Glenwood Summary Report: Expanded measures of Farm Profit with Natural Capital Accounting

Description: This case study from wool-growing property Glenwood, in the Central West of NSW, shows how Natural Capital Accounting can be used to measure and expand the perspective of Farm Profit

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Natural Capital Accounting

Natural capital refers to the natural resources on a farm, including soil, water, diversity of life, vegetation and living things above and below ground.

Natural Capital Accounting considers the different ways in which woolgrowers support their farm's natural ecosystem and how the farms natural capital contributes to the financial performance of the business. It is a new area of farm business management.

The below case study details the natural capital accounting undertaken on the wool-growing property Glenwood located in the Central West of NSW. Through the natural capital accounting process, farm management practices that affect the condition of the farms natural capital have been identified, measured, and discussed.

This process can be used to expand the traditional view of Farm Profit to incorporate changes in natural capital.

The purpose of the Natural Capital Accounting Project

New ways of thinking are changing our view on Farm Profit.

Natural Capital Accounting helps us measure the environmental impacts of farming. It can sit alongside the farms yearly financial analysis to gain an expanded view of profit. It helps us see the relationship between farming practice, ecological health, and financial return and can give management a broader understanding of farm profit.

Natural Capital metrics complement existing farm financial performance measures and gives additional information.

Taking this approach means that decisions about investing in improving the condition of natural assets can be based on measurable on-farm results and trends over time, financial a*nd* ecological. It also makes the benefits of a farm's natural capital evident and gives an indication of future farm productivity.

For Glenwood, it has also created new income opportunities.

Woolgrower Case Study - Glenwood

Glenwood shows that healthy natural capital has business benefits.

Glenwood is a 2972hectare property located north of Wellington in Central West NSW.

The property, which ranges from undulating to hilly healthy grassy woodlands and native pastures, is ideal for breeding merino sheep, which is exactly what owners Norm and Pip Smith do.

They run up to 9,000 adult sheep, up to 6,500 lambs, plus a small cattle herd. They also operate a growing merino stud and the Love Merino brand of scarves.

At the same time as operating a profitable and growing farm business, the landscape is regenerating towards grassy woodlands with over 60 grass and forb species present and significant carbon sequestration occurring.

This is creating new income streams for the business in the form of stewardship payments and direct wool marketing arrangements.

The Smith's management approach

The Smiths are passionate advocates of regenerative agriculture. In 2011 Norm Smith was named NSW Farmer of the Year.

They are the 5th generation to farm Glenwood and took over the farm in the late 1990s. At this time, the farm was carrying a lot of debt. Their initial goal was to cut costs while maintaining productivity.

They focused on recovery-based grazing to manage perennial grasses. There was already a range of native perennials thriving on the property alongside introduced species like cocksfoot and Phalaris.

Over the years, they have leased an additional three farms located close by. Their grazing approach has regenerated the land across Glenwood and these other properties.

There are now over 60 grass and forb species growing in some paddocks. With so much work and time having gone into achieving this success, it was important to the Smith's to get a more rounded view of their Farm Profit to measure the impacts of their management on the farm's natural capital.

This is where Natural Capital Accounting can assist.

Natural Capital Accounting and Profit

The following methodology was undertaken to develop the Natural Capital Accounting report at Glenwood.

Defining Ecosystem type

The foundation of Natural Capital Accounting comes from the 'Ecosystem Asset Account'. This is information about the different ecosystem types that exist on Glenwood. It is prepared in line with published information and uses a State in Transition Model to classify the ecosystem type. This considers factors including inputs, use and history.

The System of Environmental-Economic Accounting (SEEA) is used to prepare this Account to ensure internationally published methodology standards.

Parts of the property, in the past, had been converted to improved pastures, but these are being managed back toward native systems. 78 % of the landscape is regenerating towards natural grassy woodlands, which is reflected in increases to biodiversity, greater tree canopy cover and shelter for livestock and around 60 different native grass and forb species contributing to a high-quality, year-round diet for livestock.

Over the last 13 years, ground cover remained above 85% and peaked at 100%.

A high level of ground cover is an important component of an effective water cycle, carbon cycle, mineral cycle, resilience, weed control and in providing conditions for native plant recruitment. It is a key natural capital metric.

Ecosystem services

Ecosystem Services are the direct and indirect contributions that come from an ecosystem. They are measured across 12 criteria that fall under three main classifications:

1. Provisioning services: Forage for Livestock (10-year average), Forage for Bees and Timber provision
2. Regulating services: Soil protection and nutrient retention, Water Quality, Carbon Storage, Microclimate Regulation and Pollination/pest control services
3. Habitat services: such as Animal and Vegetation biodiversity protection and cultural services (such as spiritual and aesthetic values) and climate change adaption potential.

Ecosystem services are ranked as 'high', 'medium' or 'low'. At Glenwood, they measure as 'high' across all criteria.

The grassy woodlands on Glenwood are healthy and contribute a large range of natural regulating, provisioning, and cultural services, far beyond basic simply forage for livestock (a 'provisioning' ecosystem service).

The environment is a highly functional and diverse ecosystem that produces a range of ecosystem services as well as being a sound basis for the commercial wool growing business through the production of quality and diverse forage. This healthy ecosystem supports quality grazing for their plain bodied non mulesed sheep, who regularly achieve over 120% weaning rates.

Over time, new markets for ecosystem services may develop. If so, Glenwood will be well placed to benefit from these.

Ecosystem capacity

This is the measure that shows how the assessed Ecosystem Type impacts the performance of the farming business. The grasses, forbs and other forage produced on Glenwood are considered as inputs into the grazing operation. The quality of this input indicates the quality and persistence of pastures, the level of groundcover and the proportion of palatable, perennial, and persistent species. It is assessed on a scale using established industry criteria; Very Good, Good, Fair, Poor and Very Poor.

98% of Glenwood can be classified as being in Very Good condition for livestock grazing. This gives a strong base for the wool production business and is an important metric that can be monitored over time.

Carbon storage

Although these figures can't be used to trade carbon or used in a formal carbon sequestration project, the storage of carbon at Glenwood has been estimated using industry models and can be used for farm management purposes.

These calculations include conservative estimates of carbon stored on the farm. Carbon sequestration estimates include the above and below ground biomass of the trees as well as coarse woody debris. It does not include any sequestration associated with soil or pasture.

Carbon emission estimates include on-farm emissions (fossil fuel use, fertiliser application, livestock emissions, leaching and runoff), electricity use, and pre-farm emissions where relevant (production and transport of fossil fuels, production and transport of purchased inputs including livestock, fodder, grain and amendments).

Using these conservative figures, while the farm activities emitted an average of 2,228 tCO_2e/year, it was estimated that the farm activities also captured 5,673 tCO_2e/year. On average, Glenwood captures and stores around 3,445 tCO_2e/year (Net).

In effect, Glenwood captures and stores more carbon than it emits.

Farms with high storage of carbon are usually in better ecological condition than those without - meaning they will likely have better ground cover, higher tree cover, more biodiversity and greater resilience. Glenwood's net carbon storage is high and provides an excellent metric for tracking the impact of different farming practices and interventions over time.

It may also give a guide to future productivity.

Environmental Profit and Loss summary

An Environmental Profit & Loss (EP & L) analysis is another component of the Natural Capital Accounting assessment. It is a way of assessing the impact that a business has on the environment. This approach has been developed by Kering, an internationally recognised leading retail group, to help their business

understand their environmental impacts.

EP & L is a novel approach for individual farm businesses to take. The EP&L measures the resources consumed across the supply chain, such as water and land, as well as the outputs such as water pollution, air pollution and waste. In the past, EP & L has been calculated for industry, using general/generic information.

The Kering methodology with input information specific to Glenwood has been used to assess the impact of wool production on the environment at Glenwood.

Some findings in the key EP&L metrics are:

- Glenwood produces negligible air pollution, water pollution or waste.
- Concerning greenhouse gas emissions, EP&L analysis suggests Glenwood generates approximately 28.2kg of greenhouse gases per kg of Greasy Wool, which is about 56% of the amount estimated by Kering for greenhouse gas emissions from the Kering regenerated landscapes classification contained in their EP &L and 30% of emissions from their conventional landscapes classification contained in their EP &L.
- A conservative estimate of the natural capital value affected by Glenwood's operation suggests that it has impacted the ecosystem services by up to 50%. This is less than the estimates contained in the Kering Environmental Profit and Loss, which indicates land use impacts are at 80% from their conventional classification.

What does this mean:

On Glenwood, the farms natural capital has led to new income streams which contribute to the farm's financial position. Tracking the farms natural capital over time will indicate how farm management decisions influence these income streams.

The analysis done on Glenwood has shown that natural capital metrics can be easily calculated. Less Grower's time is required for natural capital analysis than is needed for traditional Farm Financial Benchmarking activities. An on-farm assessment by a trained ecologist is required, with additional desktop analysis and reporting time needed. Over time and with increasing demand, this could become a commercially viable service.

Natural capital metrics can be used for farm management purposes to complement existing farm production and financial metrics, to enhance the overall view of Farm Profit. This information can be used by growers in their wool marketing. Sustainability conscious brands wanting to source wool with known environmental characteristics are a growing segment in the industry and are keenly interested in these metrics.

Measuring a farm's natural capital will give the farm owners an indication as to the possibilities of developing new income streams for their business. It can support with evidence farm-based marketing

initiatives based around regenerative production and allow them to assess the potential for environmental payments.

This report shows there are practical natural capital measures that growers can use to complement their existing farm financial measures to broaden their understanding of farm performance and to better inform their management decisions.

If Natural Capital can be better measured through practical measures such as outlined, it can be better managed.

This work is in its early stages. Over time the impacts of management decisions on the natural capital of the farm can be tracked in a similar way to farm production and financial performance. Doing this will give a more informed view of overall profit. The relationship of the farms natural capital to farm profit is one area that will emerge with more years of measurement. Some measures of natural capital may give a guide to future financial performance, risk, and resilience.

Natural Capital Accounting is a new way in which growers can start to use to measure and monitor the impact of their decisions on the current and future productivity of their farm business.

Acknowledgements:
This project was funded by Australian Wool Innovation and represents one of a series of case studies on Natural Capital on commercial wool-growing properties. The authors would like to thank Mr Angus Ireland and Mr Sam Ropert from Australian Wool Innovation for their assistance. We would also like to acknowledge and thank Dr Steve Wiedemann, Integrity Ag and Environment, for his technical review and input.