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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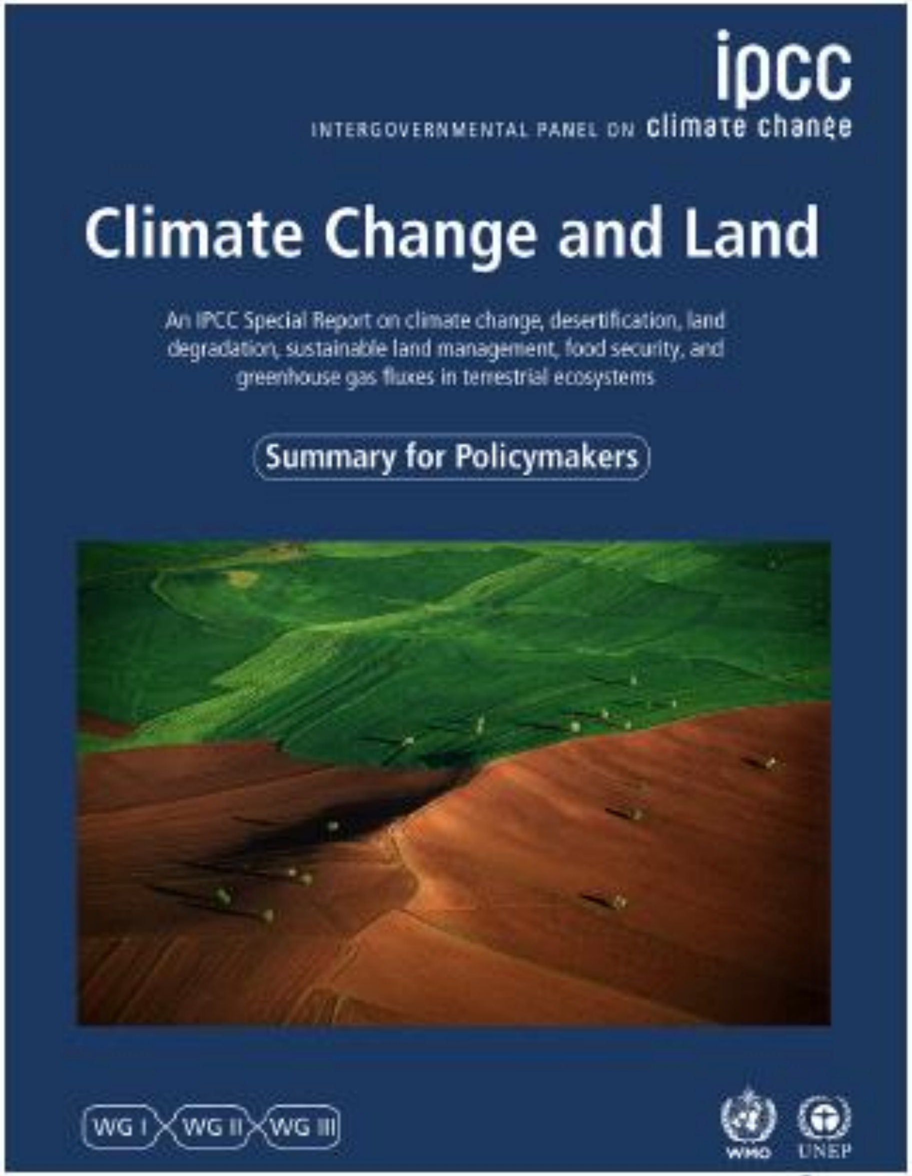


IPCC reports are the result of extensive work of many scientists from around the world.

107 Authors

52 Countries

53% Developing Countries

7,000 references assessed

More than 28,000 comments

Land is under growing human pressure

Land is part of the solution

But Land can't do it all

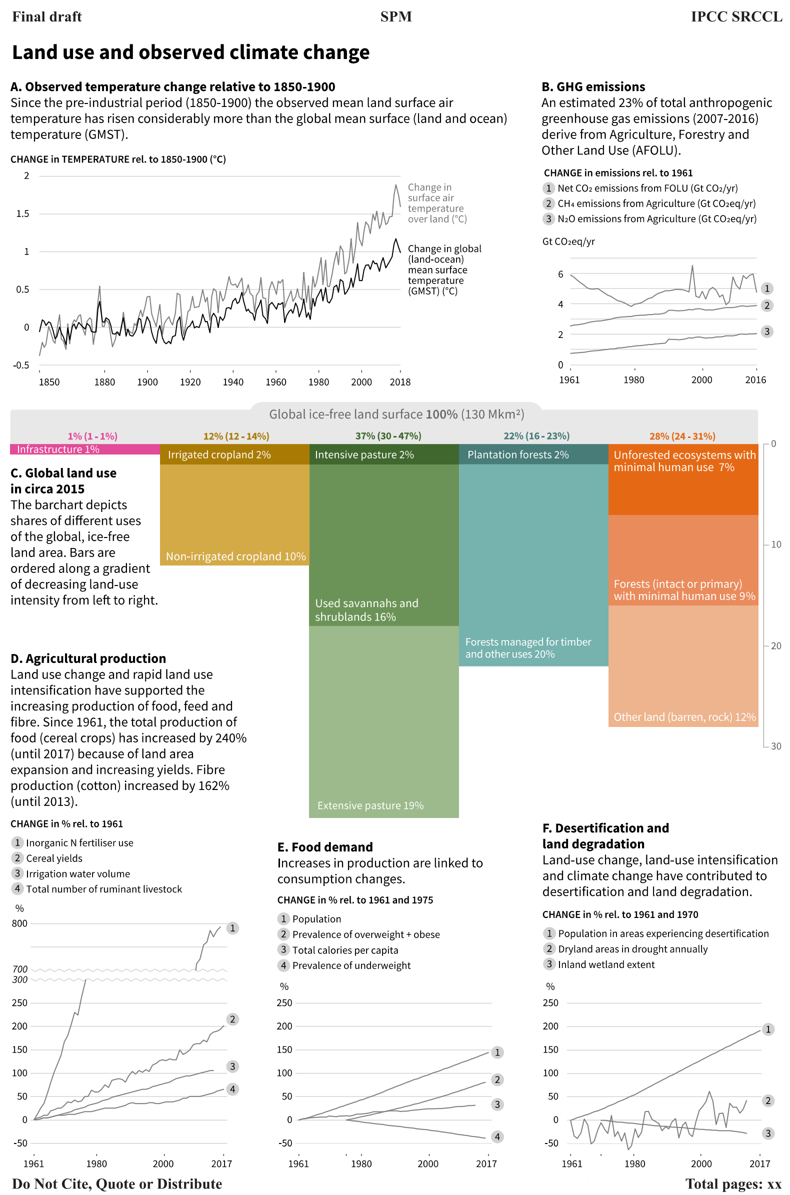


Figure SPM.1

- Observed mean land temp. risen more than GMST
- 23% of total GHG from agriculture, forestry and land use

INTERGOVERNMENTAL PANEL ON climate change

Figure SPM.2

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

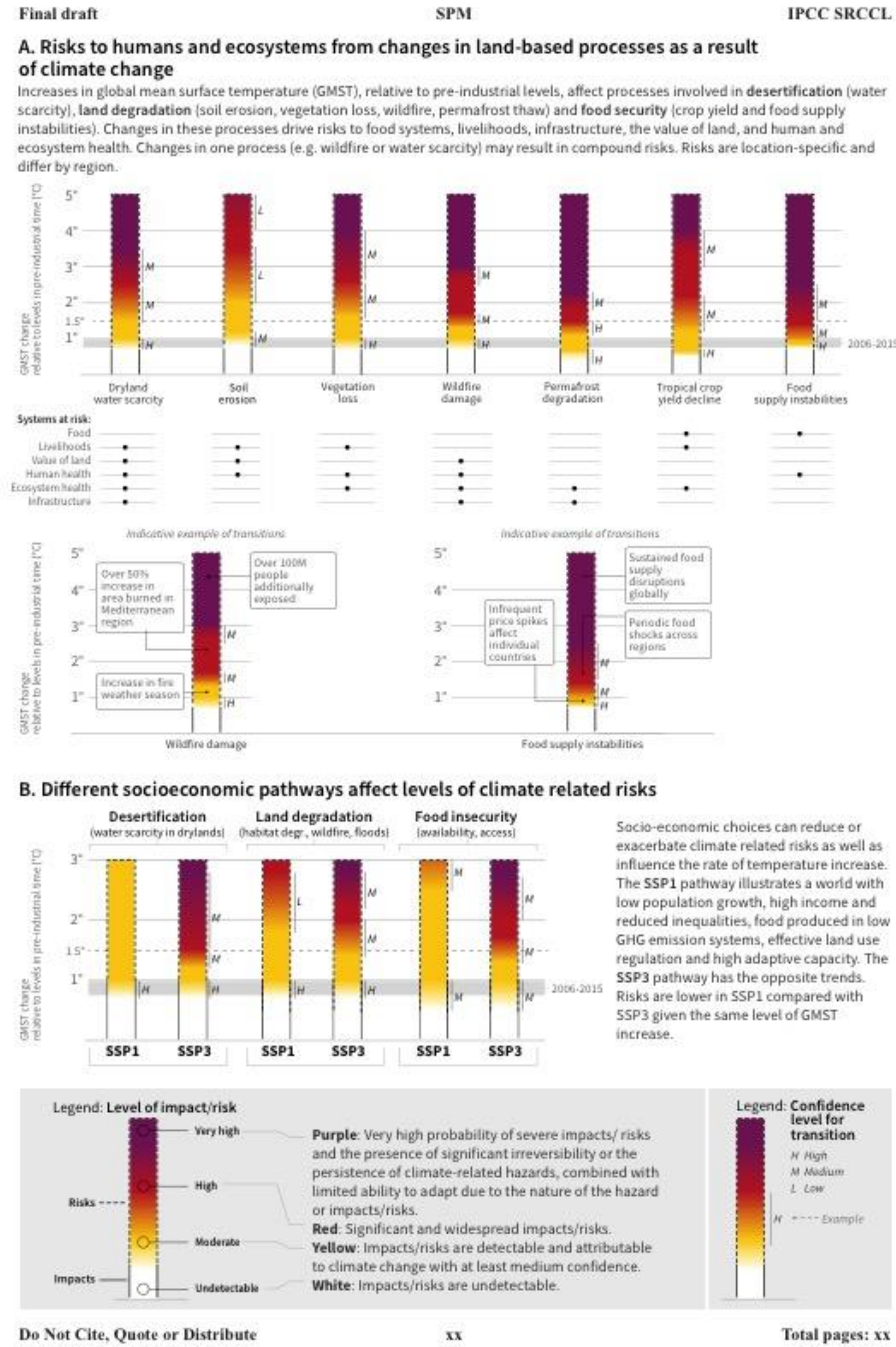
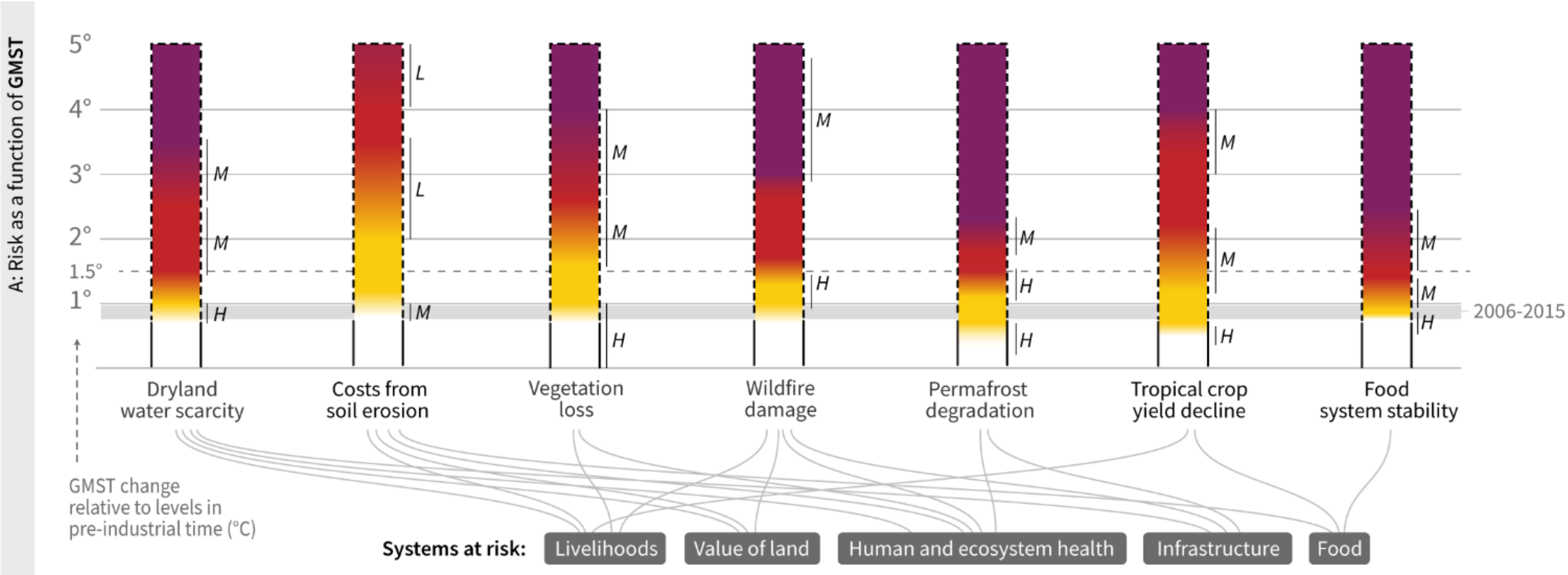


Figure SPM.2: Narrative

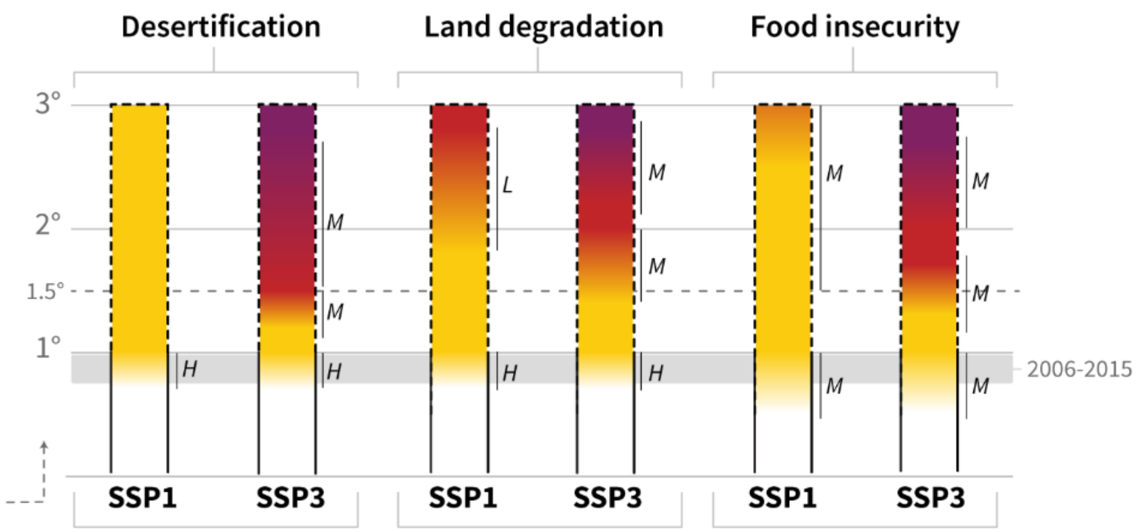
- Impacts across all processes at current levels of GMST increase
- Risks increase rapidly with GMST increase, although the level of risk differs across processes. Severe and irreversible risks with limited capacity to adapt were identified across almost all processes by 3^{o}C GMST increase.
- Cascading risks identified
- Socio-economic development pathways have significant effects on risk. At the same GMST increase, there are lower risks in a world with sustainable land management and consumption patterns, low population, high income.

Figure SPM.2: Panel A



- Around 1.5°C GMST high risks from **dryland water scarcity, fire damage, permafrost degradation and food system instability**
- By 2 degrees **very high risks** are identified from **permafrost degradation** and **food system instability**

Figure SPM.2: Panel B

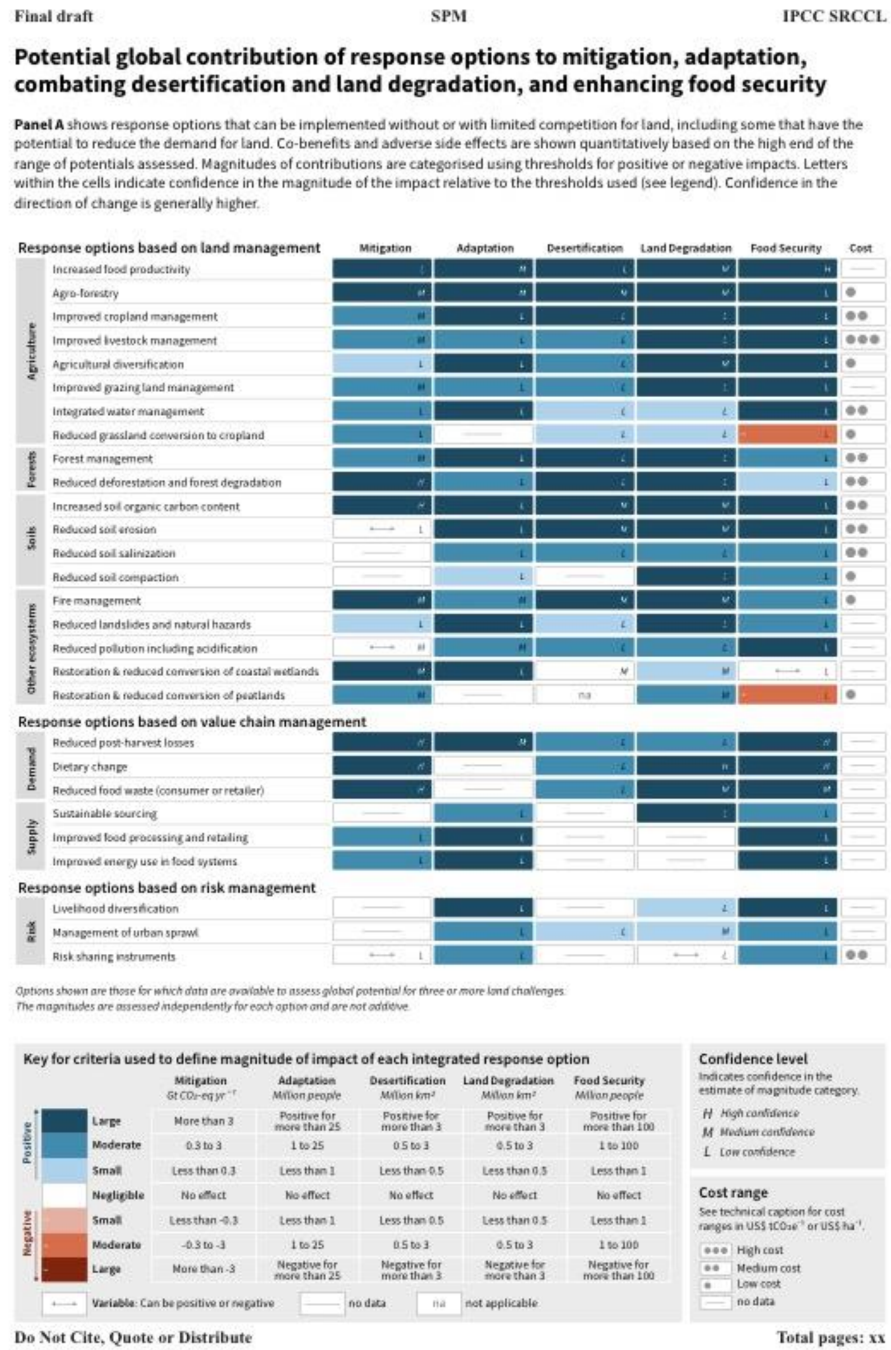


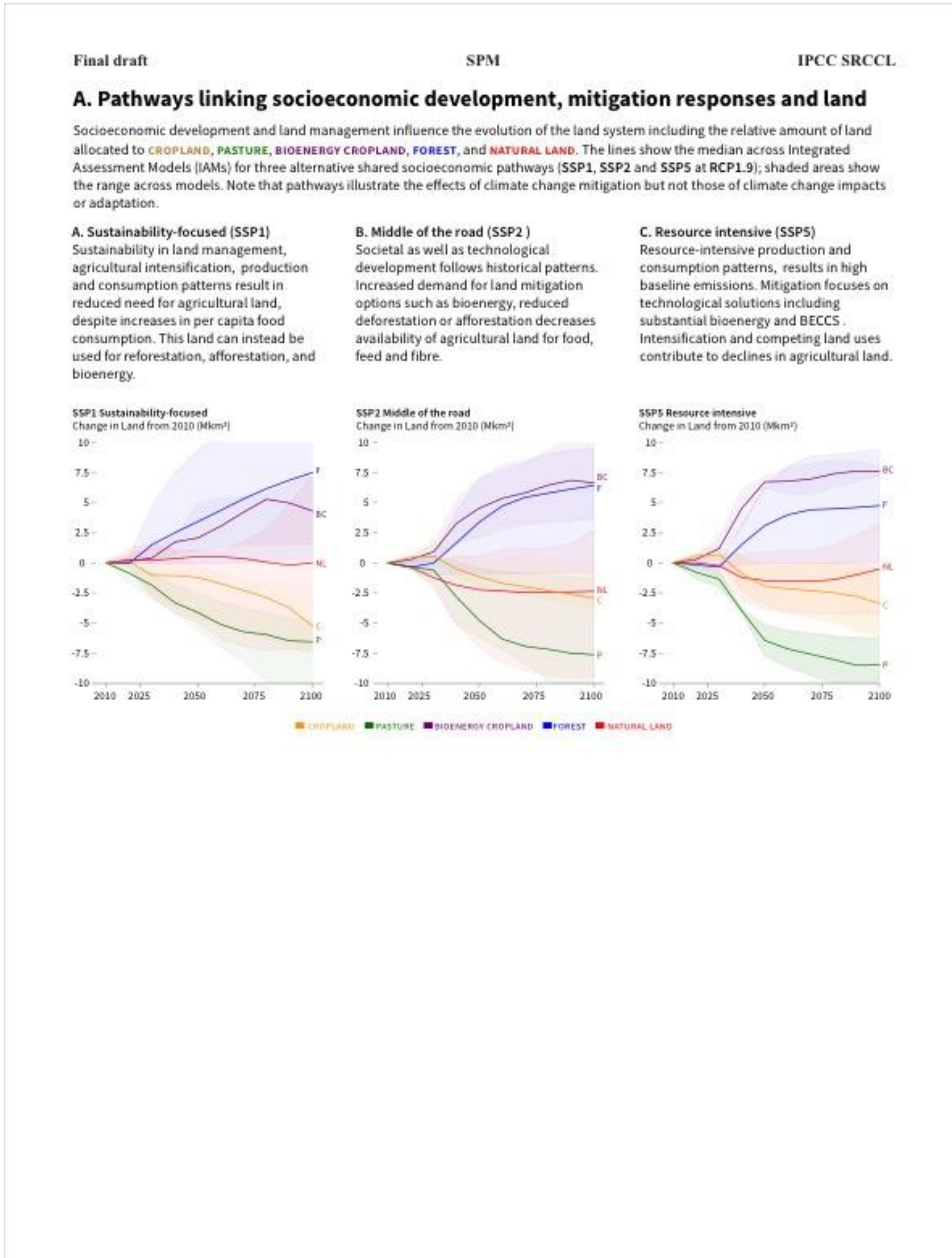
- Two contrasting socioeconomic pathways:
  - SSP1 has lower population, higher income, and lower land conversion than SSP3
  - SSP1 has high adaptive capacity, while SSP3 has barriers to adaptation.
  - As a result, SSP1 has lower risks than SSP3 at the same GMST.

Figure SPM.3

Response Options

- Many response options have multiple co-benefits
- Improved management of croplands and forests, increased food productivity, reduction of food waste, increased soil organic content
- Risk management





Final draft SPM IPCC SRCCL

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.

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

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Thank you for your attention

Questions?