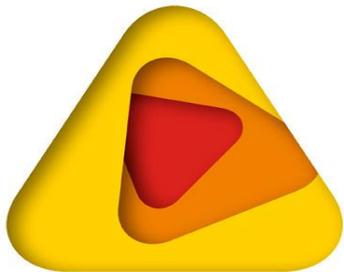


The Economics of Fire Management and Community Resilience

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Darwin Centre for Bushfire Research,
Charles Darwin University, Darwin, NT

North Australia Fire Manager's Forum, 21-22 June 2017, Kununurra, WA



bushfire&natural
HAZARDSCRC



BNH CRC research – northern hub

Projects:

1. Landscape fire and weed management

(Savanna fire management, Gamba grass and other grassy weeds)

2. Scoping remote north Australian community resilience and developing governance models:

- Asset assessment and governance models (NAILSMA and ARPNet)
- **Payments for Ecosystem Services (PES)**

Improved fire management on country



Reduced GHG emissions and
Reduced risk of future severe fire events



Economic opportunities through C and
ecosystem services-based economies



Improved land functions and processes, and
ecosystem services (incl. natural & cultural assets)



Building/utilizing people's capabilities (e.g.
Traditional knowledge of fire management)



Improved livelihoods and well-being of
people (e.g. good health, social networks)



Community Resilience

How fire management can help build resilience of remote communities?

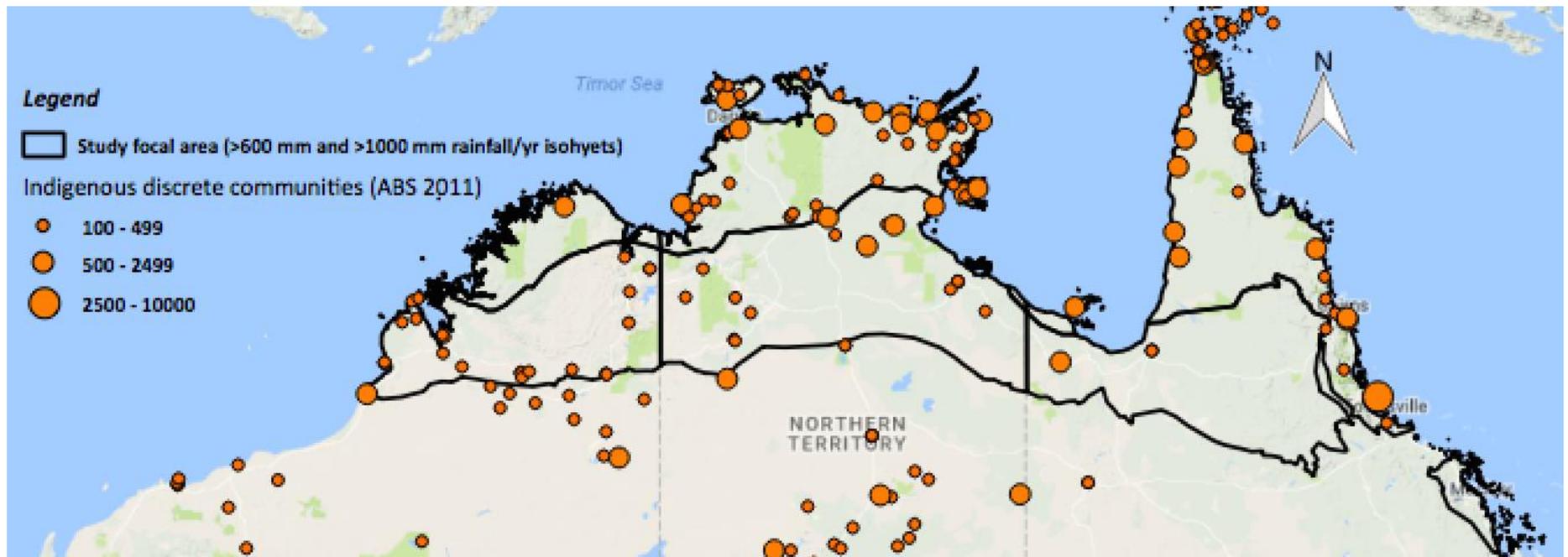


Payments for Ecosystem Services (PES) project

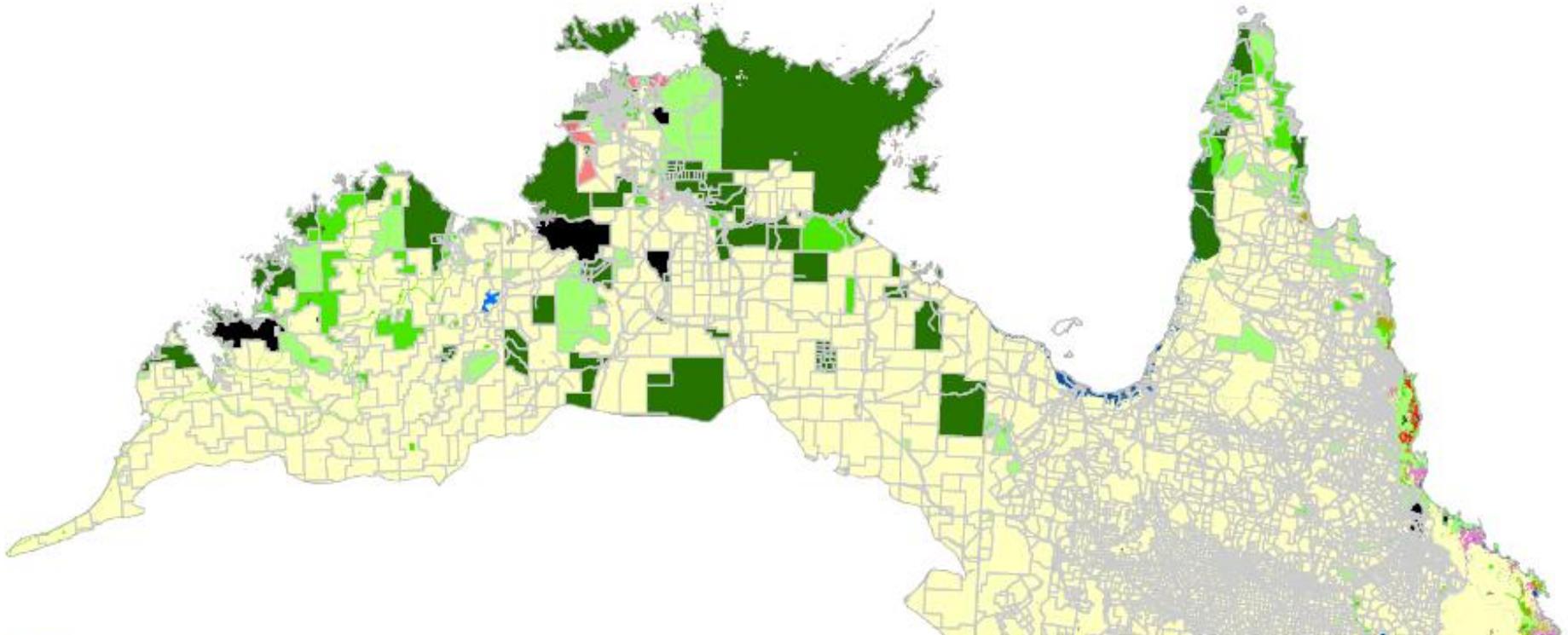
Current situational (desktop) analysis :

- Pastoral land use, land condition, wildfires, etc.
- Economic (work) opportunities in remote areas, and the socio-economic status of remote communities
- Potential for country-based enterprises (includes methodologies for valuing Ecosystem Services)

Our analyses for focal area >600mm rainfall in northern Australia:



Land use



-  Nature conservation
-  Managed Resource Protection
-  Other minimal use
-  Traditional Indigenous uses
-  Grazing Natural Vegetation
-  Production Forestry

-  Grazing Modified Pastures
-  Cropping
-  Irrigated Cropping
-  Lake
-  River
-  Marsh wetlands

-  Defence
-  Residential
-  Transport and Communication
-  Mining
-  Property Boundary

Pastoral enterprise

- 650 pastoral enterprises in North Australia region (>600 mm/yr)
- Since 1970s, <1% Return on Investment (McLean et al. 2014)

AND the environmental costs:

- Soil loss
- Impacts on water quality
- Biodiversity loss
- GHG emissions etc.

“...many northern grazing businesses are in dire financial situation.” (pg. ii)

Department of Agriculture and Fisheries

Desktop research project to provide data on liveweight and liveweight gain in the beef cattle sector in Queensland and the Northern Territory

Steven Bray, Dionne Walsh, Madonna Hoffmann, Beverley Henry, Sandra Eady, Casey Collier, Caroline Pettit, Javi Navarro, Debra Corbet

FINAL REPORT
2015



Northern Territory Government CSIRO Queensland Government

MLA reports on financial situation from 1999 to the present

1. McCosker et al. (2010) Northern beef situation analysis (1999-2008 data)

...concluded that most farms in northern Australia are unprofitable.

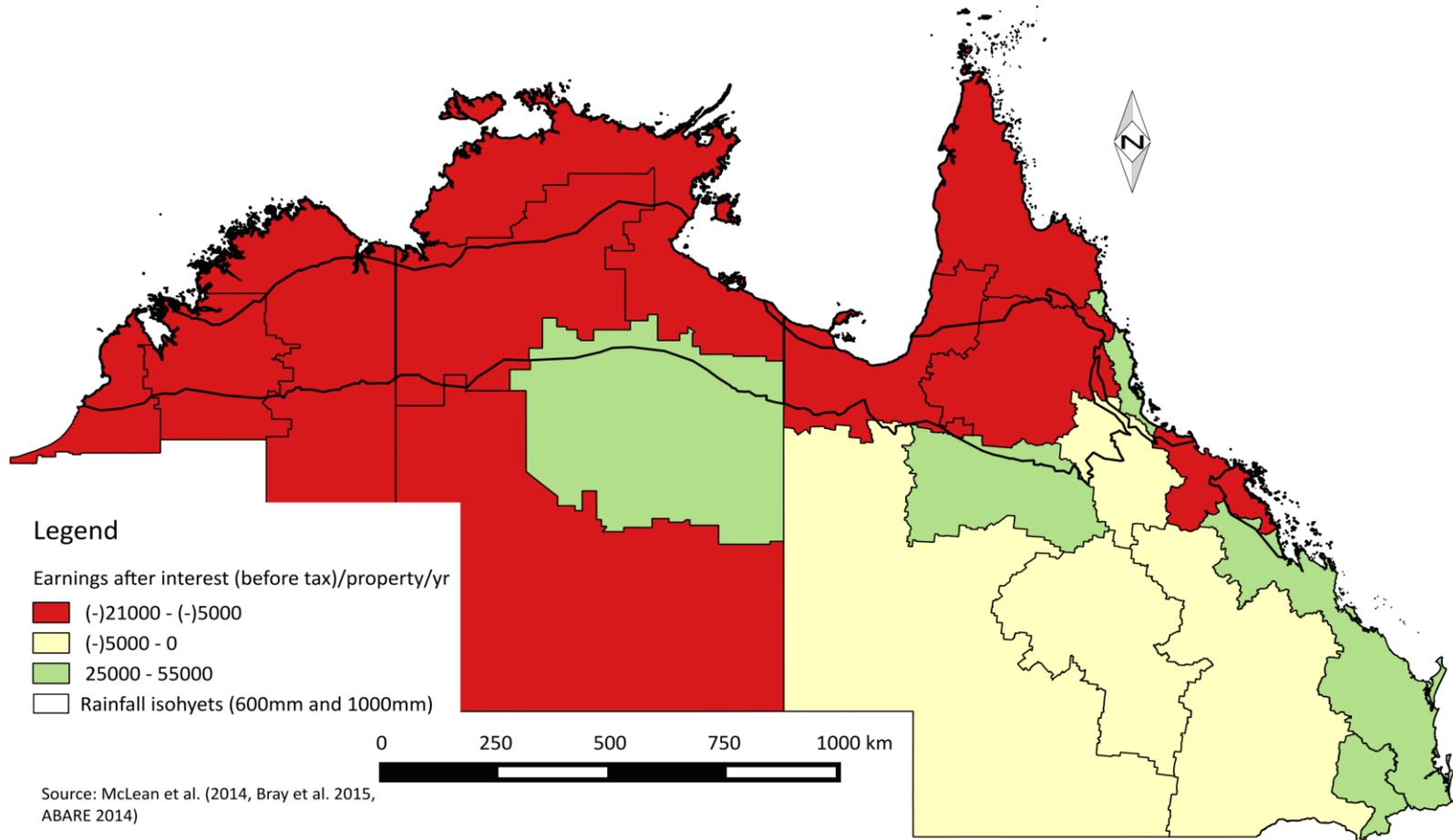
“In 2009, the northern beef industry is (*was*) in its worst state since the beef slump of the 1970’s”

2. McLean et al. (2014) The Northern beef report

“...the data (2001-2012) indicates that the majority of the northern beef businesses are not economically sustainable at present.” (pg. 11)

Annual long-term (2001-2012) economic returns from a typical, median-sized pastoral business in the north: Earnings After Interest but Before Tax (EAIBT)/yr

(Source: based on ABARES 2014, McLean et al. 2014, Bray et al. 2015)
except ~25% top performers



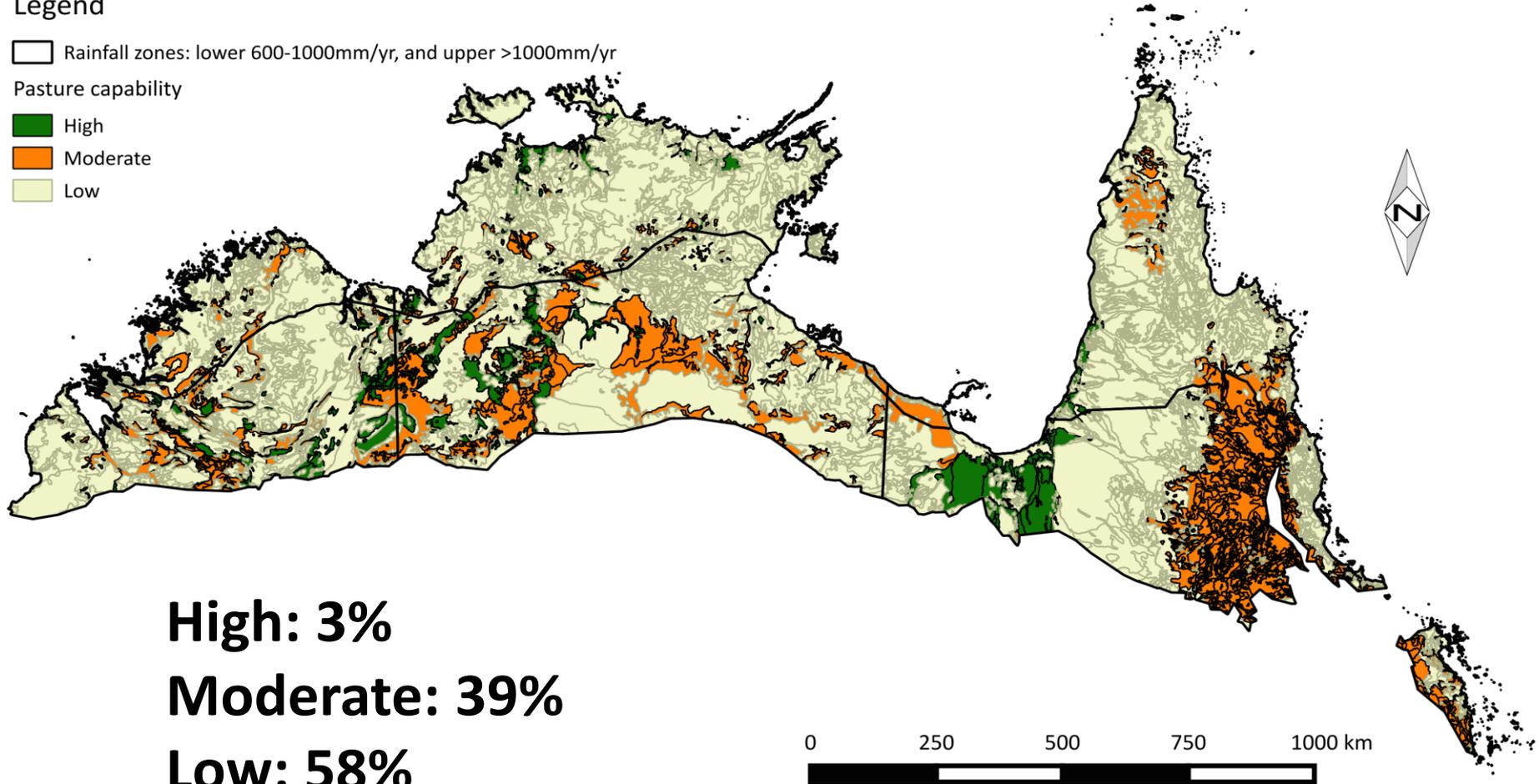
Pasture capability using expert advice

Legend

☐ Rainfall zones: lower 600-1000mm/yr, and upper >1000mm/yr

Pasture capability

- High
- Moderate
- Low



High: 3%

Moderate: 39%

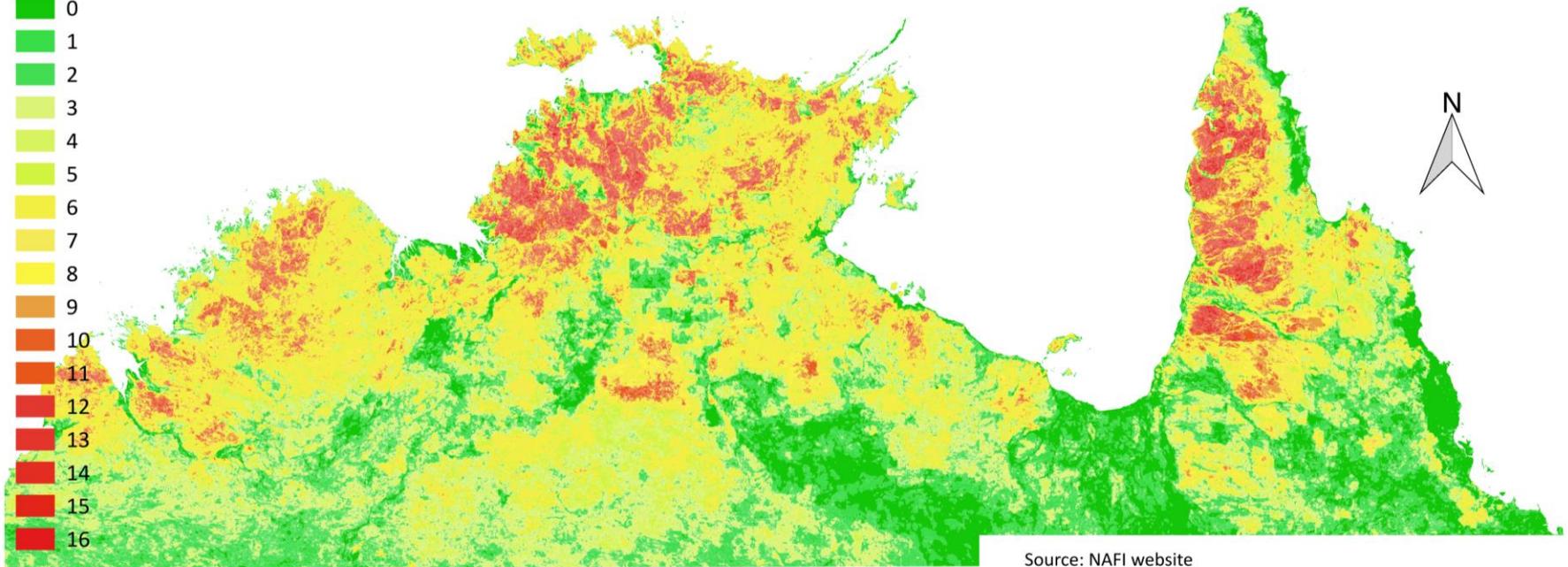
Low: 58%

Source: Tothill and Gillies (1992), with minor modifications
(for categorising Ribbongrass and Black Spear grass - M, applying
expert opinion)

High fire frequency

Legend

Fire frequency 2000-2015

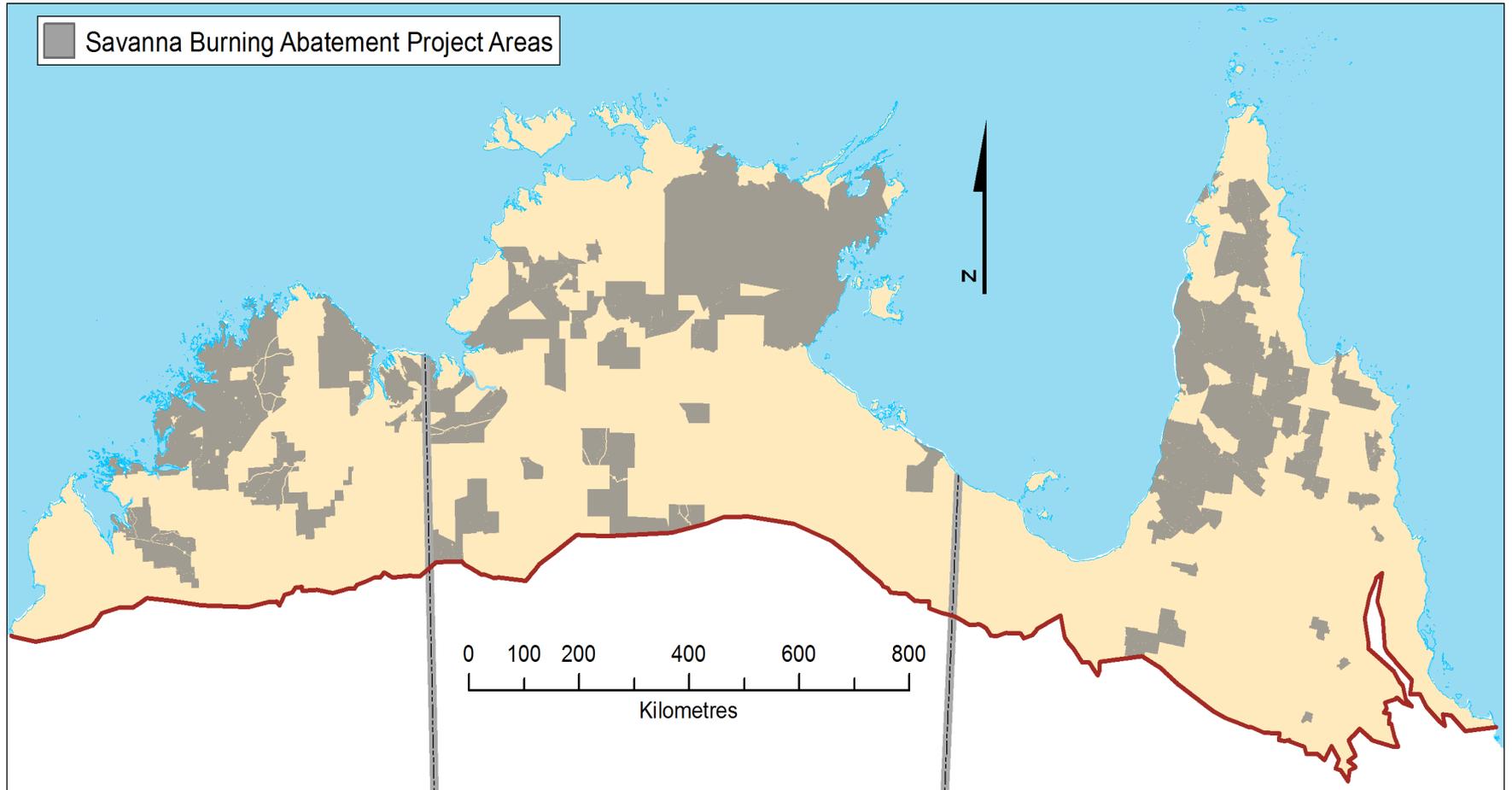


Source: NAFI website

Diversification opportunities: Land-sector based ES/carbon economies

- Potential for C projects on high-value conservation estate (265,000km²) & low-productive pastoral lands (696,000 km²)
 - these areas overlap
- Current costs of managing formal, 392,000km², = **~\$300m/yr**
- Carbon
 - GHG emissions ~7.5 M t CO_{2-e}/yr
 - Abatement potential ~2.5 M t CO_{2-e}/yr
 - \$20 – 30m/yr

Registered savanna burning Emissions Abatement projects (79) by Jan 2017





Mitigate the risk of natural hazards, i.e. fires



C and ES-based economies through PES



**Culturally appropriate work opportunities for
remote communities**



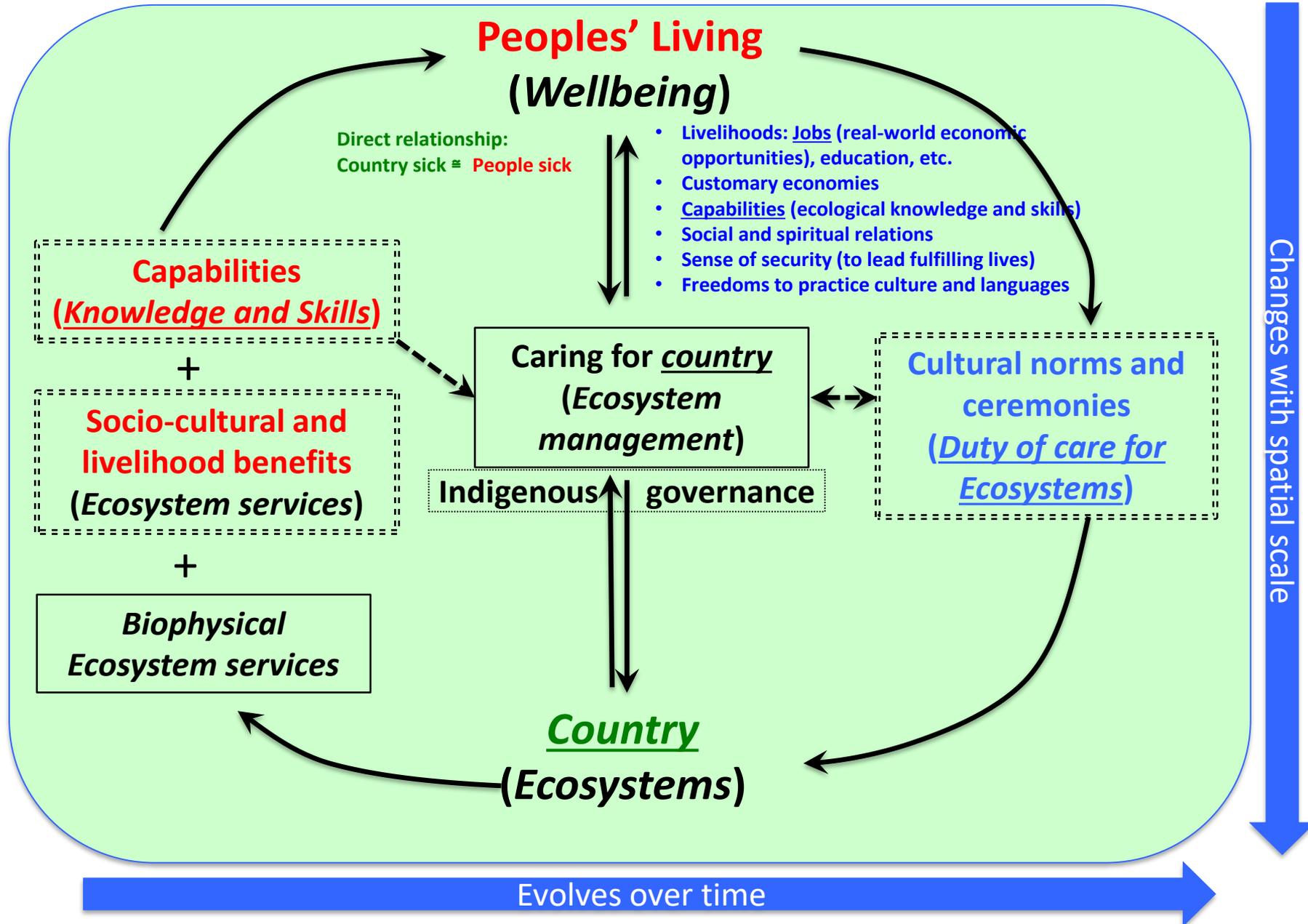
Peoples' wellbeing / resilience

Benefits:

**Sustainable ecosystems, reduced welfare-
dependency, improved health and social
systems, etc.**

Natural, Cultural, Social and Built capitals

RESILIENT Communities: ES Framework



A sustainable future for North Australia

(Eds. Jeremy Russell-Smith, Howard Pedersen, Glenn James)

Due Dec-2017, Published by Magabala Press

Ch1: A vision for sustainable development and Indigenous futures in NA

Peter Yu and others

Ch2: The North Australia cultural landscape

Ricky Archer and others

Ch3: History of dispossession and resilience in NA

Howard Pedersen, Paul Lane, Stuart Philpott

Ch4: Whose North? Whose Future? And the failure of current economic models

Rolf Gerritsen, Peter Whitehead, Natalie Stoeckel

Ch5: A sustainable North Australia land sector economy

Jeremy Russell-Smith, Kamaljit Sangha, Andrew Edwards, Bob Costanza, Ida Kubiszewski et al.

Ch6: Pathways to building Indigenous resilience and capacity

Glenn James and others

Ch7. NT Gulf case study

Sean Kerins, Jack Green, and others

Ch8: Regional development: policy and investment challenges

Allan Dale

Thanks!
Questions...

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