Submission by Nepal on behalf of the Least Developed Countries Group on Agriculture

This submission is made by the Least Developed Countries Group (LDC Group) in response to the SBSTA 38 conclusions that invited Parties to submit views on the current state of scientific knowledge on how to enhance the adaptation of agriculture to climate change impacts while promoting rural development, sustainable development and productivity of agricultural systems, and food security in all countries, particularly in developing countries …. taking into account the diversity of agricultural systems and the differences in scale as well as possible adaptation co-benefits (Document FCCC/SBSTA/2013/L.20 para 2).

Recognizing that agriculture holds the key to LDC's sustainable and rural development, a top priority on the global agenda now is how to feed the projected world population of nine billion by 2050. This task is especially formidable in LDCs, where close to 75% of the small scale farmers directly or indirectly rely on rain-fed agriculture and livestock as a source of livelihood. LDCs' capacity to produce food is likely to be challenged by the combined effects of natural resource degradation, limited knowledge, information and skill, limited access to appropriate and climate change-friendly technologies and increasing adverse effects of climate change and climate variability. Thus, ensuring food security in LDCs requires urgent actions to improve the productivity and promote climate-resilience of agriculture including livestock and to enhance the food value chains to ensure adequate nutrient-rich, pollutants-free and affordable food supplies.

From the global perspective, it is noted that due to uncertainties in climate projections and other factors (including greenhouse gas emissions, high fertilizer application, socio-economic development pathways, differential adaptive capacities of LDCs to climate change, etc.) climate change impacts on agriculture are not spatially explicit and they (the impacts) depend heavily on scenario assumptions that fail to mimic the future climate conditions. Limited studies have been conducted on the effects and impacts of climate change on agriculture in LDCs with several limitations. The major constraints could be attributed to the gaps in the scientific knowledge of climate change impacts on agriculture that have hitherto not been modeled either due to data limitations or to shortcomings in conceptualizing the problem.

For example, there is limited knowledge on: (1) the direct impact of climate change on pastoralism and agricultural farming and livestock rearing systems in the LDCs; (2) the prevalence and impact of pests and diseases in changing climate; (3) the socio-economic, including the gender differentiated impact of extreme weather and climate events as current GCM scenarios do not account for such events and yet they are increasingly becoming common in LDCs; (4) the costs and benefits of adaptation response measures and coping strategies by small scale farmers; (5) type and availability of adaptation technologies; and (6) impacts of climate change on factors of agricultural production and agro-ecological environment. This is further constrained by inadequate data, technical, and institutional

capacities that hinder effective application of climate modeling to inform national development planning and decision-making at different levels.

Furthermore, with respect to dry-land ecosystems (covering over 40% of the earth's land surface), there is insufficient understanding of how pastoral food production systems use mobility not only as a way of coping with a difficult environment, but more importantly as a strategy to harness environmental instability for food production.

Effects of climate change on agriculture take place through:

1. direct effect on the crops' and livestock's physiology through changes in temperature, precipitation, humidity, etc.;
2. direct effect on the factors of production of crops and livestock (land degradation, pasture degradation, adverse effects on water resources, air composition, etc.) and changing in agro-environment; and
3. change in the environment of pests and diseases.

The effects are further aggravated by low adaptive capacity in case of LDCs in regard to:

1. limited access to technologies for adaptation;
2. limited skill, knowledge and awareness for adaptation;
3. lack of resources especially financial resource to respond to the adverse effects of climate change; and
4. inability of climate models to produce downscaled scenarios for adaptation at local levels.

In light of the foregoing facts, the LDC Group has identified three priority areas that the international community through SBSTA could support LDCs so that it could have the most current state of knowledge that would enhance LDCs' adaptive capacities to address climate change impacts and build climate-resilient agriculture sector. These are:

1. *Capacity building on the development and application of tools and methods for addressing adverse effects of climate change, climate monitoring, modeling, uncertainty analysis, downscaling, early warning and updatability for climate change:* The LDCs are vulnerable to several climate change-related challenges and impacts that are tied closely to the LDCs' geographical diversity, economy, and population patterns. Since there is paucity of necessary historical climate and agricultural data in LDCs, there is need to study, in detail, the indicators of exposure, sensitivity, and adaptive capacities. In addition, it is imperative for the international community to put in place a programme of work on agriculture, with emphasis on capacity building, development and application of various tools and methods, particularly for climate monitoring, modeling, downscaling and early warning for developing countries, especially LDCs, with a view to building the requisite technical capacityof systems and relevant stakeholders, especially subsistence farmers of which women are the majority, and strengthening institutional infrastructure.

2. *Assessment, development and identification of research, technological options, and practices for agricultural adaptation and adaptation co-benefits, including understanding positive impacts and monitoring systems for adaptation (e.g. lessons from pastoralism's*

capacity to harness climate variability to improve livestock productivity): The motivation for research and technological options is the need to develop innovations tailored to the local scale that directly and indirectly enhance adaptive capacities of LDCs' agriculture systems in a changing climate. Enhanced adaptive action and research in different agro-climatic zones, including competitive research funding and better-managed programmes, is critical for innovation to improve agricultural productivity that could alleviate global poverty and hunger.

3. *Identification of approaches to enhance integration of indigenous, traditional, and science-based knowledge and practices:* Indigenous knowledge plays a critical role in decision-making by LDC small-scale farmers in their quest to manage climate-related risks, including extreme weather events and coping with the impacts. Such coping strategies and indigenous knowledge and traditional practices vary by sub-region or country and to a great extent are localized. On the other hand, science-based knowledge systems, such as weather forecasting, though useful, need downscaling for them to be meaningfully applied at the local scale. Therefore, to be more effective in dealing with the increasing challenges of climate change impacts on the agriculture systems of LDCs, it is imperative to integrate indigenous knowledge, traditional practices, and science-based knowledge and systems.

Finally, we note that it would be helpful for SBSTA to welcome the participation of the IPCC at the workshop as it will have released the Working Group I Report, "The Physical Science Basis" of its Fifth Assessment Report (AR5).