

What are likely influences of climate change on land use change, agrobiodiversity and livelihoods? A case study of Wayanad Agro ecosystem in Kerala, India

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Abstract

BioDIVA project follows a transdisciplinary research approach and has large focus to study multidimensional impacts of change, transition in land use systems, specifically agro-ecosystems. This matter is widely recognised in agrarian based economies worldwide and it is a point of attention for ensuring food security, livelihoods of farming communities, ecological services and benefits-including agrobiodiversity. There are several factors that drive change in land use and in turn are influenced with that change. Climate is one such factor. The bi-modal relationship between land use change and climate variability/change has a widespread range of influence. Our empirical evidence in the above context is drawn from agro-ecosystem of Wayanad district in Kerala, India. The key foci are: (a) Quantitative assessment of climatic variability as a prominent driver of agroecosystem dynamics. (b) Qualitative exploration of adaptation options at local level using participatory appraisal tools. In order to quantitatively assess climatic variability for Wayanad district, trend analysis with confidence intervals and significance tests was performed by employing salient climatic variables *viz.*, rainfall and temperature. The selected variables are tested for possible interlinks using Pearson coefficient and also tested against temporal course of rice production/productivity. The analysis indicate variability in rainfall as more prominent than temperature variability, whilst overall monsoon rainfall is decreased, maximum and minimum daily temperature increased during the specified temporal span. To explore local level perceptions of stakeholders on climate change, its threats and impacts, a participatory tool box is adopted from Regmi (2010). Stakeholders perceive drought as the major climatic challenge with regard to existing farming practices and how these agrarian practices will shape in the recent future. The observations helped appraise the adaptive capacity along with social vulnerability of local communities. The coupled attempt that integrates data driven outputs, local knowledge and understanding of stakeholders to arrive at an understanding to commend adaptation options is the main highlight of the study.

Keywords: climate change, adaptation, land use change, agro-biodiversity, livelihoods