DMS-HIMALAYA

DISASTER MANAGEMENT SYSTEM FOR THE HIMALAYAS

LESSONS LEARNT FROM THE 2013 FLOODS IN NORTHERN INDIA FOR EFFECTIVE DISASTER MANAGEMENT IN THE HIMALAYAS

DMS-HIMALAYA
(Disaster Management System – Himalaya)
– Lessons Learnt from the 2013 Floods in Northern India for Effective Disaster Management in the Himalayas

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Contributors:
Authors: Gargi Banerji, Dr. Mary Ipe, Sejuti Basu
Stakeholder interactions & Compilation: Geetika Kaushik, Rupesh Desai
Graphics: Nitin Rawat, Sandeep Thakur
Editorial team: Greg Hilditch, Moitreyee Chatterjee
Support: Amit Gupta, Rohit Gupta, Surendra Rawat

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Gargi Banerji, PRAGYA

Dr. Mary Ipe, PRAGYA

Sejuti Basu, PRAGYA

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FOREWORD

In 1987, I had the privilege of sailing with the 7th Indian Scientific Expedition to Antarctica. We went on a Swedish ice breaker, solid steel - more than two football fields in length! Yet, when we were crossing the "Roaring Forties'" and "Furious Fifties", the ship was being tossed around like a leaf on water. We witnessed the power of nature and how insignificant and helpless we mortals, with our tiny toy ships were. But then, people crossing these difficult stretches of the ocean were taking as many precautions as was possible and could be anticipated. While nature roared, they adapted.

The Himalaya is awesome and still growing. The first time I saw the unspoiled beauty of the Himalayas was in 1965 – as an awestruck school child taken for ten days to a deodar forest retreat of the Salesian order. I have, ever since, become a devotee of this wonderland crowning our country. I have seen its dales, valleys, peaks, and people at least once a year, oftentimes more, and have realized that unlike the voyage to Antarctica, where we were simple witnesses to nature's fury (and beauty), in the Himalayas it is we who have been consistently creating conditions for nature's fury to assume fearful dimensions – carelessly interfering and causing great harm to its fragile eco-system and its inherent structural and tectonic weaknesses. Fearfully, one anticipates that in the near future, climate change and its new face of unpredictability will result in high (and flash) precipitations that will invariably compound the risks of living in such areas as well as carry out rescue following disasters. The Himalayas will increasingly roar in anguish. It is high time for us to recognize this fact and adapt.

PRAGYA's report has brought out, through first hand observation, the context of the June 2013 disaster, the vulnerability of the disaster affected people, and the spirit that has enabled them to rise up quickly from the rubble, seeing to the welfare of tourists and participating in post disaster rehabilitation. It has also highlighted the 'spot evolved' and coordinated answers found by the official and civilian relief providers. The overwhelming response of the entire country, wishing to help has also been written about. However, the report has also pointed out many areas that failed to perform, and has shown that if preparedness is weak, subsequent relief and rehabilitation will always be that much harder, chaotic, time consuming and resource wasting.

One cannot wish away disasters of this type happening again and again over a terrain that is deficient of reliable, surface communication infrastructure. The question is - can one learn from this experience?

Direct stakeholders will have greater motivation to learn and re-learn even though public memory is known to be short. But indirect stakeholders, who often gain from the absence of enforceable plans and zoning controls may continue to exploit the opportunities for profit. Indeed, many will benefit from chaotic and ad hoc post disaster activities! 'Most of the District Disaster Management Authorities (DDMAs) are dormant structures, and get activated post disaster. The District Disaster Management Control Room too starts functioning only after a catastrophic event has taken place' is a quote from the report. There is, obviously no substitute to the role of the direct stakeholders taking firm decisions by themselves, primarily for their own welfare; carefully questioning the often hidden motive and advice of all secondary stakeholders and outsiders.

An ever vigilant structure of the primary stakeholders that understands this and the geology, terrain and climate of the Himalaya (assisted by scientists and others), is trained, equipped, and included in the first line of communication and warning dissemination network; and can rise up in short notice to perform designated tasks, is a very welcome suggestion of this report. Likewise, a supporting mechanism at the District and State levels that is ever alert, has been designed to absorb information (mainly climatic, geo-physical and people related) from principle sources, collate and analyse, arrive at quick, coordinated decisions (especially with the armed forces who can operate in the mountains in the absence of reliable surface communication), and can continuously and seamlessly integrate with the needs of the

primary stakeholder and the relief providers is another essential component of disaster preparedness highlighted. To me, these two are the primary "take-aways" from the report. Knowing what to do when should be the primary Mantra of disaster management.

The effort that has gone into understanding the complex inter-linked issues and packaging all into a reference format is, indeed, commendable. It speaks of the remarkable capacity and reach of this organization working in the Himalayas.

Well done PRAGYA.

G B Mukherji
A worshipper of the Himalayas

[*Retired Secretary to the Government of India;*
Chairperson - Task Force on Hill Area Development, "To look into problems of hill states and Hill areas and to suggest ways to ensure that these states and areas do not suffer in any way Because of their peculiarities", Planning Commission, Government of India (2010)]

PREFACE

In June 2013, high-intensity rain and cloudbursts in the State of Uttarakhand in the Indian Himalayas triggered a series of hydrologic and geologic disasters, including glacial lake outbursts, landslides and flash floods in multiple locations, leading to a catastrophe of immense proportions, affecting more than 2,036,000 people over a 40,000 square miles area.

PRAGYA, an international NGO with specific expertise and strong ground presence in the Himalayan region, was able to leverage its resources and networks effectively for the Relief and Rehabilitation (R&R) that followed. PRAGYA's ground staff in the affected districts in Uttarakhand were able to provide humanitarian support to the flood-affected communities, supplementing the government's relief measures and continually assessing the situation. The PRAGYA India and PRAGYA UK fundraising teams mobilized support and transported necessary relief material to all the affected areas. A Field Office in Joshimath (Chamoli district), seven Resource Centers and ground staff in Uttarkashi, Rudraprayag and Pithoragarh districts enabled PRAGYA to extend its support and provide immediate relief to the affected communities in Uttarakhand. A new Field Office and a Resource Centre were set up in Rudraprayag in order to facilitate coordination in this district that was the epicenter of the flood. PRAGYA reached out with food supplies, medicines and essential items (blankets, tarpaulins, tents, hygiene kits, water purification tablets) to evacuees in relief camps. Where commercial establishments were not affected, necessary supplies were procured locally from within the district to provide immediate support. PRAGYA staff also coordinated with the local health departments to obtain medicine requirements, and procured available drugs from the local stores to help the injured and ailing. PRAGYA also helped out with the required IT and coordination work at the District Administration facilitated Control Room at Joshimath that was tracking movement of rescued pilgrims and local population, tracking status of road connectivity and coordinating helicopter sorties.

PRAGYA reached out to remote flood-affected villages and their communities, with a particular focus on women and children. Field staff of PRAGYA coordinated with village residents and Panchayats (village councils) to reach otherwise inaccessible areas. Villagers from the affected areas were requested to assemble at their nearest road-head where the supplies were reached through small vehicles and then distributed. Reaching some of these villages was not easy. The team and village residents carried relief material on mules, ropeways and their backs to reach the affected villages.

Following the relief phase, PRAGYA has initiated rehabilitation measures for livelihood and education and restored provisions for water and sanitation in the flood-affected area. Recognizing the need to bring a semblance of normalcy to the lives of children in flood-affected communities, the organization helped to reinstate schools damaged by the flood and supported them with stationery items, tents and teaching aids. Furthermore, PRAGYA worked with other agencies to jointly organize health camps with specialist doctors from other parts of India, and supported National Disaster Relief Force (NDRF) with hygiene products for those in need at remote locations. Mobile Health Vans were pressed into service in two districts to deliver health services to flood-affected villages without adequate access to healthcare. Water storage and filtration systems and portable toilets were set up as community facilities in several villages in which these systems had been destroyed, and the danger of epidemics was looming large. Food security and small incomes for flood-affected households were assured through the provision of greenhouses for growing vegetable crops for consumption and sale. PRAGYA has also supported the UN Disaster Management Team (UNDMT) in Uttarakhand to compile and share information related to interventions in healthcare sector by various agencies. PRAGYA staff continue to take part in district and state level coordination meetings, share and receive periodic updates as part of inter-agency coordination process.

Documentation of lessons learnt

Recognizing the growing risk of disaster and increasing frequency of extreme events in the high altitude Himalayas, PRAGYA felt the need to examine the disaster response to the catastrophic flashfloods in Uttarakhand, one of the worst humanitarian crisis of the decade in

the region, and extract the learnings from it for improved Disaster Management (DM) in the Himalayas. The insights gained from the organization's experiences in the Relief and Rehabilitation (R&R) process and interactions with a range of stakeholders and Responders in the course of it were supplemented by a focused study by PRAGYA involving consultations with selected stakeholders and Responders, and information obtained from other studies and reports. This information was used to comprehensively assess the effectiveness of the response to the 2013 Uttarakhand floods, with in-depth understanding of five aspects (Responders, Coordination, Services, Delivery process, and Resources and Material) and analysis of impacts along three parameters (Responsiveness, Outreach and Adequacy). The findings were used to derive recommendations for Himalaya-adapted DM.

The study revealed that there were critical gaps and errors in the early warning for the disaster, which along with the history of inappropriate development activities in the region in recent times, led to large-scale damage and loss of several lives. The R&R effort was made complex by the fact that it was a combination disaster, occurring over a number of days, with poor infrastructural conditions in conjunction with the complete breakdown of communication and road links due to the catastrophe.

The R&R effort is among the largest ever emergency operation carried out by the Government of India. Several small local NGOs with strong ground knowledge also assisted in rescue of 125,000+ people. A large number of government and non-governmental humanitarian agencies stepped in as Responders, majority of them in the emergency and relief phases. Coordinating mechanisms were however extremely weak, particularly in the relief phase, and this led to flaws in targeting, with severe shortage in particular areas as well as gross wastage in certain others. The formation of the UN Disaster Management Teams in each of the affected districts 75 days after the event helped to smoothen the coordination. However, its weaning off during the rehabilitation phase has meant a serious loss of momentum in this phase. The unique 'place conditions' of the Himalayas meant a severe stress for human resources and logistical services of the humanitarian agencies.

Agencies with the best performance with respect to Responsiveness and Outreach were the government (in particular, the armed forces which carried out most of the emergency rescue and evacuation) and local NGOs. Considerable collaborative behavior was displayed by almost all Responders agencies, to ensure complementarities, thereby enhancing outreach and responsiveness. Most Responder agencies were multi-sectoral and provided a range of services; yet, while essentials such as food and clothing were met adequately through R&R effort, medical care was inadequate, and sectors such as Water, Sanitation and Hygiene (WASH) and psychological counseling were neglected, as were the most vulnerable sub-groups of women, children, the elderly and disabled.

The findings of the above study and the learnings extracted helped to crystallize inputs for improved Disaster Management suited to the specific context of the Himalayan region in terms of the unique pre-event, event and post-event characteristics.

Seven Strategies for a Fortified DM for the Himalayas were evolved. They include the following :

i) Nurture environment slack to help absorb extreme events, through proactive and prescriptive measures.
ii) Elaborate preparedness measures following vulnerability assessments.
iii) Strengthen 'combination disaster' monitoring and lower early warning thresholds.
iv) Implement Community-based Disaster Management.
v) Harness a Local Responder Network for quick and effective response.
vi) Establish and facilitate the Incident Organization.
vii) Adopt communication and transportation technologies for the last-mile.

A detailed set of recommendations constituting a DM framework specific to the Himalayas, called the **DMS-HIMALAYA** was also developed.

Structure of this book:

This book presents the catastrophe, response, lessons learnt and the improved DM framework for the Himalayas in five chapters. Chapter I deals with the natural hazards, policy environment and the Disaster Risk Reduction (DRR) structures in the Himalayas. The chapter also explains the disaster risk and trends and the considerable constraints for DRR in the region. Chapter II traces the Himalayan Tsunami 2013, detailing the event, damage and the lesson learning processes. The event trajectory and dynamics clearly depict the evolving, cascading combination disaster with its multiplier effect on loss of lives, livelihoods and infrastructural damages. Chapter III traces the complete response process to the disaster, and describes the chain of errors, and the response trajectory and dynamics. Chapter IV examines the effectiveness of the response and its impact. Finally, Chapter V presents the **DMS-HIMALAYA,** a fortified Diaster Management model for the Himalayas, bringing out the unique place-specific stressors and a suitable response process. Recommendations are made for all phases of the disaster management continuum- mitigation, preparedness, relief, rehabilitation and recovery.

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1 NATURAL HAZARDS AND DRR IN THE HIMALAYAS

DISASTER RISK AND TRENDS IN THE HIMALAYAS

The Himalayan region in Asia (Fig. 1) is amongst the most hazardous places on earth, periodically ravaged by a range of natural disasters, meteorological and geological, such as snowstorms, avalanches, landslides, and earthquakes, owing to its unique topographic and climatic characteristics. Hydro-meteorological disasters impact a very large number of people, and geo-physical disasters lead to huge death tolls. Given the high gradients and varied terrains in the Himalayas, the Hydro-meteorological and Geo-physical hazards are most often not single events, but sequential or combined with escalated effects. Impacts of climate change are also 3-5 times higher at these high altitudes than in other parts, and hence climatic volatility is on the increase today, with a significant rise in the frequency and magnitude of extreme weather events, particularly when combined with intensified monsoon circulations. Warming in the Himalayas has been 2-3 times higher than the global average over the last 100 years. There is a significant change in the amount of rainfall and increase in number of cloudy days over the years. The summer monsoon which dominates the climate in the Himalayas displays higher total precipitation, and an increased frequency of high intensity rainfall, including cloudbursts and other such phenomena (Vedwan and Rhoades, 2001). As atmospheric temperatures continue to rise and patterns of precipitation change, a rapid meltdown of the permafrost and glacial runoff is accelerating soil erosion and affecting river regimes and sediment transport along rivers and in lakes, turning the rapidly-flowing, silt-laden Himalayan rivers into forces of destruction, increasing the potential of associated natural hazards in the region, including landslides, flashfloods and glacier lake outburst floods. Studies on Himalayan rivers have shown increased number of 'high magnitude' flood events over the last three decades (ICIMOD, 2007). The escalated pace of glacial melt has also created a new terror for the Himalayan people – glacial lake outburst floods (GLOFs). The high altitude Himalayan region has more than 5,000 glacial lakes, many of these lakes are at risk of rupturing their walls due to rapid snow melt, earthquakes or a breach of terminal moraines. The resulting GLOFs involve the sudden expulsion of huge volumes of water and debris and can cause catastrophic flooding in the downstream.

Along with the increasing scale and frequency of natural disasters, their intensity and impact on the lives and livelihood of Himalayan people living in the area are also increasing. More than 65% of 210 million people in the Himalayas face frequent natural hazards, causing immense destruction of life and property (IPCC, 2007, ICIMOD, 2006, 2007). In 2008, seven of the top ten natural disasters by number of deaths occurred in the Himalayan region (United Nations International Strategy for Disaster Reduction), and water-induced disasters such as flashfloods and debris-flow account for nearly three-quarters of all economic losses and more than half of the casualties. Increased floods, cloudbursts and flashfloods, low snowfall in the winters, shift of cropping seasons, as a result of climate change are affecting the natural resource base and leading to increasing impoverishment of Himalayan communities. The frequent episodes of rapid-onset disasters and the associated loss to life and property have increased