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Enhancing Climate and Disaster Resilience in the Third Pole – The Need for Geo-Eco-Social Systems Integration and Transdisciplinarity

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The Third Pole region is characterized by high levels of geological, ecological and socio-cultural diversities and provides critical life-supporting resources and ecosystem services to almost 2 billion people across Western China and South and Southeast Asia. The Third Pole region is also characterized by high and increasing geo-environmental and societal uncertainties, making achieving sustainable development in the region a daunting challenge. Global climate change will very likely exacerbate the situation, which may create a vicious cycle of climate-poverty trap beyond the Third Pole region. Existing literature has focused disproportionately on geo-environmental uncertainties and knowledge gaps, and recent advances in key technologies in ICT, satellite and remote sensing have been greatly helpful in addressing these issues. Here we would like to draw attention to uncertainties associated with the solution space. Using flood and landslide disaster management in Karnali River in Western Nepal as an example, including the evolution of disaster early warning systems, we demonstrate how more knowledge on geo-hydro-environment and improved prediction of water availability and variability may not immediately turn into better adaptation actions. We also highlight similar experience from Southwest China and Northeast India on various flood, landslide and drought issues faced by economically poor communities, and suggest that the interactions between the geo-hydro-ecological systems and socio-political systems should be explicitly recognized and studied more. This would demand more scientists to step out of our comfortable zone to conduct transdisciplinary work with key stakeholders to co-generate urgently needed actionable knowledge and robust solutions to ensure a sustainable and resilient future for the Third Pole region.