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ASSESSMENT ON LANDSLIDE OCCURRENCE: A RECENT SURVEY IN NILGIRI, TAMILNADU, INDIA

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Abstract: Survey to identify and to notify the landslide activities such as scars, remedial measures and vulnerable zones has been conducted in the study area. The work has defined that the importance of the landslide monitoring studies in the Nilgiri region. Historically, Nilgiri is a landslide prone area and it is highly denoted in the study. Notified scars of landslides are clearly expresses the needs of the areas hazardous importance and remedial measures have done by the authorities are clearly expressed the contribution interest and incessant care. In science anthropogenic and natural phenomena's are reasoned for the landslide. The surveys outputs are used to classify to differentiate the mitigation level of actions and interpret further. People aware about the particular phenomenon but they finally lacking in the awareness knowledge's for such land other resource of the life needs. For it, study models should be classified and intimated to the society as a first remedial and mitigation action in the study area.
Keywords: Hazard, Landslides, Scars, Vulnerability, Nilgiri, Remedial.

1. INTRODUCTION

Nilgiri region is highly noted for the active landslides. All kinds of landslides has been occurred and accounted largely. The impact of landslide is accounted in and around 21 States and Union Territory of Pondicherry, hilly regions of Himalayas, North Eastern parts of India, Nilgiris, Eastern Ghats, and Western Ghats, in every year and makes loss of life, infrastructure and property (Sharda, 2008).

The area precipitated with rainfall in both the southwest and northeast monsoon. Southwest monsoon 50% in west and 40% in west are accounted as precipitation. It was moderate in northeast monsoon which contributes near 40% of rainfall. Significant level of rainfall accounted in both winter and summer periods. The temperature is salubrious in all the year of the climate. The humidity is more in afternoon than mornings when in range exceeding of 90% (Subramanian, 2012).

As the landslides of 1979 were more massive and of larger magnitude, detailed profiles of landslides, detailed mapping on larger scale and study with earthly

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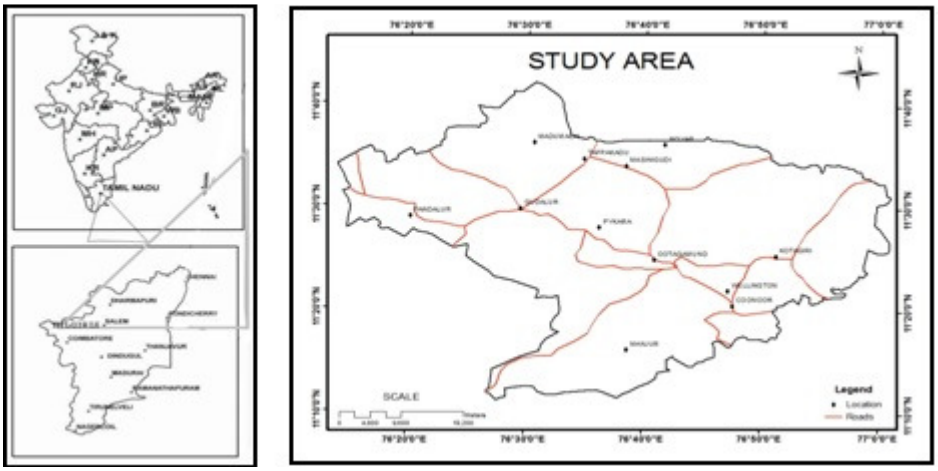
photogrammetric work, were taken up (Sharda, 2008). In 1979 November a heavy rain occurred in coonor and in sales heavy landslides too occurred. In this a house totally buried and including 2 women with 3 children dead in the debris (Ganapathy, 2012).

Vibrations created by heavy vehicular traffic may also accelerate the landslides especially during continuous heavy rainy season and flooding on the slopes. In the Nilgri Hills, it has been found that steep as well as gently slopes have failed. A study of Steepness of slope vis-à-vis the number of landslides seems to indicate that the slides in 1978 and 2006 occurred on comparatively steeper slopes than those of 1979. The synthesis of this correlation with rainfall data reveals that the intensity of precipitation in 1978 and 2006 were high only for three days, whereas the rainfall in 1979, was distributed in the months of August and December. This indicates that the 1978 and 2006 slides occurred due to heavy precipitation in a short period when there were flash floods and water spreading and consequent soaking on the slopes resulting in mass movement of the material over relatively steeper slopes. These steep slopes have failed where the toe had been removed either by stream action or by man. Deforestation has marked effect in rendering the slopes slide prone (manimaran et.al. 2012).

It has been observed that 21 States and Union Territory of Pudducherry, located in hilly tracts are affected by this hazard every year and suffer heavy losses in terms of life, infrastructure and property (Sharda, 2008).Twelve persons lost their live and more than 10 missing and passengers too washed away in two vehicles. It happened in a busy highway of rail road for about 300 m. numerous landslides were reported in the early on 14 November 2006 killing one and injuring three persons and disrupting traffic in NH-67 and blocking of mountain rail track between Mettupalayam and Coonoor (Thanavelu, 2008).

2. STUDY AREA



The study area is a part of the Western Ghats (TN uplands) and lies between the latitudes 11^{o} 10'00" N and 11^{o} '45' N and longitudes 76 ^{o} 14' E and 76 ^{o} 02'E. It lies in the Survey of India toposheet No.58 A/6, 7, 8, 10, 11, 12, 15 and 58 E/02. The maximum and minimum altitudes are 2640m and 300m above mean sea level. The natural boundary of the plateau along much of its Southern side is the Bhavani river and the Northern frontiers is bounded by Moyar river. The lithology is the charnockite group of rocks with the enclaves of Satyamangalam Schist Complex exposes in the Nilgiri district. It is bounded on the north by Karnataka State, North West by Kerala State, on the South East by Coimbatore District and the North East by Erode District of Tamilnadu.

3. METHODOLOGY

A field work survey to identify and to notify the landslide activities such as scars, remedial measures and vulnerable zones has been conducted in the study area. The locations are denoted using standard GPS instrument for the latitude and longitude. Study area map has been generated through the GIS software. The locations visited are planned from previous studies as important. The surveys outputs are used to classify to differentiate the mitigation level of actions and interpret further.

4. CONSEQUENCES AND DISCUSSIONS

The remains trace and a resultant of landslides have been notified in the field investigation. In the study area through the survey study more recent scars are identified even in settlement area.

4.1. LANDSLIDES AND SCARS: The scars of landslide have been identified in major and minor level in various places belongs to the study area (Fig: 2). In it, along road sectors more and continuous landslides are occurring because of transportation vibrations and naturally the soil loosen its strength of creep day to day could be the cause of landslides. Moreover the sudden discontinuous in slope means vertical cuts for road buildups could be reason for that. Importantly in some places the landslides have occurred in settlement areas.

Figure 2: Scars and Landslides

Figure 3: Remedial Actions of Landslide in Nilgiri region

4.2. REMEDIAL ACTIONS

The authorities are had done some favorable remedial actions for landslide behavior (Fig: 3). Rocky assemblage side walls along the road sectors where the landslide is prone. In the settlement areas the cement side wall has been constructed to stimulate the landslide activities.

5. CONCLUSIONS

The work has defined that the importance of the landslide monitoring studies in the Nilgiri region. Notified scars of landslides are clearly expresses the needs of the areas hazardous importance and remedial measures have done by the authorities are clearly expressed the contribution interest and incessant care. Anthropogenic and natural phenomena's are reasoned for the landslide. Especially, economic advantages of socioeconomic environment show the ignorance of the people. People aware about the particular phenomenon but they finally lacking in the awareness knowledge's for such land other resource of the life needs. For it, study models should be classified and intimated to the society as a first remedial and mitigation action in the study area.

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