



Impact of the caste system and altitude on smallholder farmers' climate change adaptation strategies in Nepal



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Introduction

- Nepal is among countries highly exposed to climate-related hazards due to its fragile topography, climate-sensitive subsistence livelihoods, and low adaptive capacity of farmers (Shrestha & Aryal, 2011); (Piya, et al., 2013); (Government of Nepal, 2021).
- The consequences of climate change, such as reduced yield, are a more pressing issue in higher altitudes than in lower altitudes (Nepal Academy of Science and Technology, 2018); (The World Bank, 2021) (FAO, 2015); (Ginbo, 2022).
- The communities in Nepal are divided into different caste systems, whereas climate change knowledge and institutional support for meagre caste in achieving climate resilience are limited (Ravera, et al., 2016).

Objectives

- To pinpoint CCA strategies and factors that impact the choices of these strategies,
- To identify the impact of altitude on choices of CCA strategies,
- To identify the impact of the caste system on choices of CCA strategies among Nepalese smallholder farmers.

Methodology

- Sampling procedure: Multistage; Purposive sampling to select 3 Agro-ecological regions (Mountain region: Mustang district, Hilly region: Baglung district & Plain region: Chitwan District), Simple random sampling to select 9 villages (3 villages from each district), Random sampling of 400 smallholder farmers
- Analytical tool: Multivariate Probit Model (MVP)

Interaction with smallholder farmers



Results

Table: Multivariate Probit Model results for determinants of Farmers' adaptation to climate change

Variables	Off-farm activities	New crop varieties	Early matured varieties	Small scale Irrigation system	Agroforestry	Temporary migration
Gender	-0.026(0.155)	0.302(0.166)*	-0.187(0.157)	0.065(0.158)	-0.088(0.176)	0.089(0.152)
Age	-0.003(0.008)	-0.004(0.008)	0.008(0.008)	0.011(0.008)	0.002(0.008)	0.008(0.007)
Primary education	0.303(0.173)*	0.027(0.188)	0.122(0.18)	0.236(0.177)	0.051(0.202)	0.217(0.172)
Higher secondary education	0.646(0.209)***	-0.256(0.226)	-0.185(0.214)	0.068(0.21)	0.48(0.23)**	0.107(0.205)
Graduate education	0.753(0.438)*	0.243(0.484)	0.024(0.441)	-0.091(0.452)	1.164(0.502)**	0.516(0.453)
Household size	0.027(0.026)	-0.008(0.029)	-0.028(0.027)	-0.003(0.027)	0.028(0.031)	0.027(0.025)
Farm experience	0.006(0.008)	-0.008(0.008)	-0.004(0.008)	-0.004(0.008)	0(0.008)	-0.016(0.007)**
Land size	-0.005(0.004)	0.006(0.005)	0.002(0.005)	-0.014(0.005)***	-0.001(0.006)	0.001(0.005)
Access to informal credit	0.175(0.216)	0.062(0.226)	-0.438(0.233)*	-0.107(0.228)	-0.575(0.298)*	0.607(0.229)***
Farm income	-0.232(0.257)	0.147(0.276)	0.38(0.259)	0.102(0.264)	0.666(0.283)**	-0.428(0.256)*
Awareness of CC	0.669(0.276)**	0.916(0.307)***	0.359(0.266)	-0.084(0.266)	0.576(0.316)*	0.177(0.248)
Temperature rise	0.103(0.193)	-0.094(0.208)	-0.124(0.201)	-0.081(0.2)	-0.444(0.219)**	0.013(0.189)
Erratic rainfall	0.23(0.138)*	0.095(0.149)	0.333(0.141)**	-0.202(0.14)	-0.199(0.155)	-0.013(0.136)
Access to information via internet	-0.075(0.154)	-0.335(0.165)**	0.079(0.157)	0.717(0.159)***	-0.051(0.179)	0.236(0.154)
Access to information via farmers group	-0.354(0.145)**	0.31(0.154)**	0.283(0.147)*	0.351(0.146)**	0.373(0.161)**	0.012(0.144)
Variable of interest						
Agro-ecological zone "Mountain"	2.026(0.766)***	-0.008(0.814)	0.444(0.804)	-1.869(0.828)**	-1.898(0.864)**	3.172(0.796)***
Agro-ecological zone "Hilly"	1.455(0.572)**	1.107(0.606)*	1.421(0.6)**	-1.313(0.618)**	-2.503(0.662)***	2.31(0.592)***
Caste groups "Brahmin"	-0.257(0.276)	0.769(0.303)**	0.573(0.282)**	0.511(0.281)*	-0.136(0.33)	-0.194(0.27)
Caste groups "Kshatriya"	-5.211(129.017)	0.759(0.588)	-0.163(0.655)	-4.554(145.143)	-4.531(165.162)	-0.117(0.632)
Caste groups "Vaisya"	-0.422(0.22)*	0.248(0.231)	0.11(0.213)	0.415(0.221)*	0.221(0.231)	-0.225(0.219)

CCA strategies based on caste groups

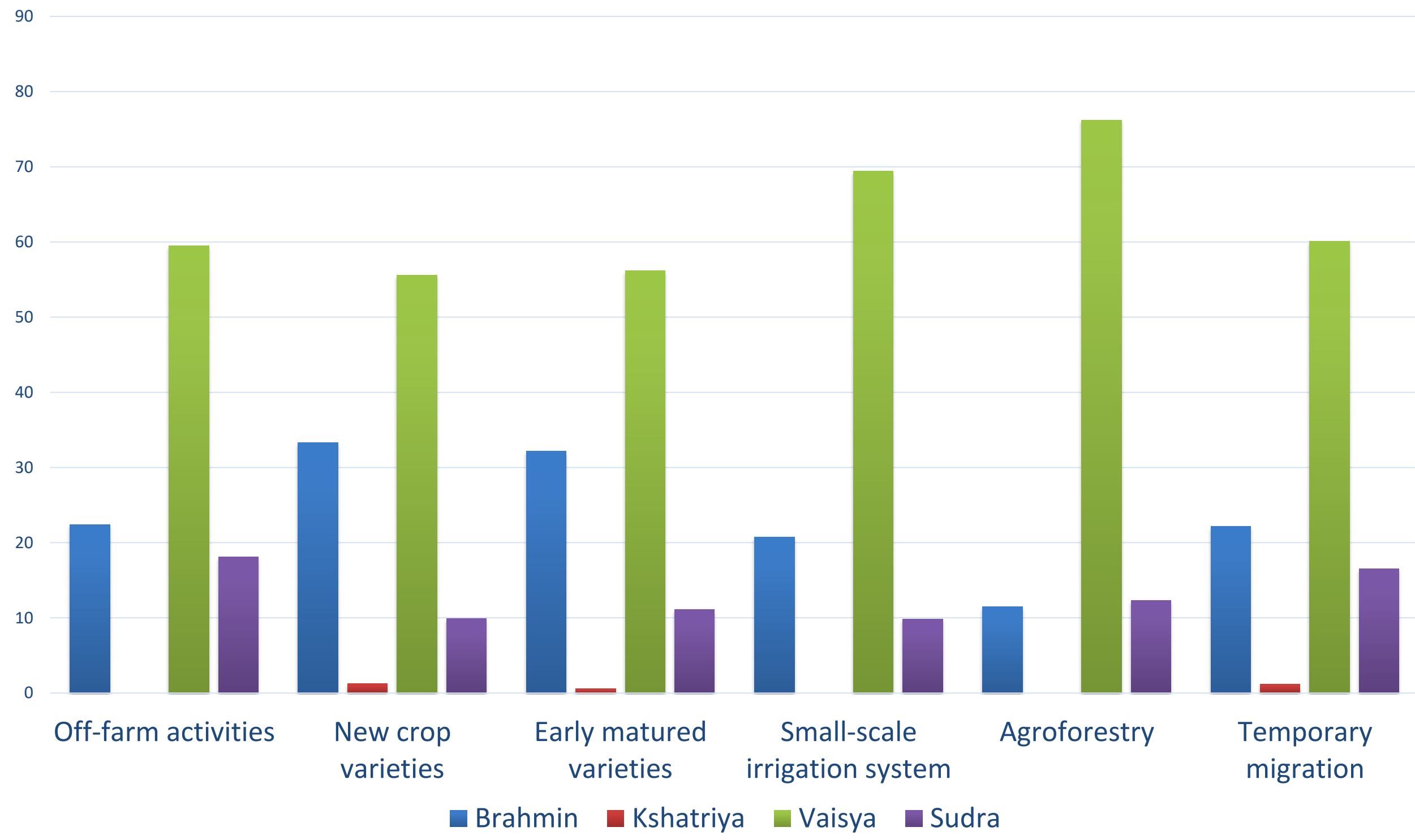


Chart 1. CCA strategies and caste groups

CCA strategies based on agroecological regions

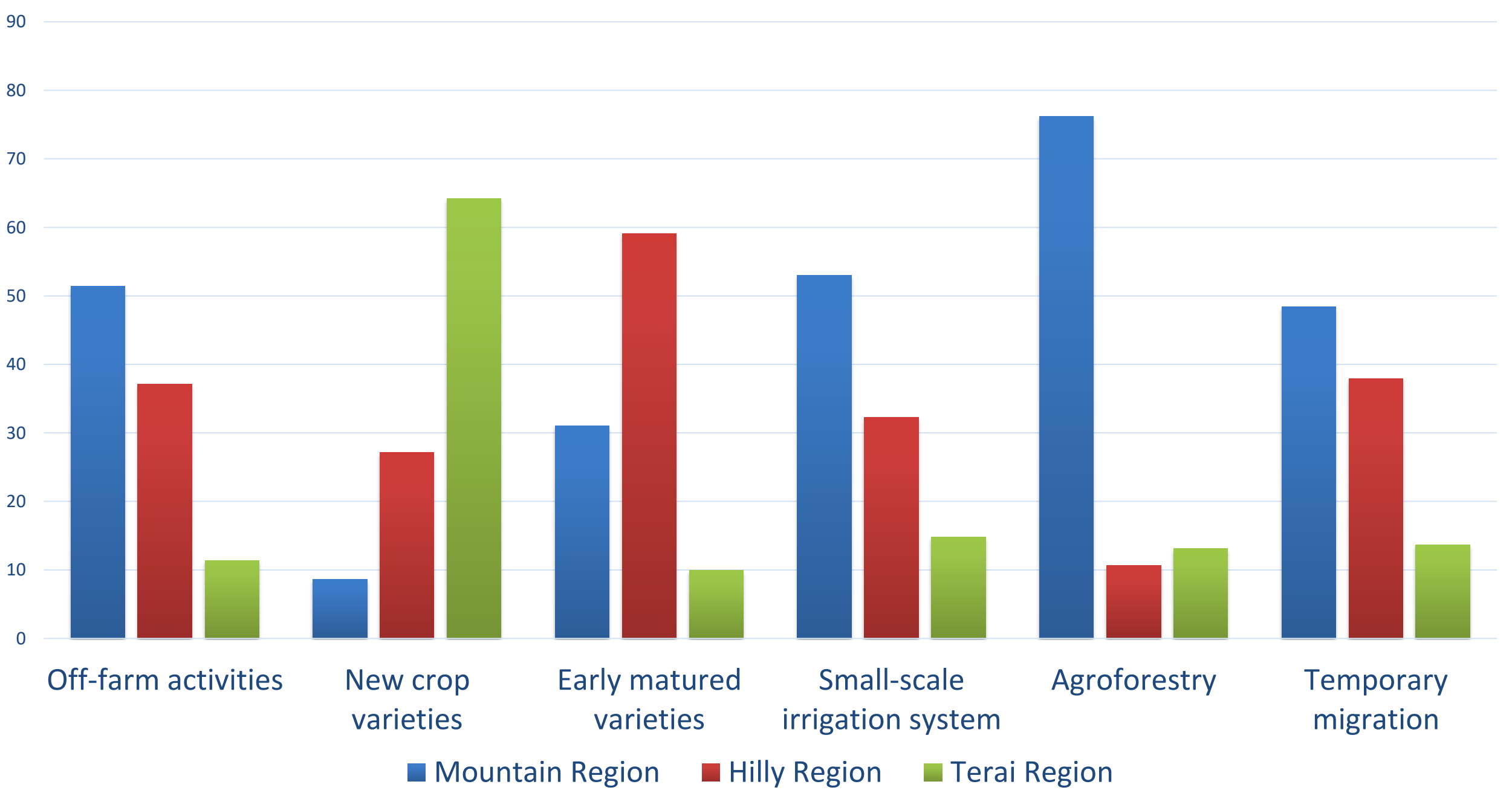


Chart 2. CCA strategies and agro-ecological regions

Conclusions

- Farmers implement different adaptation measures to reduce the impact of climate change.
- Our study confirms that altitude is a major factor in determining some of the adaptation strategies in Nepal.
- The higher caste group farmers have highly adopted varieties of adaptation strategies than lower caste farmers.

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