



International Conference on Climate Risk Management

Research Priorities for the IPCC AR6 Report

This list of research priorities was elicited from participants at the International Conference on Climate Risk Management held in Nairobi, Kenya during 4-7 April 2017. Participants identified the research topics important for their work that could contribute to the evidence base captured in the upcoming sixth assessment report of the Intergovernmental Panel on Climate Change (IPCC).

The process for developing this list used elements of human-centered design to facilitate individual ideas that were subsequently shared in small groups. Groups of 4-5 people then decided on the top 5 research topics and posted them on a wall for viewing and voting. Lastly, participants voted on the topics posted on the wall using stickers to denote the ideas they thought of as most important. This list represents both ideas listed on the wall and from individual notes, with the ideas that had at least 5 votes denoted with a star (*). The list has been edited by conference organisers for clarity, and originality of topics. The organisers have not attempted to provide further interpretation of the topics, but have chosen to present them as written. However, the Climate Centre is open to facilitating discussions and providing connections to a network of practitioners for researchers interested in taking these ideas forward.



Timescales

- Assessment of past climate-related disasters and drivers of and responses to these.*
- Near term climate change – what change has already happened?
- How to monitor and predict which climate pathway we are actually on.
- Linking WGII framework with findings on observed impact and assessed risks.
- Atlas of past, present and future climate risk
- Setting climate change trends in the context of climate variability on different timescales
- How does the likelihood of particular thresholds being exceeded change as a function of time? (where thresholds define consequences that we most want to avoid)
- Role of decadal variability in decision-making
- Emphasis on validating variability of climate models to assess whether climate variability will change in the future, focusing on timescales relevant for decision-making
- Extreme weather events and impacts on various timescales
- Matching timescales of decisionmaking with appropriate climate information across a range of sectors and decisionmakers
- More research on role of decadal variability vs long-term trends and methods to incorporate decadal variability in adaptation

Ecosystems *

- Mountain ecosystems and their impact on down streams
- Strengthen importance of ecological resilience in the IPCC framework [localizing key biodiversity choices]
- Assess the vulnerability of African Great Lakes to climate risks and its implications to – human system dynamics, water resources, crop production, poverty
- Rapidly urbanizing contexts, informal settlements
- Metrics and indicators of real opportunities or conditions for risk management at national and local levels
- Ways of understanding how physical changes make real risks for different people. = Social, political, economic contexts of risks
- Social barriers to adaptation. (social, political, economic, accesses to resources and land [land tenure])
- Vulnerability assessments at medium land cities and developing budgetary estimates and exploring financing mechanisms
- Himalayan ecosystem and its significance for 1.5 billion people
- Hydrological regimes of high mountain rivers and its impact on downstream
- Improve evidence around how ecosystem services contribute to human resilience
- Urban agriculture
- Mangrove restoration and regeneration

Extremes and geographic implications

- Extreme event indices defined using empirical evidence of impacts
- Current state of adaptation countries: metrics/indicators, role found in grey literature
- Impacts of extremes and climate variability (as a proxy for future risk) in highly vulnerable contexts – especially including conflict and displaced people
- Extreme event indices using empirical evidence of realized impacts
- Solar radiation management
- More deliberate analysis of realised climate-related risks with careful attention to their drivers and determinants (including evolution over time), risk escalation processes as well as effects/impacts.
- Role of climate vs. non-climate drivers of recent high impact events. *
- Research attribution and linking with drought, groundwater depletion and heatwaves
- Accumulated Risks (drought ... flood ... drought ... = risk) *
- Security (national, displacement, migration)
- Health (public health, vector disease, respiratory disease (PPM))

Managing risk

- Look at the extent to which it is possible to generate a generic climate risk framework and how approaches to risk assessment and communication can be derived from this.
- Well-being indicators
- Resilience at community level
- Framework for incorporating expert judgement/confidence based on model validation in the generation of future climate scenarios. (Likelihood statements in the IPCC are a good example: not all models are equal for all applications so comparing models equally is a poor way to judge likelihood)
- Development of regional framework for assessing the uncertainties associated with hydrological impacts of climate change and how to communicate uncertainty results – to policymakers and practitioners. *
- Develop methodologies, guidelines and formulas to operationalise a multi-risk framework for good governance decisions *
- Consistent method of assessment of risk and mitigation/adaptation
- Inter-generational collaboration and dialogue for sustainable risk management
- Enablers and inhibitors of climate risk management
- Metric to assess impact and outcomes
- Role of social protection in risk management and resilience building
- Metrics in support of action and choice (metrics as defining entry points for action), informing investment (information > institutions > investments) choice > priorities? > tradeoffs
- Relation between risk thresholds in natural and human systems.
- Forecasts to translation to communication to decision making (multi-stakeholder)
- Effective and efficient use of early warning systems
- Risk and perils the cost benefit analysis and risk as an opportunity

- Using system analysis on the “impact” of climate change and variability on provision of services after extreme events
- How do/can local resilience frameworks contribute to managing risk
- Improve hotspots-based approaches to assessing risk within and between sectors (territorial approach)
- Assessing the role of social safety nets of local communities in enhancing resilience
- Explore risk screening, attribution and links with drought, groundwater depletion and heatwaves
- Better characterisation of uncertainty
- How can we develop for a new climate – positives and benefits
- How local structures of resilience can deal with uncertainty and how adaptation programming can build from that
- Better document evidence and experience around regional (ie: West Africa, East Africa) approaches to adaptation
- Explore the ‘risk nexus’ and relationships between climate and other risks e.g. conflict, idiosyncratic shocks, price fluctuations, geopolitical risk and between sectors
- Improve evidence around how ecosystem services contribute to human resilience
- Methodologies, guidelines and formulas to operationalise the risk framework of the IPCC
- How to bring together knowledge from different disciplines e.g. on risk assessment, decision making under uncertainty into thinking on climate
- How to incorporate livelihoods, and uncertainty into the hazard, exposure and vulnerability framing
- Risk in rapidly urbanizing contexts especially informal settlements, focused on solutions across timescales

Extreme event attribution

- Better understanding of attribution in **real-time** and for extreme weather events
- Attribution of specific disasters/ extremes including vulnerability and exposure (and trends)
- Expand both modelling and human capacity to do attribution
- Do attribution studies in real-time to enhance uptake and policy action
- Encourage rapid attribution studies
- How has climate already changed and its implications



Social and transdisciplinary

- Ability/disability, socio-economic impacts of climate shocks and stresses
- Effective and accurate communication of messages related to climate risk
- Transdisciplinary research approaches – and participate in this way in the IPCC process
- Health and climate including malnutrition
- Indigenous knowledge system, changes in reliability of ancestral methods for example in ag. sector
- Social vulnerability: ecosystem (mountain/dryland/basins), social vulnerability (conflicts, migration, displacement, equity, justice)
- Social informatics: Analysis of social media (twitter, whatsapp, instagram...) in climate risk mgmt
- Integrated research on how changing socio-demographic and environmental conditions decrease vulnerability and exposure to climate and weather shocks
- Approaches to link natural science and socioeconomic data
- Gender, race and class - socioeconomic vulnerability
- Risk perception and behavioural thresholds/triggers
- How does media succeed in influencing, getting people engaged in climate change + risk + other information providers
- Greater use of behavioral sciences – capture existing insights and approaches relevant to adaptation and mitigation and use to guide future research (risk perceptions, motivation, capacities)
- How IPCC info can shape/drive action/decisions choice on risk/resilience
- Impact should be about “effect” and consequences of an event, or an defined “performance metric” which varies per stakeholder and society
- Understanding how local communities use climate information to support decision making
- Monitor the response and check for gaps in usage and understanding of weather and climate information by various stakeholders/user groups to inform development of appropriate early warning advisories
- Who are the most vulnerable to climate change?
- What motivates / inspires decisionmakers to act? Including analysis of how science can shape choices
- Understanding factors that will cause transformational change and require a transformational response
- Communication and psychology / sociology / anthropology : What motivates people based on climate risk interpretation. What are the right channels / interlocutors and what is the right terminology



Economics and finance

- To what extent should finance be decentralised to balance participation with accountability in managing risk.
- Include finance as a cross-cutting element as part of the problem or solution as it creates additional incentives (more powerful than governmental interventions) and access to finance is key to implementation
- Economic/environmental costing to be included to better guide policy making
- Exploring ways of promoting an economic focus for adaptation rather than dealing with negative climate change impacts
- Global framework and mapping for the social limits of adaptation and the motivation for transformational change
- Need for research into social thresholds at different scales and in different contexts *
- How climate risk financing impacts DRR in the most vulnerable community

Tipping points (environmental and social)

- Study impacts of 1.5 and 2 degrees on food security, cropping patterns, nutrition needs, and dietary needs
- Climate and human security
- Explore social constraints to resilience (in urban and agricultural systems) and pathways to maladaptation
- Give a framework of loss and damage, residual adaptation, policies and finance, that gives the scientific basis to operationalise article 8 of paris agreement *
- Explore in more detail the extent to which unfairness and inequalities in governance, power and gender dynamics exacerbate the impacts of climate hazards and risks ... and how fairer systems would deliver benefits...
- What adaptation decision-making thresholds exist and how do we then start there and assess what climate information is needed
- Research needs to prioritise how human choices can lead to tradeoffs, tipping points and other forms of system-wide change (at different spatial and timescales)



Governance

- Governance of adaptation, and geoengineering
- Anticipatory and transformative learning approaches in adaptation and planning
- Understanding the functioning of governance networks and exploring how best to reconfigure them for implementation of climate-smart technologies.
- Understanding climate change mitigation and adaptation options with identified indicators to be used for control in terms of monitoring and evaluation and good governance *
- Enabling environment for governance
- Role of governance mechanisms in a new world of security - entry points to collaboration & institutionality in a world of extremes
- Different types of processes used to foster adaptation (national level, subnational level, local level)
- Decisionmaking and implementation processes leading to real interventions on risk according to a typology of risk
- Thresholds for governance responses to incremental risks depending on sectors
- Need research on climate change related decision-making a good governance *
- How does solution-making work?
- Nexus of climate and development, governance lens on conflict and service provision in cities - roles and opportunity of climate risk?



Other

- Investigate local-scale dynamics of climate change especially in non-Annex 1 cities and agricultural areas where micro-climates are particularly marked.
- Impacts of changes in temperature with the distribution of large herbivore in East Africa – winner and losers
- Projected increase in temperature and rainfall and its impacts on highland malaria in the Lake Victoria Basin
- Synthesis of assessment of experiences to date using early warning systems – and predictability/confidence in science/limits
- Opportunities and Solutions: best practices, lessons learned, technology and innovation, synergies and co-benefits, local knowledge, indigenous and scientific solutions)
- Local influence, knowledge and ways of learning
- Create opportunities for countries anticipatory and transformative learning
- Participatory learning -scenario analysis: community-level (social learning), formal curriculum revision, non-formal learning context
- Smallholder agriculture and its sustainability in the context of climate and other changes
- Co-benefits - how to better define and monitor them
- Decisions that do not need climate change info - service framework
- Crime and climate change (relationship?)
- Need to produce review papers to bring information from the grey literature into peer-reviewed literature
- Standardize research on urban Heat Island Effect and their interactions with global and regional climate change dynamics
- Compare dynamics between cities within and without a same region
- Hierarchy of impacts on human systems
- Health risks across timescales (e.g. heatwaves)
- Mitigation of waste materials