Achieving co-benefits through managing land and climate risks

IPCC Special Report on Climate Change and Land

Agricultural landscape between Ankara and Hattusha, Anatolia, Turkey (40°00' N – 33°35' E)
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www.ipcc.ch/report/SRCCL

Jagdish Krishnaswamy

UNFCCC Climate Dialogues, 30 November 2020

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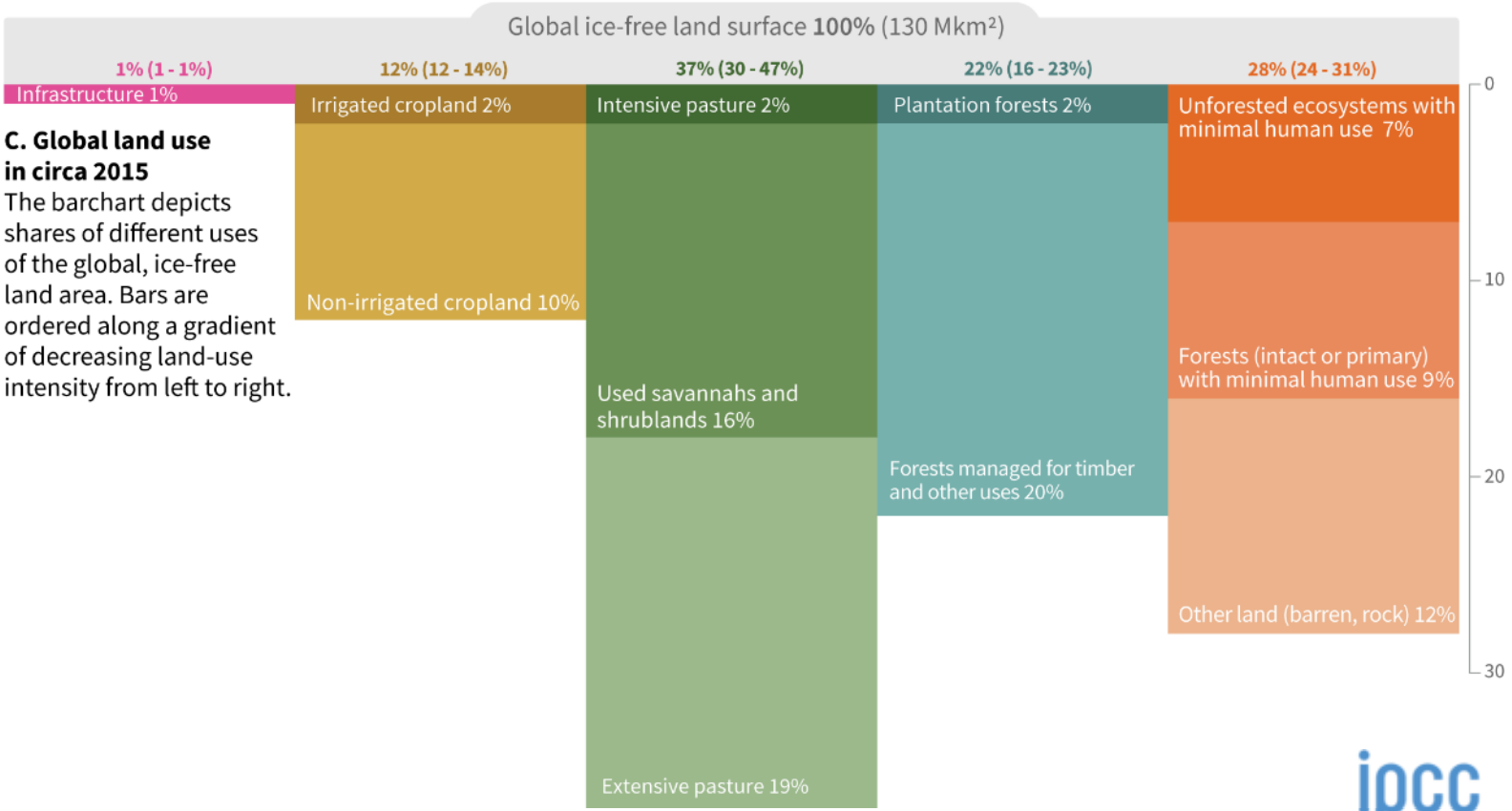
“Land is a critical resource –
we rely on it for food, water, health and wellbeing – but it is already under growing human pressure. Climate change is adding to these pressures

How we use land now: 70 % of ice free land is already impacted by human influence



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.

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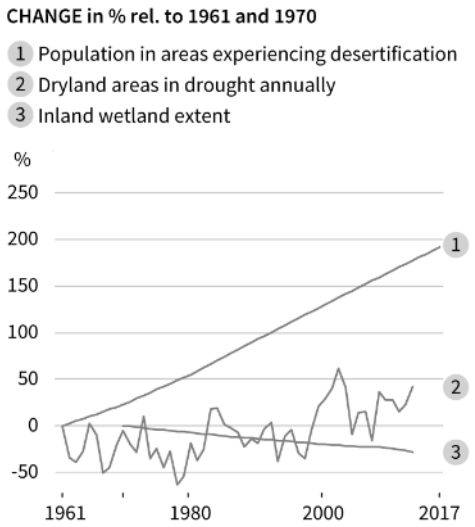
What is sustainable land management?

"the stewardship and use of land resources, including soils, water, animals and plants, to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions"

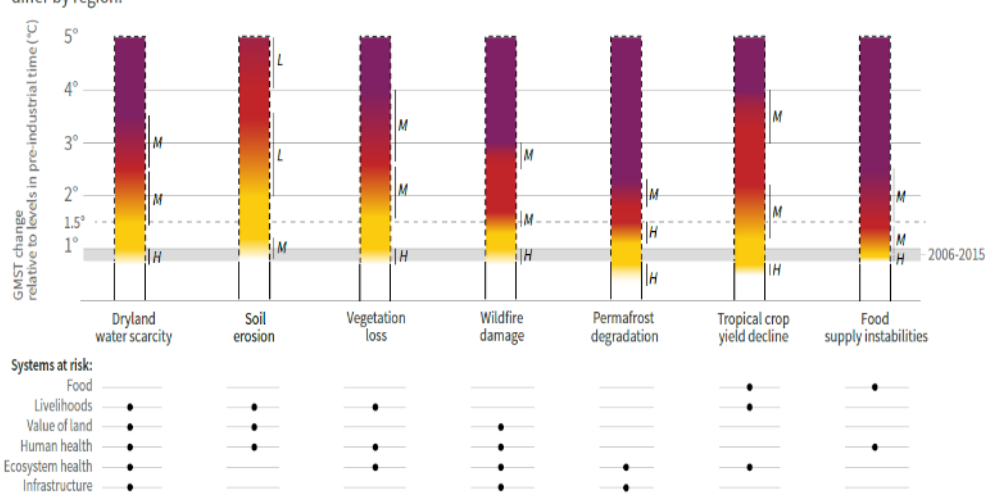
As more land is degraded, more people are being exposed to climate risks

F. Desertification and land degradation

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



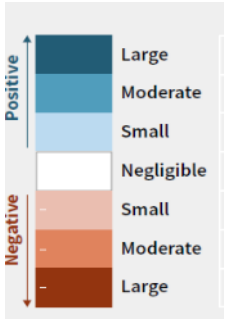
Increases in global mean surface temperature (GMST), relative to pre-industrial levels, affect processes involved in **desertification** (water scarcity), **land degradation** (soil erosion, vegetation loss, wildfire, permafrost thaw) and **food security** (crop yield and food supply instabilities). 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.



Marc Foggin

Land management options that reduce competition for land with co-benefits and minimum negative impacts on key ecosystem services

	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 salinization	—	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	●



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$ tCO_2e^{-1} or US$ ha^{-1}.

●●● High cost
●● Medium cost
● Low cost
— no data

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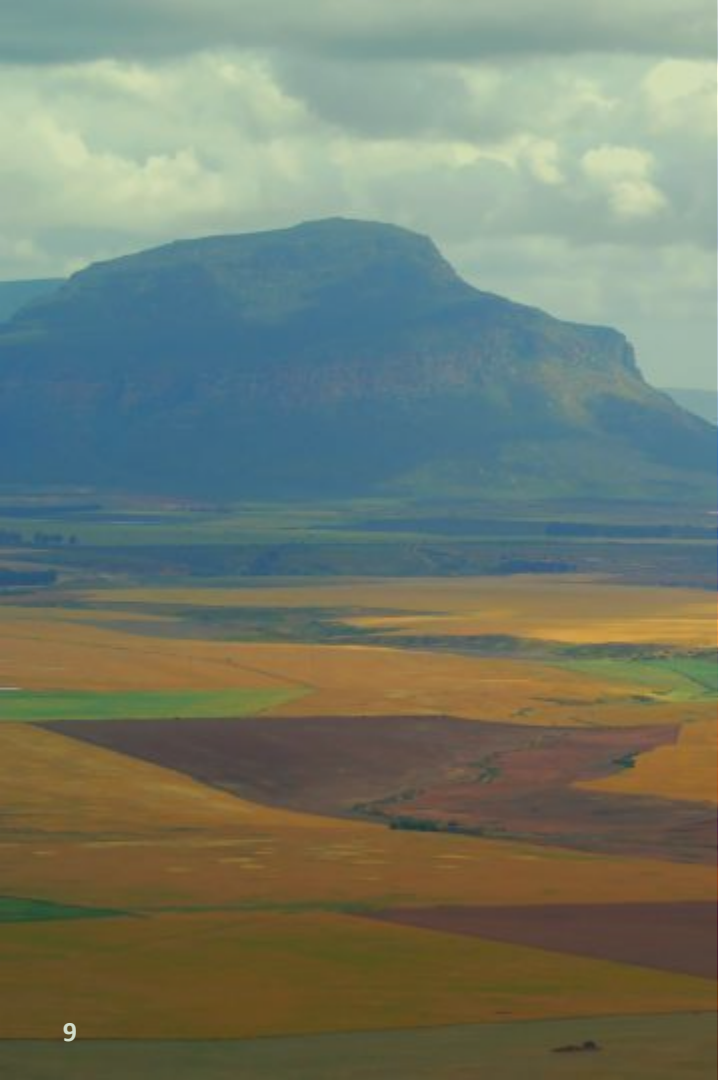
Interlinkages

- Some options have benefits for **all land-climate challenges**.
- Response options are **interlinked.** Some have co-benefits or are more **effective when paired**.
- Not all options increase competition for land. Some response options are **less feasible** than others.
- **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).
- **Acting early** will avert or minimise risks, reduce losses and generate returns on investment but has **challenges** related to technology, upscaling and barriers.
- **Measuring progress towards goals** is important to decision-making, adaptive governance & policy success.

Engaging people and good governance matter

- **Indigenous and local knowledge** can play a key role in understanding climate processes, impacts and responses.
- **Involving people** in land and climate decision making, secure tenure **advances synergies** and **overcomes barriers** to adaptation and mitigation.
- **Empowering women** can bolster synergies among household food security and sustainable land management.
- **Collective action** can be an important contributor
- The significant **social and political changes required** entail a wide range of governance mechanisms.



Enabling Response Options

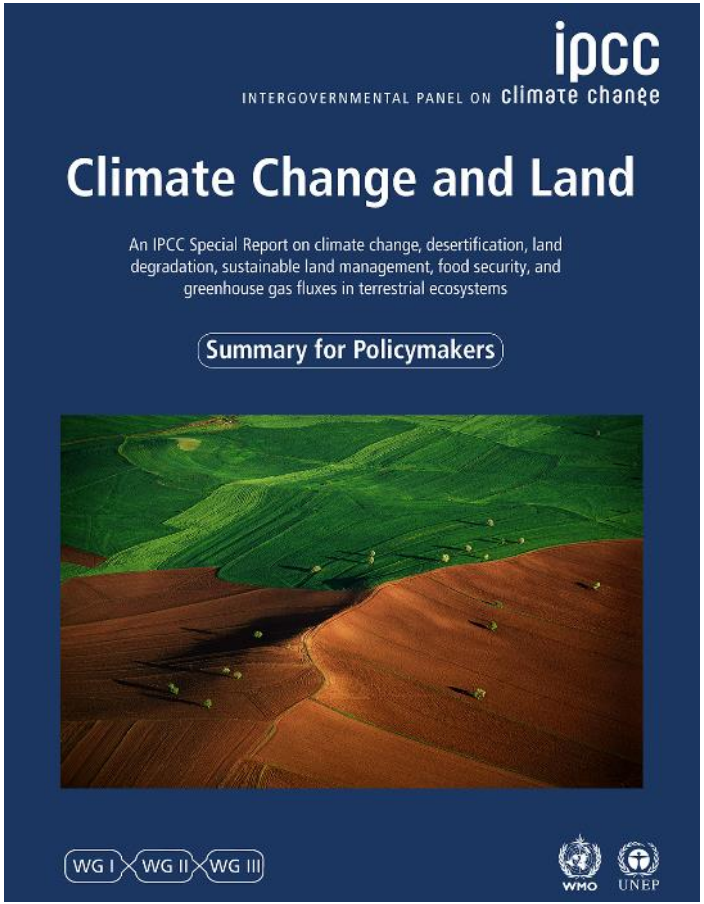
- **Measuring and monitoring** land use change supported by new information and communication technologies, climate services and climate information
- **Investments in human and institutional capacities** including access to observation, early warning systems, seasonal forecasts are critical
- Government support and **improved access to credit** can overcome barriers to adoption
- Better **access to markets, livelihood diversification strategies, drought preparedness, weather and health insurance, social protection, finance** can address multiple challenges

Policy context for **nature based solutions** and **sustainable land management**

- Mix of policies exist that can encourage sustainable land management based on regional context
- Regulation (eg land use zoning, land sparing and land sharing approaches)
- Land tenure could foster acceptance of sustainable land management
- Voluntary and persuasive (cropping patterns, standards and farm certification, awareness generation, citizen science, indigenous knowledge, collective action)
- Incentives (eg payments for ecosystem services)
- Risk sharing mechanisms (eg insurance)

Using **existing knowledge** for **near term adaptation**

- Measuring and monitoring land-use and land-cover change using shared and accessible remotely sensed data for adaptive management and governance
- Early warning systems linked to network of sensors for extreme weather and pest outbreaks
- Climate Advisories for farmers based on improvements in weather forecasting
- Adaptation climate services as ecosystems evolve and change
- Cooperation and knowledge transfer for best practices at all levels of governance



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