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### **Sustainability of Agrarian Societies in the Lake Chad Basin**

Lake Chad, a great body of fresh water in semi-arid North Central Africa, is critically important for millions of people in this impoverished region. The lake's levels have varied dramatically over many decades. The region's farmers, fishermen, and pastoralists have adapted to these extreme changes, including devastating droughts in the 1970s and 1980s. Many governments and international authorities believe that Lake Chad is drying out due to climate change, though this is not supported by published data or studies. We propose to study how Lake Chad's agrarian societies in Nigeria have operated over the long term, the value of ecosystem services they draw, and whether their path is sustainable to 2100 under realistic population increase climate scenarios. Working with African colleagues and local stakeholders, including village chiefs and elders, we will curate a comprehensive climate and agriculture dataset, and analyse it using probability models and Bayesian statistics.