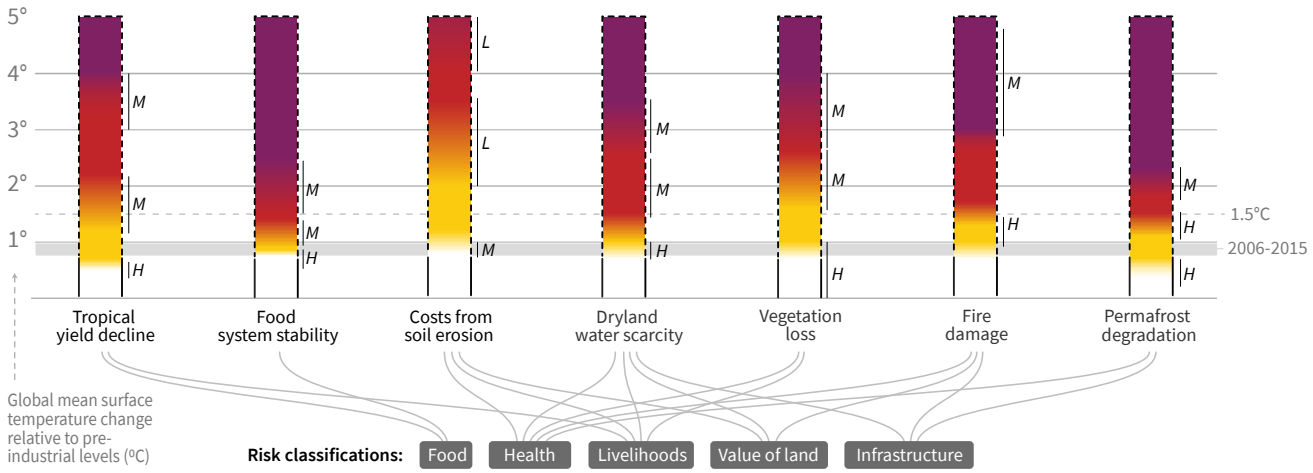
Risk as a function of GMST

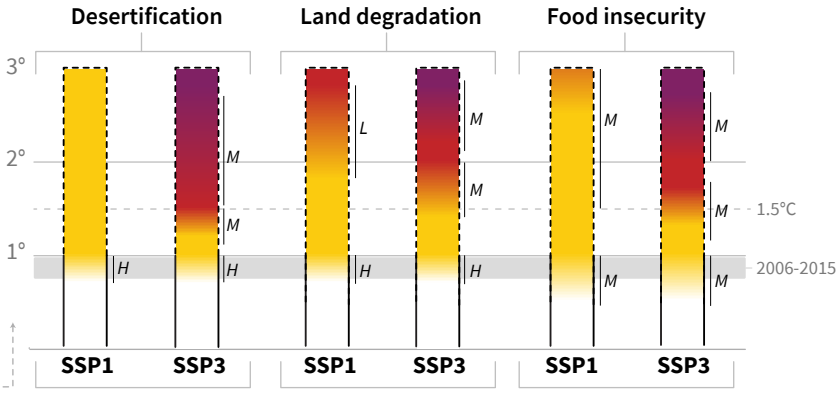
Level of global warming affects selected components of desertification, land degradation and food insecurity

With no mitigation and assuming current socioeconomic conditions, increases in GMST affect processes involved in desertification (water scarcity), land degradation (soil erosion, vegetation loss, fire, permafrost thaw) and food security (crop yield, food stability), generating risks to food provision, human livelihoods, infrastructure, the value of land and the health of humans and ecosystems. Changesin one process (e.g. fire or water scarcity) may result in compound risks to multiple human and ecosystems. Some regions reach high levels of risk at lower GMST increase than others.



Different socioeconomic pathways entail different levels of climate-related risk

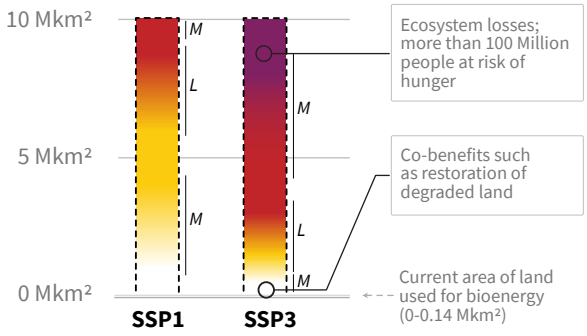
Socio-economic choices can reduce or exacerbate climate-related risks. The SSP1 pathway illustrates a world with low population growth, reduced inequalities, low meat consumption, land use regulation, moderate trade and high adaptation potential. The SSP3 pathway has the opposite trends, and higher human exposure and vulnerability. Under unmitigated climate change, risks are lower in SSP1 compared to SSP3 at a given GMST increase.



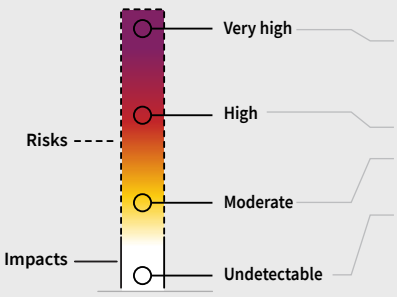
Risk as a function of land use

Mitigation through bioenergy deployment causes risks to food systems, terrestrial ecosystems and water scarcity

The amount of land used for bioenergy crops in 2050 under a 2°C warming target affects risks related to food systems, terrestrial ecosystems and water scarcity, assessed here as a combined risk. In a world with lower land requirements for food production (SSP1), there is greater opportunity for sustainable bioenergy deployment compared to a world in which there is increasing competition for land (SSP3).



Legend: Level of **impact/risk**



Purple means very high risks of severe impacts/risks and the presence of significant irreversibility or the persistence of climate-related hazards, combined with limited ability to adapt due to the nature of the hazard or impacts/risks.
Red means severe and widespread impacts/risks.
Yellow means impacts/risks are detectable and attributable to climate change with at least medium confidence.
White - means no impacts are detectable and attributable to climate change.

Confidence level for transition: L=Low, M=Medium, H=High