

Land Restoration and Climate

Deborah Bossio

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Land and soil cornerstone of life

– precondition and accelerator

15 LIFE
ON LAND



Biological
Diversity

2 ZERO
HUNGER



Food
Production

6 CLEAN WATER
AND SANITATION



Water
Benefits

13 CLIMATE
ACTION



Carbon
Storage

3 GOOD HEALTH
AND WELL-BEING



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



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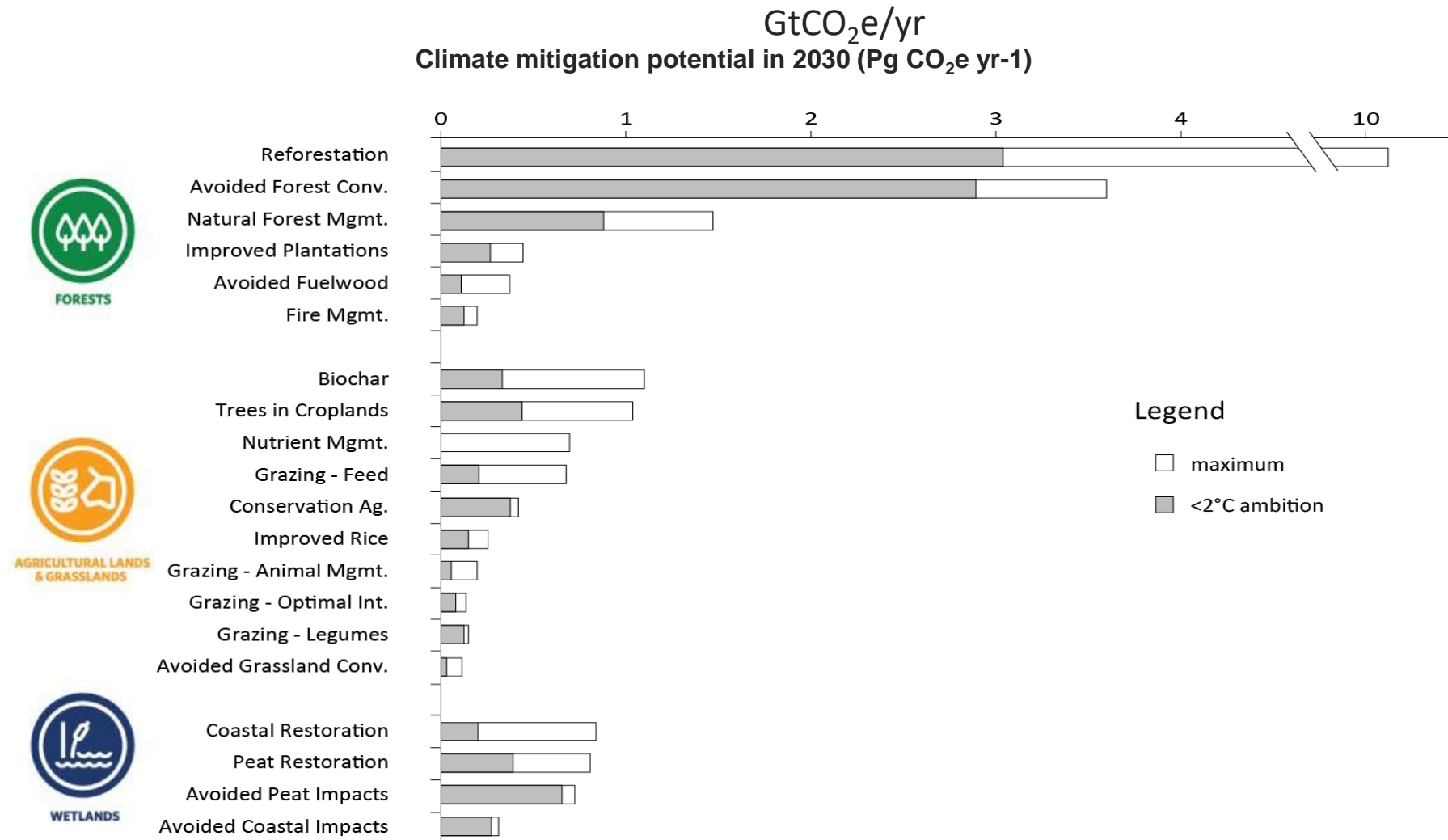
HOW MUCH CAN NATURE CONTRIBUTE?

Natural climate solutions

Bronson W. Griscom^{a,b,1}, Justin Adams^a, Peter W. Ellis^a, Richard A. Houghton^c, Guy Lomax^a, Daniela A. Miteva^d, William H. Schlesinger^{e,1}, David Shoch^f, Juha V. Siikamäki^g, Pete Smith^h, Peter Woodburyⁱ, Chris Zganjar^a, Allen Blackman^g, João Campari^j, Richard T. Conant^k, Christopher Delgado^l, Patricia Elias^a, Trisha Gopalakrishna^a, Marisa R. Hamsik^a, Mario Herrero^m, Joseph Kiesecker^a, Emily Landis^a, Lars Laestadius^{l,n}, Sara M. Leavitt^a, Susan Minnemeyer^l, Stephen Polasky^o, Peter Potapov^p, Francis E. Putz^q, Jonathan Sanderman^c, Marcel Silvius^r, Eva Wollenberg^s, and Joseph Fargione^a

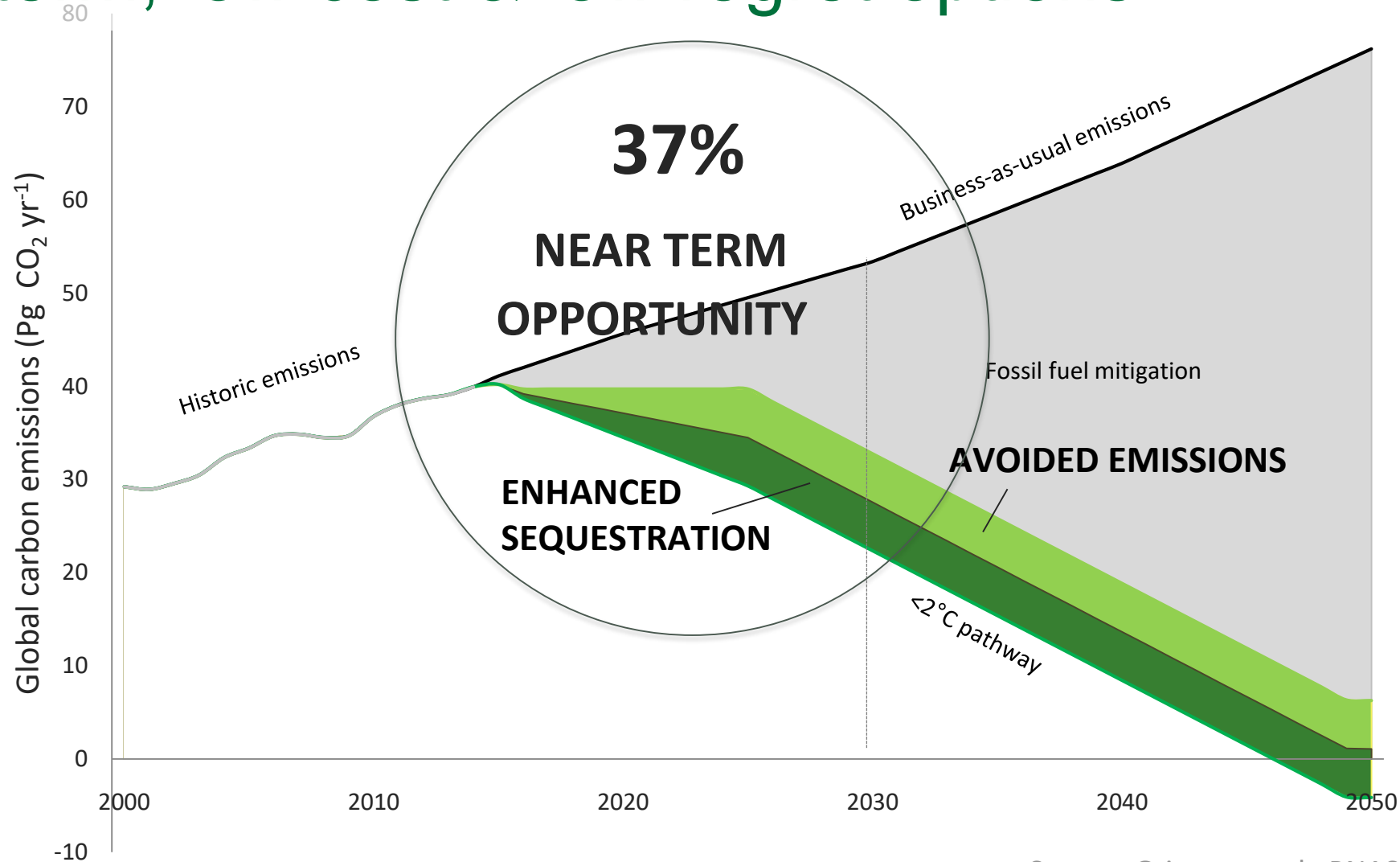
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Climate mitigation potential of nature – 11.3GtCO₂/yr



Natural climate solutions:

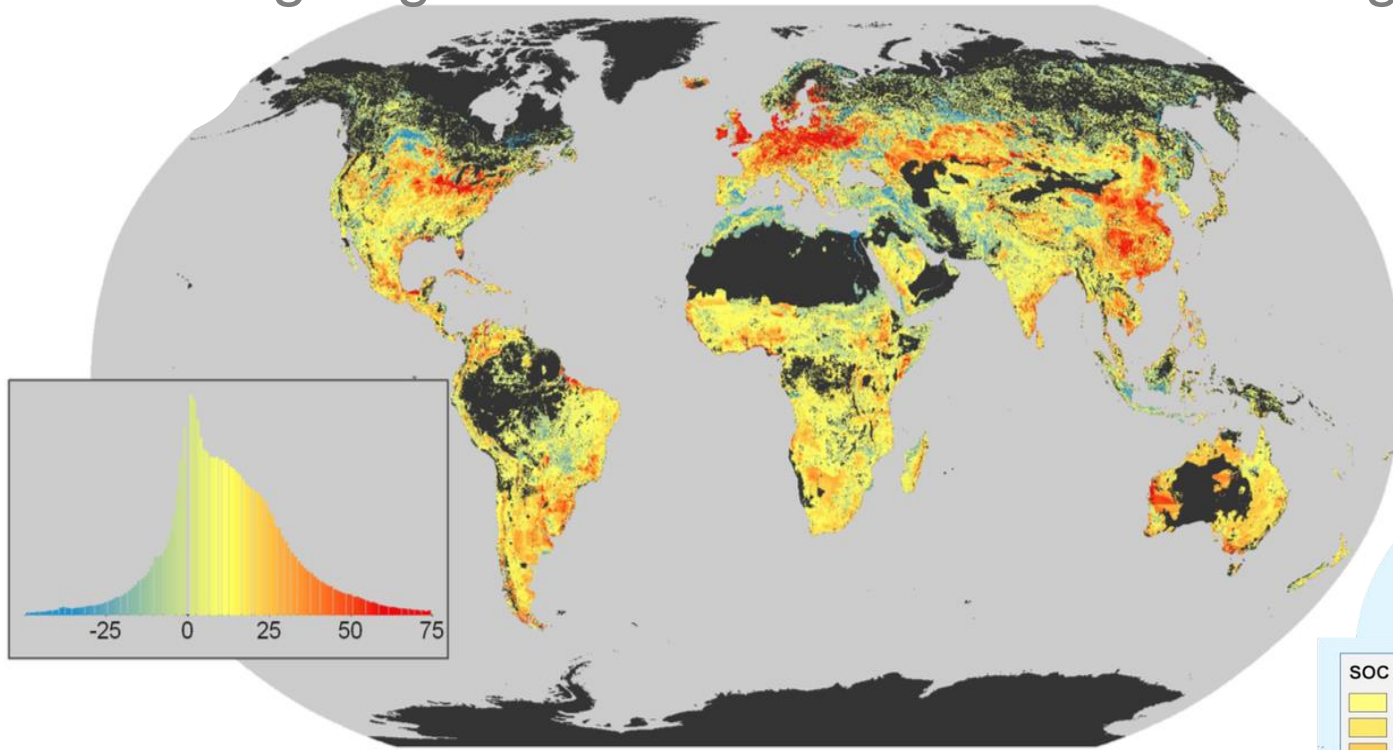
Near term, low cost & low regret options



Source: Griscom et al., PNAS (2017)

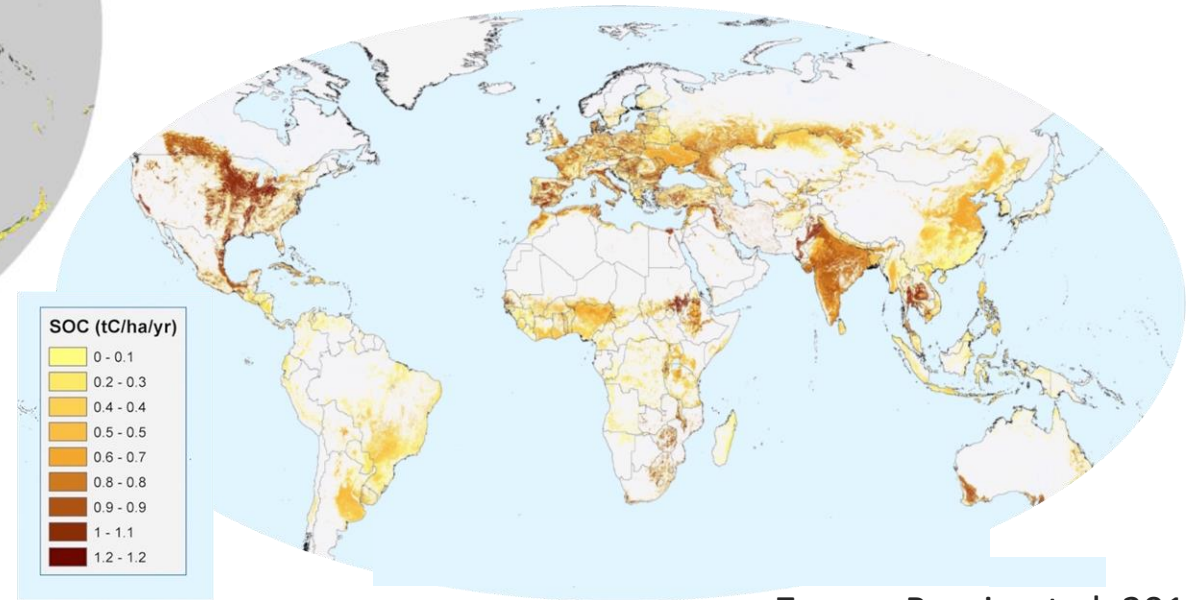
Soils have seen huge loss of organic carbon

133 Giga tones of carbon (10x annual emissions) lost from soil organic matter through agriculture and other land use change



Sanderman et al. 2017

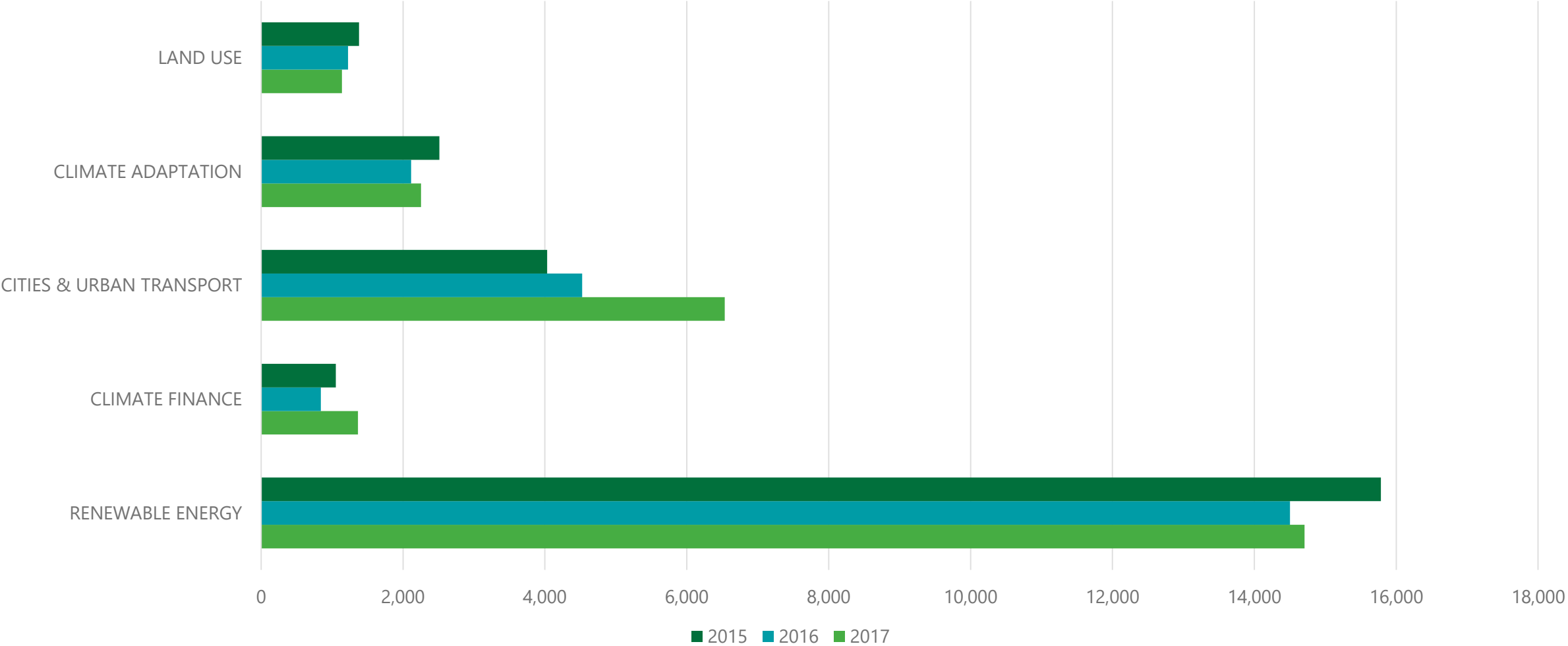
Heat map potential 1 Gt annual soil carbon sequestration cropped lands



Zomer, Bossio et al. 2017

Awareness of Land Sector is low

INDICATIVE MEDIA COVERAGE OF DIFFERENT CLIMATE TOPICS



Source: Browning Environmental

HAZARDS

- Competition with other land uses
- Distract attention from energy
- Carbon sequestration on best lands is most profitable
- Social and environmental safeguards

Imperative of creating linkages amongst SDG's

Soil: over-arching political case & vision for action

Value propositions for farms and investors

VALUE

PRIVATE VALUE AT FARM LEVEL

- Higher returns & margins
- Tradable carbon assets
- Risk management
- Supply chain benefits
- Access to public support

PUBLIC VALUE

- Carbon storage & co-benefits

SOCIETAL VALUE

- Higher food security
- Rural development
- Less land use change
- Disaster risk reduction
- Lower out-migration
- Raised GDP
- Resilient tax base

AWARENESS & APPROVAL

- On-message political leadership
- Publicity campaigns

KNOWLEDGE

- Standard protocols
- Best estimates of costs, risks & value

POLICY

- Inclusion of soil carbon in NDCs
- Subsidies reoriented to reward environmental performance

FINANCE

- Finance streams for commercial demonstrations
- Instruments to reduce cost of farm finance

ON-FARM IMPLEMENTATION

- Peer-to-peer learning
- Viable examples of raised farm value in multiple countries

PROCESS

“Upon this
handful of
soil our
survival
depends”

Sanskrit

text, 1500 BC

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