

Capacity Building for Landslides Risk Reduction in Tamil Nadu State: A Critical Study on Plans and Practices

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Abstract – A landslide is considered as one of the most common and natural disasters which is basically caused by the heavy precipitation, floods, earthquakes and erosion and by anthropogenic activities. Several causalities or unwanted reports are reported after large floods, rainstorms and earthquake are mainly caused by the landslides generated by these events. We highly required global support and assistance to decrease the losses in the nations where there is high risk of landslides. The current study investigate about the threats and warning related to landslides with respect to influence of change in climate and the process and methods used for landslides risk management and reduction.

Keywords – Hazard Vulnerability, Risk Landslide, Disaster Risk Reduction

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I. INTRODUCTION

As we know that natural hazards are a long existing warning to the human and their atmospheres which perhaps occur all over the world. One of the Indian states which is highly prone to the natural hazards is Tamil Nadu. TN is basically known for its multi hazard exposure, the major and various natural hazards which Tamil Nadu faced such as Cyclonic Storms, Floods and consistent period drought. The existence of the natural hazard like cyclone, storm surge, flood, drought, landslide, forest fire and many more, has continuously increased in the past years. TN State is also disposed to the Sea Erosion, Sea water, Landslides and Incursion in particular spaces. Most of the time the government of Tamil Nadu is committed to decrease the risks because of various disasters has begun different measures for stability in case of preparedness, response and relief over the years. The TNSDM authority has also approved a well-organized plan that is approximately same as with the Sendai framework [12].

A. Objectives

- To examine the disaster susceptibility of various forms of calamity with reference to Tamil Nadu.
- To analyze the evaluation that adopted for prevention and alleviation of landslides risk decrement with reference to Tamil Nadu.

- To investigate a strategy to examine the execution and implementation of an capacity building program for Tamil Nadu state.
- To research about the process and techniques used for landslide risk management and reduction.

II. CAPACITY BUILDING: DEFINITION, CONCEPTS AND PROCESSES

The fundamental basic investigation related to the capacity of building is copied from the political science and worldwide health structures. It mainly shows a political science thought and also describes that the capacity building is an approach and this approach basically comprises the transfer of assets from one government body to another as an investment in an unknown future times. As we know that future is unknown and no one can even predict it exactly so there are some objectives to be gifted. The objectives of worldwide healths research are to enhance health by increasing the chances to conduct research, use research outcomes effectively in several policies and programs and to endorse the domestic interest for investigation (Batews et al. 2006)

A. Definition of Capacity Building

Here the term 'Capacity'; basically refers to the ability of an organization to attain its mission completely and successfully and to maintain itself over the long term period. As capacity mainly refers to the well-organized skills and potentials of sole. The term 'Capacity building' basically refers to the activities that enhance the ability and potential of an organization to attain its mission or a capability of person to explain his or her objectives to do his or her job successfully and effectively. For several organizations, capacity building may relate to almost any features of its work: enhanced governance, leadership, approach and mission, growth and execution of program, partnerships, income generation, calculation, change in policy, planning etc. For sole, capacity building may relate to leadership growth, skills, trainings potential and other various areas of personal and professional growth.

B. Levels of Capacity Building

There are 3 different kinds of levels at which capacity buildings takes place.

- a) The individual level
- b) The organizational level
- c) The systematic or societal level

All these 3 levels are interlinked and dependent on each other. If any of the investments in capacity are made only at any of the one of these three levels and underestimating the others, the outcomes perhaps be temporary and not permanent as they perhaps be confined to a small group of sole or institutions [7].

The individual level – At the individual level, the tissues of the organization and societies shows the first and primary layer of capacity. For organizations and societies to transform and developed, they require ones with complete skills, awareness and plenty of experience. At this level, capacity growth takes place through demand driven method of learning and awareness and sharing, participation in groups of practices and coaching and other learning method that accelerate with power and place the sole in a Centre and active position and place.

The organisational/institutional level – This is the second layer of the organizational level or institutional level. As sole or individual make up the nerves of organizations and institutions, the imparting of skills, awareness, experience and worth amongst sole which belongings to a community or organization into a very capacity of organization which including the procedures, systems, policies and tradition. Nonetheless, as the collective set of capacities of sole surprisingly translates into the organizational or institutional capacity, after this it

exceeds the number of capacities of their permanent members.

The systemic / societal level – This is the third layer at which the capacity growth takes place. At this level, long ignorance in the growth hypothesis and recognized as an externality to the capacity growth techniques which has generally concentrated on the sole and the institutional levels. Any change or modification in the capacity at the systemic level is a long and time taking process and techniques, which is basically difficult to handle and steer; nonetheless, it is not to be recognized an externality or a variable that cannot be managed for.

C. Process in Capacity Building

Some of the following process includes in the capacity building:

1. Requirement of assessment
2. Approach and action
3. Addressing and calculation

The first stage requires assessment for capacity building is a basis for planning an effective plan. Capacity gaps basically identified by the first defining the significant capacities at sole or groups, organization and system levels for attaining of policy or institutional or program objectives. Valuation of current capacities is then compared with the future requirements. Any numbers of valuation devices have been executed at systems, institutional and sole levels.

In the case of the second stage, several approaches and activities in capacity building are itself made for each situation on the basis of authorization of capacity gaps. A broad consensus has been constructed on the significant strategies for effective capacity building. Most of the time the cause for capacity gaps generally occurs at various or different levels, several kinds of actions are need. Some actions perhaps more predictable like workshops, courses but they also require to be well planned in a wider context than ever before. The broad strategy and effort of this field and connection between institutions are some of the examples of complete modalities to promote original connection and partnerships. Their full capabilities in capacity building yet require to be observed completely.

In the last phase of the capacity building process, addressing and monitoring and calculation is highly essential to concentrates on the inspiration and encouragement for the calculation: the growth of capacity techniques itself, the management of program techniques. Common evaluation or measure of methodologies and techniques can

also be implemented for addressing and measuring purpose.

III. LANDSLIDE VULNERABILITY

One of the major natural hazards is Landslide which is most commonly experienced in the hilly terrains. The landslide hazard zonation atlas of India mainly published by Building Materials and Technology Promotion Council (BMTPC), GOI, categorized the Nilgiris district of TN state as one of the simple to very high landslide hazard prone areas of India. In the Nilgiris Hill Range, Landslides mostly occur at the time of the rainy season and most of the famous landslides are the Glenmore landslide, the Coonoor landslide, the Karadipallam landslide, Megamalai landslide and the Marapalam landslide. Apart from the Nilgiris, other districts in the state that have had issues of the landslide are Salem, Coimbatore, Vellore, Erode and Theni.

As per the theory of Donell (2011), Most of the time landslide occurs with other natural disaster like earthquake, floods or snow melting but volcanoes play major role for generating the landslides. There are several factors from which landslides caused but 3 of them are highly important.

IV. REASONS FOR LANDSLIDES

Landslides have three major causes are as follows:

A. Geology

Geology not only caused the landslides but also generates other natural disasters like earthquake, volcanic eruption and soil and rock erosion. One of the largest geological landslides is the volcanic eruption of Mt St. Helens in 1980. This landslide basically fallen down the cascade Mountain Range in Washington State at 70-150 miles an hour. It also cover near about 14 miles down the North Fork Toutle River and reached the recorded depths as high 600ft.

B. Morphology

This type of landslides is mainly caused by a change in a structure of land area. Whenever the fire destroys the vegetation on a slope, for example, it mostly concluded to landslides because of the loss of root system which mainly acts as a soil stabilizer. This landslide is occurred in the epic California fires of 2017. After the fires cleared the land of vegetation, it flowed through Santa Barbara County with speed 35miles per hour. In this natural disaster near about 17 people were killed.

C. Human Activity

Human activities are most responsible things in increasing number of case of natural disaster. Apart

from the change in climate and destroying earth through things such as logging, build road and frameworks can accelerate the danger of landslides. It comprises such as slow grading, poor damage and the imbalance of old landslides. The weak landscape has less number of natural drainage that can be basically generated by repeated or consistent heavy rainfall.

V. STEPS TAKEN FOR THE LANDSLIDES REDUCTION BY GOVERNMENT

As we know that the state governments have the responsibilities to deal with landslides. There is also nodal agency of District administration which also manages the circumstances on behalf of state government.

- Some essential mitigatory steps that are highly responsible to government agencies in Tamil Nadu can adopt for landslide prone areas are:
 1. Proper use of land.
 2. Correction of drainage at regular interval.
 3. Reforestation to all those areas which occupied by degraded vegetation, and
 4. Spread awareness among domestic people.
- Government should monitor the activities of local people to decrease the damage caused by the landslides and also utilize the landslide prone areas for another works such as parks, grazing etc.
- Utilization of land controls can be ratified to save dangerous areas from being used for the residential buildings and essential useful structures like roads or transmission lines.
- One of the best natural methods to reduce the risk of natural disaster is reducing infiltration and permitting excess water to move down without any restrictions.
- As an outcome, correction of drainage at regular interval of time is also an essential mitigation measures which comprises a regular maintenance of natural drainage channels in weak slopes.

VI. THREATS DUE TO LANDSLIDES

As per the explanation of [6], Landslides disaster not only damages property and construction facilities but also destroys life of most of the people

so it is considered as biggest warning to life of human. According to the statistics and reports of CRED (Centre for Research on the Epidemiology of Disasters), Landslides are mainly responsible for near about 17% of all mortalities from the natural hazards globally. The social and economic influence of landslides is comprehend only because landslides are generally not separated from other various natural hazard generations like severe precipitation, earthquakes or floods. This sarcasm basically contributes to decrease the spread of awareness and distress of both authorities and common public related to the risk of landslides [4].

Significantly, the change in the climate and increase in exposure globally, the risk from the landslides is growing gradually with time. In most of the areas with high demographic density, security works many times cannot be constructing due to the economic and environment constraints, and it is not always possible to relinquish people because of societal reasons. Individual requires the prediction of the occurrence of the landslide and the hazard and risk related with them. Change in the climate, increased vulnerability of soil of surface to instability, developing urbanization and increased vulnerability of population and frameworks as an outcome which highly contribute to the developing risk of landslide.

VII. LITERATURE REVIEW

According to the research of the [2], they examined Collaborative Approach Model for community capacity building. The investigation shows that effective community-academic examination associations require building the capacity of both community-based associations (CBOs) and academics to lead collaborative exploration of common interest and advantage. The examination distinguished four focusing on areas for abilities building were program assessment, growing necessities assessments, building overviews, and understanding measurable investigations. They were less interested in figuring out how to build coordinated efforts with academics. A proper necessities appraisal of examination training and instructive requirements of CBOs uncovered that most had insight, but negative, with academic coordinated efforts. CBO pioneers needed to build abilities to lead and examine assessments and program assessments.

[3] in their examination on Community Capacity Building and Sustainability: Outcomes of Community-Based Participatory exploration, clarified the connection between ideas of community based participatory examination and capacity building. The examination utilized Qualitative investigation for topical substance. The discoveries of the examination uncovered that (1) the ideas of capacity and sustainability were viewed as 66 interconnected; (2) organization was seen as both a facilitator and a result of CBPR; (3) sustainability was connected to

"move of information" starting with one age then onto the next inside a community; and (4) capacity and sustainability were upgraded when objectives were shared and health results were attained.

Ronald Labonte and Glenn Laverack (2010) examined capacity building as health advancement means and end. They depict three distinct employments of the term capacity building and recognize community capacity markers from two different sorts appropriate to health advancement program assessment: populace health pointers, and program-explicit markers. They survey seven hypothetical and experimental models of community capacity, which give a sum of nine separate capacity domains. They take up issues of community capacity use and estimation in health advancement arranging and assessment.

[4] presents ongoing work on the appraisal, relief and management of landslide risk, including a few models. Cultural perspectives risk, are thought of. Early admonition frameworks have gained solid interest as of late. The paper goes into the standards and components of early notice frameworks, the vital elements for progress and a portion of the accessible technology. Society and technologists need to put into the relief of landslide hazard and risk to improve the unwavering quality and productivity of the outcomes acquired.

[10] examine the natural emergencies outcomes, joined by the pulverization of household offices, passing and injury of individuals, permits us to discuss the synergistic fortifying in one zone of a few independent from one another elements of the conditions and interaction components of natural, technogenic and social genesis, together prompting more genuine results, than with their different indication. The most damaging and regularly manifested exogenous natural cycles are landslide measures.

According to the theory of [5], The in general goal of this audit is to acquire bits of knowledge into landslide risk decrease gauges that are applied or recommended in tropical landslide-prone nations, and the difficulties at play. All the more explicitly, this survey plans to (I) introducing an outline of ongoing examinations on landslides and landslide risk decrease in these nations, (ii) investigating the elements controlling the distribution output on landslides and landslide risk decrease, (iii) assessing the different landslide risk decrease measures recommended and actualized, and (iv) recognizing the bottlenecks for the execution of these methodologies.

Landslides represent an overwhelming danger to human health, executing a great many individuals every year. Human weakness is a vital component of landslide risk decrease, yet as of not long ago, all strategies for assessing the human results of

landslides depend on abstract, master judgment. Besides, these techniques don't investigate the basic reasons for mortality or educate systems to lessen landslide risk. Considering these issues, analysts build up a data-driven apparatus to gauge a person's likelihood of death dependent on landslide power, which can be utilized straightforwardly in landslide risk appraisal [8].

As per the overview of [7], Disaster management, public safety and maintainable improvement activities in areas with hilly landscape have recognized capacity advancement for landslides risk decrease as one of the fundamental segments of the arranging, policy and dynamic interaction at various levels in all areas. The common, inescapable and abrupt nature of landslides presents serious level of risks every now and again in powerless areas. In any case, the capacity of the influenced networks is restricted because of lack of sufficient perspectives, abilities, assets, institutional systems, operational methods, administrative measures and empowering climate. This is connected with absence of affectability, data, mindfulness and readiness among the weak society against the likely impending risks. The current part talks about the terms and ideas identified with capacity, capacity improvement, levels and interaction of capacity advancement, activities for landslides risk decrease through capacity improvement at worldwide, territorial, public and neighborhood levels by the various partners in capacity advancement like UN associations, provincial and global associations/organizations, and government and non-government bodies.

As per the explanation of [1], he refers natural risks as a long existing danger to human and their environmental factors which may happen all through the world. Tamil Nadu is one of the Indian States with various natural hazard occurrences. The event of natural dangers, for example, typhoon, storm flood, flood, dry season, landslide, backwoods fire and so on, has expanded complex in the new many years. The multi-risk zonation is one of the primer examinations in disaster management situation, which is utilized to comprehend the result of all conspicuous natural dangers. At the state level, it is basic for the public authority to realize the districts influenced by different hazards to assist them with setting up the management designs suitably to ensure the nearby networks and frameworks. Nonetheless, such efficient risk evaluation and joining in a managerial unit is to a great extent missing in Tamil Nadu.

As per the overview of [9], past experience, activities, and programs have uncovered gigantically constructive outcomes of training for weakness decrease and disaster risk management. Kids and grown-ups who realize how to respond if there should arise an occurrence of a disaster, community pioneers who have figured out how to caution their kin as expected, and entire social layers who have

been instructed how to set themselves up for natural hazards have added to better moderation techniques and spread of data on the threats of risks. Training and information have given individuals apparatuses for weakness decrease and life-developing self-improvement procedures. Besides, more steady and disaster strong instruction offices, for example, school buildings; give an asylum if there should be an occurrence of hazards and should be fortified and improved through better designing and specialized information.

As per the theory of [11], Disaster management is with a huge components, and it isn't clear how KM practices can be applied in all significant periods of disaster management cycle. The investigation will respond to the accompanying inquiries: I) what are a portion of the KM rehearses utilized in disaster management? What's more, ii) what are a portion of the ramifications of KM rehearses on disaster management execution? Besides, the vital discoveries of this examination recognize the acknowledgment of exploration gaps that should be tended to and they can furnish future specialists with an examination agenda.

VIII. CONCLUSION

From the above discussions and debate, it can be concluded that for decrease the risk of landslides, several initiatives of capacity development are started by the government. It also predicted that these initiatives collectively work in a synergized way for security of public, environments and continuous growth. It will also improve the capacities of the societies cope and respond to calamity or hazard more successfully and effectively. The strength and occurrence of the landslides have increased unprecedentedly, conclusive in destroying influence on lives and financial condition. The current issue for all the policymakers and governments is only to decrease the influence and affects which related to innovative evaluation. Also a multi hazard early warning system has been observed as a critical factor in most hazard risk decreasing evaluation.

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