The Contribution of WGII to the IPCC 5th Assessment Cycle

Kristie L. Ebi, Ph.D., MPH
Executive Director, IPCC Working Group II Technical Support Unit

Intergovernmental Panel on Climate Change

- Formed by the United Nations Environment Programme and the World Meteorological Organization to conduct assessments of the state of knowledge of climate change, the vulnerabilities to and consequences of any changes, and the options to avoid, prepare for, and respond to changes
- All governments that signed either the UNEP or WMO convention are members of the IPCC

IPCC Plenary

IPCC Bureau

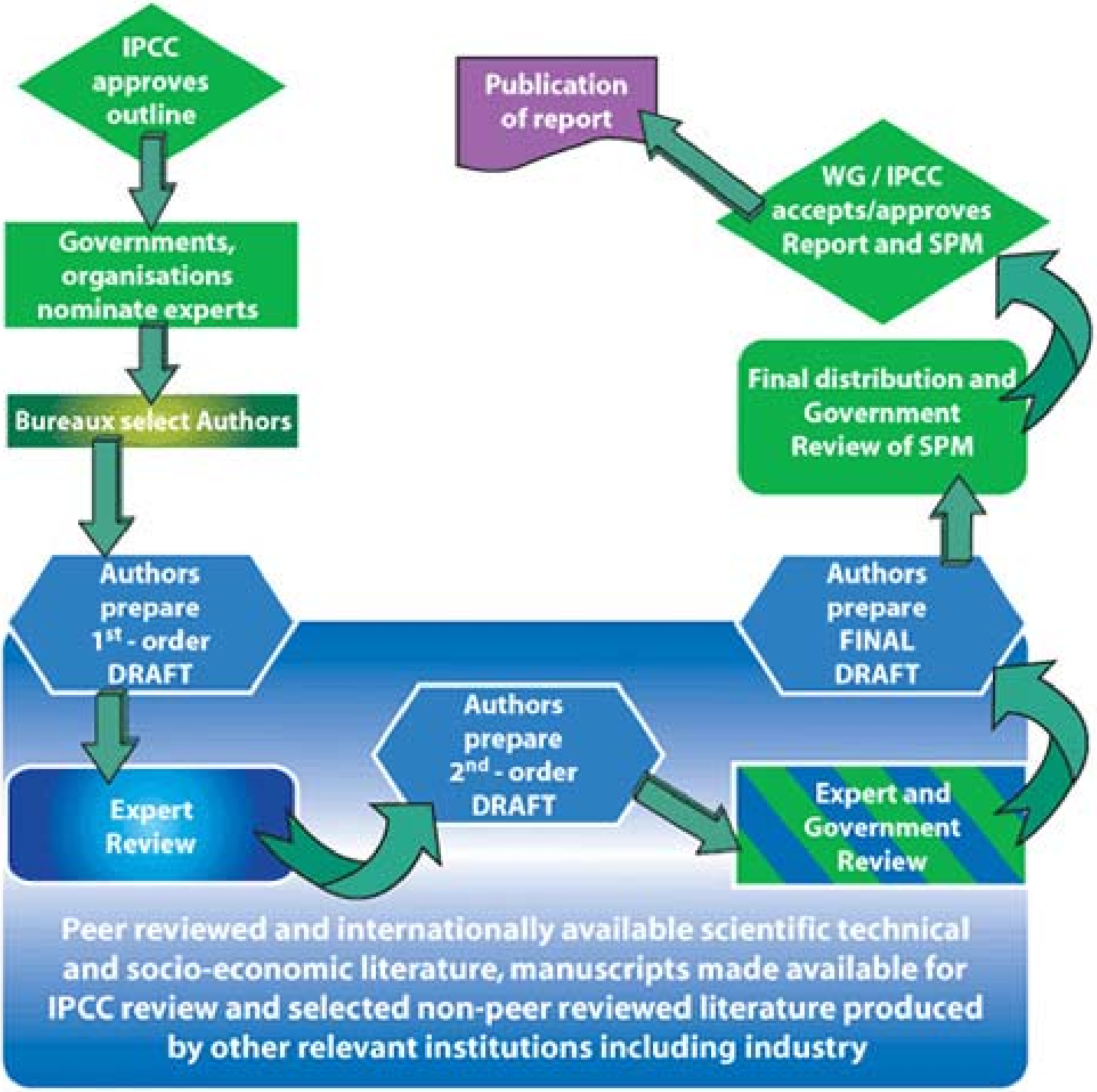
IPCC Secretariat

Working Group I	Working Group II	Working Group III	Task Force on National Greenhouse Gas Inventories
The Physical Science Basis	Climate Change Impacts, Adaptation and Vulnerability	Mitigation of Climate Change	
TSU	TSU	TSU	TSU

Authors, Contributors, Reviewers

Co-Chairs

- WGI:
  - Thomas Stocker (University of Bern)
  - Dahe Qin (China Meteorological Administration)
- WGII:
  - Vicente Barros (CIMA-FCEN)
  - Christopher Field (Carnegie Institution)
- WGIII:
  - Ottmar Edenhofer (Potsdam Institute for Climate Impact Research)
  - Ramon Pichs Madruga (CIEM)
  - Youba Sokona (Sahara and Sahel Observatory)


IPCC approves outline
Governments, organisations nominate experts
Bureaux select Authors
Authors prepare 1st - order DRAFT
Expert Review
Authors prepare 2nd - order DRAFT
Expert and Government Review
Authors prepare FINAL DRAFT
Final distribution and Government Review of SPM
WG / IPCC accepts/approves Report and SPM
Publication of report
Peer reviewed and internationally available scientific technical and socio-economic literature, manuscripts made available for IPCC review and selected non-peer reviewed literature produced by other relevant institutions including industry

Outline for the Working Group II Contribution to the Fifth Assessment Report

Major themes

- Building from the structure of the AR4
- Better integration of climate science with climate impacts
- Broader range of assessed impacts
- Climate change in the context of other stresses
- Better treatment of extremes and disasters
- Framing to support good decisions, including information on risk
- Expanded treatment of adaptation
- Better integration of adaptation, mitigation, and development
- More comprehensive treatment of regional aspects of climate change

Proposed schedule

- January – March 2010 Call for authors
- May 2010 Author teams selected
- January 2011 LAM1
- ……
- March 2014 Plenary approval

Major Sections or "Superchapters"

- Part A: GLOBAL & SECTORAL ASPECTS
  - Context for the AR5
  - Natural and managed resources and systems, and their uses
  - Human settlements, industry, and infrastructure
  - Human health, well-being, and security
  - Adaptation
  - Multi-sector impacts, risks, vulnerabilities, and opportunities
- Part B: REGIONAL ASPECTS
  - With WG1 and WG3 input and collaboration

[Context] = common topics addressed in each sectoral and regional chapter

- Observed impacts, with detection and attribution
- Projected integrated climate change impacts, with regional variation by scenario and time slice
- Assessing impacts, vulnerabilities, and risks
  - Vulnerability to key drivers (including extremes)
  - Economic, social, and environmental context for uncertain futures under alternative development pathways
  - Multiple interacting stresses
  - Uncertainty
  - Valuation of impacts and adaptation
  - Key vulnerabilities
- Adaptation and managing risks
  - Adaptation needs and gaps (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
  - Facilitating adaptation and avoiding maladaptation
  - Planned and autonomous adaptation
  - Potential and residual impacts
  - Thresholds and irreversible changes
- Case studies
- Research and data gaps

PART A: GLOBAL & SECTORAL ASPECTS

Context for the AR5
1 Point of departure
2 Foundations for decisionmaking

Natural and Managed Resources and Systems, and Their Uses
3 Freshwater resources
4 Terrestrial and inland water systems
5 Coastal systems and low-lying areas
6 Ocean systems
7 Food production systems and food security

Human Settlements, Industry, and Infrastructure
8 Urban Areas
9 Rural Areas
10 Key economic sectors and services

Human Health, Well-Being, and Security
11 Human health
12 Human security
13 Livelihoods and poverty

Adaptation
14 Adaptation needs and options
15 Adaptation planning and implementation
16 Adaptation opportunities, constraints, and limits
17 Economics of adaptation

Multi-Sector Impacts, Risks, Vulnerabilities, and Opportunities
18 Detection and attribution of observed impacts
19 Emergent risks and key vulnerabilities
20 Climate-resilient pathways: adaptation, mitigation, and sustainable development

Context for the AR5

1. Point of departure

- The setting
- Major conclusions of WG II AR4
- Major conclusions of Special Report on *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*
- Major conclusions of WG I AR5

2. Foundations for decision-making on adaptation

- Key concepts
- Impacts, adaptation, and vulnerabilities on a range of scales
- Assessing impacts, vulnerabilities, and risks
  - Multi-metric valuation
  - Treatment of uncertainty
  - Key vulnerabilities
- Managing risks
- Climate-resilient pathways: adaptation, mitigation, and sustainable development interactions

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3. Freshwater resources

- Diversity of world water resources and their sensitivity to climate change

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

4. Terrestrial and inland water systems

- Diversity of world ecosystems and their sensitivities to climate change: from the mountains to the coasts, from the tropics to the poles
  - Intensively managed systems: forestry, fiber, and fuel production
  - Wildlands and extensively managed systems
  - Protected and conservation areas

  [CONTEXT] {for each ecosystem}
- Ecosystem services
- Interactions among ecosystems; land use, land-use change and forestry; and other human activities
- Vulnerability of carbon pools, bio-energy implications, and carbon management potentials
- Threats to human activities, infrastructure, and biodiversity

5. Coastal systems 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, changes in coastal dynamics, and threats to human activities, infrastructure, agriculture, and biodiversity

6. Ocean systems

- Diversity of world ecosystems and their sensitivities to climate change
- *[CONTEXT] {for each ecosystem}*
- Ecosystem services
- Water property changes, including temperature and ocean acidification
- Interactions between ecosystems and human activities
- Threats to human activities and biodiversity

7. Food production systems and food security

- Food production: farming, livestock, and fisheries and their sensitivities to climate change

  [CONTEXT]
- Food systems: processing, distribution, and access
- Food security and the means to achieve it

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8. Urban areas

[CONTEXT]

- Urbanization processes, sustainable habitats, and climate change risks
- Urban micro-climates, including urban heat islands
- Civic services and infrastructure
- Housing and settlements
- Economic base
- Tourism
- Development plans and development pathways, including social capital
- Urban planning, management, and governance
- Landscape and regional interconnections

9. Rural areas

[CONTEXT]

- Landscape and regional interconnections {including migration}
- Housing and settlements
- Economic base and livelihoods
- Infrastructure
- Social capital and resilience

10. Key economic sectors and services

[CONTEXT]

- Networked infrastructure, including transportation, energy, water, and sanitation
- Industry and manufacturing
- Tourism
- Social and other economic services
- Market impacts (supply chains, systemic risks, and insurance)

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11. Human health

[CONTEXT]

- Determinants of health: current and future trends
- Health outcomes and their sensitivity to climate change
  - Extreme events
  - Air quality
  - Foodborne and waterborne diseases
  - Vectorborne and zoonotic diseases
  - Malnutrition
- Water quality, availability, and sanitation
- Children and other vulnerable groups
- Health inequalities, gender, and marginalized populations

12. Human security

[CONTEXT]

- Social and economic activities, including employment
- Inequalities, gender, and marginalized populations
- Culture, values, and society
- Indigenous peoples
- Local communities
- 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
- Inequalities, gender, and marginalized populations

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14. Adaptation needs and options

- Synthesis of adaptation needs and options
- International, national, and sectoral assessments, including National Adaptation Programmes of Action (NAPAs)
- Measuring adaptation
- Addressing maladaptation

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
- Decision-support tools and methods
- Adaptation status and indicators

16. Adaptation opportunities, constraints, and limits

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

17. The 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
- Using market-based approaches for adaptation decisionmaking
- Ancillary economic effects

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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 risks and key vulnerabilities

- Multiple interacting systems and stresses
- Indirect, transboundary impacts, and impacts over longer distances
- 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 patterns, lifestyles, behavior, culture, education, and awareness
- Human well-being
- Adaptation, mitigation, and sustainable development, including tradeoffs and co-benefits

Part B: REGIONAL ASPECTS
with WG1 and WG3 input and collaboration

21. Regional Context

- Introduction
- Information on observed climate changes and relevant non-climate factors
- Regional projections: added value and limitations
- Similarities and pertinent differences in systems across regions
- Cross-regional hotspots

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. Open Oceans

Chapter structure (22-30)

- Introduction
- Major conclusions from previous assessments
- *[CONTEXT] {with sub-regional information}*
- Adaptation and mitigation interactions
- Inter- and intra-regional impacts
- Multi-sector synthesis

Map AR4 to AR5

AR4		Proposed AR5	
1	Assessment of observed changes and responses in natural and managed systems	1	Point of departure
2	New assessment methods and the characterisation of future conditions	2	Foundations for decisionmaking
3	Freshwater resources and their management	3	Freshwater resources
4	Ecosystems, their properties, goods and services	4	Terrestrial and freshwater ecosystems
5	Food, fibre and forest products	5	Coastal ecosystems and low-lying areas
6	Coastal systems and low-lying areas	6	Ocean ecosystems
7	Industry, settlement and society	7	Food systems and food security
8	Human health	8	Urban Areas
		9	Rural Areas
		10	Key economic sectors and services
		11	Human health
		12	Human security
		13	Livelihoods and poverty
17	Assessment of adaptation practices, options, constraints and capacity	14	Adaptation needs and options
18	Inter-relationships between adaptation and mitigation	15	Adaptation planning and implementation
19	Assessing key vulnerabilities and the risk from climate change	16	Adaptation opportunities, constraints, and limits
20	Perspectives on climate change and sustainability	17	Economics of adaptation
		18	Detection and attribution of observed impacts
		19	Emergent and key risks and vulnerabilities
		20	Climate-resilient pathways: adaptation, mitigation, and sustainable development

Cross-cutting themes

- Consistent evaluation of uncertainties and risks
- Costing and economic analysis
- Regional aspects
- Water and the Earth system
- Carbon cycle including ocean acidification
- Ice sheets and sea-level rise
- Mitigation, adaptation, and sustainable development

Cross-cutting themes

- Consistent evaluation of uncertainties and risks
- Costing ar
- Regional a
- Water an
- Carbon cy rication
- Ice sheets and sea-level rise
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WG II, I, III
Meeting planned,
Early 2010

Cross-cutting themes

- Consistent evaluation of uncertainties and risks
- Costing and economic analysis
- Regional aspects
- Water and
- Carbon cy cation
- Ice sheets
- Mitigation, able development

WG III, II
Meeting planned,
Early 2011

Cross-cutting themes

- Consistent evaluation of uncertainties and risks
- Costing and economic analysis
- Regional aspects
- Water and the Earth system
- Carbon cy ication
- Ice sheet
- Mitigation able development

Encourage regional meetings

Cross-cutting themes

- Consistent evaluation of uncertainties and risks
- Costing and economic analysis
- Regional aspects
- Water and the Earth system
- Carbon cycle including ocean acidification
- Ice sheets
- Mitigation ... able development

Links with ongoing & planned activities

Cross-cutting themes

- Consisten… …inties and risks
- Costing a…
- Regional …
- Water an…
- Carbon cycle including ocean acidification
- Ice sheets and sea-level rise
- Mitigation, adaptation, and sustainable development

WG II, I Acidification meeting planned, Early 2011

Cross-cutting themes

- Consistent evaluation of uncertainties and risks
- Costing a
- Regional
- Water ar
- Carbon cycle including ocean acidification
- Ice sheets and sea-level rise
- Mitigation, adaptation, and sustainable development

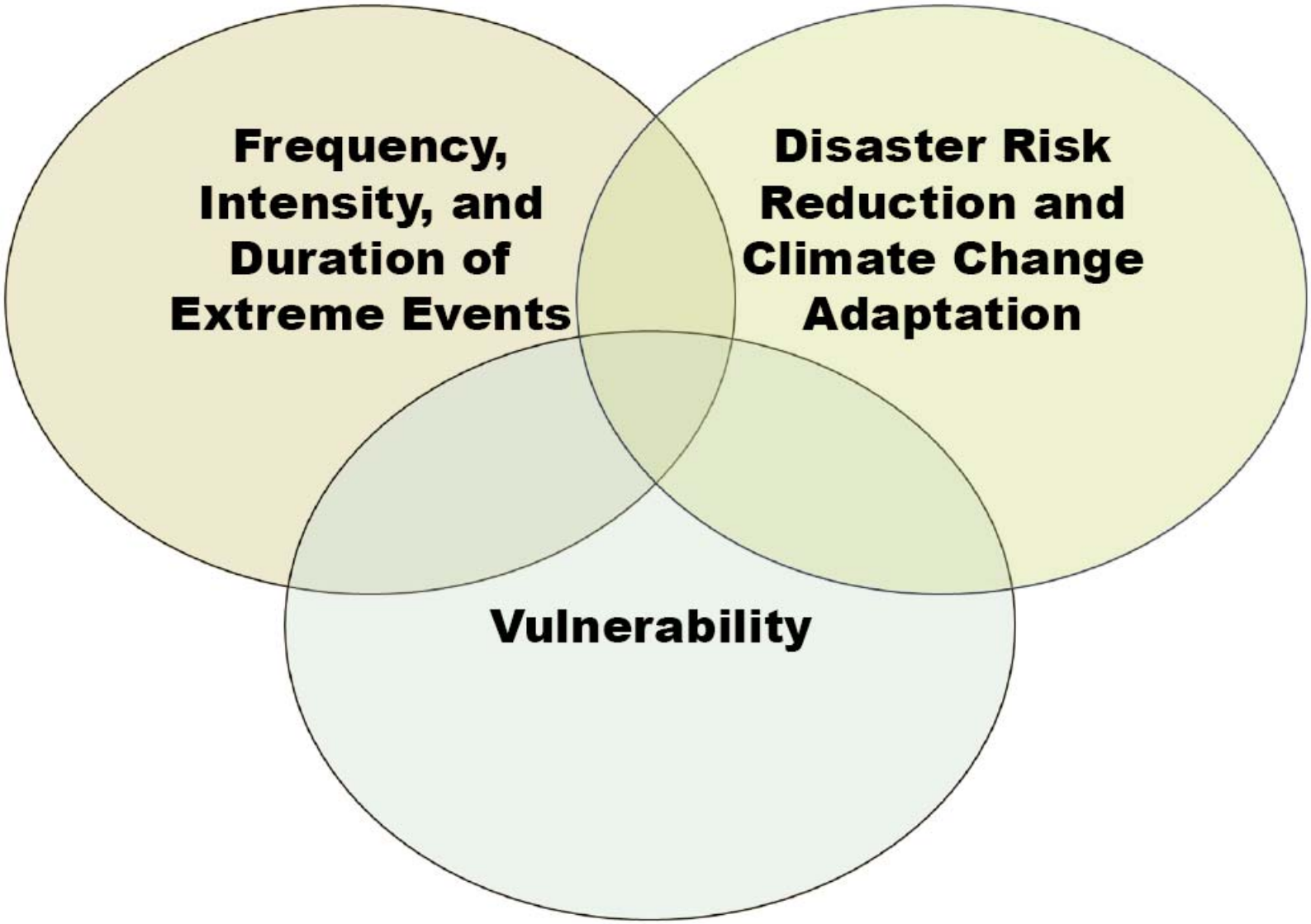
WG I meeting planned, 2010

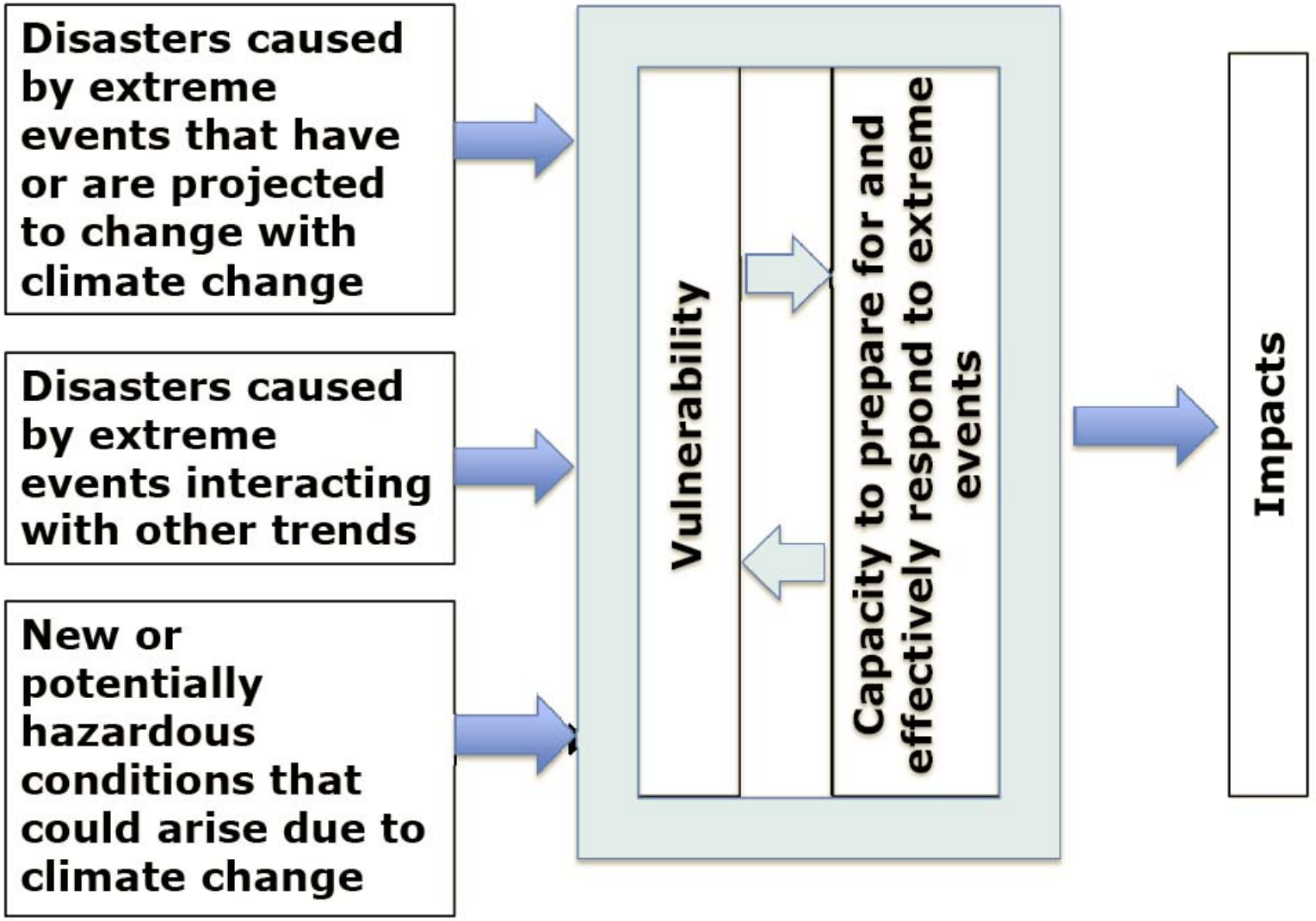
Cross-cutting themes

- Consistent evaluation of uncertainties and risks
- Costing c
- Regional
- Water ar
- Carbon cy fication
- Ice sheets and sea-level rise
- Mitigation, adaptation, and sustainable development

WG III, II Settlements meeting planned, 2010

Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation


Frequency, Intensity, and Duration of Extreme Events
Disaster Risk Reduction and Climate Change Adaptation
Vulnerability


Disasters caused by extreme events that have or are projected to change with climate change
Disasters caused by extreme events interacting with other trends
New or potentially hazardous conditions that could arise due to climate change
Vulnerability
Capacity to prepare for and effectively respond to extreme events
Impacts

- Climate change: new dimensions in disaster risk, exposure, vulnerability, and resilience
- Determinants of risks: exposure and vulnerability
- Changes in climate extremes and their impacts on the natural physical environment
- Changes in impacts of extreme events: human systems and ecosystems

- Managing the risks from extreme events at the local level
- Managing the risks from extreme events at the national level
- Managing the risks: international level and integration across scales
- Toward a sustainable and resilient future
- Case studies

Thank-you

krisebi@ipcc-wg2.gov