SIXTY-SECOND SESSION OF THE IPCC
24 – 28 February 2025, Hangzhou, China

Decision adopted by the Panel

Decision IPCC-LXII-8. Scoping of the IPCC Seventh Assessment Report (AR7)

Documents: IPCC-LXII/Doc. 11; IPCC-LXII/Doc. 12; IPCC-LXII/Doc. 13; IPCC-LXII/Doc. 14; IPCC-LXII/Doc. 15; IPCC-LXII/Doc. 16

The Intergovernmental Panel on Climate Change at its Sixty-second Session, recalling the Decision IPCC-LXI-9, decides:

(1) To agree on the outlines of the contributions of Working Groups to the Seventh Assessment Report as contained in Annexes 1, 2 and 3 to this document.

(2) To invite Working Groups to start their work as indicated by the 2025 budget as contained in the Decision IPCC-LXII-7 by initiating the call for nominations for the authors, and convene the LAM1 in 2025.

(3) To defer further consideration of the workplan including the proposed Implementation Plan as contained in the documents IPCC-LXII/Doc. 14; IPCC-LXII/Doc. 15; IPCC-LXII/Doc. 16 for the preparation of the Working Group contributions to the Seventh Assessment Report to the 63rd session.

ANNEX 1

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

Version before final copyedit

Summary for Policymakers

Technical Summary

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

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

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

- Natural and anthropogenic radiative forcing and Earth energy imbalance
- Indicators of climate change and related methodologies
- Observed changes across the Earth system and their recent and longer-term context
- Changes in modes of climate variability and monsoons
- Assessment of model-simulated changes
- Attribution of large-scale changes

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

- Regions and spatial scales of analysis, including land and oceanic regions and typological areas such as mountains, low lying coastal areas, and polar, tropical, desert, and semi-arid regions
- 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 changes in regional and local climate, including changes in seasonality and extremes

- Slow onset events including regional sea level rise and desertification
- Indicators of regional climate change and related methodologies
- Attribution of regional and local changes
- Attribution of extreme events, including tropical cyclones, and compound events

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

- Biogeochemical cycle processes and budgets, including effectiveness of sinks and sources of greenhouse gases
- Short-lived climate forcers, connection to air quality and climate interactions
- Earth system energy budget and fluxes, heat storage and redistribution
- Water cycle processes and budgets
- Cryosphere processes including in high mountain and polar regions
- Ocean processes including sea level rise and ocean acidification
- Atmospheric processes, including circulation, weather patterns, monsoons, clouds and their interactions with atmospheric composition
- Land-surface processes, including biosphere
- Land-atmosphere-ocean interactions including monsoons
- Earth system feedbacks on multiple time scales
- Model process evaluation, including paleoclimate constraints

Chapter 5:
Scenarios and projected future global temperatures
Executive 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 and carbon budgets across time scales
- Global temperature projections on different time scales
- Global warming levels and associated time frames in scenarios
- Total, historical, and remaining carbon budgets

Chapter 6:
Global projections of Earth system responses across time scales
Executive Summary
Frequently Asked Questions

- Projected changes across the Earth system, its components and their ecosystems including long-term changes in cryosphere and sea level rise
- Projected changes as a function of time and of global warming levels

- Forcing-dependent responses arising from GHGs, short-lived climate forcers, and land use and land cover change
- Projected changes in biogeochemical cycles, including carbon sinks and pools
- Projected changes in modes of climate variability and monsoons
- 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
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, as function of time and global warming levels
- Projected regional and local changes in extreme and compound events on land and oceans, including, but not limited to tropical cyclones, oceanic events, extreme sea levels, drought, heat waves, sand and dust storms.
- 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
- Advances and limitations of existing approaches and methodologies for regional climate assessment, including disparities of information production, availability, and accessibility

Chapter 8:
Abrupt changes, low-likelihood high impact events and critical thresholds, including tipping points, in the Earth system
Executive Summary
Frequently Asked Questions

- Definitions, characterization, time and spatial scales, reversibility
- Abrupt changes, low-likelihood high impact events and tipping points[1] within the Earth system components and their ecosystems, their drivers and occurrence conditions
- Evidence from and limitations of observations, models, paleoclimate and Indigenous Peoples' knowledge and local knowledge
- Local, regional and global climatic consequences relevant for impacts and risks, their magnitude, spatial extent, timing, reversibility, teleconnections, cascading and compounding effects
- Critical system-specific thresholds, including in the context of global warming levels, and early warning indicators

[1] A critical threshold beyond which a system reorganizes, often abruptly and/or irreversibly (IPCC AR6 Glossary definition).

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

- Global and regional Earth system responses to pathways towards temperature stabilization, including to global net-zero, negative and net-negative emissions, and long-term implications
- Pathway dependency of responses including in the context of overshoot and irreversible aspects
- Bio-geophysical capacity and limits of carbon dioxide removal (CDR) methods
- Global and regional Earth system responses to removals of carbon dioxide, methane or nitrous oxide
- Global and regional Earth system responses to different global and regional solar radiation modification (SRM) methods, including consequences and uncertainties

Chapter 10:
Climate information and services
Executive 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 information for climate services across timescales, including multi-hazard, early warning systems
- Methodologies to develop climate information, including co-design and co-production, 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
- Physical effects of adaptation and mitigation measures on regional climate and extremes
- Gaps and disparities in available and accessible climate data, monitoring infrastructure, 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, and training
- Case studies across regions

Annexes
Cross Working Group Glossary
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CHAPTER OUTLINES OF THE WORKING GROUP II CONTRIBUTION TO THE IPCC SEVENTH ASSESSMENT REPORT (AR7)

Version before final copyedit

Title: Climate Change 202X: Impacts, Adaptation and Vulnerability

Summary for Policymakers

Technical Summary

Chapter 1: Point of departure, framing and key concepts

- Framing in the context of the IPCC Seventh Assessment Report providing key concepts related to impacts, losses and damages, adaptation, risk, vulnerability and sustainable development that are covered in subsequent chapters
- Facing accelerating climate change impacts and risks and adapting to complex, compounding and cascading challenges and opportunities
- Setting the stage: evolving climate policy and knowledge landscapes in a changing world
- Introducing Global, Regional and Thematic Assessments
- Introducing the 202X Technical Guidelines for Assessing Climate Change Impacts and Adaptation including Indicators, Metrics and Methodologies
- From assessment to effective implementation: overcoming barriers and enabling climate adaptation and responses to losses and damages

<u>Global Assessment Chapters</u>

Chapter 2: Vulnerabilities, impacts and risks

- Multiple dimensions of vulnerability across temporal and spatial scales
- Synthesis of observed and projected reversible and irreversible impacts, building on both slow to rapid onset events and climate extremes, including quantification, detection and attribution as appropriate
- Assessment of methodologies and synthesis of observed and projected economic and non-economic losses and damages, building on both slow to rapid onset events and climate extremes, including quantification, as appropriate
- Key risks including complex, compound, cascading, reversible, irreversible and residual risks under a range of climate scenarios, and different levels of global warming, development, adaptation and other responses

- Risks, risk management and ethics of Solar Radiation Modification
- Reasons for Concern
- Lessons from other approaches to risk assessment across scales

Chapter 3: Current adaptation progress, effectiveness and adequacy

- Adaptation progress, gaps, limits and barriers and capacity building
- Indicators and metrics to measure adaptation
- Adequacy and effectiveness of support for adaptation and risk management
- Adaptation costs, trade-offs, benefits and co-benefits
- Evidence of effectiveness and scope of state and non-state actions at various scales

Chapter 4: Adaptation options and conditions for accelerating action

- Effectiveness and feasibility of adaptation options considering current context, interdependencies, and a range of climate scenarios, and different levels of global warming, development, and adaptation
- Approaches for adaptive and continuous learning, monitoring and evaluation to design better policies, options and actions, and to enhance implementation including to avoid adverse outcomes
- Drivers, enablers and conditions for accelerated adaptation action, including means of implementation and using various technologies
- Ways of adaptation decision making and planning under uncertainty and enabling and constraining conditions
- Enhancing agency and capacity of stakeholders and empowering Indigenous Peoples and local communities
- Synergies, opportunities and trade-offs of adaptation such as with Disaster Risk Reduction, mitigation and sustainable development

Chapter 5: Responses to losses and damages

- Types of responses to economic and non-economic losses and damages by a diversity of actors at various scales and their interactions
- Policy contexts, institutional arrangements and other approaches for responding to losses and damages at various scales

- Drivers of decision-making including values, perceptions, differential power and influence, behaviour, incentives and capacities

- Approaches of categorizations and metrics to assess losses and damages

- Existing and potential responses to losses and damages including effectiveness and feasibility under a range of climate scenarios and different levels of global warming, development and adaptation

- Needs, gaps, barriers and enablers in responses to losses and damages

Chapter 6: Finance

- Background considerations, including broader macroeconomic context, other international commitments, barriers and enablers to finance

- Financial adequacy, access (equity and justice), inclusion, effectiveness, and outcomes considering finance at different scales (including national, regional, and global)

- Funding for adaptation – overview of financing needs, current climate finance flows, instruments and gaps, effectiveness and access, methodologies for tracking finance flows, and costs and benefits

- Funding for responses to losses and damages – overview of financing needs, current climate finance flows, instruments and gaps, effectiveness and access, methodologies for tracking finance flows

- Public and private finance for climate adaptation action and responses to losses and damages: finance flows at domestic and international levels

- Equitable financial systems and schemes including related approaches and policies

- Approaches to accelerate finance flows and investments, including the diversity of instruments and schemes for adaptation action

- Synergies between climate finance and climate resilience

Regional Assessment Chapters

Common Bullets to all Regional Assessment Chapters

- Consider regional setting, including intra-regional variabilities, areas of special concerns, such as hotspots and geographies, socio-political contexts and the thematic assessment chapters

- Multiple dimensions of vulnerability and adaptive capacity across temporal and spatial scales

- Observed and projected impacts, including economic and non-economic losses and damages, building on both slow onset and extreme Climatic-Impact Drivers
- Key risks including complex, compound, cascading, transboundary, residual risks, and risks under a range of climate scenarios and different levels of global warming, development and adaptation
- Adaptation progress, options, solutions, gaps, limits and barriers
- Range of adaptation options and responses to losses and damages, means of implementation, costs, benefits, effectiveness and feasibility of different options
- Barriers and enablers to climate action, including finance, capacity building, education, technology development and transfer
- Perception, beliefs, values, behavioural aspects and cultural practices of adaptation, including locally led adaptation and community-based responses
- Distributional nature of effects, including consideration of human rights, equity and justice, Indigenous Peoples, local communities, gender, disability, informality and intergenerational justice, and other vulnerable groups
- Institutional and governance frameworks critical to planning and implementation, including social, economic and political considerations
- Role of diverse knowledge systems including Indigenous Knowledge, local knowledge and experiential learning
- Linkages with sustainable development and climate resilient development, including co-benefits, synergies, trade-offs and opportunities for innovation and transformation
- Regional and local case studies
- Cross-chapter Papers: polar, dryland and deserts, high altitude and mountain regions, least developed countries, Mediterranean

Chapter 7: Africa

Chapter 8: Asia

Chapter 9: Australasia

Chapter 10: Central and South America

Chapter 11: Europe

Chapter 12: North America

Chapter 13: Small Islands

Thematic Assessment Chapters

Common bullets to all thematic assessment chapters

- Observed and projected impacts, including economic and non-economic losses and damages, building on both slow onset and extreme Climatic-Impact Drivers
- Multiple dimensions of vulnerability and adaptive capacity across temporal and spatial scales
- Key risks including complex, compound, cascading, transboundary, residual risks, and risks under a range of climate scenarios and different levels of global warming, development and adaptation
- Perceptions, beliefs, values, behavioural aspects and cultural practices of adaptation, including locally led adaptation and community-based responses
- Range of adaptation options and responses to losses and damages, means of implementation, costs, benefits, effectiveness and feasibility of different options
- Barriers and enablers to climate action, including finance, capacity building, education, technology development and transfer
- Distributional nature of effects including consideration of human rights, equity and justice, Indigenous Peoples, local communities, gender, disability, informality and intergenerational justice, and other vulnerable groups
- Institutional and governance frameworks critical to planning and implementation, including social, economic and political considerations
- Role of diverse knowledge systems including Indigenous Knowledge and local knowledge and experiential learning
- Linkages with sustainable development and climate resilient development, including co-benefits, synergies, trade-offs, and opportunities for innovation and transformation
- Case studies of implementation

Chapter 14: Terrestrial, freshwater and cryospheric biodiversity, ecosystems and their services

- Considering distinct geographies and biomes, including cryosphere, polar, forests, grasslands, mountains, wetlands, deserts and drylands
- Vulnerability, resilience and climate change feedbacks of biodiversity, ecosystem structure and functions, and the implication for their services under a range of projected scenarios including climate extremes and slow to rapid onset events such as drought, sand and dust storms, and emergence of novel biological communities
- Emerging threats, challenges and management of risk to critical biodiversity, ecosystems, critical species and related cultural heritage
- Enablers, limits and barriers to natural adaptation

Chapter 15: Ocean, coastal and cryospheric biodiversity, ecosystems and their services

- Considering distinct geographies and biomes, including cryosphere, polar, mangroves, sea grasses and sea weeds, coral reefs, estuaries, open ocean, intertidal zone, and salt marshes
- Vulnerability, resilience and climate change feedbacks of biodiversity, ecosystem structure and functions, and the implication for their services under a range of projected scenarios including climate extremes and slow to rapid onset events, emergence of novel biological communities
- Emerging threats, challenges and management of risk to critical biodiversity, ecosystems, critical species and related cultural heritage
- Enablers, limits and barriers to natural adaptation

Chapter 16: Water

- Water security addressing the issues of too little, too much, and polluted water in the context of climate change to meet the needs of people, food production and ecosystems
- Water scarcity in arid and semi-arid regions in context of climate change
- Water use and budgeting including virtual water, water footprints, water-related nexus
- Water management across scales including non-economic and cultural values of water as appropriate
- Risks from response options, including water cooperation and sharing

Chapter 17: Agriculture, food, forestry, fibre and fisheries

- Adaptation options for livelihoods, food supply chains, agricultural production and food and nutritional security, considering affordability, dietary diversity, accessibility, agency and sustainability

- Synergies and trade-offs concerning land and ocean use

- Livelihood security, risks to cultural heritage and adaptation options for key vulnerable groups such as smallholder farmers, women farmers, pastoralists, forestry, artisanal and traditional fishing dependent communities

- The role of international cooperation in addressing the adverse effect of climate change and enhancing adaptive capacity in global agriculture, livestock, fisheries and aquaculture

- Impacts of climate change on inter- and intra-regional trade for food security

Chapter 18: Adaptation of human settlements, infrastructure and industry systems

- Supply chain risk, business risk, cascading impacts, risks of failure of infrastructure systems and risks to cultural heritage

- Adapting infrastructure, industry, energy systems and human settlements to reduce risk, enhance opportunities and build response capacity at multiple levels

- Developing and utilizing climate resilient infrastructure to build adaptive capacity and support sustainable development at multiple levels

- Adaptation solutions including new technologies, methods of construction, materials and innovations, green and grey and natural infrastructure, social and behavioural change, increasing energy access in the context of sustainable development

- Relevant updates to Special Report on Climate Change and Cities

Chapter 19: Health and well-being

- Observed impacts and projected risks from factors such as extreme weather, emerging pathogens, and infectious diseases to physical and mental health and well-being due to multi-scale climate change, extremes, compound and cascading events

- Intersectionality of drivers of vulnerability and exposure to climate hazards within populations and communities

- Adapting health systems, and health prevention and promotion activities to reduce risk and build capacity at multiple levels

- Intersection between climate change, health and wellbeing, and non-climatic drivers of health, and other health determining factors

- Innovative and collaborative partnerships in the health sector involving different stakeholders

Chapter 20: Poverty, livelihoods, mobility and fragility

- Livelihood options, households with low-income and social deprivations in rural and urban contexts, Indigenous Peoples, local communities, informal settlements, contexts of fragility, displaced, mobile and immobile populations

- Interaction of climate change and development with poverty, vulnerability and livelihoods
- Human mobility, including transhumance in the context of climate change
- Risks and adaptation in fragile contexts, and in contexts of social unrest and conflict
- Integrating adaptation and resilience into efforts towards poverty eradication, livelihood enhancement, formal and informal social protection mechanisms
- Differentiated capabilities and responsibilities, and asymmetric access to information, knowledge, finance and decision-making fora

Annex I: Atlas

- Inter- and intra-regional mapping of hazards, vulnerability, exposure, impacts, risks, adaptation, and responses to losses and damages

Annex II: Linkage to TGIA: Overview of Technical Guidelines on Impacts and Adaptation

Annex III: Glossary

Annex IV: Acronyms

Annex V: List of Contributor

Annex VI: List of Reviewers

202X IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptation Including Indicators, Metrics and Methodologies:

Update to the 1994 IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations

Section 1: Introduction

- Rationale for updating the Technical Guidelines
- Framing, purpose and audience for the Technical Guidelines

Section 2: Adaptation in practice

- Key principles and concepts for the Technical Guidelines, such as effective and adequate adaptation; equity and justice; co-development, flexibility and adaptive planning; integrated thinking and consideration of planning as an integrated approach suitable for practical application; synergies and trade-offs
- Considering multiple levels of governance and levels of assessment and adaptation action
- Adaptation in relation to societal development needs and values, and adaptation as both a stand-alone, iterative and continuous, mainstreamed activity

Section 3: Technical Guidelines

- **Scoping and goal setting** (analysis of current risk management capacities; and analysis of impact of adaptation measures on equity and justice outcomes; identification of risk distribution and risk tolerance across communities, regions and time scales; assessment of sectoral and development policies, data and knowledge sources, resources, enablers and barriers; identifying and addressing information gaps)
- **Impact, vulnerability and risk assessment** (analysis of climate impacts, including economic and non-economic losses and damages; relationship between global temperature goals and adapting to their impacts; assessment of climate risks, considering climatic and non-climatic risk drivers; identification of new and emerging risks; analysis of tolerance of residual risk; demand for adaptation; assessing uncertainty)
- **Planning** (identifying entry points for adaptation; participatory and inclusive planning processes; mainstreaming adaptation in existing policies, regulations and practices; costs and benefits, and budgeting of adaptation; identifying, appraising and prioritising adaptation options using criteria such as effectiveness, adequacy, feasibility, equity, synergies and trade-offs; iterative planning)
- **Implementation** (identifying roles and responsibilities of relevant stakeholders; identifying and mobilizing resources; development of workflow and institutional collaboration mechanisms; development of communication channels)
- **Learning, monitoring and evaluation** (impact, thematic targets and adaptation metrics and indicators to monitor and track progress, uptake and performance; systematic tracking of

lessons and feedback from implementation for continuous learning and adaptive management; ex-post evaluations including equity and justice outcomes)

Section 4: Tools, building blocks and enablers

- Systematic exploration of methodologies and tools for assessing impacts, risks, vulnerabilities and adaptation, including climate scenarios, metrics and indicators, adaptation options, prioritization and costing

- Co-development principles and practices (stakeholder engagement; locally-led approaches; gender-responsive approaches; mutual learning with marginalized communities, Indigenous Peoples, non-governmental organizations, and technical and scientific communities; communication and outreach)

- Services and data to support adaptation planning (climate information services; geophysical, environmental and socioeconomic information)

- Financing adaptation and mobilising resources for managing adaptation programs, and identification of funding mechanisms

- Survey of governance and regulatory enablers (frameworks to accelerate implementation of adaptation; identifying approaches for integrating adaptation into national and sectoral policies, laws and regulations; frameworks for adaptive management)

ANNEX 3

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

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Summary for Policymakers

Technical Summary

Chapter 1: Introduction and framing

- Introduction to WGIII report chapters and sections (and what is not going to be covered in the WGIII report)
- Framing, in the context of AR7, providing overarching concepts related to mitigation, including equity within and between countries, just transitions in its broader sense, differentiation considering stages of development, and circumstances, regionalization, and considerations of Indigenous knowledges and local knowledge
- Sustainable development (not limited to SDGs), national and regional priorities, and their synergies and trade-offs as a framing concept
- Framing, key concepts, and definitions of projected scenarios and pathways, including qualitative and quantitative scenarios
- Highlighting past performance and achievements in implementation of climate change mitigation and evolution of innovation (including social innovation), technology, capacity building, mitigation finance, governance, and climate policy
- Role of the ocean, land, ecosystems, and biodiversity in mitigation
- Social, economic, and environmental impacts of climate mitigation policy and action
- Adaptation interlinkages to mitigation
- Key concepts and dimensions of integration across Working Groups

Chapter 2: Past and current anthropogenic emissions and their drivers

- Historical anthropogenic emissions and emissions trends on an annual and cumulative basis (global, by region, sector, GHG, non-GHG, etc., using different indicators and definitions, at different scales), including estimates of uncertainty, and consistency with national inventories, and relationship to total and remaining carbon budgets
- Emissions, trends in drivers, including a broad set of drivers and activities at different scales
- Policy, actions, and governance at different scales, including impacts on emissions and drivers

Chapter 3: Projected futures in the context of sustainable development and climate change

- Assessment of methodologies, models, databases, development tools for scenarios and emissions pathways, methods for assessing emissions scenarios (including justice and equity assumptions and implications), and consistency of land-use emissions definitions with national inventories
- Implications of mitigation for development pathways, such as well-being, energy security, affordability and access, employment, poverty, and sustainability, including the Rio Conventions
- Assessment of how development pathways and sustainable development pathways consider and affect mitigation, including implications of Rio Conventions, meeting SDGs, and beyond
- Assessment of a broad range of projected futures for socioeconomic development, scenarios, and their underlying assumptions and outcomes, including assessments of feasibility (geophysical, environmental-ecological, technological, economic, socio-cultural, and institutional)
- Assessment of systems transitions under different projected futures
- Economics of global and national mitigation and development pathways, including mitigation costs and benefits, investment needs, employment effects, co-benefits, and spillover effects

- Climate change impacts on mitigation strategies; synergies and tradeoffs between mitigation and adaptation
- Projected emissions pathways considering current policy and projections, and relationships between national and global projected scenarios, in the context of the UNFCCC and the Paris Agreement
- Opportunities and challenges to enable climate action from current policies in the context of equity and justice
- Relationship between global temperature goals and mitigation action, including overshoot, relationship between gross emissions reductions, residual emissions, and negative emissions
- Relationship(s) between equity, justice, and mitigation across, between and within countries and generations
- Robustness of mitigation strategies and projected pathways under uncertainty

Chapter 4: Sustainable development and mitigation

- Sustainable development including and beyond SDGs as an integrative perspective for climate change responses (synergies and tradeoffs)
- Distributional consequences, within and across groups and countries
- Political economy of, co-benefits, adverse effects and livelihood and economic impacts of transitions related to mitigation
- Climate change mitigation response capacities and enabling conditions, including technology, finance, and cooperation for sustainable development
- Equity and justice (with a focus on just transitions and unpacking that at sectoral, national, regional, and global levels)
- Social and socioeconomic dimensions, including impacts of climate mitigation, and sufficiency and other strategies
- Climate change mitigation responses in the context of multi-objective policies across scales (economic development, diversification and prosperity, poverty eradication, improving living standards, etc.)
- Mitigation-adaptation interlinkages and other sustainable development objectives, including potential synergies and trade-offs
- Uncertainties and knowledge needs
- Implications of climate change mitigation responses on biodiversity and ecosystems, conservation, and restoration
- Ocean-based mitigation in the context of sustainable development and blue economy including synergies with global food and nutritional security
- Pathways in the context of sustainable development and the remaining carbon budgets, considering different stages of development, and circumstances, including links to Chapter 3

Chapter 5: Enablers and barriers

- Feasibility of mitigation in different contexts and under multiple barriers and enablers
- Development as enabler of mitigation
- Capacity for mitigation, including technological, institutional, economic, and human capacity
- Technology, including access, cost, infrastructure, innovation, scalability, replicability and speed of and disparity in adoption
- Finance, investment, policies and governance
- Distribution of benefits, costs, and impacts of mitigation
- Inequality and inequity within and across countries, including intergenerational aspects
- Social enablers, barriers, and impacts of mitigation, including public perception and support, lifestyles and behavior, production and consumption, communication, information, engagement, education, health and well-being
- Labor as enabler and barrier to mitigation, including supply, organization, wellbeing, skills
- Just transitions

- Environmental and natural resources enablers and barriers for mitigation at national, international, and subnational levels, including land, water, natural resources, minerals, and climate services
- Indigenous rights, governance, and knowledge systems
- Political economy of mitigation including public preferences, interest groups, and political institutions
- International cooperation and supply chains
- Peace, security, and conflict, including resource competition

Chapter 6: Policies and governance and international cooperation

- Policies and governance compatible with development pathways, equity, justice, distribution and integration with adaptation and sustainable development
- Various approaches to policy and institutional design
- International cooperation, taking into account political economy dimensions
- International climate and relevant non-climate agreements
- Multiple objectives, tradeoffs and co-benefits with climate and non-climate objectives
- Policy innovation, learning, and diffusion, and assessment of policy instruments
- Non-state actors' roles and efforts at different levels and contexts, including corporate and financial institutions, civil society, labor and informal economy, media, social, gender and youth movements, Indigenous Peoples and local communities
- Mitigation policies, action and cooperation at different levels
- Diverse climate regulatory and governance frameworks and other policy frameworks
- Long-term policy, governance and international cooperation for climate action and net zero emissions and beyond

Chapter 7: Finance

- Scaling finance to meet current and future finance needs
- Investment and finance for innovation and for mitigation and transitions in the context of sustainable development
- Innovation for financing
- Finance instruments, sources, channels and mechanisms
- Financial adequacy, access (equity and justice), inclusion, effectiveness, and outcomes considering finance at different scales (including national, regional, and global)
- Financial flows to support mitigation (including those to, from and between developed and developing countries), and tracking by sources, sectors and levels of governance, channels, regions, countries, and instruments
- Enablers and barriers for finance, including barriers to access
- Climate-related planning and management of finance
- Gender, Indigenous Peoples and local communities climate finance

Common elements across Chapters 8-13

- Key findings from the Sixth Assessment Report (AR6) and the Special Report on Climate Change and Cities
- Policies and implementation as appropriate
- Drivers and current trends in emissions and removals, as appropriate
- Mitigation measures and potentials and futures in the context of sustainable development, justice, equity, and global warming levels
- Feasibility and social acceptance
- Links to projected regional and global futures
- Links to sustainable development and adaptation, including risks, co-benefits, synergies, tradeoffs, and spill-over effects, as appropriate
- Links to Indigenous Peoples, local communities and gender
- Interactions between relevant UN Conventions and other relevant frameworks, as appropriate
- Assessment of costs and benefits of mitigation options
- Financial instruments (e.g., market and non-market)

- Innovation and knowledge gaps
- International cooperation and related aspects
- Case studies, as appropriate

Chapter 8: Services and demand

- Human needs, aspirations, inclusive well-being, and development
- Demand, equity, affordability and access to services across regions and social groups including the informal sector
- Demand-side mitigation potential of different service provisioning options including at system scale
- Demand-side options for comparison with other emission reductions options
- Social drivers of behavioral change, such as lifestyles, culture, value systems, psychology, communications, education, Indigenous knowledge systems, capacity building, social trust, and governance
- Other drivers of change
- Empirical evidence of the speed for diffusion of social innovations, including business model, behavioral, community based, and institutional innovations
- Policy, governance, and the roles of actors in the diffusion of demand-side solutions
- Synergies and co-benefits, including cross-sectoral implications for adaptation, health, energy security, inclusive development, and materials
- Feasibility dimensions of demand-side solutions, including synergies and tradeoffs with sectors and with sustainable development dimensions
- Services and demands related to oceans

Chapter 9: Energy systems

- Trends, historical, current and future
- Options and technologies for mitigation
- Abatement potentials and implications
- Energy access for household and productive use, including distributed approach potential
- Energy security, affordability, sustainability, resilience, and adequacy
- Energy system infrastructure changes, and timescales
- Energy transitions
- Energy governance and political economy (including energy markets and supply chains)
- Material and resource needs and constraints
- Capacity building and capacities (technology transfer and assimilation)
- Renewables, nuclear, carbon capture and storage, carbon capture and utilisation, and synthetic energy carriers (e.g., hydrogen)
- Equity, justice, just transitions, and distributional impacts
- Fugitive emissions and methane mitigation

Chapter 10: Industry

- Industry, society, well-being and inclusive development
- Current and future demand for industrial products to meet end-use services
- Past and current level of emissions by industries
- Material end-use demand, material efficiency, consumption patterns, circularity, waste; CCU and CCS; critical minerals
- Potential sector mitigation options (e.g., energy efficiency, clean fuel switching, feedstocks; process changes, such as electrification and hydrogen; carbon management), and co-benefits
- Access to technology, infrastructure, and capacity
- Governance, institutions, laws, and barriers
- Impacts on and interactions with local communities and Indigenous Peoples
- Policies to drive mitigation and co-benefits in a context of sustainable development, equity, and justice
- International cooperation and related aspects

Chapter 11: Transport and mobility services and systems

- Socioeconomic, geographic-related context circumstances
- Mobility access, affordability, and equity
- Spatial planning, infrastructure, and supply chains for mobility and energy carriers (passenger and freight; public transport, road, rail, micromobility, aviation, maritime, water-based, and multimodal transport)
- Mitigation options and strategies for passenger and freight transport (including Avoid, Shift, Improve options and social and technological innovation) towards low or zero emissions transport
- Interaction with adaptation, disaster risk and resilience, synergies and tradeoffs with sustainable development, including environment and health
- Sector-specific policies and policy packages, laws, multi-level governance, financing, and enabling conditions

Chapter 12: Buildings and human settlements

- Framing the scope and new developments
- Emission trends and drivers
- Services (including comfort, nutrition, illumination, communication)
- Potential mitigation options and strategies for buildings and human settlements (e.g., spatial planning and land use, design, construction, retrofitting and renovation technologies, behavior)
- Direct and embodied emissions reduction, including alternative building materials and material efficiency
- Interaction with adaptation, disaster risk and resilience, synergies and tradeoffs with sustainable development
- Distribution impacts under different urban, rural, and regional specificities/informal settlements, social vulnerability, and land use
- Barriers and opportunities (technological, physical, financial, institutional, governance, cultural, etc.)
- Infrastructure, systemic interactions, cross-sectoral benefits, circular economy, insights from life cycle assessment and material flow analysis

Chapter 13: Agriculture, Forestry, and Other Land Uses (AFOLU)

- Mitigation measures (emissions and removals) and potentials in the context of sustainable development and global warming levels (including equity and justice, risks, food security, feasibility, regions, tradeoffs, and synergies)
- Use of consolidated national/regional data on emission factors, forest and soil parameters, and livestock production systems from under-represented regions, including recent data on fragile ecosystems
- Projected mitigation pathways, including alternative demand scenarios, that assess the scale of land mitigation measures, impacts on gross and net land-use change across different ecosystems, and social and environmental contexts
- Effects of climate impacts on socio-ecological systems, responses, and consequences for mitigation potentials and scenarios
- Consideration of the role of Indigenous Peoples and local communities in codesigning and implementing mitigation measures
- Integration of economic, social, and technological responses and their efficacy and limits for delivering mitigation and multiple outcomes
- Comparing and reconciling land use emissions with national inventories (including the effects of increasing background fluxes on total and net GHG flux from AFOLU)
- Tradeoffs and synergies of measures with sustainable development (beyond SDGs) at regional and subregional levels
- Systems integration related to AFOLU, including linkages to Chapter 14

Chapter 14: Integration and interactions across sectors and systems

- System integration, including energy, transport, buildings, and industry
- Infrastructure used by multiple sectors for enabling low or net-zero emissions economies
- The role of urban systems in mitigation
- Materials, circularity, and waste across sectors
- Energy system integration (power-to-heat, power-to-transport, power-to-water, power-to-fuels, energy storage)
- Intersections between water, energy, food, ecosystems, and climate change; food systems; bioeconomy
- Costs and potentials, including the effects of integration
- Policies and enabling conditions for system integration and cross-sector synergies
- Digitalization and communication technologies for enabling system integration and interaction, and their implications

Chapter 15: Potentials, limits, and risks of Carbon Dioxide Removal (CDR)

- Effectiveness of CDR approaches at different warming levels and time scales
- The role of CDR strategies in net-zero and net-negative emissions futures, including levels of residual emissions achievable
- Technical and economic potential, sustainability aspects, scalability, equity implications and costs of different approaches, including storage potential, CDR approaches in other chapters and marine carbon dioxide removal
- Co-benefits, opportunities, synergies, tradeoffs and adverse effects of different CDR approaches on land, biodiversity and ecosystems, energy, materials, food, and waterbodies
- Feasibility assessment of CDR approaches (including geophysical, environmental-ecological, technological, economic, institutional and sociocultural) reflecting different regional and sub-regional contexts and scales
- Permanence, durability and reversibility of CDR approaches at different scales
- Assessment of current status and limits of MRV approaches
- Policies and governance, market, non-market and financing for research and development and implementation of CDR approaches
- Interactions with sustainable development, adaptation, and other mitigation options
- Technology transfer and capacity building for CDR approaches

Annex: Glossary