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INTERGOVERNMENTAL PANEL ON climate change

IPCC WORKING GROUP II – ELEVENTH SESSION
Montreal, 7 – 8 September 2017

WG-II:11th /Doc.2
(4.VIII.2017)
Agenda Item: 2
ENGLISH ONLY

PROPOSED CHAPTER OUTLINES OF THE WORKING GROUP II CONTRIBUTION TO THE IPCC SIXTH ASSESSMENT REPORT (AR6)

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

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WORKING GROUP II CONTRIBUTION TO THE IPCC SIXTH ASSESSMENT REPORT

Proposed Outline

Summary for Policymakers [20 pages]

Technical Summary [40 pages]

Chapter 1: Point of departure and key concepts [30 pages]

- Changing policy context (including Paris Agreement, SDGs, etc.); AR5 and SR findings and critical messages, goals of this report
- The significance of sectoral and regional climate risks to natural and human systems in the context of culture, values, ethics, identity, behaviour, and historical experience
- The climate risk framework used in this report encompassing hazard, exposure, and vulnerabilities
- The significance of adaptation (from incremental to transformational), in addressing climate change risks, including adaptation responses and outcomes
- Detection and attribution of both climate impacts and adaptation responses
- Understanding dynamic climate risks from scenarios that reflect multiple interacting drivers
- Enabling conditions for effective adaptation including governance and economic aspects
- Climate change responses and their interactions with sustainable development pathways
- Opportunities for enhancing climate resilient development pathways

THEME 1: Risks, adaptation and sustainability for systems impacted by climate change

Chapter 2: Terrestrial and freshwater ecosystems and their services [60 pages]

- Point of departure, key findings of other reports, organised by biomes including freshwater systems, taking into account ecological disequilibria
- Historical and paleontological aspects of climate change impacts and risks
- Trends in critical ecosystems including detection and attribution of observed impacts and responses
- Projected hazards and exposure (link to WGI), including extreme events and interactions of multiple climatic, non-climatic and anthropogenic stressors at relevant temporal and spatial scales
- Projected impacts: species, ecosystem structure and biodiversity, emergence of novel communities, process rates, functions, and the implication for their services, at relevant temporal and spatial scales
- Vulnerability and resilience, enablers and limits to natural and planned adaptation, and maladaptation
- Assessing risks, opportunities, costs, and trade-offs including consideration of scenarios and impacts of adaptation and mitigation responses
- Planned adaptation and mitigation for management of risk within the SDG and other relevant policy contexts, informed by cultural, ethical, identity, economic and behavioural dimensions
- Lessons from case studies

Chapter 3: Ocean and coastal ecosystems and their services [60 pages]

- Point of departure, key findings of other reports, organised by systems, taking into account ecological disequilibria
- Historical and paleontological aspects of climate change impacts and risks
- Trends in critical ecosystems including detection and attribution of observed impacts
- Projected hazards and exposure (link to WGI), including extreme events and interactions of multiple climatic, non-climatic and anthropogenic stressors at relevant temporal and spatial scales
- Projected impacts: species, ecosystem structure and biodiversity, emergence of novel communities, process rates, functions, and the implication for their services, at relevant temporal and spatial scales
- Vulnerability and resilience, enablers and limits to natural adaptation
- Assessing risk, opportunities, costs, and trade-offs including consideration of scenarios and impacts of adaptation and mitigation responses
- Planned adaptation and mitigation for management of risk within the SDG and other relevant policy contexts, informed by cultural, ethical, identity, economic and behavioural dimensions
- Lessons from case studies

Chapter 4: Water [60 pages]

- Observed and projected hydrological changes on basin and watershed scales and water related hazards including floods, droughts and landslides
- Key short, medium and long term risks to water security in the context of critical sectors (including food-energy-water-health nexus) and different users and systems under alternative scenarios
- Adaptation responses including cooperation in different climatic zones to water security risks with co-benefits for sustainable development including consideration of impacts of adaptation and mitigation responses
- Attribution of transboundary and other international and intra-national problems relating to shared water resources
- Approaches to achieving resilience in water systems and assessments of outcomes, costs, benefits, and where maladaptations were evident
- Lessons from case studies

Chapter 5: Food, fibre and other services from managed ecosystems [60 pages]

- Climate-driven historical changes in services provided by managed ecosystems, detection and attribution of impacts and responses, including impacts of adaptation and mitigation responses, considering key findings of other reports
- Current and projected risks for food and nutrition security, food systems on land and in the ocean, and the food-energy-water-health nexus
- Current and projected risks for wood, fibre and natural products, such as medicinal organisms, rubber and dyes
- Adaptation options for different managed ecosystems across scales and regions including limits and barriers, knowledge systems and aspects of sustainable development
- Competition for the use of land and ocean, including conflicts with indigenous rights to land and water bodies, and other tradeoffs in the context of adaptation and mitigation responses
- Current and projected risks for provisioning and cultural ecosystem services with considerations of ethics and identity
- Lessons from case studies

Chapter 6: Cities, settlements and key infrastructure [60 pages]

- Changes in the international policy architecture for settlements since AR5
- Interactions of climate risks with urban and rural change processes including food-energy-water-health nexus
- Risk-reducing infrastructure and services (including ecological and social), their deficits, and implications for vulnerability, exposure and adaptation
- Detection and attribution of observed impacts and responses and projected risks from climate change under alternative scenarios including energy systems, transport and industry
- Adaptation options, adaptive capacity, responses and outcomes, including equity considerations and links to mitigation
- Institutional, financial, and governance structures that enable governance for climate resilient and sustainable settlements, cities and key infrastructure
- Lessons from case studies

Chapter 7: Health, wellbeing and the changing structure of communities [50 pages]

- Health and wellbeing impacts, including detection and attribution
- Projected risks to health and wellbeing under alternative scenarios, including food-energy-water-health nexus
- Vulnerable populations and communities
- Adaptation options, limits to adaptation, and their social, environmental and economic implications
- Observed impacts and projected changes in migration, displacement, and trapped populations, and linkages to adaptation
- Psychological, social, and cultural dimensions
- Lessons from case studies

Chapter 8: Poverty, livelihoods and economic development [60 pages]

- Detection and attribution of observed impacts and responses
- Projected climate change risks under alternative development scenarios as differentiated by economic opportunity and shifting livelihoods
- Observed and projected risks and losses and the challenges for equity and sustainability
- Adaptation options, adaptive capacity and actions, and their outcomes for resilience and transformation, focusing on low-income households and communities
- Opportunities for development including tradeoffs between adaptation and mitigation, economic diversification, equity, and sustainability
- Lessons from case studies

THEME 2: Regions

Common elements across all *regional* chapters (guidance points not an outline)

- Information on selected regional and sub-regional climate characteristics and zones
- Summary Table and/or figures with WGI and WGII information, combined with risk assessment (e.g., SREX SPM.1)
- Detection and attribution of observed impacts and responses in natural and human systems on diverse time scales
- Current sectoral climate risks, including specific regional and sub-regional considerations related to land, coasts and regional oceans
- Cultural and psychological dimensions (values, attitudes, ethical aspects, identity, behaviours)

- Observed impacts and projected risks including identifying key risks and residual risks as well as development pathways depending on rate and level of climate change, including extremes and sea level rise
- Adaptation options, from incremental to transformational, including opportunities, enablers, limits, barriers, and adaptive capacity
- Governance and economic aspects including legal, institutional, financing, price responses, and trade
- Cross sectoral, intra-regional, and inter-regional issues including consideration of temporal scale
- Interaction of risks and responses to climate change with sustainable development pathways
- Lessons from case studies

Chapter 9: Africa [50 pages]

Chapter 10: Asia [50 pages]

Chapter 11: Australasia [30 pages]

Chapter 12: Central and South America [50 pages]

Chapter 13: Europe [40 pages]

Chapter 14: North America [40 pages]

Chapter 15: Small Islands [30 pages]

THEME 3: Overview of sustainable development pathways: integrating adaptation and mitigation

Chapter 16: Key risks across sectors and regions [40 pages]

- Synthesis of observed impacts and responses, including detection and attribution
- Key risks and avoided impacts under a range of climate and development pathways, across temporal and spatial scales
- Limits to adaptation and residual risks in natural and human systems
- Reasons for Concern across scales
- Lessons from case studies at different scales, including trans-boundary risks

Chapter 17: Decision-making options for managing risk [40 pages]

- Decision-making and governance for managing risk across multiple scales, institutions, and systems
- Drivers of decision-making: values, perceptions, differential power and influence, behaviour, and incentives
- Costs and non-monetized loss, benefits, synergies, and trade-offs, including distributional aspects and the social cost of carbon
- Lessons from case studies at different scales, including issues of governance and finance

Chapter 18: Climate resilient development pathways and transformation* [40 pages]

- Synergies and trade-offs of sustainable development (including SDGs), adaptation and mitigation
- Strategies that strengthen resilience and reduce inequalities
- Assessing progress, including adaptation, in the context of the Global Stocktake
- Lessons from case studies at different scales

**connection to WG III*

CROSS-CHAPTER BOXES

- **Antarctica [5 pages]**
- **Arctic [10 pages]**
- **Biodiversity hotspots (land, coasts and oceans) [10 pages]**
- **Cities by the sea [10 pages]**
- **Deserts and semi-arid areas [5 pages]**
- **Mountains [5 pages]**
- **Tropical forests [10 pages]**

ANNEX I: Regional Atlas

ANNEX II: Glossary

ANNEX III: List of Acronyms

ANNEX IV: List of Contributors

ANNEX V: List of Reviewers

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