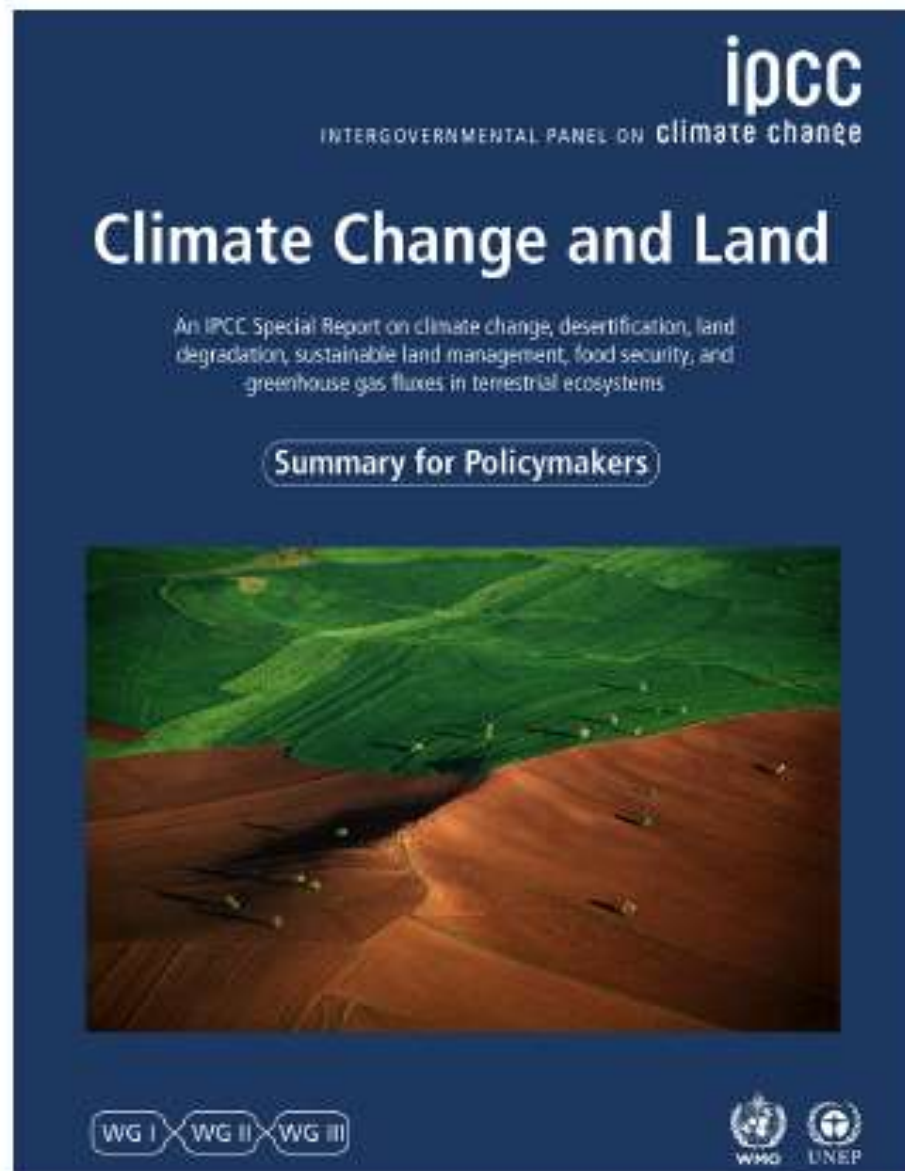


*IPCC Special Report
On Climate Change,
Desertification, land
Degradation,
sustainable land
management, food
security and greenhouse
gas fluxes in terrestrial
ecosystems*

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UNDRR

IPCC Lead Author and Review Editor



SRCCCL was the result of extensive work by many scientists from around the world.




107 Authors

52 Countries

53% Developing Countries

7,000 references assessed

More than 28,000 comments

An aerial photograph showing a yellow bulldozer operating on a large, dark-colored pile of earth or sand. The bulldozer is positioned in the upper right quadrant of the frame. In the lower left foreground, there is a wooden structure, possibly a bridge or a walkway, with a railing. The ground is uneven and shows signs of heavy machinery work. The overall scene is in a monochromatic blue-grey color scheme.

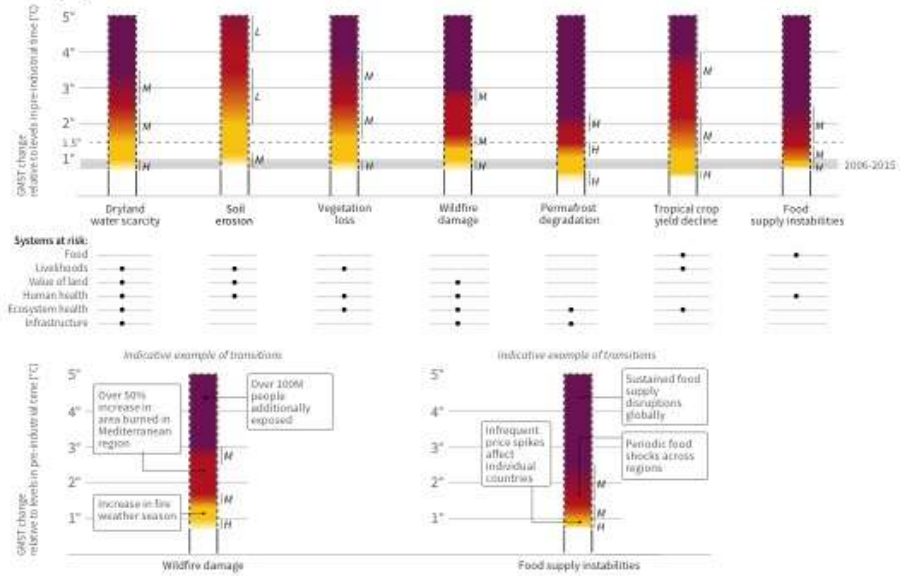
Land is under growing human pressure
Land is part of the solution
But Land can't do it all

Figure SPM.2

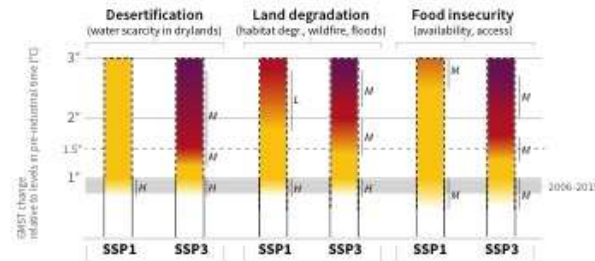
Risks to land-related human systems and ecosystems from global climate change and socio-economic development

A. Risks to humans and ecosystems from changes in land-based processes as a result of climate change

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.



B. Different socioeconomic pathways affect levels of climate related risks



Socio-economic choices can reduce or exacerbate climate related risks as well as influence the rate of temperature increase. The SSP1 pathway illustrates a world with low population growth, high income and reduced inequalities, food produced in low GHG emission systems, effective land use regulation and high adaptive capacity. The SSP3 pathway has the opposite trends. Risks are lower in SSP1 compared with SSP3 given the same level of GMST increase.

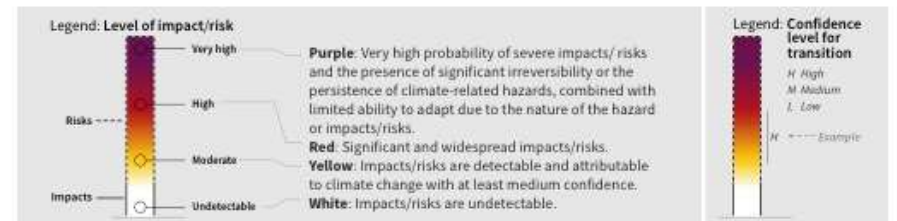
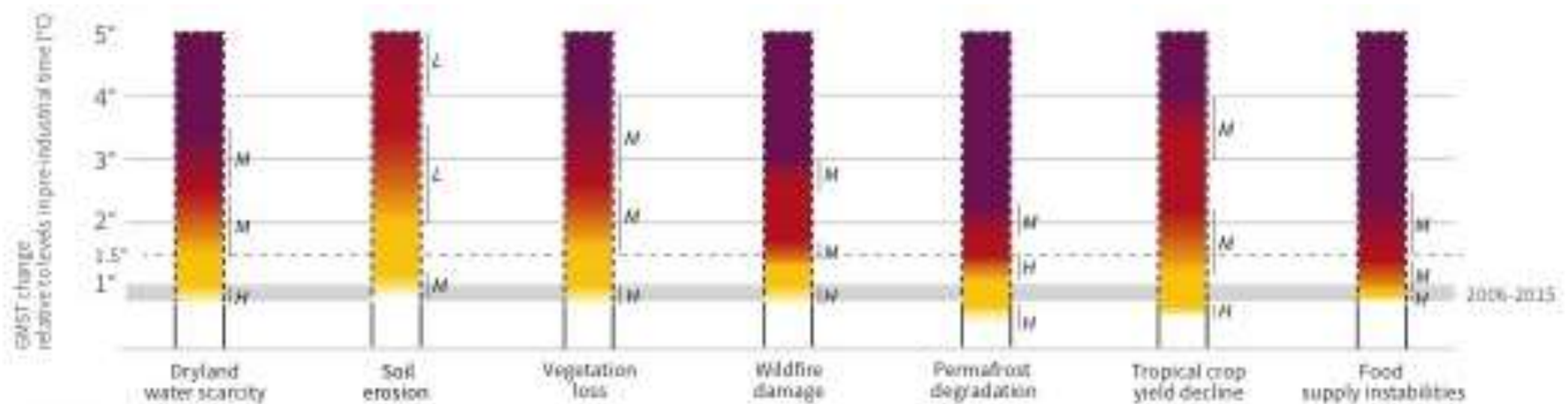


Figure SPM.2: Panel A

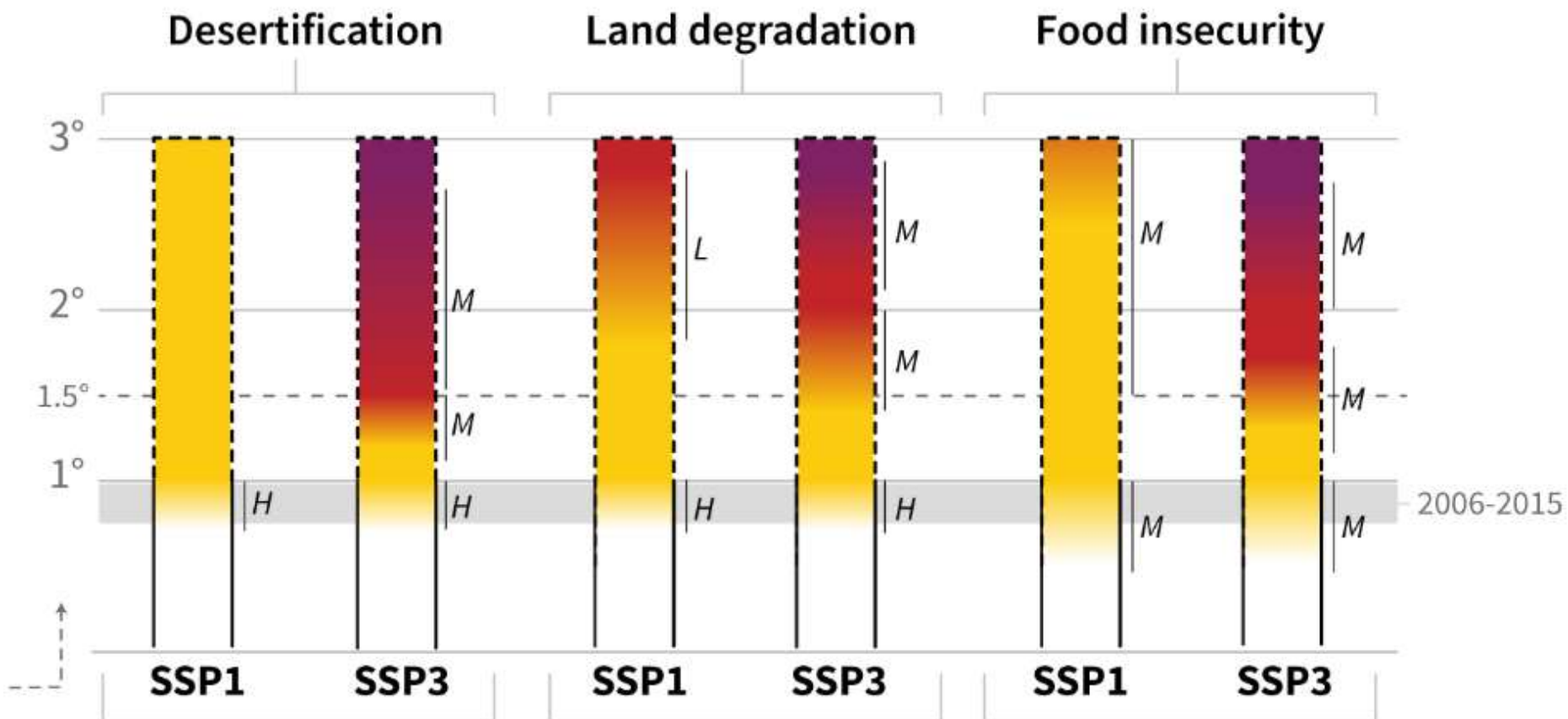


- Around 1.5°C GMST high risks from **dryland water scarcity, fire damage, permafrost degradation and food supply instability**
- By 2 degrees **very high risks** are identified from **permafrost degradation and food system instability**
- Severe and irreversible risks identified across almost all processes by 3°C GMST increase.

The Shared Socioeconomic Pathways (SSPs)

- **SSP1** includes:
 - a peak and decline in population (~7 billion in 2100),
 - high income and reduced inequalities
 - effective land-use regulation
 - less resource intensive consumption, including food produced in low-GHG emission systems and lower food waste
 - free trade and environmentally-friendly technologies and lifestyles
- **SSP3** includes:
 - high population (~13 billion in 2100)
 - low income and continued inequalities
 - material-intensive consumption
 - barriers to trade and slow rates of technological change

Figure SPM.2: Panel B





**Thank you for your attention
Questions?**

A. Pathways linking socioeconomic development, mitigation responses and land

Socioeconomic development and land management influence the evolution of the land system including the relative amount of land allocated to **CROPLAND**, **PASTURE**, **BIOENERGY CROPLAND**, **FOREST**, and **NATURAL LAND**. The lines show the median across Integrated Assessment Models (IAMs) for three alternative shared socioeconomic pathways (SSP1, SSP2 and SSP5 at RCP1.9); shaded areas show the range across models. Note that pathways illustrate the effects of climate change mitigation but not those of climate change impacts or adaptation.

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.

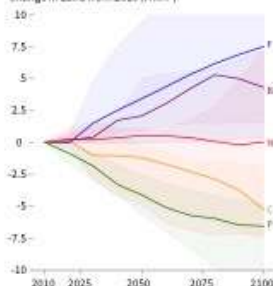
B. Middle of the road (SSP2)

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.

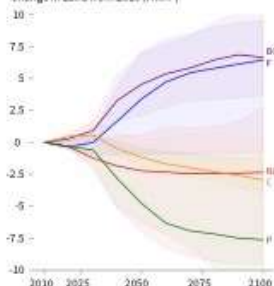
C. Resource intensive (SSP5)

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.

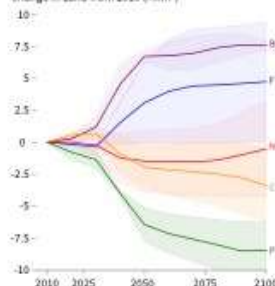
SSP1 Sustainability-focused
Change in Land from 2010 (Mkm²)



SSP2 Middle of the road
Change in Land from 2010 (Mkm²)



SSP5 Resource intensive
Change in Land from 2010 (Mkm²)



■ CROPLAND ■ PASTURE ■ BIOENERGY CROPLAND ■ FOREST ■ NATURAL LAND

Land use under different socio-economic pathways

Differences in change in forests, bioenergy crops and food production

All assessed pathways that limit warming to well below 2C require land-based mitigation and land-use change