

**LEMBAR**  
**HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW**  
**KARYA ILMIAH : BOOK CHAPTER**

Judul Buku : Land Degradation and Community Resilience in Rural Mountain Area of Java, Indonesia. In: Shit P., Pourghasemi H., Bhunia G. (eds) *Gully Erosion Studies from India and Surrounding Regions*.

Jumlah Penulis : 3 penulis

Status Pengusul : **Iwan Rudiarto**, Isna Rahmawati, Anang Wahyu Sejati

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Semarang, 14-01-2020  
Reviewer 1,



Prof. Dr.rer.nat. Imam Buchori, ST  
NIP. 197011231995121001  
Departemen PWK, FT. Undip

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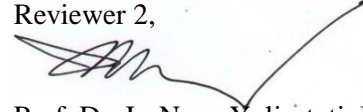
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Semarang, 07-02-2020

Reviewer 2,



Prof. Dr. Ir. Nany Yulastuti, MSP

NIP. 195407171982032001

Departemen PWK, FT. Undip

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Semarang, 09-03-2020

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Reviewer 2,



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# Gully Erosion Studies from India and Surrounding Regions

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Editors

# Gully Erosion Studies from India and Surrounding Regions

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# Spatial Extent, Formation Process, Reclaimability Classification System and Restoration Strategies of Gully and Ravine Lands in India

Gully Erosion Studies from India and Surrounding Regions pp 1-20 | Cite as

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Chapter

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## Abstract

Land degradation has been a major global issue due to its adverse effect on food security, environment and ecology. Among different degraded lands, gullied and ravine lands are very important and remained a highly researchable topic. Gullies are continuous depression on the sloping land surface as a result of soil displacement caused by overland water flow and aided by gravity force, whereas ravines are most extreme form of erosion with intricate network of various forms of gullies, having high drainage density and multidirectional slopes. In India, ravines are mostly found in four states such as Uttar Pradesh, Madhya Pradesh, Gujarat and Rajasthan. During 1976, total ravine land in India was 3.67 million ha, which has been reduced to about 60% at present, and the treatable area including peripheral land is likely to be as high as 1.5 times the actual ravine.

High-intensity rainfall, loose, friable soil devoid of organic carbon and vegetation, faulty agricultural practices, removal of vegetation and overgrazing of lands along with upliftment of central highlands, Aravalli range, Bundelkhand and Chhota Nagpur plateau against lowering of Himalayan base are some of the major factors which are responsible for formation and extension of ravine. As these lands are socio-economically very important, they need reclamation. The main objectives of ravine reclamation are to arrest degradation process, promote ecological restoration, positive on-site and off-site hydrological influences and to establish socio-economic balance



# Gully Erosion Susceptibility Mapping Based on Bayesian Weight of Evidence

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## Abstract

Identifying gully erosion susceptibility in cultivated region is important for the manager and decision makers. The present study demonstrated the application of the weight of evidence (WoE) model (a Bayesian probability model) for gully erosion susceptibility mapping using geographic information system (GIS) and remote sensing (RS) tools in the southwestern part of West Bengal, India. Eight gully erosion conditioning geo-environmental factors were considered for the susceptibility analysis, such as lithology, geomorphology, soil type, land use, slope, slope length (LS), stream power index (SPI), and wetness index (WI). Tests of conditional independence were performed for the selection of eight gully conditioning factors. Finally, gully erosion susceptibility map was prepared using the ratings of each gully conditioning factor. The resultant susceptibility map was validated using the area under the curve (AUC) method. The results indicated that the WoE model had an AUC value of 67.8%. Therefore, the WoE model is useful in gully erosion susceptibility mapping and helps decision makers in land-use planning.

## Keywords

Gully erosion Weight of evidence model Geo-environmental factors GIS India  
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