



Analysis of proposed tax arrangements for ACCUs

Element 6: Australian Agricultural Sustainability Framework

A confidential Final Report prepared for National Farmers' Federation

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Abbreviations

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
ACCU	Australian carbon credit unit
ANREU	Australian National Registry of Emissions Units
CER	Clean Energy Regulator
CGT	Capital gains tax
CSP	Carbon service provider
DAFF	Department of Agriculture, Fisheries and Forestry (Commonwealth)
DPI	Department of Primary Industries (NSW)
ERF	Emissions Reduction Fund
FBT	Fringe benefits tax
FMD	Farm Management Deposit
HIR	Human induced regeneration
ITAA	Income Tax Assessment Act

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We pay our respect to Elders past and present, whose knowledge and leadership has protected Country and allowed Aboriginal spirituality, culture and kinship to endure through the ages.

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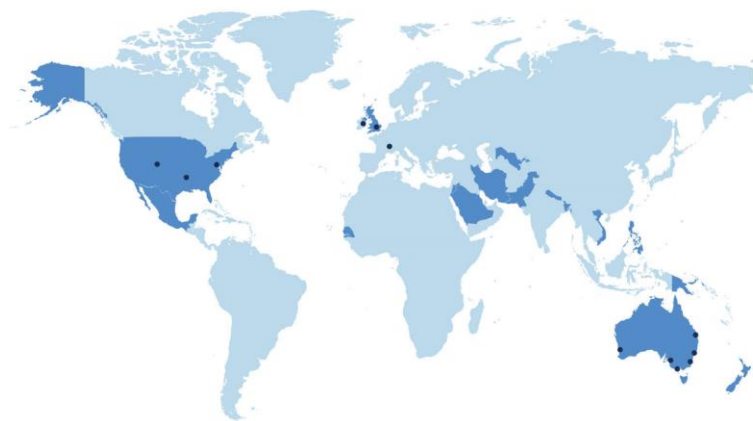
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Executive Summary

Current tax arrangements for ACCUs are a barrier to the uptake of carbon farming projects

Carbon farming offers farmers the opportunity to undertake specified activities on their land in return for Australian Carbon Credit Units (ACCUs). Carbon farming is a substantive source of ACCUs for the carbon market. The creation and ownership of ACCUs from carbon farming provides farmers with an additional option to manage their farm business according to their specific business objectives. The current tax arrangements for ACCUs reduce the incentive to participate in carbon farming and receive ACCUs in 2 ways:

- income from ACCUs is classified as non-primary production income. This affects a farmer's ability to access tax concessions, deductions and offsets, including tax deductible contributions to Farm Management Deposits (FMD) and the tax averaging offset for primary producers
- farmers are liable to pay tax on the value of ACCUs in the year they are received, and potentially future years if that value changes, regardless of whether they sell in that year.

The current tax arrangements reduce the number of farmers willing to undertake carbon farming projects. In March 2022, the Commonwealth Government proposed amendments to the tax treatment of ACCUs. The proposed changes would enable farmers to:

- treat revenue from the sale of ACCUs as primary production income
- pay tax on ACCUs in the year of sale, rather than paying tax in the year they are generated.

Aither undertook an analysis of the proposed tax arrangements. The analysis involved 6 hypothetical case studies of different farm businesses to illustrate the effect of the tax on different farm sectors under a range of scenarios. The analysis was also used to understand the likely market effects and the effect on tax revenue to government.

The proposed tax arrangements allow farmers to better manage risk and improve financial resilience

The analysis suggests that the proposed tax arrangements offer important financial and risk management benefits to farmers with specific characteristics or specific business objectives. For these farmers, the proposed tax arrangements:

- provide farmers more flexibility to receive and hold ACCUs in support of specific business objectives, such as in preparation for emerging market access risk or market premium opportunities enabled by carbon neutral requirements
- improve access to FMDs, a key financial risk management tool currently available and used by some farmers
- better enable ACCUs to function as a financial risk management tool, removing the disincentive to hold ACCUs for sale in low-income years
- allow farms participating in carbon farming to take better advantage of income tax averaging.

Only some farmers are expected to materially benefit from the proposed change

Only a limited cohort of farmers are likely to benefit from the changes. A farmer is only likely to receive benefits from the proposed tax arrangements if they:

- receive ACCUs from a carbon farming project

- have high income volatility

and they meet one or both of the following criteria:

- own and regularly use an FMD account and have high off-farm income
- are willing to sell and hold ACCUs flexibly to support business objectives (e.g. to prepare for future net-zero obligations, to smooth income, for speculative purposes).

The scale of any increase in carbon farming participation enabled by the tax changes is likely to be small. Only a small proportion of Australian farmers are likely to receive benefits from the proposed tax arrangements. This is due to 2 key outcomes that drive benefits to farm businesses:

- farmers who are willing to sell and hold ACCUs flexibly to support business objectives, rather than selling ACCUs as they are generated, will benefit. However, farmers were found to prefer to sell ACCUs to receive revenue in the year they are generated. This preference also drives the continued use of revenue-sharing models with aggregators and carbon service providers.
- farmers who own and regularly use an FMD account will benefit. However, the use of FMDs is restricted to unincorporated farm businesses and is low across most agricultural industries. Most farmers who use FMDs are also unlikely to have the required level of off-farm income to benefit from the changes due to division of off-farm income across family members.

These limitations are compounded by other more material barriers for farmers to participate in carbon farming. These barriers include a lack of suitable risk-adjusted return on investment, high transaction costs (knowledge barriers) and policy uncertainty.

[The proposed changes are likely to marginally increase participation in carbon farming, however the overall effect on ACCU prices and supply is uncertain](#)

The proposed tax arrangements will increase some farm businesses' incentive to participate in carbon farming as they will enable farmers to receive financial benefits relating to ACCU taxation and management. For example, a sheep farm with a 100ha reforestation project could receive an average annual benefit of up to \$26,000 per year over 10 years by strategically timing their ACCU sales to reduce tax liabilities (this is not possible under current tax arrangements since ACCUs are taxed when they are generated). For some farmers this may be sufficient to overcome the barriers to participate, marginally increasing carbon farming participation.

While carbon farming participation is likely to marginally increase, the effect of the tax changes on ACCU supply and ACCU prices is uncertain. ACCU supply and prices would be affected by 2 opposing drivers under the proposed tax changes. An increase in carbon farming participation would increase the number of ACCUs generated, increasing ACCU supply and decreasing ACCU prices compared to current tax arrangements. However, a proportion of farmers participating in carbon farming would choose to hold some ACCUs under the proposed tax changes (e.g. to reduce income volatility or to hedge against future net-zero obligations), since this ACCU management strategy would no longer be disincentivised. This would decrease the market supply of ACCUs and increase ACCU prices compared to current tax arrangements. It is unclear whether these drivers in combination would lead to an increase or decrease in ACCU supply and prices.

[The effect of the proposed tax arrangements on tax revenue is uncertain](#)

Tax revenue changes are difficult to estimate as their timing and magnitude is dependent on opposing drivers. The proposed tax changes are likely to increase the proportion of ACCUs which are held for a period of longer than one year, resulting in deferred tax revenue. Improved access to FMDs and tax averaging offsets for primary producers will also result in a loss of tax revenue. The tax changes are also likely to increase carbon farming participation, which would result in an increase in

ACCU sales and tax revenue. Tax revenue changes are also dependent on the unique tax structures of entities that receive or trade ACCUs.

In the short-run, it is likely that there will be a net loss of tax revenue for government. This is because the magnitude of any increase in carbon farming participation enabled by the tax changes is likely to be small in the short-run.

In the long-run, it is possible that tax revenue gains from increased participation cancel out tax revenue losses due to lower taxes. However, the scale of any change is uncertain.

Appropriate transitional provisions will prevent significant tax revenue losses in the short-term

The timing and magnitude of tax revenue effects in the short-run would be highly dependent on transitional provisions. Transitional provisions could include a legacy clause allowing or providing owners of existing ACCUs with a tax credit. A tax credit would affect all existing ACCUs, and would be likely to result in an upfront loss of millions of dollars in tax revenue. This could be particularly material given the large numbers of new ACCUs and volume of ACCU transactions over the past few years, which may be further exacerbated if participants choose to exit their delivery contracts with the ERF. Although further work would be required to be certain, a legacy clause is likely to be the most preferred transitional provision for government as it does not require upfront investment and is likely to be less administratively complex to implement.

The proposed tax arrangements support industry and government objectives for Australian agriculture

The proposed tax arrangements support industry and government objectives for Australian agriculture including improved financial resilience, market access and stewardship. They achieve this by:

- making it easier for farmers to consider carbon farming as a part of their overall farm system for the purpose of delivering long-term productivity benefits, in support of industry's goal to reach \$100 billion in production by 2030
- removing the disincentive to generate and hold ACCUs for the purpose of meeting future market access requirements for carbon neutrality
- incentivising investment in stewardship activities derived from carbon farming, which can deliver land, biodiversity, water, employment and other benefits to Australian communities.

The findings also illustrate that the proposed tax arrangements may benefit other emerging credits or certificates, such as Biodiversity Certificates, which offer a similar opportunity to support these industry and government objectives.

The design and implementation of proposed tax changes must consider unintended outcomes

Any changes to tax treatment of ACCUs and other similar instruments must be designed to consider potential unintended outcomes. These unintended outcomes could include reclassification of some businesses as primary production businesses and incentivisation of speculative investment in ACCUs. The effects of these unintended outcomes may include reduced revenue for government, higher ACCU prices in carbon markets and, increased competition for productive agricultural land.

Any changes to the tax treatment of ACCUs should also demonstrate that the overall benefits outweigh the costs for government and industry. Government may lose tax revenue and administering and understanding the effect of the change will have a cost to both government and industry. Carefully designed tax arrangements must seek to avoid or minimise the likelihood of unintended outcomes and costs for government and industry while delivering the potential benefits from the proposed changes.

1. Introduction

Current tax arrangements for ACCUs can act as a disincentive for farm businesses considering carbon farming

ACCUs are currently taxed based on a rolling balance method, similar to the tax treatment of rolling stock such as livestock and stored grain. Under these arrangements, the value of ACCUs received from carbon farming are treated as assessable income in the financial year they are received, regardless of whether the entity receiving them sells, relinquishes, or holds the ACCUs in that year. If an entity holds ACCUs across multiple financial years, the change in the market value of held ACCUs will also be counted toward the entity's assessable income in each year. For example, if the market value of held ACCUs increases, assessable income will increase by the same amount as the increase in the total value of held ACCUs. These arrangements penalise carbon farming participants which would prefer to hold ACCUs over multiple financial years, as ACCU taxation is not aligned with the sale or relinquishment of ACCUs.

Income from the sale of ACCUs is also treated as non-primary production income, referred to in this report as 'off-farm' income. Additional off-farm income can affect farmers' eligibility for a range of tax concessions and offsets provided to primary producers by federal government, such as tax deductible FMD contributions and income tax averaging offsets. This can act as a disincentive for farmers looking to participate in carbon farming or expand existing carbon farming operations.

Proposed tax arrangements for ACCUs can mitigate a range of issues introduced by current ACCU tax arrangements.

New tax arrangements for ACCUs were proposed by the Coalition government in 2021¹. The proposed changes include 2 components²:

- transition from the rolling balance method to the on-sale method for ACCU taxation. Under the on-sale method, ACCUs would only be taxed upon sale or relinquishment.
- treatment of ACCU income as on-farm income rather than off-farm income.

This report assesses key effects of the proposed ACCU tax arrangements on the Australian carbon market, government, and individual farm businesses participating in carbon farming

This report provides several high-level findings relating to the effects of the proposed ACCU tax arrangements on carbon farming participants, the carbon farming market, and government. These findings are informed by:

- a demonstrative analysis of taxes paid by a set of hypothetical farm businesses under different ACCU tax arrangements

¹ Taylor, A. (2022). *Tax changes for farmers to bolster land stewardship*. <https://www.minister.industry.gov.au/ministers/taylor/media-releases/tax-changes-farmers-bolster-land-stewardship>

² The proposed tax arrangements are focussed on ACCUs. This report and the proposed tax arrangements do not address the tax treatment of contracts associated with the sale of ACCUs, such as an offtake agreement.

- qualitative analyses informed by literature review and consultation with industry bodies, carbon service providers, and industry experts.

This report does not provide a quantitative assessment of the proposed tax arrangements' effects on government tax revenue, carbon market participation, and aggregate benefits received by carbon market participants. We provide bespoke quantitative analysis and qualitative findings relating to 3 key outcomes from the proposed tax changes:

1. **Changes to on-sale tax method from rolling balance method of ACCU taxation:** under proposed changes, ACCUs would only be taxed once the holder sells or relinquishes them.
2. **Eligibility for tax deductible FMD contributions:** farmers cannot claim a tax deduction on FMD deposits if they make more than \$100,000 in off-farm income in the same financial year. Assessable income from ACCUs contribute to a farmer's total off-farm income under current tax arrangements. Under the proposed tax arrangements, ACCU income would be redefined as primary production income and would no longer affect the tax deductibility threshold for FMDs.
3. **Tax averaging offsets for primary producers:** Under the proposed tax arrangements, ACCU income would be redefined as primary production income. This would affect calculation of the tax averaging offset for primary producers.

The proposed tax arrangements may interact with a range of other federal tax arrangements for primary producers, listed below. These interactions are likely to be immaterial in most cases and have not been considered in this report.

- Subdivision 40-F: Primary production depreciating assets
- Subdivision 40-G: Capital expenditure for primary producers and other landholders
- Division 35: Deferral of losses from non-commercial business activities
- Subdivision 70-D: Special tax rules relating to trees and crops
- Section 26-102: Expenses associated with holding vacant land
- Division 7A: non-commercial loans made to primary producers (ITAA 1936)
- Specific Fringe Benefits Tax ('FBT') concessions for primary producers (Fringe Benefits Tax Assessment Act 1986 (Cth)).

This report also does not consider interactions between the proposed tax arrangements and state tax concessions and offsets for primary producers (e.g. land tax concessions available to primary producers under the Queensland *Land Tax Act 2010*). We also do not consider interactions between the proposed tax arrangements and eligibility for drought assistance and disaster recovery measures for primary producers, as these measures are typically put in place as temporary measures by state governments.

2. Approach to analysis

Our analysis of the effects of the proposed ACCU tax arrangements consists of 4 components.

These components are described in Table 1.

Table 1 Components of Aither’s analysis of the effects of proposed ACCU tax arrangements

Component	Objectives	Outcome	Relevant section
Market effects of proposed changes (qualitative):	<ul style="list-style-type: none"> Identify likely changes in carbon market participation and make-up due to the proposed tax changes. 	Supports better understanding of how proposed tax changes would enable efficient market outcomes	Section 3
Tax analysis (quantitative):	<ul style="list-style-type: none"> Identify the magnitude of benefits received by farms due to proposed tax changes in a set of case study scenarios. 	Supports better understanding of the magnitude of tax transfers and other benefits received by farmers	Section 4
Distributional effects of proposed tax changes (qualitative):	<ul style="list-style-type: none"> Determine which farmer cohorts are more likely to benefit from proposed tax arrangements. Determine the size of farmer cohorts that are most likely to benefit from proposed tax arrangements. 	Supports better understanding of the number and type of farms that would benefit from the proposed tax changes	Section 4
Findings for government (qualitative):	<ul style="list-style-type: none"> Identify alignment with key government objectives Identify the likely magnitude and timing of tax revenue changes. Identify risks relating to proposed tax arrangements and reform design considerations for government. 	Supports better understanding of how proposed tax changes would support government and industry objectives, affect tax revenue and key considerations to manage perverse outcomes from the changes	Section 5

Our quantitative tax analysis is informed by an economic model of farm businesses participating in carbon farming

Aither developed an economic model to assess the effects of the proposed tax changes on individual farm businesses participating in carbon farming. The economic model is intended to provide a better understanding of the magnitude of benefits farm businesses could receive from the proposed tax changes. It also provides a better understanding of the types of farm businesses that would receive the most benefit from the tax changes, and the relative magnitude of each of the potential benefits of the tax changes.

The economic model uses information about a farm's income streams, carbon farming projects and financial preferences to track key financial variables over time, including:

- Tax paid by the farm (after applying all relevant concessions and offsets)
- The farm's after-tax income
- The number and value of ACCUs held by the farm (where applicable)
- The balance of an FMD account held by the farm (where applicable).

These variables are tracked under both current and proposed ACCU tax arrangements and used to determine the net benefit/cost that the farm would receive over a 10 year period under proposed tax arrangements.

Farm business tax structures, business objectives, financial management strategies and other financial characteristics can vary significantly between individual farm businesses and can be extremely complex in each case. Due to the limited scope of Aither's engagement, the economic model makes a number of simplifying assumptions relating to farm business characteristics. The economic model provides a useful indication of the benefits that may be received by farm businesses; however it should not be relied upon to assess the effects of proposed tax changes on real farm businesses.

The model has only been applied to unincorporated farm businesses. However, some findings from the economic model may also be relevant to incorporated farm businesses.

More information about Aither's modelling approach, including a full list of model limitations, assumptions, and technical documentation, can be found in Appendix A and Appendix B.

We apply the economic model to 6 hypothetical case study farms

We developed a set of hypothetical farm businesses to apply to the economic model as case studies. A case study approach based on a set of hypothetical but plausible farms enable us to assess the magnitude of benefits that might be accrued by a large range of farms within a limited scope. The case study approach also allows us to provide useful insights for policy decision making while keeping analysis simple and transparent.

Key characteristics of each case study farm are described in Table 2. Case study farms are hypothetical, and have been developed to represent a range of plausible cohorts of existing Australian farms with different financial characteristics and preferences. Financial information for each case study farm is informed by ABARES farm survey data and a range of other academic and government sources. Aither designed some characteristics of the case study farms, such as their ACCU selling strategies, to test key variables that drive changes in after-tax income over time. The financial characteristics of the case study farms have been tested for plausibility with representatives from relevant industry bodies.

Results from our case studies are dependent on a number of simplifying assumptions, and should not be extrapolated to real-life farm businesses. The case studies are intended to:

- provide a high-level indication of the range of benefits farm businesses could expect to receive from the tax changes in different scenarios
- support qualitative findings about the likely magnitude of overall effects of the tax changes on the carbon market and carbon market participants.

More information about case study assumptions, including sources, can be found in Appendix A.

Table 2 Specifications for case study farms

#	Primary commodity	Average farm income	Income volatility	FMD use	Average off-farm income	ERF method	ACCUs received per year	ACCU selling strategy
1	Wheat	\$840,000	+ -30% annually	Yes	\$30,000	Soil carbon	1,250	Sell every 5 years
2	Pork	\$760,000	+ -10% annually	No	\$30,000	Effluent management	1,542	Hold
3	Beef	\$50,000	+ -30% annually	No	\$70,000	Reforestation	4,847	Sell annually
4	Vegetables	\$110,000	+ -20% annually	No	\$10,000	Reforestation	1,212	N/A – receives annual stipend from aggregator
5	Sheep	\$610,000	+ -20% annually	No	\$60,000	Reforestation	4,847	Dynamic selling strategy
6	Dairy	\$180,000	+ -20% annually	Yes	\$30,000	Reforestation	1,454	Dynamic selling strategy

All components of our analysis were informed by consultation with expert advisors, industry bodies, and carbon service providers

A full list of organisations and individuals consulted by Aither is presented below.

Table 3 List of stakeholders consulted during development of this report

Category	Organisation/individual
Expert advisors	Claire Booth (C.O.Booth Law and Advisory)
	Roger Fitzgerald
Industry bodies	Australian Pork
	Bowen Gumlu Growers Association
	Cattle Council of Australia

Category	Organisation/individual
	Dairy Australia
	GrainGrowers
	Sheep Producers Australia
Carbon service providers/aggregators	GreenCollar
	Outback Carbon
	Select Carbon
Carbon market experts	Carbon Market Institute
	Clean Energy Regulator
	Market Advisory Group

3. Effects of proposed tax changes on the carbon market

The proposed changes are likely to lead to higher participation in carbon farming, however the materiality of the increase is likely to be limited

Carbon farming is an important source of ACCUs

Participation in carbon farming is important for the supply of ACCUs. Currently, 66 per cent of ACCUs generated have been supplied from carbon farming projects. Carbon farming is likely to continue to be a substantive source of ACCUs for the carbon market.

Proposed tax arrangements are likely to benefit some farm businesses more than others and most farmers would not benefit significantly from the tax changes

Aither analysis demonstrates that the benefits of the proposed tax changes can vary significantly based on the characteristics and preferences of individual farm businesses. In specific circumstances, the proposed tax changes can offer benefits to farmers that are large enough to encourage uptake in carbon farming. For example, a sheep farm with a 100ha reforestation project could receive an average annual benefit of up to \$26,000 per year over 10 years³, assuming the farm is willing to use ACCUs as a financial risk management tool.

Aither analysis and consultation with industry experts suggests that only a small proportion of Australian farm businesses are likely to be in a position to receive significant benefits from the proposed tax changes. To understand why this is the case, we can look at some of the key outcomes from the proposed tax changes that drive benefits to farm businesses, and assess whether most Australian farm businesses are likely to have the necessary requirements to benefit

The proposed tax arrangements provide farmers with the option to sell and hold ACCUs more flexibly to support business objectives. To benefit from this change, farmers must have both the ability and willingness to hold and sell ACCUs more flexibly. Consultation with industry experts and findings from our tax analysis (see case study 5 and case study 6 in Appendix A) suggest that most farmers would prefer to sell ACCUs as they are generated, and would still prefer to do so under the proposed tax arrangements.

Better access to tax deductible FMD contributions are another principal driver of benefit from the tax changes. However, the use of FMDs is restricted to unincorporated farm businesses, and is low across most agricultural industries (see Table 4 in Section 4). A farmer must also have a certain level of off-farm income to benefit from this change, and many farmers are unlikely to be within this range (see Table 5 in Section 4).

³ Based on the 'high-benefit' scenario in case study 5.

There are currently other more material barriers to participation in carbon farming than Australian taxation

The total increase in participation in carbon farming due to the proposed tax arrangements is likely to be limited at this time because of other, more material, barriers to carbon farming than Australian taxation. Farmers are principally only motivated to participate in carbon farming when it leads to improved farm productivity and profit. Participation for the purpose of carbon neutrality is currently less common, although likely to become increasingly important. Barriers to participation include lack of suitable risk-adjusted return on investment, high transaction costs (knowledge barriers), a lack of suitable carbon farming methodologies, land tenure constraints and access to finance⁴. These barriers are compounded by high market volatility and policy uncertainty⁵.

As a consequence of the materiality of non-Australian taxation barriers at this time, the proposed tax arrangements are unlikely to motivate most farmers to participate in carbon farming.

Existing tax management strategies employed by farm businesses are likely to limit the benefit received by many farmers

Consultation with experts suggests that some farm businesses employ tax management strategies which mitigate a number of issues that can arise due to current tax arrangements. For example, some farm managers may divide off-farm income across family members who contribute to the farm business. This would allow the farm manager to avoid the off-farm income threshold for tax deductible FMDs and increase the average value of offsets received from income tax averaging.

Existing tax management strategies decrease the number of farm businesses that would be materially affected by the tax changes. The tax changes would still provide some benefit to farm businesses who are considering carbon farming, as they would no longer be required to employ tax management strategies to mitigate issues with current arrangements.

The prevalence of aggregators and other carbon service providers in the carbon market may limit the benefit received by some farmers

Farmers most often work with an aggregator, or other carbon service providers, to develop and manage a carbon farming project. A commonly used contract between a farmer and an aggregator is based on a fee payment to the farmer. Under this contractual model, the farmer receives a payment from the aggregator based on the number of ACCUs estimated to have been generated. This payment may be as frequently as quarterly. This model benefits farmers who seek to use cash for other purposes and do not wish to manage market risk. Under this model, a farmer would not benefit from the proposed tax arrangements.

The alternative contractual model which is also commonly used is an ACCU-sharing model. Under this contractual model the farmer receives ACCUs. The proposed tax arrangements, or other future drivers (e.g. market access), may increase the number of farmers seeking to hold or relinquish ACCUs and therefore would have a preference for an ACCU-sharing model. Under this model, farmer would benefit from the tax concessions.

⁴ Macintosh, A., Roberts, G., Buchan, S. (2019). *Improving Carbon Markets to Increase Farmer Participation*. <https://www.agrifutures.com.au/wp-content/uploads/2019/07/19-026-Digital-1.pdf>

⁵ Ibid

Aggregators and other carbon service providers offer a range of services that are attractive to farmers and their use is likely to continue. The decision of a farmer to use a revenue-sharing or an ACCU-sharing model will be based on their specific business objectives. Desktop research and industry sources were unable to identify the total proportion of different contractual models. However, industry sources suggested the revenue-sharing model is common. By way of example, Terra Carbon, a subsidiary of GreenCollar, use a revenue-sharing model and account for approximately 15per cent of all ACCUs generated by registered projects since 2012/13. Without additional data the market effect of the proposed tax arrangements on market supply because of these drivers is uncertain, but generally expected to be low given the data available.

Under the proposed tax arrangements, farmers will have less incentive to trade ACCUs but the overall effect on ACCU prices and supply is uncertain

Under the current tax arrangements farmers are incentivised to sell ACCUs to generate cash flow to pay for the tax burden on the change in value of ACCUs each year. The proposed tax arrangements remove the rolling stock provisions and will reduce the incentive to supply the carbon market by selling ACCUs. This is because they will no longer be penalised for holding ACCUs. As a result, a key beneficiary from the tax concessions are those farmers who seek to generate and hold ACCUs over time. They may prefer to do this manage future risk, such as emerging market access requirements to be carbon neutral, to better smooth revenue in volatile years, or for speculative purposes.

The tax concessions remove the disincentive to hold ACCUs for these reasons, which may reduce the market supply of ACCUs. However, the market effect is likely to be diminished by the increase in ACCU supply caused by increased carbon market participation. Overall, the market effect of proposed tax arrangements on market supply because of these drivers is uncertain.

4. Effects of proposed tax changes on current and potential carbon market participants

Farms participating in carbon farming are more likely to benefit from proposed tax changes if they meet certain criteria

A farm is only likely to receive benefits from the proposed tax changes if they:

- receive ACCUs from a carbon farming project
- have high income volatility.

They must also meet one or both of the following criteria:

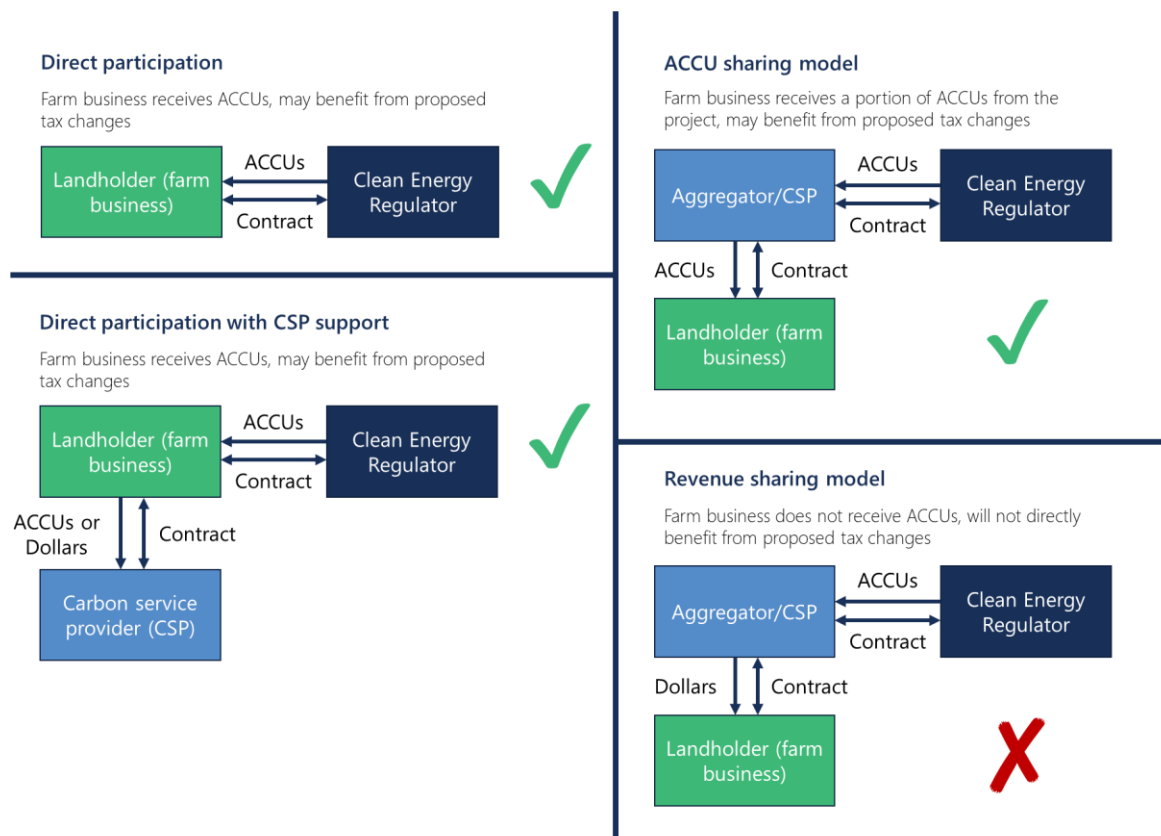
- own and regularly use an FMD account and have high off-farm income
- are willing to sell and hold ACCUs flexibly to support business objectives (e.g. to prepare for future net-zero obligations, to smooth income, for speculative purposes).

The remainder of this section provides information about the magnitude of benefits that farms which meet a selection of these criteria could expect to receive. This section also describes farmer cohorts which are most likely to meet these criteria.

Farmers must receive ACCUs to benefit from proposed tax arrangements

Under proposed tax arrangements any monetary compensation received by a farmer from a third-party related to a carbon farming project would continue to be treated as off-farm income. This means that farmers who receive cash from carbon farming projects (as opposed to ACCUs) would not receive any benefits from the proposed tax arrangements. This is demonstrated in case study 4, which concerns a farm business participating in carbon farming through a revenue sharing model with an aggregator. In this case study, the farm business does not benefit from the proposed tax changes because the changes do not affect the tax treatment of cash the farm receives from an aggregator.

Farm businesses can participate in the ERF through a range of models, as shown in Figure 1. Farm businesses participating in carbon farming through a revenue sharing model will not directly benefit from the changes as they do not receive ACCUs at any point. However, there are a range of other models where a farm business does receive ACCUs and would potentially benefit from the proposed tax arrangements.



Note This figure does not depict contractual arrangements for the sale of ACCUs generated from carbon farming projects. ACCUs can be sold through a variety of means, such as delivery contracts with the ERF, off-take contracts with third parties, or selling ACCUs in the spot market.

Figure 1 Simplified demonstration of 4 carbon farming models used by farm businesses and interactions with proposed tax changes

Unlike other participation models, revenue sharing models do not require farm businesses to decide when and how to sell ACCUs. This makes revenue sharing models administratively simple compared to other participation models, and they are therefore relatively common across small farm businesses participating in carbon farming. Industry sources could not provide a clear estimate of the total proportion of carbon farming projects registered under the ERF which use a revenue sharing model. However, Terra Carbon, a subsidiary of GreenCollar which utilises a revenue sharing model with farm businesses, is the proponent of 168 carbon farming projects registered with the ERF which have generated a total of 18 million ACCUs as of August 2022. This represents 11 per cent of all projects registered on the ERF (including non-carbon farming projects) and 15 per cent of all ACCUs generated by registered projects since 2012/13⁶.

The proposed tax changes would give farmers more flexibility to receive, sell and hold ACCUs to support business objectives

Current tax arrangements disincentivise farms from holding ACCUs past the financial year they are received. Farms who prefer to hold ACCUs instead of selling immediately can receive significant benefits from the proposed tax arrangements due to the alignment of ACCU taxation with their sale or relinquishment.

⁶ Based on Aither analysis of the ERF Project Register (as of 28 August 2022).

Farms may prefer to hold ACCUs over one or multiple financial years in anticipation of potential net-zero obligations. This is demonstrated in case study 2, which concerns a piggery that prefers to hold all ACCUs received from its carbon farming project. Under proposed tax arrangements, the piggery would save an average of \$21,000 per year in tax⁷.

A farm may also hold ACCUs over a financial year if they are using ACCUs to smooth income over time. This is demonstrated in case study 5, which concerns a sheep farm with a dynamic ACCU selling strategy. Under current arrangements (Figure 2), the sheep farm sells all ACCUs in the year they are received in order to align their ACCU income with tax payable. Proposed tax changes enable the farm to hold some ACCUs in high-income years and sell down in low-income years (Figure 3), resulting in an average of \$1,400 in tax benefits per year and less volatile income over time.

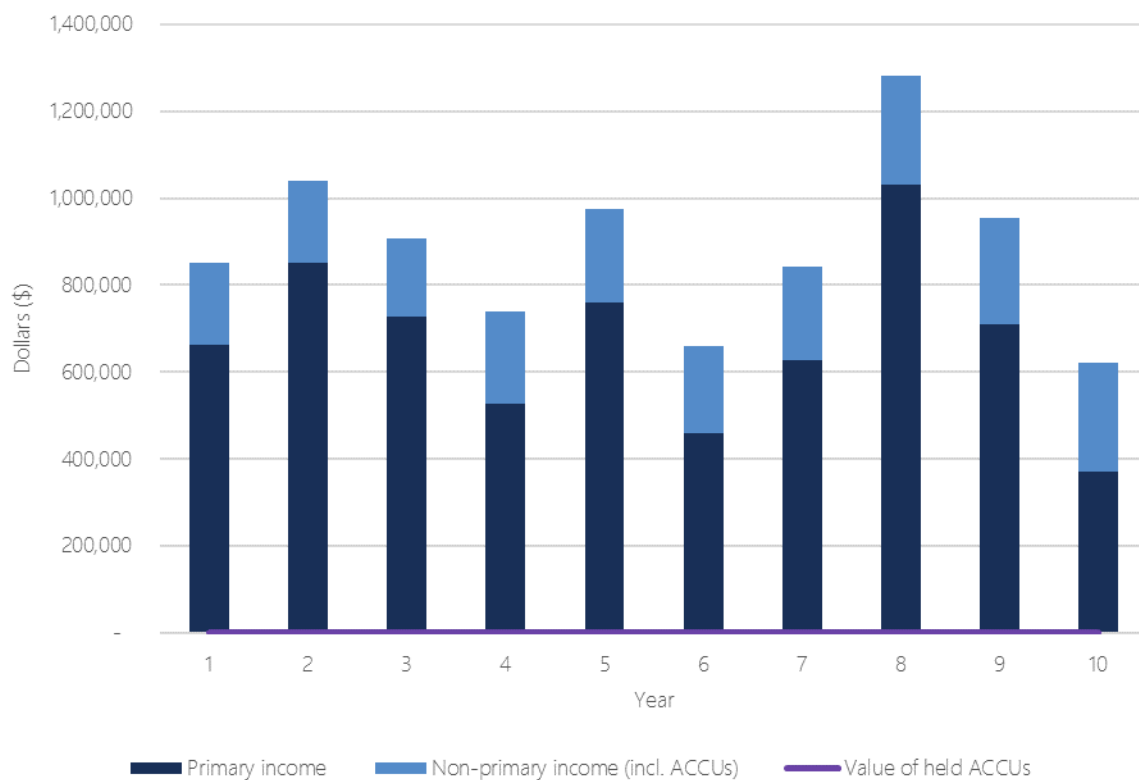


Figure 2 Assessable income and value of held ACCUs for case study 5 farm under current ACCU tax arrangements (central scenario)

⁷ Based on assumptions in the central scenario of case study 2. See [] for more details.

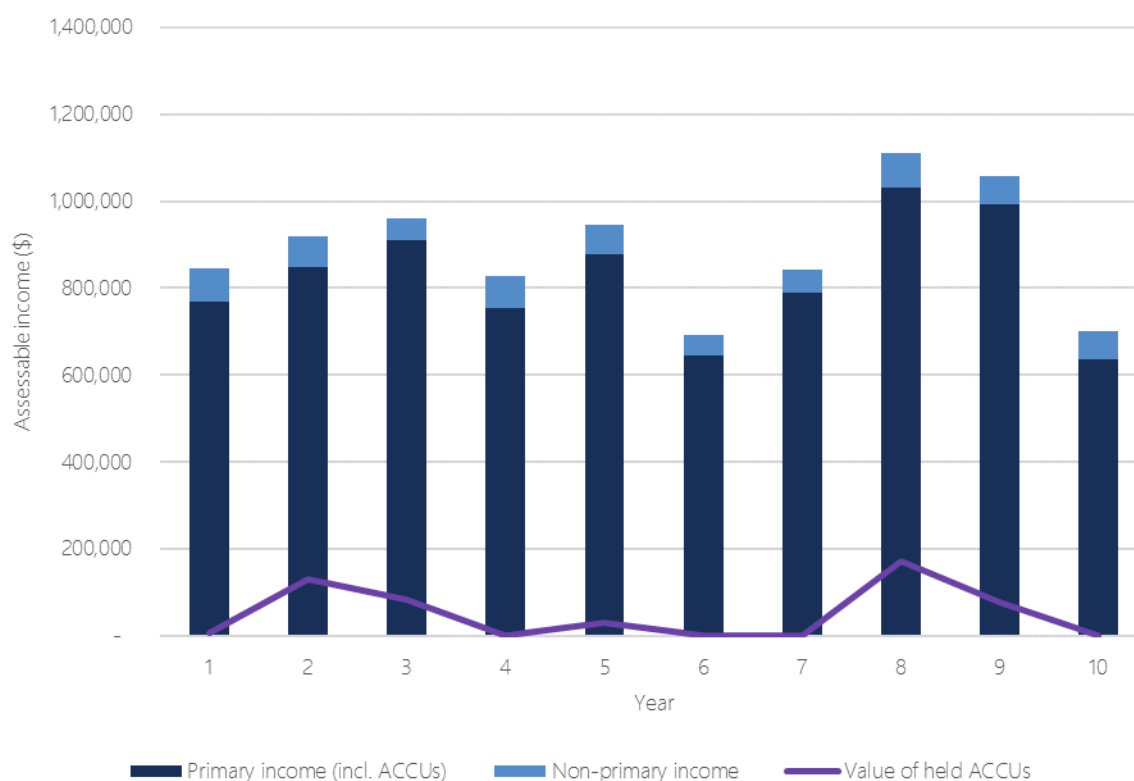


Figure 3 Assessable income and value of held ACCUs for case study 5 farm under proposed ACCU tax arrangements (central scenario)

This finding is potentially relevant to any entity which receives ACCUs for an active carbon farming project, or is considering doing so. It is most relevant to private farm businesses (both unincorporated and incorporated) that receive ACCUs from a carbon farming project. These businesses are more likely to be able to sell/hold ACCUs flexibly and would have greater ability to take advantage of benefits enabled by the tax changes. Aither analysis of the ERF Project Register estimates that there are up to 183 unincorporated farm businesses and 72 incorporated farm businesses that directly participate in the ERF as of August 2022⁸. This represents 29 per cent and 12 per cent of all participants listed in the ERF project register, respectively.

Evidence from consultation with industry bodies and carbon service providers suggests that most farms participating in carbon farming prefer to sell ACCUs as they are received and would not take advantage of the option to sell and hold ACCUs more flexibly. This finding assumes that market access requirements and carbon sequestration obligations for Australian farms do not change over time. Industry stakeholders suggested that many farmers prefer to sell ACCUs immediately to ensure immediate returns and reduce risk from price volatility, rather than selling and holding ACCUs flexibly to support other business objectives. This finding is corroborated by case study 5 and 6. They suggest that in most scenarios, the case study farms would prefer to sell most or all of the ACCUs they receive immediately under both current and proposed tax arrangements, and would not receive material financial benefits from the change to the on-sale method of taxation.

⁸ Estimates based on professional judgement. The ERF Project Register does not explicitly provide information about project proponents' legal structure and business type. Estimates are likely to include some entities that are not farm businesses receiving ACCUs from carbon farming.

Farmers participating in carbon farming would still benefit from the option to sell and hold ACCUs more flexibly due to option value. Farmers are likely to value the option to sell and hold ACCUs more flexibly even if they do not expect to take advantage of the option in future.

The value of the option to sell and hold ACCUs more flexibly is likely to be material due to uncertainty about future market access requirements for Australian farms. In the next 10 years, stronger land management and carbon sequestration requirements are likely to be imposed on Australian farms from international and domestic markets. As the risk of losing access to key markets increases, more farmers may be willing to hold ACCUs for longer periods to manage uncertainty about future market access requirements.

In some circumstances, the proposed tax arrangements incentivise additional FMD contributions, increasing financial resilience on-farm

Under current tax arrangements, the value of received ACCUs contributes to a farm’s total off-farm income. If ACCU income pushes a farm over the off-farm income threshold for tax deductible FMDs, they will have no incentive to contribute to their FMD account.

This issue would no longer be present under proposed tax arrangements. This would result in higher FMD balances over time, giving farms greater ability to manage downside risk in drought years. This is demonstrated in case study 1, which concerns a wheat farm that regularly uses an FMD and manages a soil carbon project. In the ‘high-benefit’ scenario of case study 1, the farm is not eligible for tax deductible FMDs under current tax arrangements, but would be eligible under proposed tax arrangements. This means the farm is able to accrue a \$800,000 FMD balance under proposed tax changes and receive an average net benefit of \$26,000 per year⁹ (Figure 4).

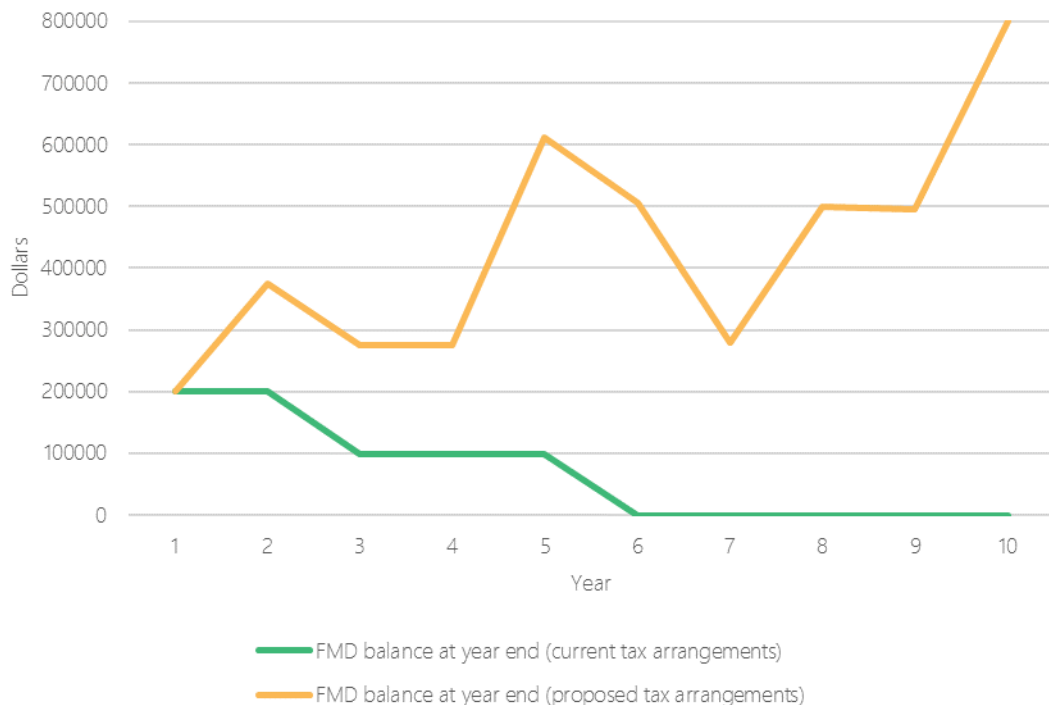


Figure 4 FMD balance of case study 1 farm under current and proposed tax arrangements (high-benefit scenario)

⁹ The majority of this benefit can be attributed to deferred income tax on additional FMD contributions.

This finding is only relevant to unincorporated farm businesses which hold an FMD account and use it to smooth income or defer tax. Aither analysis of statistics produced by Department of Agriculture, Fisheries and Forestry (DAFF) and the Australian Bureau of Statistic (ABS) suggests that a relatively small proportion of Australian farm businesses hold an FMD account (Table 4). FMD use is particularly high amongst dairy farms.

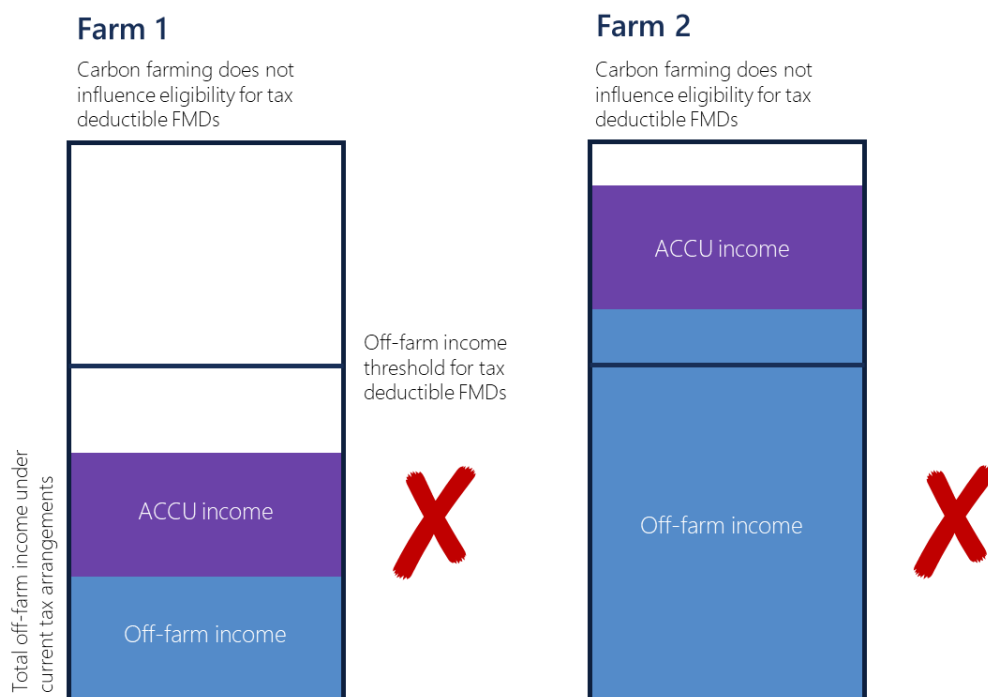
Table 4 FMD accounts held and estimated proportion of farm businesses holding an FMD account, by industry

Industry	Number of FMD accounts held	Estimated proportion of farm businesses holding an FMD account*
Cropping industries	15,871	28%
Dairy	2,780	51%
Beef	9,025	20%
Sheep	3,944	12%
Pork	125	10%

Source Aither analysis based on March 2022 FMD statistics published by DAFF and Agricultural Commodities data (AGCDCASGS202021) published by ABS.

Note Estimated proportion of farm businesses holding an FMD account is likely to be overestimated. Estimates assume that up to one FMD account can correspond with one farm business.

FMD benefits are also only relevant if ACCU income influences a farm’s eligibility for tax deductible FMDs under current tax arrangements. This is demonstrated in Figure 5 – farm 3 is the only farm that would benefit from the proposed tax changes due to changes in FMD use.



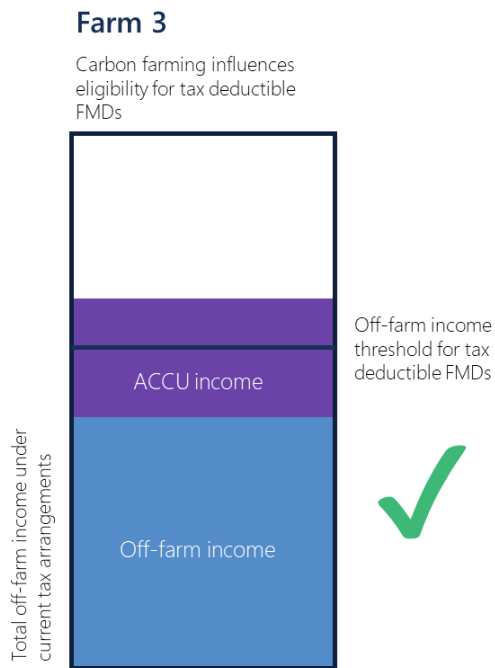


Figure 5 Effect of ACCU income on tax deductible FMD eligibility under current tax arrangements

ABARES farm survey data suggests that farms in some industries are more likely to have their FMD eligibility affected by ACCU income than others. Farms which are more likely to be affected include small to medium sized beef farms and small to medium sized broadacre cropping farms. Diversified farm businesses (Mixed, Sheep-Beef) tend to have lower and more consistent off-farm income, with the exception of large sheep-beef farms. These farms less likely to have their FMD eligibility affected by ACCU income.

Table 5 Average and maximum off-farm income on Australian farms from 2001 to 2020, by industry and farm size

Industry	Farm Size (total cash receipts)	Average off-farm income (2001-2020)	Maximum off-farm income (2001-2020)
Beef	Small	\$ 61,545	\$ 132,511
Beef	Medium	\$ 44,813	\$ 156,211
Beef	Large	\$ 30,103	\$ 72,087
Cropping	Small	\$ 47,746	\$ 72,871
Cropping	Medium	\$ 36,767	\$ 97,442
Cropping	Large	\$ 32,448	\$ 51,639
Mixed	Small	\$ 45,231	\$ 56,428
Mixed	Medium	\$ 35,730	\$ 54,517
Mixed	Large	\$ 33,921	\$ 57,315
Sheep	Small	\$ 47,586	\$ 62,310
Sheep	Medium	\$ 28,803	\$ 42,547

Industry	Farm Size (total cash receipts)	Average off-farm income (2001-2020)	Maximum off-farm income (2001-2020)
Sheep-Beef	Small	\$ 42,392	\$ 54,525
Sheep-Beef	Medium	\$ 36,155	\$ 67,990
Sheep-Beef	Large	\$ 51,127	\$ 110,474
Dairy	All (size breakdown not available)	\$ 26,112	\$ 32,378

Source Aither analysis based on ABARES farm survey data

Farms participating in carbon farming would be able to take better advantage of income tax averaging

Under current tax arrangements, a farm participating in carbon farming would receive less benefit from income tax averaging than an equivalent farm which does not participate in carbon farming. This would no longer be the case under proposed tax arrangements.

This effect is demonstrated in case study 3, which concerns a small beef farm that makes around half of their income from carbon farming. Under proposed tax changes, changes to the income averaging tax offset provide the beef farm with an average annual tax benefit of \$1,500.

Benefits relating to income tax averaging are only likely to be material if:

- a farm makes a significant portion of their total income from carbon farming
- a farm's off-farm income (excluding ACCU income) typically falls below \$10,000.

Income tax averaging benefits are likely to be small in comparison to benefits arising from increased FMD eligibility and more flexible ACCU selling. In most cases, income tax averaging benefits are not likely to affect a farm's decision to participate in carbon farming.

5. Considerations for government

The proposed tax arrangements would support government objectives relating to financial resilience, market access and stewardship of Australia's agricultural sector

Australian agriculture is extremely volatile compared to other industries, which can deter continued participation and growth in the sector. Supporting farmers to manage financial risk continues to be a priority for the Australian Government to ensure the ongoing sustainability of the sector. The proposed ACCU tax arrangements support management of on-farm financial risk by:

- enabling ACCUs to be used as a financial risk management tool
- incentivising more participation in carbon farming, providing more farmers with additional income diversification.

The Australian Government is also continuing to support the agricultural industry's goal to reach \$100 billion in production by 2030 (Ag2030). The Ag2030 Strategy identifies trade and exports and stewardship as key areas of focus to achieve this goal.

Seventy per cent of the value of Australia's agricultural production is exported¹⁰. Stricter rules relating to land management and agricultural sustainability, including rules relating to carbon emissions and carbon neutrality, are being imposed by the EU and other jurisdictions around the world. These rules and restrictions threaten to affect Australian farmers' access to critical international markets. The proposed ACCU tax arrangements can support access to international markets by providing farmers with more flexibility to hold ACCUs for longer periods, helping them to prepare for potential market access requirements.

Sustainable land management is also critical to the long-term sustainability of the Australian agricultural industry. The proposed tax changes support land and biodiversity stewardship objectives by providing greater incentive to participate in carbon farming or expand existing carbon farming projects. These activities can provide economic benefits to project proponents through ACCU income and increased agricultural productivity, and can also provide significant social and environmental benefits to regional communities¹¹.

The proposed tax changes are likely to decrease tax revenue in the short-run

Several outcomes from the changes would contribute to a decrease in government tax revenue in the short-run:

- taxes on held ACCUs which would be payable under current arrangements would be deferred to the point of sale under proposed tax arrangements. Government will no longer receive or lose tax revenue due to changes in the market value of held ACCUs that are valued based on the market value method.

¹⁰ Department of Agriculture, Fisheries and Forestry. (2022). *Delivering Ag2030*. <https://www.agriculture.gov.au/agriculture-land/farm-food-drought/ag2030>

¹¹ Department of Primary Industries (2021). *Potential co-benefits from carbon farming*. <https://www.dpi.nsw.gov.au/dpi/climate/Carbon-and-emissions/carbon-opportunities/carbon-farming-co-benefits>

- proposed tax changes would increase eligibility for tax deductible FMDs amongst farm businesses participating in carbon farming.
- proposed tax changes would increase the average income tax averaging offset received by farm businesses participating in carbon farming.

Short-run tax revenue changes are difficult to estimate as their timing and magnitude is dependent on behavioural change relating to ACCU selling strategies and FMD use. Tax revenue changes are also dependent on the unique tax structures of entities that receive or trade ACCUs. Additional information and data relating to these factors is required to develop a robust estimate of short-run tax revenue changes.

The magnitude and timing of tax revenue changes would be dependent on transitional provisions

The timing and magnitude of tax revenue effects in the short-run would be dependent on transitional provisions for the proposed changes.

Transitional provisions for the proposed tax changes would be required to avoid double taxation of existing ACCUs. Transitional provisions could include:

- a legacy clause allowing existing ACCUs (at the date of transition from current to proposed arrangements) to continue being taxed based on the rolling balance method until they are transferred to a new owner.
- providing owners of existing ACCUs with a tax credit equal to the amount of tax previously paid on held ACCUs.

These transitional provisions have different implications for the timing and magnitude of the proposed changes' tax revenue effects. Under a legacy clause, only tax revenue on new and transferred ACCUs would be affected. Conversely, a tax credit would affect all existing ACCUs, and would be likely to result in an upfront loss of millions of dollars in tax revenue.

For perspective, 4.9 million ACCUs were generated, and 5.5 million ACCUs were transferred in in Q2 2022, and there were 16.1 million ACCUs held in ANREU accounts at the end of the quarter¹². The number of new ACCUs and volume of ACCU transactions have steadily increased over the past few years, and are expected to increase further as new carbon farming projects are established and existing projects continue to generate ACCUs¹³. There are also a significant number of carbon farming participants that have delivery contracts with ERF¹⁴. If these participants choose to exit their delivery contracts, ACCU supply is likely to increase further.

A legacy clause is likely to be the most preferred transitional provision for government as it does not require upfront investment and is likely to be less administratively complex to implement.

¹² Clean Energy Regulator (2022). *Quarterly Carbon Market Report June Quarter 2022*. <https://www.cleanenergyregulator.gov.au/Infohub/Markets/quarterly-carbon-market-reports/quarterly-carbon-market-report-%E2%80%93-june-quarter-2022>

¹³ Ibid.

¹⁴ Clean Energy Regulator (2022). *Carbon abatement contract register*. <https://www.cleanenergyregulator.gov.au/ERF/project-and-contracts-registers/carbon-abatement-contract-register>

The long-run effects of the proposed changes on tax revenue are uncertain

The proposed tax arrangements could result in an increase in carbon farming participation across agricultural businesses, carbon service providers, and businesses in other industries. As discussed in Section 3, this increase is likely to be relatively small due to presence of other barriers to participation.

An increase in carbon farming participation would lead to an increase in taxes levied on ACCUs. In the long-run, it is possible that tax revenue gains from increased participation cancel out tax revenue losses due to lower taxes on carbon farming projects that would still exist under current tax arrangements. However, due to the uncertainty in market effects and the design of any transitional arrangements, the long-run effects on tax revenue are uncertain.

Other provisions would need to be considered to prevent unintended outcomes

Other policy mechanisms used to implement the proposed tax arrangements need to be carefully considered in order to avoid unintended outcomes. These unintended outcomes could include reclassification of some businesses as primary production businesses and incentivisation of speculative investment in ACCUs.

Reclassification of ACCU income as farm income could result in non-primary production businesses, such as aggregators and carbon service providers, being redefined as primary producers. This is because both the definition of primary production income and a primary production business is tied to activities that are considered as primary production activities under the Income Tax Assessment Act 1997 (Cth). If ACCU income is redefined as farm income by including carbon farming as a primary production activity in the Income Tax Assessment Act 1997 (Cth), this may have the unintended outcome of redefining non-primary production businesses with significant carbon farming operations as primary production businesses. This reclassification could allow these businesses to access tax concessions and offsets for primary producers, such as income tax averaging, FMD accounts, and government loan initiatives. If the proposed tax arrangements were to be implemented, government should consider creating a provision which prevents this outcome.

The proposed tax arrangements may also encourage speculative investment in ACCUs from farm businesses and other carbon market participants, as entities holding ACCUs would no longer be required to pay tax on them until sale. This could result in a range of unintended outcomes that may be detrimental to some carbon market participants, such as significant increases in ACCU prices, low ACCU transactions, and increased competition for use of farmland by non-primary production businesses. Government should investigate the materiality of this unintended outcome and its effects on the agricultural sector and the carbon market if they choose to pursue proposed tax arrangements. If this risk is found to be a significant problem, government should consider and implement provisions or complementary interventions to mitigate the risk.

The overall benefits from the proposed tax arrangements should outweigh the costs

Any changes to the tax treatment of ACCUs should also demonstrate that the overall benefits outweigh the costs for government and industry. The analysis demonstrates that there are likely to be benefits at least for some farmers in the short-term. In the longer-term it is possible that these benefits apply to a larger cohort of farmers if they are required to manage market access risk, higher volatility or other requirements.

The proposed tax arrangements will also impose costs on government and industry. Government may lose tax revenue, particular in the short-run, and administering the change will also impose a cost on

government. For industry, understanding the effect of the change on farmers in consideration of their individual circumstances as well as for aggregators and carbon services providers will have a cost to industry. Transaction costs for farmers are an important barrier to participating in carbon farming and any change to tax arrangements will need to be accompanied by support for farmers and other industry participants.

Appendix A - Case studies

The following sections describe 6 case studies of hypothetical but plausible farms participating in carbon farming. Each case study utilises an economic model developed by Aither and includes a description of:

- the physical and financial characteristics of each case study farm
- income, tax payable, FMD contributions/withdrawals and ACCU sales over time under current tax arrangements
- income, tax payable, FMD contributions/withdrawals and ACCU sales over time under proposed tax arrangements.

Outputs from the economic model are dependent on a number of simplifying assumptions. These assumptions and their effects on outputs from the economic model are described in Table 6.

In order to test the magnitude of benefits a case study farm may receive in different circumstances, each case study farm is assessed under 3 scenarios: a high-benefit scenario, a central scenario, and a low-benefit scenario. In each scenario, the financial characteristics of each case study farm are adjusted to test how tax benefits may change as a result. Assumptions underlying the 3 key scenarios used in the case studies are shown in the assumption tables at the end of each case study.

Table 6 Case study limitations

Central modelling assumptions	Effect on modelling outputs
Farm income and off-farm income is normally distributed and has no correlation with income in previous years	Assumption may increase or decrease net benefit received by case study farms under proposed tax arrangements. Farm and off-farm income in a particular year will have some correlation with income in previous years in real farm businesses.
Farm income and off-farm income is not affected by carbon farming projects	Assumption may increase or decrease net benefit received by case study farms under proposed tax arrangements. Income assumptions are based on typical income of Australian farm businesses, rather than farm businesses participating in carbon farming. In real farm businesses, the presence of carbon farming may materially affect other income streams.
All farm income and off-farm income received by the farm (including losses) is passed to one person and is subject to income tax	Assumption is likely to increase net benefit received by some case study farms under proposed tax arrangements. ABARES farm survey data suggests that a large portion of off-farm income received by Australian farm businesses is attributed to the spouse of the farm's owner-manager. This would decrease the likelihood that a farm business' eligibility for tax deductible FMDs would be affected under proposed tax arrangements.

Central modelling assumptions	Effect on modelling outputs
Average farm and off-farm income, farm and off-farm income volatility, ACCUs generated per year and annual carbon farming costs are constant across the analysis period	Assumption may increase or decrease net benefit received by case study farms under proposed tax arrangements. Average farm and off-farm income, farm and off-farm income volatility, ACCUs generated per year and annual carbon farming costs may change over time in real farm businesses due to a range of factors including business growth/contraction or expansion of carbon farming.
The farm manager is not liable to pay any taxes other than income tax	Assumption may increase or decrease net benefit received by case study farms under proposed tax arrangements.
The farm manager does not collect any tax concessions other than concessions relating to tax deductible FMD contributions and income tax averaging	Assumption is likely to decrease net benefit received by some case study farms. In real farm businesses, the proposed tax arrangements are likely to interact with other tax concessions and offsets for primary producers, resulting in more tax benefits.
Farms do not need to pay tax on a right to receive ACCUs.	The model does not account for scenarios in which a farm business is liable to pay tax on a right to receive ACCUs. Transfer of a right to receive ACCUs between 2 parties (such as during a sale of land that contains a carbon farming project or succession of a farm business undertaking carbon farming) may constitute a CGT event
Farms can receive the ACCU prices described in Table 7.	Assumption may increase or decrease net benefit received by case study farms under proposed tax arrangements. The timing and amount of compensation received by farm businesses for sold ACCUs can vary significantly based on a range of internal and external factors, such as the method/s of ACCU sale chosen by the farm business, supply of ACCUs, demand for ACCUs, and government policy changes. Farm businesses have a range of methods of ACCU sale available to them, including optional delivery contracts with the CER, off-take agreements with third parties, and selling ACCUs on the spot market.
Farm businesses use the market value method to determine the value of held ACCUs	Assumption may increase net benefit received by case study farms under proposed tax arrangements. Some farm businesses may prefer to use one of the cost-based methods of ACCU valuation (FIFO cost method or actual cost method). Assuming ACCU prices increase over time, tax liabilities would be deferred under cost-based valuation methods compared to the market value method under current tax arrangements, decreasing benefit received from proposed tax arrangements.

Central modelling assumptions	Effect on modelling outputs
Farm businesses can observe ACCU prices in the next financial year	Assumption may increase net benefit received by case study farms using a dynamic selling strategy under proposed tax arrangements. Real farm businesses are not able to observe future ACCU prices and may be less willing to hold ACCUs to avoid future ACCU price uncertainty. Less willingness to hold ACCUs decreases benefit received from proposed tax arrangements.
ACCU generated from different methods (and in different regions) have the same market value.	Assumption may increase or decrease net benefit received by case study farms under proposed tax arrangements. Stratification in ACCU prices based on an ACCUs region and method of origin can be significant. For example, ACCUs from savanna fire management projects attracted a premium of between \$5.65-\$9.75 in Q2 2022 ¹⁵ . ACCUs from HIR projects attracted a premium of between \$1.25-\$3.35 in the same quarter. Our model assumptions do not account for this stratification

¹⁵ Clean Energy Regulator (2022). *Quarterly Carbon Market Report June Quarter 2022*. <https://www.cleanenergyregulator.gov.au/Infohub/Markets/quarterly-carbon-market-reports/quarterly-carbon-market-report-%E2%80%93-june-quarter-2022>

Table 7 ACCU price assumptions for case study scenarios

Year	High-benefit scenario Aither assumption based on 10-year ACCU spot price forecasts published by carbon market experts ¹⁶ . Assumes linear increase in ACCU price from \$30 in Year 1 to \$70 in Year 10.	Central scenario Aither assumption based on midpoint of ACCU price assumptions in the high-benefit scenario and low-benefit scenario.	Low-benefit scenario Aither assumption based on average ACCU price paid by the CER in the ERF's 14th Auction (April 2022) ¹⁷ .
1	\$30.00	\$23.68	\$17.35
2	\$34.44	\$25.90	\$17.35
3	\$38.89	\$28.12	\$17.35
4	\$43.33	\$30.34	\$17.35
5	\$47.78	\$32.56	\$17.35
6	\$52.22	\$34.79	\$17.35
7	\$56.67	\$37.01	\$17.35
8	\$61.11	\$39.23	\$17.35
9	\$65.56	\$41.45	\$17.35
10	\$70.00	\$43.68	\$17.35

¹⁶ Carbon Market Institute (2022). *Webinar: Carbon market trading & procurement to realise climate ambition*. <https://carbonmarketinstitute.org/2022/09/09/september-9-webinar-carbon-market-trading-procurement-to-realise-climate-ambition/>

¹⁷ Clean Energy Regulator (2022). *Auction April 2022*. <https://www.cleanenergyregulator.gov.au/ERF/auctions-results/april-2022>

Case study 1 - High income wheat farm

This case study assesses the effects of proposed tax changes on a high income wheat farm in Western Australia. The farm receives an average of \$840,000 farm cash income per year and an average of \$30,000 in off-farm income per year outside of carbon farming investments. Farm cash income is highly variable as the farm is not irrigated and exclusively produces winter cereals. The farm is not incorporated and does not pay company tax.

The farm has previously invested in a 1000ha soil carbon project based on use of improved tillage methods. The project is registered with the ERF and generates a steady supply of ACCUs. The farm prefers to receive ACCUs every 5 years (the maximum interval for reporting to the CER) and then sell ACCUs in the year they are received. The farm has undertaken the carbon farming project individually without the use of an aggregator or carbon service provider.

The farm holds a Farm Management Deposit (FMD) account and uses it regularly to defer tax and reduce the volatility of its total income. The farm's FMD has an initial balance of \$220,000. Generally, the farm prefers to use FMDs to constrain its total annual non-ACCU income so that it is only 10 per cent above or below the farm's long-term average non-ACCU income. However, the farm does not make FMD deposits in years where they pass the tax deductibility threshold for FMDs.

The farm is eligible for tax averaging for primary producers but is not eligible for exemption from the non-commercial losses rule.

Implications of current tax arrangements (base case)

Under current tax arrangements the farm faces total annual taxes of between \$540,000 and \$320,000.

Figure 6 shows the before tax income and FMD balance of the farm over 10 years. They are eligible for tax deductible FMDs in all years and are able to use their FMD account to smooth their income.

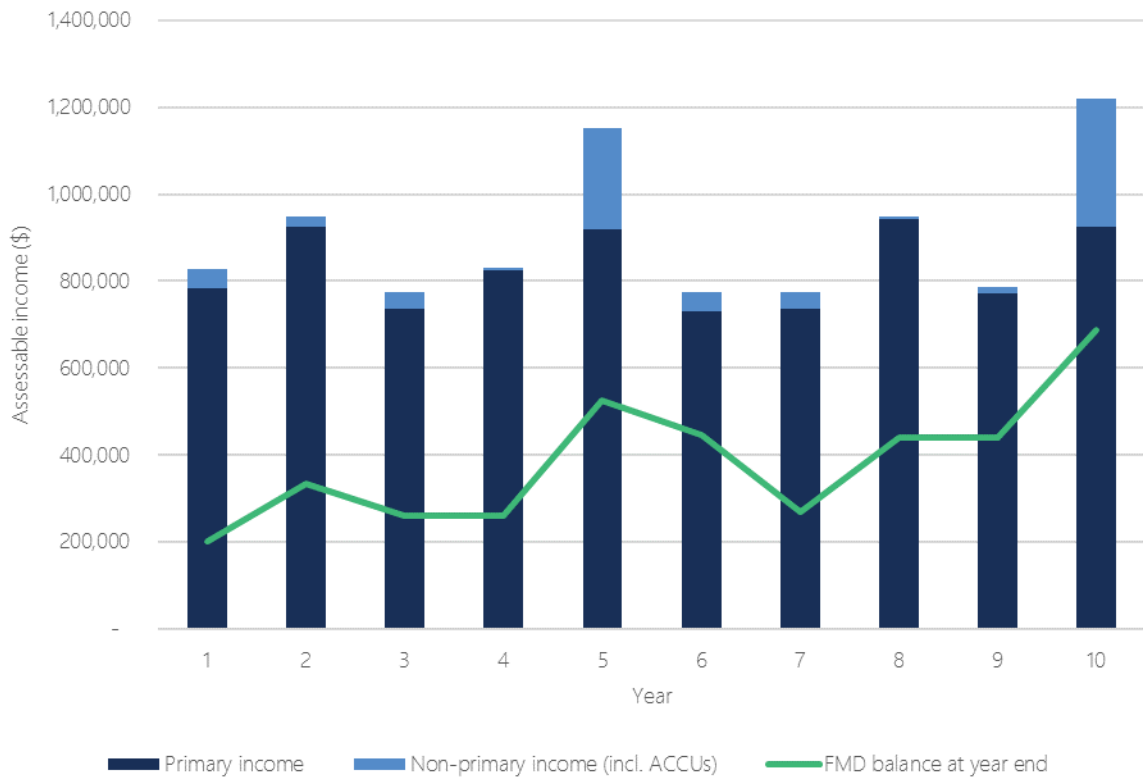


Figure 6 Assessable income and FMD balance for case study 1 farm under current ACCU tax arrangements

Implications of proposed tax changes

Under proposed tax changes, income received from carbon farming is treated as primary production income (Figure 7), which affects calculation of the income tax averaging offset. This results in a small average tax benefit of \$521 per year. The majority of this benefit is received in Years 5 and 10 when the farm receives and sells ACCUs (Table 8).

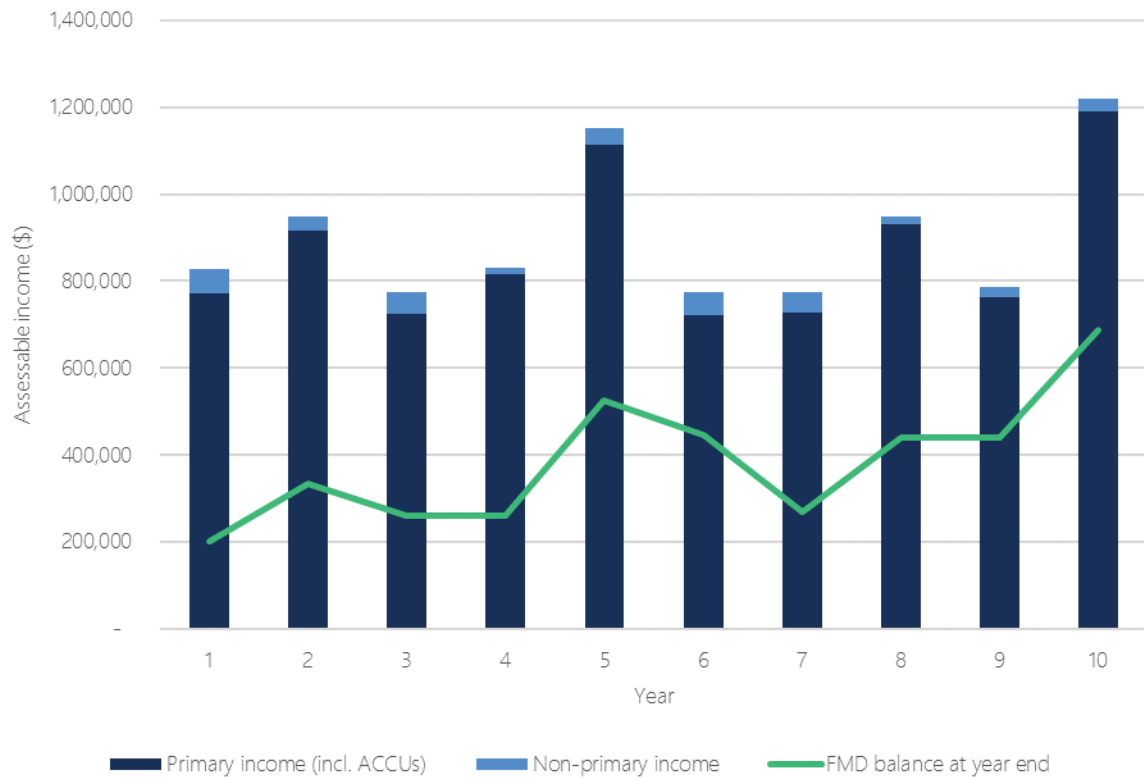


Figure 7 Assessable income and FMD balance for case study 1 farm under proposed ACCU tax arrangements

Table 8 Net benefit to case study 1 farm from proposed tax changes in Years 1 to 10

Year	Net benefit of proposed changes	Year	Net benefit of proposed changes
1	\$67	6	\$167
2	-\$82	7	\$125
3	\$132	8	-\$37
4	\$17	9	\$122
5	\$1,701	10	\$2,999
Total		\$5,211	
Net present value (7% discount rate)		\$3,083	

Scenario analysis

The effects of the proposed tax changes can also be tested in a 'high benefit' scenario and a 'low benefit' scenario. These scenarios have been developed to better understand the range of potential tax benefits a low-income dairy farm may receive. Changes to assumptions in these alternate scenarios are detailed in Table 9.

Table 9 Average annual net benefit received by case study 1 farm under proposed ACCU tax arrangements in alternate scenarios

Scenario	High-benefit	Central	Low-benefit
Average annual benefit from tax changes	\$26,761	\$521	\$96

The farm receives significant benefits from proposed tax changes in the high-benefit scenario in comparison to the low-benefit and central scenarios (Table 9). In the high-benefit scenario, the farm often does not meet the tax deductible FMD threshold under current tax arrangements. This means that they do not choose to make FMD contributions in some high income years, leaving them unable to reach their target income level in Year 7.

Under proposed tax changes, the farm no longer faces this issue in the high-benefit scenario. The proposed changes allow the farm to make use of their FMD to smooth income and defer tax. Figure 9 shows that the farm is able to use its FMD account to increase the farm's total income in Year 7 when its income is below average. By the end of Year 10, the farm has the maximum allowed amount stored in their FMD account (\$800,000) under proposed tax changes, as opposed to \$215,000 under current tax arrangements.

Analysis of alternative soil carbon project costs

Carbon farming project cost assumptions can affect benefits that the farm would receive under proposed tax changes. This is demonstrated in Table 10. Lower cost assumptions for the farm's soil carbon project result in a larger benefit in the high-benefit scenario.

Table 10 Average annual net benefit received by case study 1 farm using alternative carbon farming cost assumptions

Soil carbon cost assumption	High-benefit	Central	Low-benefit
\$24.76/ha/year plus \$1000/year in reporting costs (based on Kondinin Group 2015)	\$26,761	\$521	\$96
\$10/ha/year (based on Aither data received from an industry source)	\$36,190	\$507	\$89

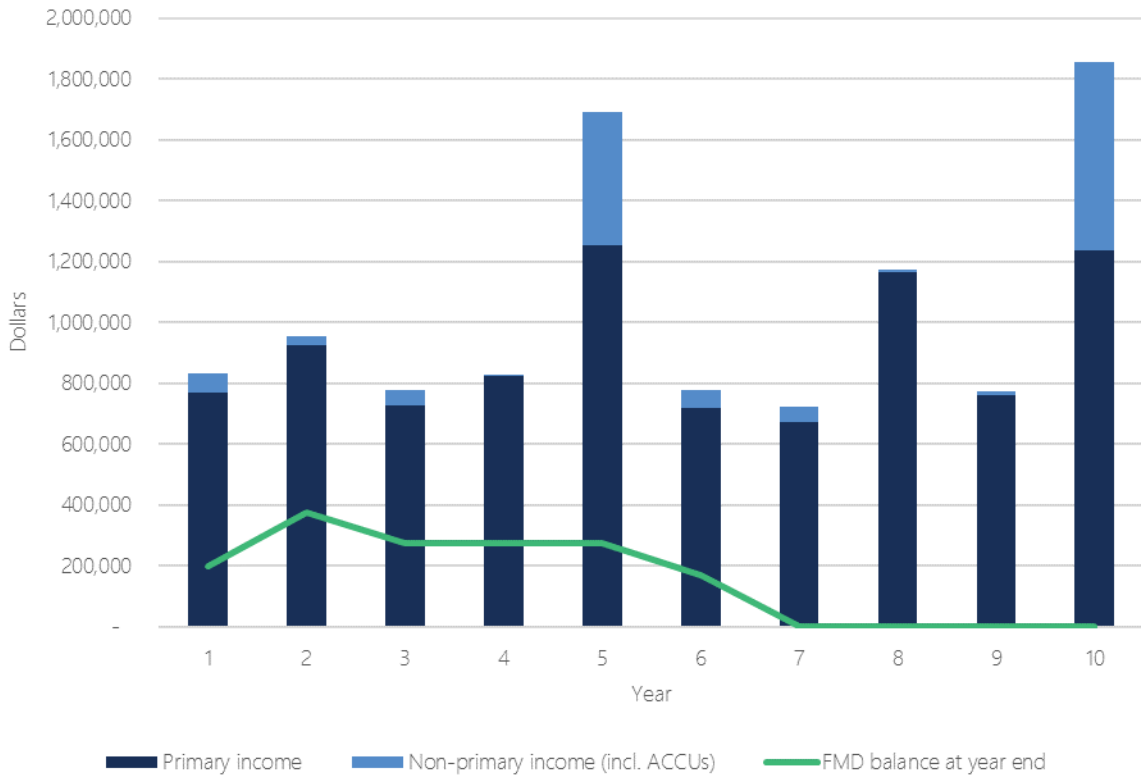


Figure 8 Assessable income and FMD balance for case study 1 farm under current ACCU tax arrangements (high-benefit scenario)

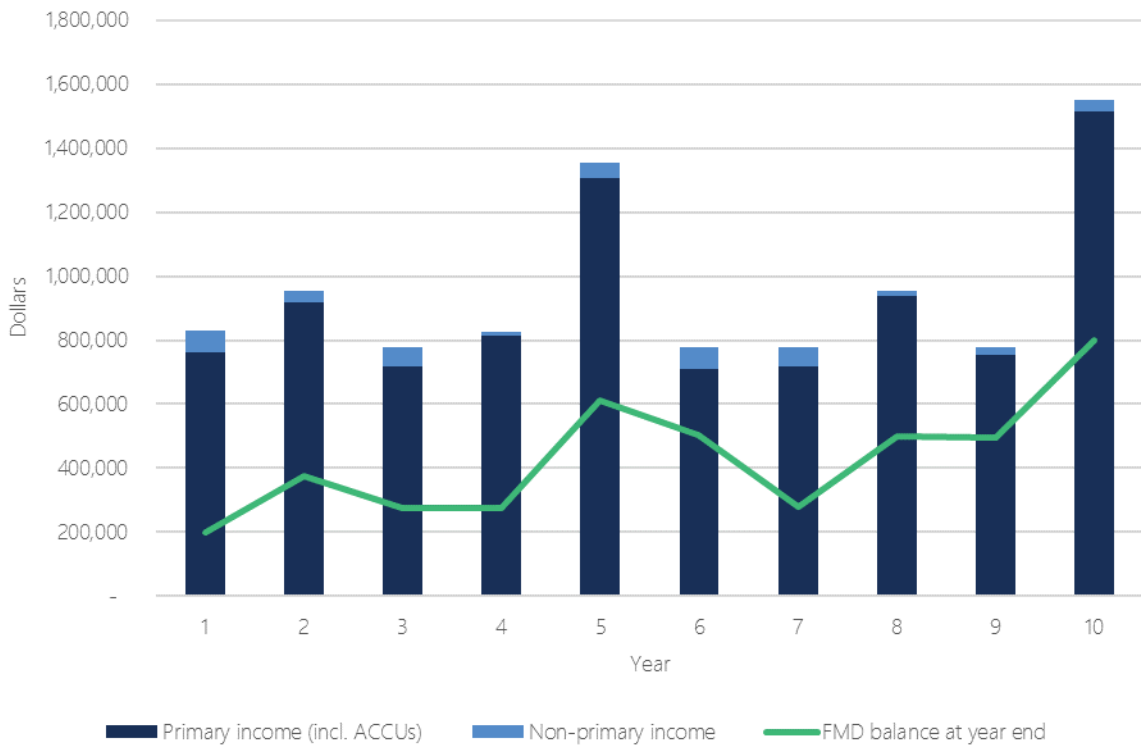


Figure 9 Assessable income and FMD balance for case study 1 farm under proposed ACCU tax arrangements (high-benefit scenario)

Analysis of alternative FMD use and ACCU selling scenarios

A farm's FMD use and ACCU selling strategies can have a material effect on the benefits a farm might incur from the proposed tax changes. This is demonstrated in Table 11.

Table 11 Average annual net benefit received by case study 1 farm under alternative FMD use and ACCU selling scenarios

	High-benefit scenario	Central scenario	Low-benefit scenario
Sell every 5 years			
The farm receives ACCUs every 5 years and sells all ACCUs in the same financial year they are received.			
FMD	\$26,761	\$521	\$96
No FMD	\$2,010	\$774	\$176
Sell annually			
The farm receives ACCUs every year and sells all ACCUs in the same financial year they are received.			
FMD	\$25,268	\$8	\$1
No FMD	\$9	\$5	\$0
Dynamic selling strategy			
The farm receives ACCUs every year. Each year, the farm decides how many ACCUs to sell or hold to maximise their utility.			
FMD	\$80,218	\$1,362	-\$1
No FMD	\$27,694	\$2,447	\$0
Hold ACCUs			
The farm receives ACCUs every year and holds all ACCUs received			
FMD	\$77,092	\$24,023	\$6,289
No FMD	\$52,054	\$24,124	\$6,308

Table 11 shows that the farm generally benefits more from the tax changes if they hold ACCUs or employ a dynamic ACCU selling strategy. This finding holds irrespective of whether the farm uses an FMD to smooth income.

In the high-benefit scenario, the vast majority of the benefits received by the farm when they are selling annually or every 5 years in the relate to FMD use and the threshold for tax deductible FMDs. If the farm employs a dynamic selling strategy or holds ACCUs, the benefits they receive are still significant in the high-benefit scenario without FMD, but lower than they would be assuming FMD use. In the low-benefit scenario, benefits received by the farm are generally immaterial unless they are holding ACCUs for the whole analysis period.

In addition to the scenarios in Table 11, it is also possible that a farm may prefer different ACCU selling strategies under current and proposed tax arrangements.

Summary

The financial benefits received by the wheat farm assessed in this case study vary significantly based on the characteristics the farm. Depending on the mix of the farm's financial characteristics, ACCU selling strategies, and FMD use, the farm may receive an average annual net benefit between \$80,218 and -\$1.

Summary of assumptions used in case study

Assumptions relating to farm and off-farm income have been tested for plausibility in consultation with GrainGrowers.

Table 12 Case study 1 assumptions

Variable	Value		Source
Average farm cash income	Central	\$840,000	Aither analysis of ABARES farm survey data. Based on average farm cash income from 2011-2020 of Australian broadacre cropping farms with over \$1,000,000 in total cash receipts per year. Rounded to the nearest \$10,000.
	High-benefit	\$840,000	
	Low-benefit	\$840,000	
Standard deviation of farm cash income	Central	\$270,000	Based on variance of farm revenue on WA wheat farms estimated in Kingswell 2011. +/- 20% for high/low-benefit scenarios.
	High-benefit	\$324,000	
	Low-benefit	\$216,000	
Average off-farm income	Central	\$30,000	Central scenario based on Aither analysis of ABARES farm survey data. Based on average off-farm cash income from 2011-2020 of Australian broadacre cropping farms. Rounded to the nearest \$10,000. +/- 20% for high/low-benefit scenarios.
	High-benefit	\$36,000	
	Low-benefit	\$24,000	
Standard deviation of off-farm income	Central	\$15,000	Central scenario based on ABARES farm survey data and data from NFF National Survey (on-farm financial risk management project). +/- 20% for high/low-benefit scenarios.
	High-benefit	\$18,000	
	Low-benefit	\$12,000	
ACCUs generated per year	Central	1,250	Central scenario based on average sequestration rate (t CO ₂ -e/ha/yr) of improved tillage methods reported by Sanderman et al. (2010). High/low-benefit scenarios based on upper and lower bounds of 95% confidence interval reported by Sanderman et al.
	High-benefit	1,680	
	Low-benefit	820	
Carbon farming cost per year	Central	\$25,760	Based on ongoing costs of nitrogen application and soil sampling of \$24.76/ha/year, \$1000/year for reporting and a total project size of 1000ha. Based on cost estimates in Kondinin Group (2015) ¹⁸ .
	High-benefit	\$25,760	
	Low-benefit	\$25,760	

¹⁸ Kondinin Group (2015). *The business case for carbon farming: improving your farm's sustainability*. <https://static1.squarespace.com/static/5c34190f4eddec0845301a20/t/5c620c59c83025158fdea92d/1549929619231/Kondinin+Group++The+Business+case+for+Carbon+Farming.pdf>

Variable	Value		Source
Initial FMD balance	Central	\$180,000	Aither analysis of FMD statistics (March 2022 quarter) published by DAFF. Based on average value of an FMD deposit held by a farmer in the WA grain industry. Rounded to the nearest \$10,000.
	High-benefit	\$180,000	
	Low-benefit	\$180,000	

Case study 2 – high income piggery

This case study assesses the effects of proposed tax changes on a high-income piggery in South Australia.

The farm receives an average of \$760,000 farm cash income per year and an average of \$30,000 in off-farm income per year outside of carbon farming investments. Farm cash income is relatively stable. The farm is not incorporated and does not pay company tax.

The farm has previously invested in an animal effluent management project. The project is registered with the ERF and generates around 1,500 ACCUs per year. The project is run under an ACCU sharing model with a carbon service provider, who receives 30 per cent of all ACCUs generated by the project. In return, the carbon service provider covers all ongoing costs of the project. The farm prefers to hold all ACCUs received from the project in case there is a future need to relinquish them for net-zero and market access purposes.

The farm does not hold or use a Farm Management Deposit (FMD) account.

The farm is eligible for tax averaging for primary producers but is not eligible for exemption from the non-commercial losses rule.

Implications of current tax arrangements (base case)

Under current tax arrangements the farm faces total annual taxes of between \$390,000 and \$260,000. The change in value of ACCUs held by the farm is treated as assessable off-farm income in each year, even though the farmer does not sell any ACCUs. This is due to the use of the rolling balance method for taxing ACCUs.

Figure 10 shows the before tax income of the farm over 10 years.

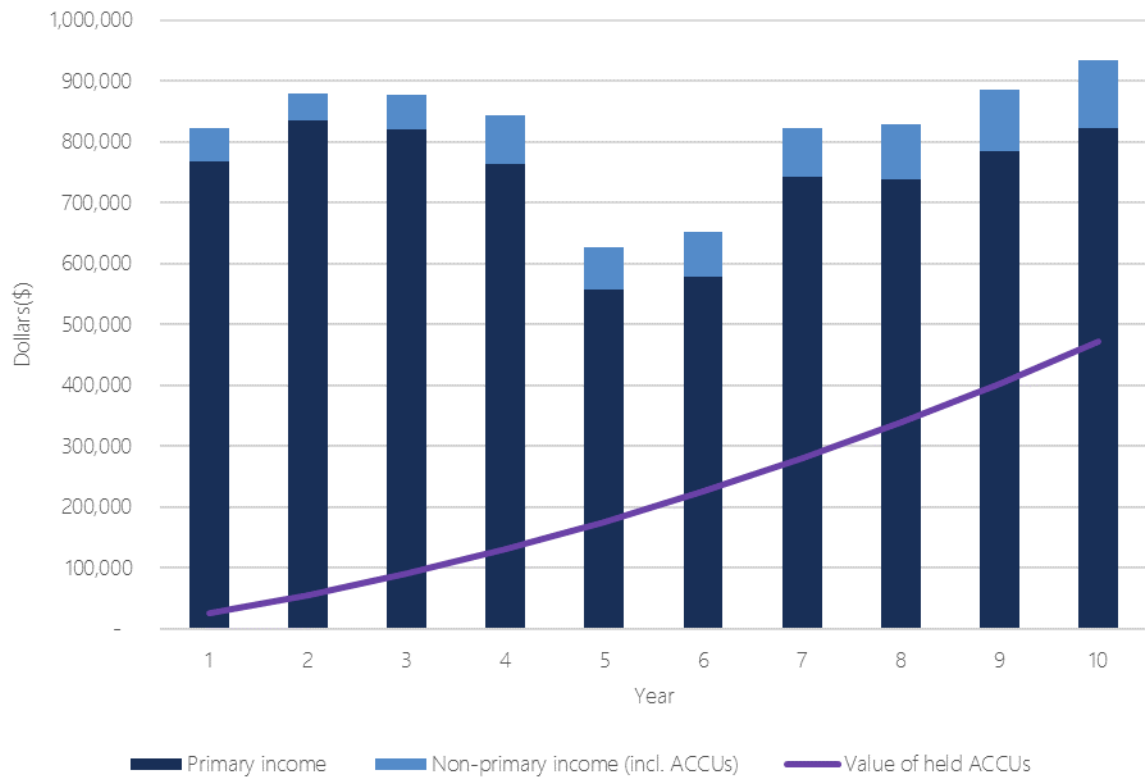


Figure 10 Assessable income and value of held ACCUs for case study 2 farm under current ACCU tax arrangements (central scenario)

Implications of proposed tax changes

Under proposed tax changes, ACCUs held by the farm are no longer treated as assessable income if they are not sold. Figure 11 shows that the farm’s assessable income drops by \$26,000 to \$69,000 each year, which is equivalent to the change in value of held ACCUs.

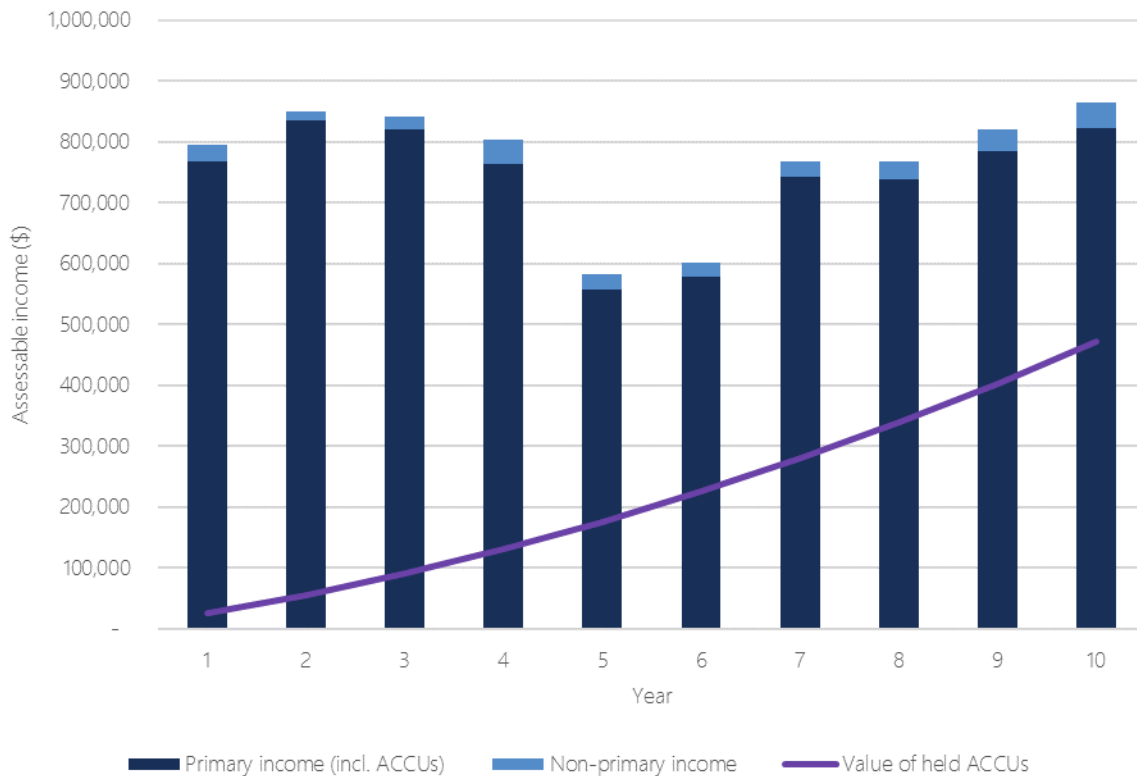


Figure 11 Assessable income and value of held ACCUs for case study 2 farm under proposed ACCU tax arrangements (central scenario)

Under the proposed tax arrangements, the farm will face an average annual tax saving of \$20,739 from Years 1 to 10. These changes are driven by the move from the rolling balance method for taxing ACCUs to the on-sale method.

Year	Net benefit of proposed changes	Year	Net benefit of proposed changes
1	\$10,619	6	\$21,179
2	\$12,895	7	\$24,321
3	\$15,160	8	\$26,613
4	\$17,376	9	\$29,143
5	\$18,894	10	\$31,196
Total		\$207,395	
Net present value (7% discount rate)		\$136,747	

Scenario analysis

The effects of the proposed tax changes can also be tested in a 'high benefit' scenario and a 'low benefit' scenario. These scenarios have been developed to better understand the range of potential

tax benefits the farm may receive. Changes to assumptions in these alternate scenarios are detailed in Table 14.

Table 13 Average annual net benefit received by case study 3 farm under proposed ACCU tax arrangements in alternate scenarios

Scenario	High-benefit	Central	Low-benefit
Average annual benefit from tax changes	\$39,946	\$20,740	\$6,614

Higher tax benefits in the high-benefit scenario are driven by a higher number of ACCUs generated by the project and higher ACCU price assumptions. These variables increase benefit received as the farm is able to avoid all taxes that would otherwise be levied on a larger balance of ACCUs under current tax arrangements.

Lower tax benefits in the low-benefit scenario are driven by a lower number of ACCUs generated by the project and lower ACCU price assumptions.

Tax treatment of ACCU surrender and relinquishment

This case study does not consider the tax treatment of ACCUs that are:

- surrendered in order to fulfill net-zero obligations or objectives, or
- relinquished in order to terminate a carbon farming project or as reparation for fraudulent conduct.

Under Section 420.30 of the Income Tax Assessment Act 1997 (Cth), if an entity (the transferor) transfers an ACCU to a Registry account held by another entity (the transferee) (including Commonwealth Registry accounts), the parties do not deal with each other at arm's length, and the transferee does not pay for the ACCUs or provide consideration equal in value to the market value of transferred ACCUs, the transferor is deemed to have received an amount equal to the market value of transferred ACCUs.

If voluntary surrender of ACCUs falls under Section 420.30 of the Income Tax Assessment Act 1997 (Cth), there would be no difference in tax paid by a farm business which voluntarily surrenders ACCUs as they are received and a farm business which sells ACCUs for income as they are received.

Summary

The high-income piggery assessed in this case study will receive significant benefits from the proposed tax changes. These include cash flow benefits due to the deferral of tax on held ACCUs in Years 1 to 10, and an overall tax saving of \$207,000 from Year 1 to Year 10. If a similar farm plans to hold ACCUs they receive from carbon farming over a long period of time, the proposed tax changes are likely to materially affect their decision to participate in carbon farming.

Summary of assumptions used in case study

Table 14 Case study 2 assumptions

Variable	Value		Source
Average farm cash income	Central	\$760,000	Aither analysis of ABARES farm survey data. Based on average farm cash income from 2011-2020 of Australian broadacre farms with over \$1,000,000 in total cash receipts per year (used as a proxy due to limited data on piggery financials). Rounded to the nearest \$10,000.
	High-benefit	\$760,000	
	Low-benefit	\$760,000	
Standard deviation of farm cash income	Central	\$80,000	Central scenario based on Aither calculations. Calculations based on farm income volatility in case study 3 and Aither 202019. Rounded to the nearest \$10,000. +/- 20% for high/low-benefit scenarios.
	High-benefit	\$96,000	
	Low-benefit	\$64,000	
Average off-farm income	Central	\$30,000	Central scenario based on Aither analysis of ABARES farm survey data. Based on average off-farm cash income from 2011-2020 of Australian broadacre farms with over \$1,000,000 in total cash receipts per year (used as a proxy due to limited data on piggery financials). Rounded to the nearest \$10,000. +/- 20% for high/low-benefit scenarios.
	High-benefit	\$36,000	
	Low-benefit	\$24,000	
Standard deviation of off-farm income	Central	\$10,000	Central scenario based on ABARES farm survey data and data from NFF National Survey (on-farm financial risk management project). +/- 20% for high/low-benefit scenarios.
	High-benefit	\$14,000	
	Low-benefit	\$6,000	
ACCUs generated per year	Central	1,542	Central scenario based on average annual ACCUs generated by a comparable effluent management project registered with the ERF. 30% of generated ACCUs assumed to be split with a carbon service provider. +/- 20% for high/low-benefit scenarios.
	High-benefit	1,850	
	Low-benefit	1,234	

¹⁹ Aither (2019). *Sub-Project 1: Insurance in the agricultural sector (On-farm Financial Risk Management Project)*. <https://nff.org.au/wp-content/uploads/2021/06/Sub-project-1-Insurance.pdf>

Case study 3 - Low income beef farm

This case study assesses the effects of proposed tax changes on a low income beef farm in New South Wales.

The farm receives an average of \$50,000 farm cash income per year and an average of \$70,000 in off-farm income per year outside of carbon farming investments. Farm cash income is highly variable as the farm exclusively produces beef. The farm is not incorporated and does not pay company tax.

The farm has previously invested in a 100ha reforestation project. The project is registered with the ERF and generates a steady supply of ACCUs. The farm expects to receive around 4,800 ACCUs per year from the project and prefers to sell them as they are received. The farm has undertaken the carbon farming project individually without the use of an aggregator or cooperative.

The farm does not hold a Farm Management Deposit (FMD) account.

The farm is eligible for tax averaging for primary producers but is not eligible for exemption from the non-commercial losses rule.

Implications of current tax arrangements (base case)

Under current tax arrangements the farm faces total annual taxes of between \$89,000 and \$75,000.

Figure 12 shows the before tax income of the farm over 10 years. On average, 82 per cent of the farm's income is classified as off-farm income, with a significant proportion of this income being ACCU income. This affects the tax benefits the farm is able to receive from income tax averaging.

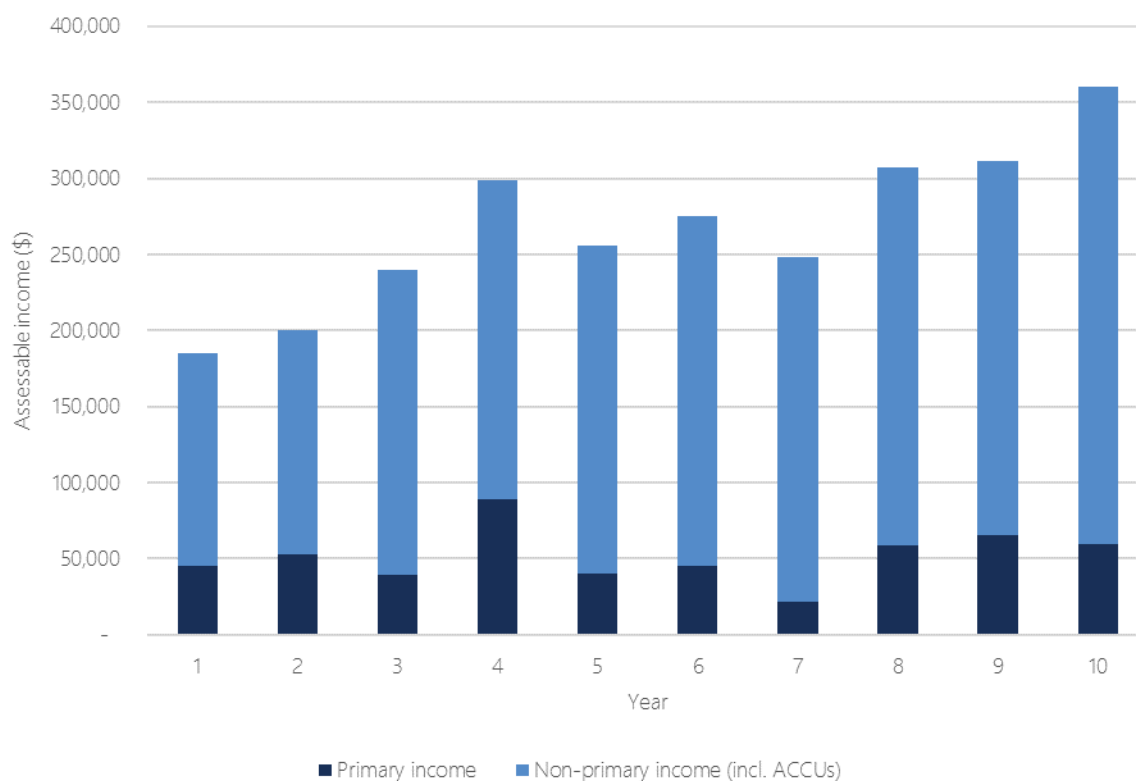


Figure 12 Assessable income for case study 3 farm under current ACCU tax arrangements

Implications of proposed tax changes

Under proposed tax changes, income from selling ACCUs is treated as primary income (Figure 13). This has a material effect on calculation of the farm's income averaging tax offset each year, which results in an average annual tax benefit of \$1,470. This benefit is small in comparison to average income the farm receives from selling ACCUs (\$159,456 per year, before tax).

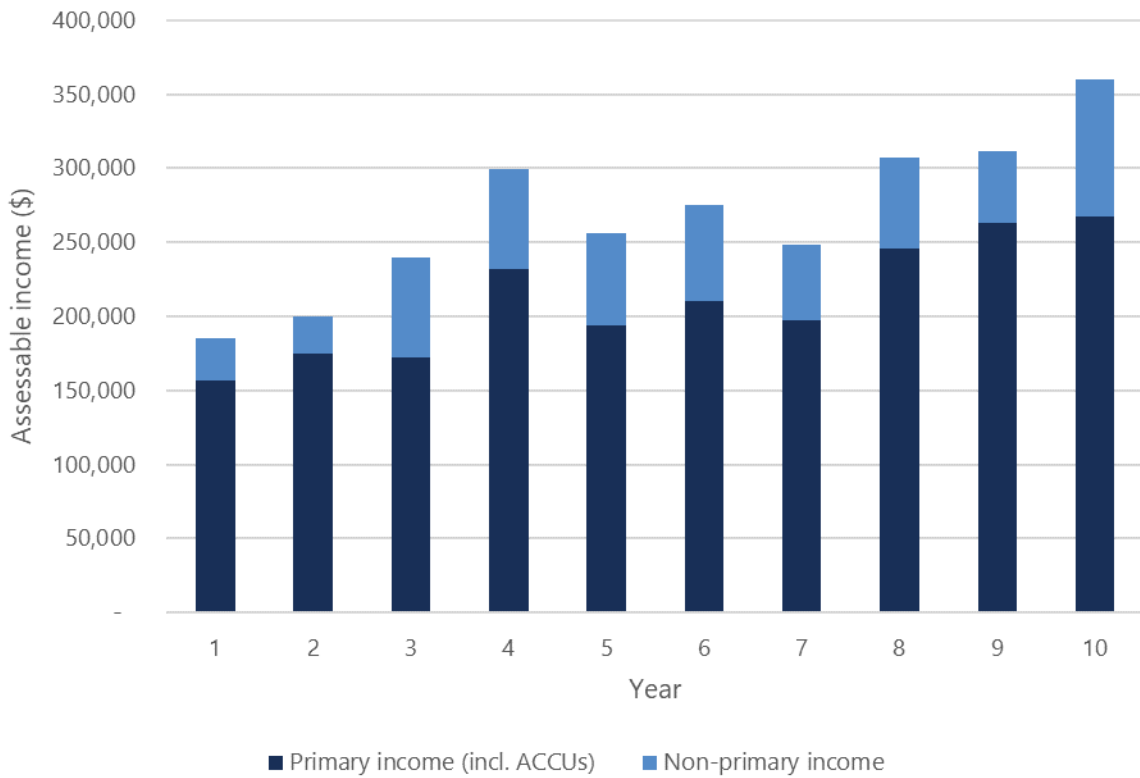


Figure 13 Assessable income for case study 3 farm under proposed ACCU tax arrangements

While proposed tax changes provide tax benefits (on average) to the beef farm, they also result in a small increase in income volatility. This is due to changes in the calculation of the income averaging offset. Table 15 shows that proposed tax changes result in the farm paying higher tax in low income years and lower tax in high income years.

Table 15 Net benefit to case study 3 farm from proposed tax changes in Years 1 to 10

Year	Net benefit of proposed changes	Year	Net benefit of proposed changes
1	-\$3,533	6	\$1,856
2	-\$1,570	7	-\$1,512
3	\$2,144	8	\$2,512
4	\$5,592	9	\$2,745
5	\$1,905	10	\$4,432
Total		\$14,570	
Net present value (7% discount rate)		\$8,204	

Scenario analysis

The effects of the proposed tax changes can also be tested in a 'high benefit' scenario and a 'low benefit' scenario. These scenarios have been developed to better understand the range of potential tax benefits the farm may receive. Changes to assumptions in these alternate scenarios are detailed in Table 17.

Table 16 Average annual net benefit received by case study 3 farm under proposed ACCU tax arrangements in alternate scenarios

Scenario	High-benefit	Central	Low-benefit
Average annual benefit from tax changes	\$3,497	\$1,457	\$7

Higher tax benefits in the high-benefit scenario are due to increased ACCU income and higher income volatility compared to the central scenario. These variables increase benefit received due to changes in the farm's income tax averaging calculation. Lower tax benefits in the low-benefit scenario are due to lower ACCU income and lower income volatility.

Summary

Under proposed tax changes, the low income beef farm assessed in this case study would receive a small tax benefit of \$1,457 per year (on average) under the central scenario.

This benefit is relatively small in comparison to the farm's annual ACCU income and the establishment costs of a reforestation project²⁰. This benefit is unlikely to affect a similar farm's decision to participate in carbon farming.

²⁰ Sudmeyer, R., Parker, J., Nath, T., et al. (2014) *Carbon farming in relation to Western Australian agriculture*. <https://library.dpird.wa.gov.au/cgi/viewcontent.cgi?article=1269&context=bulletins>

Summary of assumptions used in case study

Assumptions relating to farm and off-farm income have been tested for plausibility in consultation with the Cattle Council of Australia.

Table 17 Case study 3 assumptions

Variable	Value		Source
Average farm cash income	Central	\$50,000	Aither analysis of ABARES farm survey data. Based on average farm cash income from 2011-2020 of small Australian beef farms. Rounded to the nearest \$10,000.
	High-benefit	\$50,000	
	Low-benefit	\$50,000	
Standard deviation of farm cash income	Central	\$15,000	Central scenario based on ABARES farm survey data and data from NFF National Survey (on-farm financial risk management project). +/- 20% for high/low-benefit scenarios.
	High-benefit	\$18,000	
	Low-benefit	\$12,000	
Average off-farm income	Central	\$70,000	Central scenario based on Aither analysis of ABARES farm survey data. Based on average off-farm cash income from 2011-2020 of Australian sheep farms. Rounded to the nearest \$10,000. +/- 20% for high/low-benefit scenarios.
	High-benefit	\$84,000	
	Low-benefit	\$56,000	
Standard deviation of off-farm income	Central	\$15,000	Central scenario based on ABARES farm survey data and data from NFF National Survey (on-farm financial risk management project). +/- 20% for high/low-benefit scenarios.
	High-benefit	\$18,000	
	Low-benefit	\$12,000	
ACCUs generated per year	Central	4,847	High-benefit and low-benefit scenarios based on Carbon Feasibility Overview released by Dairy Australia and NSW DPI. Based on estimated annual carbon sequestration per hectare for an environmental planting project in South Gippsland and the Riverina, respectively and a project size of 100ha. Central scenario based on the average of yields under the high-benefit and low-benefit scenarios.
	High-benefit	8,074	
	Low-benefit	1,619	
Carbon farming cost per year	Central	\$3,500	Based on ongoing costs of \$25/ha/yr, \$1,000/yr in reporting costs, and a project size of 100ha. Based on Sudmeyer et al. (2014) and Kondinin Group (2015).
	High-benefit	\$3,500	
	Low-benefit	\$3,500	

Case study 4 - Low income horticulture farm

This case study assesses the effects of proposed tax changes on a low income vegetable farm in Queensland.

The farm produces vegetables and receives an average of \$110,000 farm cash income per year and an average of \$10,000 in off-farm income per year outside of carbon farming investments. Farm cash income is relatively volatile due to high production and price volatility. The farm is not incorporated and does not pay company tax.

The farm has previously invested in a small 25 ha reforestation project in a >550mm rainfall zone. The project is registered with the ERF through an aggregator, who receives all ACCUs and ACCU income generated by the project. In return, the farm receives an annual stipend from the aggregator via a revenue sharing model. The annual stipend is equal to 70 per cent of the proceeds from sale of ACCUs generated by the project in that year.

The farm holds a Farm Management Deposit (FMD) account and uses it regularly to defer tax and reduce the volatility of its total income. The farm's FMD has an initial balance of \$160,000. Generally, the farm prefers to use FMDs to constrain its total annual non-ACCU income so that it is only 10 per cent above or below the farm's long-term average non-ACCU income. However, the farm does not make FMD deposits in years where they pass the tax deductibility threshold for FMDs.

The farm is eligible for tax averaging for primary producers but is not eligible for exemption from the non-commercial losses rule.

Implications of current tax arrangements (base case)

Under current tax arrangements, the farm faces total annual taxes of between \$44,000 and \$33,000. They are also able to make tax deductible FMD contributions in every year because their total off-farm income is always below \$100,000. Because of this, they are able to use FMD contributions and withdrawals to manage income and tax volatility in every year (Figure 14).

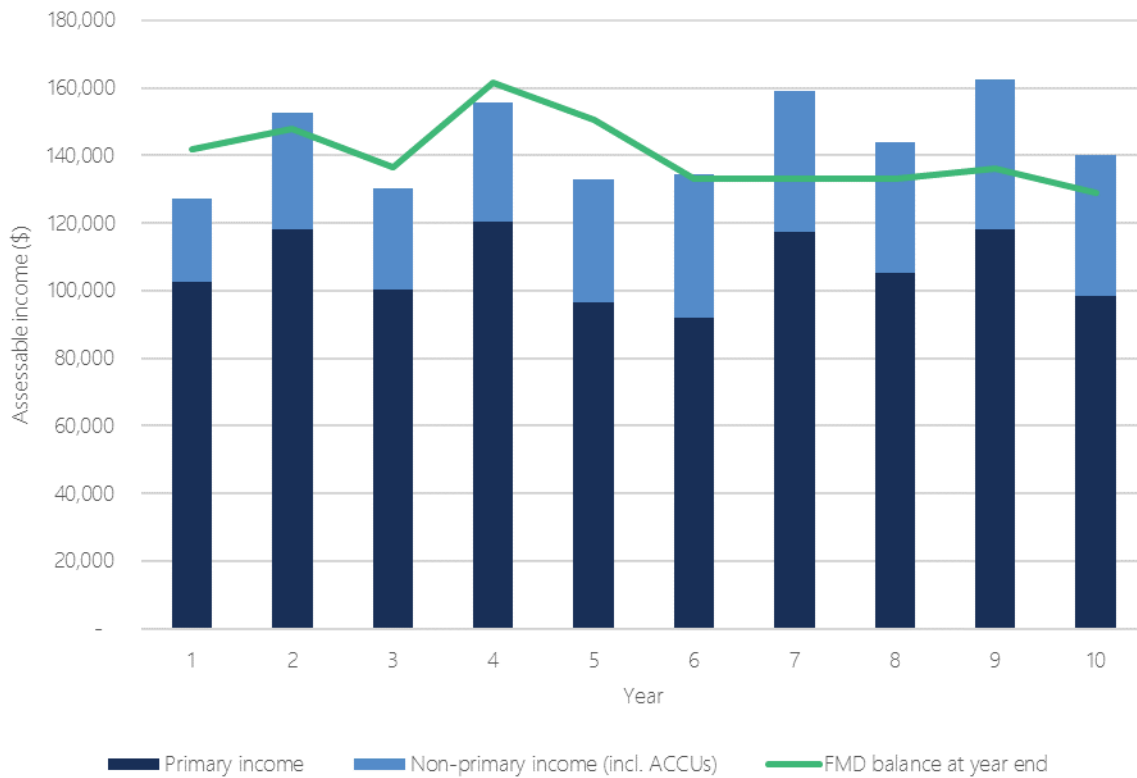


Figure 14 Assessable income and FMD balance for case study 4 farm under current ACCU tax arrangements (central scenario)

Implications of proposed tax changes

The implications of the proposed tax changes for the farm are dependent on specific changes to legislation that accompany the changes. Assuming revenue received from an aggregator continue to be classified as off-farm income, the farm is unlikely to receive material benefits from the changes.

The farm’s aggregator may receive some benefits due to the change from the rolling balance method of ACCU taxation to the on-sale method. However, assuming the aggregator is not redefined as a primary producer due to the proposed tax arrangements, they would not benefit from redefinition of ACCU income as farm income.

Interviews with CSPs who use a revenue sharing model suggest that they would receive no material benefits from the change to the on-sale method of ACCU taxation. Under proposed changes, these CSPs are likely to continue selling ACCUs in the year they are received.

Summary of assumptions used in case study

The following assumptions have been tested for plausibility and adjusted based on consultation with the Bowen Gumlu Growers Association.

Table 18 Case study 4 assumptions

Variable	Value	Source
Average farm cash income	\$110,000	Aither analysis of ABARES irrigation survey data. Based on average farm cash income from 2013-14 to 2015-16 of Australian horticulture farms in the Murray Darling Basin. Rounded to the nearest \$10,000.
Standard deviation of farm cash income	\$20,000	Based on consultation with Bowen Gumlu Growers Association.
Average off-farm income	\$10,000	Based on consultation with Bowen Gumlu Growers Association.
Standard deviation of off-farm income	\$5,000	Aither assumption
ACCUs generated per year (received by aggregator)	1,212	Based on Carbon Feasibility Overview released by Dairy Australia and NSW DPI. Based on average estimated annual carbon sequestration per hectare for an environmental planting project across South Gippsland and the Riverina, and a project size of 25ha.
Initial FMD balance	\$160,000	Aither analysis of FMD statistics (March 2022 quarter) published by DAFF Based on average value of an FMD deposit held by a farmer in the QLD horticulture industry. Rounded to the nearest \$10,000.

Case study 5 - High income sheep farm

This case study assesses the effects of proposed tax changes on a high-income sheep farm in south-west Victoria. The farm operates across 5,000 hectares.

The farm receives an average of \$610,000 farm cash income per year and an average of \$60,000 in off-farm income per year outside of carbon farming investments. Farm cash income is somewhat variable as it only produces sheep-meat, but not as variable as farm income in industries such as dryland winter cropping. The farm is not incorporated and does not pay company tax.

The farm has previously invested in a 100ha reforestation project. The project is registered with the ERF and generates a steady supply of ACCUs. The farm prefers to receive ACCUs annually and expects to receive around 4,800 ACCUs per year from the project. The farm has undertaken the carbon farming project individually without the use of an aggregator or cooperative.

The farm does not use or hold a Farm Management Deposit (FMD) account.

The farm is eligible for tax averaging for primary producers but is not eligible for exemption from the non-commercial losses rule.

Implications of current tax arrangements (base case)

Under current tax arrangements the farm faces total annual taxes of between \$530,000 and \$260,000.

Figure 15 shows the before tax income and value of ACCUs held by the farm over 10 years. Income is volatile and the farm receives very low income (compared to its average income) in Years 6 and 8.

The farmer prefers to sell ACCUs in the year they are generated each year, and does not hold any ACCUs. This is predominantly due to the tax liability they incur in the year ACCUs are generated, which acts as a disincentive to hold ACCUs for later years.

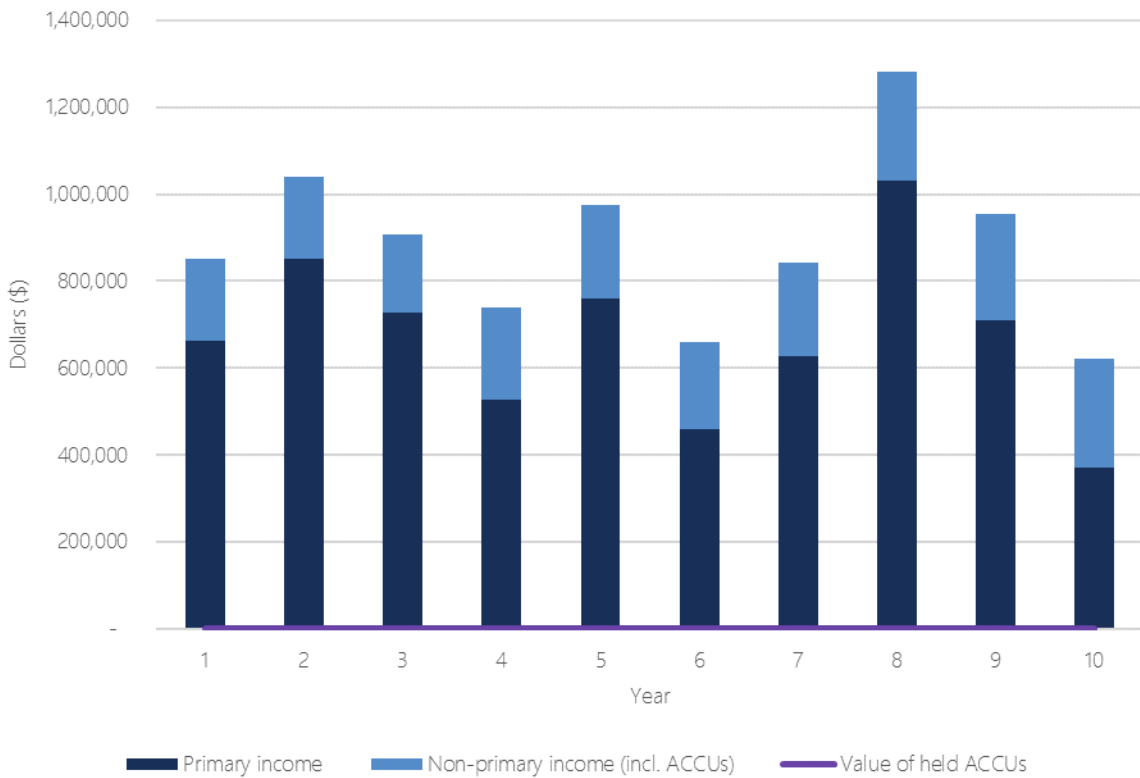


Figure 15 Assessable income and value of held ACCUs for case study 5 farm under current ACCU tax arrangements (central scenario)

Implications of proposed tax changes

Under proposed tax changes, the disincentive to hold ACCUs for multiple years is removed. As a result, the farm chooses to hold some ACCUs in high income years (Years 2, 5 and 8) and draw down on ACCUs in lower income years (Years 3, 4, 6, 9 and 10). This reduces the farm's income volatility over time and reduces downside in years where income is low due to drought or other external factors. The farm's balance of held ACCUs peaks in Year 8, when the farm chooses to hold \$171,000 worth of ACCUs.

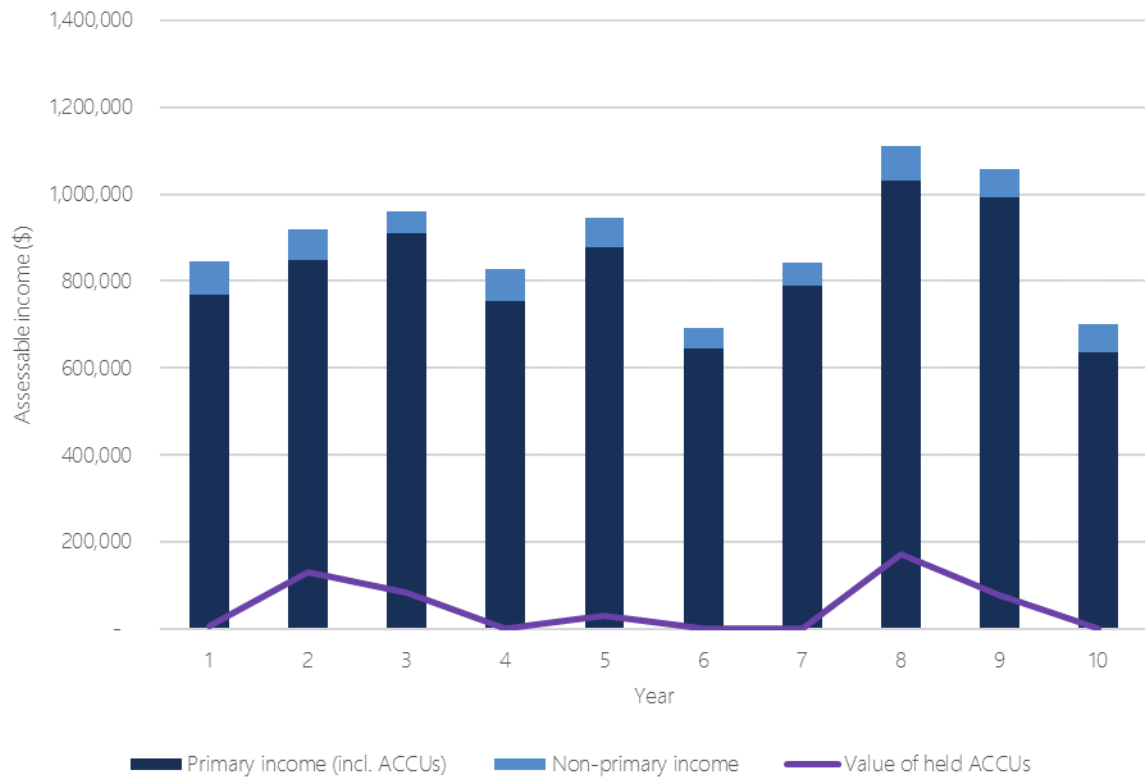


Figure 16 Assessable income and value of held ACCUs for case study 5 farm under proposed ACCU tax arrangements (central scenario)

In addition to reduced income volatility, the farm would receive an average of \$1,395 in net benefit per year under proposed tax changes. This is primarily due to the farm’s decision to sell some ACCUs multiple years after they are received, which allows the farm to receive a higher price when they do choose to sell. Benefits from delayed ACCU sale are partially offset by higher taxes on-sale; on average, the farm pays \$1,412 more in tax per year under the tax changes.

A breakdown of net benefits to the farm in each year is shown in Table 19. The farm pays less tax in years where they hold some or all of the ACCUs they receive (Years 2 and 8) and more tax in years where they sell down (Years 3, 4, 6, 9 and 10).

Table 19 Net benefit to case study 5 farm from proposed tax changes in Years 1 to 10

Year	Net benefit of proposed changes	Year	Net benefit of proposed changes
1	\$2,629	6	-\$13,767
2	\$52,501	7	-\$1,039
3	-\$12,841	8	\$72,411
4	-\$32,337	9	-\$33,723
5	\$13,167	10	-\$33,055
Total		\$13,946	
Net present value (7% discount rate)		\$19,726	

Scenario analysis

The effects of the proposed tax changes can also be tested in a 'high benefit' scenario and a 'low benefit' scenario. These scenarios have been developed to better understand the range of potential tax benefits a low-income dairy farm may receive. Changes to assumptions in these alternate scenarios are detailed in Table 21.

Table 20 Average annual net benefit received by case study 6 farm under proposed ACCU tax arrangements in alternate scenarios

Scenario	High-benefit	Central	Low-benefit
Average annual benefit from tax changes	\$26,401	\$1,515	-\$1

The farm receives significant benefits from proposed tax changes in the high-benefit scenario in comparison to the low-benefit and central scenarios (Table 20). This is because the farm is more willing to hold ACCUs each year under proposed tax changes, compared to the other scenarios. This leads to a growing balance of held ACCUs and deferral of tax that would otherwise be levied on them under current tax arrangements. The farm is also able to use some of its held ACCUs to increase the farm's total income in Years 4, 6, 7, 9 and 10 when its income is below average, reducing income volatility.

These effects can be observed in Figure 17 and Figure 18. In Year 7, under proposed tax changes, the farm holds an additional \$547,000 worth of ACCUs compared to current tax arrangements.

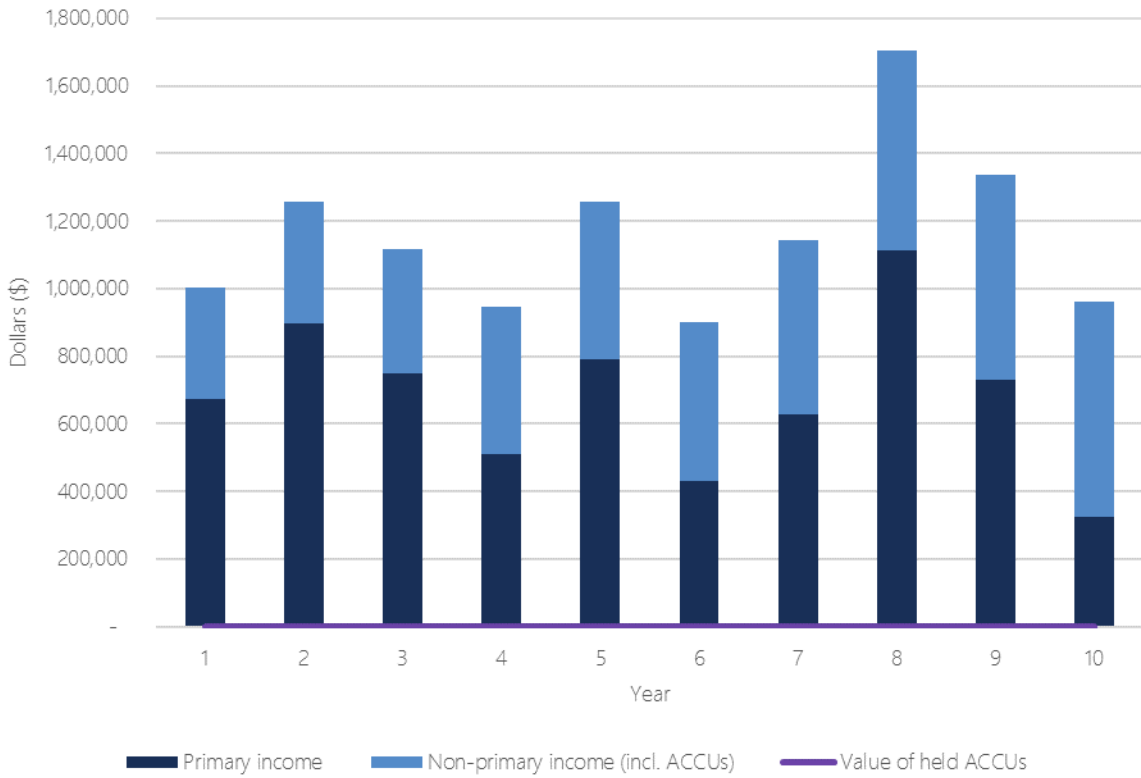


Figure 17 Assessable income, FMD balance and value of held ACCUs for case study 5 farm under current ACCU tax arrangements (high-benefit scenario)

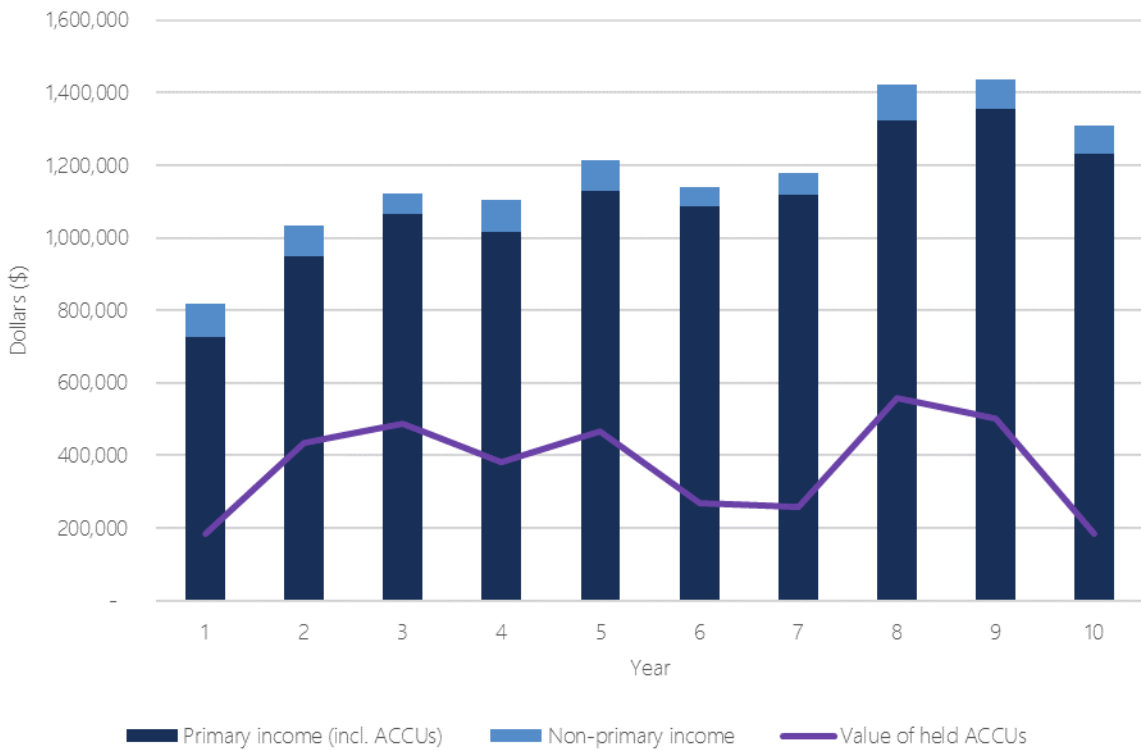


Figure 18 Assessable income, FMD balance and value of held ACCUs for case study 5 farm under proposed ACCU tax arrangements (high-benefit scenario)

Summary

The high-income sheep farm assessed in this case study will receive some benefits from the proposed tax changes. In the central scenario, these benefits include an average benefit of \$1,515, and a material reduction in the farm's income volatility.

A key benefit of the proposed tax changes for this farm relates to increased incentive to hold ACCUs to smooth income in future years. Over the long term, a stockpile of held ACCUs will allow the farm to manage prolonged periods of low income more effectively.

Summary of assumptions used in case study

Assumptions relating to farm income streams have been tested for plausibility in consultation with Sheep Producers Australia.

Table 21 Case study 5 assumptions

Variable	Value		Source
Average farm cash income	Central	\$610,000	Aither analysis of ABARES farm survey data. Based on average farm cash income from 2011-2020 of Australian sheep farms with over \$1,000,000 in total annual cash receipts. Rounded to the nearest \$10,000.
	High-benefit	\$610,000	
	Low-benefit	\$610,000	
Standard deviation of farm cash income	Central	\$130,000	Central scenario based on ABARES farm survey data and data from NFF National Survey (on-farm financial risk management project). +/- 20% for high/low-benefit scenarios.
	High-benefit	\$156,000	
	Low-benefit	\$104,000	
Average off-farm income	Central	\$60,000	Central scenario based on Aither analysis of ABARES farm survey data. Based on average off-farm cash income from 2011-2020 of Australian sheep farms with over \$1,000,000 in total annual cash receipts. Rounded to the nearest \$10,000. +/- 20% for high/low-benefit scenarios.
	High-benefit	\$72,000	
	Low-benefit	\$48,000	
Standard deviation of off-farm income	Central	\$10,000	Central scenario based on ABARES farm survey data and data from NFF National Survey (on-farm financial risk management project). +/- 20% for high/low-benefit scenarios.
	High-benefit	\$14,000	
	Low-benefit	\$6,000	
ACCUs generated per year	Central	4,847	High-benefit and low-benefit scenarios based on Carbon Feasibility Overview released by Dairy Australia and NSW DPI. Based on estimated annual carbon sequestration per hectare for an environmental planting project in South Gippsland and the Riverina, respectively and a project size of 100ha. Central scenario based on the average of yields under the high-benefit and low-benefit scenarios.
	High-benefit	8,074	
	Low-benefit	1,619	
Carbon farming cost per year	Central	\$3,500	Based on ongoing costs of \$25/ha/yr, \$1,000/yr in reporting costs, and a project size of 100ha. Based on Sudmeyer et al. (2014) and Kondinin Group (2015).
	High-benefit	\$3,500	
	Low-benefit	\$3,500	
	Central	0.5	

Variable	Value		Source
Risk aversion coefficient	High-benefit	0.4	Aither assumptions – see Appendix B for further information.
	Low-benefit	0.6	

Case study 6 - Low income dairy farm

This case study assesses the effects of proposed tax changes on a low-income dairy farm in New South Wales.

The farm receives an average of \$180,000 farm cash income per year and an average of \$30,000 in off-farm income per year outside of carbon farming investments. Farm cash income is somewhat variable as the business is small and only produces dairy products. However, its income is not as variable as farm income in industries such as dryland winter cropping. The farm is not incorporated and does not pay company tax.

The farm has previously invested in a 30ha reforestation project in a >550mm rainfall zone. The project is registered with the ERF and generates a steady supply of ACCUs. The farm prefers to receive ACCUs annually and expects to receive around 1,600 ACCUs per year from the project. The farm has undertaken the carbon farming project individually without the use of an aggregator or cooperative.

The farm intends to sell all ACCUs it receives for profit. However, the farm may be willing to hold some ACCUs in some years if their overall income is higher than expected, and then sell down on this balance when their income is low. More information about the farm's ACCU selling strategy is detailed in Appendix B.

The farm holds a Farm Management Deposit (FMD) account and uses it regularly to defer tax and reduce the volatility of its total income. The farm's FMD has an initial balance of \$100,000. Generally, the farm prefers to use FMDs to constrain its total annual income so that it is only 10 per cent above or below the farm's long-term average income. However, the farm does not make FMD deposits in years where they pass the tax deductibility threshold for FMD.

The farm is eligible for tax averaging for primary producers. The farm is also eligible for exemption from the non-commercial losses rule, but does not take advantage of the exemption because they do not make a loss in any year during the analysis period.

Implications of current tax arrangements (base case)

Under current tax arrangements the farm faces total annual taxes of between \$95,000 and \$81,000.

Figure 19 shows the before tax income, FMD balance and value of held ACCUs on the farm over 10 years.

The farmer prefers to sell ACCUs in the year they are generated each year, and does not hold any ACCUs. This is predominantly due to the tax liability they incur in the year ACCUs are generated, which acts as a disincentive to hold ACCUs for later years.

The farm is eligible for tax deductible FMDs in all years and is able to consistently use their FMD account to smooth their income.



Figure 19 Assessable income, FMD balance and value of held ACCUs for case study 6 farm under current ACCU tax arrangements (central scenario)

Implications of proposed tax changes

Under proposed tax changes, the farm continues to be eligible for tax deductible FMDs. Figure 20 shows that there are no changes to the farm's total before tax income or FMD balance.

The farm also still prefers to sell all the ACCUs they receive in most years. The farm holds a small portion of ACCUs from Year 2 to Year 4 (worth around \$5,500 to \$3,000) before selling down in Year 5.



Figure 20 Assessable income, FMD balance and value of held ACCUs for case study 6 farm under proposed ACCU tax arrangements (central scenario)

Benefits due to changes in tax payable are immaterial. Table 22 shows that tax payable slightly increases or slightly decreases each year under proposed tax changes. The larger changes in Years 2 and 5 are predominantly driven by changes in the number of ACCUs sold in these years. Changes in other years are driven by a larger averaging component (a variable used to calculate a farm’s total tax averaging offset) under proposed tax changes.

Table 22 Net tax benefit to case study 6 farm from proposed tax changes in Years 1 to 10

Year	Net benefit of proposed changes	Year	Net benefit of proposed changes
1	\$106	6	\$186
2	\$2,251	7	\$52
3	-\$222	8	-\$807
4	\$704	9	-\$619
5	-\$1,177	10	-\$381
Total		\$94	
Net present value (7% discount rate)		\$739	

Scenario analysis

The effects of the proposed tax changes can also be tested in a 'high benefit' scenario and a 'low benefit' scenario. These scenarios have been developed to better understand the range of potential tax benefits a low-income dairy farm may receive. Changes to assumptions in these alternate scenarios are detailed in Table 24.

Table 23 Average annual net benefit received by case study 6 farm under proposed ACCU tax arrangements in alternate scenarios

Scenario	High-benefit	Central	Low-benefit
Average annual benefit from tax changes	\$15,819	\$9	-\$23

The farm receives significant benefits from proposed tax changes in the high-benefit scenario in comparison to the low-benefit and central scenarios (Table 23). This is because:

- Unlike in the low-benefit and central scenarios, the farm is always over the tax deductible FMD threshold under current tax arrangements in the high-benefit scenario. The proposed changes allow the farm to make use of their FMD to smooth income and defer tax.
- The farm is more willing to hold ACCUs each year under proposed tax changes, compared to the other scenarios. This leads to a growing balance of held ACCUs and deferral of tax that would otherwise be levied on them under current tax arrangements.
- The farm is also able to use some of its held ACCUs to increase the farm's total income in Years 8, 9 and 10 when its income is below average, reducing income volatility.
- These effects can be observed in Figure 21 and Figure 22. In Year 7, under proposed tax changes, the farm has \$118,000 more in their FMD account and holds an additional \$143,000 worth of ACCUs compared to current tax arrangements.

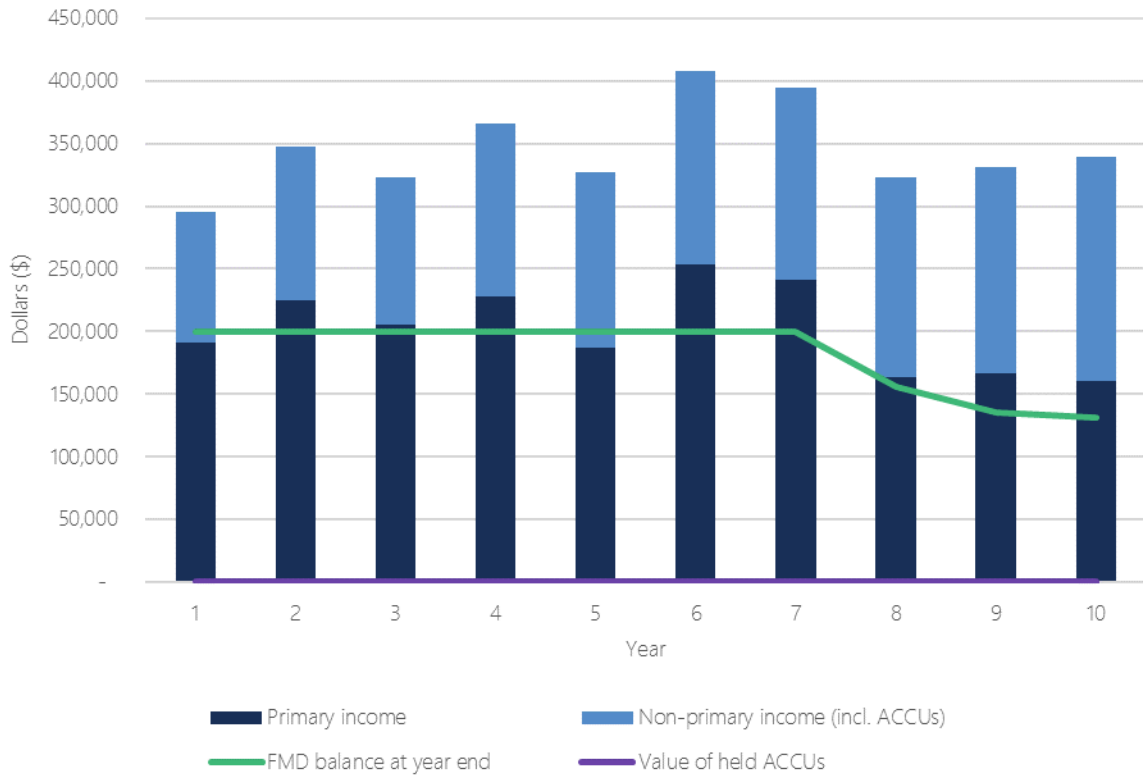


Figure 21 Assessable income, FMD balance and value of held ACCUs for case study 6 farm under current ACCU tax arrangements (high-benefit scenario)

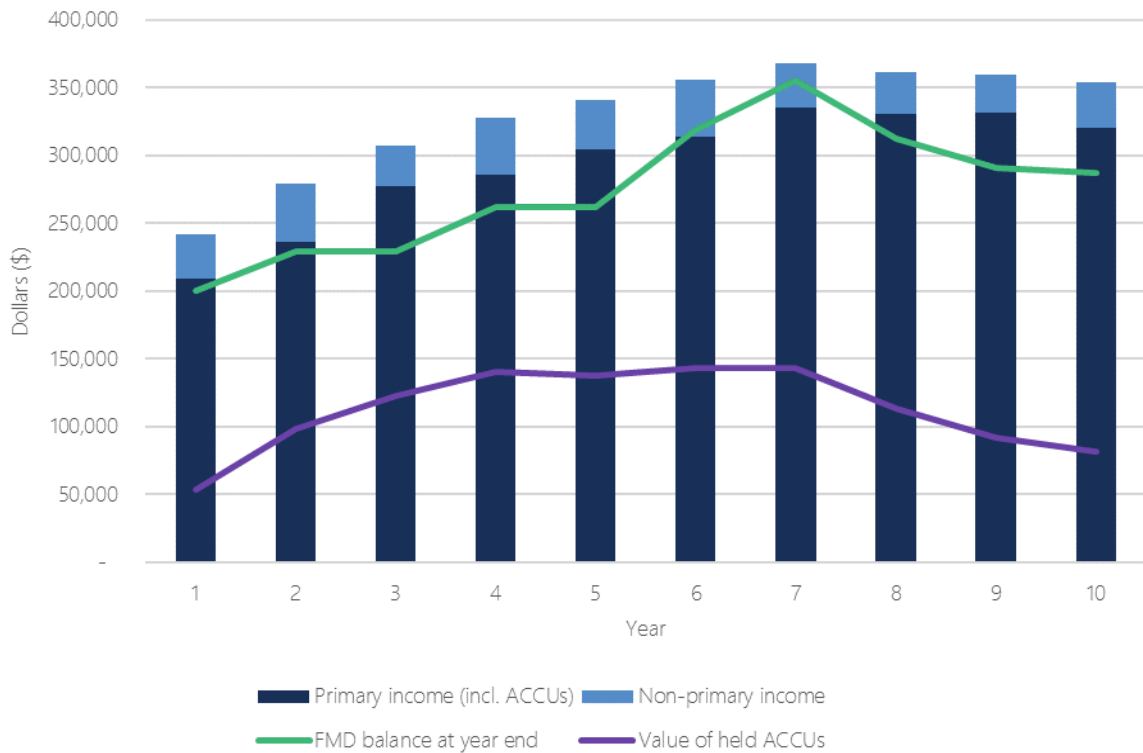


Figure 22 Assessable income, FMD balance and value of held ACCUs for case study 6 farm under proposed ACCU tax arrangements (high-benefit scenario)

Summary

In most circumstances, the low-income dairy farm will not be materially affected by the tax changes. The farm may receive significant tax benefits from the tax changes if they:

- Use an FMD and routinely cross the tax deductibility threshold for FMDs, and/or
- Are willing to hold ACCUs for multiple years to smooth income in drought years.
- If a similar farm meets these criteria, the proposed tax changes may result in

Summary of assumptions used in case study

The following assumptions have been tested for plausibility in consultation with Dairy Australia.

Table 24 Case study 6 assumptions

Variable	Value		Source
Average farm cash income	Central	\$180,000	Aither analysis of ABARES farm survey data. Based on average farm cash income from 2011-2020 of Australian dairy farms. Rounded to the nearest \$10,000.
	High-benefit	\$180,000	
	Low-benefit	\$180,000	
Standard deviation of farm cash income	Central	\$40,000	Central scenario based on ABARES farm survey data and data from NFF National Survey (on-farm financial risk management project). +/- 20% for high/low-benefit scenarios.
	High-benefit	\$48,000	
	Low-benefit	\$32,000	
Average off-farm income	Central	\$30,000	Central scenario based on Aither analysis of ABARES farm survey data. Based on average off-farm cash income from 2011-2020 of Australian dairy farms. Rounded to the nearest \$10,000. +/- 20% for high/low-benefit scenarios.
	High-benefit	\$36,000	
	Low-benefit	\$24,000	
Standard deviation of off-farm income	Central	\$5,000	Central scenario based on ABARES farm survey data and data from NFF National Survey (on-farm financial risk management project). +/- 20% for high/low-benefit scenarios.
	High-benefit	\$6,000	
	Low-benefit	\$4,000	
ACCUs generated per year	Central	1,454	High-benefit and low-benefit scenarios based on Carbon Feasibility Overview released by Dairy Australia and NSW DPI. Based on estimated annual carbon sequestration per hectare for an environmental plantings project in South Gippsland and the Riverina, respectively and a project size of 30ha. Central scenario based on the average of yields under the high-benefit and low-benefit scenarios.
	High-benefit	2,422	
	Low-benefit	486	
Carbon farming cost per year	Central	\$1,750	Based on ongoing costs of \$25/ha/yr, \$1,000/yr in reporting costs, and a project size of 30ha. Based on Sudmeyer et al. (2014) and Kondinin Group (2015).
	High-benefit	\$1,750	
	Low-benefit	\$1,750	
Risk aversion coefficient	Central	0.5	Aither assumptions – see Appendix B for further information.
	High-benefit	0.4	
	Low-benefit	0.6	
	Central	\$100,000	

Variable	Value		Source
Initial FMD balance	High-benefit	\$100,000	Aither analysis of FMD statistics (March 2022 quarter) published by DAFF. Based on average value of an FMD deposit held by a farmer in the NSW dairy industry. Rounded to the nearest \$10,000.
	Low-benefit	\$100,000	

Appendix B - Technical documentation

Dynamic ACCU selling strategy

Table 25 Indices for dynamic ACCU selling strategy

Index	Description
t	Element of the set of periods (years)

Table 26 Parameters for dynamic ACCU selling strategy

Parameter	Description
f_t	Farm income before tax in period t
of_t	Off-farm income before tax in period t
V_t	Market value of ACCUs in period t
m_t	Cost of carbon farming project in period t
a	Parameter describing farm business' relative preferences for after-tax income in period t and $t + 1$. Constrained to $0 \leq a \leq 1$. A 1% increase in after-tax income in period t results in an $a\%$ increase in U_t . A 1% increase in after-tax income in period $t + 1$ results in a $(1 - a)\%$ increase in U_t .
g_t	ACCUs generated by carbon farming project in period t

Table 27 Variables for dynamic ACCU selling strategy

Variable	Description
c_t	ACCUs sold in period t
FMD_t	Net FMD contributions/withdrawals (+/-) in period t
p_t	Tax payable on assessable income in in period t
s_t	Stock of ACCUs held at start of period t

The hypothetical farm businesses assessed in case studies 5 and 6 employ a dynamic ACCU selling strategy. When using this strategy, these farm businesses make iterative decisions about how many ACCUs to sell and hold in each year based on a 2-period Cobb-Douglas utility function.

A farm business in period t chooses the value of c_t and c_{t+1} which maximises U_t , where U_t is defined as:

$$\max_{c_t, c_{t+1}} U_t = (f_t + of_t + V_t c_t - m_t - FMD_t - p_t)^a [E(f_{t+1}) + E(of_{t+1}) + E(V_{t+1})c_{t+1} - E(m_{t+1}) - E(p_{t+1})]^{1-a}$$

The first term is equal to the farm's actual after-tax income in period t to the power of a . The second term is equal to the farm's expected actual after-tax income in period $t + 1$ to the power of $1 - a$.

c_t and c_{t+1} are subject to the following constraints:

$$\begin{aligned} c_t + c_{t+1} &= s_t + E(g_{t+1}) \\ 0 &\leq c_t \leq s_t \\ E(g_{t+1}) &\leq c_{t+1} \leq s_t + E(g_{t+1}) \end{aligned}$$

Farm businesses cannot observe future farm income and off-farm income, therefore $E(f_{t+1})$ and $E(of_{t+1})$ are equal to the farm's long-term average farm income and off-farm income respectively. For simplicity, it is assumed that farmers can observe the ACCU price in the next period:

$$E(V_{t+1}) = V_{t+1}$$

the cost of their carbon farming project in the next period:

$$E(m_{t+1}) = m_{t+1}$$

and the number of ACCUs that will be generated by their carbon farming project in the next period:

$$E(g_{t+1}) = g_{t+1}$$

Assumed farmer preferences for income in current and future period

The parameter a describes a farm business' relative preferences for income in the current period and expected income in the next period. As the value of a approaches zero, a farm business will be more willing to sacrifice ACCU income in the current period for expected income in the next period.

Table 28 Assumed value of a , by case study scenario

Case study scenario	Assumed value of a	Implication for farmer ACCU selling behaviour
High benefit	0.4	Farmer will often be willing to hold ACCUs and will sometimes be willing to sell down on their ACCU balance
Central	0.5	Farmer will sometimes be willing to hold ACCUs in and will often be willing to sell down on their ACCU balance
Low benefit	0.6	Farmer will not be willing to hold ACCUs in most circumstances and are almost always willing to sell down on their ACCU balance

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