FutureBeef

Northern Grazing Carbon Farming – Integrating production and greenhouse gas outcomes

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CSIRO

A joint initiative of:

clean energy future

Australian Government
Department of Agriculture, Fisheries and Forestry

Queensland Government

Northern Territory Government

Department of Agriculture and Food
GOVERNMENT OF WESTERN AUSTRALIA

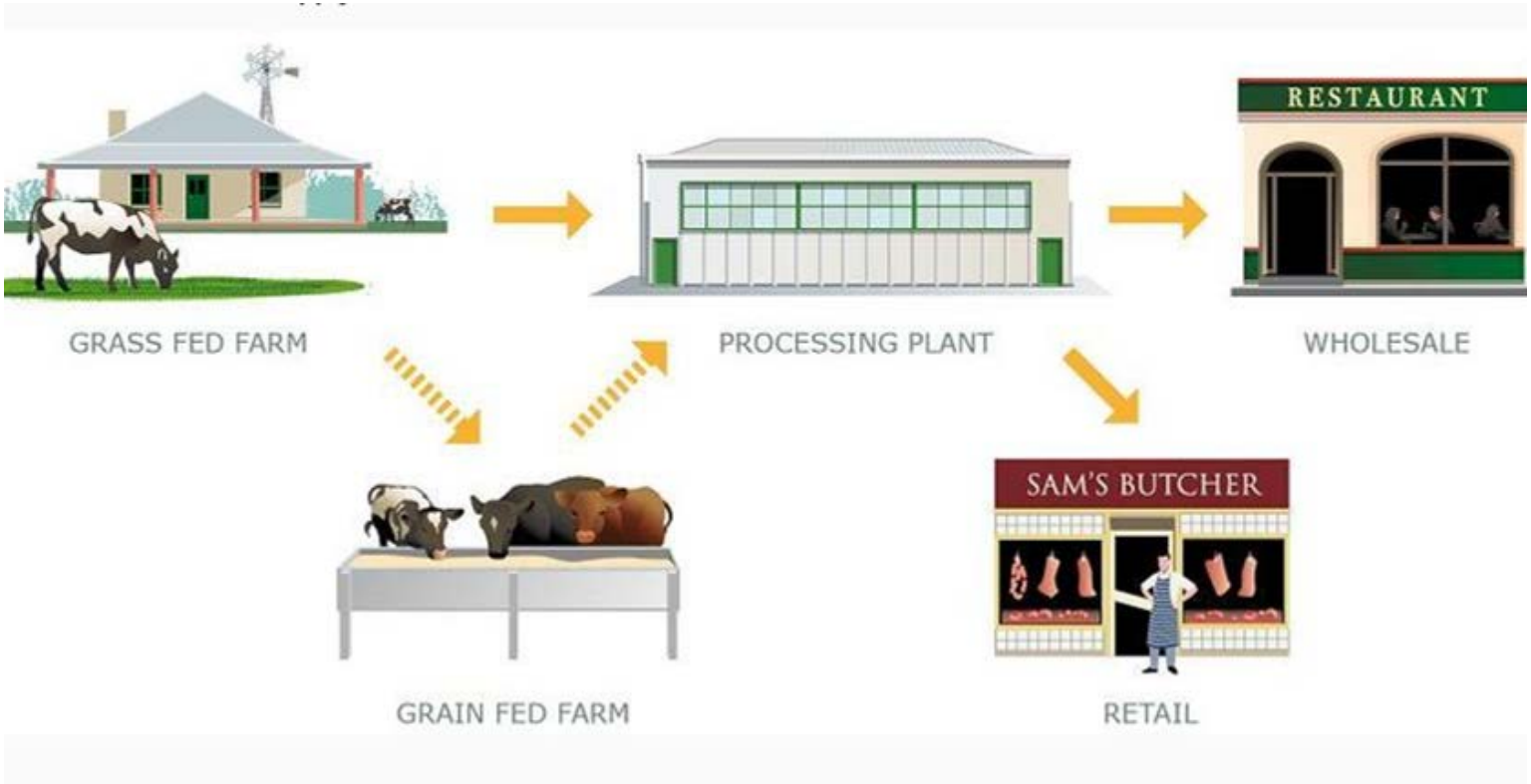
mla
MEAT & LIVESTOCK AUSTRALIA

Northern beef industry

- Aust. Beef industry 7th largest in world.
- Large number of head and area of land use.
- Water quality (e.g. sediment on Great Barrier Reef)
- Land condition
- Greenhouse gas emissions
  - Agriculture currently exempt from direct emissions reduction strategies (e.g. carbon tax)
- Impact of climate change
- Profitability pressures (McCosker *et al.* 2010)
  - Management change needs to be carefully considered to ensure appropriate productivity and environmental outcomes

Greenhouse gas emissions and beef

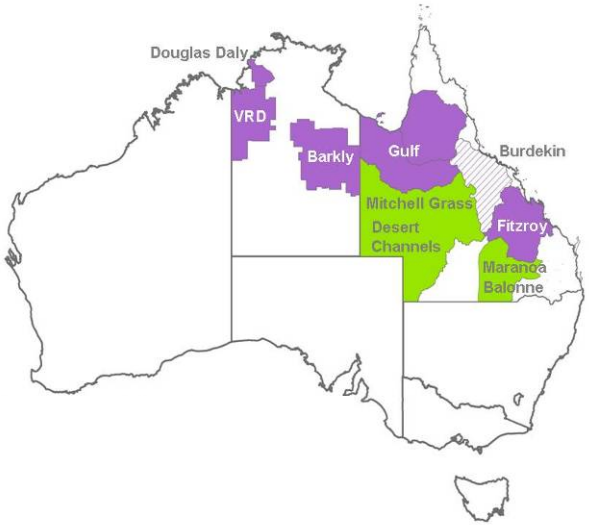
- Mitigation of GHG impacts beef production chain
- Options uncertain (particularly on-farm)
- Sequestration (soil and woody veg.) trade-offs



Source: redmeatgreenfacts.com.au

Climate Clever Beef

- Current project supported by Australian DAFF – Action on the Ground
- Building on previous MLA, Aust. DAFF supported projects
- 6 regions across northern Australia.
- Participatory model of development and extension.



- Evaluate 'Carbon Farming' project options.
- What impact will it have on the beef business?
- Focus on livestock methane, soil carbon and regrowth.

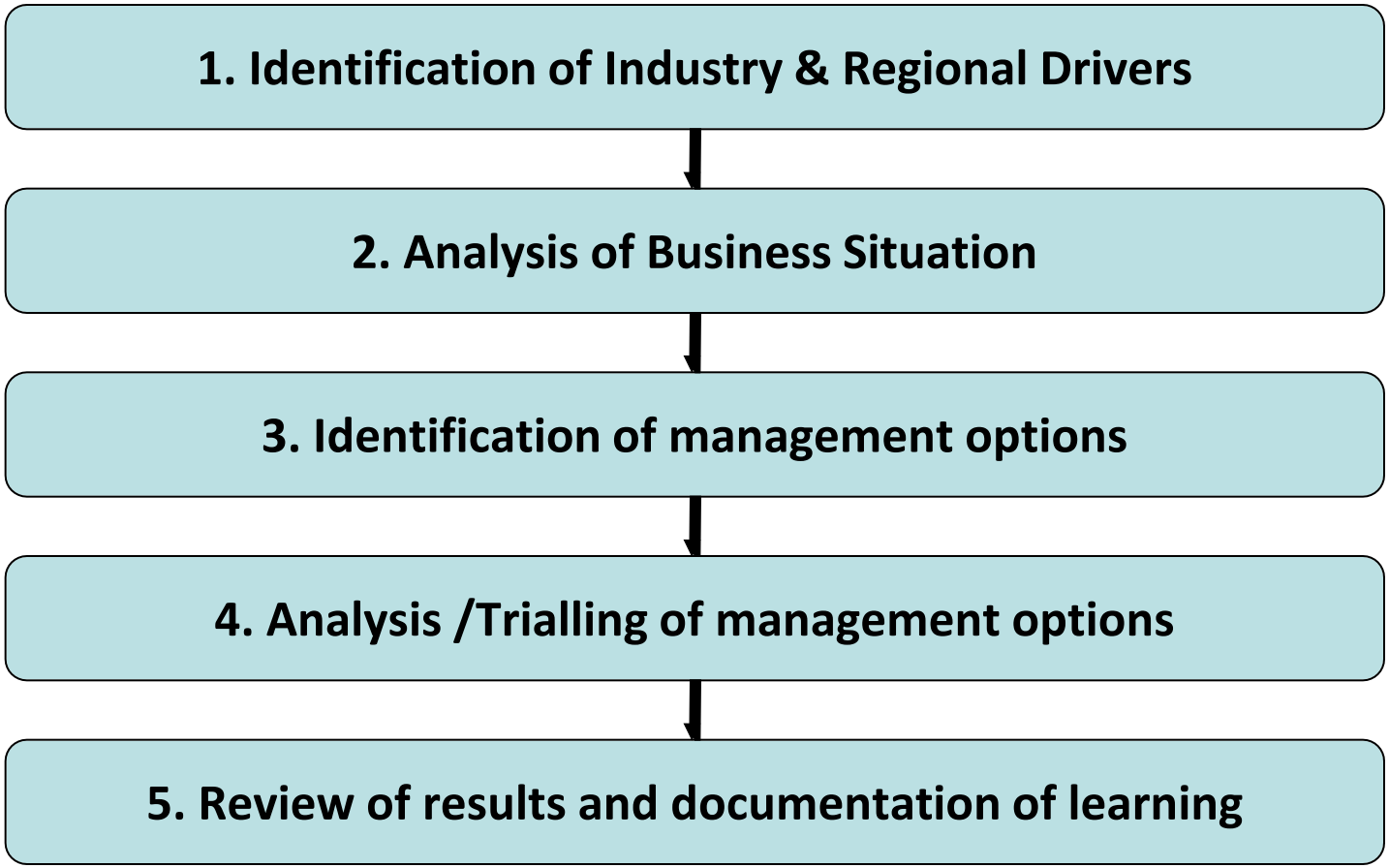
- Linking with regional groups, soil carbon and livestock methane research projects, pasture rundown project, modelling etc.

Australian Government
Department of Agriculture, Fisheries and Forestry

•Part of MLA's Northern Grazing Systems Initiative
•DAFF Australian Farming Futures funding

Framework – Climate Clever Beef

Framework to systematically assess which management options are likely to have the best outcomes for a beef business.



Climate Clever Beef

Identification of options and analysis of options are evaluated in terms of:

- Productivity
- Profitability
- Land condition
- Greenhouse gas emissions
- Climate change risk

- Business resilience and adaptability

Climate Clever Beef website
www.futurebeef.com.au

Qld Gulf case study

Kiri Broad and Gulf team

- Purchased property with stock 15 years ago.
- Ran ‘as-is’ for 3 years, low weaning rates and poor land condition.
- Then undertook considerable effort to improve the business including:
  - Reducing stocking rates
  - Wet season spelling
  - Pasture improvement
  - Supplementation
  - Feeding of young cattle to meet weight-for-age targets

Qld Gulf case study

Analysed current situation and situation 15 years ago.

- Business financial analysis
- Herd structure and productivity

Profitability

- Gross margin has increased by 93% (BreedcowDynama)
- There is room for improvement compared to regional benchmarks (ProfitProbe) primarily due to high feed costs to reach weight-for-age specifications of younger cattle and reduced time to first calving.

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Productivity

- Weaning rate improved from <50% to 70%, death rates reduced significantly
- Cow numbers reduced by about one third, however same number of calves
- Weight gains improved from 50-60 kg/hd/yr to 130-150 kg/hd/yr
- Beef sold increased by 80%

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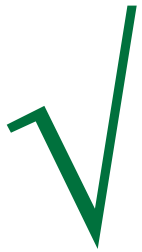
Qld Gulf case study

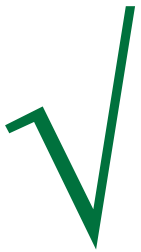
Land Condition

- 85% C-condition (poor) 15 years ago
- 85% A/B-condition (fair to good) currently



Greenhouse gas emissions

- 300 kg CO_2e/ha/yr 15 years ago
- 250 kg CO_2e/ha/yr currently
- 17% improvement



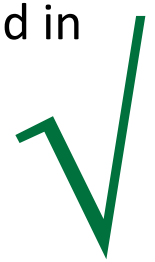
Greenhouse gas emissions efficiency

- 25.1 kg CO_2e/kg beef 15 years ago
- 11.7 kg CO_2e/kg beef currently
- 53% improvement

Qld Gulf case study

Climate change risk

- Good. Due to good land condition and feeding regimes (can be extended in poor seasons).



Business resilience and adaptability

- Fair. Due to some profitability indicators of concern.
- Conflict between cost of feeding strategy to improve productivity and reduce greenhouse gas emissions and impact on profitability

Future actions and analysis

- Heifer management to reduce feeding costs.
- Explore less costly feeding options and target only specific mobs.
- Explore alternative marketing strategies for different mobs of cattle.
- Property development which increases cattle numbers will increase GHG emissions (an issue for many properties in northern Australia).

Qld Fitzroy regrowth management

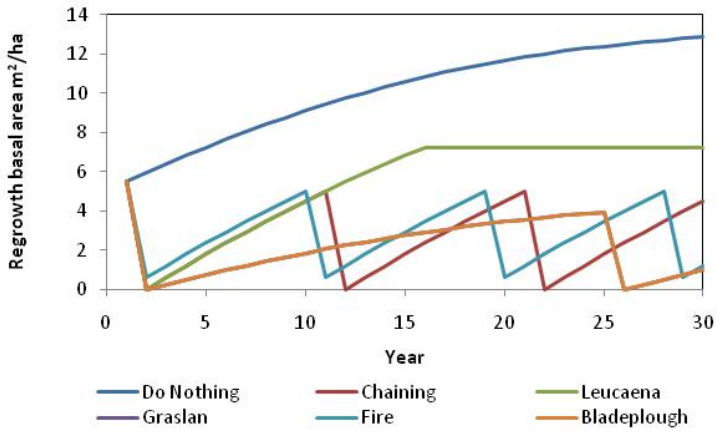
Business analysis indicated asset turnover was a key area for improvement.

Approximately 36% of property has regrowth reducing pasture production and beef productivity

Management options considered include:

- Regrowth retention (no re-clearing) allow regrowth to continue to regrow
- Clear regrowth using Graslan (Tebuthiuron) herbicide (slows subsequent regrowth)
- Clear regrowth using less intensive method (Chaining)
- Clear regrowth and plant a forage legume (Leucaena)

- Modelled change in woody plant basal area and impact on livestock carrying capacity.



Qld Fitzroy regrowth management

Net present value of regrowth management options over 30 years

- Assumed 1000 ha of 10 year old regrowth

	Livestock income only	Livestock and regrowth sequestration income ($10/t)
Regrowth retention	$ 275,000	$ 652,000
Clear regrowth (herbicide)	$ 338,000	
Clear regrowth (chaining)	$ 392,000	
Clear and plant leucaena	$ 384,000	

(100 yr management obligations)

Oaklands regrowth trial

- South of Duaringa
- Question: How much regrowth should be retained?
- Box land type
  - 10 year regrowth chained
  - 10 year regrowth retained
  - Herbicide cleared
  - Remnant
- Pasture spelling
- Measuring
  - Tree and pasture carbon
  - Soil carbon
  - Assess impact on business

Conclusion

- Climate Clever Beef framework was a powerful tool to:
  - Collaborate with and engage land managers to identify key business issues.
  - Assess options to improve business resilience.

- Will reduction in greenhouse gas emissions be achieved.
  - Depend on property development stage.
  - Regrowth retention may provide options.
  - Improving herd efficiency and GHG intensity should be a goal for all beef businesses. Win-win situation.

- Other Case studies available on Climate Clever Beef website.
  - www.futurebeef.com.au