

IPCC Special Report on Climate Change and Land (Ch7)

- Risk Management
- Policy instruments
- Decision-making
- Governance

Francis X. Johnson

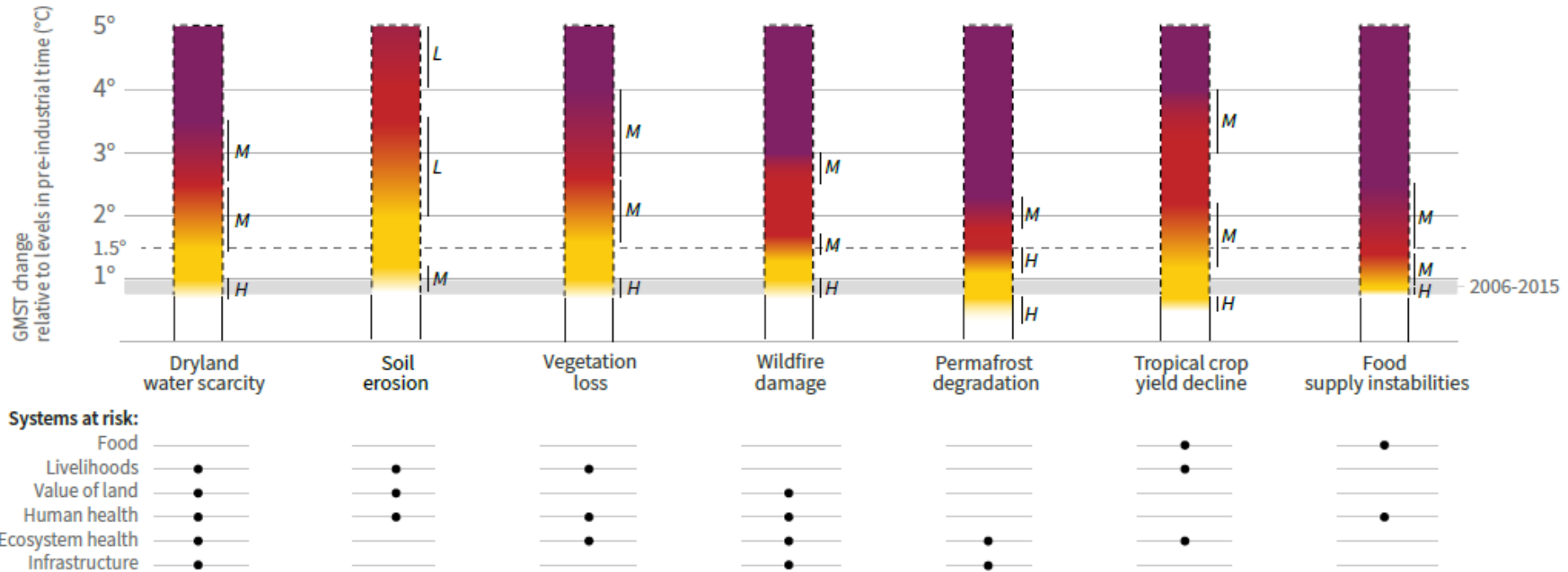
Senior Research Fellow, SEI

2 September 2019

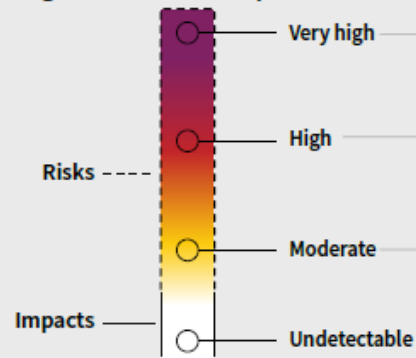




Risk transitions for humans and land-based ecosystems when moving to higher average temperature (Source: SPM Fig 2)



Legend: Level of impact/risk



Purple: Very high probability 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: Significant and widespread impacts/risks.

Yellow: Impacts/risks are detectable and attributable to climate change with at least medium confidence.

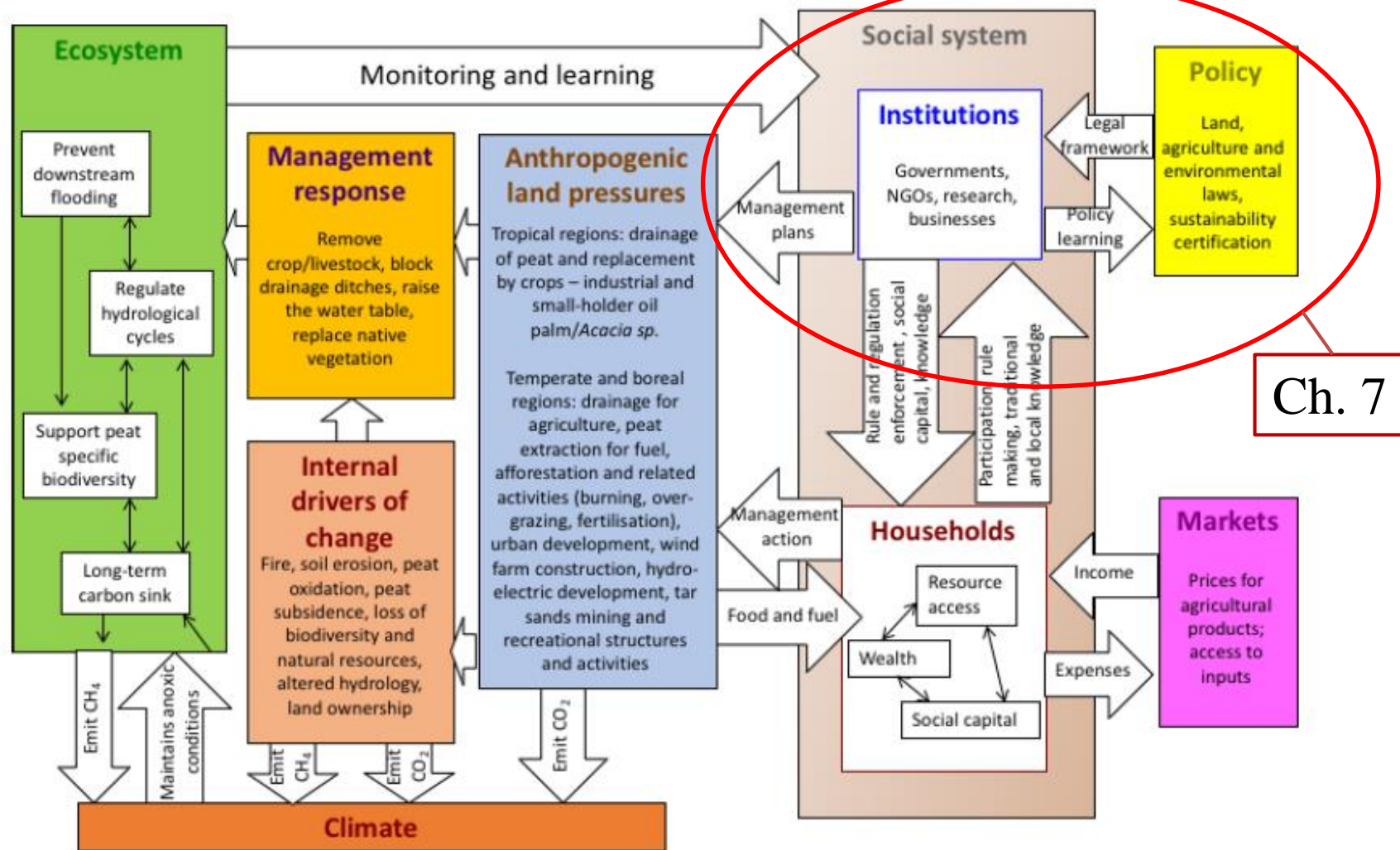
White: Impacts/risks are undetectable.

Legend: Confidence level for transition





H High
M Medium
L Low

H ← --- Example

Social-ecological system in Integrated Responses to risks (example of restoration and reduced impact of peatlands)



Examples of policy instruments at different levels in relation to the key issues in the report

LEVEL	Policy Instruments	Food security 	Desertification and Land Degradation 	Sustainable Land Use 	Extreme Events 	GHG fluxes and mitigation
Global/ Cross Border	Finance mechanisms (also National)	X	X	X	X	X
	Certification (also National)		X	X		X
	Standards		X	X	X	X
	Market based systems (also National)			X		X
	Payments for Ecosystem Services (also National)		X	X	X	X
	Disaster assistance (also National)				X	
National	Taxes	X		X		X
	Subsidies	X	X	X		X
	Direct Income Payments (with Cross-Compliance)	X	X	X		X
	Border adjustments (e.g. tariffs)	X				X
	Grants	X	X	X	X	X
	Bonds	X	X	X		X
	Forecast-based finance, targeted microfinance	X	X	X		X
	Insurance (various forms)	X			X	
	Drought preparedness plans (also sub-national and local)	X			X	
	Fire policy (suppression or prescribed fire management)			X	X	X
	Land ownership reform	X	X	X		
	Protected Area Designation and management		X	X		
Sub-national	Spatial and landuse planning	X	X		X	
	Watershed management	X	X			
Local	Landuse zoning, spatial planning, integrated landuse planning	X		X	X	
	Community-based awareness programmes	X	X	X	X	X

Source: IPCC-SRCCL Table 7.2



Components of selected certification systems, standards & networks for land and/or biomass use (IPCC-SRCCL Tab. 7.2)

Acronym	Scheme, programme or standard	Type of mechanism	Environmental						Socio-economic		
			GHG emissions	Biodiversity	Carbon stock	Soil	Air	Water	Land use management	Land rights	Food security
ISCC	International Sustainability & Carbon Certification	Certification	✓	✓	✓	✓	✓	✓	✓	✓	✓
RSB	Roundtable on Sustainable Biomaterials EU	Certification	✓	✓	✓	✓	✓	✓	✓	✓	✓
SAN	Sustainable Agriculture	Technical Network		✓	✓	✓	✓	✓	✓		
RSPO RED	Roundtable on Sustainable Palm Oil RED	Certification	✓	✓	✓	✓	✓	✓	✓	✓	✓
PEFC	Programme for Endorsement of Forest Certification	Certification		✓	✓	✓	✓	✓	✓	✓	
FSC	Forest Stewardship Council	Certification		✓	✓	✓	✓	✓	✓	✓	
WOCAT	World Overview of Conservation Approaches and Technologies	Best Practice Network			✓	✓	✓	✓	✓		
ISO 13065: 2015	Bioenergy	Standard	✓	✓	✓	✓	✓	✓	✓	✓	✓
ISO 14055-1: 2017	Land Degradation and Desertification	Standard	✓				✓	✓	✓	✓	



Examples of risk/hazard in connection to SDG impacts, interactions and trade-offs (Source: IPCC-SRCCL Table 7.6)

SDGs

- 1: No Poverty
- 2: Zero Hunger
- 3: Good Health/well-being
- 4: Quality Education
- 5: Gender Equality
- 6: Clean Water/Sanitation
- 7: Affordable/Clean Energy
- 8: Decent Work/Economic Growth
- 9: Industry, Innovation, Infrastruct.
- 10: Reduced Inequality
- 11: Sustainable Cities
- 12: Resp. Consumption/Production
- 13: Climate Action
- 14: Life Below Water
- 15: Life on Land
- 16: Peace, Justice, Institutions
- 17: Partnerships to achieve SDGs

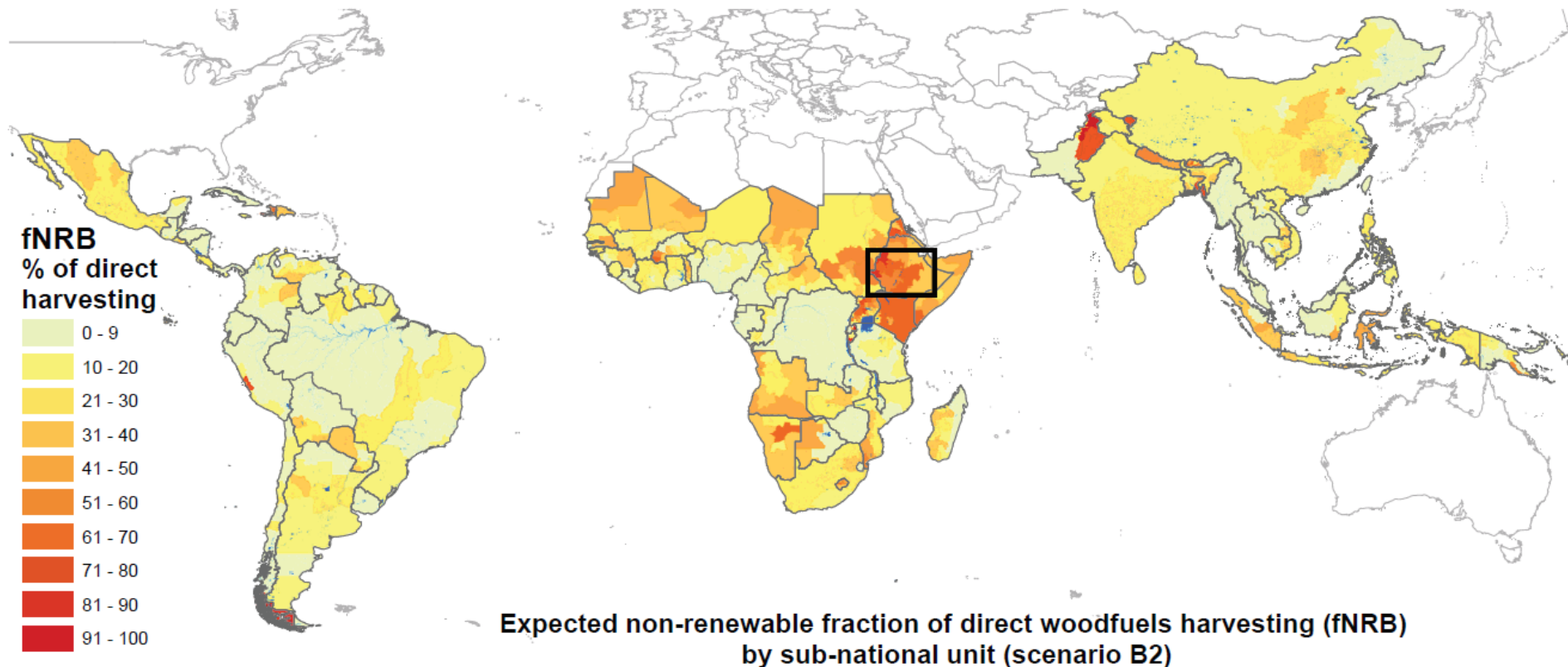
Land and climate risk/hazard	SDG impacts & trade-offs
Decline of freshwater and riverine ecosystems	2,3,6,7,8,12,16,17
Forest Browning	3, 8,13,15
Exhaustion of ground water	1,3,6,8,11,12,13
Loss of biodiversity	6,7,12,15,17
Extreme events in cities and towns	3,6,11,13
Stranded Assets	8, 9,11,12,13
Expansion of the agricultural frontier into tropical forests	15, 13
Food and nutrition security	2,1,3,10, 11
Emergence of Infectious Diseases	3,1,6, 10, 11, 12, 13
Decrease in Agricultural Productivity	2,1,3,10, 11, 13
Expansion of farm and fish ponds	1, 2, 3, 6, 8, 10, 13, 14
Over-reliance on traditional biomass	1, 2, 3, 5, 7, 13, 15



GHG emissions from land use impacts of traditional (woody) biomass > 2% of global; nearly as high as aviation sector!

Integrated Responses to replace traditional biomass supports multiple SDGs:

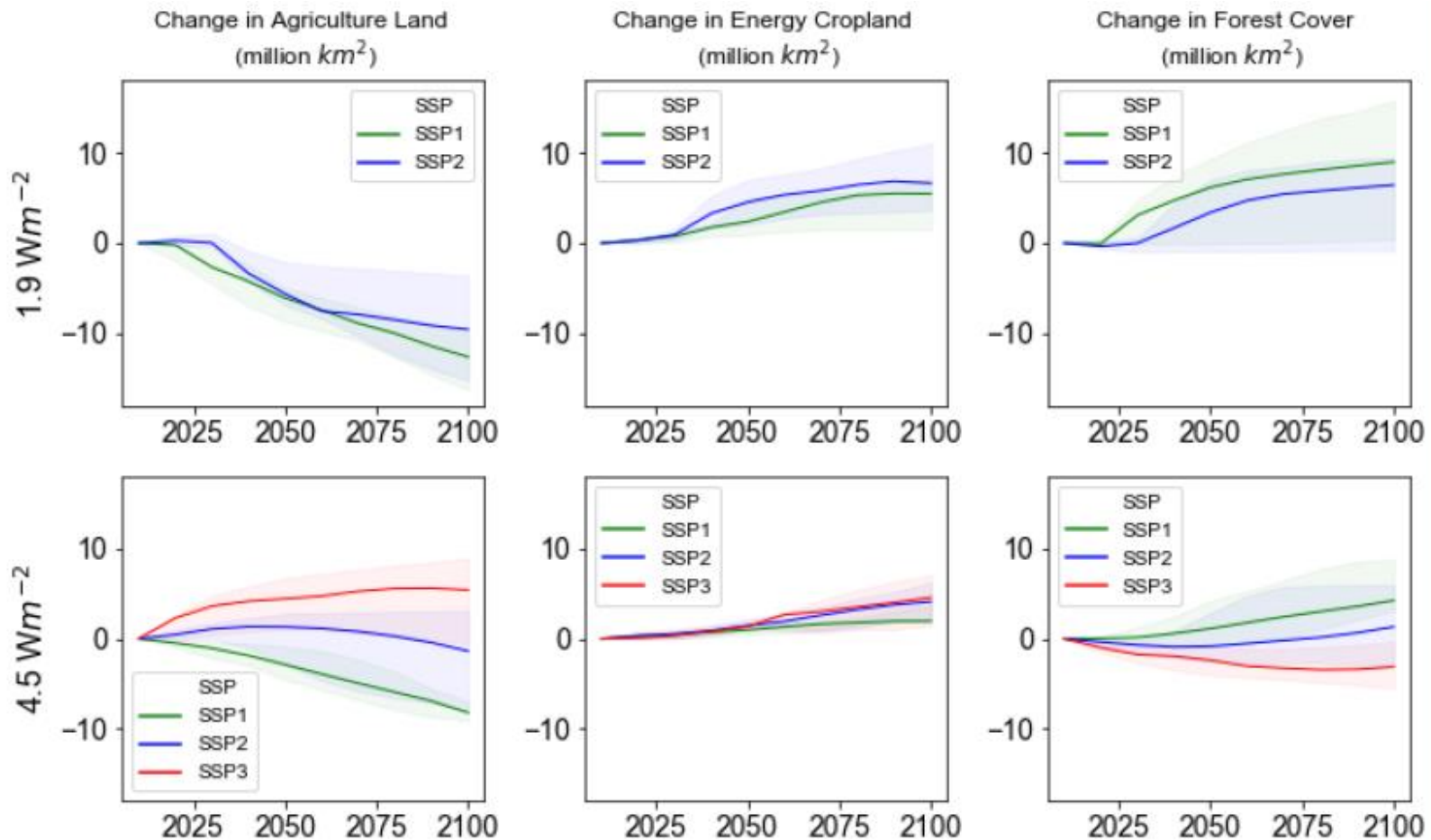
- Reduced indoor air pollution leads to improved health (SDG 3, 7)
- Less time gathering wood frees time for women and children (SDG 1, 5)
- Reduced land degradation and GHG emissions (SDG 13, 15)
- Access to modern energy services improves adaptive capacity (SDG 2, 7, 13)



Source: Bailis, 2015 (Figure shows “hot spots” of non-renewable woody biomass use)



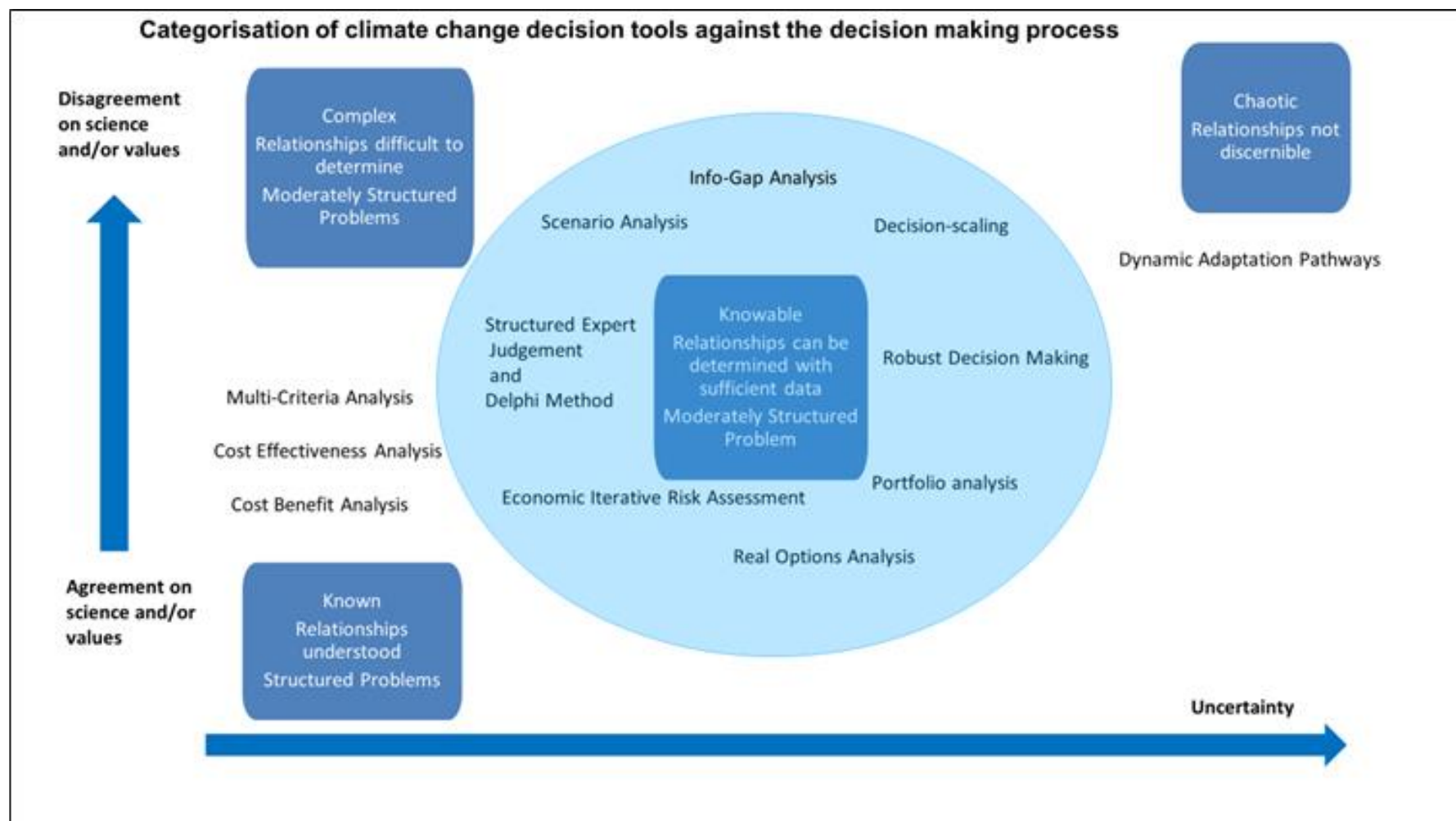
Future land use change, including land-based mitigation measures has different risks and risk management implications for different pathways (SSPs) and warming (RCPs)



Source: IPCC-SRCCL cross-chapter box 9, figure 1



Decision-making tools for climate change in relation to decision-making processes: uncertainty vs. disagreement

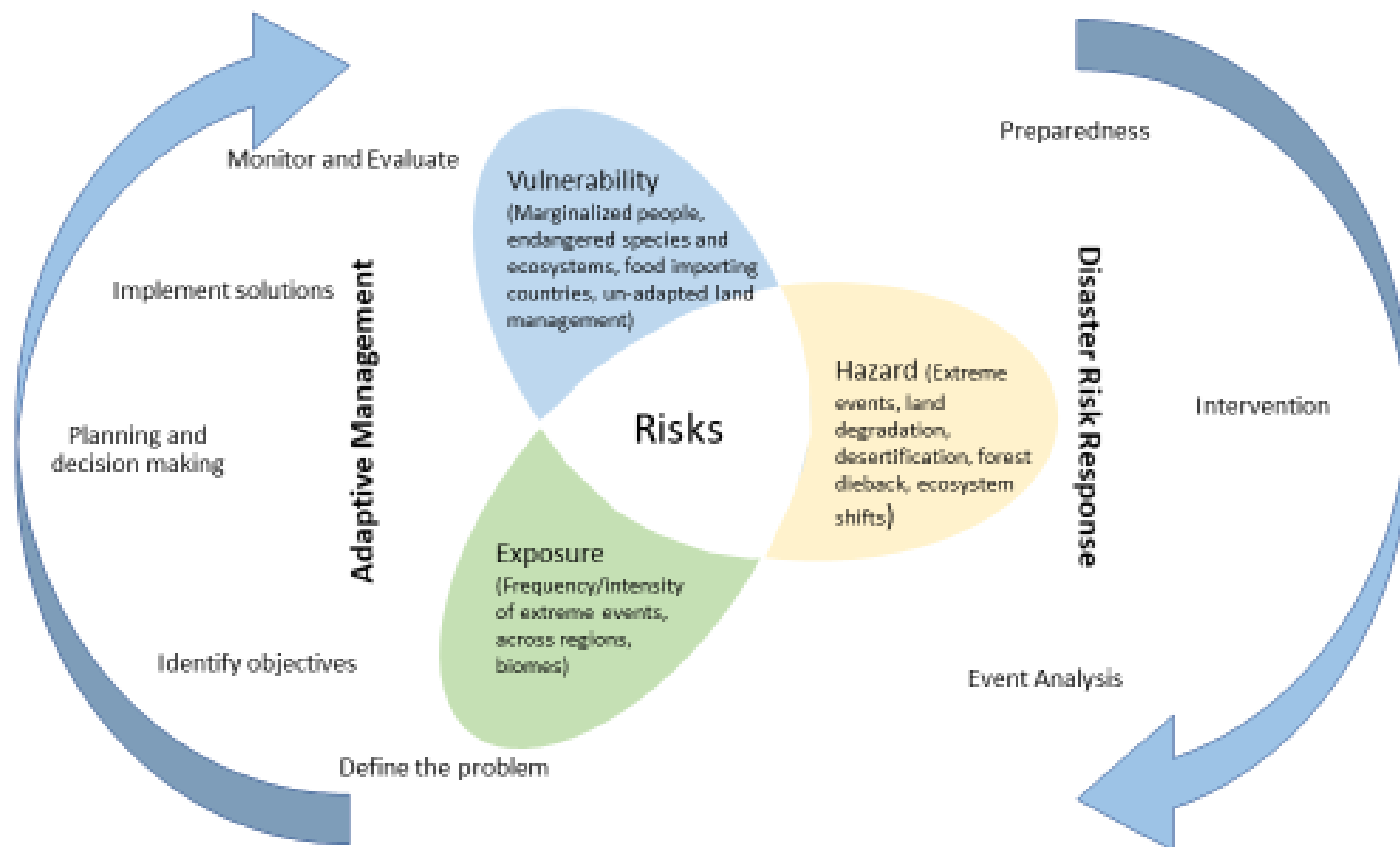


Source: IPCC-SRCCL Figure 7.5



Risk Management and Adaptive Governance

Adaptive Governance



Source: IPCC-SRCCL Figure 7.8



Strong **Governance** mechanisms for the **land-climate interface** that can **adapt** to **uncertainty** and **changing risks** are critical for achieving **best practices** but are also **multi-faceted**:

- *Governance as a social function* centred on steering collective behaviour towards sustainable and climate resilient development
- *Adaptive institutions* that incorporate experimentation and learning
- Incorporating *indigenous knowledge* and informal decision-making
- *Hybrid governance* combines centralized decision-making with horizontal structures that allow flexibility, autonomy for local decision making and multi-stakeholder engagement
- *Multi-level* (local, national, regional, global) governance structures
- *Transnational* governance (e.g. standards, partnerships, certification)
- *Integrated* governance across sectors, policies and landscapes
- *Polycentric* governance to incorporate bottom-up learning



Thanks for your attention! + SEI/contact Info

SEI was founded in 1989 and named for the first UN Conference on the human environment in 1972 (**Stockholm** Conference). The SEI operates through eight centres across five continents.



Email contact: francis.johnson@sei.org

Bioeconomy Initiative: <https://www.sei.org/projects-and-tools/projects/sei-initiative-bioeconomy/>