DISASTER MANAGEMENT POLICY

CENTRE OF EXCELLENCE IN ENERGY SCIENCE AND TECHNOLOGY
SHOOLINI UNIVERSITY, BAHJOL, SOLAN, H.P.173229

1. Preamble

Disasters due to climate change can have significant impact on economic and social infrastructure. Shoolini University is committed to United Nations Sustainable Development Goals (SDG) through its disaster management policy to make itself prepared and effective in management of disasters. The Shoolini University is located in mountainous and earthquake Zone IV in the Western Himalayan region As such the University is already following Disaster management Policy guidelines and measures of Govt of India and Govt of Himachal Pradesh. However, the University has prepared the Disaster Policy for strict implementation in order to address concern related to SDG13.This policy applies to all related constructions including buildings, operations and activities of the University before, during or after a disaster by following measures:

2. Policy Goals

- Elevating disaster risk management on priority
- Generating commitment towards disaster management
- Assigning accountability for disaster losses and impacts
- Allocating necessary resources for disaster risk reduction
- Enforcing the implementation of disaster risk management
- Facilitating participation from civil society and the private sector
- Creating Awareness among students, faculty and local population about disaster management

3. Implementation Strategy

The Disaster Management Policy will be implemented through following measures:

3.1 Prevention

Mitigation and prevention efforts aim to reduce the potential damage and suffering that disasters can cause. While disaster management cannot prevent disasters, it can prevent them from becoming compounded as a result of neglecting causal factors and manageable risks. Mitigation specifically refers to actions taken that can lessen the severity of a disaster's impact. Investing in measures that limit hazards can greatly reduce the burden of disasters.

- Raising awareness about potential hazards and how to address them
- Educating the public about how to properly prepare for different types of disaster
- Installing and strengthening prediction and warning systems

Managing hazards and risks means planning to minimize a community's vulnerability to disasters. This is done by:

- Encouraging community members to buy appropriate insurance to protect their properties and belongings
- Educating families and businesses on how to create effective disaster plans
- Promoting the use of fire-retardant materials in construction

- Advocating for capital works initiatives, such as the construction and maintenance of levees
- Building partnerships between sectors and agencies at the central, state, and local levels to collaborate on mitigation projects

3.2 Policy on Safe and Earthquake Resistant Buildings

3.1.1 Site surveys and soil profile to be inspected before construction

Before construction of buildings, soil profile and ground strata shall be inspected by certified geotechnical engineers to check for load bearing capacities, soil liquefaction etc. If the calculations show that liquefaction is expected at the site take measures (1) Strengthen the soil underneath, and (2) Adopt pile foundations, if feasible.

3.1.2 Specific requirements for construction on hilly areas

Before seeking to ensure structural safety, a building on a hill slope should be safe-guarded against: (1) Landslide of the hill slope on which the site is located, (2) Debris rolling down from uphill of the site, (3) Sliding of the site, if it rests on loose or fragmented rock layers or on ground that is expected to slide; and (4) Flowing waters on the natural waterway along the hill slope. After the above factors are addressed, the structural design of the buildings should include the following: (1) The entire house should be built at one level with a flat base, to the extent possible. In extreme case of sloping base, the angle of slope should be reduced to a minimum (much less than 30º), at least below the building. (2) If the building is to be built on an inclined ground having slope angle more than 30º, the foundation design is crucial. The foundation structural system, the founding level, anchoring of the foundation into competent rock and monolithic connection between the superstructure and foundation are some aspects to be addressed. The competent Structural Engineer should work closely with the competent Geotechnical and Rock Mechanics Engineers.

3.1.3 All residential and office buildings shall be built to resist earthquakes

The factors to be considered in the construction of a building are: (1) Safety, (2) Functionality, (3) Sustainability, (4) Aesthetics, and (5) Economy. Safety, Functionality and Sustainability are not negotiable in any building. Different types of structural damage can occur in buildings during earthquakes. Therefore, the main focus in the design of buildings is ensuring that the said structural damage is of acceptable type and at acceptable locations. For example, in a reinforced concrete frame building with unreinforced masonry infill walls in the bays between beams and columns, the vertical separation cracks are acceptable between columns and masonry walls, but the diagonal cracks cutting across the columns are not acceptable. The construction using modern technology should be carried out only under the supervision of a competent structural engineer.

3.1.4 Earthquake Resistant Practices

Buildings that are symmetrical and regular in plan & elevation are considered suitable for earthquake-resistant construction. Hence, buildings should be as close to being symmetric as possible. And therefore, if the sizes of the structural members of the building are chosen accordingly, then buildings will translate uniformly in the two horizontal directions in plan during earthquake shaking, and will not twist. Square or rectangular plan shaped buildings ensures least damage during the strong earthquake ground shaking. Square plans are better than

rectangular plans, because they are structurally efficient. Rectangular plans are better than L-shaped plans. This does not mean that all building must be square. But, it is essential to know implications of design and take appropriate actions to counter the negative effects of choosing such shapes. Any shape other than a square or rectangle is expected to sustain more damage. But even in a rectangular plan shape, the length of the building should be less than 3 times its width. The commonly used plan shapes (like T, L and C) with non-rectangular plan are functionally convenient but structurally poor. If at all such shapes are required, special attention should be made to strengthen the corners; a competent Structural Engineer should undertake this work. Alternately, the building L-shaped in plan can be made of two separate rectangular units with a connecting flexible junction.

3.1.5 Foundations for earthquake resistant buildings

Purpose of the foundation is to transfer the structure loads safely to the underlying soil. Depending on geotechnical conditions and the loads appearing from the building above, suitable systems should be chosen for the structural configuration of the superstructure and foundation. Generally, small houses up to 3 stories require shallow foundation having individual footing, if the soil is stiff and strong. Tie Beams connecting the tops of the footings of the columns help reduce the differential lateral movement of columns during strong earthquake shaking. In tall buildings, deep foundations are required to be constructed. In buildings on slopes, the foundation requires special attention. It should be made stiff by the use of diagonal braces or concrete walls. This is a critical aspect of the safety of buildings built on hill slopes. Formal engineering calculations are required; a competent Structural Engineer should be appointed for this.

3.3 Policy on Fire and Electrical Safety

All large buildings shall use fire retardant building materials wherever possible. Use of fire-resistant/retardant materials shall be mandated for large buildings. All electrical works in the buildings shall be properly earthed and designed. Compliance to fire safety and electrical safety standards shall be ensured.

4 Disaster Management Plans

Special plans or procedures for management of various types of disasters especially related to hilly regions shall be developed to ensure better management of disasters and enhance preparedness for the same. This shall be done by utilizing existing resources or through dedicated disaster management cell.

5 Disaster Relief

Special provisions for disaster relief shall be arranged by the university in collaboration of state and government departments encompassing the following:

- Setting up temporary shelters that provide a safe place to sleep, food, and emotional support from trained personnel
- Delivering meals and water
- Distributing emergency supplies and necessities, such as toiletries for hygiene and tarps, shovels, trash bags for cleanup efforts

- Providing emergency health services, such as first aid for injuries and prescription medication replacements

6 Standards and Codes

The disaster management planning and operations shall be conducted in compliance with concerned building codes and practices as prescribed under the National Disaster Management Authority's latest guidelines.

7 Roles for Compliance : Implementation

The disaster management policy shall be implemented and complied by the Director Estate, construction department of Shoolini University led by Director of Operations. Regular reports on buildings, forest fires, or any other disasters and prevention measures on Disaster management will be prepared by Director Operations for record. The policy will continue to be monitored and reviewed by Director, Centre of Excellence in Energy Science and Technology under the SDG 13 compliance initiative.

8 Review

The Disaster Management Policy will be reviewed from time to time and updated whenever required.

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