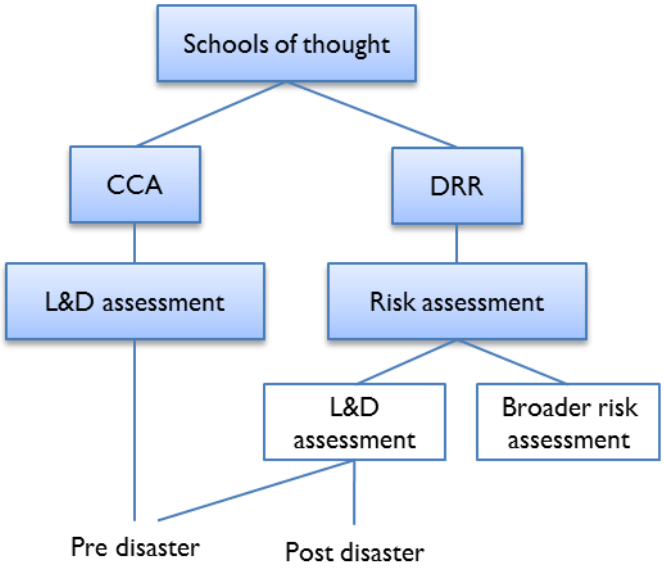
SYNOPSES SERIES:

CURRENT KNOWLEDGE ON RELEVANT METHODOLOGIES AND DATA REQUIREMENTS AS WELL AS LESSONS LEARNED AND GAPS IDENTIFIED AT DIFFERENT LEVELS, IN ASSESSING THE RISK OF LOSS AND DAMAGE ASSOCIATED WITH THE ADVERSE EFFECTS OF CLIMATE CHANGE

OVERVIEW

The technical paper draws on two major schools of thought in identifying methodologies for risk assessment:

* Climate change adaptation (CCA);
* Disaster risk reduction (DRR).



The technical paper was mandated by COP 17 (2011) under Thematic area 1 of the work programme on loss and damage (L&D).

The technical paper:

* Introduces a conceptual understanding of L&D;
* Provides an overview of existing methodologies and tools for assessing the risk of L&D;
* Assesses selected methods and tools in terms of their data and information requirements, strengths, weaknesses, lessons learned and relevance for social and environmental impacts;
* Discusses capacity needs for applying risk assessment methods in developing countries;
* Considers risk assessment application to decision-making.

Thematic Area 1 of the work programme on loss and damage: Assessing the risk of loss and damage associated with the adverse effects of climate change and current knowledge on the same, taking into account the following questions:

* What are the data and information requirements for assessing impacts and climate risks?
* What methods and tools are available for risk assessment?
* What are the capacity needs for applying risk assessment?
* How can the results of risk assessment be optimally formulated?

Contents of the technical paper:

* Overview of 18 methodologies and tools for assessing loss, damage and risks;
* In-depth review of several approaches and tools and their relevance in the context of loss and damage;
* Overview diagrams of frameworks for assessing risk and vulnerability.

This synthesis summarises the document as contained in FCCC/TP/2012/1. Access full document at www.unfccc.int/7585

KEY FINDINGS

The technical paper analyses, in depth, several selected approaches representing of wider group of models and concepts used to assess the risk of loss and damage:

Catastrophe risk models	
School of thought	DRR
Agency	Different models from different institutes
Scope	Catastrophe risk models are specialized computer models that use probabilistic scenario analysis to provide estimates of the probability of different scales of losses occurring in well-defined insurance systems. It is important to emphasize that catastrophe models are not pricing models, and their results do not lead directly to insurance and reinsurance prices. Catastrophe risk models allow insurers, reinsurers and governments to assess the risk of loss from catastrophic events, such as hurricanes. These models rely on computer technology and the latest earth and meteorological science information to generate simulated events.
Hazard type	Hurricanes, floods, earthquakes
Spatial scale	National, subnational
User requirements	High level of expertise/ training required

Comprehensive Approach for Probabilistic Risk Assessment (CAPRA)	
School of thought	DRR
Agency	Consortium in Latin America
Scope	The model is based on a GIS platform for risk assessment linked to selected hazards. The approach is to use probabilistic methods to analyse different natural hazards, including hurricanes and floods. For the risk assessment, hazard information is combined with exposure and vulnerability data. The GIS information system allows focusing on a single hazard risk and multihazard risks. The platform is conceptually oriented to facilitate decision-making; by using CAPRA it is possible to design risk transfer instruments, the evaluation of probabilistic cost–benefit ratio, providing an innovative tool for decision makers to analyse the net benefits of the risk mitigation strategies such as building retrofitting.
Hazard type	Earthquakes, tsunamis, hurricanes, floods, landslides
Spatial scale	Regional, national, subnational
User requirements	High level of expertise/ training required

Integrated impact assessment models	
School of thought	CCA
Agency	Different models from different institutes
Scope	Integrated impact assessment models of climate change model the dynamics of carbon accumulation in the atmosphere and their influence on the economy. They model the relationship between emissions, effects on the climate and the physical, environmental, economic and social impacts caused by climate change.
Hazard type	No specific hazard, uses the impact of CO2 increase in the atmosphere
Spatial scale	Global, regional
User requirements	High level of expertise/ training required

UK Climate Change Risk Assessment (CCRA)	
School of thought	DRR and CCA
Agency	Department for Environment, Food and Rural Affairs (Defra)
Scope	The CCRA has reviewed the evidence for over 700 potential impacts of climate change in a United Kingdom context. Detailed analysis was undertaken for over 100 of these impacts across 11 key sectors, on the basis of their likelihood, the scale of their potential consequences and the urgency with which action may be needed to address them.
Hazard type	Hazards related to climate change
Spatial scale	National; subnational
User requirements	High level of expertise/ training required

WorldRiskIndex	
School of thought	DRR
Agency	UNU-EHS
Scope	The WorldRiskIndex is a global index (with national scale resolution) covering just some aspects of the complex reality, but it gives an indication of the factors that require special attention in the context of risk reduction. The WorldRiskIndex is not a model quantifying loss and damage per se, but it is an indicator-based approach for DRR presenting a global view on risk, exposure and vulnerability. The index is based on 28 indicators. The selected indicators represent four components of risk, namely, exposure and vulnerability, whereas vulnerability is composed of susceptibility, coping capacities and adaptive capacities.
Hazard type	Earthquakes, storms, floods, sea level rise, droughts
Spatial scale	National; subnational
User requirements	Medium level of expertise

KEY MESSAGES

* All the tools and methods come with clear limitations that need to be recognized and understood – particularly in the context of uncertainty (climatic and non-climatic) and the scope and extent of capturing direct and indirect losses. Transparency in terms of the limitations and uncertainties of the models is important, as is clear communication with the end user community;
* Most of the approaches focus on a relatively narrow definition and quantification of loss and damage, which may lead to some underestimation of the full impacts;
* The majority of the models and approaches are quite complex and require technical skills and in-depth knowledge that have to be developed, especially in developing countries. Capacities need to be developed within the country, such as at national universities, to ensure that knowledge and expertise will also increase in these countries that are at high risk of loss and damage in the face of climate change;
* The application of tools depends heavily on data availability. The underlying hazard, vulnerability and exposure data, including climate change information determine the scale and scope of any assessment of loss and damage.