

# The IPCC's Special Report on Climate Change and Land



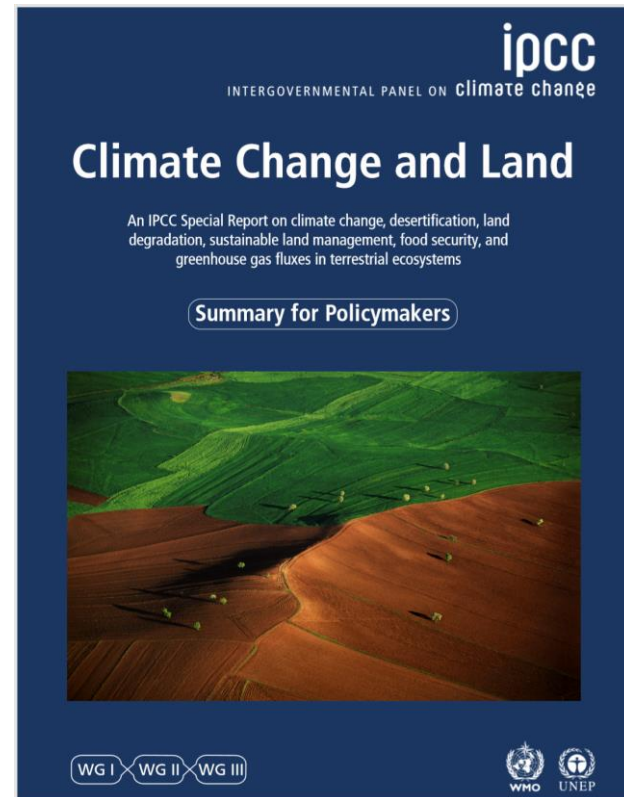
**What's in it for  
South Asia?**



# IPCC Special Report on Climate Change and Land

The report assesses:

- the existing science to date on how greenhouse gases are released and absorbed by land-based ecosystems, and
- the science on land use and sustainable land management in relation to climate change adaptation and mitigation, desertification, land degradation and food security.
- IPCC's Summary & full report: [www.ipcc.ch/srccl](http://www.ipcc.ch/srccl)



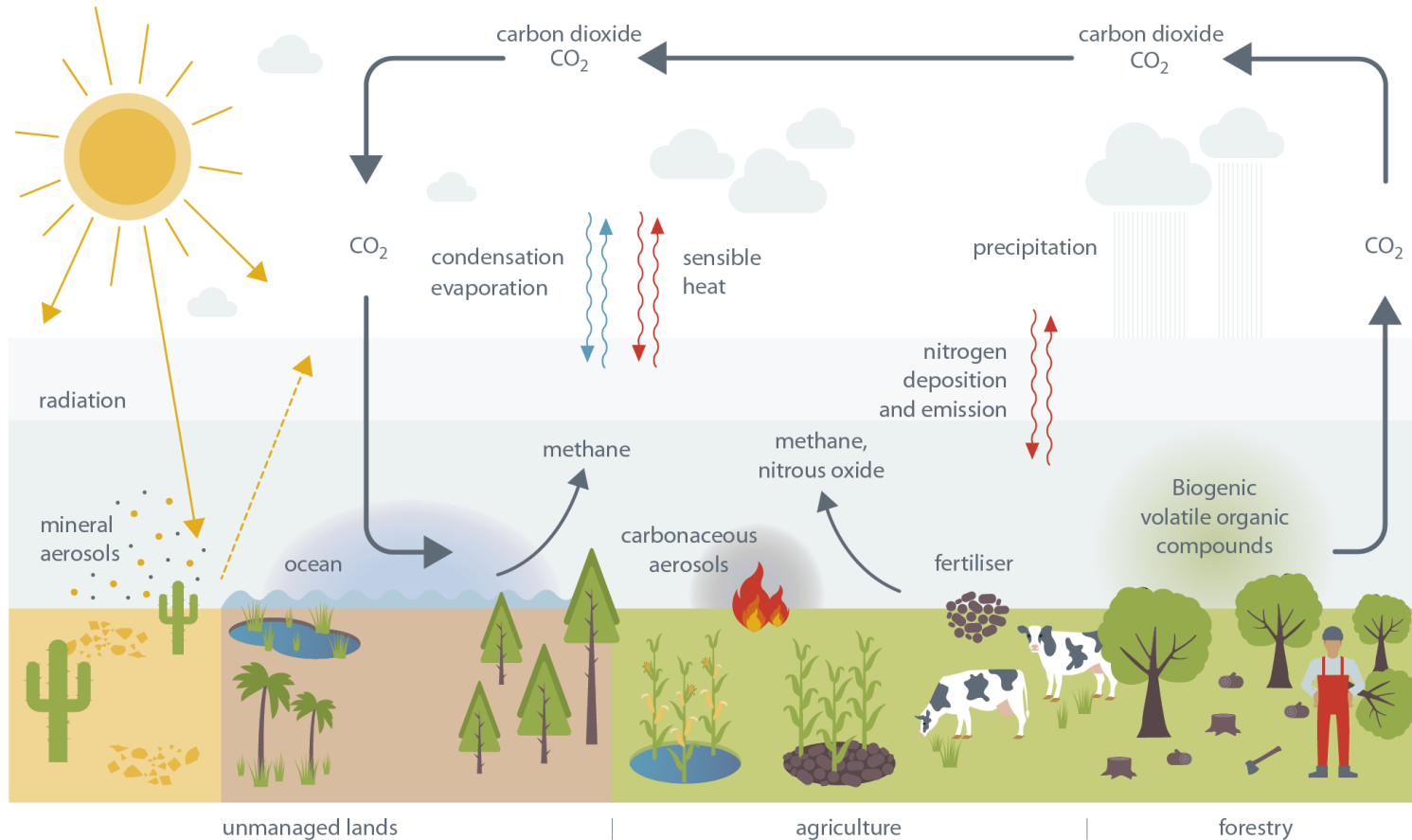
# IPCC Special Report on Climate Change and Land

- First IPCC report with more authors from developing countries than authors from developed countries
- 107 Coordinating Lead Authors, Lead Authors and Review Editors, from 52 countries
- CDKN report & communications toolkit digests the IPCC's 1,300 pages into headlines & images for African, Asian and Latin American audiences:  
**[www.cdkn.org/landreport](http://www.cdkn.org/landreport)**



# The climate and land interact with and influence each other

## How land and climate interact

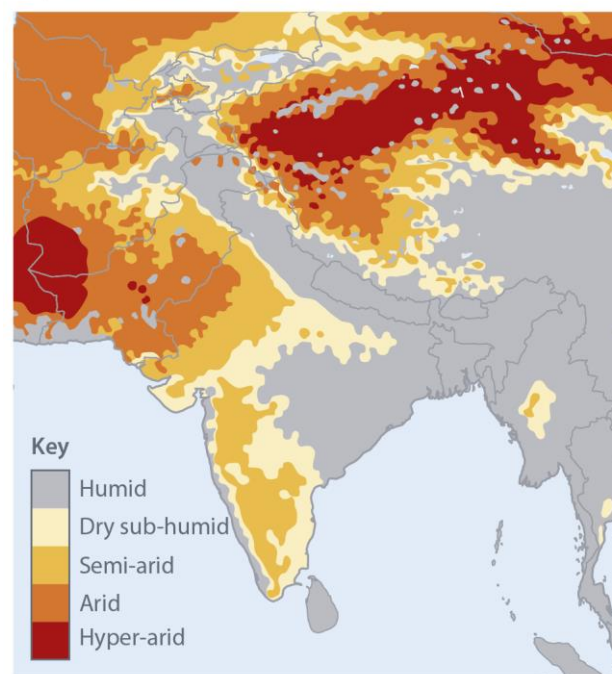


Source: Adapted from IPCC (2019) *Climate Change and Land: an IPCC special reports on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*, Chapter 2, Figure 2.1; p2-12. This figure is a slightly modified version of the IPCC's Box 2.1 in the Special Report on Climate Change and Land.

# Dryland areas are expected to become more vulnerable to desertification in South Asia – affecting many people (1)

- **‘Desertification’** refers to **degradation of drylands**.
- Future climate change will increase the frequency, intensity and scale of extreme weather events such as droughts and heat waves.
- This will **worsen the vulnerability of people and ecosystems to desertification**.

Drylands in South Asia

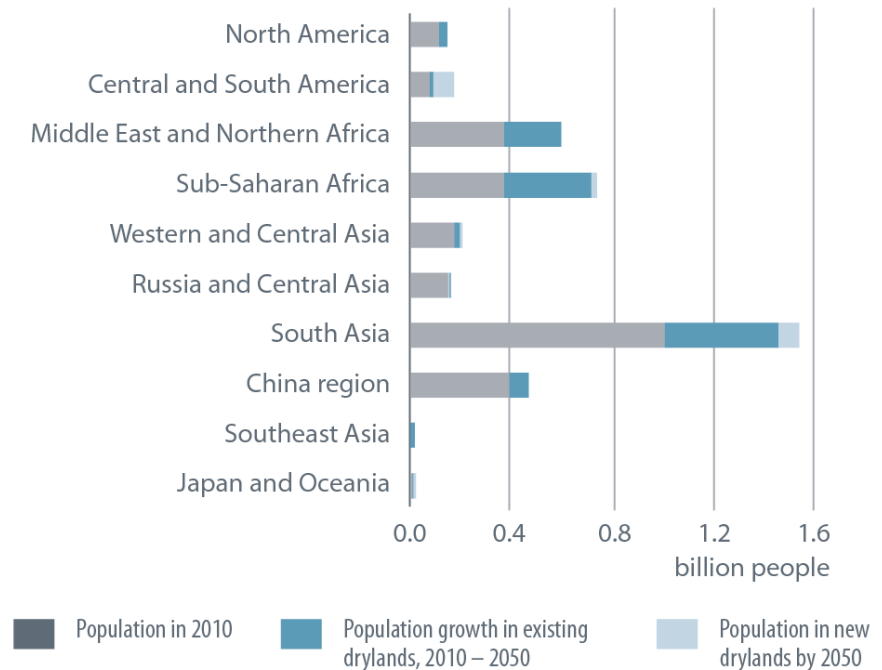


Source: Adapted from IPCC (2019) *Climate Change and Land: an IPCC special reports on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*, Chapter 2; p10.

# Dryland areas are expected to become more vulnerable to desertification in South Asia – affecting many people (2)

- The dryland population in South Asia is expected to keep increasing

Population in drylands, now and in 2050



Under a middle-of-the-road climate change and socioeconomic development scenario, called the SSP2 scenario, which assumes a continuation of current trends in population, economic development and technology

Source: Adapted from IPCC (2019) *Climate Change and Land: an IPCC special reports on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*, Chapter 3; p7.

# Desertification has implications for food security and poverty in South Asia (1)

“There is high evidence and high agreement that both climate change and land degradation can affect livelihoods and poverty through their **threat multiplier** effect.” - IPCC



# Desertification has implications for food security and poverty in South Asia (2)

Climate change will reduce the mean yields of 11 major crops – millet, field pea, sugar beet, sweet potato, wheat, rice, maize, soybean, groundnut, sunflower and rapeseed – by 18% in South Asia by the period 2046 – 2055 compared with 1996–2005.





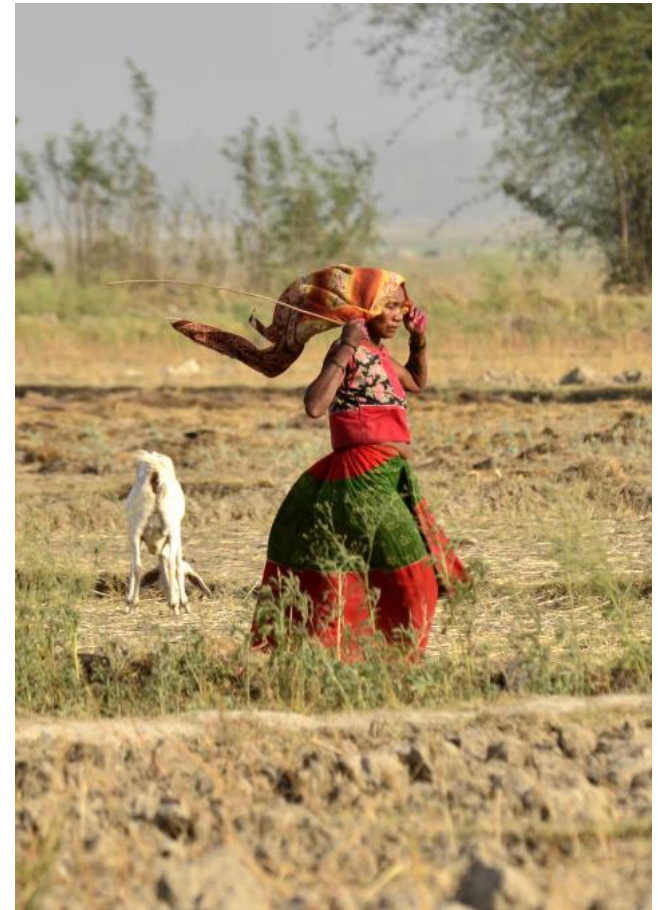
# Community and policy responses can combat land degradation (1)

## Stopping and reversing land degradation involves:

- improving the carbon content of soils; and
- retaining and restoring soil nutrients (including through soil and water management techniques and land-livestock interactions).

Also:

- reducing deforestation and forest degradation and sustainable forest management.



# Community and policy responses can combat land degradation (2)

## Reversing land degradation is worthwhile:

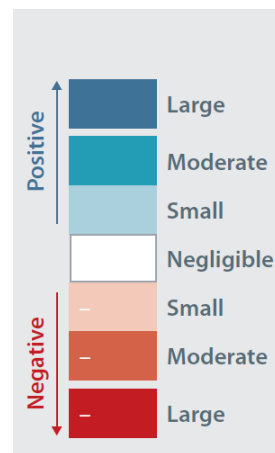
Implementing sustainable land management increases the productivity of land and provides good economic returns on investment around the world. A study of 363 sustainable land management projects found:

- three quarters of sustainable land management projects had *positive cost-benefit returns in the short term*
- 97% of the projects had *positive or very positive cost-benefit ratios in the long term.*

**Certification schemes** have been shown to improve the sustainability of forest management in tropical areas.

# Improved land management can deliver climate adaptation, mitigation and development

These actions can minimise pressure on land  
(colours illustrate positive-negative impact)



**Confidence level**  
Indicates confidence in the estimate of magnitude category.

*H* High confidence  
*M* Medium confidence  
*L* Low confidence

**Cost range**  
Relative costs for each option. See the IPCC's Summary for Policy Makers for cost ranges in US\$.

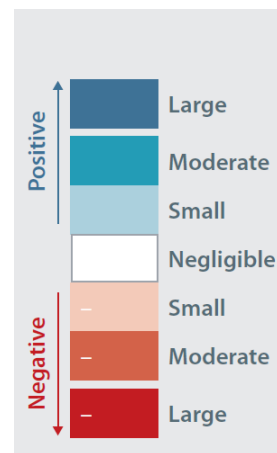
●●● High cost  
●● Medium cost  
● Low cost  
□ No data

## Response options based on land management

	Mitigation	Adaptation	Desertification	Land Degradation	Food Security	Cost
Agriculture	Increased food productivity	L	M	L	M	H
	Agro-forestry	M	M	M	M	L
	Improved cropland management	M	L	L	L	L
	Improved livestock management	M	L	L	L	L
	Agricultural diversification	L	L	L	M	L
	Improved grazing land management	M	L	L	L	L
	Integrated water management	L	L	L	L	L
	Reduced grassland conversion to cropland	L	—	L	L	L
Forests	Forest management	M	L	L	L	L
	Reduced deforestation and forest degradation	H	L	L	L	L
Soils	Increased soil organic carbon content	H	L	M	M	L
	Reduced soil erosion	↔ L	L	M	M	L
	Reduced soil salinisation	—	L	L	L	L
	Reduced soil compaction	—	L	—	L	L
Other ecosystems	Fire management	M	M	M	M	L
	Reduced landslides and natural hazards	L	L	L	L	L
	Reduced pollution including acidification	↔ M	M	L	L	L
	Restoration & reduced conversion of coastal wetlands	M	L	M	M	↔ L
	Restoration & reduced conversion of peatlands	M	—	na	M	L

# Improved value chain and climate risk management can deliver climate adaptation, mitigation and development

These actions can minimise pressure on land  
(colours illustrate positive-negative impact)



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Indicates confidence in the estimate of magnitude category.

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*M* Medium confidence  
*L* Low confidence

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●●● High cost  
●● Medium cost  
● Low cost  
— No data

## Response options based on value chain management

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

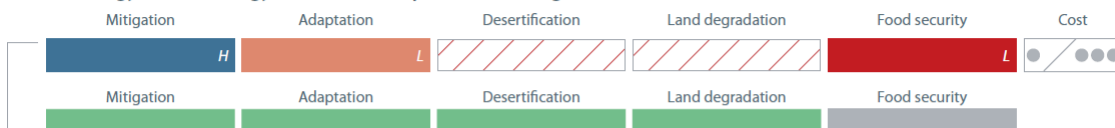
## Response options based on risk management

Risk	Livelihood diversification	—	L	—	L	L	—
	Management of urban sprawl	—	L	L	M	L	—
	Risk sharing instruments	↔ L	L	—	↔ L	L	●●

# Other options for climate adaptation, mitigation and development

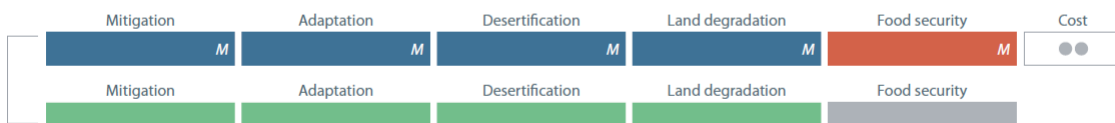
These could increase pressure for land but best practices can reduce the pressure

## Bioenergy and Bioenergy with Carbon Capture and Storage (BECCS)



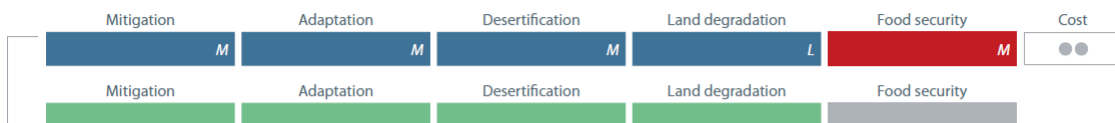
**Best practice:** The sign and magnitude of the effects of bioenergy and BECCS depends on the scale of deployment, the type of bioenergy feedstock, which other response options are included, and where bioenergy is grown (including prior land use and indirect land use change emissions). For example, limiting bioenergy production to marginal lands or abandoned cropland would have negligible effects on biodiversity, food security, and potentially co-benefits for land degradation; however, the benefits for mitigation could also be smaller.

## Reforestation and forest restoration



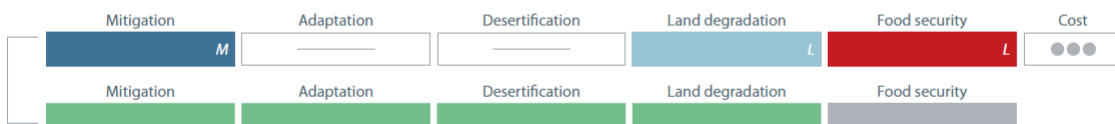
**Best practice:** There are co-benefits of reforestation and forest restoration in previously forested areas, assuming small-scale deployment using native species and involving local stakeholders to provide a safety net for food security. Examples of sustainable implementation include, but are not limited to, reducing illegal logging and halting illegal forest loss in protected areas, reforesting and restoring forests in degraded and desertified lands.

## Afforestation



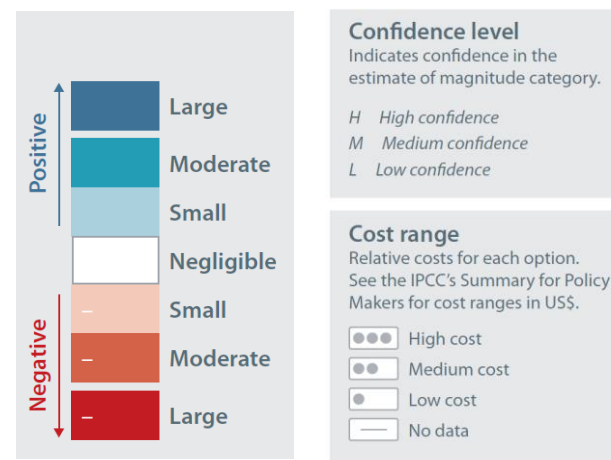
**Best practice:** Afforestation is used to prevent desertification and to tackle land degradation. Forested land also offers benefits in terms of food supply, especially when forest is established on degraded land, mangroves and other land that cannot be used for agriculture. For example, food from forests represents a safety-net during times of food and income insecurity.

## Biochar addition to soil



**Best practice:** When applied to land, biochar could provide moderate benefits for food security by improving yields by 25% in the tropics, but with more limited impacts in temperate regions, or through improved water holding capacity and nutrient use efficiency. Abandoned cropland could be used to supply biomass for biochar, thus avoiding competition with food production; 5–9 Mkm<sup>2</sup> of land is estimated to be available for biomass production without compromising food security and biodiversity, considering marginal and degraded land and land released by pasture intensification.

(colours illustrate positive-negative impact)



# Insecure property rights and lack of access to tenure and land advisory services hamper progress – especially by women

Women's lack of access to these services (for social and cultural reasons), in particular, hampers their ability to be more effective agents of sustainable change.



# The skills and knowledge of marginalised groups – especially women – are not yet sufficiently recognised

- Most literature focuses on women's, marginalised groups' greater vulnerability. However, it is important not to frame people as 'victims'.
- Recognise real strengths and ingenuity of women, indigenous people, marginalised groups, particularly in adaptation.
- Women often assume new leadership roles when adapting to climate change.



“Many sustainable development efforts fail because of lack of attention to societal issues including inequality, discrimination, social exclusion and marginalisation ... citizen engagement is important in enhancing natural resource service delivery.” – IPCC





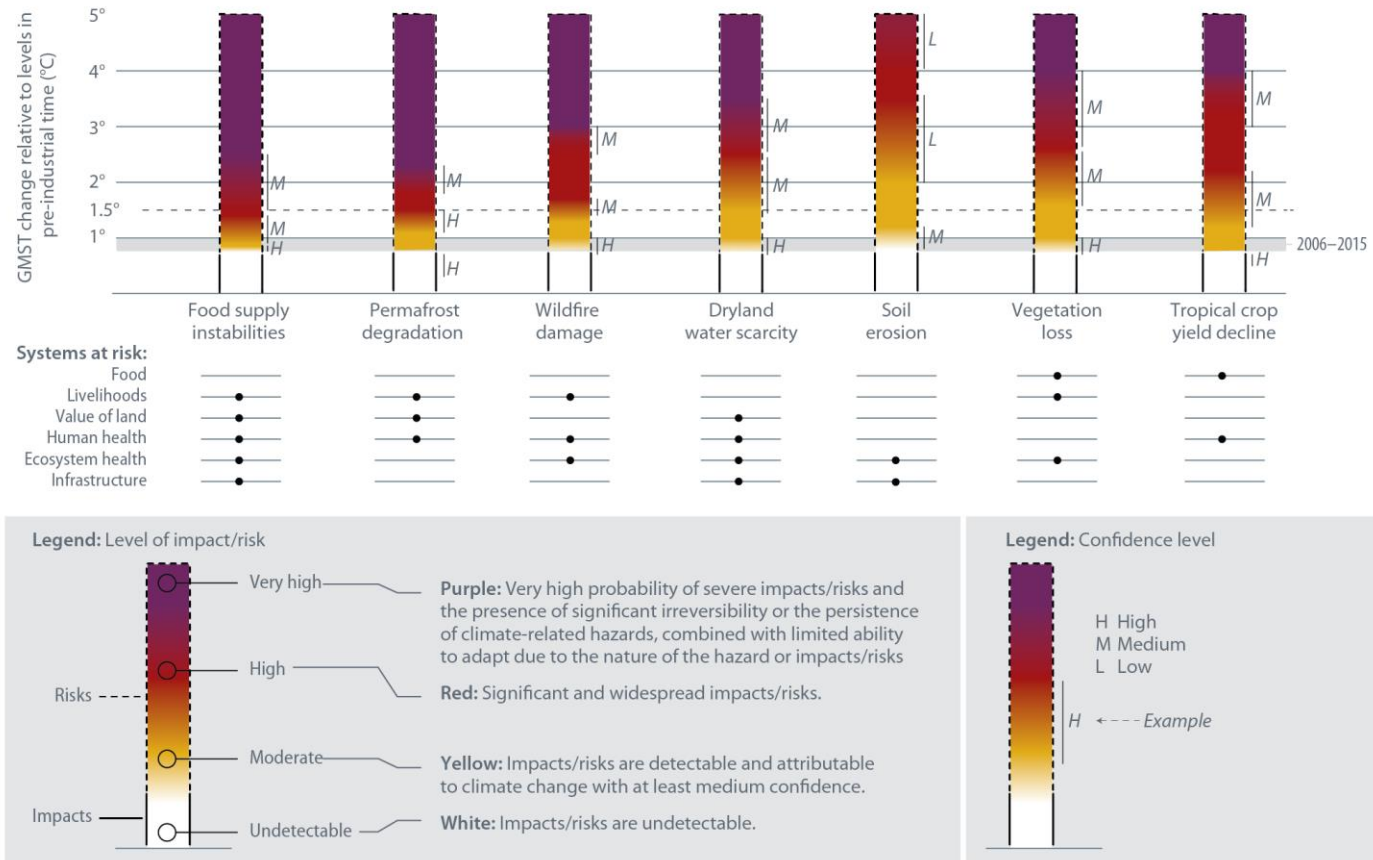
# Integrated governance is needed to maximise the benefits of land and water

- Integrated governance across sectors and scales is needed to manage pressure on land and water, to meet the requirements of people and biodiversity and relieve the increased pressures caused by climate change.
- Integrated governance is especially important at national, river basin and ecosystem levels.
- Coherent policies and adaptive management are important.



# Every degree of increase in average global warming brings more risks to people and the environment

Risks to humans and ecosystems from every 1°C of average global warming



Source: Adapted from IPCC (2019) *Climate Change and Land: an IPCC special reports on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*, Summary for Policy Makers; p13.

# Emissions reductions in other sectors are vital to relieve pressure on land

- Bioenergy crops and tree plantations are used to take up greenhouse gases from the atmosphere and mitigate climate change. However, without sustainable land management, using these approaches at large scale could jeopardise the achievement of Sustainable Development Goals (SDGs), including food security and livelihoods.
- Bioenergy and afforestation need to be carefully managed to avoid these risks. Good outcomes depend on locally appropriate policies and governance.
- Lowering greenhouse gas emissions in other sectors and areas of human behaviour (e.g. cutting waste, cutting energy use, dietary change) can ease pressure on land. **“Land cannot do it all.”**



[www.cdkn.org](http://www.cdkn.org)

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