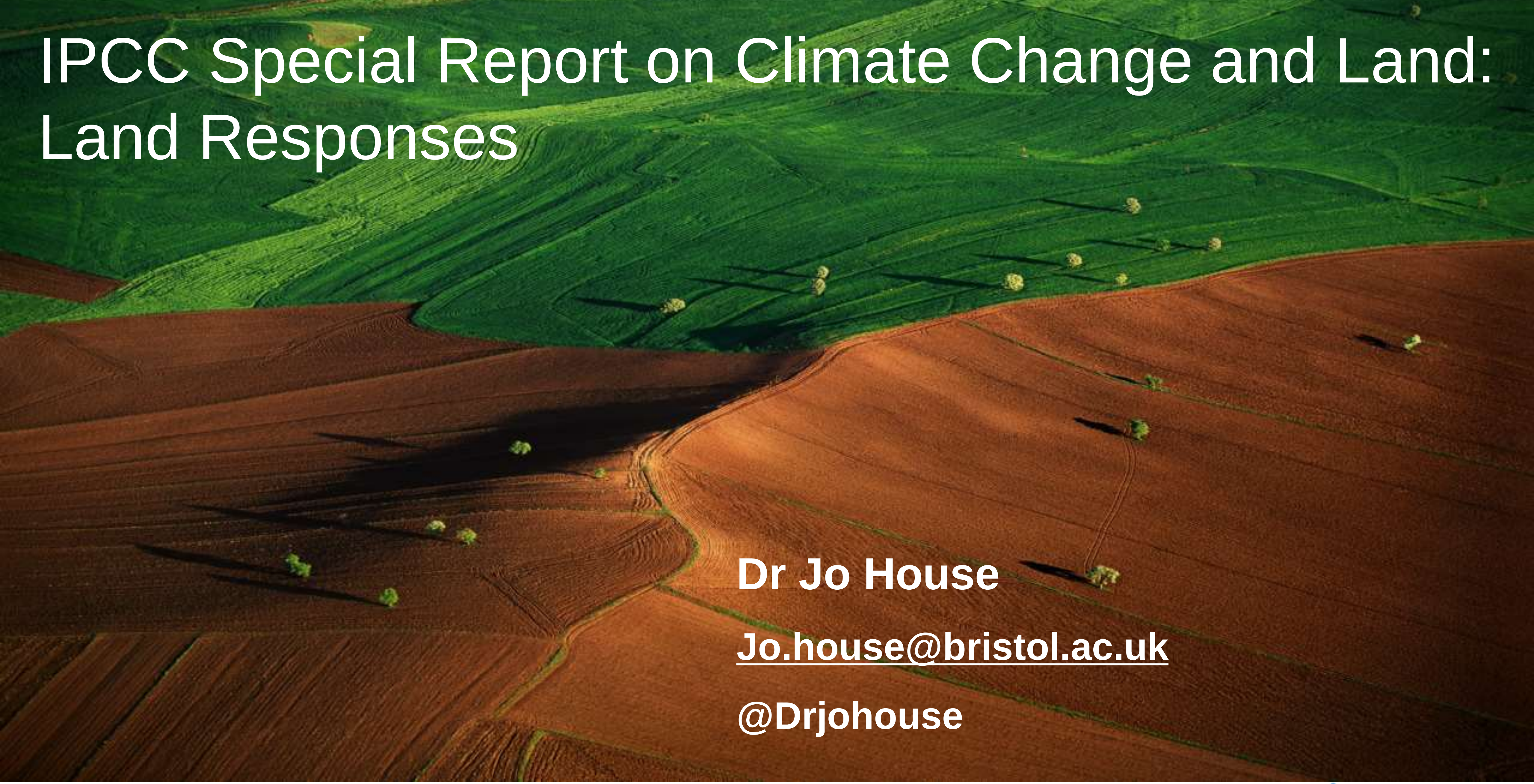
IPCC Special Report on Climate Change and Land: Land Responses



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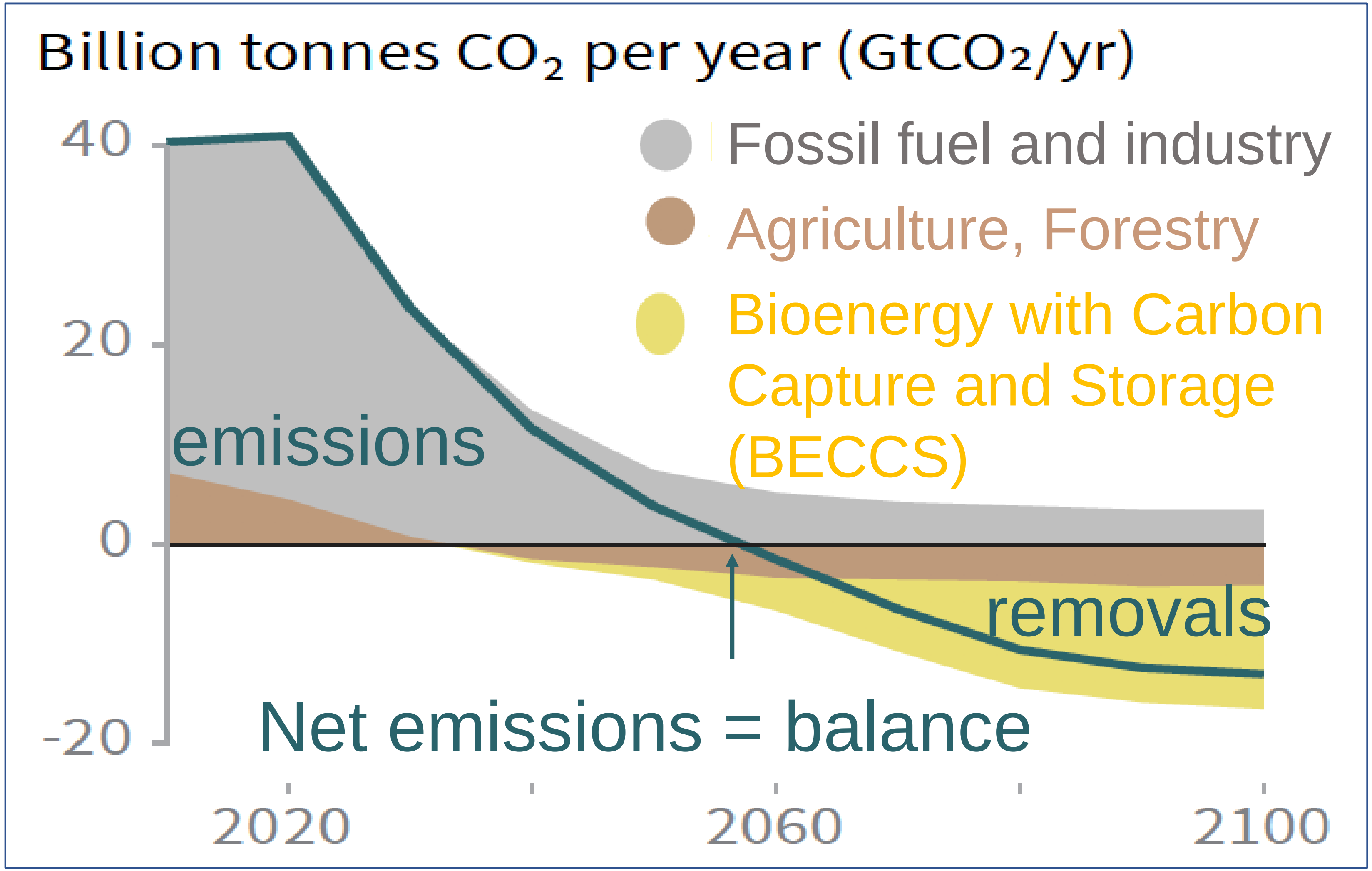
Land is where we live

Land is under growing human pressure

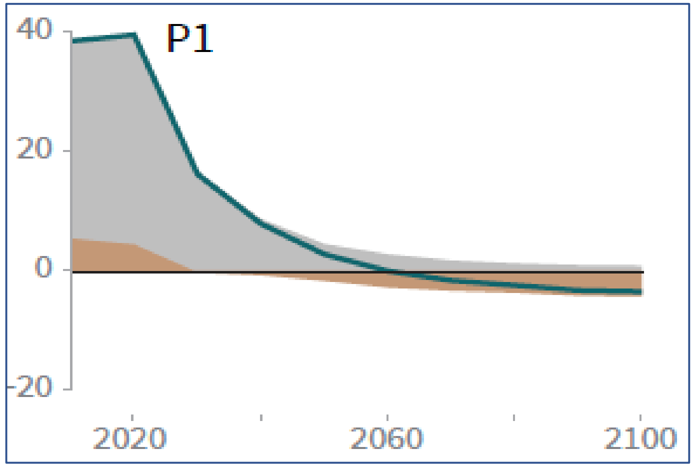
Land is a part of the solution

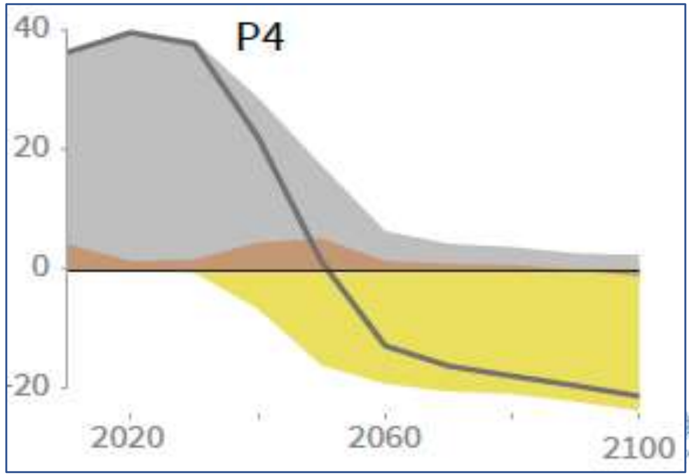
Land can’t do it all

How do we get to 1.5 degrees?

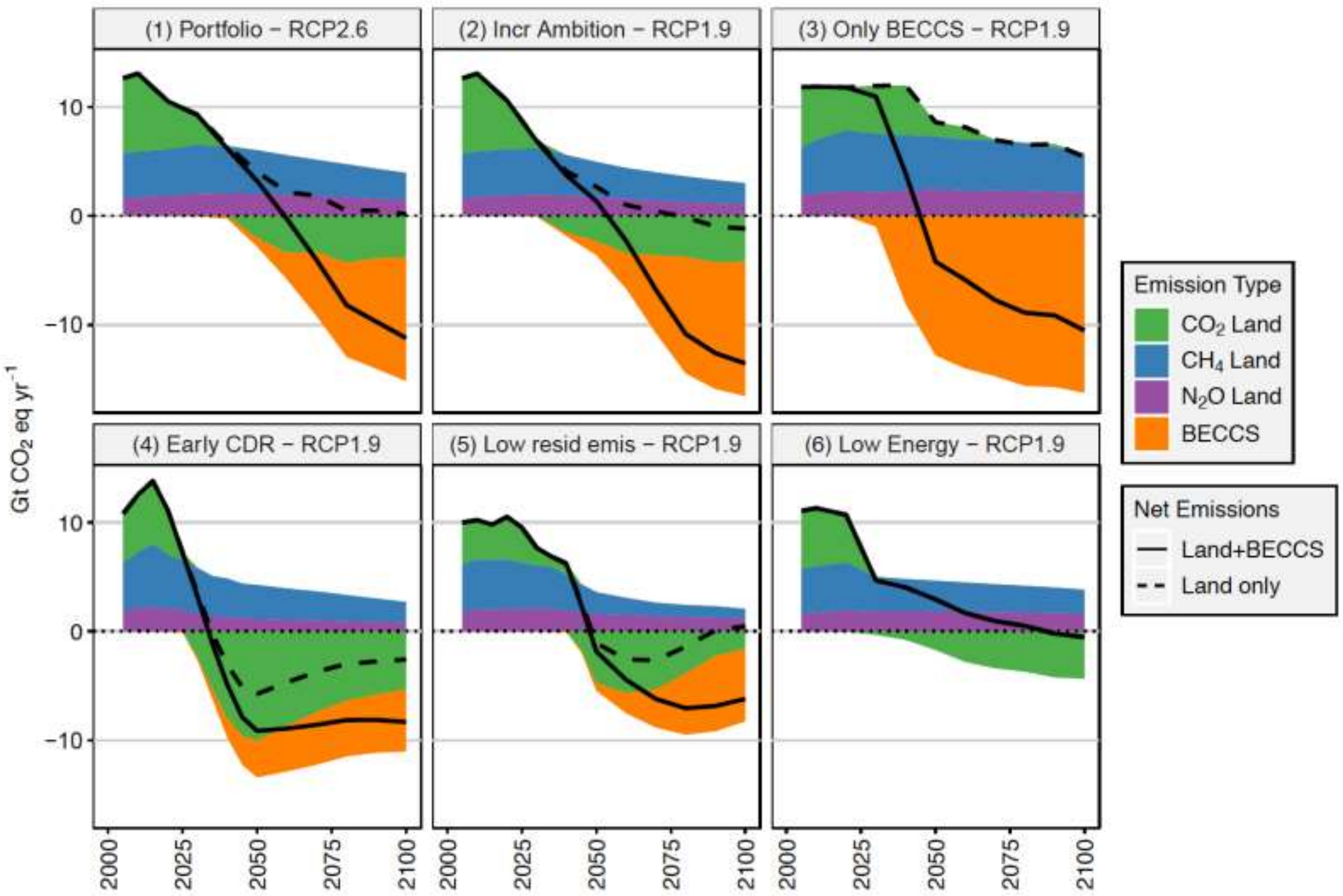


Multiple different pathways: Less fossil fuel action requires more BECCS





Land use Change in 1.5 and 2 'C consistent pathways



There are multiple different pathways that can limit warming

Less bioenergy would require more afforestation to meet targets

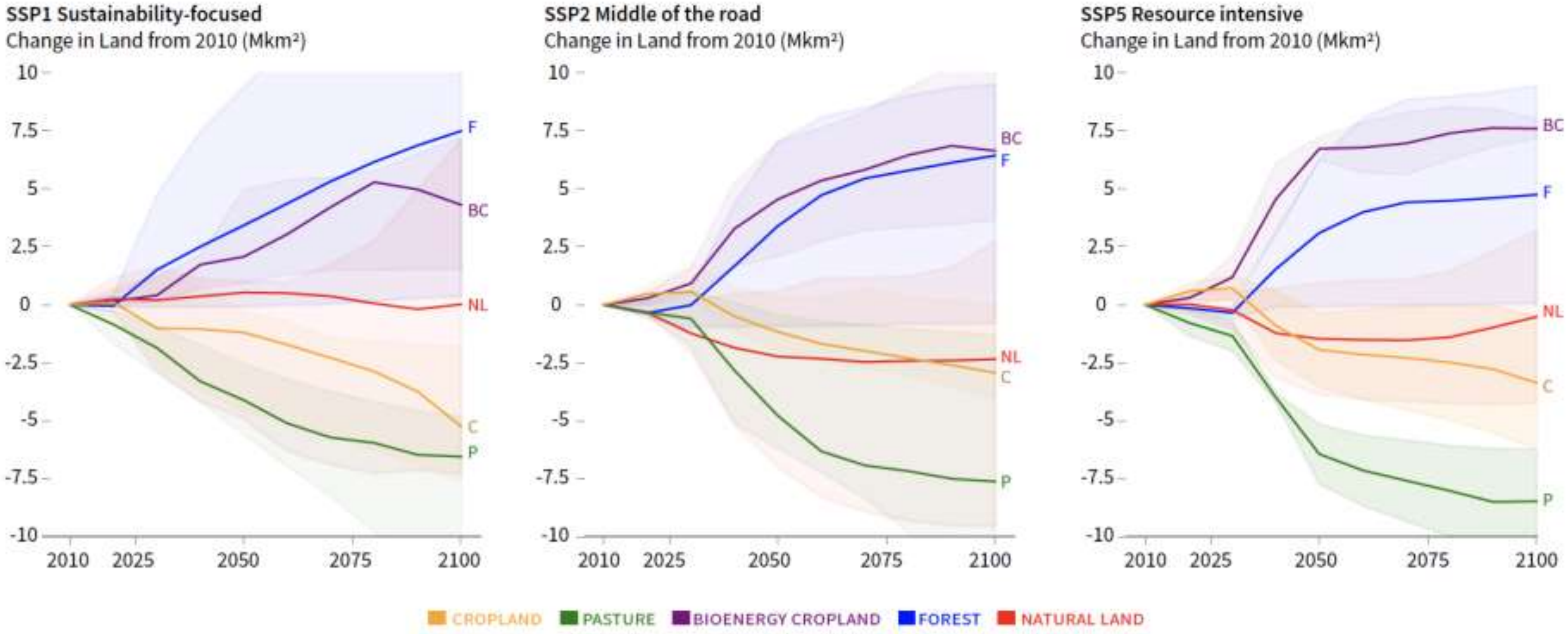
- Bioenergy area change 0-750 Mha (roughly size of India)
- Forest area -200 to 7200 Mha change

Change in land(Mha) area from 2010 across scenarios RCP 1.9, RCP2.6 RCP4.5 for different SSPs

A. Sustainability-focused (SSP1)
Sustainability in land management, agricultural intensification, production and consumption patterns result in reduced need for agricultural land, despite increases in per capita food consumption. This land can instead be used for reforestation, afforestation, and bioenergy.

B. Middle of the road (SSP2)
Societal as well as technological development follows historical patterns. Increased demand for land mitigation options such as bioenergy, reduced deforestation or afforestation decreases availability of agricultural land for food, feed and fibre.

C. Resource intensive (SSP5)
Resource-intensive production and consumption patterns, results in high baseline emissions. Mitigation focuses on technological solutions including substantial bioenergy and BECCS . Intensification and competing land uses contribute to declines in agricultural land.



Multiple pathways: Less BECCS would require more afforestation to meet targets

- Bioenergy area change 0-750 Mha (roughly size of India)
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Response options

from SPM fig 3 A

Response options based on land management

Agriculture	Increased food productivity
	Agro-forestry
	Improved cropland management
	Improved livestock management
	Agricultural diversification
	Improved grazing land management
	Integrated water management
	Reduced grassland conversion to cropland
Forests	Forest management
	Reduced deforestation and forest degradation
Soils	Increased soil organic carbon content
	Reduced soil erosion
	Reduced soil salinization
	Reduced soil compaction
Other ecosystems	Fire management
	Reduced landslides and natural hazards
	Reduced pollution including acidification
	Restoration & reduced conversion of coastal wetlands
	Restoration & reduced conversion of peatlands

Response options based on value chain management

Demand	Reduced post-harvest losses
	Dietary change
	Reduced food waste (consumer or retailer)
Supply	Sustainable sourcing
	Improved food processing and retailing
	Improved energy use in food systems

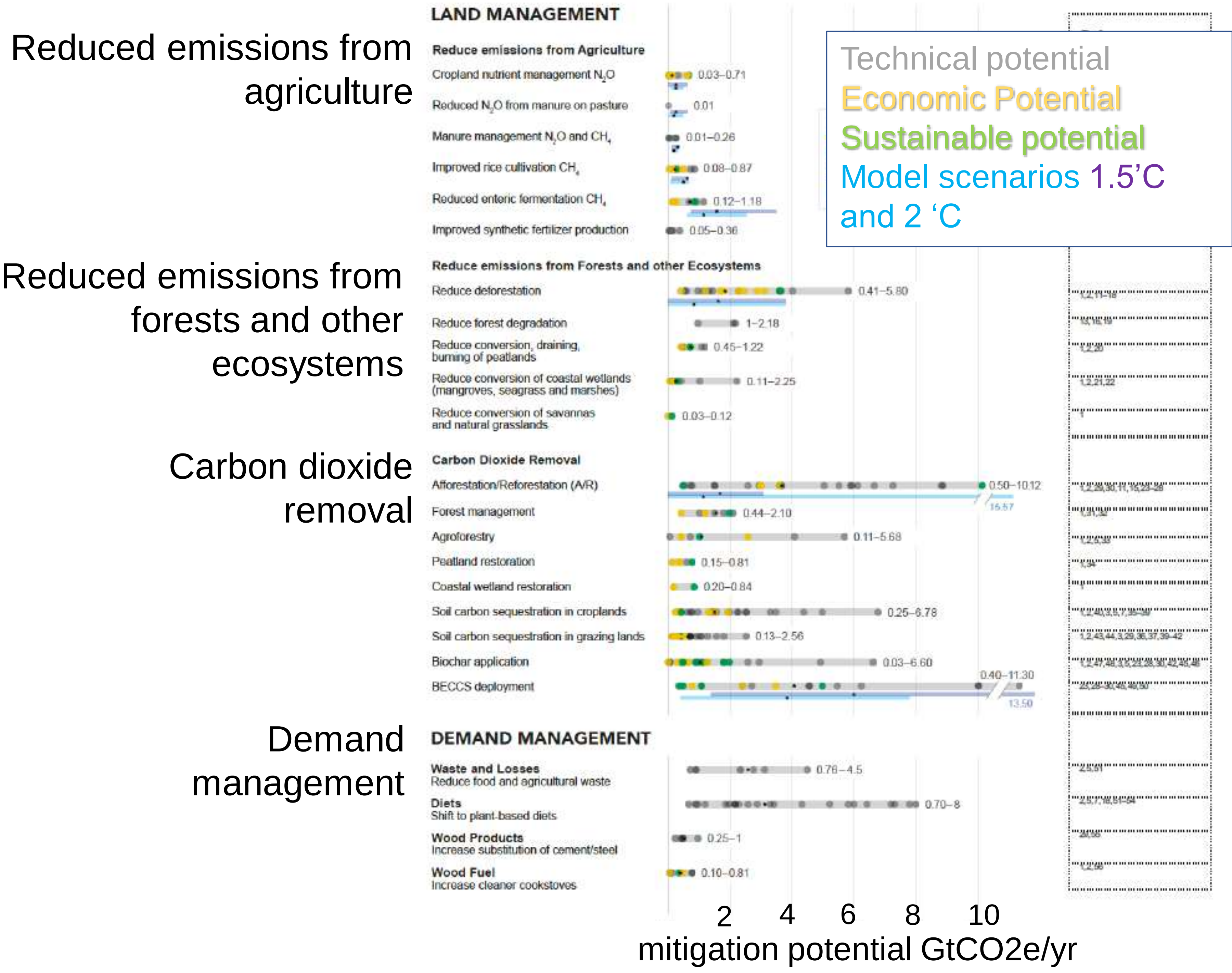
Response options based on risk management

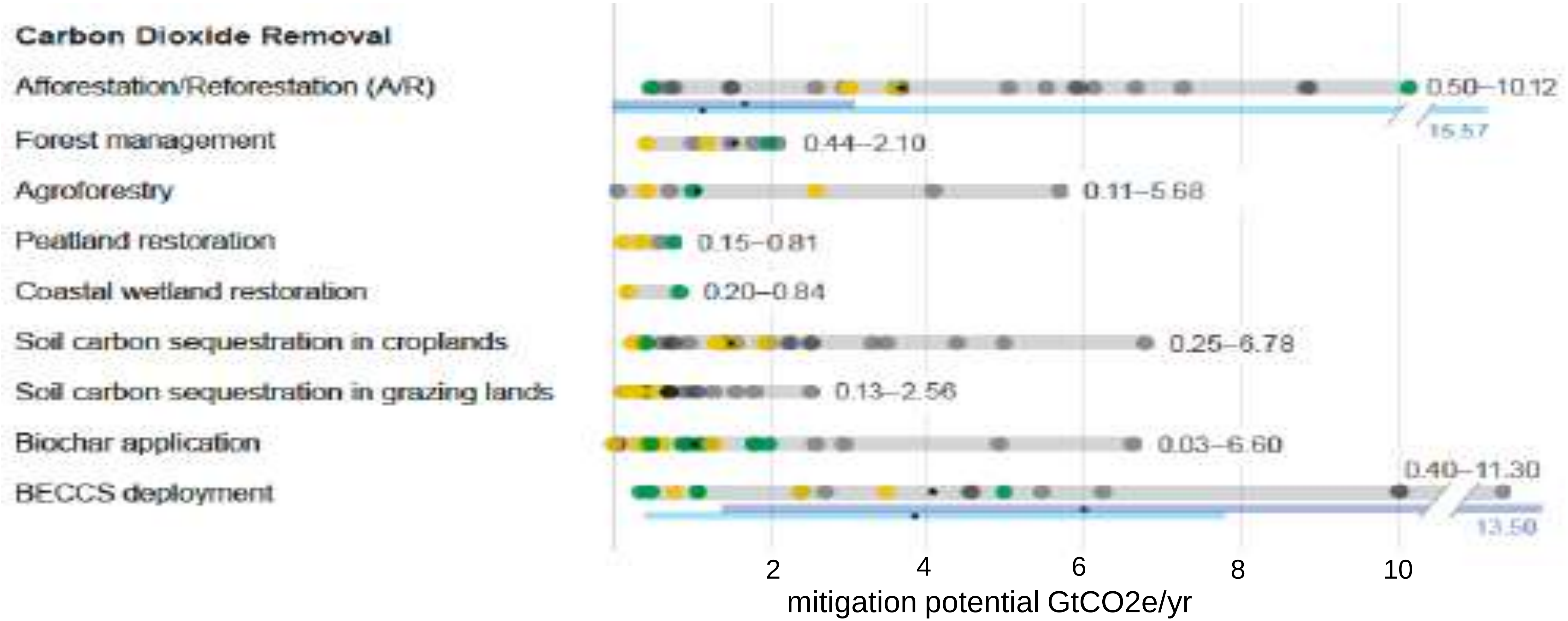
Risk	Livelihood diversification
	Management of urban sprawl
	Risk sharing instruments

Mitigation in the land sector

- Wide range of estimates from the literature
- Not additive
- most potential: afforestation; BECCS; Diet change

IPCC SRCCL fig 2.24, from Roe et al Nature climate change 2019





Technical potential
Economic Potential
Sustainable potential
Model scenarios 1.5'C
and 2 'C

IPCC SRCCL fig 2.24, from Roe et al Nature climate change 2019

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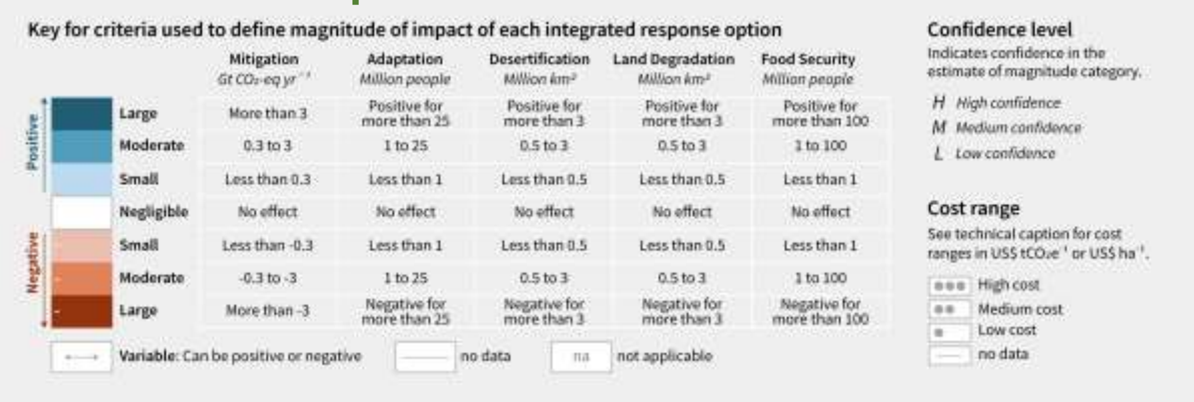
CO-benefits and trade-offs

- Lots of options have positive impacts (blue) across all of climate change mitigation and adaptation, delivering food security and tackling land degradation and desertification
- Some free up land, while others take up land



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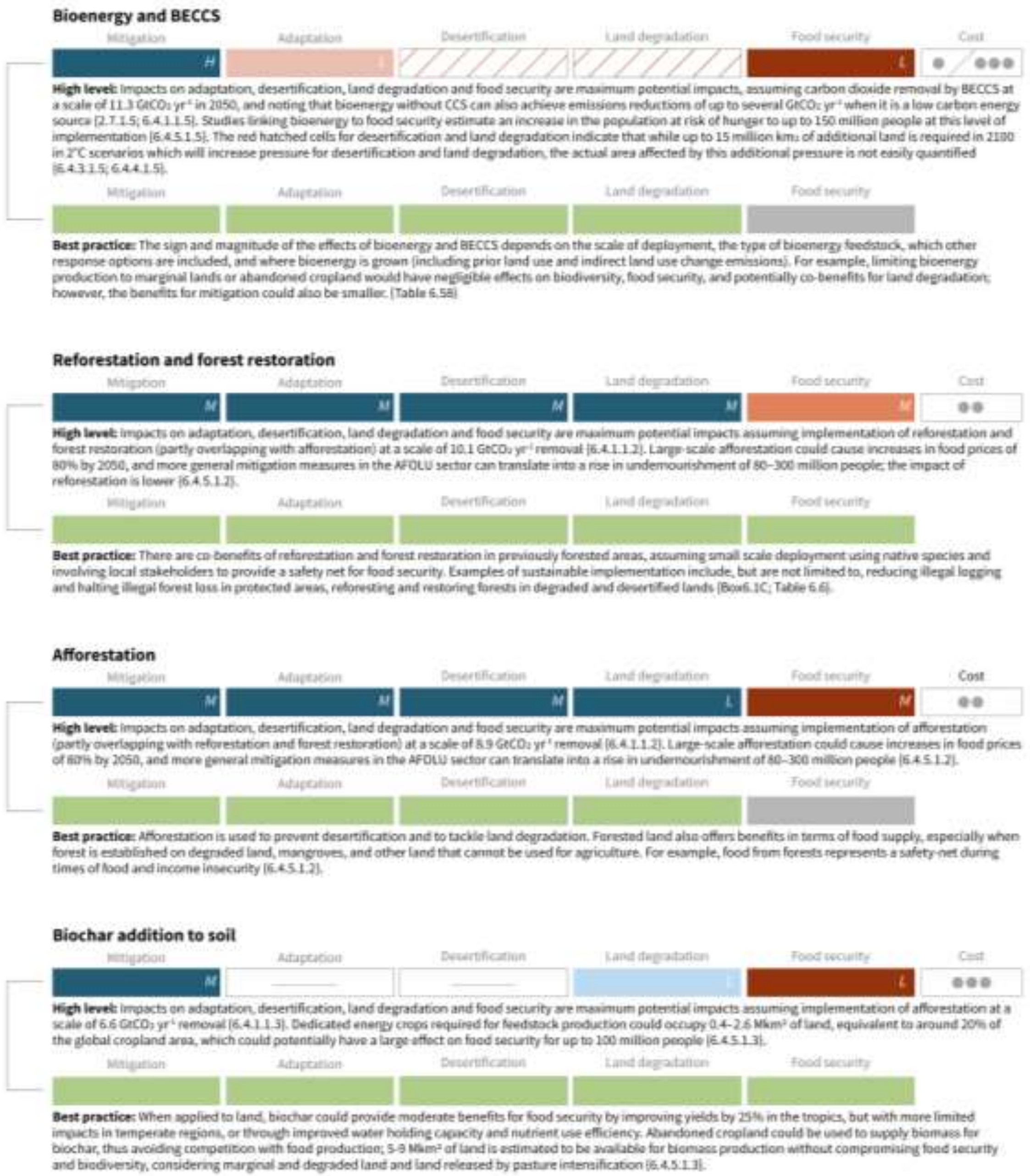
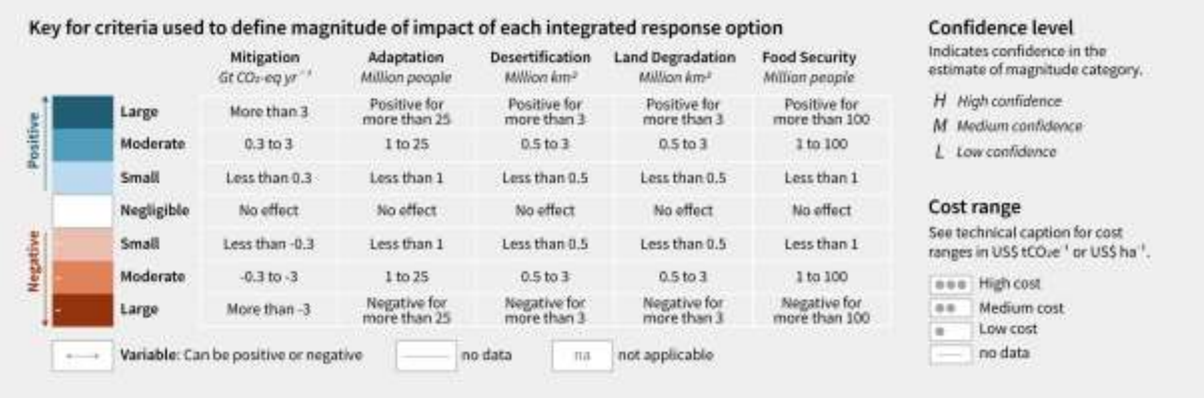
WMO UNEP



Some NETS have both positive of negative impacts based on the context (location, scale, sustainability).

Negative effects for NETS can occur when applied at scales, ways and in places that lead to high land competition for food and other ecosystem services (e.g biodiversity), or high water demand.

In appropriate contexts and scales, there can be many co-benefits



Interlinkages

- Response options are **interlinked.** Some have co-benefits or are more **effective when paired**. Others may conflict.
- Some response options are **less feasible** than others

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- **Delayed action** will mean more of a **need to respond** to land challenges **but less potential for land-based responses** (due to climate change and other pressures).
- **Early action has challenges** related to technology, upscaling and barriers.

The big picture

- Land management interacts with many of the SDGs with benefits or trade-offs e.g, biodiversity
- Lots of potential for land management with multiple benefits
- Land still limited, and under pressure, so cannot cannot offset large emissions in other sectors

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Thankyou

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