



EXECUTIVE SUMMARY

Nature as infrastructure

Recommendations to strengthen
landscapes for climate adaptation and
disaster risk reduction in Australia

NRM
REGIONS
AUSTRALIA

FIRST NATIONS ACKNOWLEDGEMENT

The authors respect the enduring spiritual and physical connection of First Nations people as Custodians of Country. We value the importance and diversity of the knowledge and understanding of First Nations people, 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 recognise their Elders, both past and present. We commit to working together to care for Country.



AUSTRALIA IS AT A DEFINING MOMENT

Addressing the growing severity and frequency of climate hazards across Australian landscapes, coastlines, and urban centres demands a pivotal transformation in how we direct capital, formulate policy, and steward our natural environment.

Achieving long-term resilience requires moving away from reactive post-event recovery toward proactive risk mitigation and nature-based adaptation, while transitioning reliance from rigid 'grey' infrastructure to adaptable, cost-effective natural infrastructure.

By recognising and investing in nature as critical adaptation infrastructure, Australia can:

- reduce chronic climate risks whilst simultaneously mitigating further risks;
- catalyse adaptation and resilience responses and reduce adaptation and resilience costs;
- protect communities, infrastructure and local economies from increasing extreme acute climate events and reduce the costs of recovering from these events;
- support ecosystem recovery and meet international nature and climate commitments; and,
- unlock new economic opportunities.

THE COSTS ARE ESCALATING

Total annual economic losses from extreme events in Australia in 2021 was an estimated \$38 billion¹. The National Climate Risk Assessment² identified around one million homes will be in 'very high risk' climate hazard zones by 2050 and effectively uninsurable – which will have huge ramifications for social cohesion and equity.

In 2025 alone, disasters damaged 145,392 homes nationwide – almost as many as the 172,657 new homes completed that year³. Escalating disasters also negatively impact the natural environment that provides \$892b to our GDP⁴. Yet domestically, Australian Government investment mostly flows into disaster response and recovery. Investment in climate adaptation and disaster resilience, primarily through the Disaster Ready Fund and Future Drought Fund, remains marginal compared to the cost of disasters⁵.

Australia's current approach to climate and disaster risk is increasingly unsustainable. As climate hazards intensify, continuing to rely predominantly on post-event recovery will expose governments, communities, businesses and insurers to even higher escalating costs. A greater share of public and private capital must be directed towards reducing risk before disasters occur by investing in prevention, resilience and adaptation.

PREVENTION IS BETTER THAN CURE

Just as targeted investment in preventative health care – such as better nutrition, fluoride in water supplies and immunisation programs – can significantly reduce the demand for acute care, investing in natural infrastructure such as functioning floodplains, coastal vegetation, urban tree canopy and fire-resilient landscapes, reduces the impacts of climate hazards and their associated costs. The lesson from health is that governments that invest in prevention and risk reduction at scale, with robust measurement and long-term funding, realise compounding returns. The same logic applies to climate and disaster resilience. Critically, natural infrastructure generates multiple co-benefits, including contributing to preventative health care – it increases biodiversity, improves community wellbeing, supports water security and sequesters carbon, while also reducing future disaster costs.

London's urban forest prevented an estimated 153 heat-related deaths between 2015–2022⁶ and Australian adults living in neighbourhoods with at least 30 per cent tree canopy have better mental and physical health than those in low-canopy areas⁷.

Investment in natural infrastructure also represents co-investment in programs that support many other government objectives, including enhanced community health and safety, and greater resilience of local economies, green jobs, cultural values, and infrastructure. These actions can reduce climate risks, advance climate resilience and adaptation, support nature recovery and net zero goals, and strengthen Australia's economy.

THE EVIDENCE IS CLEAR

Natural infrastructure approaches are cost-effective, deliver multiple benefits for communities, economies and biodiversity, and are deployable now.

A global review of more than 20,000 economic evaluations of natural infrastructure over a 20-year period found 95% consistently proved cost-effective in mitigating hazards and 91% of relevant studies found that natural infrastructure is at least as effective as engineered solutions⁸. The advent of hybrid natural and engineered infrastructure solutions provides even more scope.

What remains missing is the enabling policy, governance and investment architecture to unlock the potential of natural infrastructure at scale. This discussion paper is a call to action.

It recommends specific federal and state government actions that can accelerate natural and hybrid infrastructure approaches to climate adaptation and disaster resilience across Australia. These actions have been produced by a cross-sector collaboration spanning natural resource management, research, investment, insurance, climate policy and First Nations land management – also reflecting the breadth of engagement required to drive change at the scale needed.



'NATURAL INFRASTRUCTURE'

refers to actions that protect, sustainably manage and restore natural or modified ecosystems, to address societal challenges effectively and adaptively.

THE RECOMMENDATIONS THAT FOLLOW SHOULD BE CONSIDERED AS A SEQUENCE OF CRITICAL STEPS

Climate, nature and social risks and opportunities are interdependent, and none of them will shift at pace without a comprehensive picture across and within each. Sequencing matters as much as ambition. Government leadership sets the sequence; private capital and delivery follow with confidence once the measurement and policy signals are clear and consistent.

The key recommendations across these interconnected areas are:

- **Healthy Country Healthy People:** Increase investment in First Nations co-stewardship and leadership of natural resource management programs, and give a voice to Indigenous knowledge and leadership.
- **Value Natural Infrastructure:** Incorporate natural values into government financial decision making.
- **Catalyse Private Sector Action:** Structure government policy to catalyse private sector frameworks for valuing and investing in natural infrastructure.
- **Increase Supply:** Invest in Australia's established network of local, regional and cross-regional aggregators – including Indigenous land management organisations, regional NRM organisations, and local governments – to accelerate the delivery of natural infrastructure.
- **Build Capacity:** Invest in closing the knowledge and awareness gaps and strengthening the Australian evidence base to support scaling of natural infrastructure for disaster risk reduction.

Action to implement natural infrastructure approaches to adaptation and risk reduction is gaining momentum globally. Australian state and federal governments have a significant opportunity to strengthen Australia's landscapes, cities and communities through the adoption of natural infrastructure, so that they are resilient to the current and future impacts of a changing climate.



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- 1 Deloitte. (2021) Special Report: *Update to the Economic Costs of Natural Disasters in Australia*.
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- 6 Taylor et al. (2024) *Environ. Res. Lett.* 19 054004.
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IMAGES

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Terrain NRM – Johnstone River Catchment, QLD.

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Cradle Coast NRM – Tiagarra Tasmanian Aboriginal Cultural Centre. Image: Stu Gibson, TAS

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Perth NRM – Building coastal resilience, WA.



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