



## Climate-smart farm planning and thinking

*Discovery and exploration of carbon farming opportunities for the farm: LOOC-C*

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@DrCCarbon





*“Give ‘em a tool to make it easy to get into the carbon market with a project”*



Au Farm



Carbon Project Options

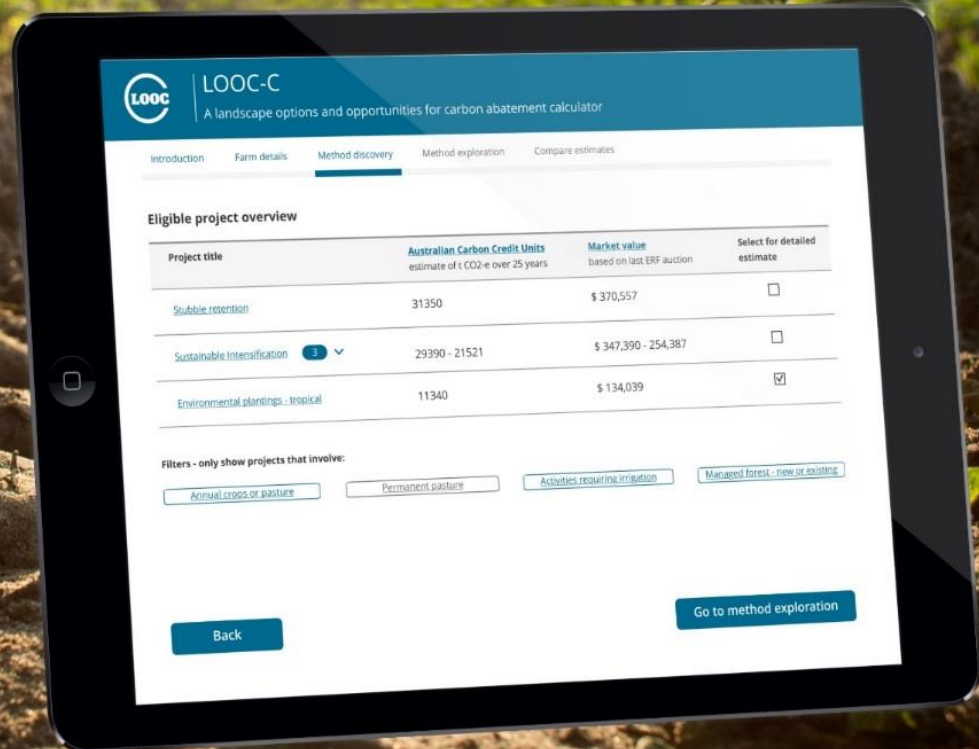


Carbon Credits  
(ACCUs)



Nat'l Sustblty  
Goals (NSGs)

# 'LOOC-C': Landscape options and opportunities for carbon abatement-calculator



LOOC-C

A landscape options and opportunities for carbon abatement calculator

Introduction Farm details **Method discovery** Method exploration Compare estimates

## Eligible project overview

Project title	Australian Carbon Credit Units estimate of t CO <sub>2</sub> -e over 25 years	Market value based on last ERF auction	Select for detailed estimate
<a href="#">Stubble retention</a>	31350	\$ 370,557	<input type="checkbox"/>
<a href="#">Sustainable Intensification</a> 	29390 - 21521	\$ 347,390 - 254,387	<input type="checkbox"/>
<a href="#">Environmental plantings - tropical</a>	11340	\$ 134,039	<input checked="" type="checkbox"/>

Filters - only show projects that involve:

[Annual crops or pasture](#)

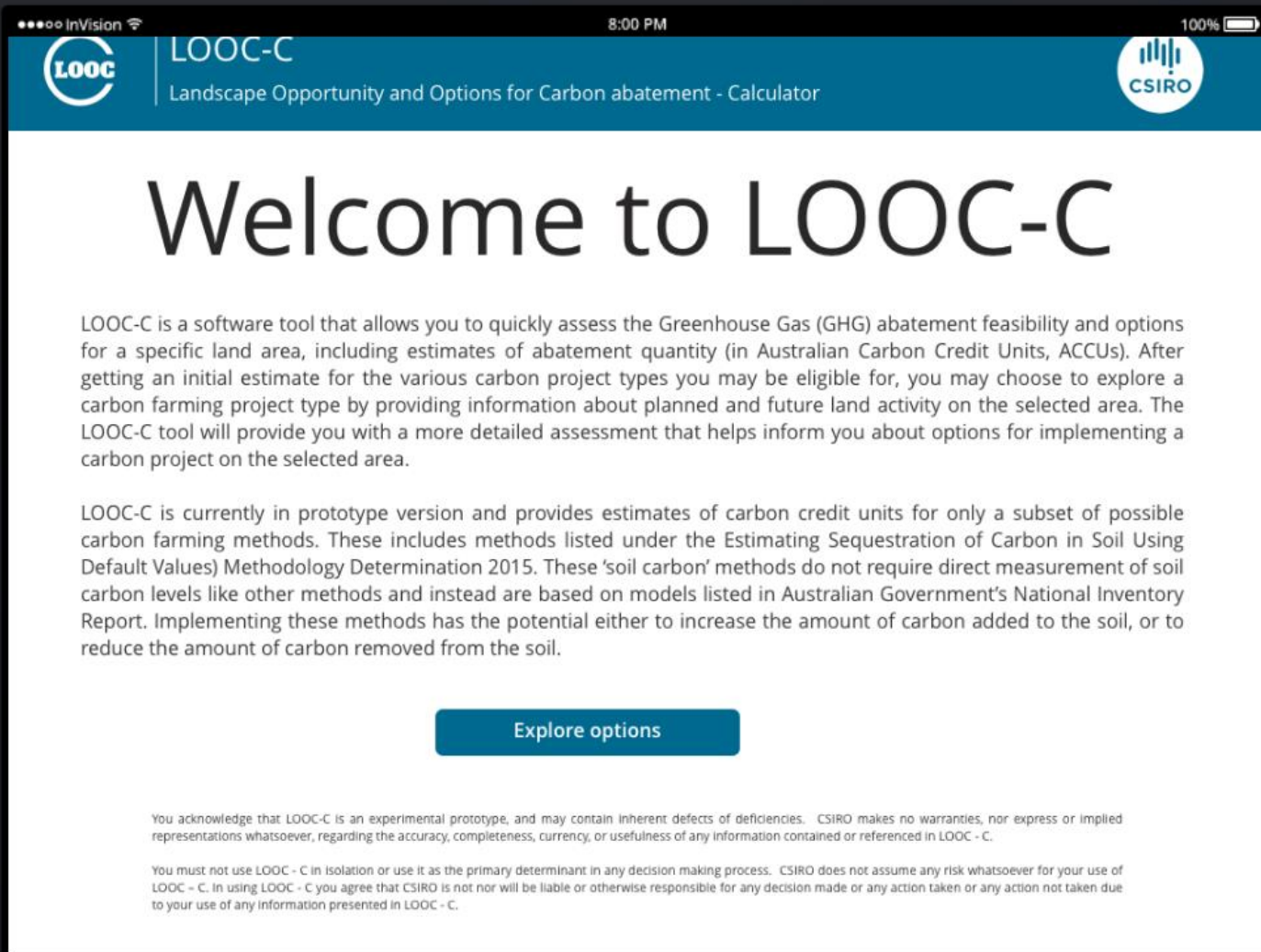
[Permanent pasture](#)

[Activities requiring irrigation](#)

[Managed forest - new or existing](#)

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## Project location

Identify the land for which you would like to determine the eligibility to participate in a carbon project, by indicating the corners of a polygon on the map.

This will be the proposed area for a carbon farming project and it is called the Carbon Estimation Area (CEA). Activities on the CEA must be managed uniformly over the duration of the project, which is 25 years or more.



## Areas to exclude from the carbon project land

Does the proposed CEA include any of the following areas? Select all that apply.

### Areas to exclude from the carbon project land

Does the proposed CEA include any of the following areas? Select all that apply.

- |   |  |
|---|--|
| <input type="checkbox"/> Forests          | <input type="checkbox"/> Native forest that has been cleared in the past 5 years |
| <input type="checkbox"/> Wetlands         | <input type="checkbox"/> Wetlands that have been drained in the past 5 years     |
| <input checked="" type="checkbox"/> Roads | <input checked="" type="checkbox"/> Settlements                                  |

What percentage of the land includes excluded areas

### Production system previously used on the carbon project land

Did the CEA-land have any of the following production systems during the past 5 years?

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Crop           | <input type="checkbox"/> Cotton        |
| <input type="checkbox"/> Crop and pasture rotation | <input type="checkbox"/> Vegetables    |
| <input type="checkbox"/> Pasture                   | <input type="checkbox"/> Horticulture  |
| <input type="checkbox"/> Sugar cane                | <input type="checkbox"/> Native forest |

### Irrigation on the carbon project land

Has irrigation been applied to the CEA-land during the past 5 years?

- ☒ Yes ☐ No

### Fertiliser on the carbon project land

Has synthetic fertiliser (Nitrogen) or urea been applied to the CEA-land during the past 5 years?



LOOC-C

Landscape Opportunity and Options for Carbon abatement - Calculator

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### Project location

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| <input checked="" type="checkbox"/> Roads | <input checked="" type="checkbox"/> Settlements                                  |

What percentage of the land includes excluded areas  Total CEA-land area selected **300** ha

### Production system previously used on the carbon project land

Did the CEA-land have any of the following production systems during the past 5 years?

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Crop           | <input type="checkbox"/> Cotton        |
| <input type="checkbox"/> Crop and pasture rotation | <input type="checkbox"/> Vegetables    |
| <input type="checkbox"/> Pasture                   | <input type="checkbox"/> Horticulture  |
| <input type="checkbox"/> Sugar cane                | <input type="checkbox"/> Native forest |

### Irrigation on the carbon project land

Has irrigation been applied to the CEA-land during the past 5 years?

☒ Yes ☐ No

### Fertiliser on the carbon project land

Has synthetic fertiliser (Nitrogen) or urea been applied to the CEA-land during the past 5 years?

☒ Yes ☐ No

### Lime on the carbon project land

Has lime been applied to the CEA-land during the past 5 years?

☐ Yes ☒ No

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LOOC-C

Landscape Opportunity and Options for Carbon abatement - Calculator

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## Method discovery

This is a list of the possible carbon project types and an initial estimate of abatement units called Australian Carbon Credit Units (ACCUs) for each project type. ACCUs are the units available for trade on the government-sponsored auction. These results are based on the farm details provided and the emission factor-based methods that are coded into the tool (This version includes soil-carbon methods). You may select one project for method exploration; after providing details about the historic and planned use of the land shape, the LOOC-C tool will provide a more detailed estimate of abatement activity. To save this page, select the 'Save as PDF' or 'Share' button.

Information provided in the project overviews is based on excerpts taken from the Emission Reduction Fund's website. The team has tried to provide basic details about the various methods and what's required as part of the application and project. [Explanatory Statement about soil carbon methods](#)

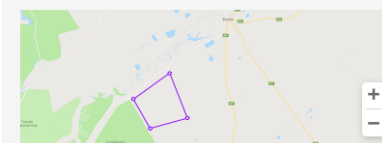
Project type	ACCU estimate t CO <sub>2</sub> -e over 25 years	ACCU estimate t CO <sub>2</sub> -e per ha over 25 years	Select one for detailed estimate
<a href="#">Conversion to Pasture</a>	4,807	16	<input checked="" type="radio"/>
<a href="#">Environmental &amp; mallee plantings</a>	4,300 - 2,152	14 - 7	<input type="radio"/>
<a href="#">Human induced regrowth</a>	2,009	7	<input type="radio"/>

### Recommendation:

Use these filters to narrow down the possible projects to explore. Select only those production systems that you are interested in using with a project over the next 25 years. Turning filters off (greyed out) will reduce the number of questions required for the detailed estimate.

[Annual crop or pasture](#)[Permanent pasture](#)[Activities requiring irrigation](#)[Managed forest - new or existing](#)

Total CEA-land area selected

**300** ha[Save as PDF](#)[Share](#)[Back](#)[Next](#)



# Carbon Estimation Tool

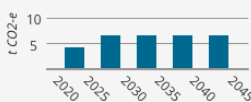
Find out what carbon farming projects you are eligible for

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## Method discovery

This is a list of the possible carbon project types and an initial estimate of abatement units (ACCUs) for each. [ACCUs](#) are the units available for sale on the government-sponsored auction. The latest auction prices are listed on the [ERF website](#).

These results are based on the farm details provided and the emission factor-based methods that are coded into the tool. You may select one project for method exploration: after providing details about the historic and planned use of the land shape, the LOOC-C tool will provide a more detailed estimate of abatement activity.

Project title	Australian Carbon Credit Units estimate of t CO <sub>2</sub> -e over 25 years	Select one for detailed estimate														
<a href="#">Stubble retention</a>	31,350	<input type="radio"/>														
<div><div>Project overview</div><p>Stubble retention project management activities keep biomass as crop residues in the field, where previously they were removed by baling or burning (but not by grazing). Stubble retention can only be run on land that is already cropped (Section 39).</p><p>The amount of carbon sequestered in the soil is calculated based on the project's direct management actions, such as retaining stubble. However, the change in emissions from sources associated with the project must also be calculated. The emissions sources include livestock, synthetic fertiliser, application of lime, crop residues (including diesel use for tillage) and fuel and electricity used for irrigation.</p></div> <div><div>Project requirements</div><ul style="list-style-type: none"><li>- Land must have been cropped annually over the 5 years prior to the project.</li><li>- More than 30% of crop stubble must be removed from the land by burning or baling in at least 4 of the 5 years prior to the project.</li><li>- Must be willing to retain stubble in the project area after crop harvest</li><li>- Must be willing to ensure that burning or baling occurs, at most, once every 5 years whilst under crops.</li></ul><div><div>Carbon credit predicted stream</div><table><caption>Carbon credit predicted stream (t CO<sub>2</sub>-e)</caption><tr><th>Year</th><th>t CO<sub>2</sub>-e</th></tr><tr><td>2020</td><td>4.5</td></tr><tr><td>2025</td><td>6.0</td></tr><tr><td>2030</td><td>6.5</td></tr><tr><td>2035</td><td>7.0</td></tr><tr><td>2040</td><td>7.5</td></tr><tr><td>2045</td><td>7.5</td></tr></table><a href="#">close</a></div></div>			Year	t CO <sub>2</sub> -e	2020	4.5	2025	6.0	2030	6.5	2035	7.0	2040	7.5	2045	7.5
Year	t CO <sub>2</sub> -e															
2020	4.5															
2025	6.0															
2030	6.5															
2035	7.0															
2040	7.5															
2045	7.5															

[Environmental plantings - tropical](#)

11,340



Filters - only show projects that involve:


☐ Annual crop or pasture☐ Permanent pasture☐ Activities requiring irrigation☐ Managed forest - new or existing[Save as PDF](#)[Share](#)[Back to farm details](#)[Go to method exploration](#)

# ...Detailed Estimate

InVision


8:00 PM

100%



## LOOC-C

Landscape Opportunity and Options for Carbon abatement - Calculator



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Conversion to Pasture 3/8

Initial [ACCU](#) estimate **4,807**

Updated [ACCU](#) estimate **4,704**

t CO<sub>2</sub>-e per 25 years

### Baseline-Synthetic fertiliser (Nitrogen) amounts

For each year listed in the table below, use the drop down menus to select the amount of fertiliser applied to the CEA-land.

Year	Production system	Amount of N fertiliser applied (tonnes)	Amount of Urea applied (tonnes)	Reuse data from previous years
2015	Non-irrigated crop	<input type="text" value="66"/>	<input type="text" value="26.1"/>	
2016	Non-irrigated crop	<input type="text" value="68"/>	<input type="text" value="24.9"/>	<a href="#">copy previous year</a>
2017	Non-irrigated crop	<input type="text" value="72"/>	<input type="text" value="25.3"/>	<a href="#">copy previous year</a>
2018	Non-irrigated crop	<input type="text" value="64"/>	<input type="text" value="25.6"/>	<a href="#">copy previous year</a>
2019	Non-irrigated crop	<input type="text" value="68"/>	<input type="text" value="25.7"/>	<a href="#">copy previous year</a>

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Conversion to Pasture 4/8

Initial [ACCU](#) estimate **4,807**Updated [ACCU](#) estimate **4,651**t CO<sub>2</sub>-e per  
25 years

### Baseline crop - residue

For each year listed in the table below, use the drop down menus to provide detail about the crop system used on the CEA-land and also provide details on the amount of crop harvested and what fraction of residue was removed from the CEA-land.

Year	Crop type	Total amount harvested (tonnes)	Fraction of residue removed (percentage)	In case of multiple crops	Reuse data from previous years
2015	Barley	<input type="text" value="1,354"/>	<input type="text" value="35"/>	<a href="#">Add crop type</a>	
2016	Cereals - other	<input type="text" value="1,281"/>	<input type="text" value="50"/>	<a href="#">Add crop type</a>	<a href="#">copy previous year</a>
	Maize				
2017	Oats	<input type="text" value="1,503"/>	<input type="text" value="35"/>	<a href="#">Add crop type</a>	<a href="#">copy previous year</a>
	Peanuts				
2018	Pulses	<input type="text" value="1,203"/>	<input type="text" value="35"/>	<a href="#">Add crop type</a>	<a href="#">copy previous year</a>
	Rice				
2019	Sorghum	<input type="text" value="1,429"/>	<input type="text" value="35"/>	<a href="#">Add crop type</a>	<a href="#">copy previous year</a>
	Triticale				
	Tuber & roots				
	Sugar cane				
	Wheat				

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## Detailed estimate

### Conversion to Pasture

Initial [ACCU](#) estimate **4,807**Updated [ACCU](#) estimate **4,883**t CO<sub>2</sub>-e per  
25 years

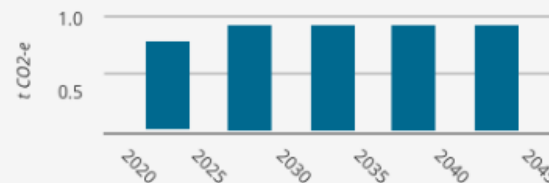
### Activity impact on carbon credits

Baseline activities (2015 - 2019)	Impact on detailed <a href="#">ACCU</a> estimate t CO <sub>2</sub> -e over 25 years
Crop	- 53
Fertiliser	- 103

Project activities (2020 - 2044)	Impact on detailed <a href="#">ACCU</a> estimate t CO <sub>2</sub> -e over 25 years
Livestock	145
Fertiliser	+ 87

### Carbon credit predicted stream



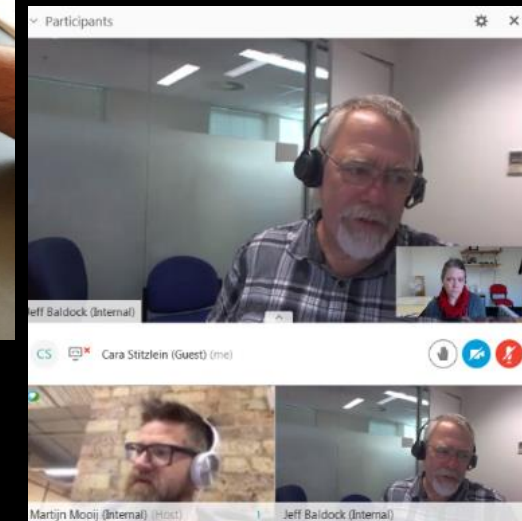
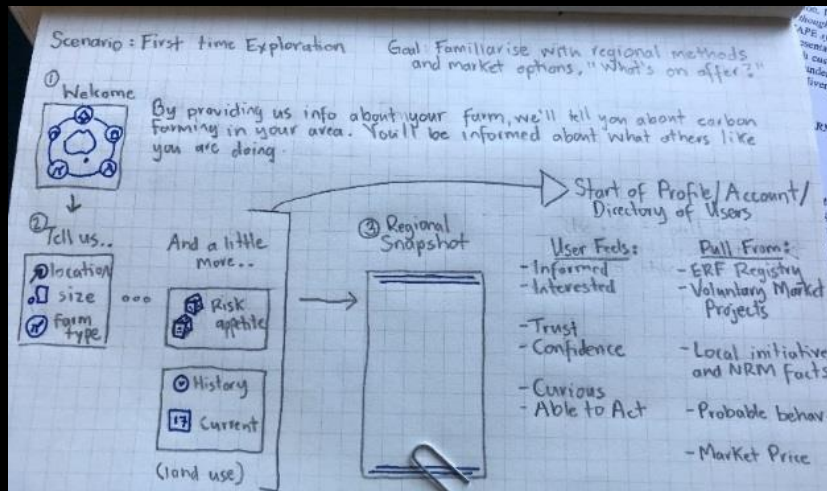
### Possible next steps

The estimates provided here are based on approved ERF methods using current values for emissions factors to determine possible carbon sequestration and are not a guarantee of ACCUs.

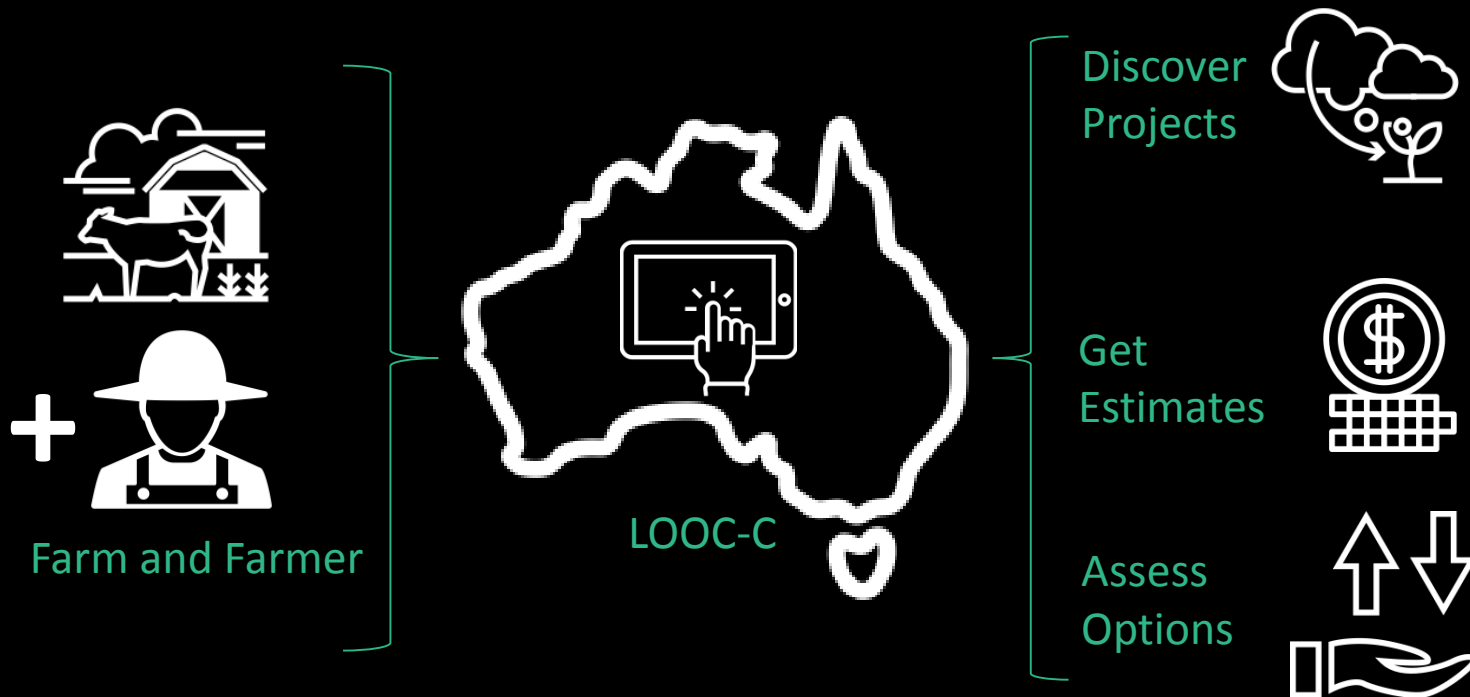
These ACCUs may be traded for cash revenue through the programme described as the [Emissions Reduction Fund](#).

you may also seek the advice of an aggregator who is knowledgeable about this process, for more details check with the [Clean Energy Regulator](#)

# Co designing the solution



*“Give ‘em a tool to make it easy to get into the carbon market with a project”  
that they’ll want to use and makes both dollars and cents”*



# LOOC-C Success



## ERF Barriers

Hard to find out what's possible on my farm

Complicated methods

Eligibility requirements

## Design Solutions

Quick discovery for the farm with estimates of carbon credits

Smart form design that filters out irrelevant Qs

Provides overview with discovery and has optional workflow for deeper dive

# CSIRO Carbon project (Digiscape)



- **The proposal:** help land owners discover options for their farm in the national carbon programme; make the market more accessible to the land sector
- **The approach:** a human-centred design approach to create an experience around discovering possible soil carbon projects for a farm and support the decision maker
- **The insights:** (farmer) understanding of what matters and how to integrate  
(product design) find where programme complexity can be reduced  
(science-tech) use estimates to support discovery and understanding
- **The prototype:** LOOC-C
- **Next steps:** Join me and be part of the solution