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Perception and adaptation of pastoralists to climate change in the central mountainous region of Pakistan

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Abstract

Similar to many other communities, the livelihoods of pastoralists in the central mountainous Koh-e-Suleiman Range of Pakistan (ranging from 500 to 3000 meters elevation) are threatened by recent extreme climate events. This study aimed to understand pastoralists' perceptions of climate change and adaptations they may already practice. In a mixed-methods approach, 199 individual interviews were combined with six focus group discussions with pastoralists from six tribes living at different altitudes in the Koh-e-Suleiman Range. Their responses were compared with real-time climate data collected over a seven-year period (2017–2023) from four flood automatic weather stations installed at different geographical locations in the study area.

About half of the respondents were practicing a sedentary lifestyle, while the others practised dry winter season transhumance with their animals. Households were characterised by a joint family system and comprised on average 14 members. Herd sizes ranged from 10 to 520 heads with an average of 106 animals, with goats and sheep being the dominant species. A majority of pastoralists perceived that the rainy season (monsoon) was starting later and ending earlier in the recent past, with an overall decrease in the number of days with rainfall. At the same time, most respondents acknowledged an increasing intensity of single rainfall events, along with more frequent flooding events. Regarding the cool winter season, most pastoralists perceived that the overall duration decreased with fewer rainy days, while the duration of the hot summer season was perceived to increase. Farmers' perceptions were partly contradicted by real time climate data, as average daily temperatures showed a slight decrease over the seven years of data collection. To adapt to climate change and extreme weather events, the respondents reported using strategies such as seasonal and annual migration with their herds and families, buying cereals (mainly maize and wheat) and fodder, working on lowland farms in exchange for crop residues, and using local shrub and tree shoots and leaves as alternative fodder during droughts.

Keywords: Climate change adaptation, extreme weather events, mountain pastoralism, vulnerability

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