Allow me to recall a few key conclusions of the AR4

Climate change is unequivocal – there is a consistent pattern of warming

Most of the observed increase in globally averaged temperatures since the mid-20th century is ***very likely*** **due to the observed increase in anthropogenic greenhouse gas concentrations**.

Discernible human influences extend beyond average temperature to other aspects of climate including ocean warming, continental-average temperatures, temperature extremes and wind patterns.

Many natural systems are being affected and some observed key impacts have been at least partly attributed to anthropogenic climate change. Among these are increases in human mortality, loss of glaciers, and increases in the frequency and/or intensity of extreme events.

Continued GHG emissions would induce larger changes than observed in 20th century
IPCC analyzed a range of scenarios of future emissions and projected changes in climate and impacts on main sectors such as water, ecosystems, food, health, human settlements and coasts

Global mean temperature changes of up to 2℃ above 1990-2000 levels would exacerbate current key impacts, and trigger others, such as reduced food security in many low-latitude nations (medium confidence).

Crop response to temp increase depends on latitude

High latitude:

- production increases with 1-3℃ rise in local me an temperature
- decreases above 1-3℃ rise.

Low latitude:

- Production decreases with 1-2℃ rise in local mea n temperatures
- Increased drought/flood frequency affect especially subsistence sectors at low latitudes

Global mean temperature changes of 2 to 4℃ above 1 990-2000 levels would result in an **increasing number of key impacts** at all scales and global mean temperature changes greater than 4℃ above 1990-2000 levels would lead to **major increases in vulnerability** (very high confidence), **exceeding the adaptive capacity of many systems** (very high confidence).

Regions that are already at high risk from observed climate variability and climate change are more likely to be adversely affected in the near future by projected changes in climate

A risk-management framework with a portfolio of **adaptation and mitigation** measures emerges as a useful framework to address key vulnerabilities.

Actions to mitigate climate change and reduce greenhouse gas emissions will reduce the risk associated with most key vulnerabilities. Postponement of such actions, in contrast, generally increases risks.

Extreme events are an important factor in the context of climate change as they can result in impacts on human health, food and water security and human settlements. Therefore the IPCC has prepared a SR on **Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation.** It was finalized in November last year.

The report addresses, for the first time, how integrating expertise in climate science, disaster risk management, and adaptation can inform discussions on how to reduce and manage the risks of extreme events and disasters in a changing climate.

A changing climate leads to changes in the frequency, intensity, spatial extent, duration, and timing of extreme weather and climate events, and can result in unprecedented extreme weather and climate events. But many extreme weather and climate events continue to be the result of natural climate variability.

Observations and projections Climate Extremes

There is evidence from observations gathered since 1950 of change in some extremes and there is evidence that some extremes have changed as a result of anthropogenic influences, such as warming of extreme daily minimum and maximum temperatures, or intensification of extreme precipitation at the global scale.

Extreme events are rare, which means there are few data available to make assessments regarding changes in their frequency or intensity. The more rare the event the more difficult it is to identify long-term changes. Therefore data collection and sharing is important to understand trend and dynamics associated with extreme climate events.

With regard to **future climate extremes** the report concludes inter alia that:

- It is *likely* that the frequency of heavy precipitation will increase in the 21st century over many areas of the globe.
- Average tropical cyclone maximum wind speed is *likely* to increase, although not in all ocean basins. However, it is also *likely* that the global frequency of tropical cyclones will either decrease or remain essentially unchanged.
- There is *medium confidence* that droughts will intensify in the 21st century in some seasons and areas.
- It is *very likely* that mean sea level rise will contribute to upward trends in extreme coastal high water levels.
- There is *high confidence* that changes in heat waves, glacial retreat and permafrost degradation will affect high mountain phenomena such as slope instabilities and glacial lake outburst floods.

Vulnerability, exposure, impacts and losses

The impacts of climate extremes result from the climate extremes themselves and from the exposure and vulnerability of human and natural systems. For exposed and vulnerable communities, even non-extreme weather and climate events can have extreme impacts.

Changes in exposure and vulnerability are influenced by both climatic and non-climatic factors such as levels of wealth and education, disability, and health status, as well as gender, age, class, and other social and cultural characteristics as. Settlement patterns, urbanization, and changes in socioeconomic conditions play an important role.

Economic losses from weather- and climate-related disasters have increased, but with large spatial and inter-annual variability. Loss estimates are lower-bound estimates because many impacts, such as loss of human lives, cultural heritage, and ecosystem services, are difficult to value and monetize, and thus they are poorly reflected in estimates of losses. Impacts on the

informal or undocumented economy as well as indirect economic effects can be very important in some areas and sectors, but are generally not counted in reported estimates of losses.

Economic, including insured, disaster losses associated with weather, climate, and geophysical events are higher in developed countries. Fatality rates and economic losses expressed as a proportion of gross domestic product (GDP) are higher in developing countries.

Long-term trends in economic disaster losses adjusted for wealth and population increases have not been attributed to climate change, but **a role for climate change has not been excluded (*high agreement, medium evidence*).**

Managing Changing Risks of Climate Extremes and Disasters

Development practice, policy, and outcomes are critical to shaping disaster risk. Closer integration of disaster risk management and climate change adaptation, along with the incorporation of both into local, sub-national, national, and international development policies and practices, could provide benefits at all scales.

Effective risk management and adaptation are tailored to **local and regional needs** and circumstances. Integration of **local knowledge** with additional scientific and technical knowledge can improve disaster risk reduction and climate change adaptation

Attention to the temporal and spatial dynamics of exposure and vulnerability is particularly important given that the design and implementation of adaptation and disaster risk management strategies and policies can reduce risk in the short term, but may increase exposure and vulnerability over the longer term.

Low-regrets measures such as early warning systems; sustainable land and ecosystem management; improvements in health surveillance, water supply and drainage systems; building codes; education and awareness are available starting points for addressing projected trends in exposure, vulnerability, and climate extremes. They have the potential to offer benefits now and lay the foundation for addressing projected changes

Post-disaster recovery and reconstruction provide an opportunity for reducing weather- and climate-related disaster risk and for improving adaptive capacity

International cooperation

Closer integration at the international level of disaster risk reduction and climate change adaptation, and the **mainstreaming** of both into international development and development assistance could foster efficiency in the use of available and committed resources and capacity.

Opportunities exist to create **synergies** in international finance for disaster risk management and adaptation to climate change.

Technology transfer and cooperation are important for both disaster risk reduction and climate change adaptation but their implementation has been fragmentary and uncoordinated

Stronger products and methods for risk sharing and risk transfer are being developed as a relatively new and expanding area of international cooperation to help achieve climate change adaptation and disaster risk reduction (*high confidence*). Established mechanisms include remittances, post-disaster credit and insurance and reinsurance.

Stronger efforts at the international level do not necessarily lead to substantive and rapid results at the local level (*high confidence*). There is room for improved integration across scales from international to local.

Finally allow me to draw your attention to the ongoing preparations for the IPCC 5th Assessment Report (AR5) which for the first time addresses specifically issues related to human rights. The Working Group 2 contribution on “Impacts, adaptation and vulnerability” contains a section on Human Health, Well-Being, and Security addressing inter alia aspects of health and climate sensitivity, security, employment, culture, indigenous peoples, migration and population displacement, livelihoods and poverty as well as inequalities, gender, and vulnerable and marginalized populations.

The Working Group 3 contribution on “Mitigation” will address in the framing section Social, Economic and Ethical Concepts and Methods including economics, rights and duties, justice, equity and responsibility.

The AR5 will be finalized in 2013/14. The expert review for the Working Group 2 and 3 contributions will start in June 2012 and experts are invited to submit their comments.