

# **Comprehensive Risk Management and Loss and Damage. Some comments on the evolving science perspective**

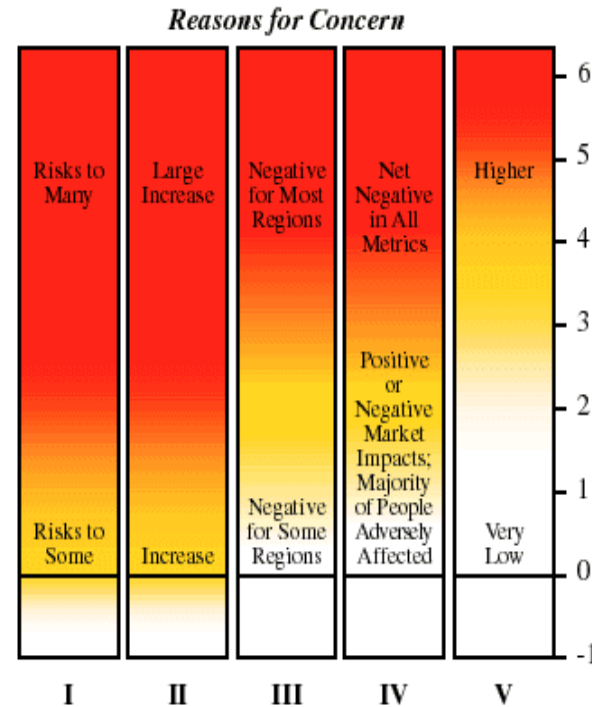
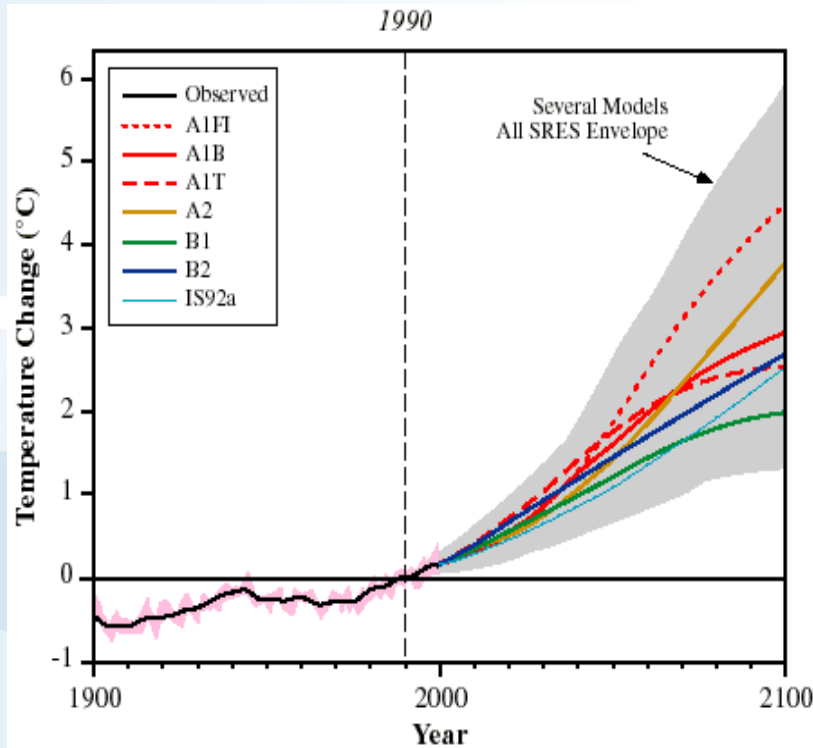
Reinhard Mechler  
IIASA

*1st meeting of the Technical Expert Group on Comprehensive Risk  
Management under the Executive Committee of the Warsaw  
International Mechanism on Loss and Damage  
Bonn 29-30 August 2019*

# IPCC AR3: 2001

## The 5 Reasons for Concern

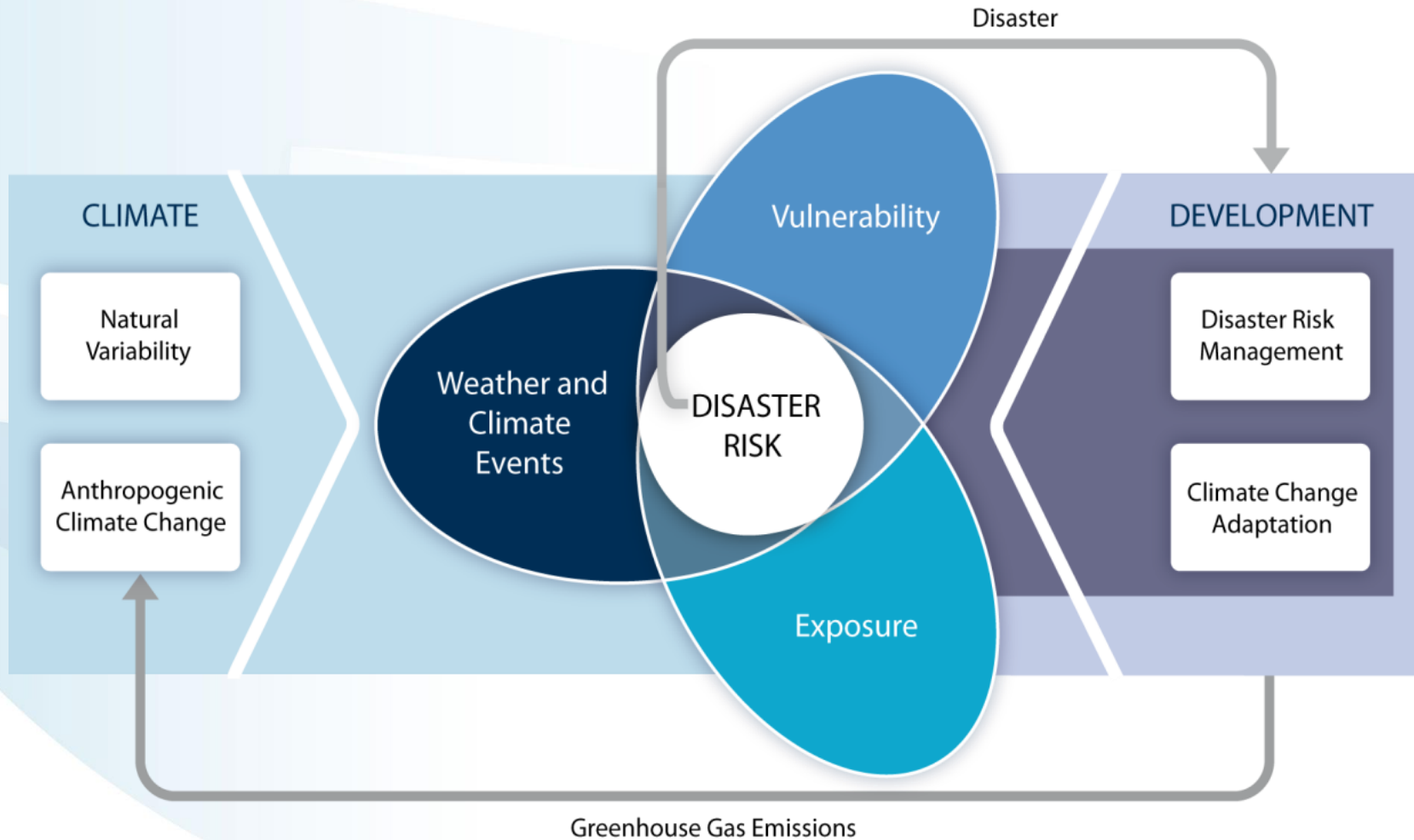
### Understanding and acting on the climate challenge



- I Risks to Unique and Threatened Systems
- II Risks from Extreme Climate Events
- III Distribution of Impacts
- IV Aggregate Impacts
- V Risks from Future Large-Scale Discontinuities

# IPCC SREX 2011

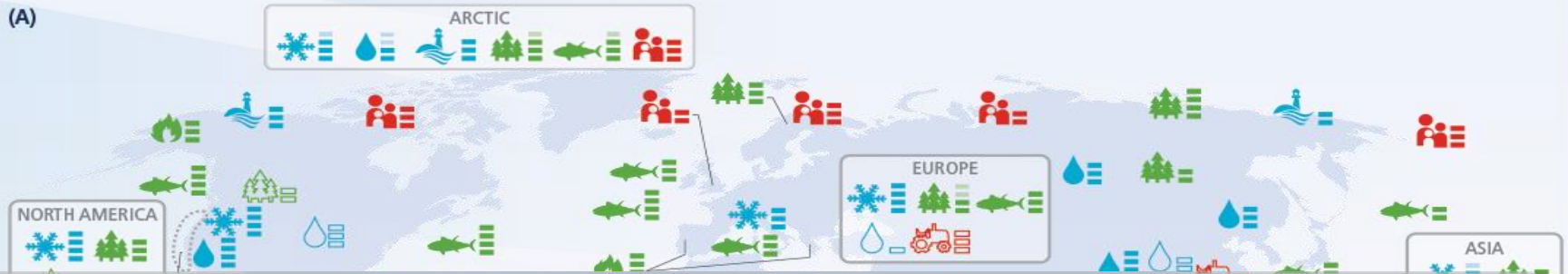
## Comprehensive climate risk perspective Integrating disaster risk and climate adaptation



# IPCC AR5 2014

## Increasing evidence on observed climate-related impacts

(A)

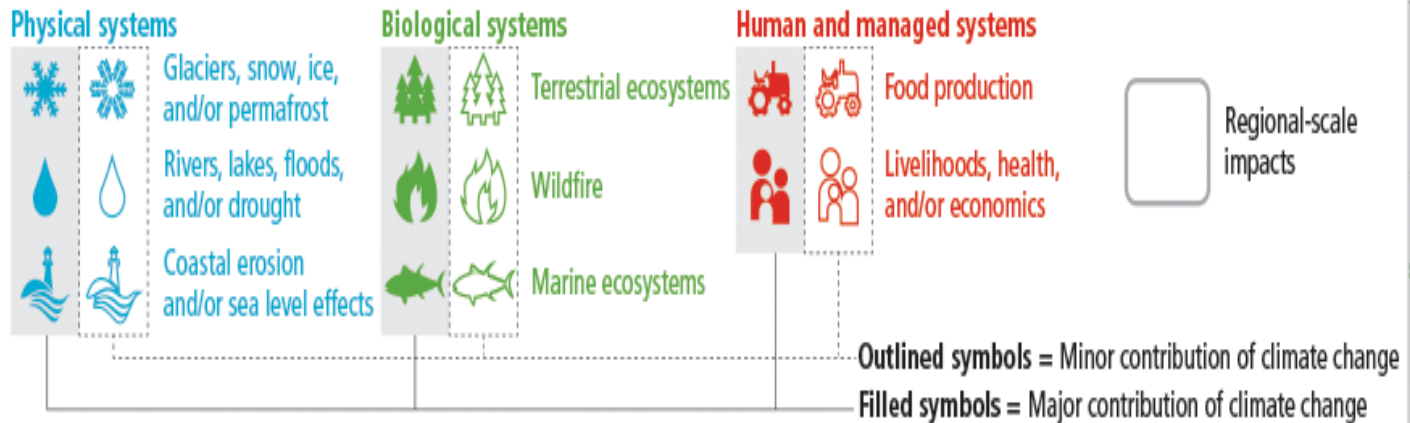


Confidence in attribution to climate change

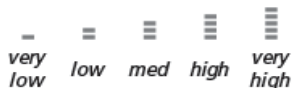


☐ indicates confidence range

Observed impacts attributed to climate change for

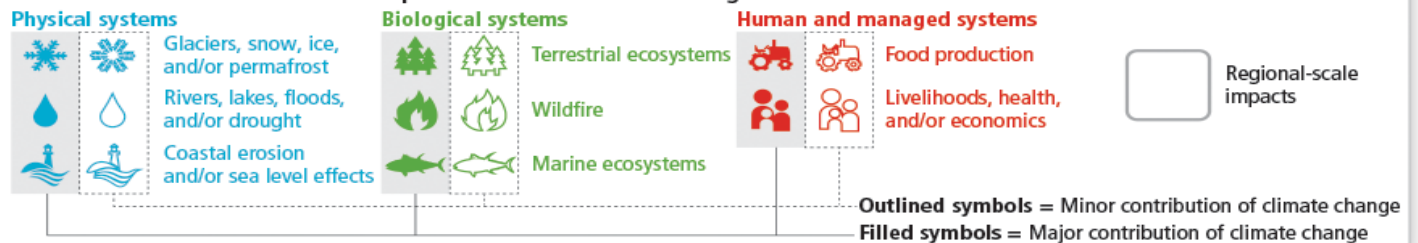


Confidence in attribution to climate change



☐ indicates confidence range

Observed impacts attributed to climate change for

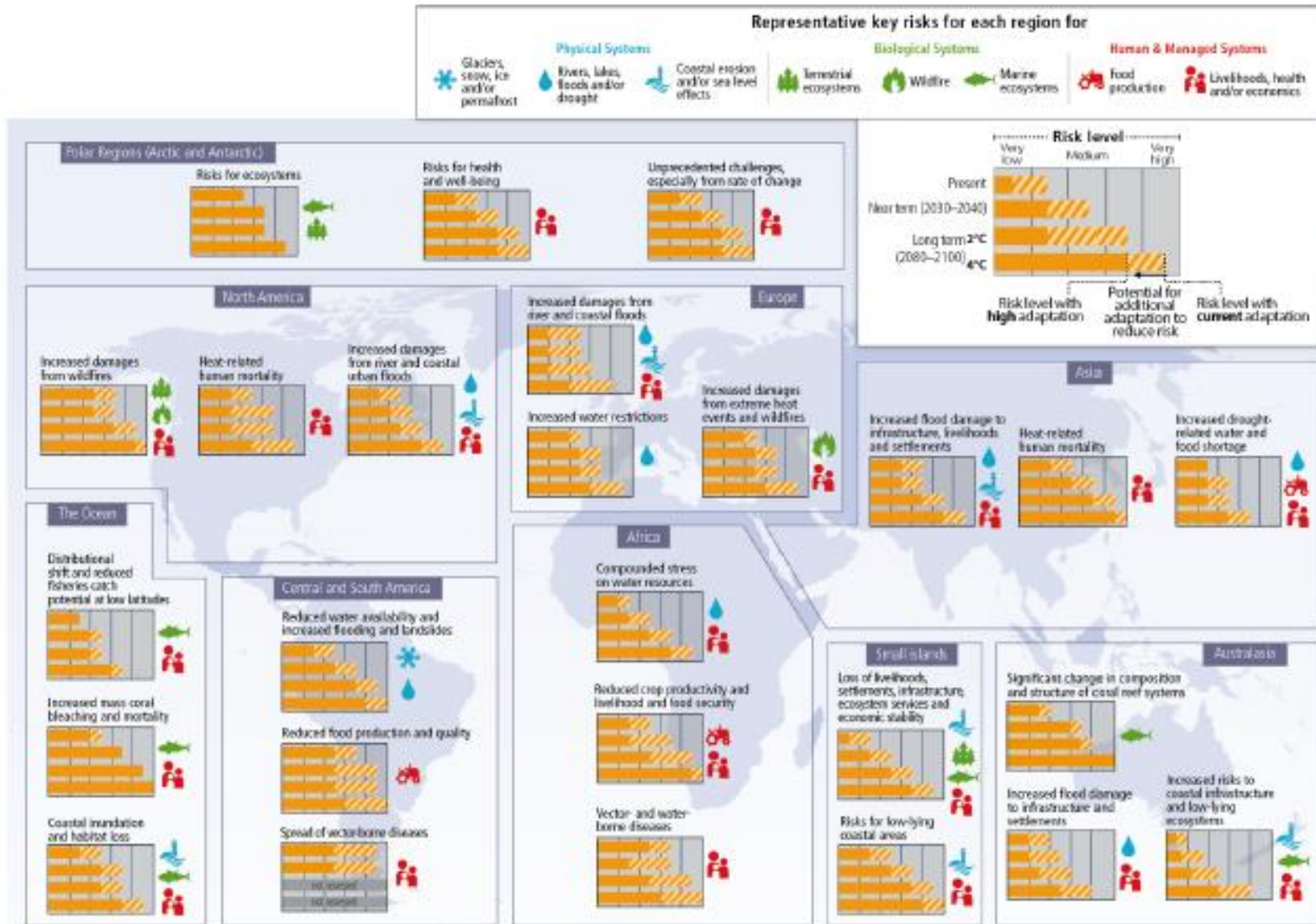






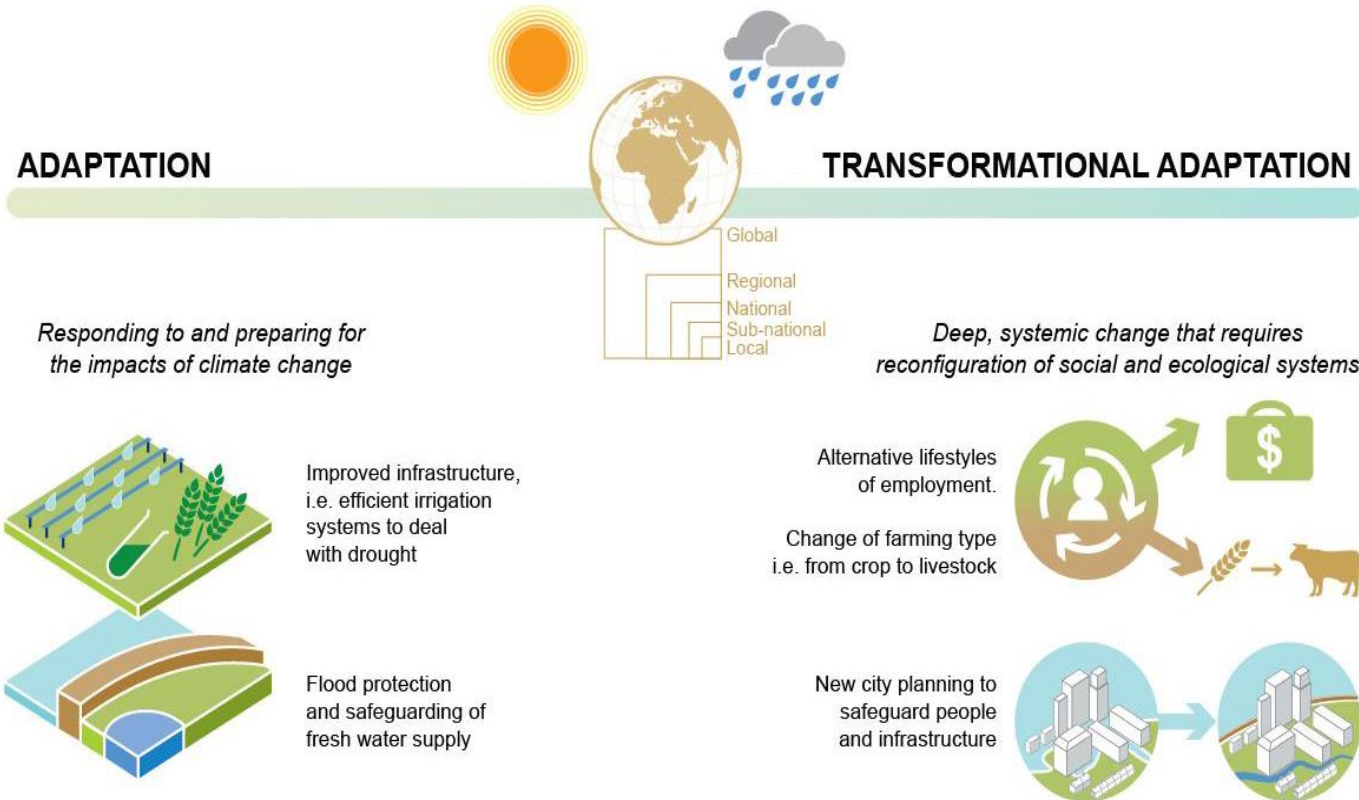
# IPCC AR5 2014: Key risks

## Addressing adaptation/risk management challenges



# IPCC SR1.5 2018

## Incremental and transformational adaptation



De Coninck et al. 2018  
(IPCC SR15, Ch. 4)

# IPCC SR1.5 2018

## Soft and hard limits

**Table 5.2:** Soft and hard adaptation limits in the context of 1.5°C and 2°C of global warming

System/Region	Example	Soft Limit	Hard Limit
Coral reefs	Loss of 70-90% of tropical coral reefs by mid-century under 1.5°C scenario (total loss under 2°C scenario) (see Chapter 3, Sections 3.4.4 and 3.5.2.1, Box 3.4)		✓
Biodiversity	6% of insects, 8% of plants and 4% of vertebrates lose over 50% of the climatically determined geographic range at 1.5°C (18% of insects, 16% of plants, 8% of vertebrates at 2°C) (see Chapter 3, Section 3.4.3.3)		✓
Poverty	24-357 million people exposed to multi-sector climate risks and vulnerable to poverty at 1.5°C (86-1,220 million at 2°C) (see Section 5.2.2)	✓	
Human health	Twice as many megacities exposed to heat stress at 1.5°C compared to present, potentially exposing 350 million additional people to deadly heat wave conditions by 2050 (see Chapter 3, Section 3.4.8)	✓	✓
Coastal livelihoods	Large-scale changes in oceanic systems (temperature, acidification) inflict damage and losses to livelihoods, income, cultural identity and health for coastal-dependent communities at 1.5°C (potential higher losses at 2°C) (see Chapter 3, Sections 3.4.4, 3.4.5, 3.4.6.3, Box 3.4, Box 3.5, Cross-Chapter Box 6; Chapter 4, Section 4.3.5; Section 5.2.3)	✓	✓
Small Island Developing States	Sea level rise and increased wave run up combined with increased aridity and decreased freshwater availability at 1.5°C warming potentially leaving several atoll islands uninhabitable (see Chapter 3, Sections 3.4.3, 3.4.5, Box 3.5; Chapter 4, Cross-Chapter Box 9)		✓



# Typology of perspectives on Loss and Damage Risk Management view with integrative potential

