Key messages of the Special Report on Climate Change and Land

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bit.ly/ipcc_outreach_centralasia

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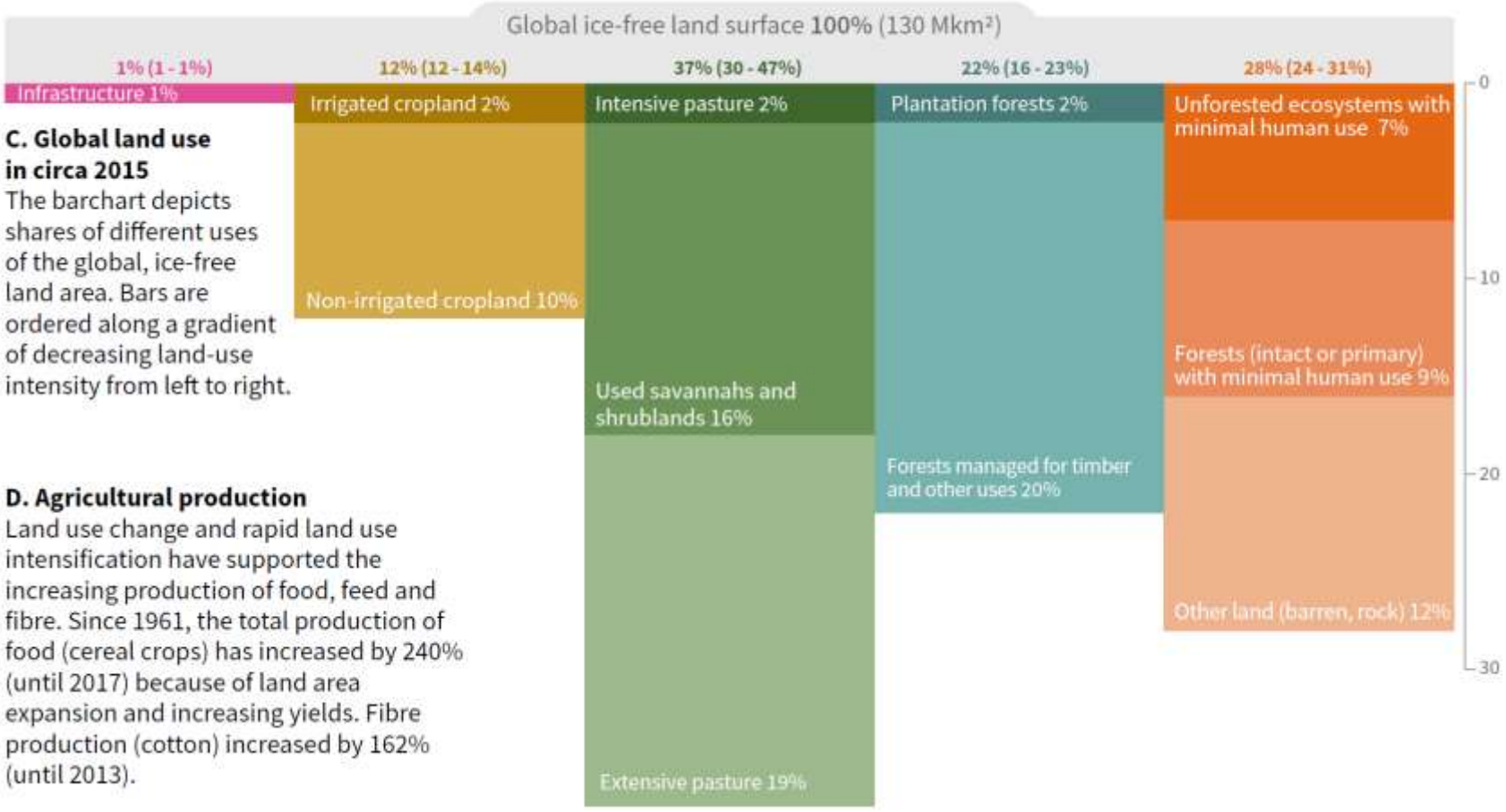
Land is a finite and precious resource

Productive land that provides us with food, fibre, materials and water and supports ecosystems and biodiversity is a finite and precious resource. Its increasingly impacted by climate change stress

Marc Foggin

Andrey Giljov and Karina Karenina

How we use land for different uses matters for future response to climate change



C. Global land use in circa 2015
The barchart depicts shares of different uses of the global, ice-free land area. Bars are ordered along a gradient of decreasing land-use intensity from left to right.

D. Agricultural production
Land use change and rapid land use intensification have supported the increasing production of food, feed and fibre. Since 1961, the total production of food (cereal crops) has increased by 240% (until 2017) because of land area expansion and increasing yields. Fibre production (cotton) increased by 162% (until 2013).

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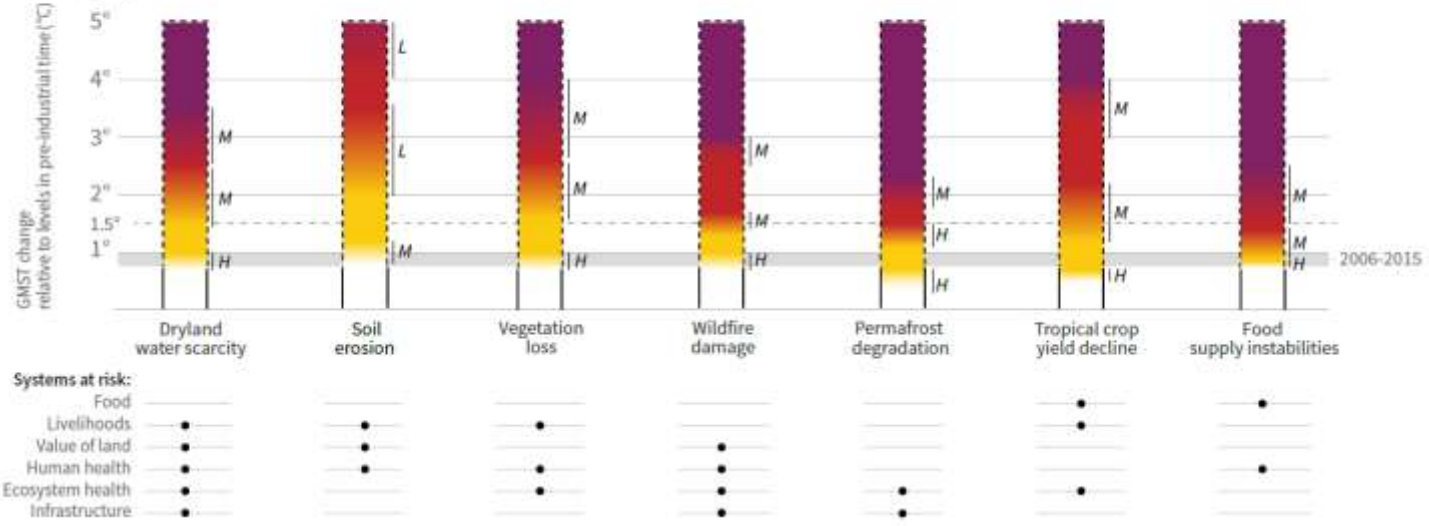
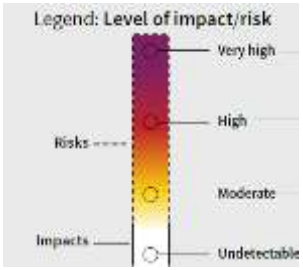
Climate change poses severe challenges for well-being of human societies and ecosystems

Increases in global mean surface temperature (GMST), relative to pre-industrial levels, affect processes involved in **desertification** (water scarcity), **land degradation** (soil erosion, vegetation loss, wildfire, permafrost thaw) and **food security** (crop yield and food supply instabilities). Changes in these processes drive risks to food systems, livelihoods, infrastructure, the value of land, and human and ecosystem health. Changes in one process (e.g. wildfire or water scarcity) may result in compound risks. Risks are location-specific and differ by region.





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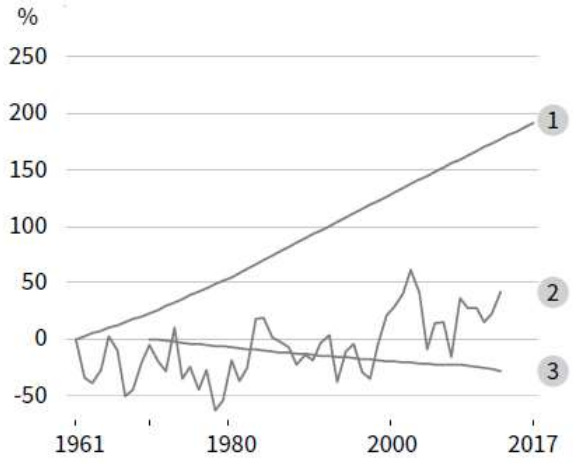
How we use land is both a problem and solution for climate change

F. Desertification and land degradation

Land-use change, land-use intensification and climate change have contributed to desertification and land degradation.

CHANGE in % rel. to 1961 and 1970

1 Population in areas experiencing desertification
2 Dryland areas in drought annually
3 Inland wetland extent



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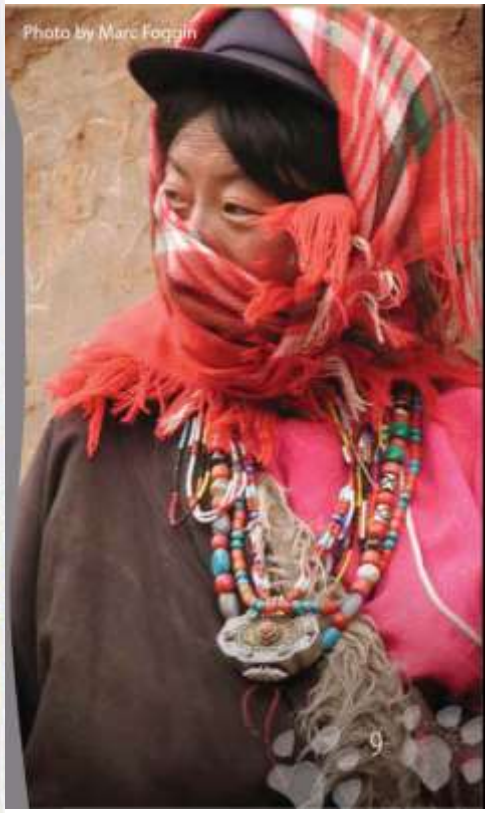
Many land based solutions can reduce risk of warming, help with options to live with climate change and provide other benefits for humans, ecosystems and biodiversity


FIGURE 1 Agricultural village in Badakhshan, Afghanistan. (Photo by Matthew Emslie-Smith)



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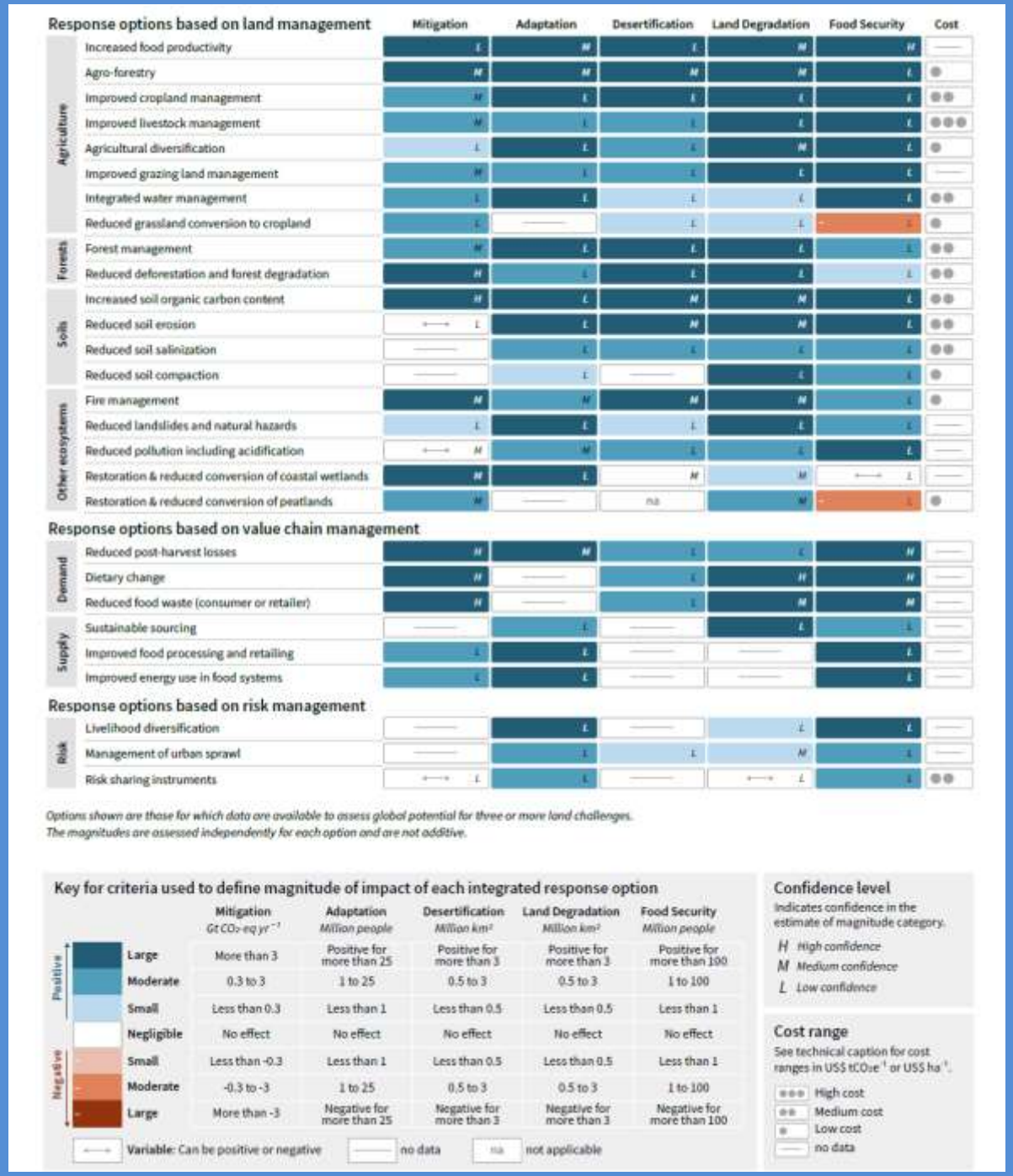
Response options based on land management
Mitigation
Adaptation
Desertification
Land Degradation
Food Security
Cost
Agriculture
Increased food productivity
Agro-forestry
Improved cropland management
Improved livestock management
Agricultural diversification
Improved grazing land management
Integrated 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
Options shown are those for which data are available to assess global potential for three or more land challenges.
The magnitudes are assessed independently for each option and are not additive.
Key for criteria used to define magnitude of impact of each integrated response option
Mitigation
Gt CO2-eq yr-1
Adaptation
Million people
Desertification
Million km2
Land Degradation
Million km2
Food Security
Million people
Positive
Large
More than 3
Positive for more than 25
Positive for more than 3
Positive for more than 3
Positive for more than 100
Moderate
0.3 to 3
1 to 25
0.5 to 3
0.5 to 3
1 to 100
Small
Less than 0.3
Less than 1
Less than 0.5
Less than 0.5
Less than 1
Negligible
No effect
No effect
No effect
No effect
No effect
Negative
Small
Less than -0.3
Less than 1
Less than 0.5
Less than 0.5
Less than 1
Moderate
-0.3 to -3
1 to 25
0.5 to 3
0.5 to 3
1 to 100
Large
More than -3
Negative for more than 25
Negative for more than 3
Negative for more than 3
Negative for more than 100
Variable: Can be positive or negative
no data
na
not applicable
Confidence level
Indicates confidence in the estimate of magnitude category.
H High confidence
M Medium confidence
L Low confidence
Cost range
See technical caption for cost ranges in US$ tCO2e-1 or US$ ha-1.
High cost
Medium cost
Low cost
no data

Mix of policies to help us cope with land and climate challenges

Regulation (eg land use zoning, land sparing and land sharing approaches)

Land tenure

Voluntary (change in diet, standards and certification, collective action)

Persuasive (eg payments for ecosystem services

Early warning systems and advisories

Risk sharing mechanisms (eg insurance)

THANK YOU FOR YOUR ATTENTION!

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