



The catalysts of CHANGE

Ability of Local Multi-Stakeholder Action to Catalyse
shifts in Programme and Policy Environment
towards mainstreaming DRR CCA

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India has been experiencing increasing incidences of hydro-meteorological disasters that defy trends. Flash floods in Barmer in the western arid region of India (2006) and in Leh in the northern mountain desert (2010) have underlined the impending climate and disaster threats in fragile ecosystems.

While the new National Disaster Management Policy professes mainstreaming of Disaster Risk Reduction (DRR), it remains a fragmented domain. Significant work is yet to start on mainstreaming of climate change adaptation, and it's linking with DRR.

The investigation team bring experience of NGO humanitarian field practice, NGO policy formulation, and academic research and teaching on environment and disaster management.

Based on the research and field practice experience of the investigators, the project studies the effectiveness of Local Multi-Stakeholder Action as an enabling factor for mainstreaming DRR-CCA in post disaster programs and ultimately in state and national policies.

It assesses the impact of consolidation of local change agents, their enablement through knowledge tools, and their strategic actions as an institution as enablers for shift in long term recovery programmes and state and national policy environment towards linking DRR and CCA and mainstreaming them in development processes.

It finally provides a set of rated influencing factors that can enable local multi-stakeholder platforms be more effective in influencing programmes and ultimately policies towards mainstreaming DRR CCA.

2 Project Information

2.1 Project Title

Ability of Local Multi-Stakeholder Action to Catalyse shifts in Program and Policy Environment towards mainstreaming DRR CCA

The **Contract** for the above project was concluded between **The International START Secretariat**, 2000 Florida Avenue NW, Suite 200, Washington, DC 20009 USA and **Dr. Anshu Sharma** and **Sustainable Environment and Ecological Development Society (SEEDS)**, 15-A, Institutional Area, RK Puram, New Delhi – 110022.

2.2 Contact Information

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2.3 Contract Period

The official term of the Contract was from 08 June 2012 to 31 December 2013.

2.4 Grant Amount

The total grant awarded was US\$109,140 according to negotiations between Principal Investigator and the START Secretariat.

3.1 Background Information

In India climate change impacts are being felt through a rise in extreme weather events and increasing weather related development stressors including water shortages, losses in crop yield and rise in vector borne diseases. Those living in fragile ecosystems of the country are feeling the severest of these impacts. Leh district in the upper Himalayan region of the country is one of the largest and remotest districts of India. In recent years Leh, which normally has a cold desert climate witnessed some of the worst flash floods in its memory. Other impacts of climate change in Leh are being felt through water stress, loss of grassland and locust attacks. In another part of the country, Barmer a district in Rajasthan's Thar Desert area also witnessed unusual flash floods that caused severe damages. Climate studies have shown that Rajasthan falls within the areas of greatest climate sensitivity, maximum vulnerability and lowest adaptive capacity in the country.

Communities living in Leh and Barmer and other similar climate sensitive and remote regions of India have limited capacity to deal with these 'new' dimensions of disasters and climate change impacts. Consequently the need to address climate change concerns with the aim of reducing disaster risks and enhancing adaptive capacity is high in such climate sensitive regions as losses due to climate change are already negating hard-earned development gains. The need to address DRR and CCA in national development policy is high also given that climate change is adversely impacting the lives and livelihoods of about two thirds of the country's largely rural and resource dependent population.

While the Indian government professes its high vulnerability to climate change and is also party to a number of international treaties and development plans, including the HFA, UNFCCC and the Bali Action Plan that formally acknowledge that integrated DRR and CCA actions can help reduce vulnerability, its adaptation investments remain focused on technological reforms to enhance the efficiency of energy use, including efforts to improve the air quality in major cities and enhancing afforestation. However, this conceptual understanding does not reflect in humanitarian and development policy actions, especially at the national and local level, where it is much needed.

3.1.1 Strategic Position

SEEDS India proposed that policy action that supports the integration of DRR and CCA can be generated by:

- Being able to identify and leverage 'windows of opportunity' for policy action through processes of agenda setting, coalition building and policy learning activities in the context of climate and disaster resilience.
- Measuring the outcomes of this process by conducting an in-depth evaluation of these efforts to understand how systematic approaches to policy change can be replicated elsewhere.

Another related aspect to generating policy action towards integration of DRR and CCA is to be able to know the 'extent' to which the integration of DRR and CCA in development policies has taken place. Examining existing policies that incorporate DRR approaches that enhance adaptive capacity was proposed to create a simple bi-variate tool to measure the 'extent'. Creating such a tool would be useful for policymakers, practitioners and communities to understand the extent to which a development policy is resilient or not and would be useful in presenting an analysis to external review processes such as the Hyogo Framework of Action Review.

The research project took examples of flash floods in Leh (2010) and Barmer (2006) districts of India by examining policy positions that district plans take vis-à-vis mainstreaming of disaster risk reduction and climate change adaptation in long term recovery and development planning. By examining the extent to which these policy positions, and any reforms after the major disaster events address DRR and enhance adaptive capacity of those at risk, a district level 'agenda for integration of DRR and CCA' in district plans was identified through coalition building activities with different stakeholders at the district level.

The integration of DRR and CCA was addressed at district level because of two main reasons. The first one being that bottom up approaches facilitate consideration of activities at the local level, which is where the impacts of climate change, climate variability and extreme events are witnessed and where risks ultimately need to be handled (Olhoff, 2011). The second reason was that the district level administrative units in India are the lowest tier of policy development where government policies and programmes converge. As the policy and strategy level closest to the communities, the district level is the best suited to bring about upward filtered transformation.

3.2 Literature Review

3.2.1 DRR and CCA- Key Concepts

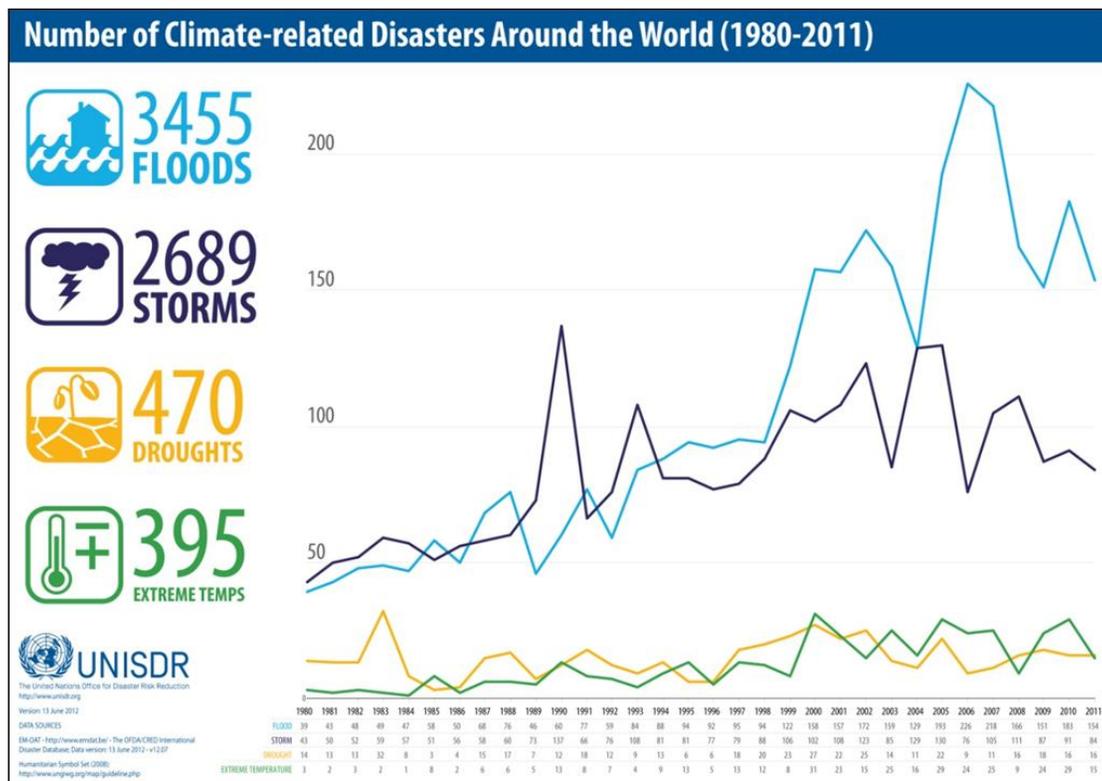
'Disaster' a word derived from Middle French *désastre* and that from Old Italian *disastro*, which in turn comes from the Greek pejorative prefix *δυσ-*, (*dus-*) "bad"+*ἀστήρ* (*aster*), "star". The root of the word *disaster* ("bad star" in Greek) comes from an astrological theme in which the ancients used to refer to the destruction or deconstruction of a star as a disaster.¹ Anyone who confronts the word makes him/her concerned of the numerous risks that follow. Natural hazards are mostly followed by disasters. The impact of disasters depends upon the capacity of the community to cope up with the hazards. The action taken by community signifies its vulnerability or resilience to disasters.

Disaster Risk Reduction studies the actions and practices followed by communities towards building their capacity and defines the actions and practice needed to reduce the risks. **Disaster Risk Reduction (DRR)** is the concept and practice of reducing disaster risks through analysis and management of the causal factors of disasters. It leads to reduced exposure to hazards, lessening of vulnerability of people and assets, effective management of land and the environment and improved preparedness for adverse events (UNISDR, 2009). DRR is a part of sustainable development and includes disciplines like disaster management, disaster mitigation and disaster preparedness.

¹ Taken from Etymology section of webpage - <http://en.wikipedia.org/wiki/Disaster>

The impact of disasters covers a wide range of human, material, environmental and economic losses. Out of several hazards, climate related disasters like floods, storms, droughts and extreme temperatures has caused severe damages in the recent past (Fig. 1). These disasters are the outcome of the rapid change seen in the climate around the world. Climate change increases disaster risks in a number of ways. It changes the magnitude and/or frequency of extreme events. It also changes average climatic conditions and climate variability, affecting underlying risk factors, and it generates new threats which a region may not have experienced earlier, for example, flash flood in arid desert environment of Barmer, Rajasthan, India left people stunned as most people have never seen any flood in their lifetime. To minimize the risk of changing climate and related disasters, adaptation capacity of communities needs to be strengthened. Climate change adaptation is the concept that anticipates the adverse effects of changing climate and provides guidance to take appropriate actions to address the damages caused. **Climate Change Adaptation (CCA)** is defined as “an adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits benefit opportunities” (IPCC, 2007).

Figure 1: Number of climate related disasters around the world (1980-2011)



Source: <http://www.flickr.com/photos/isdr/7460711188/in/set-72157628015380393/>

Table3.1: Definition of Key Concepts

Definition of Key Concepts

Disaster Risk Reduction: Disaster Risk Reduction (DRR) is the concept and practice of reducing disaster risks through analysis and management of the causal factors of disasters. It leads to reduced exposure to hazards, lessening of vulnerability of people and assets, effective management of land and the environment and improved preparedness for adverse events (UNISDR, 2009).

Climate Change Adaptation: Climate Change Adaptation (CCA) is defined as “an adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits benefit opportunities (IPCC, 2007).

Climate Variability: Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all temporal and spatial scales.

Beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability) (IPCC TAR, 2001).

Mainstreaming: A definition of ‘mainstreaming’ does not yet exist, although the term is widely used. It seems that ‘mainstreaming’ is used interchangeably with ‘integration’. Mainstreaming refers to the integration of adaptation objectives, strategies, policies, measures or operations such that they become part of the national and regional development policies, processes and budgets at all levels and stages (UNDP, 2005).

Vulnerability: The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.(UNISDR, 2004)

Resilience: The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNISDR, 2009).

Hazard: A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR, 2009).

Hydrometeorological Hazard: Process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR, 2009).

Exposure: People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses (UNISDR, 2009).

Capacity: The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals (UNISDR, 2009).

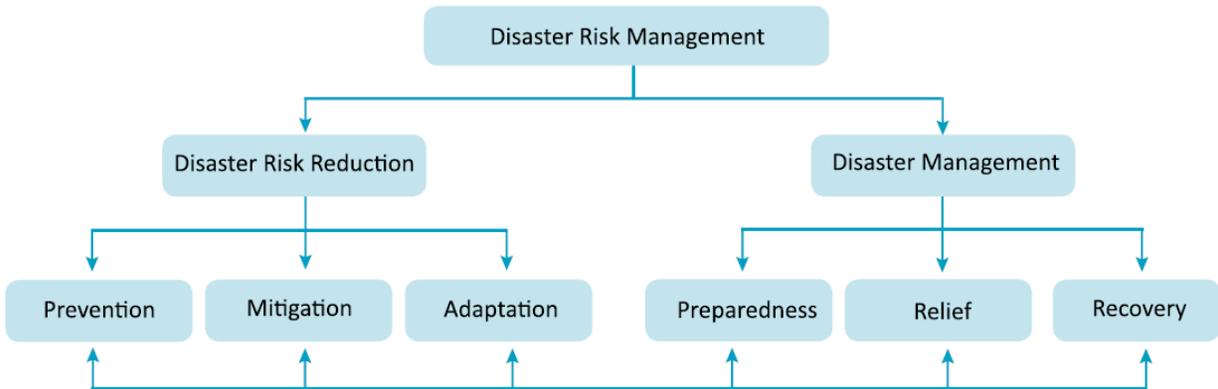
Adaptive Capacity: The ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences (IPCC TAR, 2001).

Extreme Weather Event: An event that is rare within its statistical reference distribution at a particular place. Definitions of "rare" vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile. By definition, the characteristics of what is called "extreme weather" may vary from place to place. An "extreme climate event" is an average of a number of weather events over a certain period of time, an average which is itself extreme (e.g., rainfall over a season) (IPCC, TAR, 2001).

3.2.2 DRR and CCA – Difference

In the disaster risk management framework (Fig. 2), Disaster Risk Reduction (DRR) is considered as one of the components for managing disaster risks and adaptation is one of the categories for DRR. CCA is a subset of DRR. DRR focuses on addressing existing risks related to all kinds of disasters whereas CCA focuses on only climate related disasters. DRR looks at risks more broadly rather than just focusing on climate related disasters while CCA focuses only on climate related disasters.

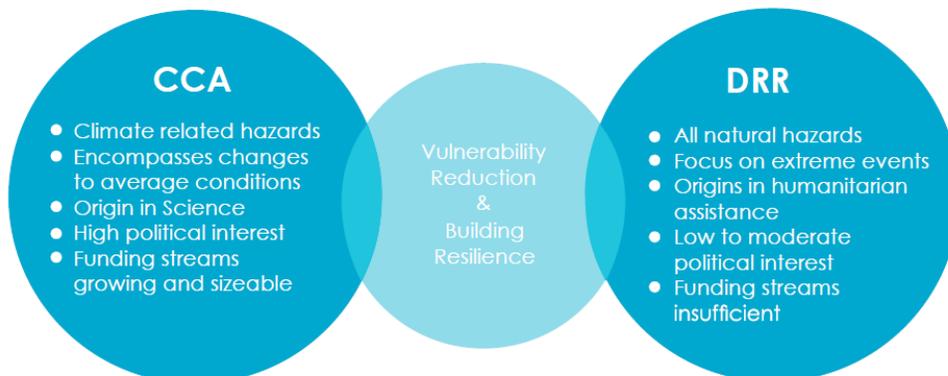
Figure 2: Disaster Risk Management and its components



Source: <http://www.unisdr.org/we/inform/publications/26725>

The basic differences and commonalities can be summed up as in Fig. 3 below. While DRR covers a vast area beyond climatic stresses, CCA includes climate extremes and also slowly impacting risks due to changing trends of climate. DRR has a comprehensive range of established tools and practices at all administrative levels unlike CCA which is rather a new concept having less developed tools and working platforms. While their scope and specific interests may differ, CCA and DRR have very similar aims in terms of seeking to build resilience in the face of hazards. They both focus on reducing people’s vulnerability to hazards by improving methods to anticipate, resist, cope with and recover from their impact.

Figure 3: Difference between DRR and CCA



Source: <http://www.unisdr.org/we/inform/publications/26725>

3.2.3 Need of Integration

The effect of changing climate magnifies the risks of disasters. It places additional burdens on humanitarian and development systems at all levels, and CCA and DRR play an important role to reduce these burdens. For both CCA and DRR, key shared objectives include protecting development gains and effective planning for managing risks and uncertainties for all shocks and stresses.

For most of the activities done under CCA and DRR activities, ‘No-regrets’ policies and actions are followed. This often follows less political will or financial incentive to invest resources to ensure for something that may or may not happen, compared with visible and popular infrastructure or social programs which attract people’s attention and involve profit making. In case of emergency situation assistance is provided majorly after disasters for relief and recovery activities but similar support for reducing risks in longer run remains largely unattended.

Till now climate change and disaster management communities have operated largely in isolation from each other. They have their own inter-sectoral coordination groups, channels of funding, separate entry points in international agreements and separate insights in similar research areas. While sharing very similar objectives and similar challenges in formulating their agendas, they typically fail to coordinate among themselves. This leads to duplication of efforts, coordination gaps and administrative inefficiencies. These not only hamper DRR and CCA efforts, but also compromises overall effective use of resources. Also, the rapid expansion of climate change related activities may waste time and create risk developing similar approaches that have already been done during DRR activities. On the other hand, efforts on DRR that do not take into account the impacts of climate change may fail to achieve their objective. Hence, integration of CCA and DRR is required to seize opportunity for joint work towards common objective of reducing risks.

3.3 Objectives of the Study

The major objectives of the study were as follows:

Objective 1

To enable policy action towards DRR and enhancing adaptive capacity by creating ‘windows of opportunity’ through processes of agenda setting, coalition building and policy learning activities at the local level.

In the process of achieving Objective 1, the study answered the following questions-

- How do various levels of disaster response and recovery actions (State, non-State actors) contribute to shifts in policy towards DRR?
- What DRR indicators enhance adaptive capacity of a community in a post disaster situation
- What factors enable decision-making for long-term risks in a post disaster situation? What is the role of knowledge communities in driving shift in policy towards DRR and building capacity?
- What role does scientific and technological information play in tackling uncertainty and flexibility in incorporating shifts in policy in post disaster situations?

Objective 2

Setting standards for local multi-stakeholder action for bringing about larger integration of DRR and CCA for resilient development.

- Consolidate innovative and strategic action towards DRR and CCA integration in policy and practice in post disaster situations and “highly vulnerable” areas in India.
- Identify factors of influence, and benchmark them for setting rated standards for local actions that will influence program and policy environment components.

The research proposed to study local level policy initiatives to build climate and disaster resilience in Leh and Barmer districts of India. Leh (cold desert environment) and Barmer (tropical desert environment) experience very little rainfall with drought like conditions for most of the year. However in the recent years both districts have witnessed heavy and untimely rainfall resulting in flash floods that have caused heavy damages.

3.4 Methodology

The research methodology included a literature review of similar efforts around the world. Our methodology is also informed by recent key studies that focus on creating opportunities for policy action in decentralized government structures, HFA mid-term Review report, analyses of the HFA review and the global assessment report on DRR by the UNISDR.

Major components of methodology

1. Field Research – The main objective of this part of the research methodology was to help in setting the agenda for bottom-up policy action for integration of DRR and CCA under resilient development framework. This component of the research project involved conducting literature review, stakeholder analysis, interviews, focus group consultations, workshops and case studies and other data collection methods to:

- Analyze district level policy reforms that were a direct result of the disaster response action and DRR activities (training programs, assessments, HFA review, workshops, reports etc) conducted before the disaster. The main questions we asked are – what are the policy reforms instated as direct result of the disaster, response action and prior DRR capacity building activities? What factors influenced policy reforms – coalitions, innovative disaster management and DRR programs, additional resources, needs assessments etc.
- We further created context specific Climate and Disaster Risk Reduction indicators to assess the extent to which these reforms address DRR issues. This helped us develop a list of policy ‘actions’ that address DRR.
- We then mapped these ‘DRR policy reforms’ or actions against a context specific adaptive capacity indicators framework. This provided us with a sub-set of policy actions that meet both DRR and adaptive capacity indicators.
- Additionally based on this analysis we created a simple bi-variate tool to assess the level of integration of DRR and CCA in local policy action.
- Based on this outcome, we organized local level multi-stakeholder workshops at the district level to incorporate feedback on the findings and on how these policy actions can

be enhanced further. We also developed a report based on this field research that formed part of our submission to a peer reviewed book chapter.

2. Coalition building – We organized multi-stakeholders workshop to disseminate the findings of the field research and to further build a national policy agenda for integration of DRR and CCA into development planning and decision-making. We also organized a national level workshop inviting innovation policy action for DRR and CCA and consultations for better integration of DRR and CCA in development policy. We prepared a national level policy brief based on the outcomes of these workshops and the field research findings.

3. Policy learning – Based on the above two components we developed a set of learning products under our Climate and Disaster Initiative to integrate the learning of this project into field practice knowledge initiatives jointly by SEEDS and Kyoto University.

Other than the above, our three important existing projects guided our research methodology. These include:

1. SEEDS India disaster response projects in India, especially SEEDS India disaster response programmes in Leh and Barmer.
2. The Climate and Disaster Resilience Initiative project in which SEEDS India is a partner organization.
3. SEEDS India Blended Learning project for policymakers and practitioners

3.5 Reference Period

The project reference period was from 08 June 2012 to 31 December 2013.

4 Activities Conducted

The following activities were conducted during the project:

4.1 Desk Review

A detailed desk review of similar efforts was done during the research period. Recent key studies that focus on creating opportunities for policy action were studied in detail. HFA mid-term Review report, analyses of the HFA review and the global assessment report on DRR by the UNISDR, Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX), etc were reviewed to get inputs for DRR and CCA.

4.2 In Depth Interviews

To get a better understanding of the study area and to dig out actual issues and stories related to DRR and CCA for policy formulation, in-depth interviews were conducted in Leh and Barmer. Various stakeholders were identified and interviews were held in person to get insight of their experience about DRR and CCA. The various stakeholders included govt. officials, local leaders, scholars, researchers, civil society organisations, religious heads, village heads, local people, etc.

4.3 Focus Group Consultations

To get ideas, discuss plans and develop strategies for DRR and CCA, various Focus Group Consultations (FGDs) were held in the case study area. This helped to frame our project activities and led the path for informed decision making. The discussions made people aware of the project activities and provided opportunities for deliberation and debate on local and regional issues. The people were actively involved to give their inputs and suggestions and develop options.

4.4 Resource Mapping

To get acquaintance with the area in Leh, the physical resources in Serthi village was mapped. This portrayed information regarding the occurrence, distribution, access to and use of resources, topography, human settlements structure and their activities. It helped us to understand the local systems and how they work in harmony to integrate their resources to collective risk management. The maps prepared were then shared with people in Focus Group Discussions to take the agenda forward to action.

4.5 Participatory Rural Appraisal

To study the effects and the vulnerability of the people in the hot arid zone, a Participatory Rural Appraisal was conducted in 2 villages of Barmer district in western Rajasthan. The main objectives of the study include studying the vulnerable areas in the village and getting acquaintance with the local hazards which lead to disasters. The study also focuses on understanding local issues related to decision making regarding disasters and the local people's perception on what can be done at different levels to minimise the risks of disasters and climate change.

4.6 Household Surveys

Under the project a household survey was conducted to understand the people's perceptions about climate change and its relation to disasters. The survey was conducted in Leh district of Ladakh region in North India and Barmer district in western Rajasthan. A total of 400 households were interviewed (200 in each study area). The people in the project study area were asked to give their views about the changes they have experienced during last two or three decades. The questions were asked specifically to adults and older people to obtain a clear picture of climate change and related stresses developed in the area.

4.7 Developing a Bi-variate Approach

To understand the effects of disasters and climate change, several indicators at local level were explored. A set of context specific DRR indicators from Leh and Barmer experiences was developed based on HFA framework. Also context specific indicators for Leh and Barmer using literature on adaptive capacity indicators were developed using key studies on factors that enhance adaptive capacity. Through the bi-variate approach, a relationship matrix of enabling factors of local actions for influencing programs and policies towards integration of DRR and adaptive capacity was established.

For efficient planning, these indicators at local level were explored to understand the specific issues related to DRR and CCA separately. The indicators were then correlated to analyse the common points of intervention for risk reduction due to climate change or disasters.

4.8 Workshops

Based on the bi-variate tool, stakeholders were engaged on a common platform through workshops at various levels. Workshops at the district level were organised in the two case study areas to incorporate feedback on the findings and on how these policy actions can be enhanced further. For further coalition building, state level workshops were organised to disseminate the findings of the field research and to further build a national policy agenda for integration of DRR and CCA into development planning and decision-making. A sub-national level workshop was also organised inviting innovation policy action for DRR and CCA and consultations for better integration of DRR and CCA in development policy.

4.9 Setting up of AWS

In Leh, we set up a climate and disaster-learning school along with providing equipment for a community managed weather-monitoring station. The school was run by a local NGO (Rural Development and You) and SEEDS. The main activities of the school were to orient school communities and farmers to use the weather station, liaise with the State Meteorological Department and disseminate weather information to the local community. The school provided an anchor for local information exchange and discussions on dealing with day-to-day climate change stresses and understanding the links between temperature, precipitation and seasonal changes. This also brought the local community in direct contact with the State Meteorology Department.

4.10 Community Radio Training

In Barmer, SEEDS helped start a community radio programme with a local NGO called UNNATI. A group of local adolescent girls from a highly vulnerable and marginalised

community were trained to develop, edit and broadcast radio programmes. Fifteen minutes programme are broadcast twice a week, on climate change and disasters related issues of western Rajasthan. The programmes are divided into various sections, focusing on the climate change, disasters, local adaptation and risk reduction solutions, government policies, expert interviews and some cultural entertainment. The radio programme, already a huge success, is helping communities participate in the discussions on development, and also bringing cutting edge research outputs and information directly from experts to local communities and vice-versa.

4.11 Changthang Study

Over the three months between mid-December, 2012 and mid-March, 2013, there were four major snowstorms; a record for Changthang region in eastern Ladakh. In fact, it snowed consecutively between January 18th and February 3rd. The winter pastures were totally covered with blankets of snow. Usually, the wind would blow away enough snow so that parts of the pastures could be accessed within 5-6 days. Livestock could survive this amount of time without food. However, this winter, the snow was packed down so heavily that there was no access to the pastures at all. The plummeting temperatures only added to the crisis. January and February are the key months both for pashmina hair growth and birthing. Both goats and sheep required extra food at this time. Unfortunately, starvation meant that almost 90% of the young were stillborn or died. Around 40,000 livestock (goats and sheep) perished, as well as several hundred horses, yaks and other wild mammals.

Under the project, SEEDS, in partnership with Live to Love and RDY, planned an immediate pilot project in one of the worst affected and most cut-off areas before the next winter season. The story was recorded and displayed at various platforms putting an appeal to reach out for help to the affected families.

4.12 Report Writing

The learning of the project was consolidated into this report portraying project information, project activities, outcomes and products of the project, conclusion and future directions of the project.

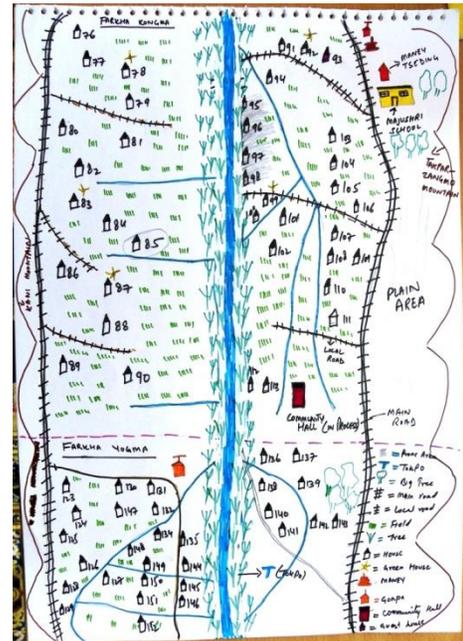
5 Outcomes and Products

5.1 Building DRR & CCA capacity in Leh

5.1.1 Resource Mapping

The resource mapping gave an in-depth insight of the physical, social, cultural, economic and environmental aspects of the community. The physical features were marked after consulting local people.

The maps were presented in Focus Group Discussions where the risks were identified by the people and options for reducing the risks were discussed. Topographical features were studied along with the available resources. High risk areas were marked and people were made aware of the risks. Safe routes during emergency situations were identified. Issues related to environment were also discussed with the people, covering local stresses. The mitigation and adaptation strategies were also discussed with the people.



5.1.2 Installing Automatic Weather Station in Leh

As part of the development of the resource maps and discussions with the community, it was apparent that a few areas needed immediate attention. One of them was “water scarcity”. Currently villages are fed by the glacial streams. These streams or Tokpos as they are called in the local language are drying up faster than usual. Apart from dealing with water stress, the community felt that erratic weather conditions were becoming a challenge for their traditional cropping practices. They felt that with better weather information and some agriculture extension support, the community could not only know when to sow their crops, but also how to manage pests and make most of the ‘rising’ temperatures. Farmers in Sakti felt that while there was potential to grow new kinds of vegetable and fruits with the changing weather conditions, storing the produce and pest management were out of their area of expertise. With very small landholdings and youngsters giving up agriculture for tourism-based jobs, Leh is increasingly becoming more and more dependent on food from outside. This not only increases a family’s overall spending budget, but is also instilling a sense of loss of culture and encouraging rapid and unplanned urbanisation. The government of Leh is also very concerned about this trend and has tried many ways to subsidize agriculture while encouraging eco-tourism. The rapid urbanization and encroachment of areas to build new guesthouses and shops was one of the main reasons for the devastation during the 2010 floods. The encroachment had blocked local streams causing major flooding in Leh.

As a result of the above discussions and suggestions, SEEDS planned to establish a climate school in Serthi village in Leh district. As part of this project, SEEDS installed an Automatic Weather Station (AWS) in a community center build by SEEDS in Serthi village. The AWS records six weather parameters covering atmospheric temperature, rain, wind speed, wind direction, humidity and atmospheric pressure. SEEDS' representatives discussed the benefits of AWS and highlighted the process of using the data and preparing the local community for unforeseen situations. The meteorological data generated by the AWS would help in planning community based disaster risk reduction and adaptation strategies in the long run.

5.2 Amplifying local voices in Barmer

5.2.1 Community Radio Programme

SEEDS trained a group of twelve adolescent girls and five youth in Barmer and Jodhpur district to produce and broadcast community radio programmes, which provided a platform for local communities to engage in debates and discussions on issues affecting their development. The theme of the radio programme was centred around issues of development and environment with specific programmes in climate change adaptation and the role of local and state authorities. SEEDS collaborated with UNNATI, a national NGO based in Jodhpur and its partners for this work. This was the first phase of the trainings to be carried out. A total of 11 days were spent on the training.

The Radio Programme Trainer trained the community group to manage their own radio programme. The trainer worked on site from a local NGO base for a period of 11 days initially with a team of 17 trainees who had no experience in media and little or no education background. The job entailed training these community members in all aspects of production & broadcasting skills, journalism skills, principles of community media/radio, development communication, understanding of community, media analysis. The trainer trained these 'Community Producers' to be powerful communicators, content creators, journalists, advocates and leaders in their communities. The trainer designed the content of the programme with the programme team of SEEDS and its partners in Barmer.

The radio episodes focused on the following issues of development:

1. Climate Change (1 episode)
2. Common Resource Pooling (3 episodes)
3. Female and Child Health (1 episode)
4. Diseases – (focus on Malaria) (1 episode)
5. Right to Information (1 episode)
6. Water Conservation – Use of wells (*tankas*) (1 episode)
7. Agriculture Insurance Schemes (2 episodes)

5.3 Research Analysis

5.3.1 Household Survey analysis

The impacts perceived by the villagers during the survey can be summarised as follows:

5.3.1.1 Observed Changes in Precipitation and Temperature

Most people interviewed in villages in Leh said that winter temperatures have been increasing and that the duration of the cold period has been decreasing. Likewise, the warm period i.e. summer is getting longer; hot temperatures are perceived even in April which was not evident before. In Barmer, people experienced warmer summers and decreased spans of winter. The variation in weather patterns is more in both the places. People said that earlier it was easier for them to forecast weather based on their traditional knowledge, but now they cannot do so. The rain/snowfall does not come in time. Even if the average rainfall/snowfall is similar to previous years, the variation in the timing of precipitation has increased their day to day stresses. It has deeply affected farming practices and cattle rearing which are major livelihoods in these areas.

In Leh, for snowfall (Fig. 4), 77% of the people said that it had reduced while the rest said that the time of snowfall has varied. In Barmer, 40% of respondents said that rainfall has decreased, 44% said that the timing has varied, 16% believed that it was same as before and 1% said that rainfall has increased.

For change in summer season (Fig. 5), almost all people in Leh (98%) responded that there is a rise in temperature of summer season and 2% said that the duration of summer has varied. In Barmer, 82% respondents said that a temperature in summer has increased and 16% said that it is same as before.

For winter season (Fig. 6) in Leh, 63% people responded that the length of winter season has decreased, 34% said that it has varied over the years and 3% said that the winter season has increased. In Barmer, 67% of the people in Barmer said that winter has increased, 7% said that the time has varied and 25% said that it has not changed much.

Fig. 4 Observed Changes in Rainfall

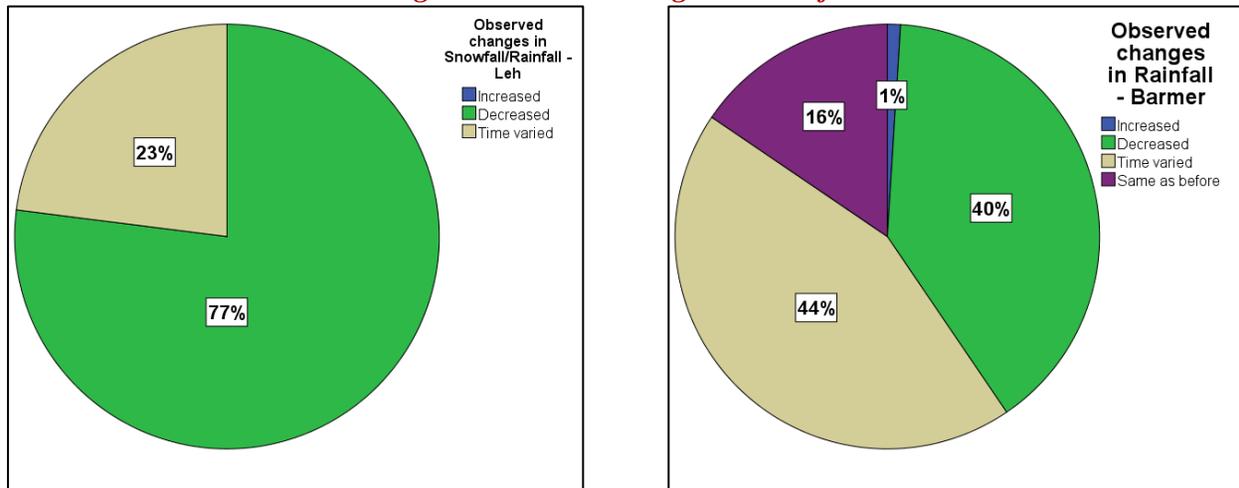


Fig. 5 Observed Changes in Summer

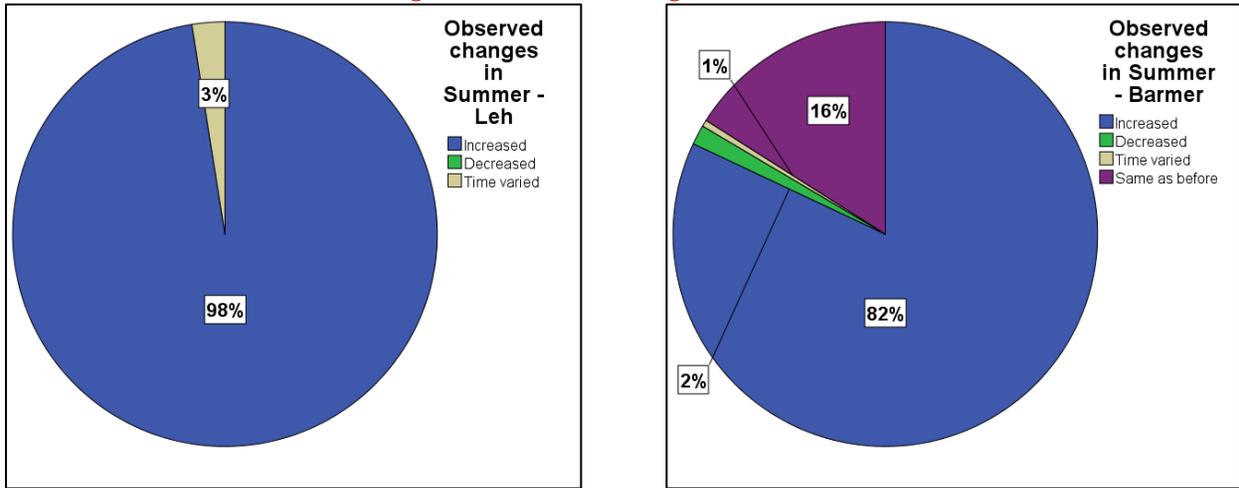
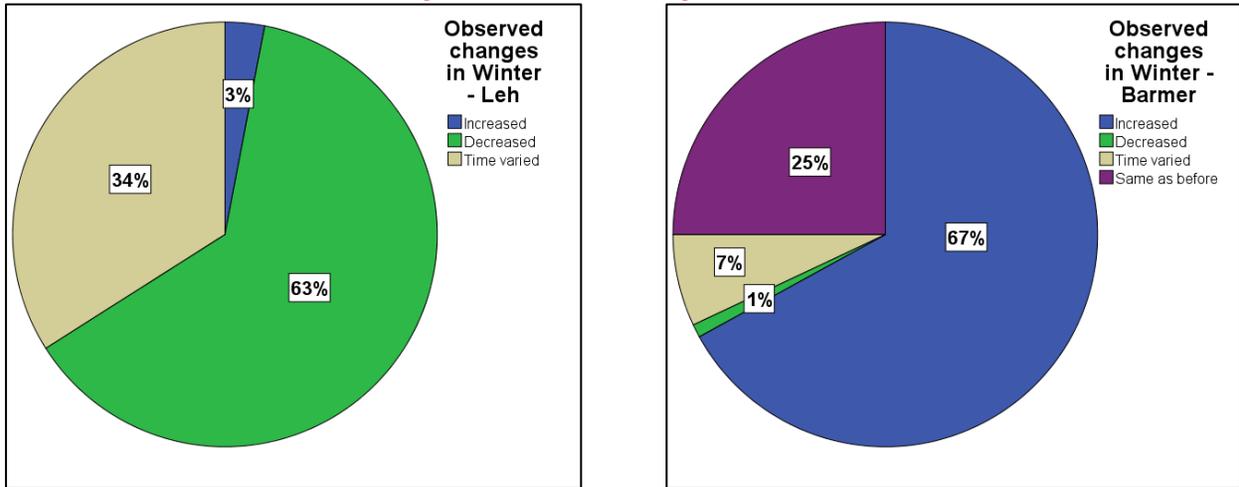


Fig. 6 Observed Changes in Winter



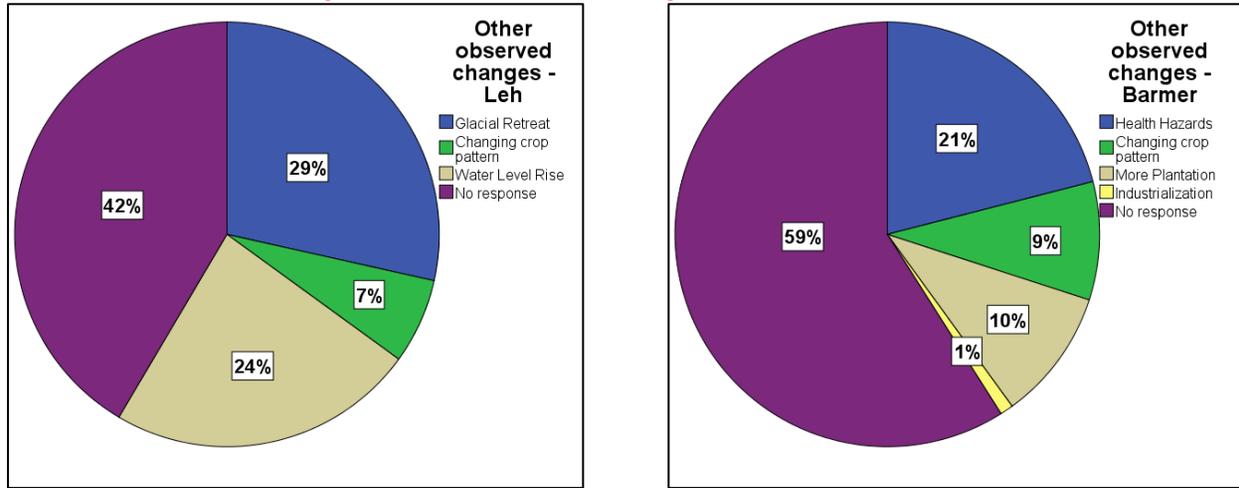
5.3.1.2 Other Observed Changes Related to Climate

As a result of changing climate, many changes have been observed by the people of Leh and Barmer (Fig. 7). In Leh, the major changes which affect their day to day activities include glacial retreat, changing crop pattern and rise in water level of rivers. In Barmer, the major effects are seen as increasing health hazards, changing crop pattern, more plantation and industrialisation.

In Leh, 29% of the respondents believe that glacial retreat is one of the major changes, 7% said that changing crop pattern has affected their lives more, 24% respondent believed that rising level of water bodies have affected their day to day activities and 42% people did not respond to this question. In Barmer, 21% respondents believe that increasing health hazards is an effect of climate change, 9% believe that changing crop patterns are also a result of climate change, 10% believe that because of more plantation in some concentrated pockets, micro climatic conditions have changed and some people (1%) said that increasing industrialisation and urbanisation has

disturbed their ecological system. However, 59% of the respondents did not give any answer to this question.

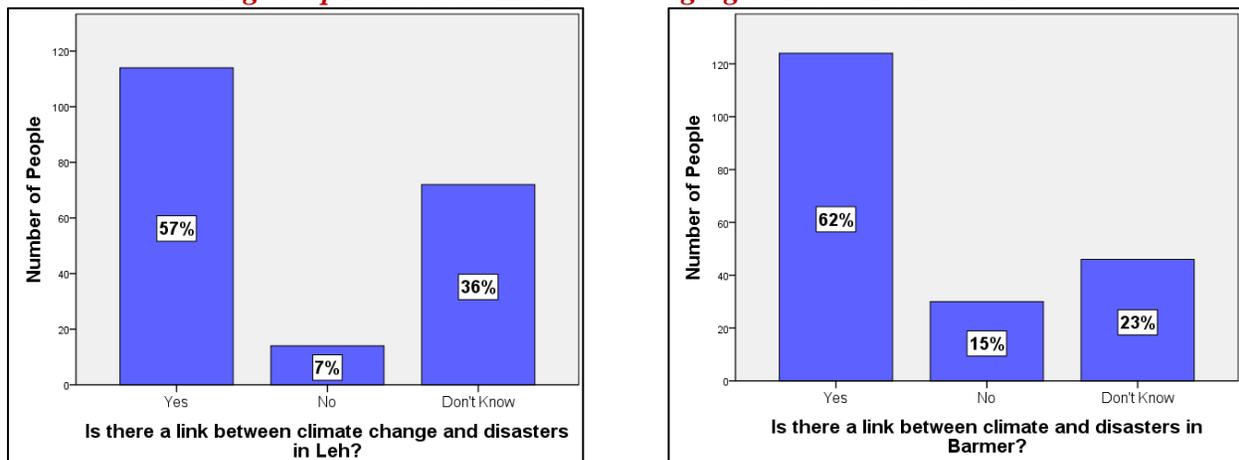
Fig. 7 Other Observed Changes Related to Climate



5.3.1.3 Opinion about Link on Changing Climate and Disasters

When people were asked if there is a link between climate change and disasters (Fig. 8) in Leh, 57% of the respondents agreed that there is a link between climate change and disasters. They believed that because of interrupted human interventions in nature, the balance of nature is getting disturbed and as a result they are facing more climatic stresses which many times lead to disasters. 7% of the respondents said that they don't feel there is a link between climate change and disasters and a large percentage of the respondents, i.e. 36% people said that they cannot respond to the question. In Barmer, 62% people said that there is a link between climate change and disasters, 15% believe that there is no link between climate change and disasters and 23% respondents did not give any response to this question.

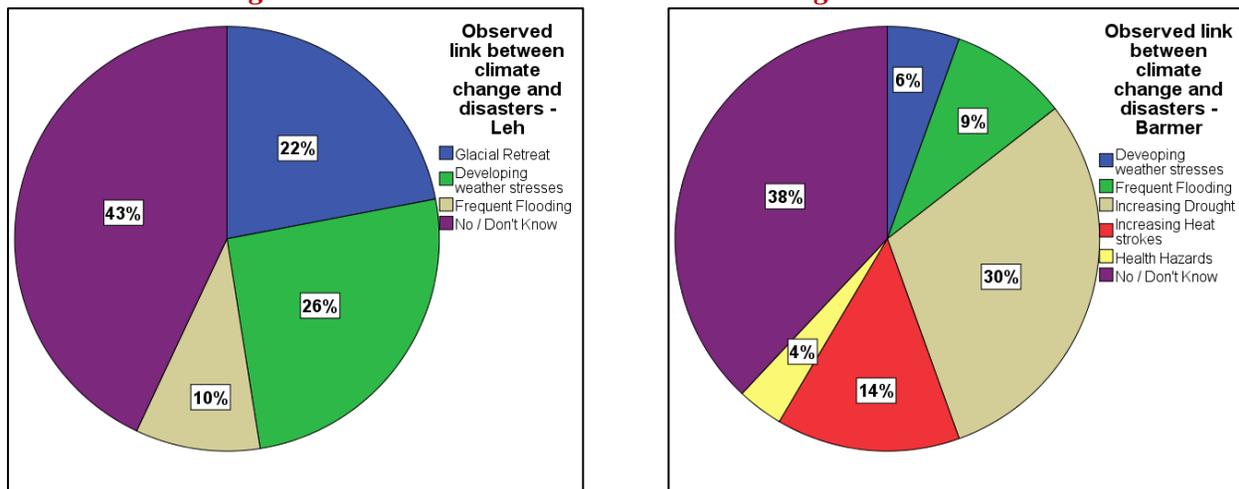
Fig. 8 Opinion about Link on Changing Climate and Disasters



5.3.1.4 Observed Links between Climate Change and Disasters

The respondents, who felt that there is link between climate change and disasters, were asked for specific observations (Fig. 9). In Leh, 22% people said that glacial retreat is one of the disastrous effects of climate change, 26% believed that the changing weather patterns are causing disasters, 10% said that the frequent flooding conditions is a result of changing climate and 43% said that they believe that there is a link between climate change and disasters but they could not give specific examples. In Barmer, 6% people said that developing water stresses are due to climate change which leads to drought situations, 9% said that unexpected and frequent flooding is one of the examples, 30% believed that increasing drought is one of the links between climate change and disasters, 14% claimed heat strokes as examples of link between climate change and disasters, 4% people said that increasing health hazards is also one of the result of changing climate and 38% were not able to give specific examples of links between climate change and disasters.

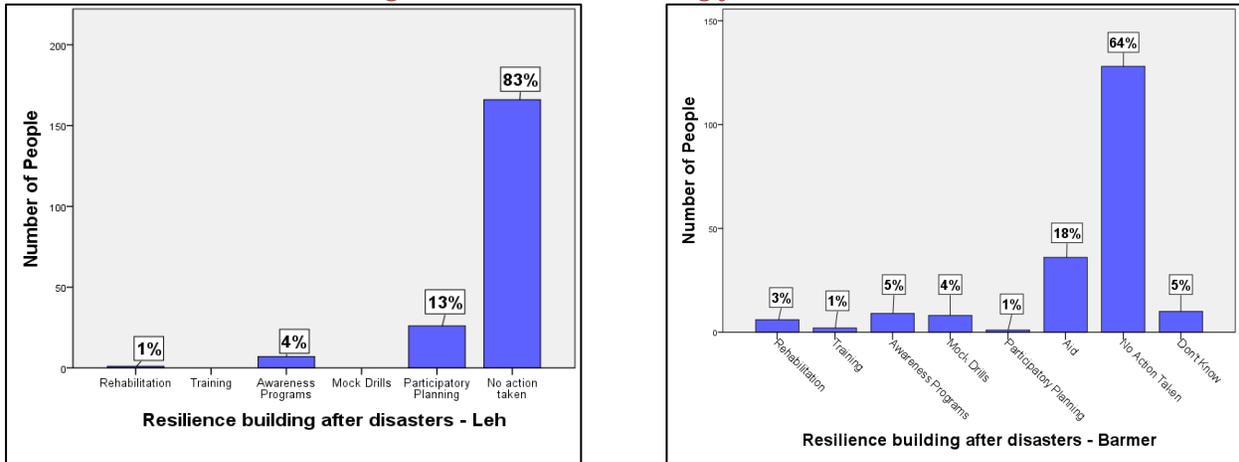
Fig. 9 Observed Links between Climate Change and Disasters



5.3.1.5 Resilience Building for Disasters

To understand the capacity building of people for disaster, they were asked what has been done by government and local authorities for people (Fig. 10). In Leh, 4% people said that there was some awareness programmes carried out in villages, 13% said that participatory planning approach was followed to discuss the key issues of villages and prepare a road map for developmental activities. However, these were restricted to certain communities and individuals. Most of the respondents (83%) said that there were no appropriate actions taken for helping them out with disasters. In Barmer, 3% people said that there were rehabilitation works done by government and NGOs, 1% said that they have attended some training programs but there was no follow up activity, 5% said that some awareness programs were conducted, 4% said that mock drills were done in schools after flash floods in 2006, 1% people had some experience of participatory planning exercises, 18% respondents said that they received aid after disasters. A large ratio of the respondents (64%) said that they no action was taken for them and 5% people did not respond to the question.

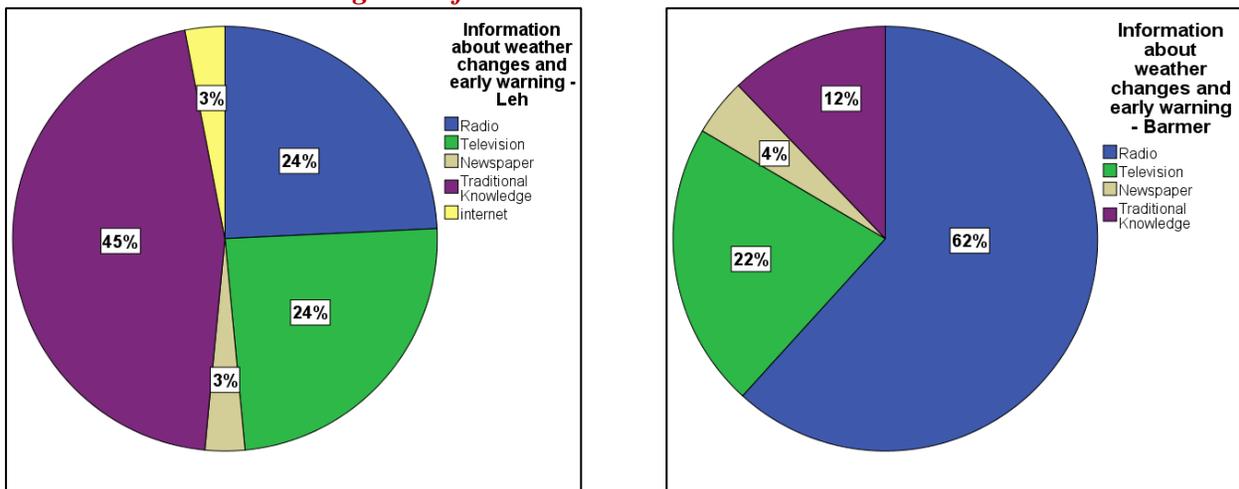
Fig. 10 Resilience Building for Disasters



5.3.1.6 Information about Weather Forecasts

People were also asked about the information they get about daily weather and warnings in case of any emergency situation (Fig. 11). In Leh, 24% people said that they get information through radio broadcasts, 24% said that they got the information through television, 3% said that they read out from newspapers, 45% respondents said that they do not follow the scientific observations but they have a traditional system of knowing about the weather forecasts. There is a traditional calendar called 'lotto' which defines all the coming seasons according to dates in the calendar and people follow that for all the weather advisories. Some of the people (3%) also used internet to know about the daily weather situations. In Barmer, 62% people said that they listen to radio for information, 22% said that they watch television for such information, 4% said that they read newspaper and 12% said that they followed traditional system for gathering information on weather forecasts.

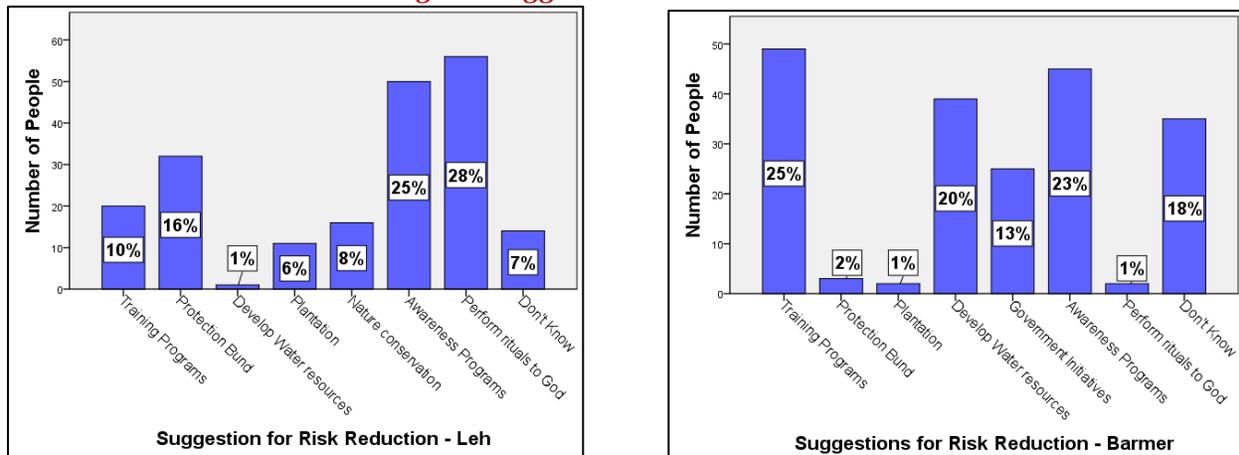
Fig. 11 Information about Weather Forecasts



5.3.1.7 Suggestions to Reduce Risks

People were asked for suggestions on what should be done to address the risks arising because of changing climate and increasing disasters (Fig. 12). The suggestions that people referred include introduction of training programmes, awareness campaigns, creating protection bunds, developing water resources, more plantation, conservation of nature, performing rituals to gods and government initiatives. In Leh, 10% of people said that training programs will be helpful in risk reduction, 16% people said that creation of protection bunds will reduce the risk for flood situations, 1% emphasized on development of water resources to solve increasing fresh water availability problems, 6% said that more plantation should be done to strengthen the natural ecosystem, 8% said that natural systems should not be disturbed and its conservation should be focused, 25% respondents said that awareness programmes would make people more resilient, 28% people believed that disaster events are acts of god and nothing major can be done to prevent them and so people should perform rituals to god avoid disaster events, and 7% people could not give any suggestion. In Barmer, 25% people said that training programmes will add to their capacity building, 2% said that creation of protection bunds can help in reducing the effect of flash floods in low lying areas, 1% said that plantation should be carried out, 20% emphasized on development of water resources to solve water shortage problems, 13% believe that government should do whatever they can to reduce risks, 23% people believe that awareness programs will help in making people aware of the risks, 1% people say that they cannot play any role as disaster are acts of god and 18% respondents were unable to give any suggestions to reduce risks.

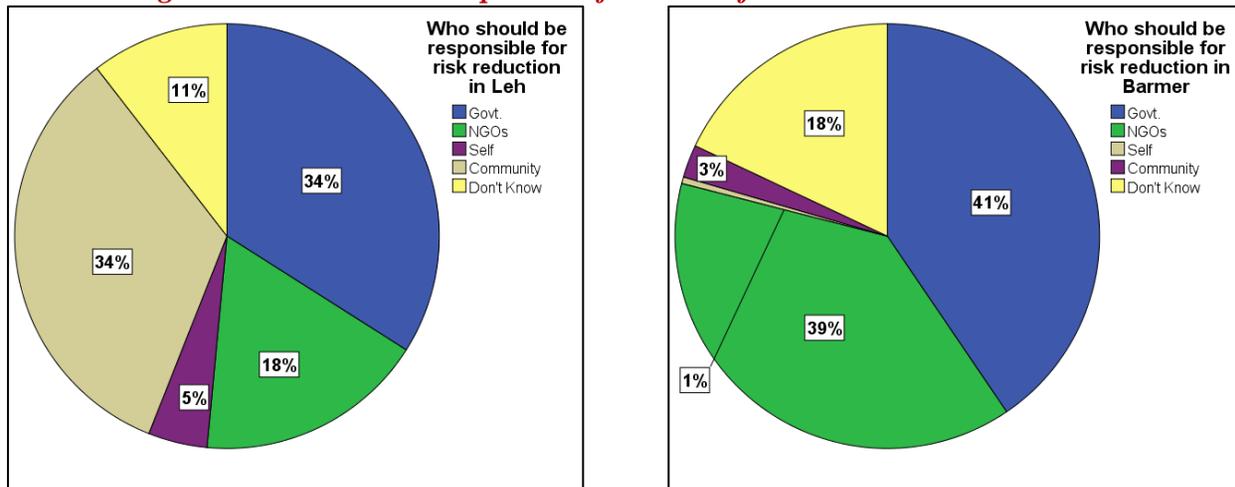
Fig. 12 Suggestions to Reduce Risks



5.3.1.8 Who should be Responsible for Action for DRR?

For the implementation of suggested actions for reducing disaster risks, people were asked who they consider as most appropriate for taking actions for risk reduction (Fig. 13). In Leh, 34% people responded that government organisations should be responsible for taking actions, 18% people said that NGOs are suitable for taking actions, 5% said that people should take their own responsibility of taking actions, 34% respondents believe that community as whole can take action for risk reduction, and 11% people had no suggestions for who should be responsible for taking actions for disaster risk reduction. In Barmer, 41% people said that government should be responsible for taking actions, 39% said that NGOs can take actions, 1% responded that they themselves should take the action, 3% said that community as a whole can take up collective actions and 18% could not give any answer to this question.

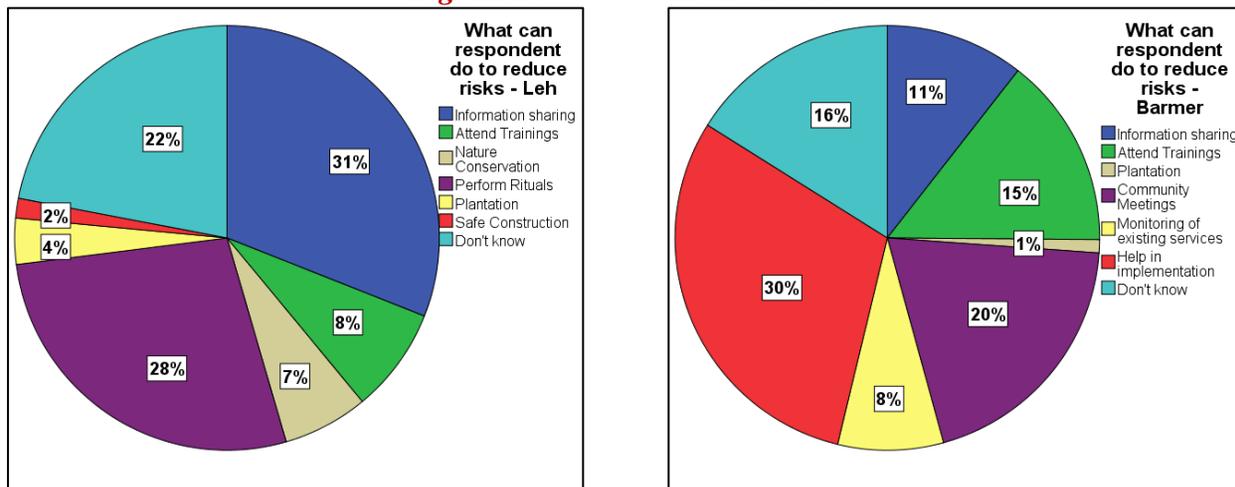
Fig. 13 Who should be Responsible for Action for Disaster Risk Reduction?



5.3.1.9 Individual's Intervention

People were also asked for what they can contribute for reducing risks arising out of changing climate and disasters (Fig. 14). In Leh, 31% people said that they can share whatever information they have with the community to strengthen participatory planning approach to deal with disasters, 8% said that they can attend trainings to develop specific skillsets which can be used for reducing risks, 7% said that they can stand up against human intervention in nature and help to conserve it, 4% said that they can do more plantation of trees to develop greenery, 28% said that they do not have anything in their control but they can perform rituals to god who can take care of all, and 22% respondents did not respond to the question. In Barmer, 11% people responded that they can share the information they have with the community, 15% said that they can attend trainings, 1% said that they can encourage plantation, 20% respondents said that they can initiate community meetings and discuss issues of climate change and disaster risks, 8% said that they can participate in monitoring of existing services, 30% said that they cannot do anything themselves but they can help in implementation of government and other organisation initiatives and 16% respondent did not give answer to this question.

Fig. 14 Individual's Intervention



5.3.1.10 Conclusion of Household Survey

The household survey conducted gave a deep insight of people's perception about changing climate in the high altitude cold arid region of Leh, Ladakh and in the hot arid region of Barmer, Rajasthan. The people responded well to certain questions but also they were clue-less on some questions. For example, people gave immediate response about temperature variations in the region, but when asked of the specific impacts, people were mostly unable to answer. People see climate change stresses and disaster events as the areas where they could intervene much. Out of the survey of 400 households in the two study area, the following conclusions were drawn:

1. The climatic conditions in the region are perceived to have changed with a rising trend in temperature and decreasing trend in precipitation.
2. The changing climatic condition of the area has resulted in many negative impacts, but there are some positive aspects as well.
3. The changing climate is inducing more disasters and there is a link between climate change and disasters. Glacial retreat, changing crop pattern and rising level of water bodies are some of the examples of climate change effects.
4. Temperature variations are clearly visible to the communities but when asked for other specific changes observed due to climate change, they are unclear. Thus most of the people did not have a clear concept of climate change impacts and disasters as separate issues, though they experience climate induced disasters and stresses.
5. Few interventions are made to build resilience into communities. The interventions need to be more transparent and the extent of resilience building has to be increased.
6. Traditional knowledge is a major component of information sharing about weather. However, with the rapid urbanization, use of traditional knowledge is fading. Traditional knowledge has helped people to find solutions to local problems, but with large variations in weather, it is unable to cope.
7. For reducing risks of climate change and disaster, government bodies and NGOs are considered to be responsible. Also collective approach as a community is considered as important for reducing risks.

5.3.2 Bi-variate Approach

At local level, climate change impacts and disasters are not seen as separate issues. People believe that these are part of stresses being developed due to human interventions. To face the challenges and to cope up with the increasing differences between habitats and surrounding environment, appropriate planning needs to be done at micro level. The effects of disasters and climate change can be very well understood in respect of several indicators. For efficient planning, these indicators at local level need to be explored to understand the specific issues related to DRR and CCA separately. The indicators can be correlated to analyse the common points of intervention for risk reduction due to climate change or disasters.

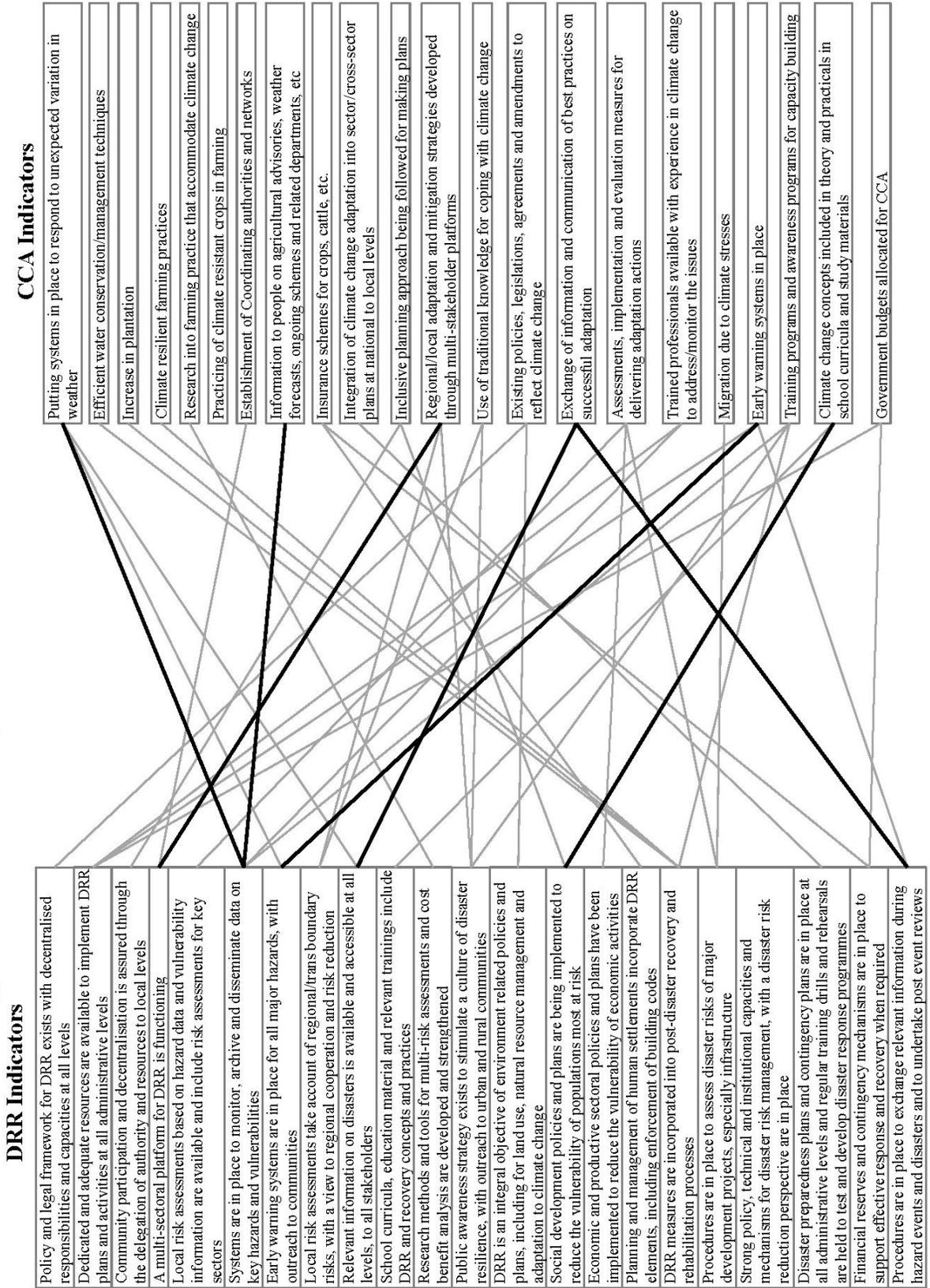
A set of context specific DRR indicators from Leh and Barmer experiences was developed based on HFA framework. Context specific indicators for Leh and Barmer were developed using literature on adaptive capacity. The indicators were correlated as shown in Fig. 15, and were looked into at local level through a participatory process. The people were consulted discussing common interventions that can be done at local level to reduce risks. Out of the various issues discussed, the priority topics that came were:

- Unavailability of correct and dependable information on weather
- Procedure to disseminate information on disaster and climate change in understandable manner by common people
- Integration of DRR and CCA concepts in school curricula to make children aware through whom community can gain knowledge
- Inclusive planning approach should be followed to get people's views in decision making
- DRR and CCA cover cross sector issues and to have holistic approach, multi-stakeholder platforms should be created.

In Leh, emphasis was on water shortage due to receding glaciers which affected agricultural practices and daily activities, and the variability in weather patterns. People said that due to variability in weather conditions and lack of information, they were not able to plan for the agricultural activities. As a result they could not get sufficient produce. It was suggested that if they could get correct information about the weather forecasts and agricultural advisories, it would be a boon for them to adapt to the changing climate patterns. As a result of this, SEEDS installed an Automatic Weather Station (AWS) for the project duration. The data generated can be used to assess the micro climate of the area and take accurate decisions for micro planning of the area.

In Barmer, one of the major issues that came up out of the discussions was the inability of marginalised communities to put up their voice in any community decisions. There was also lack of knowledge about disasters and climate change. It was suggested that if there can be a medium which can bring out their concerns and also give them reliable information, it will connect them to the decision making process. As a result, SEEDS started a Community Radio Programme covering stories of rural areas in Barmer district. The radio programme provided a common platform for stakeholders for discussing sustainable development.

Fig. 15 Bivariate-tool showing Correlation between DRR and CCA Indicators



5.4 Encountering Emergency

5.4.1 Changthang Appeal

The story of a snowstorm that hit Changthang in eastern Ladakh was recorded and disseminated through various platforms with an appeal to reach out for help to the affected families. The details of the appeal can be found on web link: <http://one.trust.org/item/20130523072427-hyvm7>.

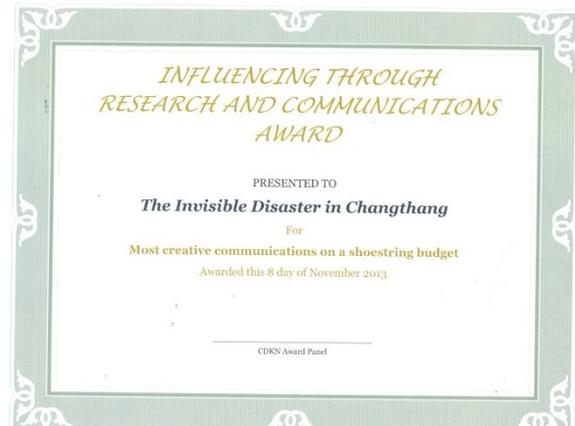
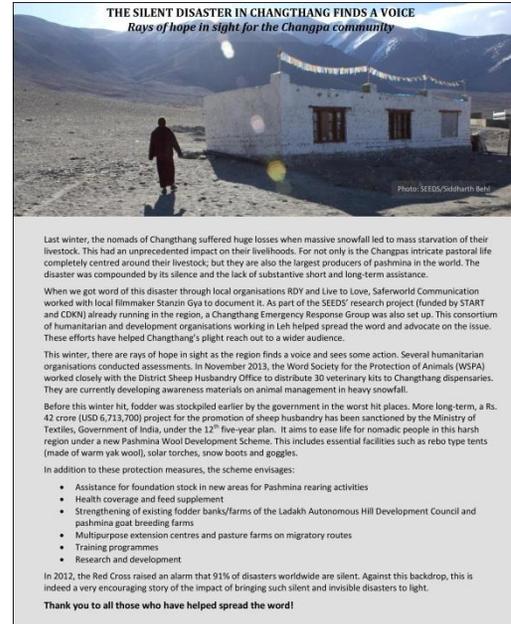
Spurred by the efforts of local organisations and NGOs, the story of Changthang's plight has reached out to a wider audience. In turn, there has also been some action. Several humanitarian organisations conducted assessments. In November 2013, the World Society for the Protection of Animals (WSPA) worked closely with the District Sheep Husbandry Office to distribute 30 veterinary kits to Changthang dispensaries. They are currently developing awareness materials on animal management in heavy snowfall.

This year, fodder was stockpiled earlier by the government in the worst hit places. More long-term, a Rs. 420 million project for the promotion of sheep husbandry has been sanctioned by the Ministry of Textiles, Government of India, under the 12th five-year plan. It aims to ease life for nomadic people in this harsh region under a new Pashmina Wool Development Scheme. This includes essential facilities such as Rebo type tents, solarised torches and snow boots and goggles.

In addition to these protection measures, the scheme envisages:

- Assistance for foundation stock in new areas for Pashmina rearing activities
- Health coverage and 'Feed Supplement'
- Strengthening of existing fodder banks/farms of the Ladakh Autonomous Hill Development Council and Pashmina goat breeding farms
- Multipurpose extension centres and pasture farms on migratory routes
- Training programmes
- Research and development

This initiative also won an award under the category 'Most creative communications on a shoestring budget,' in a mini competition held within CDKN to select influential communication outputs from funded research projects through CDKN.



5.5 Policy Impact

5.5.1 Incorporating the Changing Face of Disasters into DRR/CCA Policy

As the impacts of climate change intensify and landscapes are transformed by infrastructure construction, the very face of disasters themselves is changing. More areas are seeing unprecedented hydro-metrological events, such as flash floods in traditionally desert zones. The impact of climate change is an additional factor that is increasing day-to-day stresses such as water shortages; particularly in poor and vulnerable communities that have little capacity to cope with these recurrent calamities. While the scale of the emergencies may not be large, the impact is as disastrous for the affected families.

Incorporating the above observations, a policy brief was prepared addressing extreme events, daily stresses and silent disasters. The policy brief presents project experiences giving the need and long term benefits of addressing the said problems. The policy brief also puts down seven golden recommendations to incorporate disaster's changing face into DRR/CCA policy. It was brought out in partnership with the Indian Institute of Public Administration (IIPA), Govt. of India, and finalised in a national consultation workshop organised in partnership with them.

5.6 Disseminating Learnings

The project encompassed gathering information at grass root level, engaging with various stakeholders and drawing out a combined approach to address issues related to CCA and DRR. Overall, the project initiated engagement with state departments on specific issues of climate change adaption and disaster risk reduction. Government officials were engaged on steps for disaster risk reduction activities and climate change adaptation measures. At national level, an engagement was made with National Institute of Disaster Management (NIDM) to discuss about integrating and mainstreaming DRR and CCA issues. This further led to talks with Indian Institute of Public Administration (IIPA), for a brainstorming session which led to development of a joint policy brief on mainstreaming Disaster Risk Reduction and Climate Change Adaptation for shocks and stresses.

The project proceedings and learning were disseminated to audiences at different levels through workshops, consultations and visibility material throughout the project period. At community level, focussed group discussions were organised. At district level various workshops and meeting were conducted. For wider outreach of the project, print and digital content created and disseminated across a range of communication media. This included flyers, photo-essays, blogs, poster, films, policy notes, case studies, articles, and reports. A brief summary of the same is presented in the next page:

Sl. No.	Deliverable Title	Type (e.g. research report, policy brief, journal publication)	Brief description	Date of submission	Source/weblink (if available)
1	Catalysts of change in the face of high-altitude climate calamities	Blog	Blog introducing the project in Leh through a workshop	06 Aug 2012	http://www.trust.org/item/20120806053800-958xs/?source=search
2	The catalysts of change	Project flyers	Project information and research dimensions were summarised in project flyers.	28 Nov 2012	http://cdkn.org/wp-content/uploads/2012/09/CDKN-flyer-Barmer-low.pdf
3	Project progress report	Report	A project progress report was submitted covering activities performed till date, future activities, challenges faced and stories of change and impact.	27 Oct 2012	
4	The catalysts of change	Photo essay	A photo essay was prepared portraying project proceedings.	27 Oct 2012	http://cdkn.org/2012/12/catalysts-of-change-photo-essay/
5	Catalysing communication on Barmer's changing climate	Blog	Blog documenting the project ongoing.	06 May 2013	http://start.org/spotlight/catalysing-communication-on-barmers-changing-climate
6	The Catalysts of Change	Project Poster	A project poster was prepared to present activities of the project in a learning workshop on subnational climate compatible development organized by CDKN-ICLEI.	03 June 2013	Workshop information on: http://www.iclei.org/details/article/experts-discuss-climate-compatible-development-at-a-cdkn-iclei-workshop.html
7	Changthang Snowfall and Livestock Loss Crisis	Humanitarian Appeal	Encountering an emergency situation, SEEDS along with local partners in Ladakh region studied a silent disaster and launched a humanitarian appeal during the project period.	23 May 2013	http://cdkn.org/2013/05/feature-the-invisible-disaster-for-the-changpas-tribe-in-ladakh-india/?loclang=en_gb http://start.org/spotlight/humanitarian-appeal-changthang-

					snowfall-and-livestock-loss-crisis http://www.trust.org/item/20130523072427-hyvm7/?source=search
8	Invisible Disasters	Film	Stanzin Dorjai Gya of Himalayan Film House and Saferworld Communications (with the support of Live to Love, SEEDS and RDY) have documented the local impact of the disaster in Changthang and made a short video.	23 May 2013	http://www.youtube.com/watch?v=-d_cq4kr2Q4
9	Incorporating traditional knowledge in post disaster recovery to integrate climate change adaptation and disaster risk reduction	Book Chapter	Springer's book 'Disaster Recovery: Used or Misused Development Opportunity' includes this chapter.	May 2013	http://www.springer.com/earth+sciences+and+geography/natural+hazards/book/978-4-431-54254-4
10	Indigenous resilience and adaptation in high altitude arid zone communities	Book Chapter	Springer's upcoming book 'Mountain Hazard and Disaster Risk Reduction' to include this chapter. This chapter examines inter-linkages between communities' indigenous knowledge and practices and scientific techniques to develop resilience to changing climatic conditions.	June 2014 (expected)	
11	Project case studies booklet	Case Studies	Several case studies were documented during the project cycle which is documented in the booklet along with the voices of local people.	05 February 2014	
12	Incorporating the Changing Face of Disasters into DRR/CCA Policy	Policy Brief	A policy brief on DRR/CCA was prepared during the project by taking lessons from Changthang crisis.	05 February 2014	

13	Project Film on Leh	Film	A short video covering the project proceedings in Leh was made.	11 February 2014	http://www.youtube.com/watch?v=3xvDIIBi9Es
14	Project Film on Barmer	Film	A short video covering project proceedings in Barmer was made.	10 December 2013	http://www.youtube.com/watch?v=_HOHz6gfXpE
15	Community Radio Episodes	Radio episodes	10 radio episodes were prepared as a pilot project under this study	December 2013 – March 2014	
16	Final Report	Report	Final Report of the project covering all the activities done, outcomes and products of the project including conclusion and future direction.	26 March 2014	

Our research study in the highly climate change sensitive and disaster prone arid zones of Barmer (western Rajasthan) and Leh (Kashmir) in India, has brought forward some plausible and innovative ways by which at risk communities can harness local multi-stakeholder platforms for causing favourable policy environment changes towards integration of DRR and CCA, not just at the local level but also at the state and national levels. Our field research was guided by three basic elements of our approach for integration of DRR and CCA: Agenda Setting, Coalition Building and Policy Learning activities.

We examined district level plans and policies of Barmer and Leh and identified areas where DRR and CCA are being addressed in an integrated manner. We then studied why, where, how and when such plans and policies were introduced in order to understand the reasons that trigger such policies and plans at the districts level. We also measured their success and failure based on how local communities perceive the benefits of these policies and the factors that have led to their respective successes or failures. We found that most government action on DRR and CCA comes in the aftermath of disasters and recovery periods rather than in long term development planning, which focuses mainly on infrastructure building for industry, housing, transport and agriculture. Recently both Barmer and Leh drafted their disaster management plans under their State Disaster Management Acts, but these plans are mostly written as standard operating procedures for providing relief during contingencies. Most integrated DRR and CCA activities are happening either under national schemes such as the national water mission, which was launched under the NAPCC and the national agro-met advisory services. Other than that local district level initiatives in the aftermath of disasters have provided us with some good examples of integrated and planned integration of DRR and CCA. For example, after the flash floods in Leh, affected communities worked with the district government, utilising funds available under the national watersheds management scheme to repair local fresh water streams (called ‘Nala Training’ in the local language) that had been damaged during the floods to build proper drainage channels, clear out blockages and build storage ponds for times of overflow. The policy directive to do ‘Nala Training’ for all major fresh water streams in Leh already existed but funds to do so were only released in the aftermath of the flash floods, when the district government added disaster risk reduction benefits to the pending proposals for Nala Trainings. This had dual benefits as overflow from glacial meltdown can now be utilised and stored properly, minimising wastage. This extra water can also be used to irrigate fields and new types of crops can now be grown in Leh due to longer summers. In addition, properly management water streams reduce the future risk of disasters from flash floods as most of the damage was caused due to blocked streams.

We also found that local communities and local multi-stakeholder groups involved in adaptation and risk reduction use very sophisticated and advanced socio-political, economic and ecological indicators such as sustainability, efficiency, long-term benefits etc, when measuring the success or failure of integrated risk reduction programmes. Their ability to do this puts them in an excellent position to identify local agendas for integrated of DRR and CCA, providing ideas for upward policy intake, and measures the progress and outcomes of integrated services. On the other hand we were also able to identify agendas and opportunities for better integration of DRR and CCA at the local/district, state and national level and ways in which at risk and

vulnerable communities can have a say in the process of the integration and related decision making.

At the state and national level, we were able to bring different stakeholders together to discuss issues identified during our research project. We focused mainly on how to build on the limited but promising integration work already happening on the ground. The biggest achievement for us was to turn the discussion on integration into a positive discussion, focusing on what is already happening, challenges in scaling up, increasing efficiency and success rate of integrated risk reduction activities and ways to turn them into integrated DRR and CCA policies, networks, and also to minimize losses and increase sustainability of development gains through risk reduction work.

6.1 Project Impact

The project brought significant changes at various levels. In Leh, communities we worked with were able to understand the importance of using scientific weather information and were able to understand the impact of temperature rise, precipitation, wind speed, wind direction and atmospheric pressure on local environmental changes. According to the meteorological department, this would also encourage the use of scientific weather data in farming practices that would help farmers adapt better to changes in the climate pattern. Usually farmers rely on local monks to give them directions for when to sow and reap based on a Buddhist calendar. In addition, use of weather monitoring on a daily basis works as a basic step in the direction of “greenhouse farming”, an adaptation strategy by which locals can get the benefits of growing new types of fruits and vegetables in the now longer and warmer summer months.

Use of modern technology such as weather monitoring for farming was also seen as a way to get ‘youth’ back to farming, a big concern for the communities and government alike, who told us that young people were abandoning farming at an alarming rate for the less labour intensive and far more lucrative tourism industry. This was a highly unsustainable trend as Leh now imports almost all of its vegetables, rice and fruits due to a sharp drop in agriculture activity and rise in population. According to experts, climate change has big role to play in the abandoning of farming in Leh because farming is no longer a viable livelihood option as it is highly sensitive to local climatic changes in these cold and arid zones.

According to village elders (age group 60-80) and policymakers, by infusing farming with new ideas and also by linking it up with tourism or other ways or earning an on farm income, the younger generation could be incentivised to get back to farming and practice sustainable tourism. This could also help in reducing disaster risks as Leh has seen rapid urbanisation in the past few years to accommodate a growing number of tourists each year (in summer months, the population of Leh more than doubles). As a result of this, disaster risks from flash floods, snowstorms and earthquakes have risen considerably. Coupled with use of modern technology and adaptation practices (that can also be effective income generation activities) such as organic farming and eco-tourism, Leh can achieve both DRR and CCA effectively.

In Barmer, the project was able to effectively bring together the three communities that are essential for the integration of DRR and CCA. These include:

- Highly vulnerable and marginalized members (adolescent girls²) of one of the most climate change and disaster risk prone part of the country
- Scientists, researchers and specialists doing cutting edge research on climate change, adaptation and disasters
- Policymakers.

By providing training to adolescent girls to develop content and broadcast a community based radio programme to investigate, collect, compile and disseminate climate change and disaster related issues and solutions, the project was able to provide an interactive platform for engaging these three response communities to devise integrated DRR and CCA solutions. This activity also instilled a sense of proactive action for risk reduction activities.

The consultations carried out during the project period at the district, state and national level highlighted the most important concerns and ideas for implementing planned integrated DRR and CCA policy activities.

At national level, a discussion was initiated to address key issues for integrating DRR and CCA from the ground up. The national policy dialogue led to a joint initiative with the Indian Institute of Public Administration, Govt. of India, to develop and disseminate a policy brief.

6.2 Key issues and recommendations

6.2.1 Issues

The major issues which came from research findings are:

- The most severe impacts of climate change are being felt through disasters caused by weather related extreme events as well as day to day stresses. Farmers living in some of the most arid parts of India are observing long-term changes in their local climate patterns that are adversely affecting their lives and livelihoods. Winter and summer weather has become more severe in their observation and extreme weather events such as flash floods and droughts are more frequent and intense now. Other visible impacts of climate change are being felt through changes in seasons, temperatures, precipitation, loss of plant species and changes in fresh water sources/availability. Although local communities are well aware of these changes, they only see them as aberrations and consequences of local land use change and environmental degradation. In both Barmer and Leh, rapid and poorly planned urbanisation has also caused an increase in risks from flash floods and earthquakes.
- Disasters and climate change policies of the government are largely divergent from each other at the operational level, their implementation institutionalised and compartmentalised into different ministries and departments, with meagre coordination among these. Because of this segregation of policies, it is very difficult to address climate change stresses as part of or compounded by local environment and disaster risks.
- Climate change has caused a drastic change in the nature, occurrence and scale of disasters in the country. More and more ‘invisible disasters’ are occurring around the

² Malnutrition, illiteracy, child marriage and abuse is the highest among adolescent girls in western Rajasthan. According to the HDR of Rajasthan, women and female children in western Rajasthan (especially Barmer) have some of the lowest HDI in the country and the world.

country that go unnoticed in terms of response as these ‘first time’ and often ‘low category’ disasters are underreported.

6.2.2 Recommendations

The research led to better understanding of some of the key issues at ground level that need to be addressed while making policies for integration of DRR and CCA. Some of the recommendations are as follows:

- Policies on climate change need to consider and formulate measures for slow onset (day-to-day) climate stressors, such as health impacts of water shortages, loss of working days/income from increased number of severe temperature (hot and cold) days, loss of local plant species that are used as fodder or for medicinal purposes.
- Special planning and response mechanisms need to be developed to meet the increasingly unprecedented nature of climate change induced disasters in the country.
- CCA and DRR policies need to reflect their linkages at the policy level with a thrust for mainstreaming and convergence at the operational level, including through funding convergence.
- Local multi-stakeholder platforms have a crucial role in influencing both upward and downward convergence on DRR and CCA. But to be truly effective, these platforms need to develop mechanisms for sustained action, increase communication capacities and have stronger links with relevant sub-national and national mechanisms.
- The district level is most optimal for convergence of DRR and CCA to bring about upward filtered transformation.
- A bi-variate approach will help systematise the DRR-CCA domain.
- Besides policy interventions, education and technology innovation need to focus on DRR-CCA.

6.3 Project Challenges and Limitations

An integrated DRR and CCA response involves getting diverse stakeholders together in order to have discussions on a wide range of issues, debate solutions and agree on response actions. This task in itself is challenging, as it requires giving the right incentives, expert knowledge of DRR and CCA, good moderation and consensus building skills and resources for sustained action. Since we were working with communities, local multi-stakeholder development groups, research bodies and government agencies in a limited time frame and with a specific mandate, it was difficult for us to explore in depth how these challenges can be overcome fully.

Apart from our own limitations, we observed that communication on climate change and consequent disasters is easy to discuss as a problem in general, since the changes are quite visible and apparent. However, discussions on an integrated response are more difficult to approach at the policy level, since decision-making has resource implications. Additionally, lack of scientific data and uncertainty is a definite challenge in the planned response to climate change and disasters. For this reason also, we feel that community led multi-stakeholder groups can play a critical role in catalysing action on integration of DRR and CCA as they are able to articulate the cumulative impact of climate change and disasters better, drive focus towards

overall development gains (or towards a no-regrets approach) minimising the influence of scientific uncertainty in decision making for policy.

6.4 Future Directions

6.4.1 Transferring Lessons for DRR/CCA in Uttarakhand

The massive cloudburst in Uttarakhand in June 2013 is the latest in the series of extreme weather events on which this research project is based. It has thrown up several of the same issues that have echoed throughout this research. To make people aware of the micro climate of the area and to inculcate a practice of informed decision making, SEEDS transferred the AWS from Leh, Ladakh to Chamoli, Uttarakhand as a follow up activity of the project. After the flash floods, there is a strong need for more climate knowledge and this will help the community understand their micro-climate better. In the coming months, links with a climate group in schools and community radio programmes will help spread this knowledge further.

In the hills, the temperature variation from area to area is very large. Often, the nearest meteorological station is far away and the data they record is not applicable. Monitoring the data of a specific area over a year can show the variations and linkages to the available meteorological data. It can also spark an interest in the community and help people begin understanding the links between the climate and the problems.

The idea of climate groups in schools is also being explored. This is a forum for the children to learn hands-on about the climate. It could also help the community find local solutions to their climate problems in their day-to-day lives.

A workshop was organised in Uttarakhand where experiences from Leh were shared.

6.4.2 Further Action Research

The present study has given clear directions, and further investigations, and creation of learning content will help the initiative further its impact for influencing the new emerging DRR-CCA domain.

Extension of the research to coastal, riverine and urban communities is also required.

7.1 Workshops

Workshops at the district level were organised in the two case study areas to incorporate feedback on the findings and on how these policy actions can be enhanced further. For further coalition building, state level workshops were organised to disseminate the findings of the field research and to further build a national policy agenda for integration of DRR and CCA into development planning and decision-making. A sub-national level workshop was also organised inviting innovation policy action for DRR and CCA and consultations for better integration of DRR and CCA in development policy. The information about the workshops is given as follows:

7.1.1 District Workshops

7.1.1.1 Workshop 01

Title of the Workshop: Assessing disaster risks and climate change impacts in cold arid zone		
Date: 27 July 2012		
Venue: Community Center, Igoo, Leh		
Workshop Agenda:		
		
<p>To discuss issues of disaster risks and climate change, a one-day workshop was organised in Serthi valley, near Leh city. This workshop was done after consultation with govt. officials regarding the research project. The agenda of the workshop was as follows:</p>		
Time	Item	Speaker
11:00 – 11:20	Inaugural Talk	Mr. Padma Tashi, Director, RDY
11:20 – 11:40	Regional setting and light on disaster risk and impacts of climate change on building practices	Mr. Kamal Chawla, Architect, SEEDS
11:40 – 12:10	Local opportunities and challenges in the region	Mr. Tashi Nurboo, Area Councillor
12:10 – 12:40	Changing weather patterns and its impacts on the region	Dr. Anshu Sharma, Principal Investigator, SEEDS
12:40 – 01:00	Local actors as an enabling factor in decision making	Ms. Sahba Chauhan, Co-Investigator, SEEDS
01:00 – 02:00	Lunch	
02:00 – 04:00	Open Discussion on DRR-CCA in the region	

Participants:

The participants included Mr. Tashi Nurboo, Area Councillor, Mr. Padma Tashi, Director, RDY, village heads (gobas), elected village heads (sarpanch), village people, research team from SEEDS, and local team of SEEDS.

7.1.1.2 Workshop 02

Title of the Workshop: Moving from Disaster Management to integrated DRR & CCA thinking in Leh

Date: 10 October 2012

Venue: Community Center, Serthi, Leh

Workshop Agenda:

After ensuing discussion from local government, village people, local leaders, an Automatic Weather Station was installed in Serthi village, Leh. A district level workshop was organised to sensitise people for developing integrated thinking towards DRR & CCA. The agenda of the workshop was:



Time	Item	Speaker
11:30 – 11:50	Inaugural Talk	Mr. Padma Tashi, Director, RDY
11:50 – 12:30	Inauguration of Automatic Weather Station (AWS)	Mr. Gyal Phunchok Wangyal, Area Councillor, and Mr. Sonam Lotus, I/C Director, Regional Meteorological Centre, Srinagar
12:30 – 12:45	Importance of agro-met services for farming communities	Mr. Sonam Lotus, I/C Director, Regional Meteorological Centre, Srinagar
12:45 – 01:00	Local opportunities for DRR & CCA	Mr. Gyal Phunchok Wangyal, Area Councillor
01:00 – 02:00	Lunch	
02:00 – 02:30	Applicability of AWS data in farming practices and day to day activities	Ms. Sahba Chauhan, Co-Investigator, SEEDS
02:30 – 04:00	Open Discussion	

Participants:

The participants in the workshop included Mr. Sonam Lotus, I/C Director, Regional Meteorological Centre, Srinagar, Mr. Gyal Phunchok Wangyal, Area Councillor, Mr. Padma Tashi, Director, RDY, local team of RDY, village heads (gobas), elected village heads (sarpanch), farmers, village people, research team from SEEDS, and local team of SEEDS.

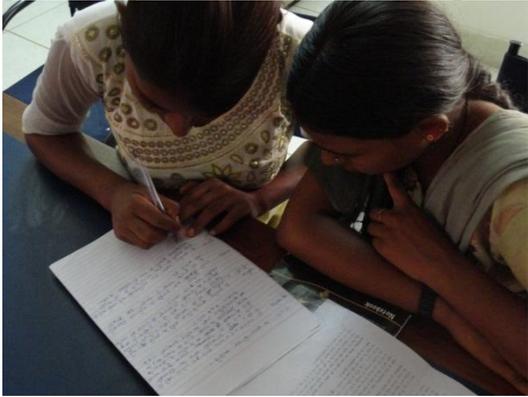
7.1.1.3 Workshop 03

Title of the Workshop: Learning Workshop on Climate Change Initiative in Serthi, Leh		
Date: May 13 2013		
Venue: Rural Development and You (RDY), Hemis Complex, Zangsti, Leh-Ladakh		
<p>Workshop Agenda: After installation of AWS in Serthi village, Leh a Climate School was established to orient school communities and farmers to use the weather station, liaise with the State Meteorological Department and disseminate weather information to the local community. A district level workshop was organised to get learnings from the initiative and views of local people. The agenda of the workshop is as follows:</p>		
Time	Subject	Speaker
11:00 – 11:30	Inaugural talk and participants introduction	Mr. Sunny Kumar, Research Assistant, SEEDS
11:30 – 13:00	Incorporating climate forecast in decision making (with a focus on agriculture practices)	Mr. Sonam Lotus, I/C Director, Regional Meteorological Centre, Srinagar
13:00 – 14:00	Lunch break	
14:00 – 15:50	Discussion Session on: <ul style="list-style-type: none"> - Weather and Climate - Relation to Climate Change and Disasters - Observed changes in climate and their reasons - Coping strategies adopted - Benefits and ill-effects of disasters and changing climate - Historical time of Leh (Major disasters) - Seasonal Calendar - Relationship between Climate, Pest, Crop Growth and Development – Related Risks - Information sources regarding weather – early warning systems - General problems faced as a result of disaster and climate change - What can be done to reduce the risks – Individual level, community level, Govt. level - Initiatives that can be done at individual level 	Facilitated by: Mr. Sunny Kumar, Research Assistant, SEEDS, and Mr. Stanzin Khentse, RDY
15:50 – 16:00	Vote of Thanks	Mr. Stanzin Khentse, RDY
<p>Participants: The participants in the workshop include representatives from civil society organisations including Mr. Phuntsog Tashi, WWF India, Mr. Tashi Thokmat, LEHO, Mr. L Tsultiu LEDeG, Mr. Tsewang Norboo, CENSFOOD, Mr. Karma Sonam, NCF, Mr. Rigzin Dorjey, Young Drukpa Association, Mr. Padma Tashi, RDY, Mr. Tashi Morup, LAMO, Mr. Sonam Lotus, IMD, Jammu & Kashmir, Mr. Stanzin Dorjai, HFH, and people from Serthi village.</p>		

7.1.1.4 Workshop 04

Title of the Workshop: Ability of local stakeholder action in mobilizing action towards integration of Disaster Risk Reduction and Climate Change Adaptation	
Date: 04 November 2012	
Venue: UNNATI, 650, Radhakrishnan Puram, Near Laharia, Resort, Chopasni Pal Bypass Link Road, Jodhpur 342 008. Rajasthan	
Workshop Agenda:	
<p>The workshop intended to discuss key issues and challenges of integrating Disaster Risk Reduction and Climate Change Adaptation in the context of ‘Learning from our experiences in dealing with new and expected extreme weather events and climate stressors in Rajasthan’ and recommendations for future planning and collaboration to mobilize action for sustainable adaptation and disaster risk reduction activities, policies and projects for the State.</p>	
	
The agenda of the workshop was as follows:	
10:00 am	Inaugural talk by Dr. Rajib Shaw, Kyoto University, on “Importance of integration of DRR and CCA for sustainable development”
10:20	Presentation by Mr. Binoy Acharya / Ms. Swapni, Unnati, on “Local Context and Emerging Needs”
10:35	Presentation by Ms. Eriko Saino, Kyoto University, on “Environmental Management and Social Capital”
10: 50	Presentation by Ms. Sahba Chauhan, SEEDS, on “The Stakeholder Action Research Initiative”
11:00	Current initiatives and ideas of action on integration of DRR and CCA in Rajasthan – Participant discussions on opportunities and challenges
12:45	Summary of Workshop by Dr. Anshu Sharma, SEEDS India
1:00 pm	Lunch
Participants:	
<p>The participants in the workshop included Dr. Rajib Shaw, Ms. Yukiko Takeuchi, Mr. Yusuke Murakoshi, Ms. Satomi Inoue, and Ms. Eriko Saino from Kyoto University; Dr. Manoj Kumar and Mr. V K Badmgas from Krishi Vigyan Kendra, CAZRI; Mr. Nitin Dixit, IAG Sphere; Mr. Praveen Kumar, Ms. Swapni Shah, Mr. Arvind Agarwal, Mr. Bhima Ram and Mr. Dilip Bedawat from UNNATI; Mr. Motaram Gaur, Prayas; Mr. Praveen Kumar, GRAVIS; Mr. P R Barupal, VSSK; Ms. Mateshwari Arya, Civil Defence, Jodhpur; and Dr. Anshu Sharma, Ms. Sahba Chauhan, Mr. Sunny Kumar from SEEDS.</p>	

7.1.1.5 Workshop 05

Title of the Workshop: Hands on learning workshop for developing radio episodes
Date: 28 January 2013 – 02 February 2013
Venue: UNNATI, Rajasthan Programme Office, 650, Radhakrishnan Puram, Near Laharia, Resort, Chopasni Pal Bypass Link Road, Jodhpur 342 008. Rajasthan
Workshop Agenda: SEEDS conducted a six days workshop with a group of adolescent and youth girls empowering them to own, manage their own Radio Programme. The agenda of the workshop included production & broadcasting skills, journalism skills, principles of community media/radio, development communication, understanding of community, media analysis and content creation, distributed over six days in various sessions. The editing and field experience was taken up in subsequent workshop in different phases.
 
Participants: The participants included participating group of girls from villages, radio programme trainer, research team members from SEEDS, and team members from UNNATI.

7.1.1.6 Workshop 06

Title of the Workshop: Assessing disaster risks and climate change impacts in hot arid zone
Date: 27 January 2013
Venue: Kalathal Village, Pachpadra, Barmer
Workshop Agenda: To discuss issues of disaster risks and climate change, workshop was organised in two hamlets of Kalathal village in Barmer. The agenda of the workshop included introduction to villagers and other participants, explaining the project and regional setting by research team members, discussing impacts of climate change and disasters on people's day to day activities, their suggestions on how the risks can be reduced.

Participants: The participants included village heads, village people, Mr. Bhima Ram, Mr. Dilip Bedawat form UNNATI, Mr. Ganpatlal Mehra, Director, IDEA, local team of IDEA, and research team from SEEDS.

7.1.2 State Workshops

7.1.2.1 Workshop 07

Title of the Workshop: Ability of local stakeholder action in mobilizing action towards integration of Disaster Risk Reduction and Climate Change Adaptation – Learning from Cold Arid Zone in India	
Date: 30 July 2013	
Venue: Hotel Indus, Choglamsar, Leh-Ladakh	
Workshop Agenda:	
<p>The workshop was intended to discuss key issues and challenges of integrating Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA). It was a collective effort to learn from experiences in dealing with new and unexpected extreme weather events and climate stressors in Ladakh. Also the workshop explored collectively for recommendations for future planning and collaboration to mobilize action for sustainable climate change adaptation and disaster risk reduction activities, policies and projects for the region.</p>	
	
The agenda of the workshop was as follows:	
Time	Agenda
1700 – 1720 hrs	Inaugural talk by Mr. Padma Tashi, RDY and Presentation on “Regional context and related issues and needs”.
1720 – 1740 hrs	Talk by Dr. Rajib Shaw, Kyoto University on “Climate Change and DRR – Asian perspective”.
1740 – 1855 hrs	Presentation by Mr. Chewang Norphel on “Local innovation and opportunities”.
1855 – 1810 hrs	Presentation by Mr. Sunny Kumar, SEEDS, on “The Serthi Initiative”.
1810 – 1840 hrs	Participant’s discussion on opportunities and challenges of the region for catalyzing program and policy environment of Ladakh.
1840 – 1900 hrs	Collaborative action agenda on DRR and CCA integration and next steps by Dr. Anshu Sharma, SEEDS.
1900 onwards	Dinner
Participants:	
<p>The participants in the workshop included representatives from academia like Kyoto University and Edinburgh University, government offices in Leh such as SLC-IT, CDPO, civil society organisations like LAMO, WWF, CENSFOOD, Social Welfare, HFH Live to Love, RDY, research institutes like TISS, media such as Reach Ladakh and Greater Jammu, village head and people from Serthi village, local team of RDY, and research team from SEEDS.</p>	

7.1.2.2 Workshop 08

Title of the Workshop: Transferring Lessons for DRR/CCA in Uttarakhand		
Date: 29 December 2013		
Venue: Gomti Prayag Jan Kalyan Parishad (GPJKP), Bhakunda, Chamoli, Uttarakhand		
Workshop Agenda:		
<p>The massive cloudburst in Uttarakhand in June 2013 is the latest in the series of extreme weather events on which this research project is based. It has thrown up several of the same issues that have echoed throughout this research. To make people aware of the micro climate of the area and to inculcate a practice of informed decision making, SEEDS transferred the AWS from Leh, Ladakh to Chamoli, Uttarakhand as a follow up activity of the project. A workshop was organised in Uttarakhand where experiences from Leh were shared and the impacts of changing climate and increasing extreme events were discussed.</p>		
		
The agenda of the workshop is as follows:		
Time	Item	Speaker
11:00 – 11:15	Inaugural Talk and introduction of participants	Mr. S P Bahuguna, Chief Secretary, GPJKP, Karanprayag, Uttarakhand
11:15 – 11:30	Inauguration of AWS	Mr. Govind Prasad Pant, Retd. Principal, Inter College, Joshimath
11:30 – 11:50	Demonstration of AWS to school children and community	Mr. Sunny Kumar, Research Assistant, SEEDS
11:50 – 12:10	Lesson from flash floods of Leh	Mr. Padma Tashi, Director, RDY
12:10 – 12:20	Emerging issues due to climate change and after math of disasters	Dr. Anshu Sharma, Principal Investigator, SEEDS
12:20 – 12:30	Role of community radio in emergencies and awareness	Mr. Rajendra Singh Negi, Henvallvani Community Radio, Chamba, Uttarakhand
12:30 – 01:30	Open discussion with workshop participants	
01:30	Lunch	
Participants:		
<p>The workshop participants included Mr. Govind Prasad Pant, Retd. Principal, Inter College, Joshimath; Mr. Bhuvan Chand Nautiyal, Member, District Panchayat; Mr. Rai Singh Sajwan, Ex-Head, Somla Village; Mr. S P Bahuguna, Chief Secretary, GPJKP; Mr. Rakesh Soti, Mr. Mangla Kothiyal and Mr. Sandip Chamoli of GPJKP; Mr. Rajendra Singh Negi, Henvallvani Community Radio, Chamba, Uttarakhand; local teacher and students; village people and research team of SEEDS.</p>		

7.1.3 Sub-National Workshops

7.1.3.1 Workshop 09

Title of the Workshop: Policy Environment towards Mainstreaming Disaster Risk Reduction and Climate Change Adaptation	
Date: 22 November, 2013	
Venue: Indian Institute of Public Administration (IIPA), New Delhi	
Workshop Agenda:	
<p>BACKGROUND</p> <p>India has been experiencing increasing incidences of hydro-meteorological disasters that defy trends. Recent flash floods in Barmer in the western arid region of India (2006) and in Leh in the northern mountain desert (2010) have underlined the impending climate and disaster threats in fragile ecosystems. While the new National Disaster Management Policy professes mainstreaming of Disaster Risk Reduction (DRR), it remains a fragmented domain. Significant work is yet to start on mainstreaming of climate change adaptation, and it's linking with DRR.</p> <p>SEEDS, with support from CDKN and START, and in partnership with UNNATI and RDY, undertook a research in 2012 that studies the effectiveness of Local Multi-Stakeholder Action as an enabling factor for mainstreaming DRR-CCA in post disaster programs and ultimately in state and national policies. During the project period, pilot initiatives were taken up in two project locations, Barmer in Rajasthan and Leh in Jammu & Kashmir. Studies from the project have created a new platform for dialogue between communities, government authorities, scientists and decision makers to discuss policy issues towards mainstreaming DRR CCA for shocks and stresses. The workshop being organized by Indian Institute of Public Administration (IIPA) and SEEDS aims to identify directions for influencing the policy environment for mainstreaming of DRR and CCA. It is expected that the outcome will emerge in the form of a policy viewpoint that can be taken forward for advocacy, and also refinement through further collaborative research.</p>	
	
AGENDA OF THE WORKSHOP	
Welcome and Keynote	Dr. V K Sharma, Sr. Professor, IIPA
National Perspective on Environment, Climate Change and Disasters	Dr. T. Chatterjee, IAS (Retd), Director IIPA
Lessons learning initiative in India – CDKN research	Dr. Anshu Sharma, SEEDS

Silent Disasters – a snapshot from Changthang, Leh	Ms. Vijayalakshmi Viswanathan, Saferworld Communications
Issues and approach to integrating DRR and CCA	Mr. Shashikant Chopde, ISET
Perspective from Barmer, Rajasthan	Ms. Swapni Shah, UNNATI, Rajasthan
Perspective from Leh, Jammu & Kashmir	Shri Padma Tashi, RDY, Leh, Jammu & Kashmir
Plenary DRR-CCA Policy Approach for Shocks & Stresses	Dr. Anil Gupta, and Ms. Sreeja S. Nair, NIDM
Concluding remarks	Dr. Rajib Shaw, Kyoto University

Participants:

The participants of the workshop included the following:

	Name	Organisation
1	Dr.K.J.Anandha Kumar	NIDM
2	Dr. Anil K. Gupta	NIDM
3	Mr. Ashwini Kumar	Member – SSMI CHDR
4	Mr. R.S. Katoch	Vice-president, SSMI
5	Mr. Vineet Kishor	Programme Associate
6	Mr. Mani Kumar	Head of programmes, Dan Church Aid
7	Dr. Shabana Khan	Consultant for SEEDS and UVA
8	Ms. Sreeja S. Nair	Assistant Professor, NIDM
9	Mr. Shashikant Chopde	ISET
10	Ms. Nirmita Mehrotra	HOD, Department of Architecture and Planning, Gautam Budh University, Greater Noida
11	Prof. Pratima R. Bose	Former principal, CBP Government Engineering College Delhi and Professor & Head, Delhi College of Engineering
12	Prof. Vinod Menon	Former member, NDMA
13	Prof. Vinod Sharma	IIPA, New Delhi
14	Ms. Suchitra Goswami	Advisor, DRR
15	Mr. Mohit Verma	ARCHADE Foundation
16	Ms. Abha Mishra	Coordinator, CRM in Urban Areas, UNDP
17	Ms. Reshmi Theckethil	Coordinator, Capacity Development, UNDP
18	Ms. Meesha Tandon	Senior Manager, ICELEI South Asia
19	Mr. Padma Tashi	Director , RDY, Leh, Ladakh
20	Ms. Swapni Shah	COO, UNNATI – Organisation for Development Education
21	Dr. Meenakshi Dhote	Professor, Department of Environmental Planning, School of Planning and Architecture, New Delhi
22	Dr. Rajib Shaw	Associate Professor, Graduate School of Global Environmental Studies, Kyoto University, Japan
23	Mr. M.P. Sajnani	Knowledge Links
24	Ms. Anjali Verma	Knowledge Links
25	Dr. Anshu Sharma	SEEDS
26	Ms. Vijayalakshmi Viswanathan	Saferworld Communications
27	Mr. Sunny Kumar	SEEDS

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