Two degrees climate change target 'utterly inadequate', commentary says

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The official global target of a 2°C temperature rise is 'utterly inadequate' for protecting those at most risk from climate change, says a lead author on the Intergovernmental Panel on Climate Change (IPCC), writing a commentary in the open access journal *Climate Change Responses*.

The commentary presents a rare inside-view of a two-day discussion at the Lima Conference of the Parties (COP) on the likely consequences of accepting an average global warming target of 2°C versus 1.5°C (measured from pre-industrial times until 2100).

The discussions were part of the United Nations Framework Convention on Climate Change (UNFCCC) 'structured expert dialogue' in December 2014. They reveal unevenly distributed risks and political power differentials between high-income countries insisting on a 2°C target and low- and many middle-income countries pushing for 1.5°C or lower.

The 2°C target has been said to carry an increased risk of sea level rise, shifting rainfall patters and extreme weather events such as floods, droughts, and heat waves, particularly targeting the Polar Regions, high mountain areas, and the Tropics.

The author Petra Tschakert from The Pennsylvania State University and a coordinating lead author of the IPCC's Fifth Assessment Report says: "The consensus that transpired during this session was that a 2°C danger level seemed utterly inadequate given the already observed impacts on ecosystems, food, livelihoods, and sustainable development.

"A low temperature target is the best bet to prevent severe, pervasive, and potentially irreversible impacts while allowing ecosystems to adapt naturally, ensuring food production and security, and enabling economic development to proceed in a sustainable manner."

In her commentary, Tschakert explains that the target of keeping the global average temperature rise to below 2°C originates from early studies in the 1970s. This target became anchored in policy debates over the decades, and was officially sanctioned as the long-term global goal for greenhouse gas emission reductions at the COP15 in Copenhagen in 2009.

Despite support from high and upper middle-income countries with high emissions, the 2°C target has been subject to repeated criticism from climate scientists, economists, and political and social scientists.

Alliances representing over 70% of the parties around the table, including over 100 low- and middle-income countries and small island states, have repeatedly said that a 2°C rise is unsafe for their communities, and insist on a long-term goal to keep global average temperatures below 1.5°C. These states include the Pacific nation of Tuvalu that was recently hit by Cyclone Pam.

While the 2°C target is now being re-evaluated, no reference to an explicit 1.5°C target is included in the 2014 Lima Call for Climate Action, despite specific remarks on the lower temperature limit being made throughout the negotiations.

Having taken part in the latest structured expert dialogue in Lima, Peru, with country delegates to the COP, fellow IPCC authors and representatives from UN agencies and intergovernmental organizations, Tschakert now shares new insights into the ongoing debate on the adequacy of the long-term goal.

A representative of the World Health Organization at the session stressed that there was no 'safe limit' for health, as current impacts and risks from climate change were already unacceptable, impacting people's health significantly and inequitably. This includes a rise in undernutrition, food- and water-borne infections, and excess deaths during heat waves, of which 10,000 have already been attributed to the 2010 Russian heat wave.

In addition to heat waves, science participants in the dialogue said that extreme events such as floods and hurricanes were expected to cause high risk in a 2°C warmer world. These events would put at significant danger disadvantaged populations in megacities like Lagos, Mexico City or Shanghai, people whose livelihoods are dependent on natural resources, and those at risk from conflicts over scarce resources.

Tschakert says: "Using a figure for average global warming may indeed be the most convenient and compelling means to discuss the severity of climate change impacts, but not only does it inadequately capture the complexity of the climate system, it poorly reflects locally experienced temperature increases and the extreme and large variation across regions - no single person or any species faces a global average."

Singapore highlighted that certain risks were already catastrophic for people and ecosystems in their region while only moderate in the aggregate. Along the same lines, Ethiopia re-emphasized the uneven distribution of risks for the African continent. Trinidad and St. Lucia stressed regional differences in risk from ice sheet loss and coral bleaching. Botswana raised the subject of costs for mitigation, adaptation, 'loss and damage' and technology transfer associated with both temperature targets.

In terms of ecosystems, it was said that limiting warming at 1.5°C could keep sea level rise below 1m, saving half of the world's corals, and leave

some of the Arctic summer ice intact.

Tschakert says: "These implications emphasize what is truly at stake - not a scientific bickering of what the most appropriate temperature target ought to be, but a commitment to protect the most vulnerable and at risk populations and ecosystems, as well as the willingness to pay for abatement and compensation. This should happen now, and not only when climate change hits the rich world."

The findings are timely as the long-term goal to stay below 2°C warming is currently undergoing a 2013-15 Review, the results of which are expected this June and could be adopted in Paris at COP21 in December 2015.

Tschakert concludes in her commentary: "The crux of the matter is no longer about the scientific validity of one temperature target over another... It is first and foremost about overcoming deeply entrenched divisions on value judgments, responsibility, and finance... It is about acknowledging that negative impacts of climate change under a 0.8°C temperature increase are already widespread, across the globe, and that danger, risk, and harm would be utterly unacceptable in a 2°C warmer world, largely for 'them' - the mollusks, and coral reefs, and the poor and marginalized populations... even if this danger hasn't quite hit home yet for 'us'."

More information: 1.5C or 2C: A conduit's view from the science-policy interface at COP20 in Lima, Peru, Petra Tschakert, Climate Change Responses 2015, DOI: 10.1186/s40665-015-0010-z

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