

Soil as a climate solution

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Alternative Futures

Tallis et al. 2018

THE NATURE CONSERVANCY

BUSINESS AS USUAL

or

SUSTAINABILITY

[Global Temperatures]

3°C
Temps increase 5.76°F, sea levels rise and storms are more severe



1.5°C
Temp rise constrained to 2.88°F, natural infrastructure safeguards many coastal communities

[Air Quality]

50%
5B people breathing 'code red' air, global health impacted



90%
9B people breathing healthier air

[Fishery Health]

16%
Only 16% of fisheries will not be overfished



100%
All global fisheries are sustainably managed

[Land Protection]

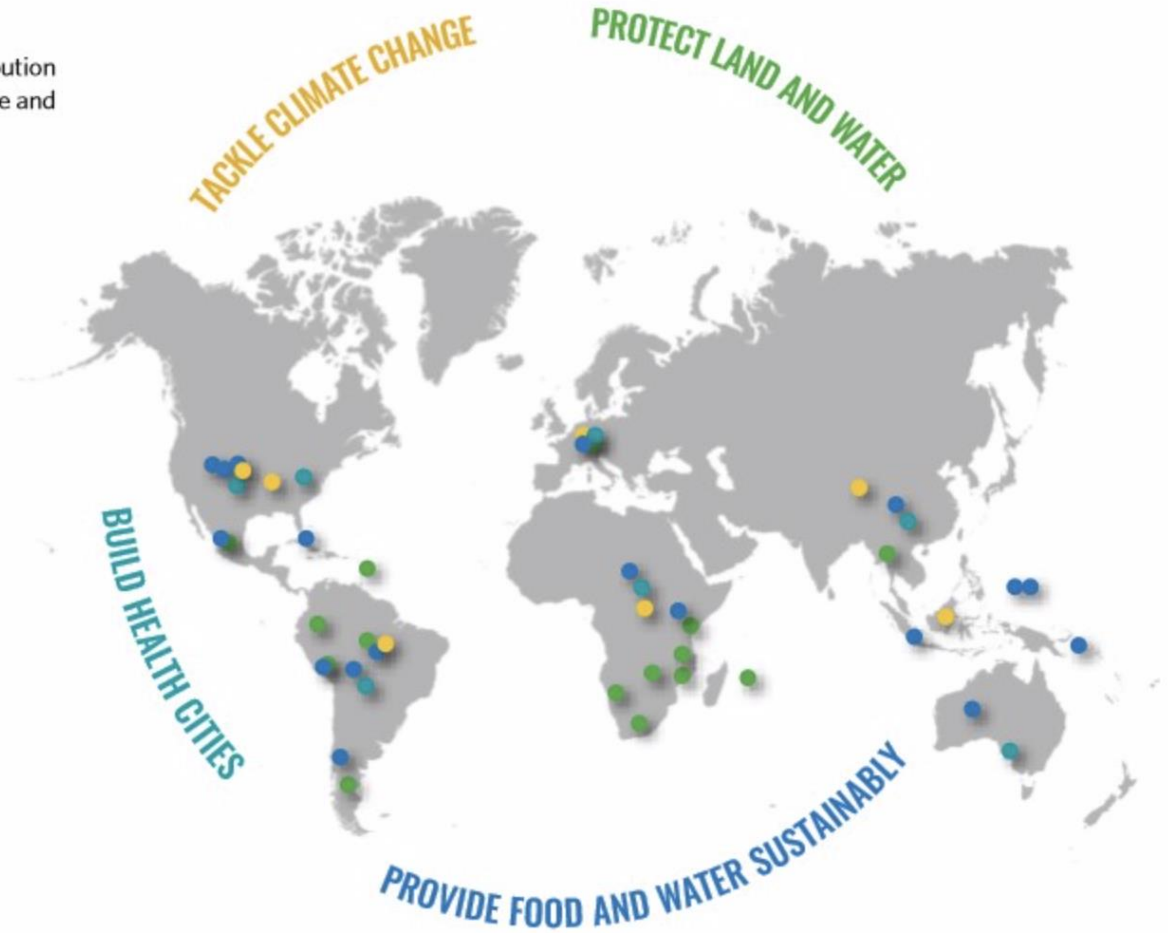
8%
With so few lands protected, species are disappearing at record rates



17%
LANDS PROTECTED
With more lands protected, wildlife populations have room to thrive

OUR PRIORITIES

TNC can make a measurable and meaningful contribution to solving some of the greatest challenges facing people and nature today in these four areas:



The Paris $< 2^\circ$ imperative: carbon removal required

1.5 DEGREES

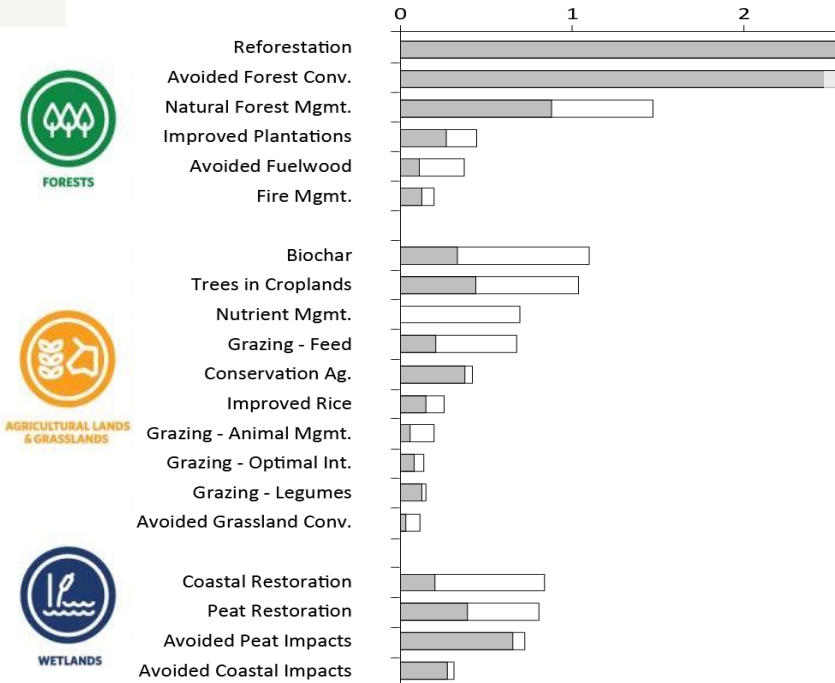
100%
Clean Energy + Carbon Dioxide
Removal

A low-angle photograph of a woman in a green-themed costume, possibly a 'Green Goddess' or 'Earth Mother' character. She is wearing a dark top and has her face and hair adorned with green paint and foliage. She is holding a large green plant with white flowers. In the background, another person in a similar green costume is visible, looking upwards. The scene is set outdoors against a clear blue sky with bright sunlight filtering through the leaves.

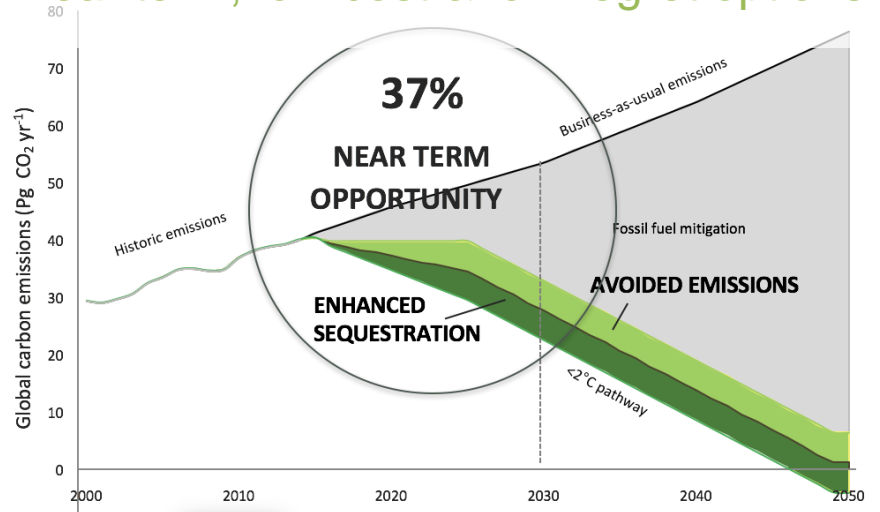
The Forgotten Solution

Climate mitigation potential of nature – 11.3 GtCO₂e/yr

GtCO₂e/yr

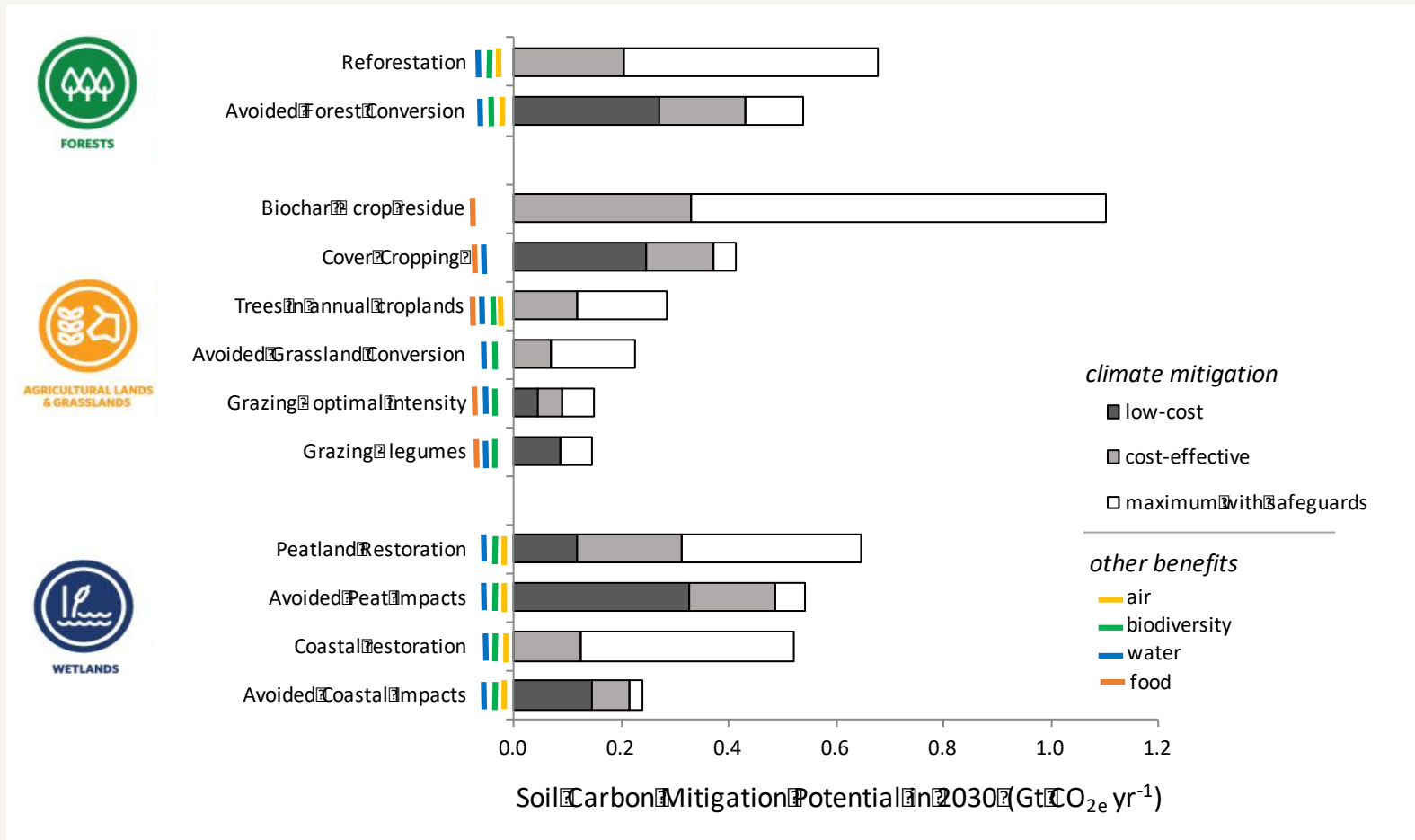


Near term, low cost & low regret options

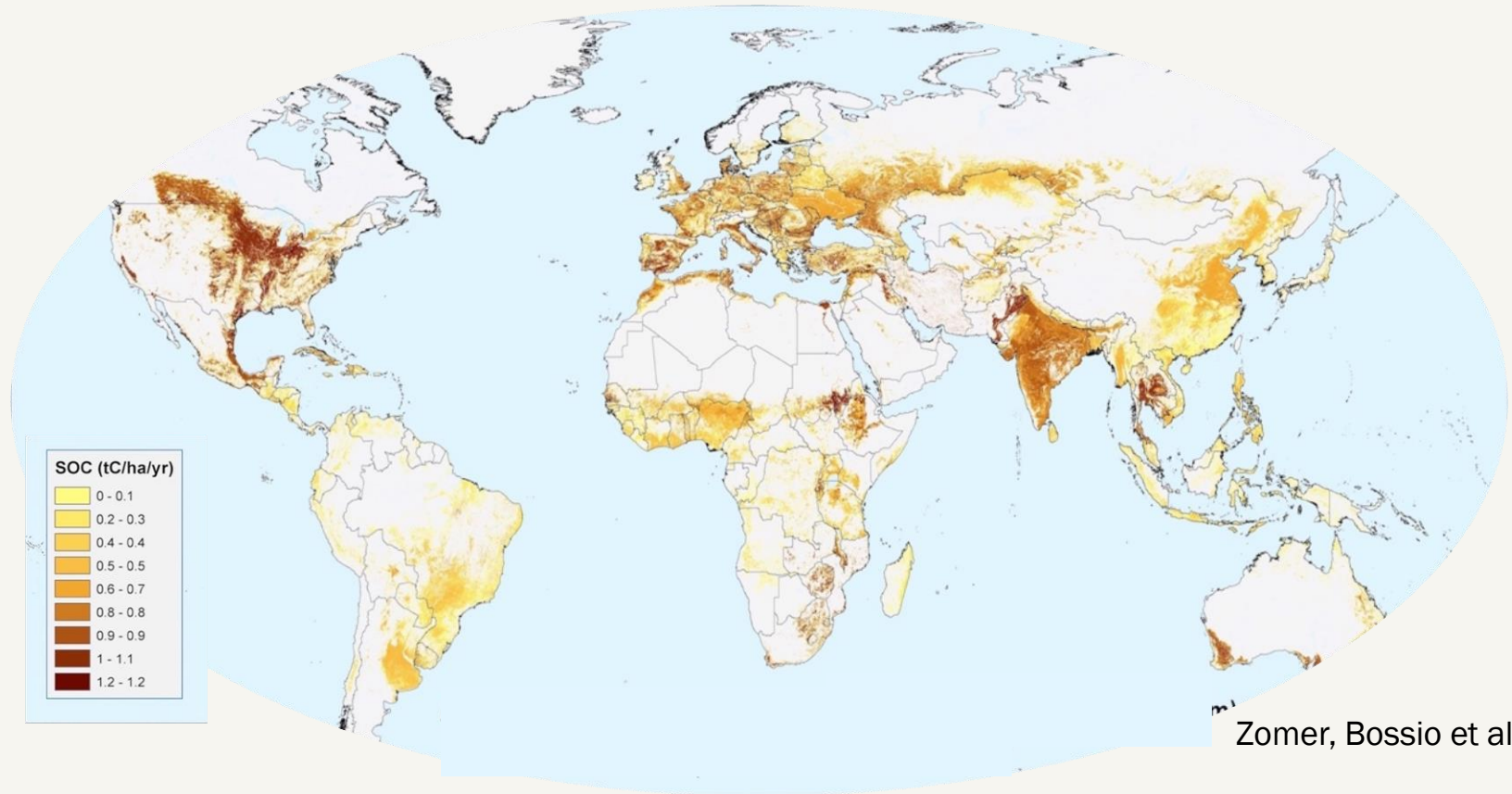


Source: Griscom et al., PNAS (2017)

Soil: 5.5 Gt CO₂e yr⁻¹ ≈ 25% of land sector pathways



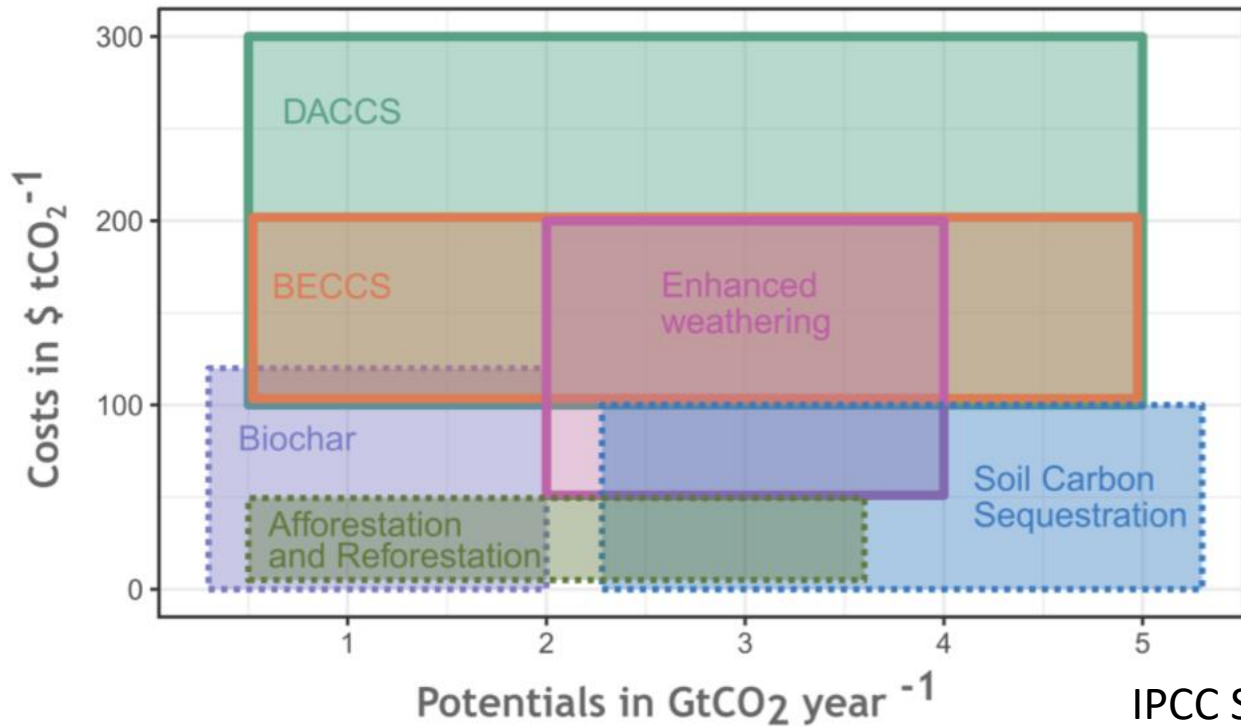
Soil ≈ 3.0 Gt CO₂e yr⁻¹ on croplands worldwide



Zomer, Bossio et al. 2017

IPCC SR1.5 2018: Soil – Low Cost High Potential 'Negative Emissions' Opportunity

Panel A - Estimated costs and 2050 potentials



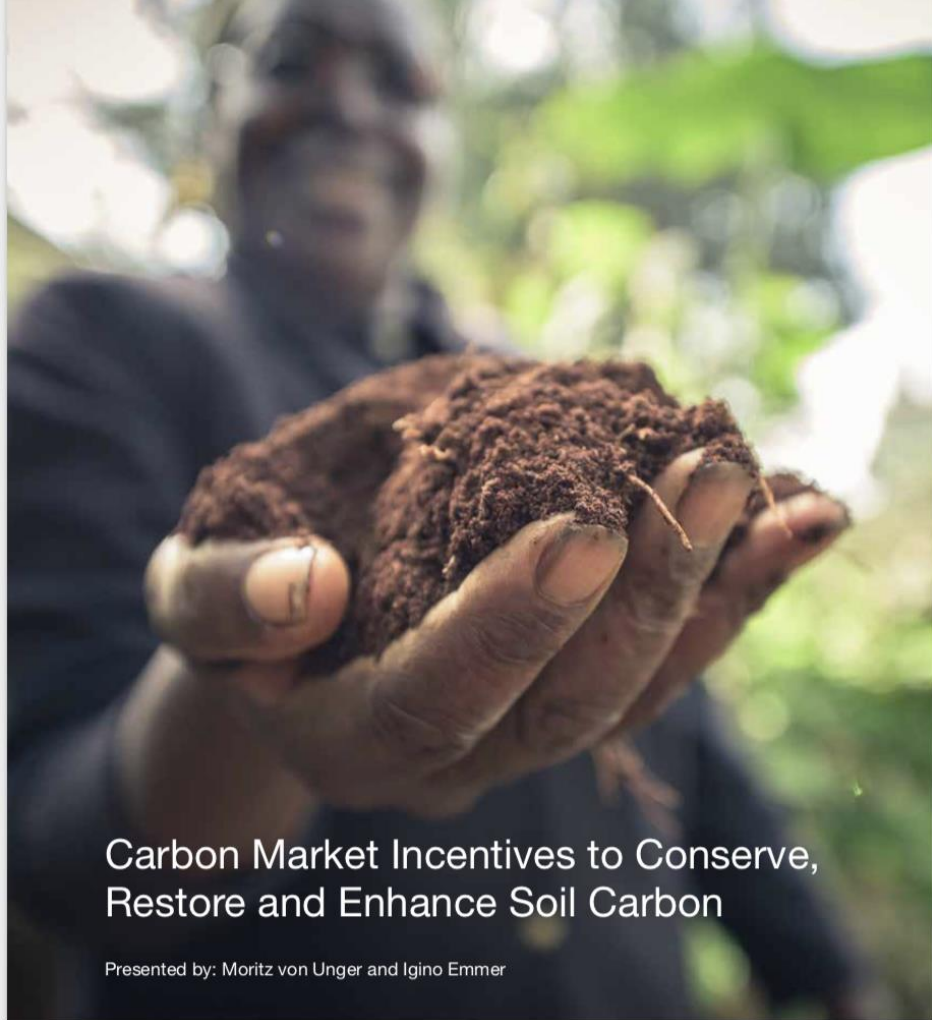


Soil

The Forgotten Forgotten Solution

“Despite scientific consensus, deployment of soil carbon storage and sequestration as a climate solution in practice remains limited. Soil is a relative newcomer to international climate mitigation conversations”

von Unger and Emmer, 2018



Assesses the state and prospects of carbon finance for soil carbon

Carbon Market Incentives to Conserve, Restore and Enhance Soil Carbon

Presented by: Moritz von Unger and Igino Emmer



<https://global.nature.org/content/soil-carbon-markets>

Soil carbon market projects are rare

Fewer than 20
projects in voluntary
market; a few dozen
in compliance market
in Australia

North and South
Dakota, US
Avoided Conversion
 ≈ 100 Mt CO₂e over
20 years
Rancher livelihood
Biodiversity



PHOTO Amy Carlson

**Technical issues
less problem
than commonly
perceived**

Methodologies for
croplands, grasslands
savannahs and
peatlands now exist

Northern Rangeland
Trust, Kenya
Grazing Management
37 Mt CO₂e over 20
years
Pastoralist livelihoods
Wildlife habitat



PHOTO Ami Vitale

Many barriers are now balanced with opportunities

Alignment between
multiple sustainable
development goals

Barriers	Opportunities
Ignored by compliance markets	Current availability of standards and accounting methods (including additionality, leakage, non-permanence)
Incurs considerable transaction costs in terms of project development, as long as level of experience and market perpetration is low	Modest market prices (for most project categories and countries)
Overall credit demand has plateaued (though the effect from the Paris Agreement is not yet clear)	Accumulating best-practices
No support to emissions trading from some influential NGOs	Wide networks advocating soil carbon restoration and conservation are active
Issues with scaling up of projects in the land-use sector (tenure, measure, report and verify (MRV) requirements)	Growth potential of mitigation-cum-co-benefits
Uncertain tenure situations in developing countries	Near-future aviation offsetting mechanism
Multi-stakeholder character of land-use projects	New opportunities in compliance regimes (Paris Agreement but also individual countries)
	Role as laboratory for testing new technologies in the land-use sector

Size and scalability are consistent challenges

Numbers of stakeholders usually large, novelty required large investments in methodology development

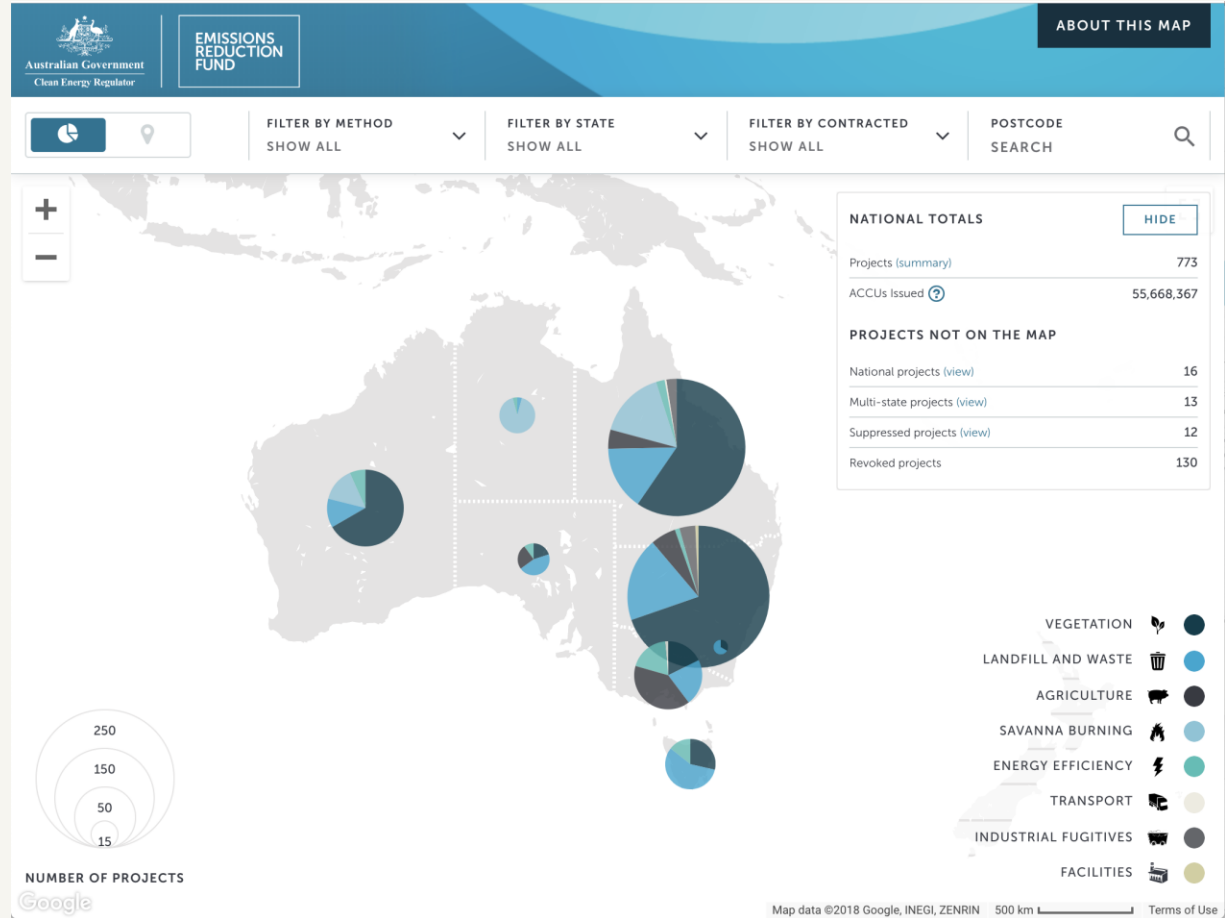


Kenya Agriculture
Carbon Project
Smallholder
farming
≈ 2 Mt CO₂e over
20 years
Livelihoods
Resilience

PHOTO Steve Zwick

Triggering scale requires policy action

Carbon projects are useful laboratories, supportive policy and public climate finance are essential for full-scale roll-out



Priorities looking forward

Supporting political action and strategy development at all levels - NDCs and sub-national action, public and private

- Science – policy – public communication
- Trusted monitoring reporting and verification
- Providing practical tools and evidence to quantify soil carbon for national carbon accounting and markets

Global Soil Health Challenge



A global network to increase the pace and scale of multi-benefit soil management to achieve 25% of the needed carbon removal by 2030 for food and human security

Breaking News 2050

“We are on track for a bright future globally thanks to healthy soils, clean energy, equitable food production and just policies”

