerned that whatever rules and frameworks are developed, they need to be practical, provide options and not penalise farmers.

2.8 Attitude and Motivation Analysis

Farmers are strongly motivated by financial considerations; however they are also very strongly influenced by social and environmental motivations.

Financial considerations can be seen as a prime driver in farmer decision making, but these considerations are strongly influenced by social and environmental motivations as well.

3. Information and Training Needs

3.1 Current Information

54% responded that current information about carbon storing and trading for farmers is inadequate. Only 9% responded that current information is adequate. 36% replied that they did not know.

The main reasons given for the inadequacy of current information and materials is:

- current information is not geared to the needs of farmers
- current information is confusing and too complex
- the information farmers need is not available.

3.2 Training Needs

Farmers were asked through which means they would prefer to learn more about carbon trading and storage issues. First preference means were identified as:

- written information (67%)
- one on one advice (43%)
- newsletters (24%)
- field days (19%)
- DVD (16%)
- web (15%).

3.3 Current and Future Sources on Information

The top sources of information farmers currently use or would consider using in the future were all very closely ranked (receiving first preference from nearly 50% of respondents in each category). They are:

- newsletters
- media
- *Tasmanian Country* (a Tasmania-wide rural newspaper)
- farm advisors and consultants.

These first preferences were followed by the Tasmanian Farmers and Graziers Association (TFGA) (35%), web (33%), government (25%), industry (22%) and Private Forests Tasmania (18%).

3.4 Types of Information

When given a choice of four types of information that would assist them to participate in carbon storage and trading through farm forestry in the future, farmers indicated a first preference for financial advice (51%).

This was followed by information about greenhouse gas emission and storage calculators (43%); information about carbon brokers and offset schemes (27%); and farm forestry management advice (23%).

3.5 Level of Engagement of Farmers

Only 36% of farmers agreed that carbon storage and trading was a regular topic of discussion with their family, fellow farmers or farm business advisors.

While farmers were *aware* of carbon and greenhouse gas related issues in general, there has been not a deep level of engagement with the issues as yet. Farmers see the issue as a low farm management priority at the moment.

Uncertainties about future carbon markets and trading schemes and the low price of carbon, as well as the current financial challenges facing many commodity based farmers in Tasmania were given as major contributing factors to the current low level of farmer engagement in the issue.

3.6 Level of interest of Farmers in the Carbon Economy

Although the level of farmer engagement is currently low, there is a *high* level of interest by farmers in learning more about the carbon economy, with 83% responding that they had a high, very high or medium interest in learning more about carbon farming.

Only 17% of respondents said they had a low or very low interest in learning more.

This section shows that farmers have not yet fully engaged in carbon economy, that it is not a regular topic of conversation between them, but they are eager to learn more.

4. Future Opportunities for Farmers

4.1 Opportunities to Increase the Engagement of Farmers in the Carbon Economy

Farmers believe the main opportunity government and industry have to best motivate them to get more involved in farm forestry carbon storage projects is for clearer economic benefits to be detailed to them. This was indicated by 79% of farmers.

Farmers want to know, clearly and simply, without hyperbole and salesmanship, what are the costs and economic benefits of participating in carbon storage and trading through farm forestry.

Farmers also want better information than is now available as current information is seen to be complex, incomplete, not geared to the needs of Tasmanian farmers and not scientifically based.

Tax incentives were noted by 43% of respondents as an effective way for government and industry to motivate farmers to get more involved in carbon storage and trading.

4.2 Future Intentions: for Established Farm Forestry Areas on Farm

Shelter/windbreaks were nominated as the most likely use of their property's farm forestry areas in the future (by 55% of farmers). This was followed by biodiversity and wood production.

Significantly, carbon storage was only identified by 21% of respondents as the major future use of their existing farm forestry areas.

However nearly half (46%) of respondents said it was *likely* that they would establish farm forestry areas on their properties in the next five years for carbon storage and trading.

4.3 Future Intentions: Carbon Rights

More than half of farmers (57%) said they would consider selling their carbon rights in the future. 20% of farmers said they would not sell their rights; nearly a quarter said they didn't know if they would or not.

Farmers commented that there is still a great deal of uncertainty about how future carbon trading systems will work, and this was preventing them from making a firm predication about the future intentions.

4.4 Future Intensions: Plantations and Investments Sources

Farmers are willing to use their own resources to invest in a carbon based future. 55% of landowners indicated that they would consider using their own financial resources to develop new plantations on their farms for carbon storage and trading; 29% did not think they would and 16% indicated that as yet they did not know their intentions.

4.5 Future Intensions: Offering Land to External Investors

When asked whether they would offer their land (e.g. lease) to external investors to develop new plantations on their farms for carbon storage and trading, only 31% agreed with this statement.

60% of farmers said they would not offer their land to external investors (including 22% who strongly stated they would not do this). 9% said they were unsure.

Discussion on this point revealed that many farmers were wary of external investors on their land, given the recent collapse of several major 'managed investment schemes' for plantations. Some farmers also commented that they felt there was more profit in the long term if they invested in and managed plantations with their own resources.

4.6 Future Intentions: Farm Forestry for Carbon Storage and Trading

Nearly half (46%) of respondents said it was likely that they would establish farm forestry areas on their properties in the next five years for carbon storage and trading. 37% said that did not think this was likely. 17% of farmers were unsure.

61% of those surveyed indicated that they would choose planting trees with their own resources as their first preference in the future.

The second first preference identified by farmers was to sell carbon rights from their existing forests (52%). Planting trees with external resources was a third first preference for 46% of farmers.

Making land available for others to establish and manage plantations was given the lowest preference, with only a third of farmers indicating this as a first preference.

5. Barriers and Risks

5.1 Barriers to participating in Carbon Storage and Trading

The major barriers to farmers participating in carbon storage and trading highlighted by farmers include:

- lack of clear government policy or consistent framework (60%)
- financial return is too low or uncertain (58%)
- I don't have enough information about it (40%)
- lack of a carbon price (32%)
- I don't understand what it's all about (30%)

The lack of a clear government policy (including lack of a carbon price) and low or uncertain financial return are the main reasons given for farmers not getting involved in carbon storage and trading through farm forestry.

Lack of appropriate information and difficulty understanding current information is also a major barrier.

The issue of not being able to factor in carbon sequestered in native forests growing before 1990 (because of the Kyoto Protocol) was highlighted as a barrier to engagement and a disincentive for Tasmanian farmers to get involved in carbon storage and trading.

5.2 Risk Perception

The majority of farmers (53%) believe carbon storage and trading through farm forestry is a risky activity. 28% said it was not a risky activity and 19% said they didn't know.

Reasons given for the belief that it is risky activity mirror the major barriers noted in 5.1 above, especially the lack of a clear government policy and the fact that the financial return is currently too low or uncertain.

5.3 Emissions Rule Changes and Liabilities

70% of farmers indicated that one of the main reasons they have *not* got involved in carbon storage and trading through farm forestry is because they are concerned about future emission trading rule changes and the possibility that their offset operations could become a liability in the future.

Only 19% of farmers disagreed with the statement and the rest didn't know or thought the question was not applicable.

The level of uncertainty about future emission trading rule changes is a major risk-oriented barrier preventing farmers from fully engaging in the carbon economy.

Farmers do not want to invest in schemes where the rules are not yet fixed and the 'goal posts' appear to be changing on a regular basis.

6. Climate Change

6.1 Farmer Belief in Local Climate Change

60% of farmers surveyed believe that global climate change is affecting their local climate, 22% indicated they thought global climate change was not having an effect and 17% said they didn't know.

Two thirds of farmers believe 'climate variations' are affecting their property due to global climate change. Other effects identified by farmers include increased temperatures, changing management techniques and that climate change is 'creating unknowns' in how to manage their property.

19% of farmers said they did not know how climate change was affecting their property.

Observations on local climate change made by farmers were diverse: some commented that the changes were subtle and incremental; some made specific observations such as drier winters; some communicated that if there were local changes they were part of natural cycles; others were adamant that there were no local effects due to climate change on their properties.

6.2 Greenhouse Gas Emissions and Global Climate Change

66% of farmers believe 'greenhouse gas emissions due to human activity are responsible for *global* climate change.' Only 14% disagreed with this statement.

21% of farmers said they didn't know if greenhouse gas emissions due to human activity were responsible for global climate change.

78% of farmers said they believe that climate change is a serious problem. 15% disagreed with this statement and 7% said they didn't know.

When farmers were asked if they were happy with their understanding of climate change issues, 69% said they were happy, 29% said they were not and 2% were unsure.

6.3 Government and Industry Actions to Address Climate Change

71% of farmers believe that government is *not* doing enough to address climate change issues, only 22% believe government is doing enough, 7% say they don't know.

60% of farmers believe industry is *not* doing enough to address climate change issues, 26% believe industry is doing enough, 14% say they don't know.

A number of farmers are worried that future government action on carbon trading will not take into consideration farmer concerns and they strongly believe industry needs to be proactive to protect its interests. Farmers want encouragement and incentives to participate in carbon storage and trading - they do not want to be penalised or victimised.

Recommendations

1. Increasing Awareness Level of Farmers

To increase the awareness level of farmers about carbon storage and trading opportunities through farm forestry, it is recommended that extension materials should be developed that include:

- clear and concise written information about the carbon economy as it relates to farmers in Tasmania, especially carbon storage and trading opportunities
- clear written information about the potential economic benefits and options for farmers
- independent one-on-one advice be available to farmers
- targeted newsletters on carbon storage and trading issues for farmers
- field days at key landholder sites

2. Understanding of Emissions and Storage Options on Farms

Learning materials should be developed for Tasmanian farmers that clearly explain the major sources of greenhouse gas emissions on farms and the options farmers have for storing carbon and reducing their emissions through farm forestry.

Farmer-friendly greenhouse gas emission and storage calculators (especially with regard to farm forestry) should be trialled with Tasmanian farmers so that they can quickly and easily get a general idea of their farm's net emissions and storage options.

3. Increasing the Engagement of Farmers

To increase the engagement of farmers in the carbon economy, it is recommended that the economic benefits of participating in carbon and storage be highlighted clearly in extension materials.

Clear and concise cost benefit analysis information regarding farmer participation in carbon storage and trading activities through farm forestry should be developed so as to avoid creating unrealistic expectations about the financial benefits of the carbon economy.

4. Understanding Economic, Social and Environmental Motivations of Farmer

To increase the uptake of carbon farming programs, policy makers should take into consideration that although farmers are highly motivated by financial considerations, they also have very strong social and environmental motivations that significantly influence their decision making.

Policy makers should not consider the financial aspects of policies and programs related to carbon trading and storage in isolation, but they should also consider the social and environmental consequences of any policies for farmers (including incentives and disincentives).

Farmers are more likely to participate in a program if there are integrated financial, environmental and social benefits. Their current uptake only occurs when it aligns with what they believe to be good farm management practice. For them, good farm management practice is directed towards sustainable production, as without this they will not have a profitable business, which in turn, has social implications for them, their families and their communities.

5. Carbon Branding

'Carbon Branding' of farm forestry products associated with carbon storage and trading should be pursued with great care so as to ensure that farmers benefit from any such programs and that branding does not create unnecessary administration, auditing and regulatory burdens for them.

The net beneficiary of any carbon branding or codes of practice should be analysed as there is concern amongst farmers that any potential benefits of branding and marketing will not flow through to them but will be only realised by those above them in the value chain (e.g. supermarkets).

6. National Carbon Policy Framework

The lack of government policy for a national carbon framework and price for carbon is a strong disincentive for farmers to get involved in carbon storage and trading through farm forestry.

A transparent and consistent national carbon trading and storage policy should be developed and farmers should have input into this framework to ensure greater uptake by their industry.

If a national price for carbon is established, it must be a competitive price or there will be limited uptake of farmers.

7. Carbon Incentives for Pre-1990 Vegetation

Farmers are concerned that they cannot get carbon credits or related incentives for areas of native vegetation on their properties that were established pre-1990 (as currently the Kyoto Protocol exempts these areas from carbon accounting practices).

Government and industry should jointly investigate how Tasmanian farmers can receive carbon credits or incentives for managing areas of native vegetation on their properties that were established prior to 1990.

8. Climate Change

To increase farmer understanding and engagement with climate change preparedness and mitigation, there should be clear information and advice provided by government **and** industry to Tasmanian farmers regarding global climate change issues, the possible local effects of climate change, mitigation options and ways farmers can prepare for different climate scenarios.

Introduction

Farmers are daily bombarded with a plethora of information – through the media, emails, the web, field days, workshops, seminars, farm advisors, consultants, rural merchants, accountants, financial advisors and also via the privacy of their own mailboxes through such things as newsletters, magazines, industry updates, country newspapers, advertisements and political pamphlets carefully targeting *issues of importance* to farmers – and the last thing they want or need is yet *more* information.

But we live in the information age and no one can escape. The challenge now, for anyone hoping to penetrate the information swamp and to get farmers to consider *their* product versus the many other products on offer, is to provide well researched, concise and creative information, materials and methods that will help farmers make better decisions.

It is with this goal in mind that the Private Forests Tasmania established this 'Carbon Plantations' project. The project is designed to help farmers and regional communities understand carbon emission trading and storing issues and how to invest in, grow and manage plantations as part of their own climate change management practices.

One of the key outputs of the project will be the production of a *Carbon Plantations Tool Kit* which aims to include such things as:

- demonstration plantation case studies and management models/options;
- information about proposed Carbon Pollution Reduction Schemes (or similar legislation and policies) relevant to forestry and agriculture;
- a guide for landholders on how to use carbon calculators/tools;
- information on the role of plantations to both offset carbon emissions and produce wood;
- information on how landholders can participate in any CPRS through opportunities for plantation based carbon trading and carbon offsets for agricultural enterprises.

When the project was developed in 2009 by the project consortia members, the Rudd Government's Emissions Trading Scheme (ETS) was proposed and there was some expectation that agricultural emissions could be included in a Carbon Pollution Reduction Scheme (CPRS). Today, neither the ETS nor CPRS have been legislated. The fate of agricultural emissions is also still uncertain.

However new approaches are unfolding rapidly:

- The federal government is developing a Carbon Farming Initiative which aims to open up new opportunities for farmers to participate in international markets for carbon credits and is now seeking feedback from stakeholders on a draft framework of the initiative (Department of Climate Change and Energy Efficiency, 2010).

- The Productivity Commission is undertaking a study of emission and energy-reduction policies in key international economies to help inform the Government's plan to introduce a carbon price in Australia (Combet, 2010).

- The voluntary offset market continues to grow nationally and State Governments across Australia are all active in the area of climate mitigation and adaptation.

This project, under these changing conditions will still yield valuable and useful outcomes for government, industry and key stakeholders.

As a necessary precursor to developing a Carbon Plantations Tool Kit and appropriate extension materials, it was deemed logical (and critical) to undertake a comprehensive survey of regional farmers to find out what they know and don't know about carbon storing and trading issues on their farms. It was felt that only through talking with and surveying farmers could accurate and quality learning tools be subsequently designed and developed.

This report presents the findings of the survey and makes recommendations.

The project is funded by the Australian Government through its Forest Industries Climate Change Research Fund.

Objectives

The objectives of the survey were to not only identify the knowledge level of farmers about carbon trading and storing issues on their farms, but also their attitudes and motivations for getting involved in the carbon economy through farm forestry.

The key research question established for the survey was:

- What is the level of understanding and attitude of farmers regarding carbon storage and trading opportunities relating to farm forestry and what things do landholders need to better participate in the new carbon economy?

The survey was designed to provide data and analysis to help identify ways farmers can better participate in the new carbon economy and make more informed decisions about their level of involvement.

A Survey Description sheet was established to describe the project (see Appendix 2) and this information was also provided on-line as part of the introduction to the survey.

Methodology

Both quantitative and qualitative social research methods were used to generate data for this report. The majority of the questions were multiple choice questions, with additional comments encouraged. Both through the telephone interviews and especially through the face to face interviews, extended comments were invited and noted.

Sixty four farmers in Tasmania completed the survey, either through phone interviews (30), on-line self-completions (30) or through four in-depth semi-structured interviews which were conducted with key landholders whose farms were volunteered as demonstration properties for the overall project.

The surveys were conducted between the 9th of August and the 8th October 2010, with the majority of phone interviews undertaken in August; the majority of on-line self-completion interviews took place in September. Field interviews took place in late September.

A reference group for the project was established and this group provided initial comments on the formation of the questions which were developed by Rural Development Services in consultation with Private Forests Tasmania.

To assist in the development of the survey questions and theme areas covered, a literature review was conducted to research similar or related surveys and information (see Further Reading list provided in the References section).

There have been no previous surveys conducted in Tasmania that have targeted farmer awareness and knowledge levels related to carbon storage and trading issues through farm forestry.

At the same time as the Tasmanian carbon survey was being undertaken, the Australian National University (ANU) was developing a survey-based project entitled *"Forestry Carbon Sink Plantings: A study of landowner attitudes and thoughts on forest carbon sink plantings*". Possible synergies were recognised between the two research projects and communication was established with ANU at the start of the development of the survey, however the questions for the Tasmanian survey were developed and the survey undertaken before the ANU survey questions were available. The ANU survey was conducted between September and October 2010 and a report on this research is due early in 2011 (Bull, 2011).

Useful related reports relevant to Tasmania include*: Greenhouse Gas Emissions Audits for Decision Support Summary Report* (Hall, 2010) which audited greenhouse gas emissions on farms within the Tamar Valley, which is part of the case study region for this report.

Nationally and internationally carbon, greenhouse gas and climate change issues have been surveyed for various purposes, but none of the surveys were specific to the information needs required for this project. Of most use was a recent survey conducted in Victoria for the Department of Primary Industries (DPI) "*Understanding farmer knowledge and attitudes to climate change, climate variability, and greenhouse gas emissions"* (Widcorp, 2009). Some of the questions in the DPI survey (relevant to farm forestry and climate change questions) had influence on the development of several questions for the Tasmania survey and provides comparable data.

The survey questions were framed around the following themes and these themes serve as the basis for analysis:

Awareness

- understanding of storage and trading issues

- sources of carbon and greenhouse gas emissions on farm
- net emission levels

Attitudes and Motivation

- motivations for actions taken on farm
- future intentions and motivations
- attitude to storage and trading issues
- attitude to social and environmental responsibility aspects
- branding and marketing issues

Information and Training Needs

- current information
- information needs and preferences
- interest level

Future Opportunities

- government and industry roles
- future intentions

Barriers and Risks

- perceived barriers
- perceived risks

Climate Change

- view on climate change
- understanding of climate change issues
- government and industry roles

Demographics

- age group, location, percentage of income earned on-farm
- enterprises (e.g. dairy, beef, sheep, cropping)
- farm forestry enterprises on farm

Once the surveys were completed, the results were analysed both through quantitative analysis of the survey questions and through a qualitative interpretation of the comments and the information generated through the in-depth interviews.

The case study area and farmers chosen for the phone and face to face surveys were defined around their proximity to the four locations which were chosen for the demonstration farms as part of the larger Carbon Plantations project (see Figure 1 below). These farms were chosen on the basis of the representative nature of their associated agricultural enterprise, climatic and geographic region.

The main enterprises on these demonstration farms include dairying, beef and sheep meat production, grazing, cropping and horticulture. The 34 farmers chosen for phone and face to face interviews reflect the enterprise mix of the four demonstration farms. The distance

between the demonstration properties is approximately 90 km; rainfall varies from 500 mm to over 1000 mm between the properties.

Figure 1 General Locality of Case Study Farms

The 30 farmers chosen for the phone interviews were picked on the random basis of availability from a larger list of farmers in North East Tasmania compiled by Private Forests Tasmania. All these farmers were known and identified by Private Forests Tasmania on the basis of their previous interest and/or involvement in farm forestry on their properties. All interviewees willingly volunteered their time to participate in the survey.

Self-completed web surveys were available to anyone in Tasmania; however the majority of respondents were from the case study region. Of the total surveys, 56 of respondents noted their location. 44 of these fell into the main study region, of North East Tasmania. The 12 other landowners were spread evenly around North West and Southern Tasmania, with six each coming from these areas, including farmers from King Island and Bruny Island.

Each survey took approximately 25 minutes to complete.

Survey Results

1 Farmer Awareness

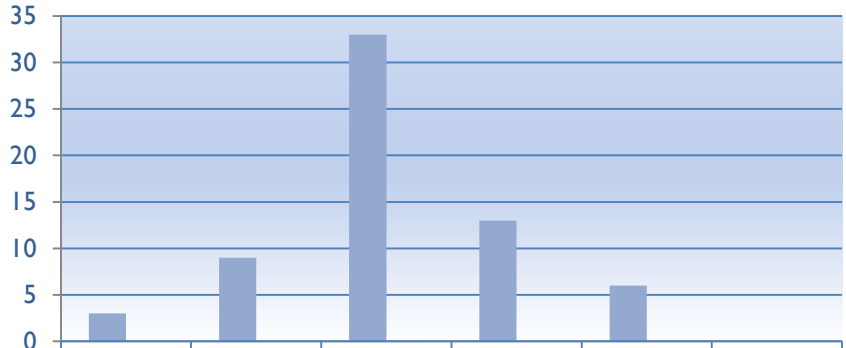
In this first set of questions, farmers were asked about their awareness level regarding carbon and greenhouse gas issues, the sources of emissions on their properties, and about emission and storage levels on their farms.

1.1 Awareness Levels of Farmers of Carbon Storage Issues

Farmers have a medium to low level of awareness of carbon storage and greenhouse gas emissions issues (as they relate to farm forestry).

81% of farmers rated their awareness level as medium to very low, with only 19% rating their understanding as high or very high (see Figure 2).

Figure 2 How would you rate your understanding of carbon storage and trading issues as they relate to farm forestry?



	Very high	High	Medium	Low	Very low	Don't know
Response Count	3	9	33	13	6	0
Response Percent	4.7%	14.1%	51.6%	20.3%	9.4%	0.0%

Farmers generally communicated that their awareness level was medium to low because they had not yet put time into researching the issue, primarily because there did not seem to be, at present, an economic imperative to do so.

1.2 Sources of Greenhouse Gas Emissions

72% of farmers indicated they have a *good* understanding of the *sources* of greenhouse gas emissions on their farms, with 28% of farmers indicating that they did not have an adequate understanding of this issue.

Farmers were asked to identify, without prompting or choice, the *sources* of greenhouse gas emissions on their farms.

The large majority of farmers identified two main sources of emissions on their farms: 88% of farmers identified livestock and 85% identified energy use (including machine and vehicle use) as a key sources of emissions.

After these two sources were identified by farmers, the response rate fell off rapidly with 25% identifying soil disturbance and 20% identifying fertiliser use as a source of greenhouse gas emissions.

Table 1 shows that native vegetation and crops and pasture were also identified as sources of emissions. Other sources identified by farmers include fire use (for crop and forestry burn offs), logging, land clearing and loss of biodiversity. Some raised the issue of total greenhouse gas emissions resulting from the complete cycle of farm forestry activities (e.g. clearing, planting, harvesting, transportation, etc.). Electricity production and distribution were also mentioned as sources of greenhouse gas emissions.

Table 1 Sources of greenhouse gases

The sources of greenhouse gas emissions on my farm include such things as:		
Answer Options	**Response Percent**	**Response Count**
Livestock (including methane)	88.3%	53
Fertiliser use	20.0%	12
Soils	25.0%	15
Plantations	0.0%	0
Native vegetation	8.3%	5
Energy use (including machine use)	85.0%	51
Crops and pasture	5.0%	3
I don't know	0.0%	0
	answered question	*60*
	skipped question	*4*

1.3 Level of Greenhouse Gas Emissions on Farms

Farmers were asked about their understanding of the *levels* of greenhouse gas emissions on their farms. 49% of farmers responded that they did not have a good understanding of the levels on their farms, 46% said they did have a good understanding and 5% responded that that were unsure about their understanding.

However when asked had they ever *calculated* the level of greenhouse gas emissions on their farms, 81% said they had never done any calculations; 19% of farmers said they had done some kind of calculation. Two farmers indicated that consultants had assisted with identifying their emissions. Emission figures were provided by only two farmers.

1.4 Level of Understanding of Carbon Storage Levels on Farms

57% of farmers felt they had a good understanding of *how* to *store* carbon on their properties. 26% of farmers said they did not have a good understanding of this issue. 17% of farmers were not sure of their level of understanding regarding how to store carbon on their farms.

Only 26% of farmers felt they had a good understanding of the carbon storage *levels* on their farms.

Just 13% of respondents had calculated the net level of carbon storage on their farms.

Of concern to farmers was the terms of the Kyoto Protocol (United Nations, 1998), which prevents landowners from claiming any carbon storage credits for vegetation that was growing on their properties before 1990. Many farmers with considerable areas of pre-1990 native bush believe they would be *net carbon storers* if they could factor in the amount of carbon sequestered in the total amount of native bushland on their properties.

Comments below are indicative of three farmer perspectives on the Kyoto issue.

Respondent Comments
In reality we are a net storer because of all the native forest we have, but because of Kyoto, we are a net emitter.
The lack of accounting for mature trees and bush areas is a real concern. By only counting post 1990 plantings a false accounting of carbon storage is taking place.
All native trees and grasslands should be included in the carbon economy, i.e. pre-1990 forests. Carbon trading and storing rules need to be more flexible to include all native forests, regardless of when planted or age, to be included in overall farm's storage levels - this allows an incentive to keep forests, to get some income that can be put back into the rest of the farm and look after the bush that is being conserved.

Other farmers commented about the level of carbon stored in their soils, saying this was a complicated issue that they knew little about and that it should be considered in carbon accounting figures.

- *The lack of knowledge and measurement of soil carbon storage and capture is also underselling a farm's carbon storage potential and effect.*

1.5 Are Farmers Net Storers or Emitters of Emissions?

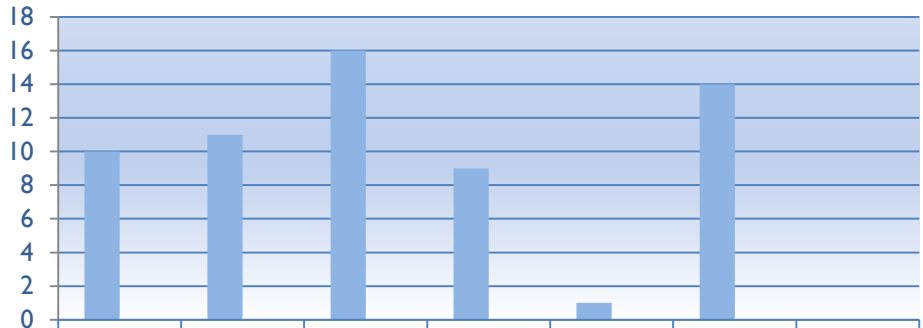
Farmers were asked to describe their farm's annual greenhouse gas emissions and whether they thought they were a net emitter or net storer of emissions.

As Figure 3 shows, the responses varied, with 34% of farmers believing they were definitely or possibly net emitters. 26% of farmers indicated that they thought they were about neutral in their emissions. 16% of farmers believe they are definitely or possibly net storers. 23% admitted to being unsure of their net emissions.

(These figures are interesting to compare with a recent survey of farmers in Victoria which found that only 20% of farmers believe they are net emitters. The Victoria survey also revealed that 33% of farmers believe they are neutral in their emissions; 27% of farmers believe they are net storers, and 20% were unsure of the greenhouse gas balance on their farms (Widcorp, 2009.))

The Tasmanian response is indicative of farmer perceptions and intuition about their net emission levels, given that only 13% of farmers indicated that they have done any kind of formal calculations about carbon storage levels on their farm (see 1.4 above).

Figure 3 How would you describe your farm's annual greenhouse gas emissions, I am:



	Definitely a net emitter	Possibly a net emitter	About neutral (emissions releases about the same as stored)	Definitely a net storer	Possibly a net storer	Don't know	I don't know
Response Count	10	11	16	9	1	14	0
Response Percent	16.4%	18.0%	26.2%	14.8%	1.6%	23.0%	0.0%

2 Attitudes and Motivations

The next set of questions focussed on farmer attitudes and motivations toward carbon farming and greenhouse gas issues on their farms.

2.1 Actions to Reduce Greenhouse Gas Emissions

Landholders were asked whether they had taken any *deliberate* actions to reduce greenhouse gas emissions or store carbon on their farms.

49% of farmers indicated that they had taken actions to reduce greenhouse gas emissions or store carbon on their farms; 51% have not taken any deliberate actions.

Major actions taken (in order of highest take-up) include:

- establishment of shelterbelts (including riparian zone re-vegetation)
- soil management
- changed agricultural management practices
- retention/expansion or establishment of native forest
- reduced energy use
- plantations establishment.

Other actions noted by individual landholders include: using less artificial fertilisers, installation of solar generation systems, farm energy audits and using 'more modern equipment' (e.g. for minimum tillage).

That nearly half of farmers have already taken *deliberate* actions to reduce their emissions may seem a high percentage, but as indicated in the next section (2.2), direct economic benefits (e.g. increased productivity) and the *ease* of doing some of these actions, coupled with a sense of social responsibility may have motivated these farmers to be proactive on carbon storage and emission issues.

2.2 Motivations to reduce greenhouse gas emissions

The major reasons *why* farmers have taken actions to reduce their greenhouse gas emissions or store carbon on their farms (in order of preference) include:

- financial gain
- social responsibility
- biodiversity benefits
- personal interest.

Financial gain, social responsibility and biodiversity benefits were all rated very closely as prime motivators for farmers to take actions, with financial gain nominated by 45% of respondents as their number one preference.

It appears that the major reason farmers were taking these actions on their farms was to implement good farm management practices and a secondary *result* was reduced greenhouse gas emissions. Comments below from three farmers reveal a diversity of motivations.

Respondent Comments
I am doing it every day - but not to directly reduce greenhouse gas emissions; I do it for other productive (business) reasons - e.g. for energy efficiency, for sustainability, for soil improvement, and for productivity aims.
The financial benefit is not my prime motivator (sustainable farming is). There is so much doubt about where it is all heading (at the government policy level) so I have avoided putting time into it until there's some solid price or policy or way forward.
I have been reducing my carbon emissions before the issue came along. I am driven by good farming practices. We've been driven by sustainability from day one. The potential carbon market hasn't been a motivator to change yet; I'm not highly motivated about carbon and farm forestry yet. This project is a way to start the leaning process.

Another motivation for some actions was the *ease* of taking an action, as summarised by this comment from a farmer.

- *"We reduced energy use because it was the easiest thing to do."*

2.3 Emission Reduction Motivations

Farmers were asked how likely they were to consider offsetting their farm's greenhouse gas emissions through farm forestry in the future.

Significantly, 71% of farmers said they were either likely (44%) or highly likely (27%) to consider farm forestry as a means to offset their emissions. 15% replied that they didn't know and 14% said it was highly unlikely they would get involved in farm forestry.

When asked the reasons *why* they would consider reducing their greenhouse gas emission through farm forestry in the future, financial gain was nominated as a motivator by 88% of respondents; 68% nominated financial gain as their number one priority.

The following comments encapsulate how important the financial aspects of participating in the carbon economy are for farmers.

Respondent Comments
We are a business; without the financials working we can't do things.

Why would I do it now? - It is not sustainable economically. The market is not there as long as dairy farming is viable. I would rather do what we can to minimise emissions rather than just offsetting and destroying our productive base.

Biodiversity and social responsibility were also noted as important reasons to consider farm forestry in the future, with 22% choosing biodiversity benefits and 20% choosing social responsibility as their primary motivations. Both of these also rated highly as secondary motivations: social responsibility at 46% of respondents, and biodiversity benefits at 39% of respondents.

2.4 Farmers believe they have a Social Responsibility

When asked directly whether they believed they had a social responsibility as landholders to take action on their farms to reduce greenhouse gas emissions, 78% either agreed or strongly agreed with this statement. 19% disagreed and 3% said they didn't know.

Several farmers communicated that they did feel a strong sense of social responsibility to reduce emissions, but that the wider community should assist them to do this and not penalise them for being productive farmers.

Respondent Comments

I do feel a sense of social responsibility strongly to reduce my greenhouse gas emissions. However in saying that, if we are doing this for the benefit of the urban population (or because they want it done) then they should pay for it in some way. It irks me that farmers have to bear the costs and finance the change. The urban population can't do things so we have to do it for them - and so I think we should be paid to do this, not penalised.

The only reasons I wouldn't do it is financial. I believe I do have a social responsibility with the help of the rest of the community; it's society's responsibility to help me to do my bit.

2.5 Future Motivations: Disincentives

When farmers were asked for what reasons they would *not* consider offsetting their greenhouse gas emissions in the future, cost (73%) and lack of financial gain (59%) were nominated as the major reasons they would *not* offset their emissions.

Some farmers noted that a disincentive to adopt farm forestry as a means to reduce greenhouse gas emissions was because they had high value agricultural land that had previously been protected from non-agricultural development and they did not want to see it go into plantations that were less economically productive for them.

- *"Soil sequestration should be thoroughly investigated for these properties to prevent highly productive farms from being penalised for not having poor quality areas for forestry."*

Other reasons to not participate in future emissions reductions included a fear of government red tape and bureaucracy hindering farmers and their profitability.

- *"The only reason I would not get involved is if the trading systems or regulatory system was wrong - and this could be likely! We should be able to use forests planted pre-1990. Let the voluntary market work it out and then be the catalyst for a financial market to work it out. Government intervention is useless."*

A number of farmers indicated they would continue to try to reduce their emissions as part of their normal farm activities as long as these reductions were not prohibitively costly.

These comments below from three different farmers are indicative of the strong intention of many farmers to continue to reduce their emissions:

Respondent Comments
We wouldn't consider NOT doing it - social conscience is high factor for us.
I wouldn't consider not doing it - we have to do it.
If it was really cost prohibitive I wouldn't do it. Otherwise I will continue to improve my soils (regardless of the carbon economy) because of the additional benefits - e.g. biodiversity, shelter, fauna habitat, windrows and aesthetics. My motivations stem from trying to create a sustainable farming system while enjoying the agricultural production benefits.

2.6 Future intentions: Motivational Benefits of Carbon Storage and Trading

Farmers were asked through three separate questions whether they were most likely to participate in carbon storage and trading activities through farm forestry because of the economic benefits to their farms or the overall benefits to the environment or society.

83% of landholders replied that that they were most likely to participate in carbon storage and trading through farm forestry because of the economic benefits to their farms.

63% of farmers indicated they would participate because of the overall benefits to the environment and 50% said they most likely participate in carbon storage and trading because of the overall benefits to society.

This indicates that as shown above, farmers are strongly motivated by financial considerations, however they also have a very strong social and environmental motivation and awareness level. Financial considerations could be seen as prime driver, but these considerations are strongly influenced by strong social and environmental motivations as well.

- *"We all have a responsibility to do something (about reducing emissions) although there are bigger polluters than me. We all have some responsibility for it."*

2.7 Brand Recognition for Carbon Farming

Farmers were asked whether they believed there would be brand recognition or marketing advantages for their businesses by participating in carbon storage activities through farm forestry.

This question provoked a degree of discussion amongst respondents. While 50% of those surveyed agreed that there would be brand recognition or marketing advantages for them in the future, 25% disagreed with this statement and nearly 25% said they didn't know.

Many of those who disagreed with the statement believe Tasmanian farmers will not benefit because they sell into bulk commodity markets and that if there are any market advantages it will be the supermarkets that gain the advantage.

Respondent Comments
We don't market our product; we sell into a commodity market. There will be no advantages for us in the area of marketing and branding.

If carbon branding happens I can tell you that it won't be to the farmer's advantage - it will be the supermarkets that will advantage. If there is a branding it will incur a cost on farmers, it won't be an advantage - it will simply be a point of difference for the supermarkets.

I don't believe this will happen; getting a premium won't happen. Any premium will soon disappear and what you have to do will be for a normal price.

Some farmers pointed out that if a branding or related carbon certification systems were to be established, any new system would likely create an additional cost to farmers because of the necessary record keeping, monitoring and possible audits that may have to be done.

- *"Branding/certification: it irks me. Every industry wants certification. We end up doing separate certifications for everything we grow. You have to get multiple audits and keep multiple records and get asked the same things for every system. Government needs to introduce a national scheme, say with five different levels, so you end up with one audit and one set of rules... but it won't happen. If there's no financial benefit to us for a scheme we won't do it."*

2.8 Carbon Brokers

Farmers were asked whether they would consider employing a carbon broker to assist them to participate in carbon storage and trading issues. Responses to this question were divided: 42% of farmers said employing a carbon broker was likely, 25% said it was highly unlikely and 32% said they didn't know.

Those that did not want to employ a carbon broker gave reasons such as the need to understand carbon trading themselves before considering paying someone else, paying unnecessary fees, and a scepticism of 'middle men' taking profits out the system. Two comments are indicative of many farmers' perspective on this issue.

Respondent Comments

I am a sceptic of carbon traders - will this become another MIS (managed investment scheme) type scheme? This is the biggest challenge for the government - making it real and making it pay the farmer - making sure it's not just a gravy train for everyone in the middle. Is the (carbon) industry based on science?

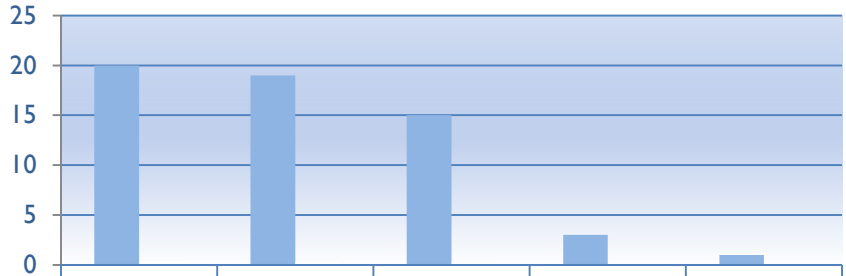
Carbon brokers: I hope it doesn't come to that. We shouldn't be trading, we should be developing systems to lower our emissions rather than offsetting them - that's the best productive outcome for Australia. This is much more sustainable for the long term for the planet (than offsetting).

2.9 Need for Emission Trading Scheme Rules

Farmers were asked whether they agreed with the following statement: "There is no benefit for me to reduce or offset my farm greenhouse gas emission through farm forestry until I know the rules of an emissions trading scheme."

Over two thirds of farmers (67%) agreed with this statement (including 35% strongly agreeing); 31% of farmers disagreed.

Figure 4 There is no benefit for me to reduce or offset my farm greenhouse gas emissions through farm forestry until I know the rules of an emissions trading scheme



	Strongly agree	Agree	Disagree	Strongly disagree	Don't know
Response Count	20	19	15	3	1
Response Percent	34.5%	32.8%	25.9%	5.2%	1.7%

Farmers want to know the rules of a trading scheme and the current lack of rules is cited as a consistent frustration and a major reason for them not participating in carbon storage through farm forestry. Comments from different farmers on this issue were strong.

Respondent Comments

We need to understand the rules. If we get the rules right carbon can be seen as an asset.

We are going to be reactive to the issues because of government back-flipping all the time – until they sort out what's an offset, etc., there is no incentive. Industry can only operate properly in the rules they are a part of.

Industry is not going to be active unless it's worthwhile – someone has got to lead it.

Industry and government are all sitting on the fence.

Until they sort all the things out, the system won't be equitable or fair to farmers. It's just not feasible, sensible or properly thought through at the moment. The current system is not effective in reducing fossil fuel use. We need incentives to reduce consumption.

Rules about carbon need to be practical and aimed at achieving something; if they are impractical they won't work.

Farmers are also concerned that whatever rules and frameworks are developed, they need to be practical, provide options and not penalise farmers.

- *"The major impediment is government and industry uncertainty - we need certainty in the market, so we get a decent price. Farmers need more options rather than just plonking in plantations."*

A number of farmers were sceptical of the real environmental benefits of any carbon trading and storing schemes. These comments from three farmers are indicative.

Respondent Comments

It wouldn't matter if Australia signed agreements - if China and India don't come on board then it is meaningless what we do re reducing greenhouse gas emissions. We are just so small in comparison.

Any carbon trading system will only work if there are market distortions - and they won't work in the long term - e.g. MIS collapse in Australia. It doesn't have anything to do with emissions reduction. It might reduce carbon in the atmosphere, but it's not going to do anything about the level of emissions in the atmosphere.

Farming is a small part of the climate debate because the city won't take any responsibility for their emissions - it drives me mad. It's ridiculous. Farmers are being bandied around as the great source or solution when in reality we are a small part of the emissions problems. Everyone wants to talk about it but no one wants to do it. This really bugs me.

If they think they are going to solve the world's problems by converting farmland to forests - well, we'll all starve.

None of the farmers I talk with are discussing carbon issues - it is not an immediate thing you can do, so it's not discussed.

At the end of the day planting trees isn't going to solve anything.

3 Information and Training Needs

The following set of questions focussed on farmer information and training needs.

3.1 Current Information and Materials

Farmers were asked about the adequacy of current information available about carbon storage and trading opportunities related to farm forestry. 54% responded that current information was inadequate. 9% responded that current information was adequate and only one respondent said that information was excellent. 36% replied they didn't know.

The main reasons given for the inadequacy of current information and materials are:

- current information is not geared to the needs of farmers (57%)
- current information is confusing and too complex (51%)
- information I need is not available (37%).

Further comments on the inadequacy of current information and materials include uncertainty of where to go for information; lack of scientific rigour in the information that is available; and uncertainty regarding what carbon trading and storage is really about.

Respondent Comments

Not really sure where I'd go for advice. I would need a broker to know the right things to do. Farming is very complex these days. Is it a good time to invest in carbon trading now? Is the price right? I don't know. The demand will come when the government sets a price. It's a low price now – it's all a voluntary market.

A lot of talk, but nothing is going ahead to make it a viable part of your farm enterprise yet - I haven't seen anything on the ground coming to fruition yet. Current information is unclear as to the future direction and the timeframe it is all taking.

Abysmal information. Science hasn't been the driver here - not the science done yet.

Unqualified information – 'believe it or not' - who do you believe?

The reasons given by the 36% of farmers who said that they didn't know whether current information was adequate or inadequate were consistent: this group of farmers had not sought information on this issue and they saw the issue as a low priority for them.

Respondent Comments
I have not yet seen any information and I have not looked for it.
I haven't researched it yet. I don't understand it enough. I've just seen the odd newsletter.
Really don't know what's out there. Hard to know what's fact or fiction.
It's bloody hard to understand what it's all about without putting a lot of time into it.
I haven't needed to research the information yet as we are stewards of our land and should be managing it responsibly regardless of global warming, legislation or social pressure.
It's not even on the radar yet.

3.2 Information and Training Needs

Farmers were asked through which means they would prefer to learn more about carbon trading and storage issues. First preferences identified included:

- written information (67%)
- one-on-one advice (43%)
- newsletters (24%)
- field days (19%)
- DVD (16%)
- web (15%).

The two comments below illustrate that farmers appreciate independent, scientifically based, industry-oriented information or advice.

Respondent Comments
Lots of information presented looks really good but then you read the details and the net benefits to farmers is not clear. That's why an independent person, one-on-one, would be ideal advice for us. Field days are also great as other people ask questions that you haven't thought of.
I don't need information. When it happens and it becomes a viable option, the market will look after itself.
When the time is right, someone will turn up with a smart ute with a thing on the door and tell me what the situation is - like a poppy rep trying to sell me something - then it will become a viable industry.
The market will determine when the industry has it together to actually trade carbon. And I don't see that happening anytime soon.

Farmers were then asked to identify what *sources of information* they currently use or would consider using in the future. They were also asked to identify their two top preferences.

The top sources of information were all very closely ranked, receiving first preference from nearly 50% of respondents in each category:

- newsletters

- media
- *Tasmanian Country*
- farm advisors and consultants.

These first preferences were followed by TFGA (35%), web (33%), Government (25%), industry (22%) and Private Forests Tasmania (18%).

Second preferences identified included

- field days (50%)
- NRM regional bodies (50%)
- industry (33%)
- other farmers (30%).

Third preferences identified include:

- Landcare groups (54%)
- Private Forests Tasmania (36%)
- other farmers (30%)
- networks (27%).

The following comments indicate that while some farmers are sceptical about carbon economy issues and any potential benefit to agriculture, others are eager for more information.

Respondent Comments

I don't actively seek it - whatever turns up in the newspapers. I don't actually believe in it at the moment. It's a complete waste of time if there is no money in it for farmers - farmers always wear the costs. We're price takers, not makers - prices always going up, and income is going down.

Nobody knows much about anything yet.

I want the issue properly explained to me. There's so much misinformation and conflicting information on climate change issues. Field days are good. It is important to get out and talk with people. So much research doesn't get applied. Very little extension is done in the Department [Primary Industry, Parks, Water and the Environment] now.

I have an interest in learning more - it's going to be an issue - something we will have to deal with in time. We need to know what we are doing - are we in credit or deficit - so we know where we stand. It's going to be an issue, but it's just on the backburner at the moment.

3.3 Types of Information

Farmers were given four choices regarding the types of information that would assist them to participate in carbon storage and trading through farm forestry in the future. They ranked their first preferences in the following order:

- financial advice about the benefits of the carbon economy
- greenhouse gas emission and storage calculators
- information about carbon brokers and offset schemes
- farm forestry management advice.

First preferences indicated strong support for financial advice, followed then by information about emission and storage calculators. This seems to indicate that farmers feel they need to first understand what the financial advantages of any potential carbon scheme might be, and secondly an understanding regarding their net emission levels *before* they consider whether they need to engage carbon consultants or seek farm forestry management advice.

A few comments from farmers show that farmers have diverse learning needs and information needs.

Respondent Comments
I am willing and able to participate if I knew what information was relative to the type of farm I have and the potential direction I would like to take my farm.
Carbon brokers are just another middle man taking the profitability out of the system.
Farmers need to understand the issues themselves first - then you don't need a broker.
I want all four [of the above choices].
Need practical, nationally consistent, nationally validated information and calculation methods.

3.4 Level of Farmer Interest in the Carbon Economy

Farmers were asked their level of agreement with the following statement: "Greenhouse gas emissions, carbon storage and trading is a regular topic of discussion with my family, fellow farmers, farm business advisors and/or other people I know."

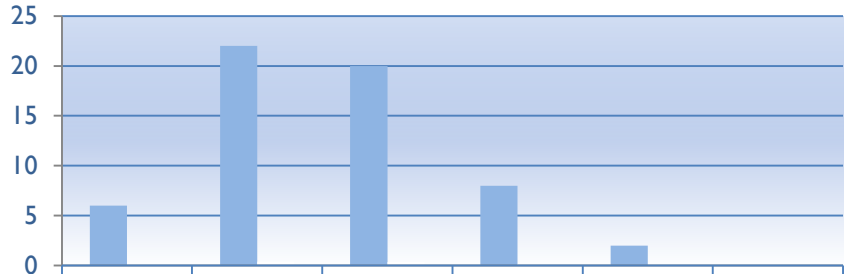
64% of farmers disagreed with this statement. Discussion with farmers showed that while farmers are *aware* of carbon and greenhouse gas related issues in general, there has not been a deep level of engagement with the issues as yet. Farmers see the issue as a low farm management priority at the moment.

Uncertainties about future carbon markets and trading schemes and the low price of carbon, as well as the current financial challenges facing many commodity based farmers were given as major contributing factors to the current low level of farmer engagement in the issue.

Farmers were then asked about their interest in learning more about carbon storage and trading issues relating to farm forestry.

As Figure 5 indicates there is a high interest from farmers in learning more about the carbon economy with 83% responding that they had a high, very high or medium interest in learning more about carbon farming. Only 17% of respondents said they had a low or very low interest in learning more.

Figure 5 My interest in learning more about carbon storage and trading issues related to farm forestry is:



	Very high	High	Medium	Low	Very low	Not interested
Response Count	6	22	20	8	2	0
Response Percent	10.3%	37.9%	34.5%	13.8%	3.4%	0.0%

This section (3) shows that farmers have not yet fully engaged in carbon economy, that it is not a regular topic of conversation between them, but that they are eager to learn more.

4 *Future Opportunities for Farmers*

The next set of questions focussed on future opportunities for engagement of farmers in carbon storage and trading related to farm forestry.

4.1 Opportunities to Increase the Engagement of Farmers in the Carbon Economy

Farmers were asked to indicate the main opportunities they think government and industry have to best motivate landowners to get more involved in farm forestry carbon storage projects.

By the far the best opportunity for motivation, noted by 79% of farmers, was for clearer economic benefits to be detailed to them. Farmers want to know, clearly and simply, without hyperbole and salesmanship, what are the costs and economic benefits of participating in carbon storage and trading through farm forestry.

Farmers also want better information than is currently available. Current information is often complex, incomplete, not geared to the needs of Tasmanian farmers and seen to be not scientifically based.

Other ways to further engage farmers include:

- tax incentives: noted by 43% of respondents as an effective way for government and industry to motivate farmers to get more involved in carbon storage and trading
- establishing demonstration properties: nominated by 34% of farmers as an effective way to assist them to get more motivated.

Having less regulations and red tape was also highlighted by farmers as a vehicle to assist them to get more involved - while at the same time they want a government framework to guide future carbon trading systems.

Representative comments on the issue of what government and industry can do to help farmers get more motivated about carbon farming show how diverse farmer thinking is on this issue.

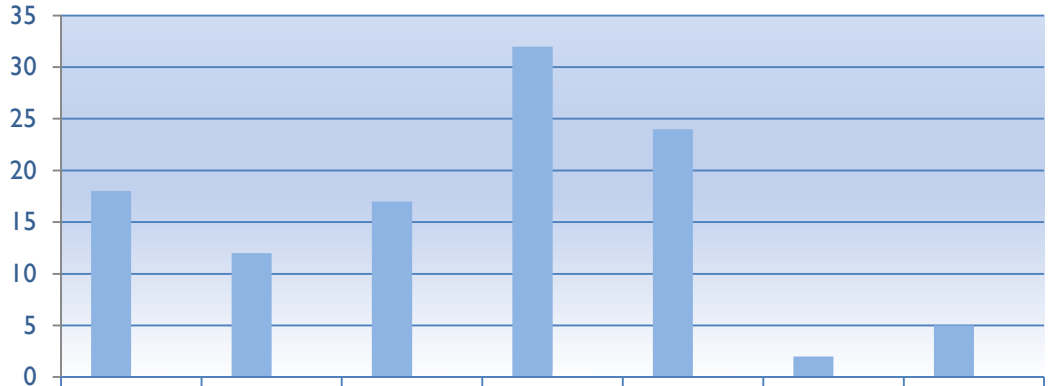
Respondent Comments
Bring in regulations (a framework) and thus a demand for carbon. If there is no clear economic benefit we will bide our time.
Allow it to be market driven.
Concrete evidence would assist us, then to know the tax/financial benefits.
I don't want to see a system where more and more trees covers good quality land that should be producing food for the nation. If you throw too much tax incentives at it, it can be lopsided – I'm concerned that the land we produce food on, provided it's not degraded, should continue to produce food.
Forestry is a pain in the arse to get into and then get out of - so much red tape, long term contracts, forestry plans.... I won't consider selling my carbon rights because if there is a trading market we will be looking for our own offsets.
Clear, accurate information needed. I'm not entirely satisfied the bureaucracy even knows the issues.
We need information that considers all aspects of carbon release and capture.
Do the rural science research, especially with regard to soils. Need practical assessment of every farm.
There is no solid pathway yet. Farmers have enough to worry about without having to research and figure out a system that isn't fixed yet.
Critical to understand the RULES of carbon trading before we invest in it.

4.2 Future Intentions: for Established Farm Forestry Areas on Farm

Farmers were asked about the most likely use of their property's farm forestry areas in the future. Results in Figure 6 show that shelter/windbreaks were nominated by 55% of respondents as the most likely use in the future. This was followed by biodiversity (41%), wood production (31%) and wood production & carbon storage (29%).

Significantly, carbon storage was only perceived by 21% of respondents as a future use of their existing farm forestry areas.

Figure 6 Farm forestry areas already established on my farm are going to be most useful to my business in the future for which of the following. You may choose more than one.



	Wood production	Carbon storage	Wood production & Carbon storage	Farm Shelter / windbreaks	Biodiversity	Don't know	Not applicable
Response Count	18	12	17	32	24	2	5
Response Percent	31.0%	20.7%	29.3%	55.2%	41.4%	3.4%	8.6%

This data shows that while a majority of farmers do not *currently* foresee carbon storage as a major use of their existing farm forestry areas in the future, one in five farmers do see carbon storage as a potential enterprise.

4.3 Future Intentions: Carbon Rights

Farmers were asked would they consider selling carbon rights from their existing farm forestry operations in the future. More than half (57%) of farmers said they would consider selling their carbon rights in the future. 20% of farmers said they would not sell their rights.

There was a large undecided portion of farmers, with nearly a quarter saying they didn't know whether they would or would not sell their carbon rights in the future.

4.4 Future Intensions: Plantations and Investments Sources

When asked whether landholders would use their *own* financial resources to develop new plantations on their farms for carbon storage and trading, 55% of landowners agreed that they would consider doing this, 29% did not think they would and 16% indicated that as yet they did not know their intentions.

This shows that a significant percentage of farmers are willing to consider putting their own financial resources into developing plantations for carbon storage and trading. This also shows that while farmers may be unclear of the economic benefits and have a degree of scepticism about the issue, more than half would be willing to *consider* investing in the concept through planting plantations with their own resources.

4.5 Future Intensions: Offering Land to External Investors

When asked whether they would offer their land (e.g. for lease or joint ventures) to external investors to develop new plantations on their farms for carbon storage and trading, only 31% agreed with this statement.

60% of farmers said they would not offer their land to external investors (including 22% who strongly stated they would not do this). 9% said they were unsure.

Discussion on this point revealed that many farmers were wary of external investors using their land because of the recent collapse of several major 'managed investment schemes' for plantations. Some farmers also commented that they felt there was more profit in the long term if they invested in and managed plantations with their own resources.

4.6 Future Intentions: Farm Forestry for Carbon Storage and Trading

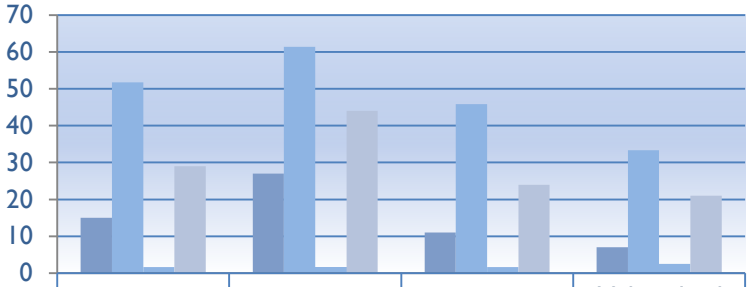
Farmers were asked whether in the next five years they would be establishing farm forestry operations (including biodiversity and plantations) on their farm for carbon storage and trading.

Nearly half (46%) of respondents said it was likely that they would establish farm forestry areas on their properties in the future for carbon storage and trading. 37% said that did not think this was likely. 17% of farmers were unsure.

Figure 7 shows that when given the choice of four options for future investment, the majority of farmers (61%) indicated they would choose planting trees with their own resources as their first preference. (This corresponds well with section 4.4 above which indicated 55% of farmers would consider investing their own resources into plantations for carbon storage and trading.)

This table also shows that the second first preference identified by farmers was to sell carbon rights from their existing forests (52%). Planting trees with external resources was also moderately rated (46%).

Figure 7 Farm forestry carbon storage and trading can be achieved through four main ways. If you were to participate in carbon storage and trading in the future, which of the options below would you most likely choose?



	Selling carbon rights from my existing farm forests	Planting new trees with my own resources	Planting new trees with external resources	Making land available for others to establish and manage plantations
First Choice (as Response Count)	15	27	11	7
First Choice (as %)	51.7	61.4	45.8	33.3
Rating Average (out of 4, where 1 is high and 4 is low)	1.69	1.68	1.67	2.52
Total Response Count	29	44	24	21

Making land available for others to establish and manage plantations was given the lowest preference, with only a third of farmers indicating this as a first preference. This corresponds with section 4.5 above which indicated that over two thirds of farmers indicated they did not favour offering their land to external investors.

5 Barriers and Risks

The next set of questions focussed on the barriers and perceived risks to farmers getting involved in carbon storage and trading through farm forestry.

5.1 Barriers to Participating in Carbon Storage and Trading

Farmers were asked to identify the main things preventing them from participating in carbon storage and trading through farm forestry.

Major barriers highlighted by farmers included:

1. lack of clear government policy or consistent framework (60%)
2. financial return is too low or uncertain (58%)
3. I don't have enough information about it (40%
4. lack of a carbon price (32%)
5. I don't understand what it's all about (30%).

Other reasons highlighted include lack of funds for the initial establishment of plantations, carbon markets are too risky and uncertain, regulations, bureaucracy and red tape, and information it too confusing.

Unquestionably the lack of a clear government policy (including lack of a carbon price) and low (or uncertain) financial return are the main reasons given for farmers not getting involved in carbon storage and trading through farm forestry.

Lack of information and difficulty understanding current information is also a major barrier.

Farmers also commented that they were worried that if a carbon framework was established by government, it could negatively affect farmers (e.g. reduced profitability, more red tape, loss of prime agriculture land to forestry).

The issue of not being able to factor in carbon sequestered in native forests growing before 1990 (as mentioned in section 1.4) was also highlighted as a barrier to engagement and a disincentive for Tasmanian farmers to get involved in carbon storage and trading.

Illustrative comments on major barriers include.

Respondent Comments
There is no financial incentive at the moment. If a system comes in it will negatively impact on our productive system.
The land is too valuable for farming and food production. It would be a waste to grow plantations.
No market yet. No valid auditing or validating system is available yet. Lack of a voluntary market to get really going yet. Rules not flexible enough to include all native forests on your property.

Farmers are always concerned about government changing the goal posts - that's why we would be wary of losing control of our land through external investors. Need to be able to count pre-1990 bush.

There is no demonstrated financial advantage at the moment. Farmers won't do it unless there is a financial advantage. Farmers have to make a living too. I would consider selling my carbon rights if the rules were right. But why would anyone now lock up their trees for carbon storage? - You have to lock it up for a hundred years! I don't believe the system is fair, based on the Kyoto protocol - that is not a true representation of carbon storage and trading (e.g. pre-1990 vegetation not factored.)

It's a high risk investment if you don't have enough information about it.

System is not clear and profitable yet.

Lack of certainty. Lack of science at the moment.

5.2 Risk Perception

Farmers were asked whether they thought participating in carbon storage and trading through farm forestry was a risky activity.

The majority of farmers (53%) believe carbon storage and trading through farm forestry is a risky activity. 28% said it was not a risky activity and 19% said they didn't know.

Reasons given for the belief that it is risky activity mirror the major barriers identified in section 5.1, especially the lack of a clear government policy and the fact that the financial return is too low or uncertain:

1. lack of clear government policy or consistent framework (56%)
2. financial return is too low or uncertain (44%)
3. I don't have enough information about it (31%)
4. carbon markets are too risky and uncertain (31%)
5. information is too confusing (19%).

A number of farmers also indicated that they did not yet know what the risks were or they did not understand what the issue was all about.

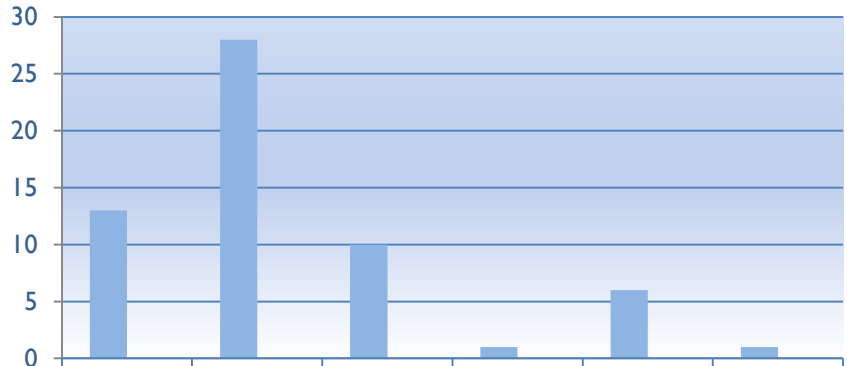
When further asked whether the level of risk was preventing farmers from participating in the carbon economy, a majority of farmers (52%) indicated it was. 31% said that level of risk was not preventing them from participating and 17% said they did not know if risk was a factor or not.

5.3 Emissions Rule Changes and Liabilities

Farmers were asked their level of agreement with the following statement: "One of the main reasons I have *not* got involved in carbon storage and trading through farm forestry is because I am concerned about future emission trading rule changes and the possibility that my offset operations could become a liability in the future."

70% of farmers either agreed or strongly agreed with this statement. Only 19% of farmers disagreed with the statement and the rest didn't know or thought the question was not applicable.

Figure 8 One of the main reasons I have not got involved in carbon storage and trading through farm forestry is because I am concerned about future emission trading rule changes and the possibility that my offset operations could become a liability in the future



	Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not applicable
Response Count	13	28	10	1	6	1
Response Percent	22.0%	47.5%	16.9%	1.7%	10.2%	1.7%

Clearly the level of uncertainty about future emission trading rule changes is a major risk-oriented barrier preventing farmers from fully engaging in the carbon economy. Farmers do not want to invest in schemes where the rules are not yet fixed and the 'goal posts' appear to be changing on a regular basis.

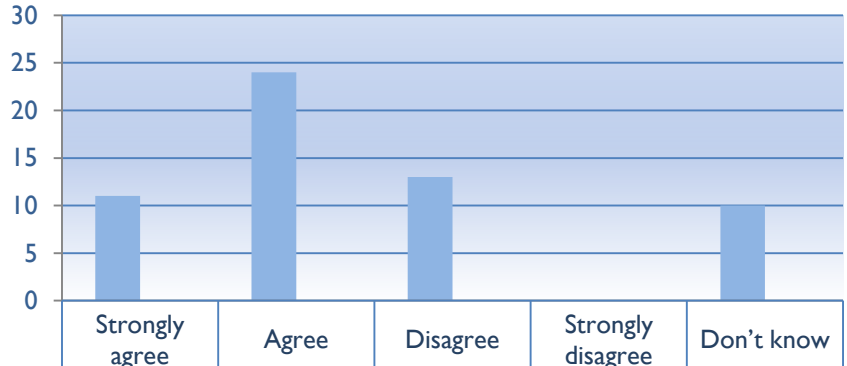
6 Climate Change

The next set of questions focussed on farmer perceptions of climate change and greenhouse gas emissions issues.

6.1 Farmer Belief in Global Climate Change

Over 60% of farmers surveyed believe that global climate change is affecting their local climate, 22% believe climate change is *not* having an effect on their properties and 17% say they don't know.

Figure 9 I believe that global climate change is affecting my local climate



	Strongly agree	Agree	Disagree	Strongly disagree	Don't know
Response Count	11	24	13	0	10
Response Percent	19.0%	41.4%	22.4%	0.0%	17.2%

Farmers were then asked in what ways climate change is affecting their property. The number one way, noted by two thirds of respondents was 'climate variations'. This was followed by increased temperatures (30%), changing management techniques and 'creating unknowns', for example, in farm management (both 25%). 19% indicated that they did not know how climate change was affecting their property.

Other effects noted included drought, increased rainfall, weeds, reduced profitability and changing the crops grown by farmers.

Additional comments on local climate change made by farmers were diverse: some commented that the changes were subtle and incremental; some made specific observations such as *drier winters*; some communicated that *if* there were local changes they were part of natural cycles; others were adamant that there were no local effects of climate change on their properties. Representative comments include the following.

Respondent Comments
Weather extremes.
More extreme climate events. Big hits of rain.
Heavier rain rather than more scattered.
Becoming hotter and drier (but this doesn't mean it's a bad thing).
Milder winters.
Unreliable climate; variations.
Generally drier and drier in the growing times - e.g. autumn and springs. Warmer overall. Climate variations throughout the year are huge.
Very subtle - not as obvious as glaciers melting.
Incremental changes are so small I can't really pick it but I believe there are external factors happening.
Less rainfall, less reliable rainfall. Hard to get consistent data from the experts. Could be cyclical or something else - I don't have any confidence in any of that.
I don't think it will (affect us) - the climate changes every year. Every year is different, some are hotter and drier and some are wetter and colder. Some are drier and colder and so on - just a part of the cycle.
A lot of climate change is bullshit.
It is not, it is just part of a natural cycle.

6.2 Greenhouse Gas Emissions and Global Climate Change

66% of farmers believe greenhouse gas emissions due to human activity are responsible for *global* climate change, with 24% 'strongly agreeing' with this statement. (This matches closely the 60% of farmers identified in section 6.1 who indicated that global climate change is affecting their *local* property.)

However 21% of farmers said they didn't know if greenhouse gas emissions due to human activity were responsible for global climate change. Farmers in this category commented that they simply weren't sure whether climate change was part a natural cycle or human influenced. Only 14% disagreed with the statement.

When farmers were asked whether they believe climate change was a serious problem, the response was strong: 78% of farmers believed that climate change is a serious problem (see Table 2).

15.5% of those surveyed disagreed with the statement that climate change is a serious problem and 7% said they didn't know.

Table 2 I believe climate change is a serious problem

I believe climate change is a serious problem:		
Answer Options	**Response Percent**	**Response Count**
Strongly agree	25.9%	15
Agree	51.7%	30
Disagree	15.5%	9
Strongly disagree	0.0%	0
Don't know	6.9%	4
answered question		58
skipped question		6

When farmers were asked if they were happy with their understanding of climate change issues, 69% said they were happy, 29% said they were not happy and 2% said they were unsure. When asked *why* they were *not* happy with their understanding of climate change issues a number of farmers commented that the more they read and researched the issue, the more uncertainty (and confusion) this created for them. The complexity of the issue and lack of clear, objective information were cited as reasons for wanting to understand the issue more.

6.3 Government and Industry Actions to Address Climate Change

Farmers were asked if they believed *government* was doing enough to address climate change issues.

71% of farmers said that government is *not* doing enough to address climate change issues. Only 22% believe government is doing enough. 7% said they didn't know.

When asked if industry is doing enough to address climate change issues, 60% said industry is *not* doing enough, 26% believe industry is doing enough, and 14% said they didn't know.

A number of farmers are worried that government action on carbon trading will not take into consideration industry concerns and they feel industry needs to be proactive to protect its interests.

Comments on industry and government roles included the following.

Respondent Comments
The systems are all voluntary now - lots of industries will ignore it as long as they can - until there is a system.

Professional farm businesses need a range of options for carbon emission reduction, not just a leap into trees as a 'feel-good' for the Sydney voters. Government record on land management is terrible - farmers are the only skilled land managers left.

My interest in all of this is so I can inform the discussion, so I can be pro-active - because our industry is a potential target (e.g. methane emissions, fertiliser, water and energy use).

My interest in learning more is high because I want to make sure we are prepared as an industry so we can protect our business when something comes. If there's an economic benefit it will be because of huge market distortions.

Bureaucracy doesn't know what it is doing with carbon issue - things are too up in the air. There are things we can do, if we can afford to do it and we can manage things responsibly. But when it starts to cost, then I'll start complaining.

Is industry doing enough? From where we're are at now, industry needs to protect its productive position.

7 Demographics

7.1 Location of Farmers, Age and Gender

Fifty six respondents noted their location. Forty four of these fell into the main study region, of North East Tasmania (the 03 63 area code). The 12 other landowners were spread evenly around North West and Southern Tasmania, with six each coming from these areas, including farmers from King Island and Bruny Island.

35% of farmers who responded were in the 55-64 year old age group; 28% were 45-54 years old; and 21% fell into the 35-44 age group. 9% were 65 years old or older and 7% were 35-44 years old.

93% of respondents were male.

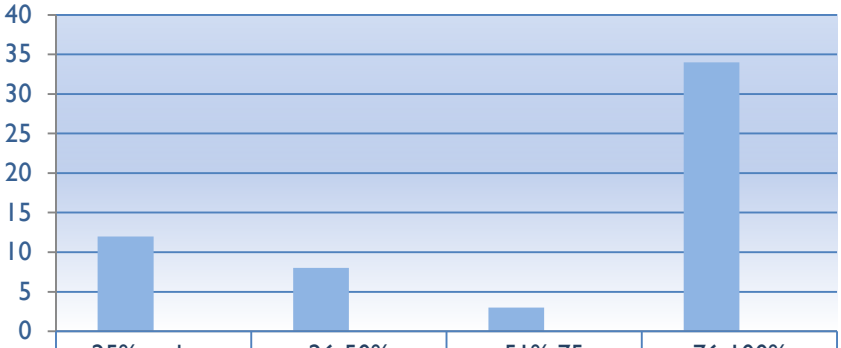
49% of farmers surveyed had completed a Property Management Plan (or Whole Farm Plan) in the last five years.

7.2 Income Earned On Farm

The majority of those surveyed (60%) earned 76-100% of their income from farming.

Figure 10 below shows the full range of percentage of family income earned on-farm by those who responded to this question.

Figure 10 Percentage of family income earned on-farm



	25% or less	26-50%	51%-75	76-100%
Response Count	12	8	3	34
Response Percent	21.1%	14.0%	5.3%	59.6%

7.3 Farm Enterprises

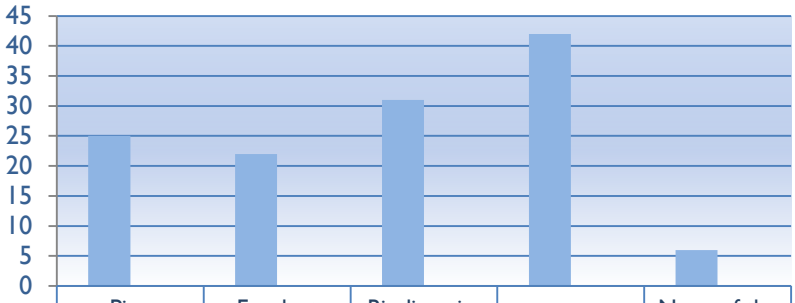
Landholders were asked to identify the main farm enterprises on their farms. Farmers in Tasmania generally mange mixed farming enterprises. The figures below (based on 57 respondents' answers) show the diversity of farm enterprises of those surveyed:

- 70% beef
- 58% sheep meat
- 56% cropping
- 33% wool
- 18% horticulture
- 16% dairy.

7.4 Farm Forestry Enterprises

Farm forestry enterprises of farmers surveyed are shown in Figure 11 below. 74% of respondents had native forest on their properties, 54% had established biodiversity plantings, 44% had pine plantations and 22% had eucalypt plantations.

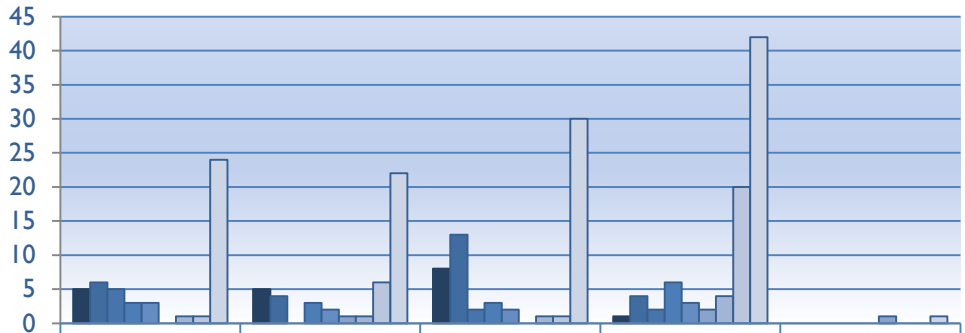
Figure 11 Farm Forestry Enterprises



	Pine plantations	Eucalypt Plantations	Biodiversity plantings	Native forest	None of the above
Response Count (out of 57 Respondents)	25	22	31	42	6
Percentage	44%	39%	54%	74%	11%

The respective areas of farm forestry enterprises of farmers surveyed are detailed in Figure 12 below.

Figure 12 Approximate number of hectares of farm forestry enterprises



	Pine plantations	Eucalypt Plantations	Biodiversity plantings	Native forest	None of the above
< 5	5	5	8	1	0
5-10	6	4	13	4	0
11-15	5	0	2	2	0
16-20	3	3	3	6	0
21-30	3	2	2	3	0
31-40	0	1	0	2	1
41-50	1	1	1	4	0
>50	1	6	1	20	0
Response Count	24	22	30	42	1

Appendix 1 – Survey Questions

A copy of Survey Questions is available in a separate document.

Appendix 2 - Survey Description

Rural Development Services Information Sheet

Carbon Storage through Farm Forestry Survey

Survey Description

This survey is being conducted to identify the knowledge level and attitudes of landholders regarding carbon storage opportunities through farm forestry. This survey will also help to identify ways farmers can better participate in the new carbon economy.

The survey is part of a larger Carbon Plantations project managed by Private Forests Tasmania whose overall goal is to produce products and services for landholders so they can make better and more informed decisions about their participation in the emerging carbon economy.

The project is funded by the Australian Government through its Forest Industries Climate Change Research Fund.

Key Research Question

The key research question for the survey is:

- What is the level of understanding and attitude of farmers regarding carbon storage opportunities relating to farm forestry and what things do landholders need to better participate in the new carbon economy?

What is involved in the Survey?

Rural Development Services is carrying out this survey with landholders in Tasmania. Thirty landholders in north east Tasmania will be surveyed through broad phone interviews. Landholders state-wide are able participate through online web access. In-depth face to face interviews will be conducted with a smaller group of landholders.

The survey takes about 20 minutes to complete.

Confidentiality

Every effort will be made to maintain confidentiality and anonymity of survey data by providing only aggregate data in all project reports.

Participation is voluntary. Any participant may fully withdraw at any time during the interview.

All participants will be provided with a copy of the final report of the survey findings.

Further Information:

The survey can be accessed at: http://tinyurl.com/RDS-Carbon-Plantations-Survey

For further information about the survey, contact:

Don Defenderfer, Senior Consultant, Rural Development Services

Ph: 0447 561 539 or email: don.defenderfer@ruraldevelopmentservices.com

References

Bull, L, Schirmer, J, 2011, *Landholder perceptions of planting trees for carbon sequestration*, ANU. (Report in Progress).

Combet, G, 15 November 2010, *Study into Emission Reduction Policies in Key Economies*. Media release. http://www.climatechange.gov.au/minister/greg-combet/2010/media-releases/November/mr20101015.aspx 16 Nov 2010 Accessed 16/11/2010.

Department of Climate Change and Energy Efficiency, 2010, *Design of the Carbon Farming Initiative: Consultation Paper*, Commonwealth of Australia, ACT.

Hall, R, 2010, *Greenhouse Gas Emissions Audits for Decision Support Summary Report: Prepared for Tamar NRM.* AK Consultants, Launceston.

United Nations, 1998, *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. http://unfccc.int/resource/docs/convkp/kpeng.pdf Accessed 22/11/2010.

Widcorp, 2009 *Understanding Farmer Knowledge and Attitudes to Climate Change, Climate Variability, and Greenhouse Gas Emissions: Prepared for the Department of Primary Industries, Melbourne.* Water in Drylands Collaborative Research Program, Horsham, Victoria.

Further Reading

ABS, Agriculture in Focus: *Farmers' Perception of a Change in Climate, 2006-07*, 2009. 7104.0.55.002.

ACE CRC 2010, *Climate Futures for Tasmania general climate impacts: the summary*, Antarctic Climate and Ecosystems Cooperative Research Centre, Hobart.

Australian Chamber of Commerce and Industry, Media Release, 12 July 2010, *75% of Business Owners Call For Action On Energy Costs, Not Going it Alone on Carbon Taxes*.

Bruce, S, Sims J, *Science for Decision Makers: Soil Carbon Management and Carbon Trading 2010*, Australian Government Bureau of Rural Sciences.

Burns, K, Vedi, J, Heyhoe, E, Ahammad, H, 2009. *Opportunities for Forestry under the CPRS: An Examination of Some Key Factors.* ABARE Issues Insights 09.01, March 2009.

Cotching, W, 2009, *Quantifying Soil Carbon Storage in the Farm Carbon Story*, Tasmanian Institute of Agricultural Research.

Combet, G, 22 November 2010, *Carbon Farming Framework Released.* Media release. http://www.climatechange.gov.au/en/minister/greg-combet/2010/media-releases/November/mr20102211.aspx Accessed 22/11/2010.

Combet, G, 27 October 2010, *Domestic Offsets Integrity Committee Open for Business.* Media release. http://www.climatechange.gov.au/en/minister/greg-combet/2010/media-releases/October/mr20101027.aspx Accessed 16/11/2010.

Dare, M, Schirmer, J, Vanclay, F, 2008, *A brief guide to effective community engagement in the Australian plantation sector.* Technical Report 181, Cooperative Research Centre for Forestry, Hobart.

Department of the Environment and Heritage, 2006 *Planning Forest Sink Projects A Guide to Forest Sink Planning, Management and Carbon Accounting.* Australian Greenhouse Office in the Department of the Environment and Heritage, Canberra.

Department of the Environment and Heritage, 2006, *Growing trees as greenhouse sinks: An overview for landholders*, Australian Greenhouse Office in the Department of the Environment and Heritage, Canberra.

EcodSecurities, Conservation International, *Forest Carbon Offsetting Survey 2009*. http://www.ecosecurities.com/Standalone/Forest_Carbon_Offsetting_Trends_Survey_2009/default.aspx#19721 Accessed 25/10/10.

Fleming, A, Vanclay, F, *Farmer Responses to Climate Change and Sustainable Agriculture. A Review*. Agronomy for Sustainable Development, Volume 30, Number 1, January-March 2010.

Ford, M, Gurney, A, 2009, *Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications, ABARE, Canberra.*

Gillard, J, 5 September 2010, *Carbon Farming Initiative, Fact Sheet*. http://www.scribd.com/doc/35870084/Carbon-Farming-Fact-Sheet Accessed 16/11/2010.

Grose MR, Barnes-Keoghan I, Corney SP, White CJ, Holz GK, Bennett JB, Gaynor SM and Bindoff NL, 2010, *Climate Futures for Tasmania: general climate impacts technical report*, Antarctic Climate & Ecosystems Cooperative Research Centre, Hobart.

Hall, R, Armstrong, D, 2009, *Greenhouse Gas Calculators: Comparison of Three Calculators*, AK Consultants, Launceston.

House of Representatives Standing Committee on Primary Industries and Resources, 2010, *Farming the Future: The role of government in assisting Australian farmers to adapt to the impacts of climate change*, Commonwealth of Australia, Canberra.

Ian Johnson and Rebecca Coburn, January 2010, *Trees for carbon sequestration* in *Prime Facts 981*, Department of Industry and Investment, NSW.

Jiang, T, Hanslow, K, 2009, *On-farm impacts of an Australian ETS Economic Analysis,* Rural Industries Research and Development Corporation, Publication No 09/064.

Mazur, M, N., Curtis, 2008, *Rural Landholders Adapting to Climate Change: Social Research Perspectives*. Technical Report No. 5, Department of Environment, Water, Heritage and the Arts, Canberra.

Melanie F, 2006, *The Impacts of a Changing Climate on Industry Sectors in Tasmania*, Hobart.

Milne, M, Stenekes, N, 2008, *Climate Risk and Industry Adaptation.* Bureau of Rural Science, Canberra.

MMA, 2009, *Tasmanian Greenhouse Gas Emission Reduction Project - Understanding the Potential for Reducing Tasmania's Greenhouse Gas Emissions: Report to Tasmanian Climate Change Office, Department of Premier and Cabinet,* Tasmanian Climate Change Office, Department of Premier and Cabinet. (Also known as *Tasmanian Wedges Report Project*).

Mooney, C, Defenderfer, D, Anderson, M, 2010, *An Exploration of the Role of Non-Profit Drivers in Decision Making about Diversification - A Case Study: Northern Midlands of Tasmania*. Rural Industries Research and Development Corporation, Barton ACT.

O'Brien, N, Meizlish, M, Hawn, A, 2008, *Carbon Trading and Renewable Energy: A Discussion Paper on Carbon Credits and Bioenergy Developments for Forestry and Agriculture*, Rural Industries Research and Development Corporation, Barton ACT.

RSM Bird Cameron Chartered Accountants, 15 March 2010, *Farm Reforestation Opportunities Potentially Lucrative.* http://www.rsmi.com.au/media_centre/farm_reforestation.html Accessed 25/10/10.

Tasmanian Climate Action Council, July 2010, *Opportunities to Reduce Tasmania's Greenhouse Gas Emissions: Tasmanian Climate Action Council: Advice to the Tasmanian Government on the Tasmanian Wedges Report*. Hobart.

Tasmanian Climate Change Office, February 2010, *How We're Going: Report Update on the Tasmanian Government's progress on climate change action*. Department of Premier and Cabinet, Hobart.

Tasmanian Climate Change Office, 2008, *Tasmanian Framework for Action on Climate Change,* Department of Premier and Cabinet, Hobart.

United Nations Framework Convention on Climate Change, 2010, *Kyoto Protocol*. http://unfccc.int/kyoto_protocol/items/2830.php Accessed 22/11/2010.

Williams, K, June 2009, *Community Attitudes to Plantations: Survey of the Views of Residents of Tasmania, 2008.* CRC for Forestry, Hobart.

Williams, K, *June 2009. Community Attitudes to Plantation Forestry, CRC for Forestry Technical Report No. 194,* Hobart.