Nature for resilience: innovative disaster resilience solutions through nature

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Acknowledgement

NRM Regions Australia respects the enduring spiritual and physical connection of Traditional Owners as Custodians of Country.

We value the importance and diversity of the knowledge and understanding of Traditional Owners, which is based on a history of adapting to shifting climatic conditions, and balancing nature and society.

We respect and recognise them as the first natural resource managers of Australia who have practised nature-based solutions for more than 60,000 years and recognises their Elders, both past and present. We commit to working together to care for Country.

Cultural fire management workshop, NQ Dry Tropics.
Photo: Scott Radford-Chisolm


Nature for resilience
Resilience for nature
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Overview

- What's NRM?
- Value and risk to nature
- Resilience for nature:
  - Bushfire Recovery Knowledge project
  - Emergency preparedness and response plans for natural assets
- Nature for resilience:
  - Nature-based approaches
  - Evidence

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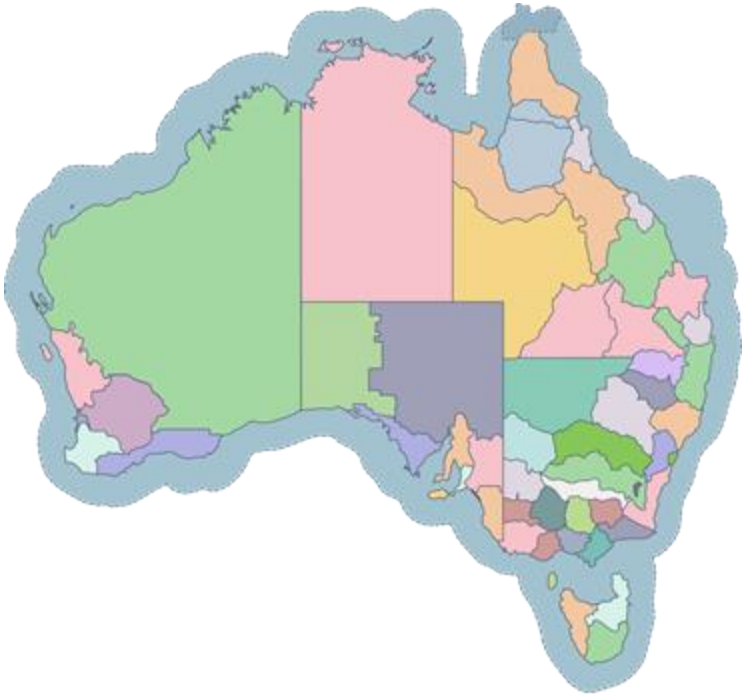
Who and what is NRM?



- **NRM = Natural Resource Management**
- Integrated management of the natural resources that make up our landscapes
- Place-based, landscape-scale
- Driven by collaboration & partnerships
- 54 regional organisations, with Australia-wide coverage, 20+ years

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Nature matters

Nature in Australia:

- Underpins industries that contribute *at least* $138bill/yr to economy
- $511bill/yr value to the economy including non-market services
- Supports at least 20% of GDP (equal to combined output of finance + mining sectors)

(Thompson F, Chau S, Nguyen M (2025). Nature Economics: Analysis of the case for Australian Government investment in nature. Cyan Ventures and 30 by 30.)

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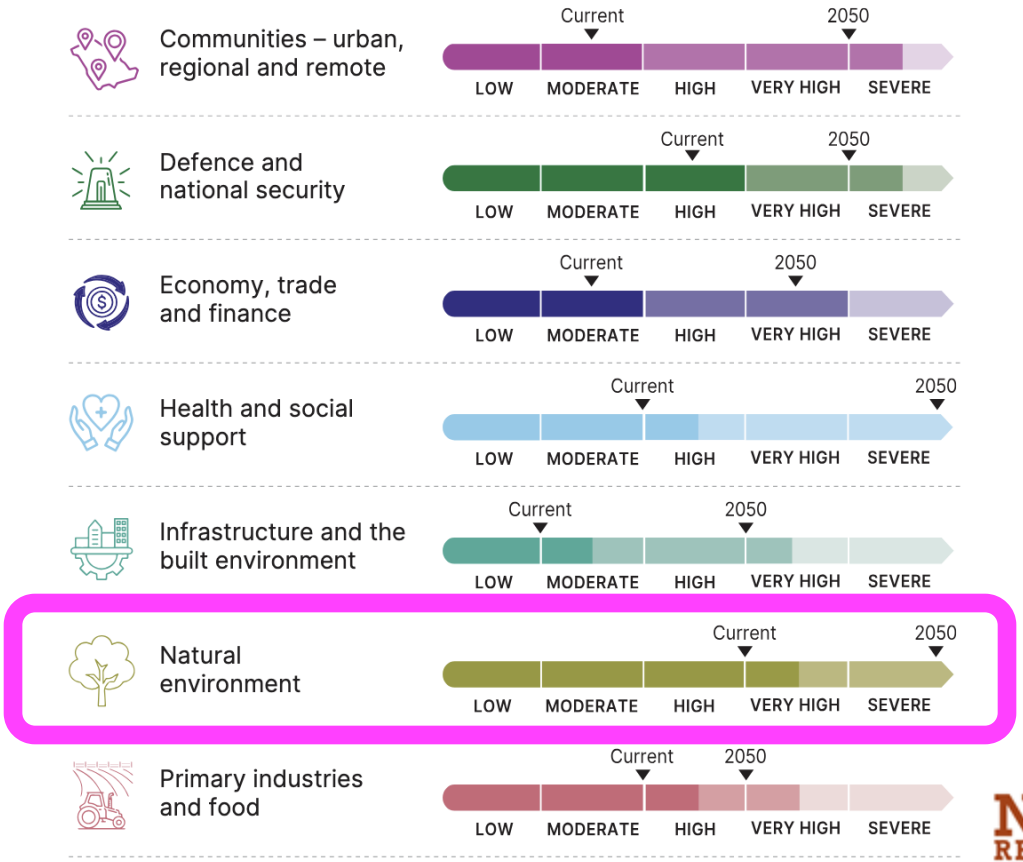
Nature at risk

National Climate Risk Assessment 2025:

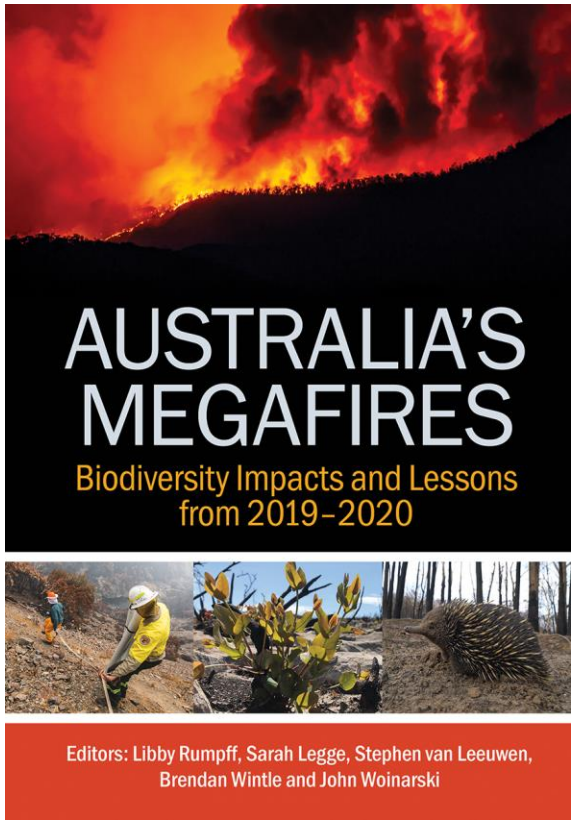
- Natural environment underpins all other societal systems
- Natural environment already at high/very high risk, and severe by 2050



Coastal Protection Impact of Black Summer Fires

- Over 5.6 million hectares of land burnt in New South Wales alone, including extensive damage to mangroves and saltmarsh.
- Mangrove monitoring has shown almost little significant signs of recovery to date.
- Represents a massive loss of coastal protection - $2.6b

Bushfire Recovery Knowledge Project



- Learning and embedding lessons from 2019-20 and other events
- Developing resources for the future
- Identify gaps / priorities for additional work

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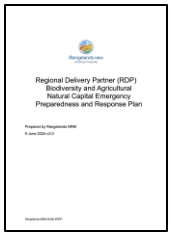
Bushfire recovery knowledge project: Key takeaways

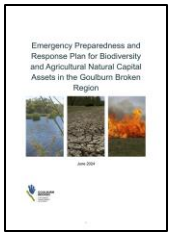
1. Critical roles for NRM in recovery
2. Resilient recovery: Build back better
3. Capacity: short- and long-term funding and people
4. Planning and preparedness is key
5. Shift focus to resilience: across landscapes and ecosystems for multiple compounding events

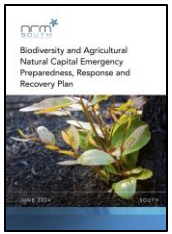
Emergency Preparedness and Response Plans for Natural and Agricultural Assets (EPRPs)

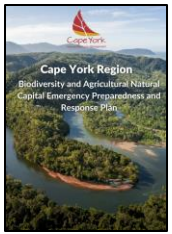
- Define the priority natural capital and agricultural assets in the NRM region
- Identify the risks to those assets presented by extreme events
- Define management responses for the planning, preparedness, response and recovery phases of such events.

Explore the plans here:









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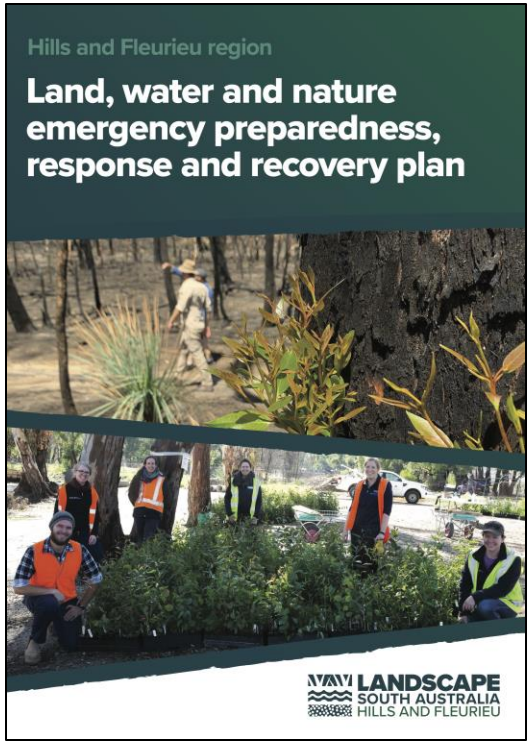
EPRP in Action: Hills and Fleurieu region

- EPRP released in 2024
- Clarified governance, roles and responsibilities
- Improved data on natural assets
- Key actions for each phase of disaster management
- Strengthened partnerships with emergency management agencies



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EPRP in Action: Hills and Fleurieu region

- Feb 2026 bushfires – private land and Deep Creek National Park
- Home to some of the last populations of endangered species

Mt Lofty Ranges
Southern Emu-wren

Western Beautiful Firetail

EPRP in Action: Hills and Fleurieu region

- Cross-agency Natural Assets Team worked with CFS suppression crews
- Saved critical habitat
- Shift to protecting life, property and environmental assets together
- Rapid rollout of recovery grants for landholders

Deep Creek National Park backburn Photo: SA CFS

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Photo: NRM North, Tasmania

Nature for resilience

Mangroves, saltmarsh, and seagrasses

Catchment and river restoration

Photo: NRM North, Tasmania

Cultural fire

Photo: Burnett Mary Regional Group

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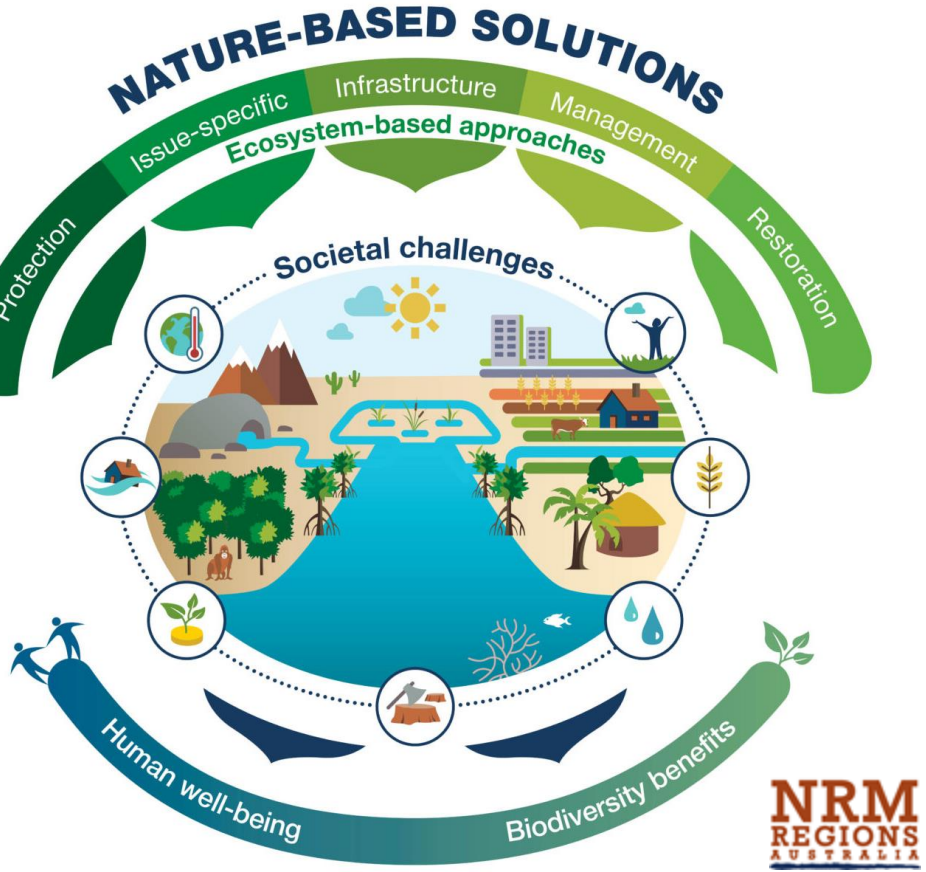
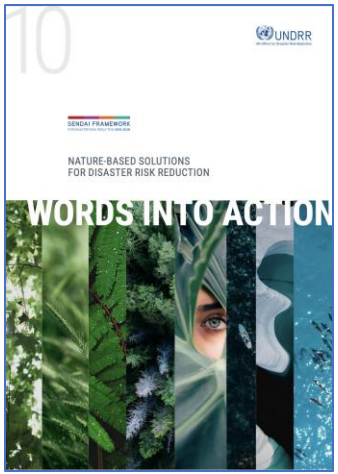
Nature for resilience

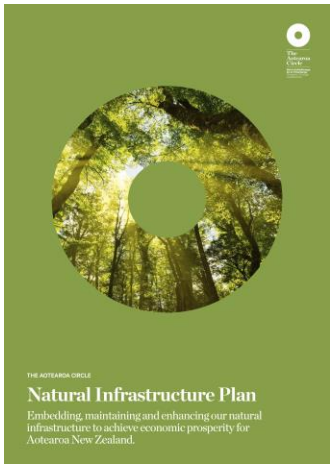
- $9:1 Return on Investment (UNEP 2024)
- ~37% of the global CO_2 mitigation required by 2030
- Biodiversity outcomes
- Protecting coastal wetlands could save $52billion/yr on insurance (WEF 2020)



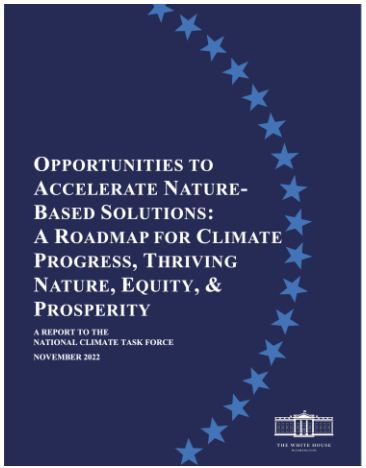
Nature for resilience: global adoption



UN NbS for DRR



NZ Natural Infrastructure Plan



US Roadmap for NbS

Canada Natural Climate Solutions Fund

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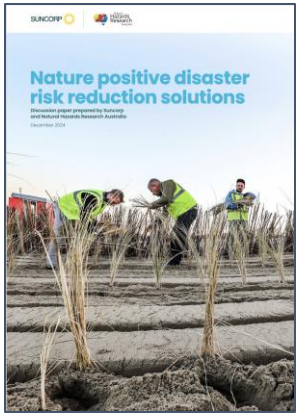
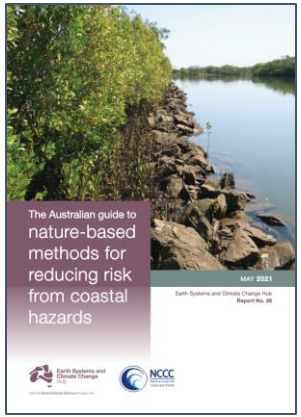
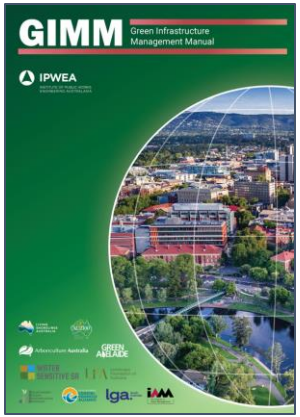
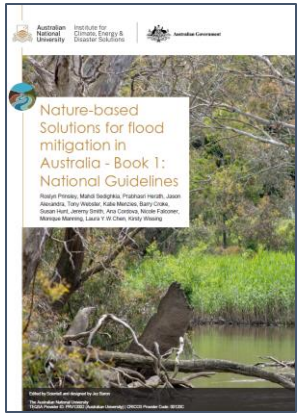
Nature for resilience: Australian context









- NbS not yet seen as a core strategy for resilience
- Under-resourced
- Limited evidence base about effectiveness, benefits, and impacts
- Absence of clear definitions, guidelines, metrics and methodologies

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National Nature-led Resilience Program

- Build the evidence base through field trials and evaluation
- Advocate for an enabling policy, regulatory, and funding environment for NbS
- Build local knowledge, capacity and networks to deliver NbS at scale

Photo: NQ Dry Tropics

Photo: Terrain NRM

Photo: South West NRM, WA

The Nature-led Resilience Program is delivered with support from the Minderoo Foundation.

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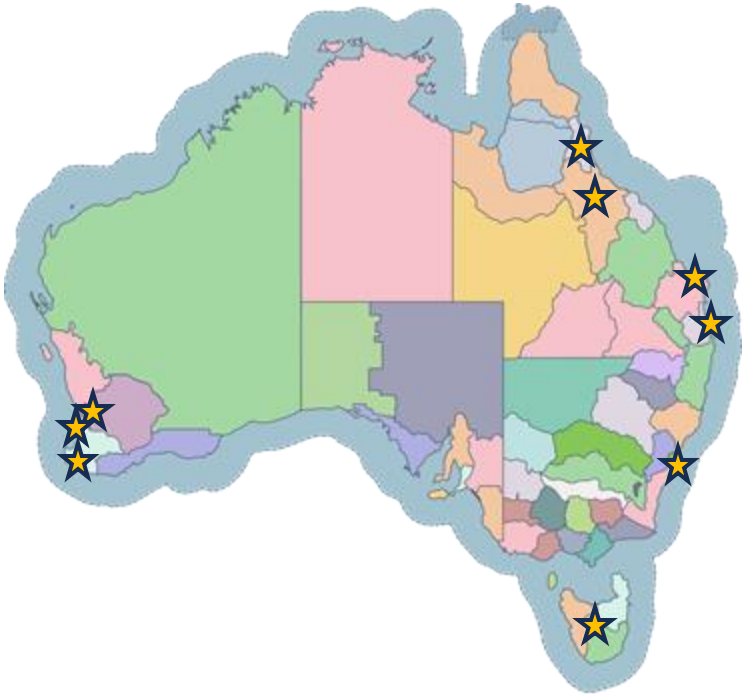
Regional trials and evaluations



Trials of nature-based solutions to enhance flood, fire, coastal and drought resilience

South West NRM

NACC

NQ DRY TROPICS

nrm SOUTH

NRM North

Cradle Coast NRM

TERRAIN NATURAL RESOURCE MANAGEMENT

Perth NRM

BMRG Ecosystem Resilience

OCEANWATCH AUSTRALIA

Healthy Land & Water

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Nature-based Flood Resilience, Tasmania

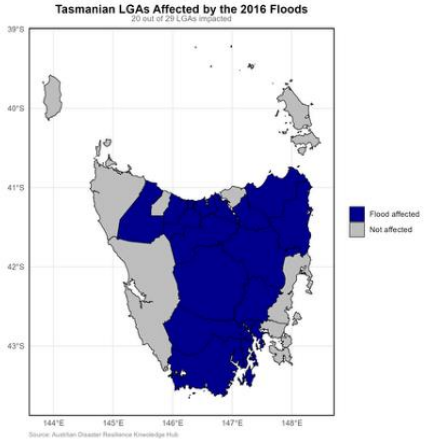

Photo: NRM North, Tasmania

Photo: NRM North, Tasmania

- 2016, widespread flooding
- Loss of 3 lives
- At least $70mill damage to agriculture alone

Nature-based Flood Resilience, Tasmania

Photo: NRM North, Tasmania

Nature-based Flood Resilience, Tasmania

Nature-based solutions:

- Resilient Riparian Vegetation
- Connected Wetlands and Floodplains

On-ground actions:

- Revegetation and weed management
- Access control
- Riverbank modification or realignment for erosion management
- Bank armoring using nature-based methods
- Re-engage wetlands

Nature-based Flood Resilience, Tasmania

- Works put to the test in 2022 floods
- Damage costs in 2022 only $12.4mill (compared to $70mill in 2016)
- 2025 Survey: Two-thirds of participants in the original projects agreed that the works had:

(i) reduced the impact of the subsequent floods on agricultural production,

(ii) increased biodiversity,

(iii) provided recreational and aesthetic benefits on the farm,

(iv) benefited other industries and the Tasmanian community.

Photo: NRM North, Tasmania

BUT: not 100% success - in some cases, subsequent flooding has washed away works

Next steps

- Build evidence base – analysis of existing projects to assess effectiveness of different nature-based approaches for resilience
- Continued capacity-building
- Recommendations for enabling policy, regulation, and funding

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Nature-led disaster resilience

- Nature can deliver effective disaster risk reduction at landscape scales.
- Barriers remain, and we're working on them: policy, resourcing, knowledge, capacity.
- NRM sector is partnering to enable the shift towards nature-led resilience in Australia. We'd love to work with you!

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Thanks

- Regional NRM Organisations
- Collaborators including University of Melbourne, CSIRO, Climate-KIC, AIDR
- Ainslie Macdonald
- The Nature-led Resilience Program is delivered with support from the Minderoo Foundation.

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