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SENSITIVITY OF HIGH ALTITUDE PEATLANDS TO CHANGES AND THEIR SUSTAINABLE MANAGEMENT IN THE HINDU-KUSH HIMALAYAN REGION

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Peatlands in the Hindu Kush Himalayan (HKH) region are present in diverse forms including floodplain marshes, wet meadows, seasonal waterlogged areas and forest swamps. As one kind of the most important wetlands in this high altitude region, they are a kind of ecosystem interface between terrestrial and aquatic habitats encompassing water, soil and organisms that are adapted to the unique wet environment, making it one of the most productive and sensitive. The dynamics of an ecosystem interface are particularly sensitive to rapid changes in climate and anthropogenic impacts, thus they could be a good indicator to use in environmental monitoring. In the HKH region peatlands with an extent of about 20-25% of the total wetland are sources of energy, fodder and food for local communities, play an important role as aquifers and provide habitat for diverse species of flora and fauna. However, these valuable ecosystems are facing multiple stresses from a variety of drivers such as changes in land use, over-extraction of resources, pollution, and environmental change, including climate change. Large areas of peatlands have been opened up for the cultivation of crops and plantations or drained out for livestock grazing. These changes have created new economic opportunities and contributed to strengthening food security. However, the environmental impact of these changes has become a source of deep concern. Currently, the scientific, technical and political debate has been focused on the assessment of the greenhouse gas (GHG) emissions resulting from peatland utilization and their production potential. Although the significance of high altitude peatlands as the source of methane and sink for carbon in the HKH region has been identified, the relative contributions of peatlands to atmospheric methane levels are highly uncertain. At present the urgency in addressing the challenges and enhancing cooperation for better understanding and management of these unique ecosystems has been noted in many national, regional and global forums. In this report the author addresses the distribution of peatlands, carbon storage, GHG emission features and their sustainable management with case-studies in the HKH region including the Tibetan Plateau.

Keywords*: greenhouse gas emission, carbon storage, sustainable management*