Costing natural disasters and assessing cost effective community solutions

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Darwin Centre for Bushfire Research, CDU

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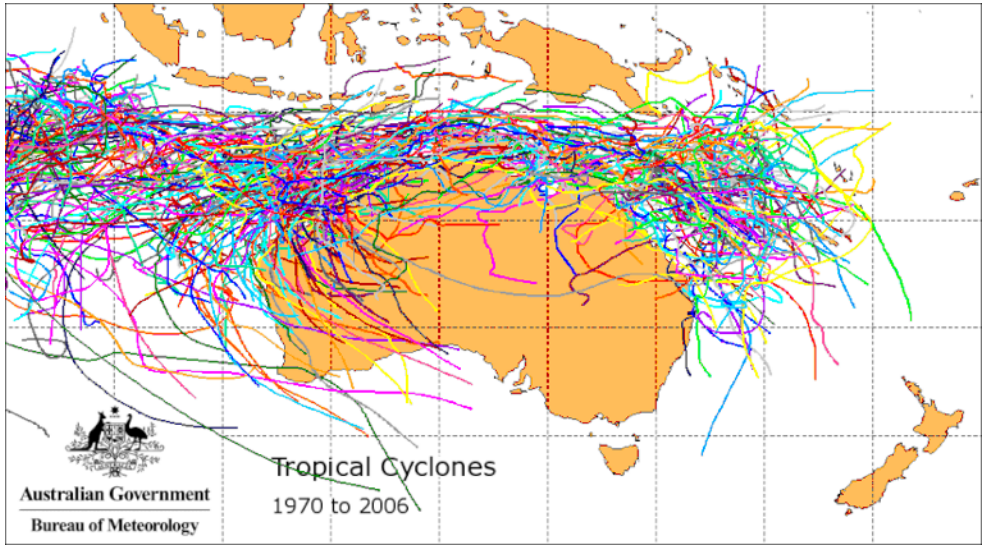
A wide range of Natural Disasters in the NT



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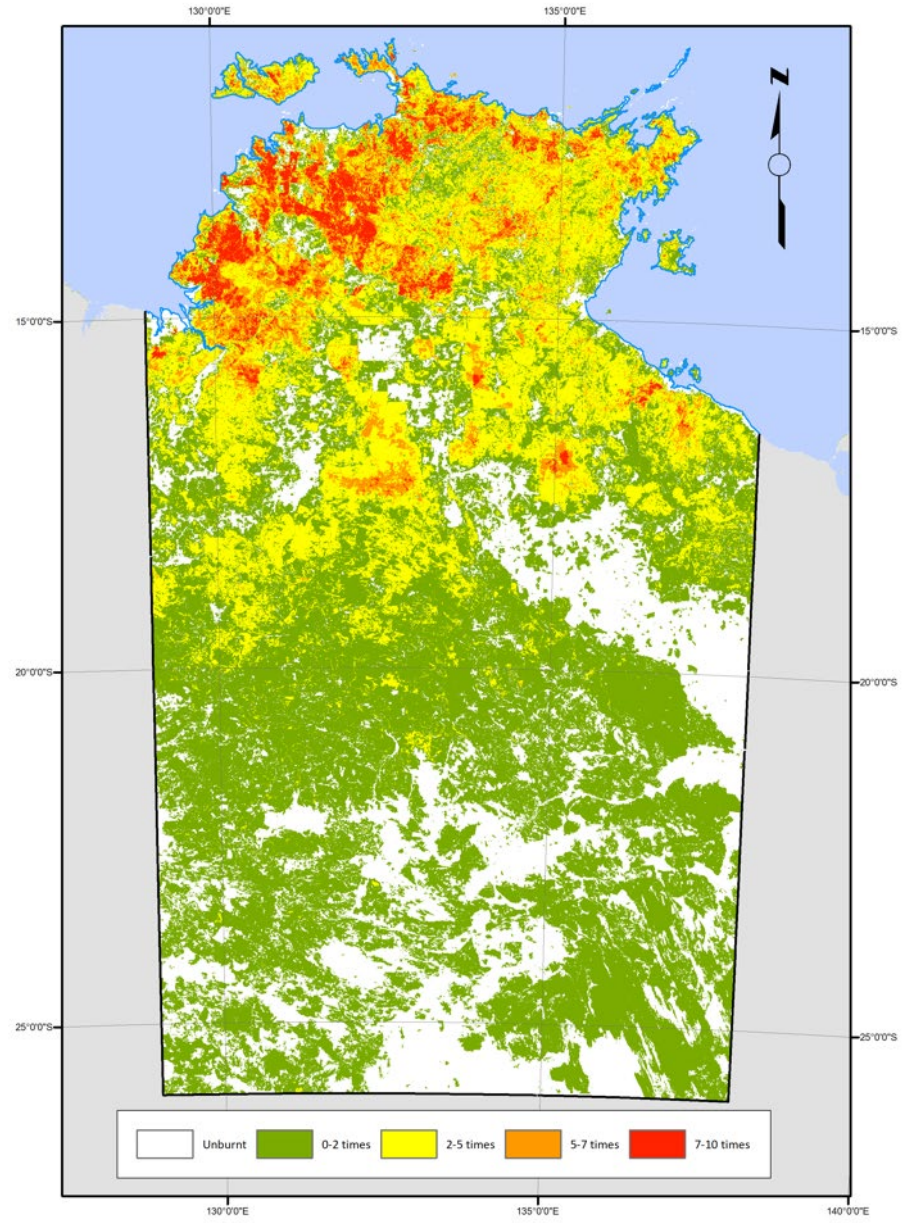
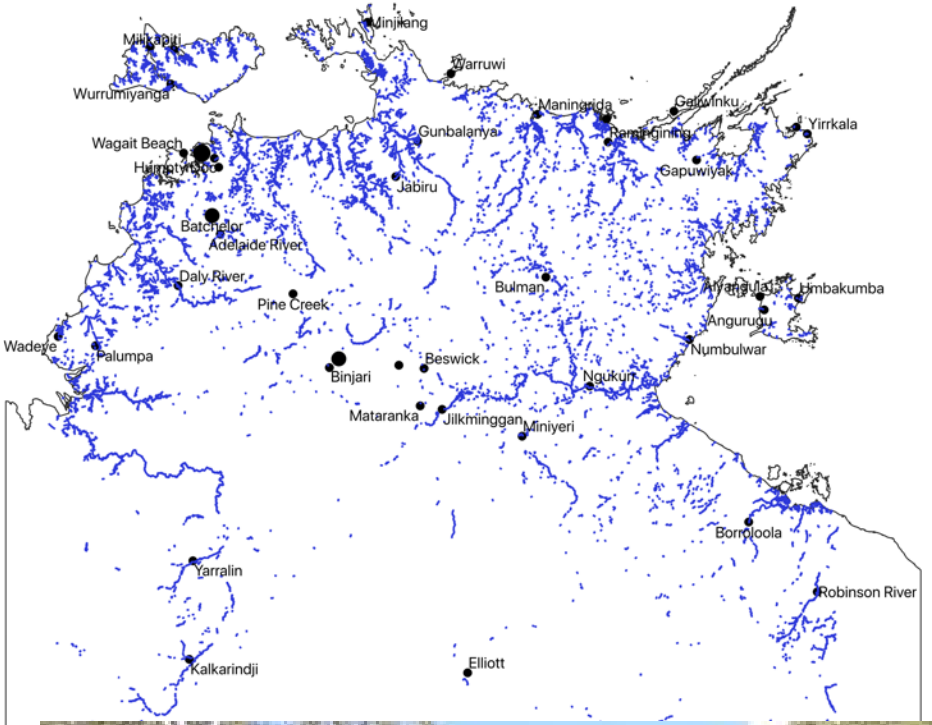
Average fire frequency from 2009-2018 in the NT



Flooding – annual in coastal remote communities

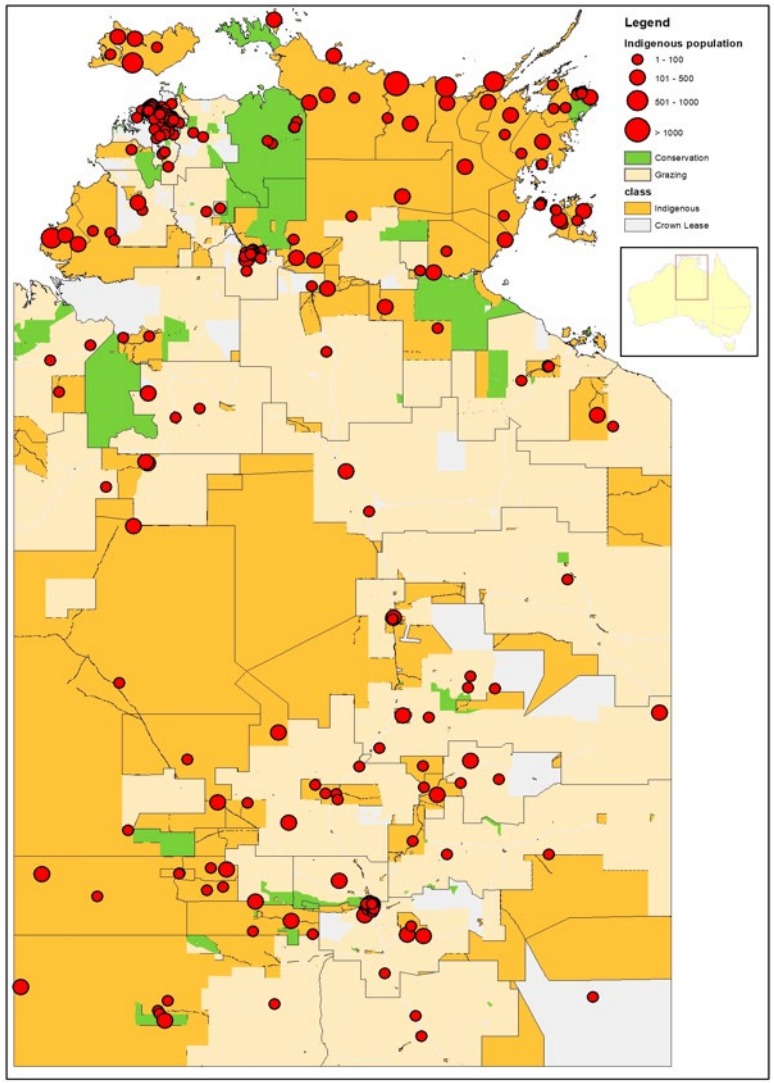


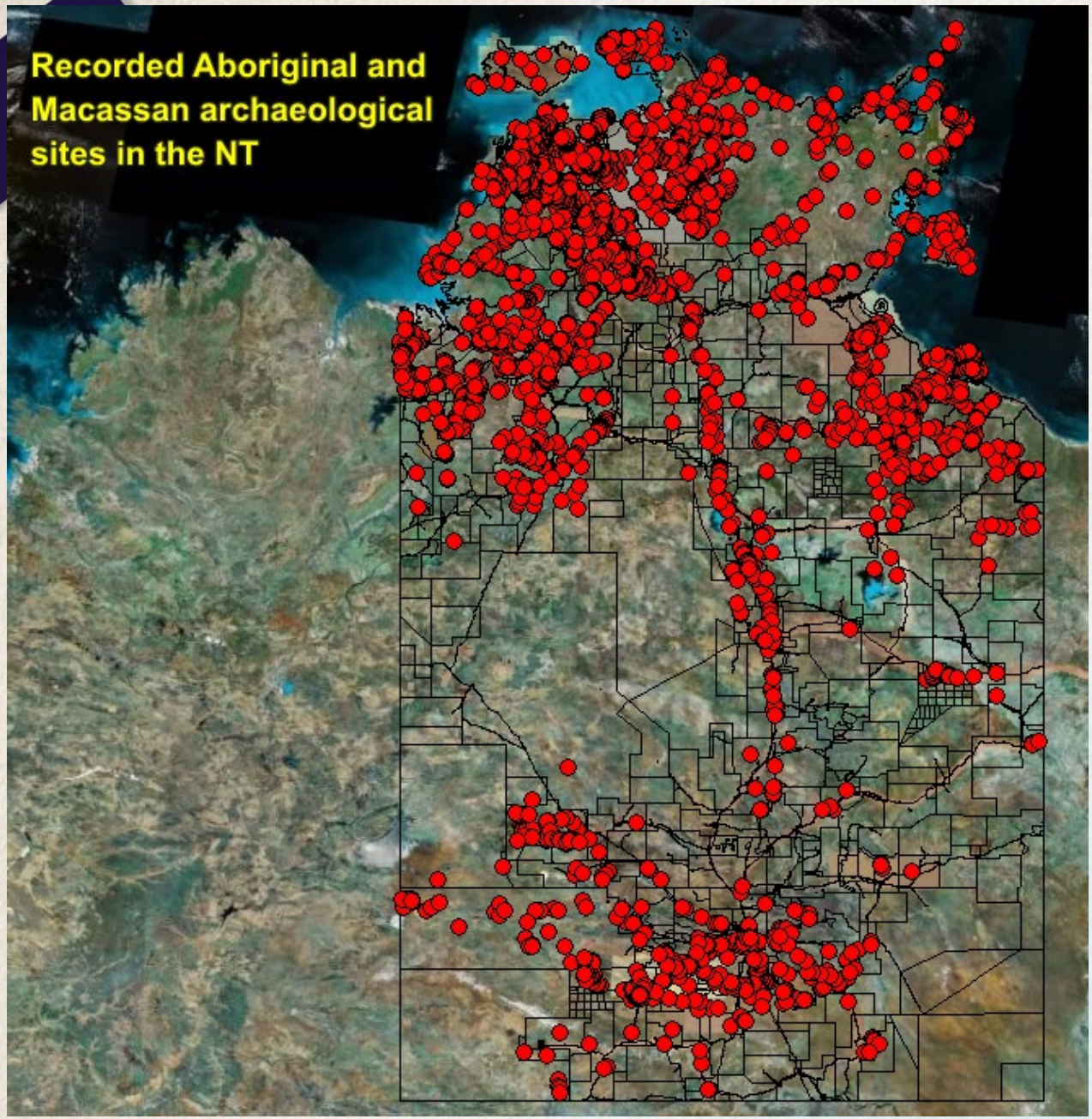
Australian Disaster Declaration Database : cyclones, floods and bushfires in the NT from 2010-2020

Start date	End date	Disaster Types	Name of Disaster- NT
Cyclone			
Mar-19	Mar-23	Cyclone	Severe Tropical Cyclone Trevor: 23 March 2019
Feb-18	Mar-18	Cyclone	Tropical Cyclone Marcus: March 2018
Mar-15	Mar-20	Cyclone	Tropical Cyclone Nathan: 20 March 2015
Feb-15	Feb-20	Cyclone	Tropical Cyclone Lam: 16 February 2015
Dec-11	Dec-28	Cyclone	Northern Territory Cyclone Grant: December 2011
Feb-11	Feb-16	Cyclone	Tropical Cyclone Carlos: 11 February 2011
Bushfires			
Jul-11	Aug-11	Bushfire	Central Australian bushfires: August 2011
Flooding			
Mar-19	Mar-21	Cyclone and Flood	Severe Tropical Cyclone Trevor: 23 March 2019
Jan-18	Jan-18	Flood	Daly River Flooding – January 2018
Dec-16	Jan-17	Flood, Rainfall	Central Australia Flash Flooding: December 2016 and January 2017
Dec-15	Dec-15	Flood	Central Australia Flash Flooding: 21 December to 23 December 2015
Jan-15	Jan-15	Flood	Central Australia flooding: 3 to 13 January 2015
Feb-12	Mar-12	Flood	Central Australian floods: March 2012
Nov-10	Nov-10	Flood	Alice Springs floods: 13 to 17 November 2010

Context:

- Total population 245,000
- Indigenous population 58,000 (25% of total pop)
- 96 Major and minor communities with >600 outstations – dispersed across the landscape
- >20 coastal communities experiencing floods/cyclones/ bushfires, throughout the year
- Many intangible losses





Source:
NT Heritage Branch
(Department of Tourism,
Sport and Culture)

Assessments of ND-related losses

ABRDR&SC (2017) - the total economic cost of $18.2 billion per year (2006-2016)

- **For the NT, the total cost is $50m/year**

- All costs are attributed to cyclones

- Forecast $3.3bn/yr by 2050

- **For Qld, total cost $11bn/yr**

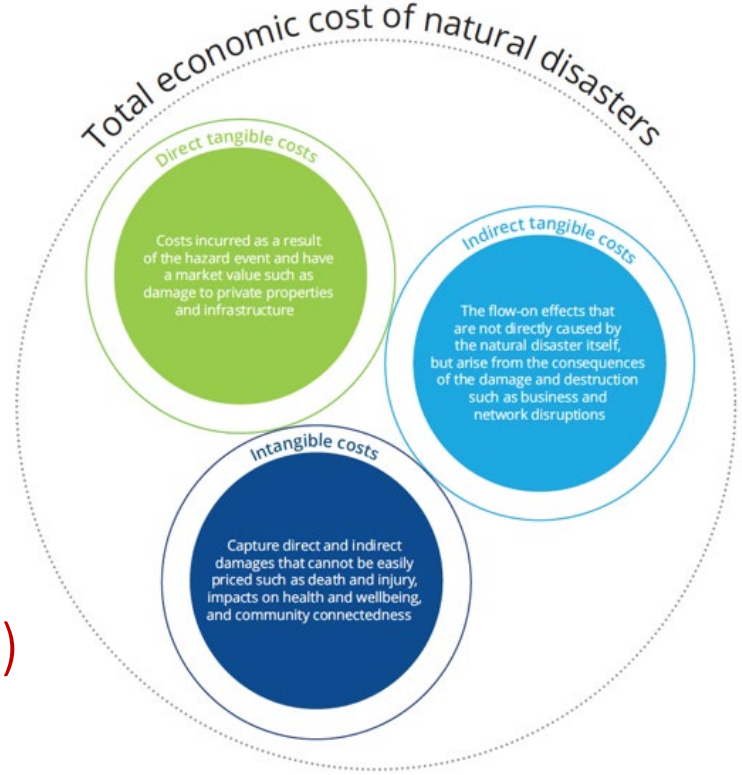
- floods, cyclones, hail and storms

- Forecast $6.2bn/yr by 2050

- **For WA, total cost $1bn/yr**

- All major NDs (predominantly hailstorms)

- Forecast $2.4bn/yr by 2050



The World Bank Framework for assessing ND-related losses

- **Direct losses**

- Marketable (public infrastructure, public, private and business buildings, etc.)
- Non-marketable (loss of ecosystems and their services, and cultural assets, human lives, etc.)

- **Indirect losses (consequence of NDs):**

- Marketable (Business disruption, communication and network/computer disruption, loss of work and public services, etc.)
- Non-marketable (poor health especially emotional well-being, loss of public amenity, loss of water, electricity and gas services, etc.)

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Total losses for the NT = $155.5m/yr

	ND related costs ($/year)
Direct costs	
Marketable	$5.9m/yr (using average costs of insurance loss from a cyclonic event, ICA database)
Non-marketable	$95m/yr - bushfires (of size >100km^2) causing loss of ES $7.6m/yr - cyclones causing loss of ES (category 3 or more)
Indirect costs	
Marketable	$47 m/yr (estimated by accounting for NDRRA Category A + B expenditure)
Non-marketable	not estimated (poor health, emotional well-being, etc.)

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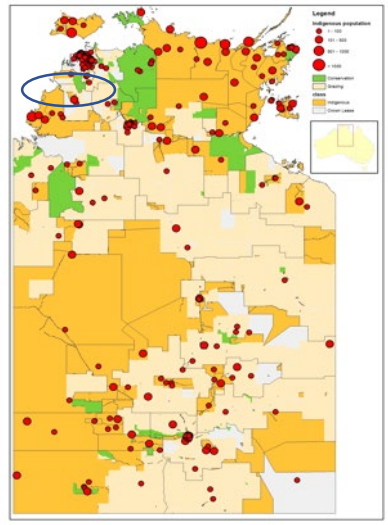
Daly River community case study



- Average annual cost of floods: $3.8million
- Across the NT, annual cost of floods and monsoon troughs: $7.5million
- Over the last 9 years: floods alone have costed $68 million

Image courtesy: Paul Terawsky

Key messages

- Significant non-marketable losses (2/3rd of the total)
- Several frequent and minor events, each costing between $1-4 million/yr, that need to be listed in our national datasets (AUS-DIS, Australian Disaster Declaration Database, and others)
- Typically, minor events costing <$10million/yr are not accounted for in ND-related loss assessments to date – but in the north, these are important to consider!

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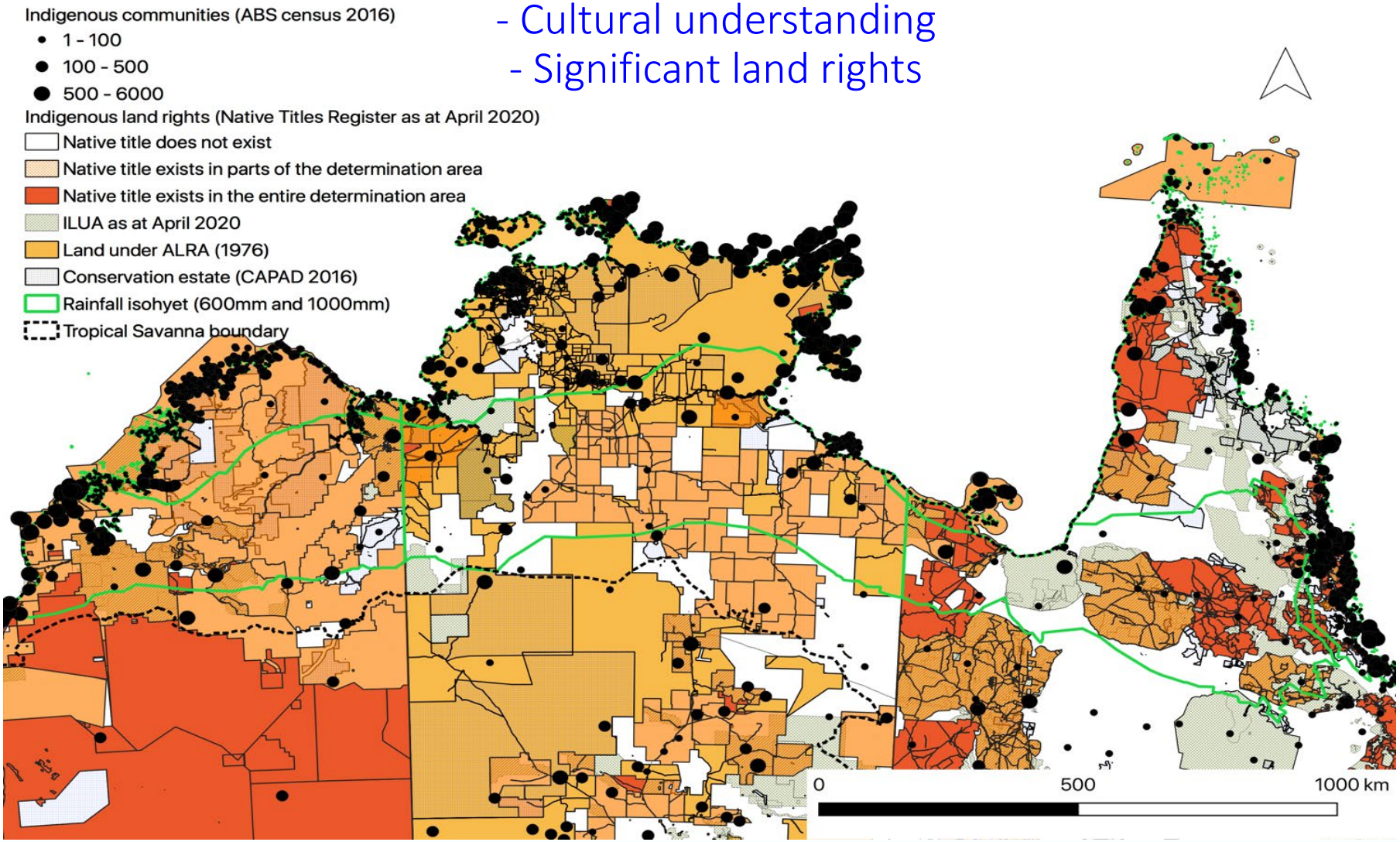
Possible solutions:
Economic Rationale — Indigenous involvement in EM sector

Cost savings Main benefiting sectors	Benefits generated from emergency-related employment ($ values in 2019)
• Welfare cost savings (applying half of the average welfare costs for Indigenous people in the NT i.e. $35,968/person/yr)	$13,811,756
• Pride and self-respect ($15,004/person/yr)	$5,761,617
• Domestic violence related cost savings ($20,760/person/yr)	$7,971,951
• Incarceration related cost savings (average cost of $8,897/person/yr)	$3,416,377
Total	**$30,961,701**

Building resilience in remote communities across the north

- Dispersed communities
- Permanent residency
- Cultural understanding
- Significant land rights



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