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PROPOSED CHAPTER OUTLINES OF THE WORKING GROUP II CONTRIBUTION TO THE IPCC FIFTH ASSESSMENT REPORT (AR5)

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

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Outline for the Working Group II Contribution to the Fifth Assessment Report
IMPACTS, ADAPTATION, AND VULNERABILITY

Please refer to the Background Document WGII-9/INF.1 for information on the conceptual framework underpinning the Working Group II Contribution to the IPCC Fifth Assessment Report

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Summary for Policy Makers
Technical Summary

PART A: GLOBAL AND SECTORAL ASPECTS

For each sectoral and regional chapter, there will be a standard set of topics that are referred to as [CONTEXT] in each chapter outline:

- Assessing vulnerability
  - Vulnerability to key drivers (including extremes)
- Assessing risks
  - Observed changes, with detection and attribution
  - Projected climate change impacts, with regional variation by scenario and time slice
  - Economic, social, and environmental context for uncertain futures under alternative development pathways
    - i. Potential vs. residual impacts
    - ii. Planned vs. autonomous adaptation
    - iii. Multiple interacting stresses {including the effects of geoengineering}
    - iv. Uncertainty
- Managing risks
  - Adaptation needs (based on assessed impacts and vulnerabilities)
  - Practical experiences of adaptation, including lessons learned
  - Observed and expected barriers to adaptation
  - Observed and expected limits to adaptation
- Valuation of impacts and adaptation
- Key vulnerabilities, thresholds, and irreversible changes
- Research and data gaps
- Case studies

Context for the AR5

1. Point of departure
   - The setting
   - Major conclusions of WGII AR4
   - Major conclusions of SR on *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*
   - Major conclusions of WGI AR5

2. Foundations for decisionmaking
   - Key concepts
   - Impacts, adaptation, and vulnerability on a range of scales
   - Assessing risk
     - Multi-metric valuation
   - Managing risk
   - Climate-resilient pathways: adaptation and mitigation interactions

Natural and Managed Resources and Ecosystems, and Their Uses

3. Freshwater resources
   - Diversity of world water resources and their sensitivity to climate change
     - Variables affecting the hydrosphere and cryosphere

     [CONTEXT]
   - Interactions among water resources, human activities, and the built environment
   - Water management and sustainable development

4. Terrestrial and freshwater ecosystems
   - Diversity of world ecosystems and their sensitivities to climate change
     - Intensively managed systems
     - Protected and conservation areas

     [CONTEXT] {for each ecosystem}
   - Ecosystem services
   - Interactions among ecosystems, human activities, and the built environment
   - Vulnerability of carbon pools, bioenergy implications, and carbon management potentials
   - Threats to human activities, infrastructure, and biodiversity

5. Coastal ecosystems and low-lying areas
   - Diversity of world ecosystems and their sensitivities to climate change

     [CONTEXT] {for each ecosystem}
   - Ecosystem services
   - Interactions among ecosystems, human activities, and the built environment
   - Sea-level rise and threats to human activities, infrastructure, and biodiversity

6. Ocean ecosystems
   - Diversity of world ecosystems and their sensitivities to climate change

     [CONTEXT] {for each ecosystem}
   - Ecosystem services
   - Ocean acidification
   - Interactions between ecosystems and human activities
   - Threats to human activities and biodiversity

7. Food systems and food security

   [CONTEXT]
   - Diversity of world food production and its sensitivities to climate change

     [CONTEXT] {for each food production system, including cropping, grazing, and fisheries}
   - Food systems
   - Food security and the means to achieve it

Human Settlements, Industry, and Infrastructure

8. Urban Areas

   [CONTEXT]
   - Urbanization processes and climate risks
   - Urban micro-climates
   - Civic services and infrastructure
   - Housing
   - Informal settlements
   - Economic base

- Development plans and development pathways
- Governance
- Landscape and regional interconnections

9. Rural Areas
   [CONTEXT]
   - Landscape and regional interconnections {including migration}
   - Housing
   - Economic base and livelihoods
   - Infrastructure
   - Social capital and resilience

10. Key economic sectors and services
    [CONTEXT]
    - Networked infrastructure
    - Industry and manufacturing
    - Tourism
    - Social and other economic services

Human Health, Well-Being, and Security

11. Human health
    [CONTEXT]
    - Determinants of health: current and future trends
    - Health outcomes and their sensitivity to climate change
      - Extreme events
      - Air quality
      - Food- and waterborne diseases
      - Vector-borne and zoonotic diseases
      - Malnutrition
      - Water quality and availability
    - Child health
    - Health inequalities

12. Human security
    [CONTEXT]
    - Social and economic impacts
    - Inequalities, gender, and marginalized populations
    - Culture, values, and society
    - Indigenous peoples
    - Local and traditional knowledge
    - Migration and population displacement
    - Conflict
    - Community resilience

13. Livelihoods and poverty
    [CONTEXT]
    - Chronic and transient poverty
    - Effects of climate change responses on poverty
    - Interactions between climate change and poverty-reduction initiatives

Adaptation and Development

14. Adaptation needs and options
    - Synthesis of adaptation needs and options
    - National Adaptation Programmes of Action (NAPAs) and other national and sectoral assessments
    - Addressing maladaptation
    - Measuring adaptation
    - [Case studies of Least Developed Countries and other vulnerable countries and groups]

15. Adaptation planning and implementation
    - Local, national, regional, and global strategies, policies, and initiatives
    - Technology development, transfer, and diffusion
    - Financing for adaptation
    - Insurance and social protection
    - Knowledge sharing, learning, and capacity building
    - Institutional arrangements: public- and private-sector stakeholders and priorities
    - Links between adaptation and development

16. Adaptation opportunities, constraints, and limits
    - Cross-sectoral synthesis
    - Limits to adaptation, including ethical dimensions
    - Interactions among limits
    - Effects of alternative mitigation pathways on adaptation
    - Ancillary social and ecological effects of adaptation

17. Economics of adaptation
    - Adaptation costs and benefits at global, national, sectoral, and local levels
    - Inter-relationships between adaptation costs and residual damage
    - Economic instruments to provide incentives
    - Challenges of using market-based approaches for adaptation decisionmaking
    - Ancillary economic effects

Multi-Sector Impacts, Risks, Vulnerabilities, and Opportunities

18. Detection and attribution of observed impacts
    - Integration of observed impacts across sectors and regions
    - Attribution of observed impacts across sectors and regions

19. Emergent and key risks and vulnerabilities
    - Multiple interacting systems and stresses
    - Indirect, trans-boundary, and long distance impacts
    - Key vulnerabilities, aggregate impacts, thresholds, irreversible changes, and reasons for concern

20. Climate-resilient pathways: adaptation, mitigation, and sustainable development
    - Multi-metric valuation
    - Ecosystem services and biodiversity threats
    - Consumption, lifestyles, behavior, culture, and education
    - Human well-being
    - Adaptation, mitigation, and sustainable development

PART B: REGIONAL ASPECTS

21. Regional context
    - Introduction
    - Observed climate and non-climate information
    - Regional projections
    - Similarities in systems across regions

Regional Chapters

22. Africa
23. Europe
24. Asia
25. Australasia
26. North America
27. Central and South America
28. Polar Regions
29. Small Islands
30. International Waters

These chapters will be subdivided into sub-regions to provide the detailed information requested by Plenary taking into account the availability of regional information.

Chapter structure (22-30)

- Introduction
- Major conclusions from previous assessments
- *[CONTEXT]* at the sub-regional level
- Integrated analysis of adaptation and mitigation
- Inter- and intra-regional impacts
- Multi-sector synthesis

Annex I: Glossary
Annex II: Acronyms
Annex III: Contributors to the IPCC Working Group II Fifth Assessment Report
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