

## **Modelling the Impacts of Geophysical Parameters on Deforestation and Forest Degradation in Pre and Post Ban Logging Periods in Hindu Kush Himalayas**

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**Abstract :** Loss of forest cover is one of the most important land cover changes and has been of great concern to policy makers. This study quantified forest cover changes over pre logging ban (1973-1993) and post logging ban (1993-2015) to examine the role of geophysical factors and spatial attributes of land in the two periods. We show that despite a complete ban on green felling, forest cover decreased by 28% and mostly converted to rangeland. Nevertheless, the logging ban was completely effective in controlling agriculture expansion. The binary logistic regression revealed that the south facing aspects at low elevation witnessed more deforestation in the pre-ban period compared to post-ban. Opposite to deforestation, forest degradation was more prominent on the northern aspects at higher elevation during the policy period. Agriculture expansion was widespread in the low elevation flat areas with gentle slope, while during the policy period agriculture contraction in the form of regeneration was observed on the low elevation areas of north facing slopes. All proximity variables, except distance to administrative boundary, showed a similar trend across the two periods and were important explanatory variables in understanding forest and agriculture expansion. The changes in determinants of forest and agriculture expansion and contraction over the two periods might be attributed to the influence of policy and a general decrease in resource availability.

**Keywords :** forest conservation , wood harvesting ban, logistic regression, deforestation, forest degradation, agriculture expansion, Chitral, Pakistan

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