

HAVE YOUR SAY

INTRODUCTION

Growing@Goulburn (G@G) is a company devoted to decarbonisation using mixed farming and circular economy strategies. It is undertaking the purchase of a uniquely developed parcel of land near Goulburn in the NSW Southern Tablelands as a major demonstration site for:

- A. An agri-PV system featuring co-location of high value horticulture, dairy production and solar power (5 MWac);
- B. A Circular Economy project using a former fish farm for milk harvesting, dairy processing, algal growth and harvesting, Astaxanthin production, biomass processing for cattle fodder and organic fertiliser;
- C. Education and applied research in the existing lecture and residential facilities, associated with up to 10 Australian universities, CSIRO and the Fraunhofer Institute of Germany.

DISCUSSION – LAND USE CONFLICTS & IMPEDIMENTS TO THE TRANSITION FROM FOSSIL FUELS TO RENEWABLE ENERGY

The Discussion Paper and Questions produced by DCCEW and incorporating the Ministries of Climate Change and Energy, Environment and Water and Agriculture Forests and Fisheries grapples with land use conflicts. These remain unresolved and involve:

- Loss of agricultural land to renewable developments, particularly utility scale solar installations in agriculturally productive regions;
- Loss of water security to mining developments – particularly mining for resources used in batteries, e.g. lithium, rare earths etc.;
- Loss of biodiversity through the roll out of the electricity network and associated infrastructure (sub-stations, power pylons etc); and
- Loss of social cohesion due to neighbourhood issues and farmer jealousies.

Most of these conflicts are addressed by G@G's demonstration. See also NSW Commissioner for Agriculture's Report *"Renewable energy generation and agriculture in NSW's rural landscape and economy – growth sectors on a complementary path"* (November 2022).

G@G and its team of experts would like to engage with the Federal Government to develop policies that avoid these land use conflicts and to ease the way to Australia's energy transition in the regions.

RESPONSES TO "HAVE YOUR SAY" - Agriculture and Land Sectoral Plan

What are the opportunities to reduce emissions and build carbon stores in agriculture and the land? What are the main barriers to action?

It is only a matter of time before agriculture in all its sectors is obliged to account for its emissions – enteric methane, fossil fuel usage, fertilisers, food miles etc. PRIOR TO the issue of ACCUs, a project proponent will need firstly to account for emissions from these greenhouse gas producing activities.

Only AFTER these emissions have been offset, should ACCUs be issued to reflect the carbon negative aspect of new activities, whether as a result of carbon stored in vegetation or the soil. The value of these ACCUs must be of such significance that the project proponent is encouraged to reduce the emissions from livestock, machinery, synthetic fertilisers and transport using feed additives, electrification of plant and machinery, returning agricultural waste to the land as fertiliser and EVs (or hybrid) transport.

- 1) How can we progress emission reduction efforts whilst also building resilience and adapting to climate change?

The international move towards agrovoltatics provides this dual benefit. Farmer projects that involve “behind the meter” as well as grid connected energy production are both commercially beneficial for the landholder as well as advantageous from an agricultural angle. Solar installations reduce the impact of hail and frost, reduce sunburn to fruits, provide shade to animals and can collect run-off water for storage for precision irrigation of high value cash crops. Research and development into ideal panel design and wavelength engineering will create systems that increase agricultural output alongside power generation, tailor-made for Australian conditions.

There has already been significant action taken by industry, governments, First Nations peoples, local and regional communities to address climate change. This is explored in [section 2](#).

- 2) Are there initiatives or innovative programs underway that could be applied or expanded on at a national scale?

While the work of RDCs and industry has been admirable, it lacks ambition. Farmers are notoriously risk averse and solar developers are unwilling to venture outside their trusted models where costs and rewards are largely known in advance. This tendency to prefer BAU both on the farm and in the boardroom is holding the transition back.

The relationships between landowners (whether First Nations or not) and the renewable energy industry are commercial in confidence. The rewards being provided in the form of lease payments or a percentage of power profits are kept private so as not to offer a guide to new participants in the industry. Greater transparency is essential. Further, the benefit sharing aspect of renewable developments is all over the place – usually at the whim of Local Councils. This is an area in which Landcare Australia could be the “honest broker” so as to blend regional resilience with biodiversity enhancement as a realistic adjunct to the approval process.

- 3) How can the Australian Government bring together existing effort and new initiatives into one coordinated plan?

G@G has already lodged comments on the CER’s **INTEGRATED FARM MANAGEMENT METHOD CO-DESIGN** in which it recommended a “one stop shop” for registration of, and a single marketplace for the sale of eco-credits. In the interests of simplicity, the bundling of ACCUs, LGCs (or STCs), biodiversity offsets and the new Nature Repair Credits could be endorsed. To divide climate change mitigation into silos is a deterrent for landowners who see the whole area as complex and expensive. For this reason, they tend to rely upon brokers/aggregators whose prime motivation is to earn money at the expense of the landowner, who should be able to navigate the system unaided.

Opportunities to reduce emissions

Looking in more detail, there are technologies, practices and other measures that can reduce emissions and increase carbon stores. Some are established and others are still emerging. This is explored in [section 3](#).

- 4) What are the most important options to be further adopted or supported, looking in the short and the longer-term?

As mentioned above, G@G sees agrovoltatics as an important solution in need of support. The demonstration near Goulburn is capable of wide application – for tropical produce, viticulture, broadscale cropping and specialty horticulture, all in rotations with livestock (including poultry and pigs). Proof of concept in various climatic regions with differing soil types will pay dividends in both the short and long term.

The Circular Decarbonisation element of G@G's demonstration adds an extra dimension to the carbon capture story. Algae are responsible for 50% of the oxygen in the atmosphere and already remove between 45% and 50% of the world's CO₂. Algae have numerous important uses in Nutraceuticals, biomass production for animal fodder (methane reducing) and as a compost feedstock. Incorporating algal production in any circular economy system is a sensible use of waste water to the benefit of the environment as well as human and animal wellbeing.

- 5) What are the practical solutions to increase uptake?

Although not a REZ, Goulburn has become a hot spot for renewables because it sits under the existing power infrastructure. The easement for these lines already exists and could be used for additional lines and/or the increase in capacity of existing lines.

Other advantages include a cooler climate for enhanced solar output, proximity to the major consumer bases of Sydney and Wollongong (thus reducing losses in transmission), freeway access and opportunities to repair degraded land. While both Federal and State MPs have joined the objectors, they would both be convinced by the blending of power generation, greater employment and investment avenues and agriculture.

In most of Europe, Japan and South Korea, continuation of agricultural activity under, between and surrounding solar installations is mandatory. In Australia it is voluntary and therefore largely untried. Making agrovoltatics a condition of approval will undoubtedly increase uptake.

Developing emissions pathways

The plan will explore different ways for agriculture and land to contribute to whole-of-economy emission goals, whilst also delivering on national priorities that include a profitable and productive future for agriculture, and sustainable management of Australian landscapes. This is considered in [section 4](#).

- 6) How do you see the agriculture and land sectors contributing over the medium and longer-term? What are the opportunities to deliver emission reductions in parallel with wider goals?

For all the reasons outlined, agriculture can grow into the net zero space while increasing its role as a

high value export. Nothing in this approach to agriculture, carbon capture and emissions reduction threatens Australia's position as a production powerhouse, but reducing the carbon footprint of Australian agriculture should make us an international "preferred supplier".

Supporting and enabling change

The plan will explore ways in which the Australian Government can help to accelerate emissions reduction in agriculture and increase carbon storage in the land. This is considered in [section 5](#).

7) How can the Australian Government better support agriculture and land sectors to:

- a) drive innovation,
- b) build capacity,
- c) ensure the system enables emissions reductions?

(a) Drive Innovation. The paper answers its own question here:

"However, there is a gap between promising solutions and commercial scale availability for adoption on farm."

"... trial sites were also identified as ways to help support R&D across the system."

"A lack of sufficient local evidence can make it difficult to demonstrate the efficacy and viability of low emissions technologies and practices.Trialling solutions at scale and minimising risk for first movers may encourage uptake."

These are strategies that G@G intends to employ at its demonstration site and, in association with its team, at other sites around the nation, where renewable energy and agricultural production is feasible. Australian questions must be answered with Australian solutions – not imported ones.

(b) Build Capacity – Whose capacity and who is doing the building?

Farming and agriculture should not be the plaything of boffins. The Government needs a group of adventurous farmers who are willing to use their own ideas as a trial. Then the measurement and evaluation can be handed over to the scientists and researchers for verification, but it is nearly always the farmers who come up with the ideas to solve problems they have encountered. In many cases, it is the researchers who need their capacity built and their horizons widened.

(c) Enabling Emissions Reduction

Funding of the agricultural contribution to emissions reduction and carbon capture is a fraught issue. The current mix of grants (ARENA and government programs), equity investment (CEFC and delegated VC Funds) and private investment is a minefield for proponents such as G@G. The issue of "Green Bonds" or something akin to the UK "Green Gilts" could be an answer, but all of these options involve picking winners. How mature is the project? What is the motivation – profit or philanthropy? Is the IP to be protected or available via creative commons? How to co-ordinate Federal, State and Local Government support? So many factors to consider and who is qualified to do the picking?

There is also a suggestion of international collaborations in the Discussion Paper. Avoidance of replicated research is essential. G@G is already engaged with Fraunhofer in Germany and is mindful of the work being undertaken by USDA in agrovoltatics via the Agrivoltaic Clearing House. Use of

comparable research into solar panel performance should be conducted in proof of concept trials under Australian conditions.

- 8) What new initiatives could the Australian Government design that would support emissions reduction and carbon storage in agriculture and land and help ensure a productive, profitable, resilient and sustainable future for the sectors?

Supporting demonstrations such as that proposed by G@G.

- 9) A consistent and trusted approach for assessing and reporting emissions is often raised as a barrier to reducing emissions. Is there a role for the Australian Government in addressing this concern, and how can producers and land managers be supported?

See comments about simplifying the participation in biodiversity, waste reduction, carbon capture, nature repair, renewable energy programs and markets.

- 10) What skills, knowledge and capabilities do you think producers and land managers need to implement change? What information and data would help them make decisions about emissions reductions and sustainable land management in the short and longer-term?

Education of all players in the climate change field is vital. This might commence with micro-credentialling for continuing professional development, through to undergraduate courses and post-graduate research. At present there is no tertiary institution specialising in all things Natural Capital and its relationship with climate change, e.g. trading platforms, valuation of land based on carbon capture potential or biodiversity offsets, climate law, finance and banking, planning and regulation, public policy, carbon accounting, branding and marketing, water management, regenerative farming, etc. Agricultural science courses have not kept pace with the international importance of climate change with ag-tech and genetics dominating the field. Less whiz-bang invention is necessary and more practical approaches should be supported based on existing science – take climate change out of the laboratory and into the field.

This also has been addressed by G@G in consultation with 10 universities and CSIRO.

CONCLUSION

Companies like G@G that combine the national interest, profitability, environmental enhancement and social licence should be supported, applauded and funded. The Board would be pleased to discuss this response and provide expertise to the Departments in anticipation of an examination of G@G's suitability for financial support.