



Forest landscape degradation assessment in Dokeh watershed, Iran

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Abstract: Degradation Model was introduced as an instrument of Environmental Impact Assessment (EIA) in Iran. Several methods are introduced in rapid environmental assessment, but none of them have evaluated landscape level. Thus, the main objective of this research is to introduce a new spatial method for EIA by using landscape metrics. A benefit of rapid assessment by using ecological landscape metrics is, understanding intensity of cumulative degrading activities in working units from past to present. The landscape degradation is $LD = \sum kI / Vi$. Where LD is equal to degradation coefficient of landscape compartments, $\sum kI$ is the index of intensity of human activities in landscape working units, (I is the indicator of metrics and k is intensity of them) V stands for habitat vulnerability. The approach of this model is to emphasize on conservation of natural ecosystems (which their LD is low). Therefore, to introduce landscape degradation model, we considered Dokeh Watershed with 67600 ha, that is located in Gilan. Then, 13 sub watersheds were delineated as a measure for comparison between working units. The road and land use layers were overlaid to compute fragmentation. Then all landscape metrics were extracted for each working units. We arrangement these metrics as a total activity and number of patches (NumP) was considered as the habitat vulnerability in landscape degradation model. After computation of landscape degradation model, sub watershed 8, 9, 10 and 11 had the maximum number of degradation, which is suggested for development. In this study, we had correlated between satellite data, length of road, slope, number of patches, and data were extracted from landscape degradation model. These correlation were observed that red class in imaging data has the highest correlation with degradation ($R^2 = 0.61$).

Keywords: Landscape Degradation Model, landscape Metrics, Rapid Environmental Impact Assessment, Dokeh, Gilan, Iran.