Methodology

Data Used: Vector and Raster files were collected from various Bhuvan portal in pdf and shp shapefile format

Steps to Collect Data:

➢ Land Degradation Map for Uttarakhand was downloaded from Archive section of Bhuvan
➢ Vector Layers of Road Map and Rivers was prepared from Bhuvan-2D, using 'Draw tool' and were downloaded as shapefiles.
➢ Latitude and Longitude of Settlements from Bhuvan-2D were noted in Excel sheet and were then imported to QGIS.
➢ Data of Past forest fire points were mapped using Draw tools in Fire Management section of Uttarakhand Forestry Maps. These downloaded as individual shape files were imported to QGIS

Steps to Map Data:

➢ Loaded Admin boundary as Vector layer.
➢ Loaded fire points as Vector point.
➢ Imported excel data of settlements form Add delimited layer.
➢ Loaded Raster layer of land degradation map and clipped raster through masked layer from Raster dropdown.
➢ Used styles to highlight various attributes of data.
➢ Scale of raster layers were matched using georeferenced.

Application and Uses of Map

Application	Uses
Hill cities planning	To limit urbanization w.r.t fragility of Area
Road Network Planning	To minimise water erosion and deforestation.
Land Use Land Cover	Afforestation activities, Reducing Soil Erosion, Contour bunding to reduce soil erosion.
Geology Analysis	Plan for defining limit to Mining and Road Network activities.
Forest Fire Preparedness	Locations to Set up Fire Stations based on most Vulnerable Fire zones
Restoring Biodiversity	Planning for maintaining land cover, ecosystem protection in fire and land slide vulnerable areas.
Policy Preparation	Interdisciplinary comprehensive forest policies for lower Himalayan districts or foothills which ensures livelihood and biodiversity.

Complexity Involved

➢ Data for Fire points on Bhuvan were available of 2012 and before. These points were to be drawn and downloaded individually.
➢ Many raster layers in pdf format only.
➢ Official Administrative Boundary of Rudraprayag did not match with layers available. It was drawn from Bhuvan and downloaded.