

Using a life cycle approach to evaluate trade-offs associated with Payment for Ecosystem Services schemes

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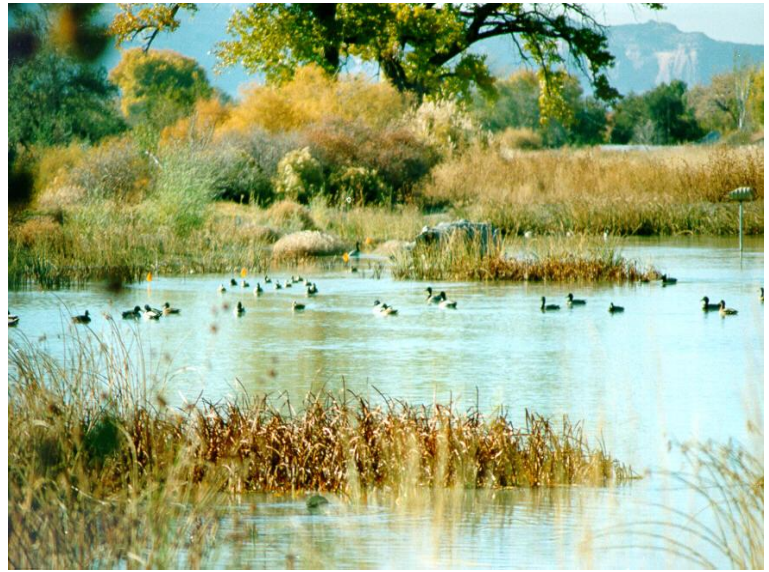
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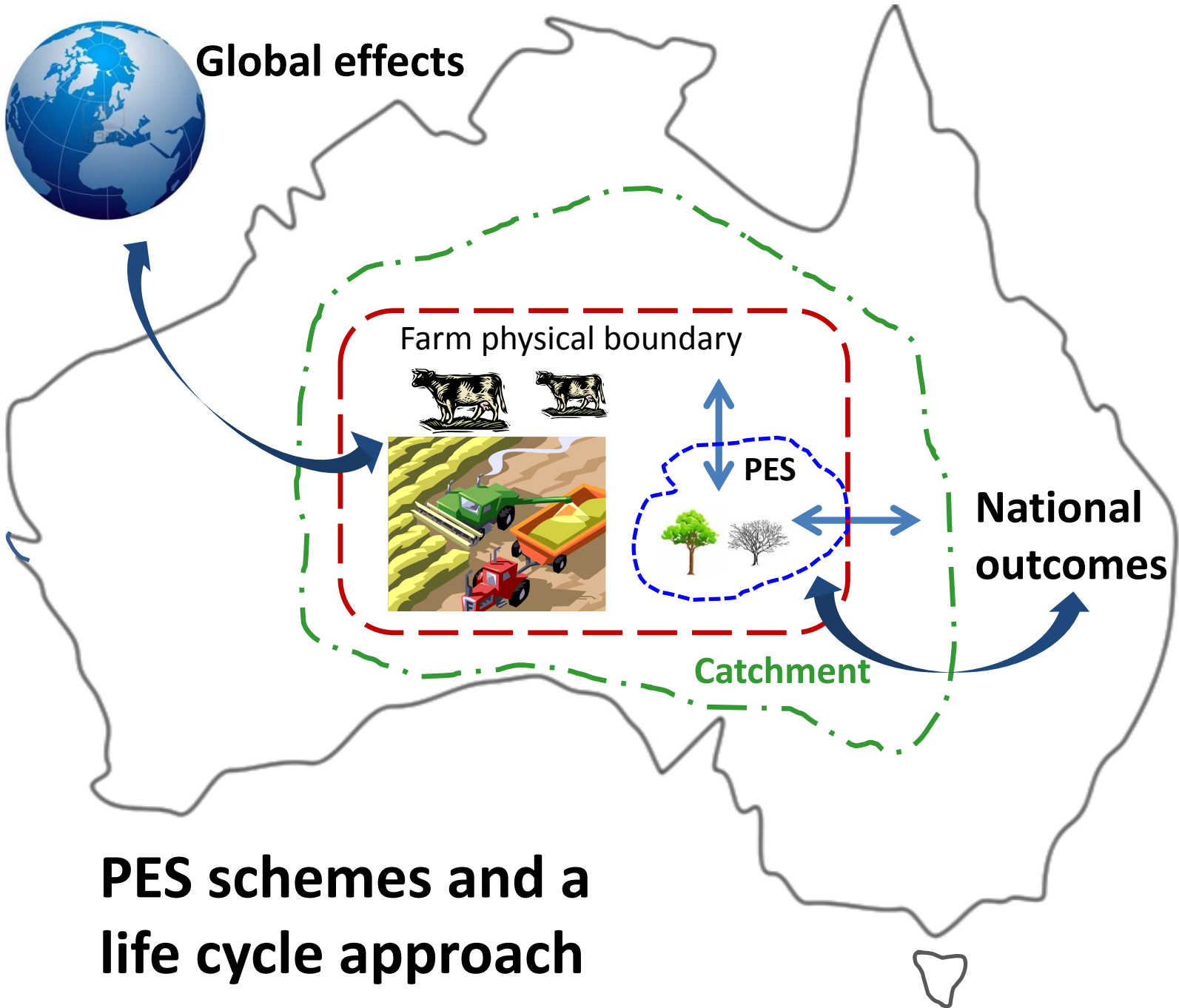
Need to assess outcomes of PES using a life cycle approach

- Displacement of impacts elsewhere
- Environmental trade-offs

**A life cycle approach can help to understand
net environmental outcomes of PES schemes**

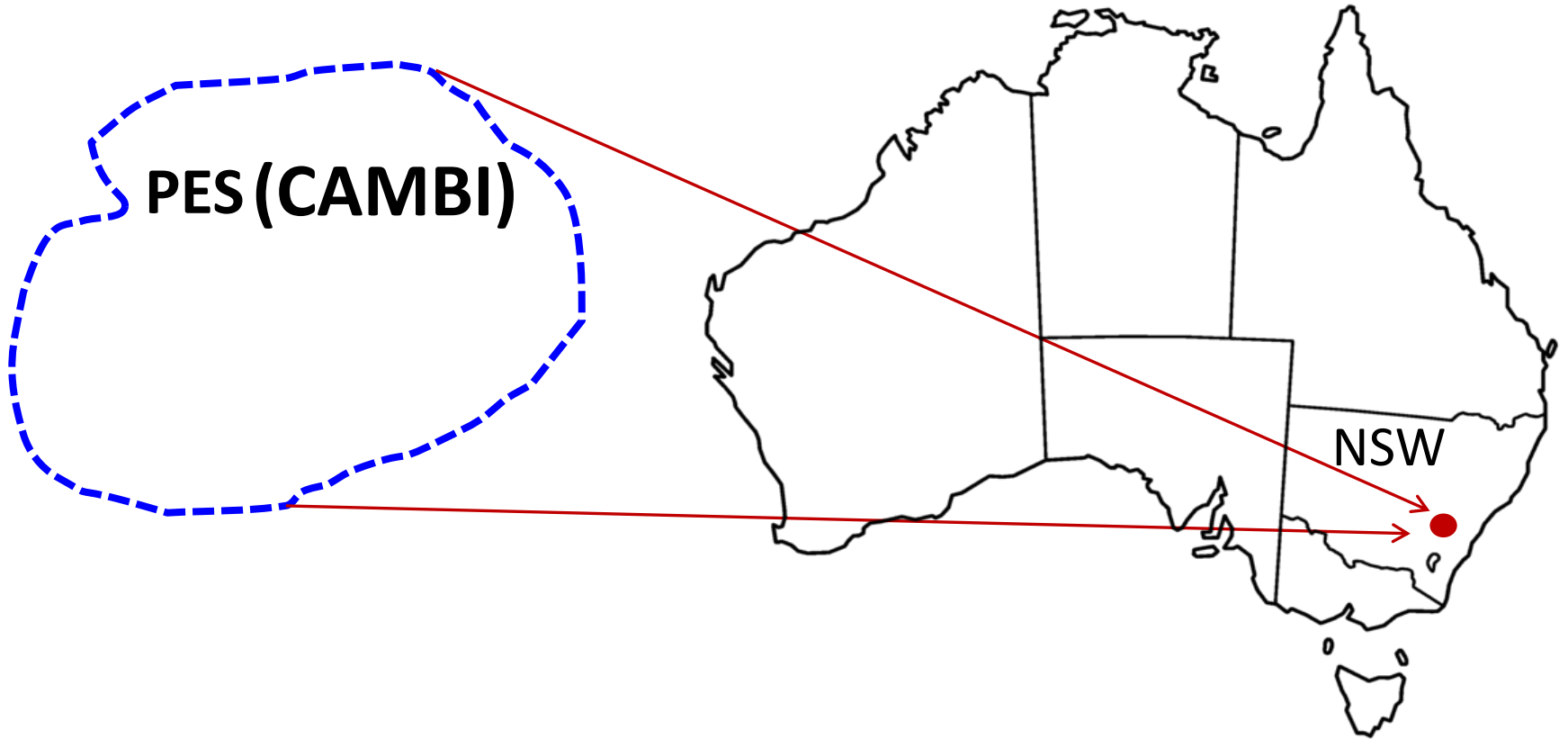


Global effects



PES schemes and a life cycle approach

Focus of this study



Question?

Q: What are the environmental trade-offs of CAMBI intervention at the case paddock?

Methods?

- LCA-based GHG impacts

Data & analysis

CAMBI case paddock - 80 ha

Before CAMBI (historical management)	Under CAMBI (current management)
Cropping (wheat-canola rotation)	Improved pasture with sheep grazing
GHG emissions from cropping	GHG emissions from sheep grazing
	GHG seq. (soil C seq.) from cropping to grazing

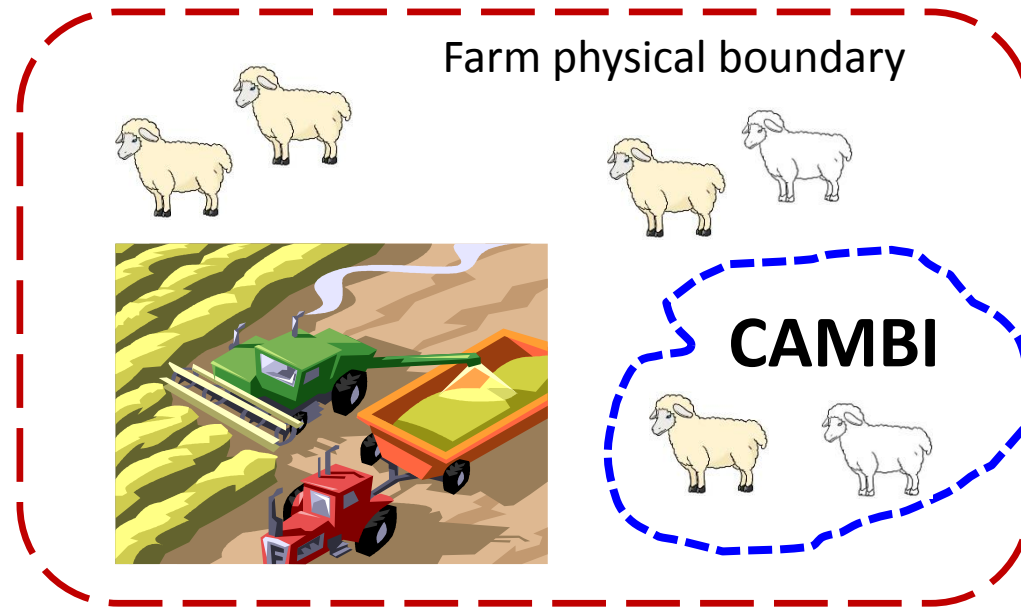
Net GHG effects: $\text{tCO}_2\text{-e ha}^{-1} \text{ yr}^{-1}$

Results (tCO₂-e ha⁻¹ yr⁻¹)

Item	GHG emissions before CAMBI		GHG emissions under CAMBI	Soil C seq. under CAMBI
	Wheat	Canola	Sheep grazing	Cropping to grazing
Farming inputs	0.44	0.59	0.10	-
Soil N ₂ O from fertilizer	0.14	0.116	-	-
N ₂ O emissions from crop residues	0.007	0.003	-	-
Sheep grazing	-	-	0.44	-
	0.58	0.70	0.54	1.27

CAMBI case paddock = net GHG sink

Future research



- CAMBI; net environmental benefits at the farm scale?

Summary/implications

LCA offers advantages for PES assessment

- Displacement of impacts elsewhere
- Environmental trade-offs

Final comment

Thank you!

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