

# RECOVERY AND RECONSTRUCTION AFTER UTTARAKHAND DISASTER 2013

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## I. Introduction

Himalayan range is the youngest mountain range of the world. It is made up of soft fragile rocks. Kedarnath is ancient pilgrimage place situated at latitude of  $30.73^{\circ}$  and longitude of  $79.06^{\circ}$  in Uttara Khand state of India in Himalayan range. This is one dham, pious place, for Hindu devotee's, out of four dhams. Kedarnath is at the height of 3583 meters above mean sea level in Mandakini valley of Rudra Prayag district. Due to adverse weather condition it is not possible to visit this holy place throughout the year. May to October is safe months for pilgrims to visit this place. During these months the entire valley remains filled with pilgrims. Some people also go there for the sake of tourism which has created further congestion. So a lot of hotels horseman and persons providing other facilities have surrounded the Kedar nath temple.

The slopes of hills are unstable and erodible. Land slide is a common feature in this region. Due to heavy rain fall in the night of 16- 17 June 2013 a massive landslide occurred in the region of Kedarnath which blocked the glacial flow creating condition like a temporary dam. Due to continuous inflow in this lake temporary obstruction which was created earlier breached. The sudden flow of water took away debris's and another rock creating a new stream. Due to afflux created by the obstruction and high slope of river itself the water and debris flowed with very high speed downstream washing away towns, Kedarnath, Rambara, Gaurikund along the way. Eyewitnesses said that huge rock broke away from Kedar dome and got struck some distance from the shrine. This possibly save the shrine's main structure and directed the flash floods through the hutments all around. Rivers always have meandering tendency. It scours one side and deposit the material at the other side. Some houses were built in the spate of river where river might have flown sometime back. These buildings washed away like paper boat in huge water mixed with debris. Had there been no debris in water damage would have not been so severe. Environmentalist says it is all due to construction of number of power houses, which has disturbed the

ecology of the area. Deforestation has been done without taking proper care of forestation.

The entire Kedar area including shops and hotels was completely washed away leaving no trace of community facility there. With no warning time to evacuate, there was large number of fatalities and much distress among inhabitants and many visitors in the region. Following the disaster, with the few roads cut off and collapse of some bridges connecting to key towns about 70,000 pilgrims and tourists were stranded in the area. Total number of evacuees has been around 1, 10,000. Number of fatalities is about 5000; with those missing about 4,700 the actual toll is expected to be higher.

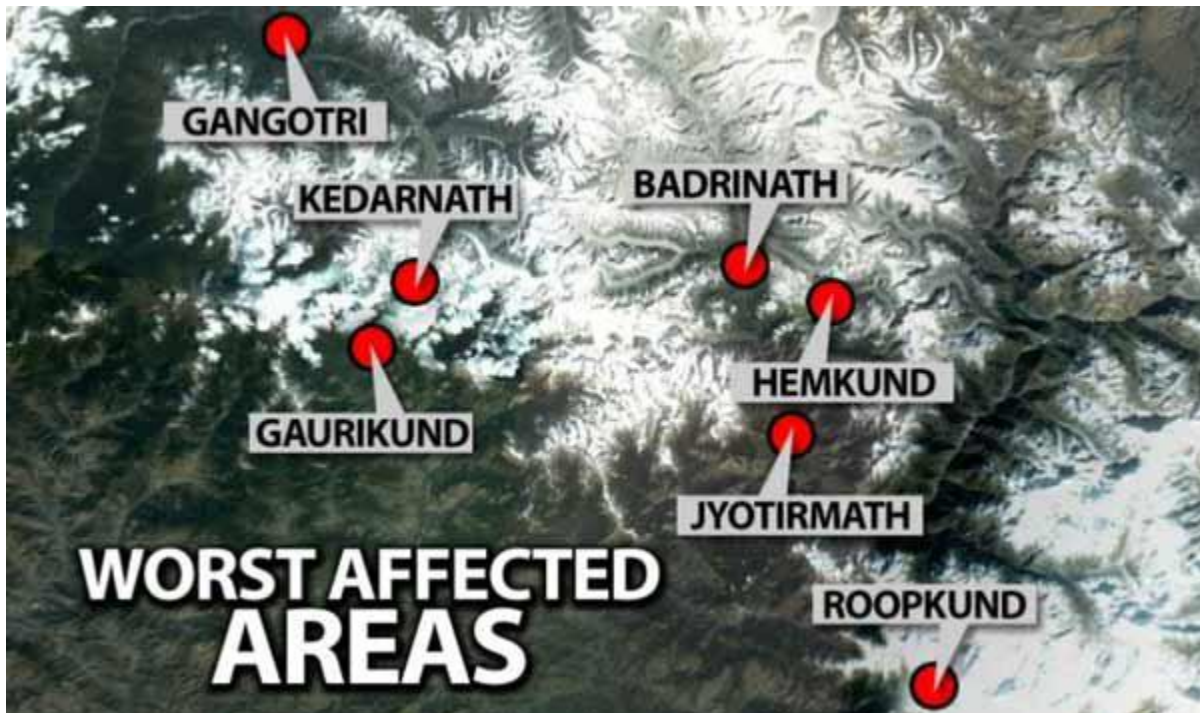
Public infrastructures such as roads and vital bridges houses and administrative buildings, schools and health centers, have been badly damaged. A state loss of Rs 30,000 million is estimated. Disaster crippled lives and livelihood of about 20, 36000 poor rural people in nearly 40,000 sq miles area.

## II. Unusual Monsoon

This year monsoon came about two week earlier. Glacier melts faster in monsoon rains resulting more runoff in the river. There is direct relation between climatic change and change in rainfall pattern. As per prediction of scientists, India will face extreme condition of rainfall if this condition of climatic change continues. This is bad news for Himalayas reign as it indicates that there is higher probability of cloud burst and heavy rainfall in near future.

## III. Rescue operation carried

It was one of the largest rescue operations of the world. Army deployed 10,000 soldiers and 11 helicopters, Navy 45 naval divers and air force 41 aircraft including 36 helicopters, in Rudrapryag, Chamoli and Uttarkashi district of Uttara Khand to save the stranded pilgrims and local residents. In 17 days i.e. upto July 2<sup>nd</sup> over 1, 10,000 people were rescued and sent to their own houses or safe places.



#### IV. Disaster impact

Disaster impacts comprise mainly physical impacts and social impact. **Physical impacts** includes casualties i.e. deaths and injuries to man and cattle, damage to properties, community services such as telephone and electric lines, water supply system, communication system, transportation system etc. The physical impact of a disaster can be assessed easily and reported to government and media. **Psychosocial impacts** include economic aspects, psychological impact.

##### Physical impacts

About 14 km pedestrian route between Gaurikund and Kedarnath has completely washed away. Maximum damage occurred in Kedarnath, Guiaya, Lenchuri, Ghindurpani, Rambara, Gaurikund and downstream area upto Rudrapryag. A total of 5000 human lives were lost over 5400 people were reported missing 4200 villages were affected and 3320 houses were fully damaged. The numerous side effects of the rainfall destroyed the state's economic lifelines over 9000 km of roads and 225 bridges were damaged and 61 hydroelectric power plants 465 km distribution lines and 377 transformers were destroyed.

##### Psychosocial impacts

In most cases psychosocial impact are transitory. Vast majority of disaster victims experience only mild psychological distress. However, some victims have also

experienced positive impacts strengthening family ties decreasing importance to material posses

##### Recovery

Recovery is the process of bringing the organization or the place that was affected by the disaster to the before the-accident-condition.

There are three types of recovery corresponding to sources of assistance. These are autonomous (own resources), kinship (extended family resources), or institutional (government).

**Autonomous recovery** depends on the household's available human material and financial resources. Human resources are available to the extent household can continue to derive or generate income from employment, rental of physical assets, or interest / dividends from financial assets. Moreover, household recovery depends on the degree to which material resource are available, this includes an ability to withdraw savings quickly from banks, to quickly liquidate stocks and bonds at a fair price and to receive adequate compensation from its insurer. In some cases, household recovery also depends on the degree creditor will accept delayed payments on financial liabilities such as loans mortgages and credit card etc. Finally, household recovery depends on the degree member can reduce consumption such as purchases of shelter, food, clothing, medical care, entertainment, and other goods and services

**Kinship recovery** depends on the physical proximity of other nuclear families in kin network, the closeness of the psychological ties within the network the assets of other families

**Institutional recovery** depends on whether victims meet the qualification standards, usually documented residence in the impact area and proof of loss

## V. Reconstruction

### Support the affected community

A good construction helps reactivate communities and empowers people to rebuild their housing, their lives and their livelihoods. Reconstruction should begin as early as first day of the disaster. The first and main effort in responding to a disaster is always made by the affected community. Support must also be based on an understanding of the different roles and resources of individuals and groups within the community.

### Coordinate and promote a strategy for response

Community members and leaders of local implementation should be partners in policy making. Reconstruction policy and plans should be financially realistic but ambitious with respect to disaster risk reduction. Coordination between government and person affected should be based on consensus. Coordination strategy aims to support the government filling the gaps where necessary. The strategy should cover the entire response from initial crisis to recovery, and to the point at which durable solutions are reached for every member of the affected population. The strategy must be consistent with international and national laws, standards and principles. Reconstruction is an opportunity to plan for the future to conserve the past.

### Main continuous assessment of risk, damage, needs and resources

Emergency assessments, followed by ongoing assessments, monitoring and evaluation, are essential to a successful response and should be reviewed and updated according to the results obtained from the ongoing process.

### Avoid relocation or resettlement unless it is essential for reasons of safety

Affected communities should not be displaced or resettled unless it is essential to avoid risks from actual hazard. Remaining near homes enables survivor to support themselves and recover their livelihood.

### Minimize duration and distance of displacement, when displacement is essential

If displacement is essential for the reason of safety the displaced population should be supported to minimize the duration of their displacement and the physical distance from their place of origin. Minimizing the duration and distance of displacement enables the people to recover their social connections and livelihoods as quickly as possible.

### Support settlement and reconstruction for all those affected

Support must be offered to all affected persons, regardless of whether or not they are land or property owners or living in houses or apartment buildings. Families hosting displaced populations must also be included. Assisting groups should identify and monitor major problems facing the response so that the needs of all affected persons can be fulfilled, regardless of race, ethnicity, gender and age. This includes people who settle in a new location. All variety of solutions should be considered.

## VI. Sustainable construction practices

Sustainable technology should be low cost, practical and environmentally appropriate. Availability of construction material and skilled worker should be kept in mind while selecting the most appropriate construction system. Some recommendations for sustainable house are,

Houses should be energy efficient environmentally sustainable.

House design should be resistant to hazards such as floods and earthquake.

House design should be robust, simple and low cost.

House design should be flexible that can easily upgrade and expand.

While designing the building its whole cycle should be kept in mind such as construction maintenance, reuse, demolition and recycling phases. Sometime later on renovation turnout to be technically complicated resulting more expensive.

Use design materials that can be easily recycled.

Ensure cost effectiveness in all construction activity

## VII. Reuse of temporary shelters

Temporary shelters can be reused when they are still in good condition. Temporary shelters should be so planned and constructed to allow them to be either integrated into, or disassembled/recycled for use in the final buildings. This requires well planned site plan. Affected people from disaster are not victims, they are the first responders during an emergency and most critical partners in reconstruction.

GOU has prepared project to deal with the disaster problem. This project will have six components.

**1. Resilient Infrastructure Reconstruction:** About 4000 damaged houses and 1000 Public building (school, hospitals, women and child center) The aim is to reduce vulnerability of the affected population and restore access to the basic services such as health, education and governance. US\$ 42 million is allocated in this head.

**2. Rural Road Connectivity:** This component will finance the reconstruction of 5,170 km of village roads bridle path and other district roads including 85 motor bridges and 140 bridle bridges. All bridges and roads reconstructed will follow IRC guidelines. About 65 million US\$ has been allocated for this component.

**3. Technical Assistance in Risk mitigation and response:** This component will finance the activities to enhance data preparedness remote sensing capacity for damage assessments, flood forecasting and early warning capability, automatic hydro meteorological monitoring systems, satellite imaginary for hazard and vulnerability assessment. The aim is it enhance knowledge, understanding and capacity in risk mitigation. About 20 million US\$ has been allocated for this component.

**4. Capacity building in disaster risk management:** This component will finance the strengthening of Emergency operation centers and decision support system for contingency planning in Uttrakhand. Training, exposure visits, and knowledge exchange programs for first responders and community members will also be established. About 15 million US\$ has been allocated for this component.

**5. Implementation support:** This component will finance incremental operating costs for the Project Management Unit and respective Project Implementation Units. These will include consultancies required for the preparation and supervision of specific activities, trainings, exposure visits and knowledge exchange programs. About 8 million US\$ has been allocated for this component.

**6. Contingent Emergency Response:** In case of a natural disaster, this component will allow the government to re-allocate project funds to support urgent response and construction.

## VIII. Conclusion

Buildings should not be allowed to construct in river spate and on the slope prone to slide. Recommendation of National Building Code and CBRI Roorkee should be followed. Well equipped metrological lab should be established to forecast about weather accurately. People should be educated to react immediately on weather forecast. Administration should be enough sensitive to response and implement the ideas for protecting the people from hazard. Timely action, sometimes, saves the lives of thousands and properties of cores. Disasters cannot be avoided but their impact can be minimized.

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