

Response ID ANON-4EM2-EK4T-G

Submitted to **Native vegetation issues paper**

Submitted on **2020-02-10 18:05:14**

Your details

1 What is your name?

Name:

Richard Harper

2 Can we publish your response?

Yes, you may publish my response in full

3 What is your email address? (optional)

Email:

[REDACTED]

4 What is your postcode? (optional)

Postcode:

[REDACTED]

5 Do your views officially represent those of an organisation?

No, these are my personal views

If yes, please specify the name of your organisation.:

6 Which of the following best describes the group or person you represent?

Academia

If other, please specify.:

7 Which of the following best describes the sector you represent?

Environmental / NRM

If other, please specify.:

8 Are there specific parts of your submission that you want to keep confidential?

If yes, please outline which specific parts of your submission must be kept confidential and explain why. :

No

A State native vegetation policy

9 Referring to the proposed policy objective statements below, how well do you support each one in guiding our development of a policy?

Objective 1 matrix - Objective 1:

Supported

Please explain in the text box below.:

Objective 2 matrix - Objective 2:

Strongly supported

Please explain in the text box below.:

Objective 3 matrix - Objective 3:

Strongly supported

Please explain in the text box below.:

10 What opportunities are presented by the development of a State Native Vegetation Policy focused on how government manages vegetation?

Please provide your answer in the text box below.:

New industries related to Payment for Environmental Services - e.g. valuing changes in water flows and recharge, water quality that result from changes in vegetation management.

Unleashing carbon markets to provide biodiversity co-benefits.

Development of a science-base to allow adaptation to future climate change(s)

Better information

11 How do you use native vegetation data within your sector? (Choose as many options as you require)

To plan for conservation, To plan for restoration, To scope offset opportunities

If you have chosen 'other', please specify:

12 Which of the following elements of better information provision would be most relevant to your sector? (Choose as many options as you require)

Evidence-base for decisions

If you have chosen 'other', please specify:

13 What other opportunities are presented by improved information and improved access to information?

Please provide your answer in the text box below.:

"Information" as presented in the Issues Paper appears primarily to be related to the gathering and presentation of information on vegetation condition. This is essentially static.

What is also needed is a strong science program that will provide the basis of new management regimes in the face of developing threats such as climate change, salinity, pathogen spread etc. It can also provide the basis for new approaches such as payment for environmental services and valuing various aspects (e.g. biodiversity, water).

Better regulation

14 Which of the following elements of better regulation would be most important to your sector? (Please rank your top three)

Rank better reg elements - Improved protection for native vegetation:

1

Rank better reg elements - Ensuring development is sustainable:

Rank better reg elements - Streamlined regulation for cost saving:

Rank better reg elements - Clearer requirements for business certainty:

Rank better reg elements - Improved assessment timeframes:

Rank better reg elements - Transparent, evidence-based decisions:

Rank better reg elements - Improved compliance and enforcement of unauthorised clearing:

Rank better reg elements - Equitable treatment of all proponents:

Rank better reg elements - Confidence in the regulatory system for all stakeholders:

Rank better reg elements - Other:

If you selected Other, please provide further information.:

15 What other opportunities are presented by better regulation?

Please provide your answer in the text box below.:

Formal framework for the development of environmental markets (e.g. water, biodiversity, carbon).

A bioregional approach

16 Which of the following elements are the most important to you/your sector? (Please rank your top three)

Rank bioregional elements - 1. Transparent outcomes and objectives:

Rank bioregional elements - 2. Leveraging local knowledge:

Rank bioregional elements - 3. Strategic and innovative approach to conflicting interests:

Rank bioregional elements - 4. Clear targets and thresholds:

Rank bioregional elements - 5. Planned approach to dealing with cumulative impacts:

Rank bioregional elements - 6. Effective monitoring and evaluation framework:

Rank bioregional elements - 7. Supporting public-private partnerships for conservation:

Please explain in the text box below.:

Ensuring that decisions are science-based.

17 What other opportunities are presented by a bioregional approach?

Please explain in the text box below.:

18 What concerns are presented by a bioregional approach, for your sector?

Please explain in the text box below.:

Other initiatives

19 What initiatives do you think would work best to improve native vegetation outcomes in your region?

Pricing, incentives and markets (e.g. biodiversity banking, offsets, carbon farming etc)

Please explain in the text box below.:

See attached re carbon farming.

Importantly, this approach will actively tackle degradation of native vegetation from causes such as salinity and allow restoration and protection of ecological communities.

Globally, much research has been undertaken on the use of land-based methods of generating carbon sinks [1], and they are consequently an accepted component of greenhouse gas management policies, both within Australia (e.g. Carbon Credits (Carbon Farming Initiative) Act 2011) and internationally [2, 3]. However, they need to be well-designed and managed to avoid perverse outcomes such as displacing food production [4] or damaging water supplies [5]. Under the CFI Act formal Methodologies are used to generate Australian Carbon Credit Units (ACCUs) and these have been developed for a broad range of mitigation activities across the land-sector, including reforestation, avoided deforestation, savannah burning, agricultural emissions, and soil management. Some key points related to carbon mitigation are:

- The technical potential for offsets in Western Australia is large, with an upper limit of 2,100 Mt CO₂-e across 16.7 million ha of the agricultural region and between 290 and 1170 Mt CO₂-e for the rangelands [6]. This technical potential will have several constraints, not the least being the profitability of carbon mitigation compared to farming, and the need to maintain food production activity across much of this region. Overall, the amount of ACCUs that could feasibly be produced is in the realm of 16-31 Mt CO₂-e/yr.
- Carbon offsets can produce substantial environmental and economic co-benefits [6, 7], beyond mitigation of greenhouse gases. For example:
 - o Carbon reforestation of southern catchments (e.g. Warren-Tone, Collie Catchments) could reverse stream salinity, such as demonstrated in the Denmark River [8] and thus provide additional sources of water and timber, while also mitigating greenhouse gases [9].
 - o Reforestation and revegetation will provide an option for the treatment of 1 million ha of salinized farmland, and also provide future grazing value [10, 11]. Salinity represents an intractable problem that is leading to the extinction of several hundred endemic species; carbon farming offers one of the few viable options for this land.
 - o Reforestation with biodiverse species within the WA wheatbelt will provide links between existing remnants, and increased habitat. This helps protect a range of threatened species, as demonstrated with projects such as Carbon Neutral and Gondwana Link in south-western Australia which have reforested around 16,000 ha [12, 13].
 - o Regeneration of the rangelands, through active and passive interventions, could potentially provide benefits in biodiversity protection and pastoral production.
 - o Aboriginal land management techniques, using traditional ecological knowledge such as fire management, provides economic development opportunities, enhanced ecosystems, reduced wildfire risk and contributes to cultural continuity and overall wellbeing of traditional owners [14, 15].

While several Methodologies have been approved, there is still the need to develop new methods (e.g. establishing Atriplex and other grazing shrubs on saltland) and adapt existing Methodologies (e.g. to allow carbon reforestation in higher rainfall areas to allow the reversal of stream salinity, where appropriate).

Although there was much innovation in the land-based mitigation space in Western Australia in the past (e.g. various reforestation programs to overcome salinity) this has been in abeyance in recent years. It can be argued that future mitigation potential will be increased by further research, involving local stakeholders and traditional owners, that results in cost-effective mitigation methods. This should be pursued by building on the existing academic literature and successful land management practices.

20 What else could be done to improve the management of native vegetation to arrest the decline of native vegetation extent and condition?

Please provide your answer in the text box below.:

Upload a document

21 If you would like to upload a document to support your submission, please upload it here.

Upload document 1 here::

2020_02 Harper & Stewart DWER Native Veg submission[1].pdf was uploaded

Please describe which question(s) document 1 relates to. :

Better information

Other initiatives

Upload document 2 here::

No file was uploaded

Please describe which question(s) document 2 relates to. :

Submission for Native Vegetation in Western Australia: Issues paper for public consultation

Professor Richard J. Harper and Dr Joanne Stewart, Murdoch University

7 February 2020

We broadly support the four key initiatives outlined in the Issues Paper, being:

1. A State native vegetation policy to promote consistency and transparency across all government processes;
2. Investing in better information, including mapping and monitoring;
3. Better regulation with clear objectives and consistent standards; and
4. A bioregional approach with tailored objectives to engage local stakeholders.

Key points that we outline in this submission include:

- 1. The suggestion of a whole-of-government management plan to enhance ecosystem resilience;**
- 2. The need for new land management research, involving local stakeholders and supporting Aboriginal rangers, to develop new management regimes in the face of challenges such as climate change;**
- 3. The benefits of carbon mitigation for native vegetation restoration, and protection, and the need for new approved Methodologies for Australian Carbon Credit Units;**
- 4. Support for further research and development of market-based mechanisms to provide public and private benefits.**

Management Plan: Given the current condition and risks to native vegetation and supporting ecosystems in WA, we suggest that overall there should be a whole-of-government management plan for ecosystem enhancement and resilience. This would include mitigating underlying causes such as climate change, past deforestation, and overgrazing. Many of the

issues, and the potential solutions, identified in the Issues Paper are interrelated, and appropriate evaluation mechanisms that recognise the systemic nature and flow-on effects of impacts should be employed in future decision-making.

Researching new management options for native vegetation: While the Issues Paper discusses the need for better information systems about the state of native vegetation, there is a clear priority in investing in research to develop new management regimes, particularly in the context of the increasing impacts of climate change. This should include the involvement of local stakeholders, and support for Aboriginal Rangers to apply traditional methods.

Carbon mitigation investment to actively manage landscapes: In particular, our comments in this submission focus on the effectiveness of carbon mitigation in the land sector to deliver a range of economical, social and environmental co-benefits. Importantly, this approach will actively tackle degradation of native vegetation from causes such as salinity and allow restoration and protection of ecological communities.

These comments are based on considerable experience over the past 25 years, in the carbon mitigation and land management areas, both in terms of research into different options and participation in State, national and international science and policy processes.

Globally, much research has been undertaken on the use of land-based methods of generating carbon sinks [1], and they are consequently an accepted component of greenhouse gas management policies, both within Australia (e.g. *Carbon Credits (Carbon Farming Initiative) Act 2011*) and internationally [2, 3]. However, they need to be well-designed and managed to avoid perverse outcomes such as displacing food production [4] or damaging water supplies [5].

Under the *CFI Act* formal Methodologies are used to generate Australian Carbon Credit Units (ACCUs) and these have been developed for a broad range of mitigation activities across the land-sector, including reforestation, avoided deforestation, savannah burning, agricultural emissions, and soil management.

Some key points related to carbon mitigation are:

- The technical potential for offsets in Western Australia is large, with an upper limit of 2,100 Mt CO₂-e across 16.7 million ha of the agricultural region and between 290 and 1170 Mt CO₂-e for the rangelands [6]. This technical potential will have several constraints, not the least being the profitability of carbon mitigation compared to

farming, and the need to maintain food production activity across much of this region. Overall, the amount of ACCUs that could feasibly be produced is in the realm of 16-31 Mt CO₂-e/yr.

- Carbon offsets can produce substantial environmental and economic co-benefits [6, 7], beyond mitigation of greenhouse gases. For example:
 - Carbon reforestation of southern catchments (e.g. Warren-Tone, Collie Catchments) could reverse stream salinity, such as demonstrated in the Denmark River [8] and thus provide additional sources of water and timber, while also mitigating greenhouse gases [9].
 - Reforestation and revegetation will provide an option for the treatment of 1 million ha of salinized farmland, and also provide future grazing value [10, 11]. Salinity represents an intractable problem that is leading to the extinction of several hundred endemic species; carbon farming offers one of the few viable options for this land.
 - Reforestation with biodiverse species within the WA wheatbelt will provide links between existing remnants, and increased habitat. This helps protect a range of threatened species, as demonstrated with projects such as Carbon Neutral and Gondwana Link in south-western Australia which have reforested around 16,000 ha [12, 13].
 - Regeneration of the rangelands, through active and passive interventions, could potentially provide benefits in biodiversity protection and pastoral production.
 - Aboriginal land management techniques, using traditional ecological knowledge such as fire management, provides economic development opportunities, enhanced ecosystems, reduced wildfire risk and contributes to cultural continuity and overall wellbeing of traditional owners [14, 15].

While several Methodologies have been approved, there is still the need to develop new methods (e.g. establishing *Atriplex* and other grazing shrubs on saltland) and adapt existing Methodologies (e.g. to allow carbon reforestation in higher rainfall areas to allow the reversal of stream salinity, where appropriate).

Although there was much innovation in the land-based mitigation space in Western Australia in the past (e.g. various reforestation programs to overcome salinity) this has been in abeyance in recent years. It can be argued that future mitigation potential will be increased by further research, involving local stakeholders and traditional owners, that results in cost-effective

mitigation methods. This should be pursued by building on the existing academic literature and successful land management practices.

Using market mechanisms to manage native vegetation: Whereas incentives and market mechanisms for carbon offsets and co-benefits (e.g. payment for environmental services) is much explored in the literature, there are few tangible examples in Western Australia. Further research and development of suitable mechanisms should be implemented to enhance both public and private benefits of environmental restoration. This could include, for example, bringing the value of increased water flows and water quality to account as a result of forest management [16].

References

1. Smith, P., et al., *Agriculture, Forestry and Other Land Use (AFOLU)*, in *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, O. Edenhofer, et al., Editors. 2014, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. p. 811-922.
2. FAO, *The agriculture sectors in the Intended Nationally Determined Contributions: Analysis. Environment and Natural Resources Management Working Paper No. 62*. 2016, Food and Agriculture Organization: Rome.
3. United Nations Framework Convention on Climate Change, *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. 1997, United Nations, New York: New York.
4. Smith, P., et al., *How much land based greenhouse gas mitigation can be achieved without compromising food security and environmental goals?* Global Change Biology, 2013. **19**: p. 2285-2302.
5. Jackson, R.B., et al., *Trading water for carbon with biological carbon sequestration*. Science, 2005. **310**: p. 1944-1947.
6. Harper, R.J., et al., *The potential of greenhouse sinks to underwrite improved land management*. Ecological Engineering, 2007. **29**: p. 329-341.
7. Bustamante, M., et al., *Co-benefits, trade-offs, barriers and policies for greenhouse gas mitigation in the agriculture, forestry and other land use (AFOLU) sector*. Global Change Biology, 2014. **20**: p. 3270-3290.
8. Ruprecht, J.K., et al., *Using reforestation to reverse salinisation in a large watershed*. Journal of Hydrology, 2019. **577**: p. 123976.
9. Townsend, P.V., et al., *Multiple environmental services as an opportunity for watershed restoration*. Forest Policy and Economics, 2012. **17**: p. 45-58.
10. Sochacki, S.J., R.J. Harper, and K.R.J. Smettem, *Bio-mitigation of carbon from reforestation of abandoned farmland* GCB Bioenergy, 2012. **4**: p. 193-201.
11. Walden, L.L., et al., *Mitigation of carbon following *Atriplex nummularia* revegetation in southern Australia*. Ecological Engineering, 2017. **106**: p. 253-262.
12. Harper, R.J., S.J. Sochacki, and J.F. McGrath, *The development of reforestation options for dryland farmland in south-western Australia: a review*. Southern Forests, 2017. **79**: p. 185-196.
13. Jonson, J., *Ecological restoration of cleared agricultural land in Gondwana Link: lifting the bar at 'Peniup'*. Ecological Management & Restoration, 2010. **11**: p. 16-26.

14. Yibarbuk, D., et al., *Fire ecology and Aboriginal land management in central Arnhem Land, northern Australia: a tradition of ecosystem management*. Journal of Biogeography, 2001. **28**(3): p. 325-343.
15. Stewart, J., M. Anda, and R.J. Harper, *Low-carbon development in remote Indigenous communities: Applying a community-directed model to support endogenous assets and aspirations*. Environmental Science & Policy, 2019. **95**: p. 11-19.
16. Harper, R.J., et al., *Forest-water interactions in the changing environment of south-western Australia*. Annals of Forest Science, 2019. **76**: p. 95.