Forest Risk and Vulnerability Assessment: A Case Study from East Bokaro Coal Mining Area in India

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Abstract : The expansion of large scale coal mining into forest areas is a potential hazard for the local biodiversity and wildlife. The objective of this study is to provide a picture of the threat that coal mining poses to the forests of the East Bokaro landscape. The vulnerable forest areas at risk have been assessed and the priority areas for conservation have been presented. The forested areas at risk in the current scenario have been assessed and compared with the past conditions using classification and buffer based overlay approach. Forest vulnerability has been assessed using an analytical framework based on systematic indicators and composite vulnerability index values. The results indicate that more than 4 km^2 of forests have been lost from 1973 to 2016. Large patches of forests have been diverted for coal mining projects. Forests in the northern part of the coal field within 1-3 km radius around the coal mines are at immediate risk. The original contiguous forests have been converted into fragmented and degraded forest patches. Most of the collieries are located within or very close to the forests thus threatening the biodiversity and hydrology of the surrounding regions. Based on the vulnerability values estimated, it was concluded that more than 90% of the forested grids in East Bokaro are highly vulnerable to mining. The forests in the sub-districts of Bermo and Chandrapura have been identified as the most vulnerable to coal mining activities. This case study would add to the capacity of the forest managers and mine managers to address the risk and vulnerability of forests at a small landscape level in order to achieve sustainable development.
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