

Name:

Rowan

Which of the following best describes your situation?

Research and academia

Are you responding on behalf of an organisation or industry body?

No

How would you like to respond?

a. Answer discussion paper questions via the online survey

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

The main opportunity is in the extensive grazing sector where land use is very inefficient. Current production could be achieved on 15% of the land area currently used. If production efficiency were increased that land could be used to store carbon. The costs to achieve this would need to be covered by the payments for environmental services (mainly feed and fencing). The other main barrier is that land use is currently excluded in carbon accounting for agriculture.

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

Using land more efficiently tends to be better for production by not farming unprofitable areas (which make a financial loss), and revegetating those areas increases the productivity and climate resilience of the areas under production. The shading and evapotranspiration decreases maximum temperature by up to 2 degrees and increases moisture retention.

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

The PES scheme in Costa Rica uses a small amount of the fuel tax for payments for vegetation retention on farms. The forested area has gone from <20% in the 80s to over 50%. There has been a turn around in the culture, especially among farmers. They now see themselves as an ecological society. Much of the tourism is attracted to the natural values and many people derive income from this, providing improved standard of living, in addition to the improved production.

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

If the accounting systems worked properly and accounted for land use, payments for environmental services would tend to move things in the right direction. This would require using natural vegetation as the baseline rather than a starting year, which creates perverse incentives. And accounting for the carbon displaced by the enterprise (carbon opportunity cost, foregone sequestration of 'carbon loss'). The advantage of doing it this way is that production values, GHG reduction and biodiversity values all align. The current system puts them at odds with each other and often makes things worse, eg through leakage.

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

We think intensive silvopastoral systems are very promising as our research indicates these can be even more efficient than feedlots, and preferable for welfare and natural values. The efficiency is achieved by intensively growing feed in the understorey. So the feed, the cattle and the trees occupy the same landscape, whereas feedlots displace the carbon by both the cattle and the feed production. This could achieve revegetation of perhaps 70% of the landscape through a combination of efficiency gains and land sharing. Development is needed to work out the best-performing systems spatially.

What are the practical solutions to increase uptake?

Attitudes follow the money, but we need to get the metrics right, and they're not atm.

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?

Meeting growing food demand while increasing land productivity. Trees carbon plateaus after 20 years, but the carbon can then be returned to the soil, enhancing future production. Of course, they PESs would need to cover costs. It's such a tough job being a farmer, just trying to be financially viable. And we want them to do climate regulation too!

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

The most important factor is land use - it trumps everything else. Extensive livestock is the only production system that really matters because the others already use efficiency metrics (yield per hectare) because they have costs per ha. The most important role govt can have is to get the metrics and the planning rules right. ATM the metrics are perverse and can be making things worse. It's important for metrics to encourage greater land-use efficiency. Currently, we can get the answer that it's better to remove production because it displaces it to elsewhere, where it's not counted. Scientists currently uncritically follow rules set by govt even if they are making things worse. It's alarming. Land use is often free in the system to graziers because it can't be used for anything else due to planning restrictions. Well-designed payments for environmental services could improve this, if land they encourage land to be used for its best purpose. We are trying to address problems at a global scale with decisions on farm. If we get the metrics right, precise measurement at the paddock or farm isn't important, but that the system as a whole is moving in the right direction. This will be much more cost-effective to implement.

Do you have any additional views or feedback that you would like to include in your response?

I can provide evidence for what I have said, if this is useful. But some of it is here <https://www.nature.com/articles/s41893-018-0138-5>. There are such alarming practices out there which get through due to the unmanageable and unnecessary complexity. Part of the key to modelling is to only include factors which are significant, evidence-based and greater than the error. It seems like it's currently a popularity contest. Most of what's going on in soil C is not evidence-based. <https://protect-au.mimecast.com/s/px-xCr8DKNf8Z0zwpt7s99x?domain=sciencedirect.com> There are large stocks but the flows are mostly downward and we don't have good evidence for increasing it through management. People selectively includes some C pools and not others which favour pasture over vegetation, eg including soil C but not below-ground woody biomass. A farm here is being paid to clear and burn mature trees to plant seedlings. Not untypical. Our own modelling for MLA is removing production to make way for revegetation where it magically moves beyond the system boundary, because that's what farmers asked for. We need metrics which take include the system as a whole.

Is your response confidential?

No

Do you agree to your response being published on our website?

Yes

I have read and understood the privacy notice and consent to the collection, use and disclosure of my personal information as outlined in the privacy notice.

Yes

Confirm that you have read and understand this declaration.

Yes

