

**Statement by R K Pachauri, Chairman of the  
Intergovernmental Panel on Climate Change,  
Wednesday 30<sup>th</sup> November 2011  
Durban, South Africa**

Madame Chairperson, Distinguished Delegates, Members of Civil Society, Members of the Media,  
Ladies and Gentlemen,  
Thank you for this opportunity!

When I had the privilege of addressing this august gathering at the opening session of COP 16, as indeed I did at the opening sessions of previous COPs, I highlighted some of the projected and possible impacts of climate change. Based on the findings of the IPCC's Fourth Assessment Report (AR4), I had mentioned, for instance, that "approximately 20 to 30 percent of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperatures exceed 1.5 to 2.5 degrees Celsius", and also that "anthropogenic warming could lead to some impacts that are abrupt or irreversible depending upon the rate and magnitude of the climate change. Partial loss of ice sheets on polar land could imply meters of sea level rise, major changes in coast lines and inundation of low-lying areas, with greatest effects in river deltas and low-lying islands".

A few days ago the IPCC completed and released its Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX), in which we came up with several important findings. For instance, exposure and vulnerability are dynamic, varying across temporal and spatial scales. Rapid urbanization and growth of megacities, especially in developing countries have led to the emergence of highly vulnerable urban communities. Vulnerable populations also include refugees, internally displaced people, and those living in marginal areas.

This Special Report found that some regions of the world have experienced more intense and longer droughts, in particular in southern Europe and West Africa, but in some regions droughts have become less frequent, less intense, or shorter, e.g. in central North America and northwestern Australia. Further, it is likely that there has been an increase in extreme coastal high water related to increases in mean sea level. It is also likely that anthropogenic influences have led to warming of extreme daily minimum and maximum temperatures on the global scale. We also concluded that anthropogenic influences have contributed to intensification of extreme precipitation on the global scale.

Global weather- and climate-related disaster losses reported over the last few decades reflect mainly monetized direct damages to assets, and are unequally distributed. Estimates of annual losses have ranged since 1980 from a few billion to above 200 billion USD (in 2010 dollars) with the highest value for 2005 (the year of Hurricane Katrina). 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. 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 GDP are higher in developing countries. During the period from 1970 to 2008, over 95% of deaths from natural disasters occurred in developing countries. Middle income countries with rapidly expanding asset bases have borne the largest burden. In small exposed countries, particularly Small Island Developing States, losses expressed as a percentage of GDP have been particularly high, exceeding 1% in many cases and 8% in the most extreme cases, averaged over both disaster and non-disaster years for the period from 1970 to 2010.

Models project substantial warming in temperature extremes by the end of the 21st century. It is virtually certain that increases in the frequency and magnitude of warm daily temperature extremes and decreases in cold extremes will occur in the 21st century on the global scale. It is very likely that the length, frequency and/or intensity of warm spells, or heat waves, will increase over most land areas. Based on specific emissions scenarios, a 1-in-20 year hottest day is likely to become a 1-in-2 year event by the end of the 21st century in most regions, except in the high latitudes of the Northern Hemisphere, where it is likely to become a 1-in-5 year event. The 1-in-20 year extreme daily maximum temperature (i.e., a value that was exceeded on average only once during the period

1981–2000) will likely increase by about 1 °C to 3 °C by mid-21st century and by about 2 °C to 5 °C by late-21st century, depending on the region and emissions scenario.

It is also likely that the frequency of heavy precipitation or the proportion of total rainfall from heavy falls will increase in the 21<sup>st</sup> century over many areas of the globe. Heavy rainfalls associated with tropical cyclones are likely to increase with continued warming. At the same time droughts will intensify in the 21<sup>st</sup> century in some seasons and areas due to reduced precipitation and/or increased evapotranspiration. The very likely contribution of mean sea level rise to increased extreme coastal high water levels, coupled with the likely increase in tropical cyclone maximum wind speed is a specific issue for tropical small island states. In the case of mountain areas there is high confidence that changes in heat waves, glacial retreat and/or permafrost degradation will affect high mountain phenomena such as slope instabilities, movements of mass and glacial lake outburst floods.

In the AR4 we had confirmed that Africa is one of the most vulnerable continents because of the range of projected impacts, multiple stresses and low adaptive capacity. Our assessment indicated that in Africa, by 2020, between 75 and 250 million of people are projected to be exposed to increased water stress due to climate change. By 2020, in some countries, yields from rain-fed agriculture could be reduced by up to 50%. Agricultural production, including access to food, in many African countries is projected to be severely compromised. This would further adversely affect food security and exacerbate malnutrition. Towards the end of the 21<sup>st</sup> century, projected sea level rise will affect low-lying coastal areas with large populations. The cost of adaptation could amount to at least 5 to 10% of Gross Domestic Product (GDP).

President Jacob Zuma in his address in the opening session of this conference referred to the legendary Mahatma Gandhi. It was Gandhi ji who said: “A technological society has two choices. First it can wait until catastrophic failures expose systemic deficiencies, distortion and self-deceptions...Secondly, a culture can provide social checks and balances to correct for systemic distortion prior to catastrophic failures”.

Let me remind this Conference that “the ultimate objective of the UNFCCC as stated in Article 2 is to prevent dangerous anthropogenic interference with the climate system”. Science can support informed decisions on this issue. It could provide criteria for judging which vulnerabilities might be labeled key. In the AR4 we had stated that more specific information is now available across the regions of the world concerning the nature of future impacts, including for some places not covered in previous assessments. In the AR5 we are placing greater emphasis on providing comprehensive and consistent scientific information that is relevant to and informs the consideration of Article 2 of the UNFCCC, including key vulnerabilities and development.

Many impacts can be avoided, reduced or delayed by mitigation. And the options before us for mitigation carry major co-benefits. For instance, in all analyzed world regions, near-term health co-benefits from reduced air pollution, as a result of actions to reduce GHG emissions, can be substantial and may offset a substantial fraction of mitigation costs. Other co-benefits cover increased energy security; increased agricultural production; reduced pressure on natural ecosystems, due to decreased tropospheric ozone concentrations; integrating air pollution abatement and climate change mitigation policies offer potentially large cost reductions compared to treating those policies in isolation; realizing emissions reductions in the transport sector is often a co-benefit of addressing traffic congestion, air quality and energy security.

The AR4 had estimated that mitigation opportunities with net negative costs have the potential to reduce emissions by about 6 GtCO<sub>2</sub>-eq/yr in 2030. Realizing these requires dealing with implementation barriers. The economic mitigation potential, which is generally greater than the market mitigation potential, can only be achieved when adequate policies are in place and barriers removed. We have also estimated that in order to stabilize GHG concentration levels at say 445-535 ppm CO<sub>2</sub>-eq levels the reduction of average annual GDP growth rates up to 2030 would be less than 0.12% of average annual GDP globally. This implies a range of global GDP reduction less than 3% in 2030 and less than 5.5% in 2050.

This year the IPCC completed its Special Report on Renewable Energy Sources and Climate Change Mitigation (SRREN). This Report examines 164 different scenarios of renewable energy development in the future and found that more than half of the scenarios show a contribution from renewable energy (RE) in excess of a 17% share of primary energy supply in 2030 rising to more than 27% in 2050. The scenarios with the highest RE shares reach approximately 43% in 2030 and 77% in 2050. However a favorable or enabling environment for RE can be created by addressing the possible interactions of a given policy with other RE policies as well as with energy and non-energy policies (e.g. those targeting agriculture, transportation, water management and urban planning). The literature indicates that long-term objectives for RE and flexibility to learn from experience would be critical to achieve cost-effective and high penetrations of RE. It also needs to be emphasized that the cost of most RE technologies has declined and additional expected technical advances would result in further cost reductions. An effective carbon-price signal could realize significant mitigation potential in all sectors.

Madame Chairperson, may I state most humbly that the discussions in this Conference must be guided by the scientific knowledge the IPCC has generated on the human and economic costs of inaction and the direct as well as indirect benefits of early action.

When I had the privilege of accepting the Nobel Peace Prize on behalf of the IPCC I asked the rhetorical question, "Will those responsible for decisions in the field of climate change at the global level listen to the voice of science and knowledge, which is now loud and clear?"

In conclusion, we need to keep in mind two profound statements from one of the tallest leaders of our time. These are: "Education is the most powerful weapon which you can use to change the world", and "We know what needs to be done – all that is missing is the will to do it". The great leader who made these statements is Mr. Nelson Mandela!

Thank you.