# "REHABILITATION OF MALIN LANDSLIDE AFFECTED PEOPLE"

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**Abstract-**

As per civil engineering is concerned it is very important for every planner to plan any city or village so that all the facilities should be provided to public not only with respect to the residence but also transportation, water supply, drainage disposal, public amenities etc. Further it is expected to fulfill the best adaption of comfort, convenience, health and safety while planning any town or village. Being more specific, migrated people or disaster affected people have different tendency while shifting to a new place. In such cases, a good planner should prove more flexible to serve all the required facilities. Newly proposed village or town should be close to villagers so that the rehabilitation can be done properly. On 30th July 2014, a landslide happened due to heavy rainfall for about 7 days. This synopsis explains the rehabilitation of Malin landslide affected people and development of new ideal village at Aamade (Pune district) which will provide all the facilities required.

**Key words- amenities, rehabilitation, migrated etc.**

## INTRODUCTION


**Fig- Location of Malin village**

Due to continuous heavy rainfall at Malin (tal-Ambegaon, dist.-Pune) for about 7 days a landslide was occurred on 3oth July 2014.Huge property loss was faced by people along with 151 deaths and about 100 villagers were missing. Near about all the population was involved in agricultural field. Village was situated at about 7.63 km. sq. of area. Rehabilitation of whole population is the main task in front of the competent authority as well as management of risk, labors are the key threats for this big project. Developing new village for villagers at "Aamade" with all the required facilitation is the chief task.

**Relevance:**

**Malin (3Oth July 2014)**

On 30 July 2014, a landslide occurred in the village of Malin in the Ambegaon Taluka of the Pune district in Maharashtra, India. The landslide, which hit early in the morning while residents were asleep, was believed to have been caused by a burst of heavy rainfall, and killed at least 134 people. The landslide was first noticed by a bus driver who drove by the area and saw that the village had been overrun with mud and earth.

In addition to those dead people, about 200 people were believed to be injured heavily and about 100 were believed to have been buried in the landslide in 44 separate houses. Rain continued after the landslide making rescue efforts difficult.

A huge loss of property and assets were observed after the disaster along with the loss of infrastructure, lifeline facilities farmland. Reduced property values due to unwillingness of people to purchase disaster prone land. Increased cost due to investments in preventing or mitigating future landslide damage. Loss of human productivity due to death and injury Reduction in quality of life due to the deaths of family members and the destruction of personal belongings, which had a great sentimental value.

## Literature Review

**Landslide at Malin**

This paper states that, On 30 July 2014, a landslide occurred in the village of Malin in the Ambegaon taluka of the Pune district in Maharashtra, India. The landslide, which hit early in the morning while residents were asleep, was believed to have been caused by a burst of heavy rainfall, and killed at least 134 people.

The landslide was first noticed by a bus driver who drove by the area and saw that the village had been overrun with mud and earth. In addition to those dead, more than 160 people which are possible up to 200 were believed to have been buried in the landslide in 44 separate houses. Rains continued after the landslide making rescue efforts difficult.

According to the need of people it was expected to construct new shelter and provide public amenities. The authority appointed a committee to select a site for rehabilitation but villagers rejected to shift. For this reason a village called "Aamade" was selected by villagers but committee did not agreed because of the stability of slope at "Aamade". Keeping emotions of people the temporary hutments were provided. Government

had sanctioned 68 houses and 18 facilities including road network, water supply, drainage disposal etc (Shaikh et.al. 2015)

**Mangrove restoration technique:**

This paper states that, Sedari village is one of the villages in the Cibuaya Sub district, Karawang District. The total area of Sedari Village is 3.787 hectares. Mangrove restoration was successfully adopted in 2013. In this method, for stability of slope the whole area is converted into farm and small trees are planted i.e. vegetation which will protect the plot from landslide.

As per the study conducted regarding the rehabilitation and development of new village for Malin landslide affected people, it can be summarized that rehabilitation of disaster affected population is a challenging task for a planner as well as all the technical people related to the project. Stabilization of slope plays an important tool in development of new village. Mangrove restoration is the best way of maintaining the stability. **(**Randya, Hutomob,Purnama et.al. 2013)"

**Analysis of Malin landslide in India-**

The Malin landslide area is located on the eastern slope of a roughly N-S trending hill. The area is drained by the Ghod River and its tributaries. The area around Malin village is represented by the basaltic lava flows. The seismo-tectonic map of the area revealed the occurrence of two low magnitudes seismic activities (4.0 to 4.9) within 100 km radius of the landslide location. However, these seismic events do not appear to have played any significant role in inducing slope instability in Malin. (Kulkarni,Kolekar,Murthy, Duala et.al. 2015)

**Statistical analysis:**

This paper states that Slum area in India report by RGI (Registrar General of India). In the first phase, 640 cities/towns with more than 50,000 populations as per 1991 census were covered. In the second phase 1321 towns were covered [1151 with 20,000 to 50,000 population and 170 with more than 50,000 populations]. Out of the 1321 towns covered in 2nd phase, 1103 reported having slums [958 towns - 20,000- 49,999 population and 145 with more than 50,000].

Total 1961 (640+1321) towns - covered for identification of slums. Out of 1961 towns, 1743 cities/towns having more than 20,000 populations have reported having slums in the Country. The slum population constitutes 4.1 per cent of the total population of the country. As per these estimates, the slum population in 2001 was 61.82 million. (Joshi et.al. 2014)

**Rehabilitation:**

Paper states that, for speedy recovery of any disaster affected area maximum efforts should be taken In addition to this, maximum vegetation around the site prior to rehabilitation operation starts should be adopted.

In the steppe south-Oranian of Naama (Algeria), clearing, overgrazing and overexploitation of vegetation expose the soil surface pastoral rangeland desertification intense. Intervention measures to this alarming situation are to promote the process of reverse degradation reconstruction, restoration and rehabilitation of degraded steppe by the technique of enclosure. This technique of fencing which is to put the grazing of degraded areas in order to promote the restoration and it may be sufficient to reconstruct the condition she still have the ability to correct itself degradation effects these pathways. She favors natural regeneration, the most appropriate to induce biological recovery of natural steppe. With a number of transects inside and outside the enclosure. These transects is a grid that can scan the entire site and put some grazing routes nearby free range. Along these transects, phytoecological are placed every 200 m in an area of 100 m². Following this assessment, remediation by technical enclosure the steppe of *Lygeum spartum* has a positive impact on biological recovery by a quantitative and qualitative increase in the rate of recovery of vegetation, floristic richness and of phytomass. Minimum slope should be less than 16 degree. If it exceeds then the slope failure is observed. If the rehabilitation operation is carried out at steppe portion then the stability of slope should be maintained below 16 degree. (Benarad and ithafidha et.al. 2013)

This paper states that, disaster affected people are not ready to migrate from the native. in such a case, neighbourhood concept gives idea to create good living conditions of new place. It is better to keep the new place close to native and the people at new place should not vary from the economic and social class. (Chan,Yung et.al. 2013)

**Proposed Work:**

**a. Objective**

1) To identify the requirements of population i.e. facilities to provide
2) Distribution of the area which is allotted according to the different zones
3) To study the landslide resisting techniques and suggesting the suitable method.
4) Labor management using the present population distribution i.e. gender, age
5) Study of terrain by plane survey
6) Planning of whole village as an ideal solution for rehabilitation
7) Comparative study of existing construction and proposed plan.

**b. Research Methodology**

1. Collection of data regarding the socio-economic status
2. Distribution of present population of affected village according to age, gender.
3. Study of all the techniques adopted for resisting landslide and suggesting the best technique.
4. Zoning of village according to the town and country planning principles
5. Knowing the RL's of "Amade" village.
6. Planning of whole village and suggesting ideal provisions for achieving the facilities.

**c. Expected Outcome**

This project will help for ideal planning of village with respect to health, comfort, safety, convenience and economy. Further there will be employment for villagers of affected area as labors on construction site.

## References:


1. Shaikh,(2015) “report on landslide in malin village in Pune” Scientific journal impact factor :( ISRA) international journal of engineering sciences and research technology IJESRT (volume 4, no.4, page no-111-112)
2. Randya, Hutomob, Purnama(2013),” Collaborative efforts on mangrove restoration in sedari village,karawang (page no.2)
3. Kulkarni, Kolekar, Murthy, Duala,(2015) “Forensic analysis of malin landslide in India” International Symposium on Geohazards and Geomechanics (ISGG2015) IOP Publishing IOP Conf Series: Earth and Environmental Science (vol. no. 26,page no. 2-4)
4. Joshi (2014) “Report of the committee on slum statistics/census government of India ministry of housing and urban poverty alleviation national buildings organisation” New Delhi (page no. 16, 23)
5. Benaradj, boucherithafidha(2013),”Rehabilitation of the steppe lygeum in the region of Naama (western Algeria)( vol. no 36, page no. 349)
6. Chan, Yung (2012),” Neighbourhood change in semi urbanised villages; a case study of Shanghai” (vol. no138 no.3., page no. 235 238)