Huiny Huinyal Watershed (Garhwal Himalayas)

Altitude varies between 360-2680 meters

Altitude varies between

Area 260 sq.Kms

Location 30°07’00” to 30°25’07”N
78°17’11” to 78°25’45”E

Fig. 1 Location of Study Area
Fig. 3 Approach for Vulnerability Analysis
Fig. 4 Concept of Resource Vulnerability
Fig. 5 Approach for Disturbance Index Map

Source: Roy et al., 1997.
Disturbance Index Map

$DI = f(\text{Fragmentation, Porosity, Patchiness, Juxtaposition, Interspersion, Proximity from disturbance sources})$

Fig. 6 Disturbance Index Map
Accessibility Index = 0.5*(Slope Index) + 0.25*(Settlement Buffer Index) + 0.25*(Road Buffer Index)

Resource Requirement Index

Resource Importance Index

Critical Areas of Resources

Landscape Analysis Package

Forest/Non Forest map

Fragmentation

Proximity Analysis

Disturbance Index = f(Fragmentation, Porosity, Interspersion, Biotic/Human Disturbances, Juxtaposition)

Land Use/Cover Type Map

Porosity, Interspersion

Juxtaposition

Broad Cover Types

Bio_CAP

Road

Sources of Human Disturbances

Settlement

Fig. 7 Approach for Critical Area Assessment
Fig. 9 Inputs for Critical Area Assessment
Critical area Index = \(W_1 \cdot LDI + W_2 \cdot RII + W_3 \cdot PAI + W_4 \cdot RRI\)

LDI : Landscape Disturbance Index
RII : Resource Importance Index
PAI : Physical Accessibility Index
RRI : Resource Requirement Index
\(W_i\) : Weightages

Critical Areas of Resources

( Source: Joshi et al., 2002 )

Fig. 10 Critical Area assessment in Huniyal Watershed
Fig. 12 Live and Economic Vulnerability Map
Changes Along Altitudinal Zones
(LANDSAT TM & IRS 1D LISS-3)

Dataset used:
- LANDSAT TM (1986)
- IRS 1D LISS 3 (2001)

Fig. 13
Changes Along Altitudinal Zones (TOPOSHEET & LANDSAT)

Dataset used:
- SOI TOPOSHEET (1965)
- LANDSAT TM (1986)
Changes Along Altitudinal Zones (TOPOSHEET & IRS 1D LISS-3)

Dataset used:
• SOI TOPOSHEET (1965)
• IRS 1D LISS 3 (2001)
Changes vs. Aspect
TOPOSHET & IRS-1D LISS-3

Dataset used:
- SOI TOPOSHET (1965)
- IRS-1D LISS-3 (2001)
Changes Along Road
LANDSAT TM & IRS 1D LISS-3

Dataset used:
• LANDSAT TM (1986)
• IRS 1D LISS 3 (2001)
Changes Along Road
TOPO SHEET & IRS 1D LISS-3

Dataset used:
• SOI TOPO SHEET (1965)
• IRS 1D LISS 3 (2001)
Changes Along Road
TOPOSHEET & LADNSAT TM

Dataset used:
• SOI TOPOSHEET (1965)
• LANDSAT TM (1986)
Fig. 22 Approach for Fire Risk Zonation

(Revised from Powner et al., 1997)
Fig. 23 Inputs for Forest Fire Risk Zonation
Fig. 24 Inputs for Forest Fire Risk Zonation

LEGEND
- 0-5%
- 5-10%
- 10-20%
- 20-40%
- 40-60%
- >60%

Legend:
- North East
- South East
- South
- South West
- West
- North West/
- North East

Scale: 1:50,000
Projection: UTM
Fire Risk Zonation Map

CFR = FTI*4 + ASI*3 + SLI*2 + ACI

Where,

CFR = Cumulative fire risk
FTI = Fuel type index
ASI = Aspect index
SLI = Slope index
ACI = Accessibility index

LEGEND
- Very High
- High
- Moderate
- Low
- Least

Fig. 25 Forest Fire Risk Zonation Map
Fig. 26 Approach for Landslide Zonation and Slope Stability Map
Figure 27
Legend

- Highly Dissected Denudo-Structural Hill
- Moderately Dissected Denudo-Structural Hill
- Low Dissected Denudo-Structural Hill

Figure 28
LINEAMENT MAP

Huinyal Watershed

Legend

\[\text{Fault}\]

\[\text{Lineament}\]

Scale: 0 1 2 3 4 5 Km

Figure 29
Figure 30
Figure 31
Fig. 32  Area Statistics for Disturbance and Fire risk Zonation
Area Statistics for Critical Area

Area Statistics for Vulnerability

Fig. 33 Area Statistics for Critical Area and Vulnerability