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CHAPTER OUTLINES OF THE WORKING GROUP CONTRIBUTION TO THE IPCC SEVENTH ASSESSMENT REPORT (AR7)

Proposed Chapter outlines of the Working Group I contribution to the IPCC Seventh Assessment Report

(Submitted by the Co-Chairs of Working Group I)

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Summary for Policymakers

Technical Summary

Chapter 1:
Framing, methods and knowledge sources
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Framing, narrative and context of the AR7
- Key findings and gaps in AR6 WGI
- Knowledge sources
- Assessment of knowledge sources
- Methodologies to integrate lines of evidence
- Emerging topics and tools

Chapter 2:
Large-scale changes in the climate system and their causes
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Natural and anthropogenic radiative forcing
- Indicators of climate change and related methodologies
- Observed changes across the Earth system and their long-term context
- Changes in modes of variability
- Assessment of model-simulated changes
- Attribution of changes

Chapter 3:
Changes in regional climate and extremes, and their causes
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Regions and spatial scales of analysis, including land and oceanic regions and typological areas
- Disparities in regional information availability, accessibility and gaps, and integration of multiple information sources, including Indigenous Peoples' knowledge and local knowledge, and paleo archives
- Advances and limitations in the assessment of regional climate change and extremes including models and observations
- Emerging regional and local process understanding, including regional interconnections and long-range transport

- Rapid and slow emerging changes in regional and local climate, including changes in seasonality and extremes
- Attribution of regional changes, including extremes and compound events
- Indicators of regional climate change and related methodologies

Chapter 4:
Advances in process understanding of Earth system changes
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Biogeochemical cycle processes and budgets, including changes in sinks and sources of greenhouse gases
- Short-lived climate forcers, air quality and climate interactions
- Earth system energy budget and fluxes, heat storage and redistribution
- Water cycle processes and budgets
- Cryosphere and ocean processes
- Atmospheric processes, including circulation and clouds
- Land-surface processes, including biosphere
- Earth system feedbacks on multiple time scales
- Model process evaluation, including paleoclimate constraints

Chapter 5:
Scenarios and future global temperatures
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Description of scenarios (emissions, removals, and concentrations of GHGs and short-lived climate forcers; land cover and land use change)
- Use and evaluation of models and tools for the assessment of scenarios
- Global Earth system and climate sensitivity metrics and properties, relationship between carbon cycle, energy balance and global temperature
- Effects of non-CO_2 forcers on temperature across scales
- Global temperature projections on different time scales
- Crossing times for different global warming levels
- Total and remaining carbon budgets

Chapter 6:
Global projections of Earth System responses across timescales
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Projected changes across the Earth system, its components and their ecosystems
- Forcing-dependent responses arising from GHGs, short-lived climate forcers, and land use and land cover change
- Projected changes in biogeochemical cycles, including vulnerability of carbon sinks and pools
- Projected changes in modes of variability
- Near-term information from multiple sources
- Uncertainties arising from forcings, models, internal variability, and process understanding

Chapter 7:
Projections of regional climate and extremes
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Regions and spatial and temporal scales of analysis, including land and oceanic regions and typological areas
- Projected regional and local changes in means, variability and seasonality including regional circulation
- Projected regional and local changes in extremes and compound events
- Natural and anthropogenic drivers of regional changes and their feedbacks
- Influence of regional interconnection processes and long-range transport on projected changes
- Assessment of cascading uncertainties
- Limitations of existing approaches and methodologies for regional climate assessment, including disparities of information availability and accessibility

Chapter 8:
Abrupt changes, tipping points and high impact events in the Earth system
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Framing: definitions, characterization, time and spatial scales, reversibility
- Abrupt changes, tipping points and high impact events and their drivers within the Earth system components and their ecosystems
- Evidence from and limitations of observations, models, paleoclimate and Indigenous Peoples' knowledge
- Regional to global climatic consequences relevant for impacts and risks, their magnitude, spatial extent, timing, reversibility, teleconnections, cascading and compounding effects
- Critical thresholds, including global warming levels, and early warning indicators
- Case studies and storylines

Chapter 9:
Earth system responses under pathways towards temperature stabilization, including overshoot pathways
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Global and regional Earth system responses to global net-zero emissions, and long-term implications
- Pathway dependency of responses including irreversible aspects
- Bio-geophysical limits on carbon dioxide removal (CDR) methods
- Global and regional Earth system responses to different CDR methods and global net negative emissions
- Global and regional Earth system responses to different global and regional solar radiation modification (SRM) methods, including in the context of non-stabilization pathways

Chapter 10:
Climate information and services
Executive Summary
Plain Language Summary
Frequently Asked Questions

- Usage of climate information from multiple lines of evidence and knowledge sources, including Indigenous Peoples' knowledge and local knowledge, for public awareness, impact and risk assessment, losses and damages, adaptation and mitigation
- Advances in climate services across timescales, including early warning systems
- Methodologies to develop climate information to support impact and risk assessment, losses and damages, adaptation and mitigation
- Information on climatic impact-drivers and their changes to support impact and risk assessment, losses and damages, adaptation and mitigation, for systems and sectors across regions
- Responses of regional climate and extremes to adaptation and mitigation strategies, including ecosystem-based approaches
- Gaps and disparities in available climate data, information and indicators for climate services, and their implications across spatial and temporal scales, across regions
- Climate information and services to reduce gaps and disparities in climate education and literacy, capacity, training and strengthen the science-policy interface
- Case studies and storylines for systems and sectors across regions

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List of Contributors
List of Reviewers

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