Submission by Nepal on behalf of the Least Developed Countries Group on costs, benefits and opportunities for adaptation

The views express in this submission complement the previous submissions of Least Developed Countries Group (LDC Group) on adaptation under different drivers of climate change, including the relationship between adaptation and mitigation. The present submission provides inputs to the technical paper on costs, benefits and opportunities for adaptation being prepared by the UNFCCC Secretariat.

The LDC Group understands that the technical paper on costs, benefits and opportunities for adaptation is placed in the context of the ADP Workstream 1 on the 2015 legally binding agreement with the view to better understand adaptation-related issues. The Group sees the paper as a potential contribution to improve the framing of the adaptation discussion under the 2015 Agreement.

1. Assessing the needs for adaptation

Based on the existing scientific literature on impacts (Schellnhuber *et al.*, 2013) and various methods for estimating the costs of adaptation (e.g. World Bank, 2010a; de Bruin, Dellink & Agrawala, 2009; Hof, de Bruin, Dellink, den Elzen & van Vuuren, 2009; World Bank, 2010b, 2010c, 2010d, 2010e), the paper could provide, for various levels of temperature, assessments of current and likely impacts with corresponding costs, including investments and financial needs for adaptation and the overall costs of the residual damages, and other implications for example on the projected needs for loss and damage. In this regard, the LDC Group is of the view that assessing the adaptation costs and residual damages for different emissions scenarios would provide Parties to the UNFCCC with useful cost estimates. For a framing relevant to UNFCCC Parties, four different scenarios should be used:

- Scenario under business-as-usual (non-mitigation) assumptions (e.g. IPCC AR5 RCP8.5) leading to a global mean temperature increase above 4°C relative to pre-industrial level by 2100 (see IPCC, 2013).
- Scenario with implementation of current pledges and proposals on the table leading to a global mean temperature increase of about 3.5–4°C relative to pre-industrial level by 2100 (e.g. UNEP, 2012).
- Scenario consistent with a warming staying below 2°C relative to pre-industrial level (e.g. IPCC AR5 RCP2.6, IPCC, 2013).
- Scenario consistent with 1.5°C warming pathways (e.g. UNEP, 2012).

2. Scaling-up funding for adaptation in different scenarios

Based on the cost estimates under different emissions scenarios, the technical paper could also highlight how much funding is required to meet adaptation needs in the different scenarios and by how much developed country Parties should scale-up their contribution to adaptation actions in developing countries compared to current contributions.

Simultaneously, some actions on adaptation may also trigger potential private sector opportunities (such potential areas could include: micro insurance, micro finance, housing, off grid energy services, ICT, waste management, water and irrigation, costal management, etc.) and possibilities of reaching new markets with tailored products and services. The technical paper could also provide an assessment of the identified market opportunities (e.g. for the insurance industry) in developed and developing countries, related to adaptation as well as proactive and reactive adaptation measures.

3. Limits to adaptation and needs for loss and damage mechanism

From the analysis, it might appear that when global mean temperature reaches 3°C or 4°C above pre-industrial level, adaptation options may not be technically and/or financially feasible in areas exposed to sea-level rise, with dramatic reduction in water availability or with decreased food production (Schellnhuber *et al*., 2013). It is the view of the LDC Group that this analysis may reinforce the need to keep global mean temperature increase below 1.5°C in order to keep adaptation manageable for all Parties, in particular for the LDCs. Based on the existing scientific literature, including the upcoming IPCC AR5 (especially Working Group 2), the technical paper could highlight sectors and areas where adaptation to climate change is projected to become unmanageable, infeasible or uneconomical, for temperature increase levels of 1.5°C, 2°C, 3°C and 4°C.

The technical paper could also provide insights on the consequences of climate change impacts under conditions of "under-adaptation", in which adaptation measures fall short, or are not fully implemented and on the costs of the resulting future residual damages in the different emission scenarios. These values would provide relevant estimates for future loss and damage mechanism.

The LDC Group views this analysis as fundamental for the ADP, not only in 2013 but also beyond, and invites Parties to build their work on such analysis.

References

De Bruin, K., Dellink, R., & Agrawala, S. (2009). Economic Aspects of Adaptation to Climate Change. Paris, France. Retrieved from http://www.oecd-ilibrary.org/content/workingpaper/225282538105

Hof, A. F., de Bruin, K. C., Dellink, R. B., den Elzen, M. G. J., & van Vuuren, D. P. (2009). The effect of different mitigation strategies on international financing of adaptation. *Environmental Science & Policy*, *12*(7), 832–843. doi:10.1016/j.envsci.2009.08.007

IPCC (2013) *Working Group I Contribution to the IPCC Fifth Assessment Report Climate Change 2013: The Physical Science Basis - Summary for Policymakers* (pp 1-36)

Schellnhuber, H. J., Hare, W., Serdeczny, O., Schaeffer, M., Adams, S., Baarsch, F., Rocha, M. (2013). *Turn down the heat: Climate extremes, regional impacts and the case for resilience*.

UNEP (2012) *The Emissions Gap Report 2012 - A UNEP Synthesis Report* (pp 1-50)

World Bank. (2010a). *The economics of adaptation to climate change: A Synthesis Report FINAL CONSULTATION DRAFT August 2010* (pp. 1–84).

World Bank. (2010b). Economics of Adaptation to Climate Change: Country Study Ghana.

World Bank. (2010c). The Social Dimensions of Adaptation to Climate Change in Ethiopia.

World Bank. (2010d). The Social Dimensions of Adaptation to Climate Change in Bolivia.

World Bank. (2010e). Economics of Adaptation to Climate Change: Country Study Samoa.