

## Integrating Climate Change Concerns into Disaster Management and Development Planning

### THE CASE OF ALMORA, UTTARAKHAND

The Indian Himalayan region extending over 10 states comprises the youngest and loftiest mountains which are still rising, making the entire region naturally unstable and fragile. The Himalayas influence the climate of Indian sub-continent and at the same time they are influenced by climate change and global warming. Melting of Himalayan glaciers is the biggest concern for northern-river plains. A 10% reduction in glacial cover has been observed in the last three decades. Glacier melting would cause floods in the rivers in short-term and droughts and water insecurity in long-term. The temperature is expected to rise between 1.7°C to 2.2°C by 2030. Rise in temperature would further trigger many events like Glacial Lake Outburst Floods (GLOF). Increasing extreme weather events and disaster risks is another major concern. A 2-12% increase in the intensity of extreme precipitation will be observed by 2030 (INCCA, 2010). Loss of bio-diversity and agro-diversity during disasters and extreme events will lead to food insecurity. New health risks are also emerging with warming up of Himalayas and receding glaciers & forest lines. The cases of diarrhoea and insect vector-borne diseases like malaria, Japanese encephalitis and dengue fever are expected to rise.



Uttarakhand is an Indian Himalayan state known for its rich spiritual and religious tourism, ecological richness and diversity, and cultural ethos rooted in traditions, but it is also known for growing frequency and intensity of natural disasters, and for its fragility of ecological and geological systems. Due to its geo-climatic, ecological and socio-economic settings, Uttarakhand is one of the most disaster-prone states of the country.

Almora is one of the multi-hazard-prone districts of Uttarakhand. The climate in different parts of Almora varies due to wide difference in altitudes. Almora has an average annual maximum temperature of around 23o C and average minimum temperature of approximately 10o C. The winter months are usually freezing and the temperature may go below 00 C. (Source: VPKAS, Almora). The annual average rainfall is slightly more than 1000 mm. The climate is marked by variations in temperature in various seasons and the tropical rains affect the district during monsoons.

In 2013, the Uttarakhand region was hit by flash floods and the disaster was termed as the 'Himalayan Tsunami' which caused widespread loss of lives and damage to infrastructure, property and environment with resultant impact on the livelihoods and local economies of nine million people. The disaster caused huge devastation to almost all developmental facets in the state that needed a reconstruction strategy that can take care of high vulnerability of mountain communities and land to natural hazards in the backdrop of ecological fragility, environmental impacts, livelihood resilience and local economic sustainability issues. This led to the realisation and learning that the elements of climate change adaptation and disaster risk reduction need to be very innovatively and strategically woven into all the development and reconstruction plans of the states.

Climate change is impacting women differentially in the hilly regions such as Uttarakhand. Gender inequality – manifested as limited access to resources and information, and exclusion from decision making – is among the factors that limit women's capacity to cope with the changing environment. Mountain women play many roles, as farmers, natural resource managers, caregivers, and household managers to name a few. Wherever they live, mountain women are constantly coping with the heavy burden of household chores combined with farm production and livestock raising. Moreover, the mountain landscape, with its steep and fragile slopes, makes collection and carrying of water, fuel wood, and fodder even more difficult and dangerous. This burden takes a toll on the health of mountain women. But because as women they are generally less able to voice their needs, they rarely access the technologies and other essential resources that would reduce their drudgery and build their resilience to environmental changes.

A pilot initiative supported currently by Climate and Development Knowledge Network (CDKN), UK is addressing many of these issues in Almora district of Uttarakhand. Jointly implemented by the Gorakhpur Environmental Action Group (GEAG), the Institute for Social and Environmental Transition - International (ISET-I) and the National Institute of Disaster Management (NIDM), the programme aims to effectively incorporate climate change considerations into disaster management planning and development planning in Almora district. This document briefly captures how the programme was developed, what factors contributed to its success and evaluates how a climate-mainstreaming programme such as Almora's might inspire other local governments in a similar position.

## THE GLOBAL PERSPECTIVE: SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION

The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030, adopted at the Third UN World Conference in Sendai, Japan in 2015 to which India too is a signatory country, articulates the need for improved understanding of disaster risk in all its dimensions of exposure, vulnerability and hazard characteristics and strengthening of disaster risk governance, including national platforms. It further emphasizes on the actions that should focus on tackling underlying causes of disaster risks, such as the consequences of poverty and inequality, climate change and variability, unplanned and rapid urbanization, poor land management non-risk-informed policies, lack of regulation unsustainable uses of natural resources, declining ecosystems, and so on. The Sendai Framework also advocates for a more people-centred preventive approach to disaster risk and lays emphasis on disaster risk reduction practices to be multi-hazard and multi-sectoral, inclusive and accessible in order to be efficient and effective.

India is a signatory to SFDRR and is attempting to comply with it on voluntary basis. The country is making efforts to achieve the global targets by making advancement in the entire disaster management cycle by following the recommendations in the Sendai Framework and by adopting internationally accepted best practices. Recently released National Disaster Management Plan of India (NDMP), 2016, incorporates the approach articulated in Sendai Framework to achieve substantial reduction in disaster risk and losses in lives, livelihoods, and health and in the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries. The NDMP is aligned with the goal and priorities of SFDRR.

With these provisions, a paradigm shift is taking place in India at the national level from the relief centric syndrome to holistic and integrated approach with emphasis on prevention, mitigation and preparedness in dealing with disasters. These efforts are aimed to conserve developmental gains as also minimize losses to lives, livelihood and property.

## DISTRICT DISASTER MANAGEMENT PLANS

The National Disaster Management Act (2005) in India mandates the creation of District Disaster Management Authorities in each district, which are entrusted with developing and implementing a District Disaster Management Plan in consultation with all line departments. Accordingly, the Almora District Disaster Management Authority also prepares a District Disaster Management Plan every year. Currently, the Plan is more of a ready reckoner for the district administration for quick response and relief in case of any natural or man-made disaster in the district. The document mainly outlines the departmental resources that can be used in rescue and relief, rather than reflecting on how disaster risk management can be mainstreamed in annual plans of various departments. Further, it also lacks a systematic approach to identifying climate and weather-related hazards and vulnerability, and needs more focus on mitigating disaster risks in a proactive way.

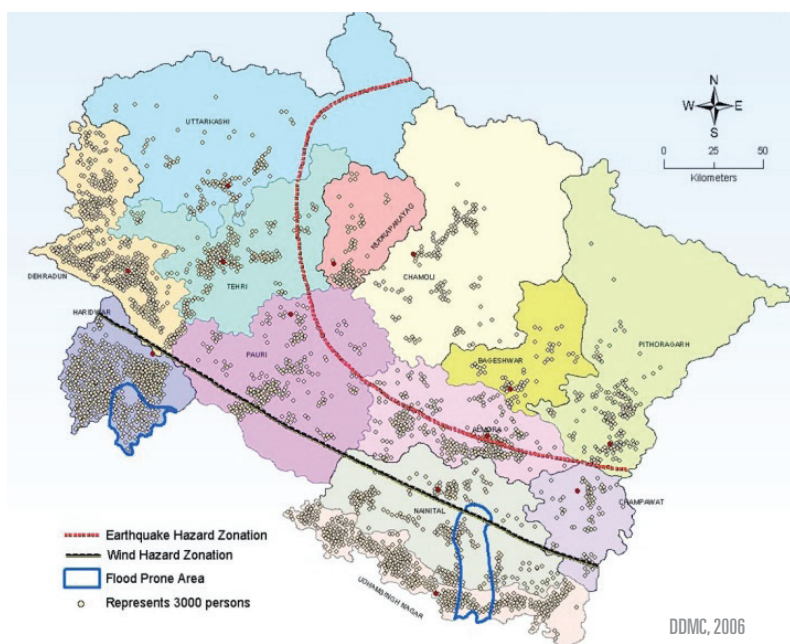


Fig-1: Disaster profile of Uttarakhand

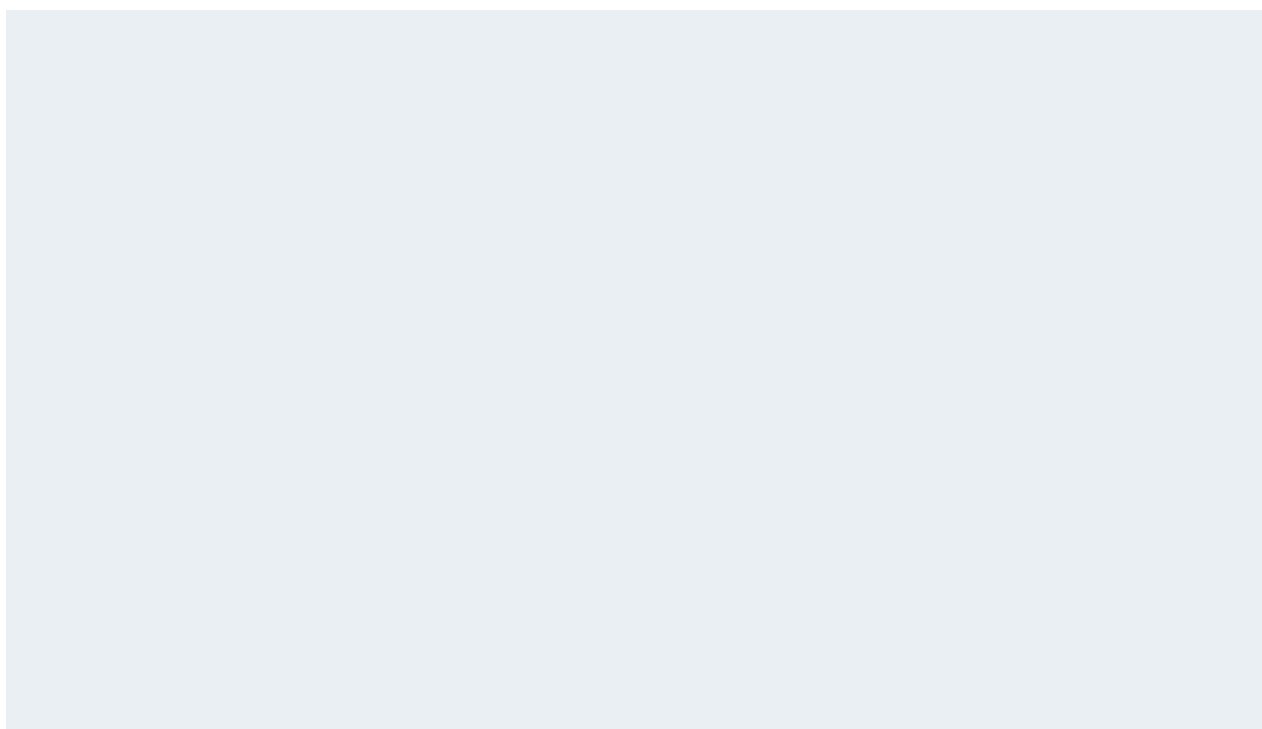
The key identified natural hazards in Almora are cloud bursts, flash floods, landslides, earthquake, forest fire and snow fall. Future climate data projections and its rigorous analysis concluded that in Almora, the temperatures and precipitation events are going to further become extreme and erratic. Increased intensities of rainfall and temperatures may lead to extreme weather events such as landslides, flash floods, and so on.

In light of all of this, the key objectives of the CDKN supported initiative have been to:

- demonstrate mainstreaming of CCA-DRR integration into departmental plans (DPs) and DDMPs in Almora district as catalytic nucleus for the state
- identify and promote changes in plans, programmes and procedures of various departments at the state level
- build capacity of district and state level departments on mainstreaming CCA-DRR integration
- document and disseminate key findings of the programme

## THE PILOT INITIATIVE IN ALMORA

The first phase of pilot initiative which was supported by START-CDKN and implemented by GEAG, ISET and NIDM in Gorakhpur district of Uttar Pradesh aimed at mainstreaming CCA and DRR concerns in DDMP and in Development Plans of various departments at district and state levels in a way that reduced vulnerabilities while enhancing the capacities to build-back-better especially of poor and marginalised by addressing the underlying causes. This initiative was rested upon the principles of Climate Resilience Framework (CRF) which helped to assess climate exposure, systems, institutions and change agents and showed an over-simplified understanding in the District Disaster Management Plan of vulnerability issues and their root causes.

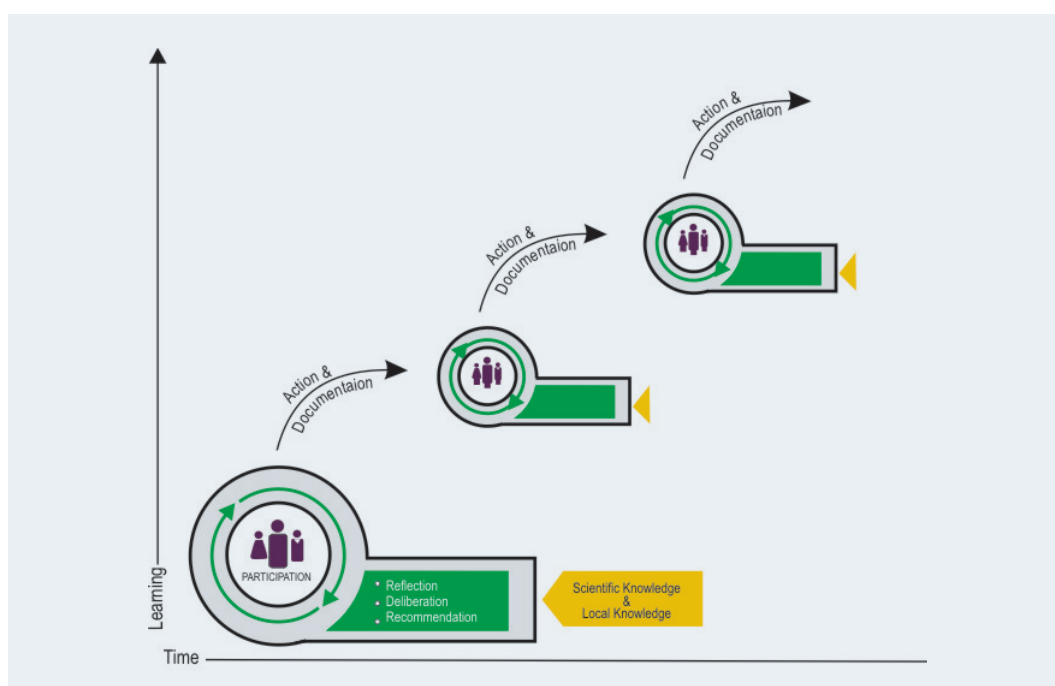


**Figure 4: Climate Resilience Framework**

*(Source: Moench, et al., 2011. Catalyzing Urban Climate Resilience)*

Experiencing the success of the Gorakhpur Model of climate-smart DDMP, in the second phase too, GEAG and ISET-I implemented a pilot initiative in Almora district in collaboration with the DDMA, Almora where the understanding of CRF, guided the initiative. Expert inputs were provided by NIDM in the entire process. This pilot initiative was designed with the objective of making recommendations on how to incorporate climate change concerns into Departmental Plans and DDMPs.

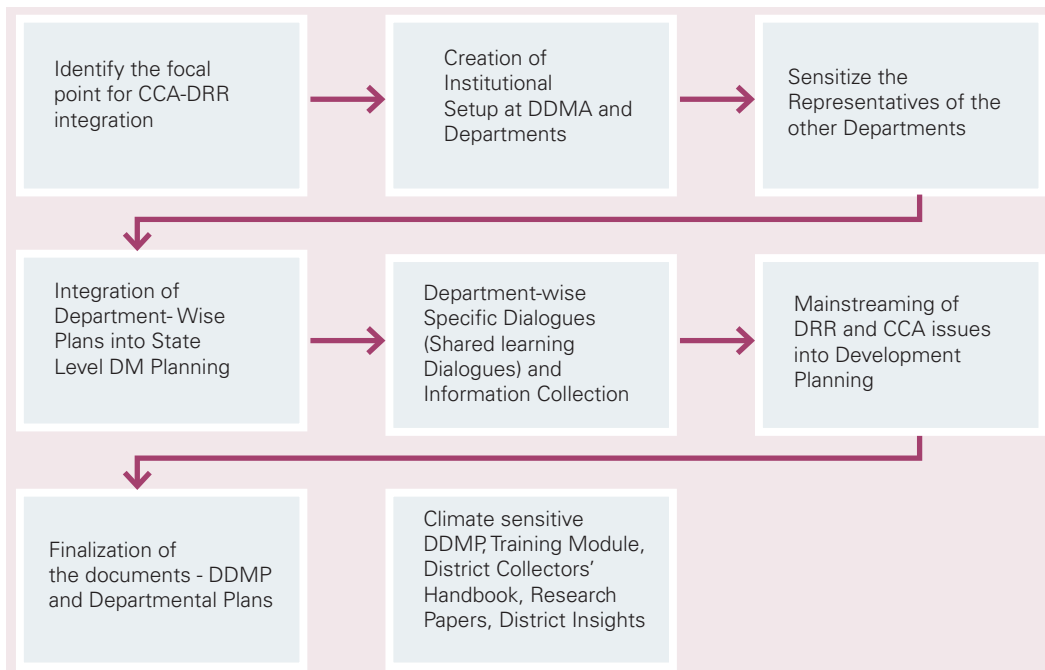
The CRF helped to unpack and understand vulnerability in lucid and comprehensive way as inter-relationships between climate exposure, systems, institutions and agents. Further, the CRF explained key characteristics of vulnerability under each of the components of systems (flexibility, redundancy and safe failure), institutions (rules, laws and regulations) and agents (capacity to learn and reorganise in government, academia and civil society organisations and community groups). It provided a tangible way to communicate issues of vulnerability to especially district level departments, which in turn aided them to comprehend vulnerability associated with their department's work/ mandate.



**Fig-3: Shared Learning Dialogue**

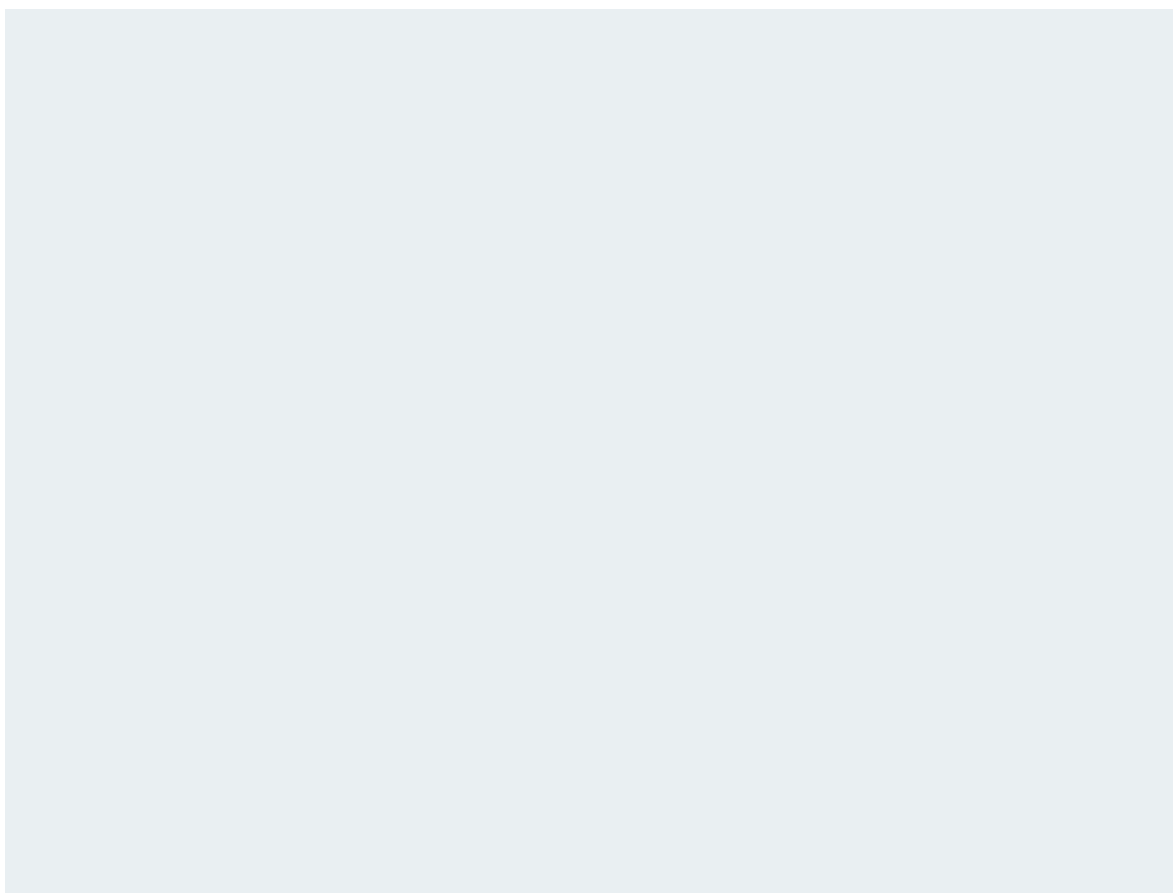
The CRF and SLDs provided conceptual and handholding support to departments for assessing vulnerability pertaining to their sectors in first round, and investigate the inter-linkages between departments that influence vulnerability in the districts in the second round. Climate change analysis and interpretation of its results was done to understand its implications on various departmental plans. Finally, the needed revisions in DPs and DDMPs were pursued with DDMA and various departments.

The key purpose of the plan is to reduce the disaster risks along with overall development of the region. Micro-risk analysis of the region was done and CCA and DRR component was integrated into major development programs and schemes. The initiative saw higher levels of buy-in and effective coordination by the DDMA and other departments which contributed to its success resulted in publishing a climate-sensitive DDMP for Almora district.



**Fig-4: Essential steps for Integration of CCA and DRR issues into DDMP and developmental plans at sub-national level**

The process of CCA-DRR integration at the sub-national level was a step by step process wherein engagement with DDMA and the line departments was done. Two rounds of Shared Learning Dialogues helped in identifying key vulnerabilities at the time of pre-, during- and post-disasters and the resilience options and mechanisms required to overcome these vulnerabilities. Based on this, the departmental plans were revised with inter-departmental convergence. These revised departmental plans were then taken into consideration and a revised DDMP was formulated with the integration of CCA-DRR concerns.



**Figure 5: Process of CCA-DRR Integration at Sub-national level in District Puri**

## KEY RECOMMENDATIONS

(SOURCE: SLD REPORTS)

The Shared Learning Dialogue exercise with each line department was conducted and gaps were identified, based on which the following recommendations were given:



### Police Department:

- More Fire Hydrants and Static Water Tanks are required in new areas, small towns and villages, especially where forest fire is more
- More maintenance funds need to be provisioned
- Snow boots are required to be procured and given to the personnel
- Strategy development to encourage female to apply and join police. Specific strategy is required

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**“In view of earlier experiences, snow boots are required for Police personnels to undertake rescue and relief work efficiently during snow fall. Preparedness and maintenance of all basic essentials much before the onset of disasters will help minimizing the losses and damages”**

Mr K S Nangyal, SSP, Almora

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### Public Works Department

- Periodic meeting and actions with forest department
- Some good practises like of ADB’s UEAP project where SoR is higher than PWD normal rates, can be referred and used for policy changes for provisions for resilient roads construction
- Need for sharing lessons from execution of restoration/repairs/ new construction program as there are diverse guidelines, program and schemes
- Loss assessment process needs to be made simple and fast
- Some provision from SDRF for post-disaster repairing work will be helpful



### Education Department

- Solar system may be installed in the schools where power is the problem.
- Water lifting pump can be provided for the schools
- Provision from SDRF and timely release of funds for repairing and maintenance is required



### Forest Department

- Manpower are required to be recruited
- Area of range should be increased and equal for all the range officers/staffs.
- Role of other departments should also be fixed in forest fire mitigation and prevention
- Awareness program for community is required. Innovative event like *Lambi Doori Ki Gasht*, a 20/25 km walk by forest officials to meet and discuss community people may bring significant results
- DDMA should organize a training for forest staff on disaster management
- Periodic meeting and communication with PWD and other departments
- The budget prepared by Forest Department as part of their exercise to protect the forests from fire should be given from SDRF



### Electricity Department-Uttarakhand Power Corporation:

- Costing norms need to be revised
- Verification norms needs to be reviewed and made simpler.
- Funds disbursement time should be minimised



### DDMA/Revenue:

- Land zoning policy and building code should be in place with specific re-enforcing agencies
- Plantation of wide leaves tress is essential
- There should be 10-15 barrel of ATF to be reserved that can be used in aviation by the department
- More rain gauges should be installed
- Revenue Police should also be equipped with modern communication tools
- Some recognition/award must be provisioned for exemplary work by revenue staff
- Women should be given equal preference in training and other activities.

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**Use of latest technology and communication in disaster management can be key to effective disaster management. DDMP and all departments should start maintaining their data using GIS technology**

Mr Savin Bansal, District Magistrate, Almora

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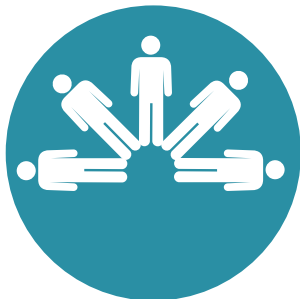
### **Animal Husbandry:**

- Fodder development program/scheme should be launched and some interim arrangement should be made to minimise the shortage situation.
- LEOs are required to be recruited (Livestock Extension Officers). -Pharmacist are also required
- Retrofitting of fodder bank buildings



### **Irrigation**

- Training of staff on new technologies
- Review of mechanism and policies for fund provision and disbursement
- Periodic dialogue with department
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### **Panchayati Raj**

- Need higher norms for hilly areas where the terrain demands higher per-unit costs of infrastructure
- Training of panchayat members on DM and other developmental schemes and norms.



### **Integrated Child Development Services**

- Norms of AWW coverage should be different for plains and hills. Review is required
- Infrastructural support is required in terms of provision of AWW centres and vehicles for CDPOs/DPO
- Advance indent and procurement of three months food supplementation for remote and vulnerable location. Provision for the procurement of food supplements in advance should be there in the department budget
- Survey of pregnant women is held on every six months- January and July every year which should take place in the month of May, before monsoon so that data can be used pre-disaster planning



### **Agriculture**

- Field officers and at AAO II levels to be recruited
- Establishment of laboratory to minimise external dependency
- Playhouses to be promoted
- Crop loss assessment should be done by agriculture expert. AAO should be made more accountable and given more space
- There is need to increase non planned budget



### Jal Sansthan

- Develop new resilient technologies in drinking water supply especially considering the causes of damages due to disasters in hilly areas
- For enhancing drinking water supply and sustainability, project must be developed under UWDP
- Deployment of trained manpower in the field or training of community on repairing and maintenance



### Almora Municipality

- Drainage improvement/construction work is required
- Overhead tanks for drinking water reserve will be helpful in emergency situation
- More funds for repairing and maintenance is required
- Building bylaws is required to be in place



### Health

- Immediate action is required on repairing of buildings/centres
- Additional fund or flexibility in procurement of advance drugs for three months for remote areas
- Under RBSK, awareness program for children can be organized
- Power back up for the centres to maintain the cold chain

## KEY ACHIEVEMENTS

- Participation of key line departments in Almora and their level of engagement during SLDs was overwhelming
- Comprehensive understanding on interdepartmental coordination issues was developed
- Hazards and climate vulnerability of various blocks were identified which could be a base for future micro level planning
- Understanding of existing hazards, risk and sectoral vulnerability helped in taking strategic decisions and making appropriate changes in the approach
- Process of DDMP revision in Almora has the potential to help state and national authorities reviewing exiting norms and policies and facilitate climate-smart sub-national disaster management plans
- Communication and coordination issues among departments helped DDMA in improving mechanisms to engage with departments in more effective manner
- This pilot initiative is also a key contribution towards Vision 2030 that the states would be developing in the light of new set of Sustainable Development Goals and for integrating the objectives of the Paris Agreement along the SFDRR

## KEY CHALLENGES IN CCA DRR INTEGRATION AT SUB-NATIONAL LEVEL

- Lack of sensitization of state and sub-national level departments on international and national commitments and their key respective roles in integration & implementation
- Lack of understanding of departmental staff, especially on the implications of climate change for their departmental plans and programmes
- Lack of comprehensive understanding of vulnerability and its contributing factors
- Differing scales of collection of vulnerability/ damage data by various departments (tehsil vs. block level)
- Unavailability of micro level climate data, especially snow fall data of Almora district and climate projections at the needed scale.
- Inter-departmental convergence areas are not properly identified at sub-national and state level, thus, not included by the departments in their annual developmental plans
- Majority of actions in DDMP still seem to be response centric, therefore, role of departmental developmental activities in pre and post disaster phase are mostly ambiguous.

## CAPACITY BUILDING NEEDS ON CCA-DRR INTEGRATION AT SUB-NATIONAL LEVEL

### AT THE STATE LEVEL

- Orientation on SFDRR, SDGs, Paris Climate Change Agreement & inter linkages
- Training on integration of CCA-DRR with inter departmental convergence
- Establishing periodic review of planning and implementation

### AT THE DISTRICT LEVEL

- Capacity building on integration of CCA-DRR with inter departmental convergence
- Review of developmental plan implementation in view of disaster and climate risks on periodic basis under the aegis of DM & DDMA
- A monitoring and review mechanism of DDMP to be developed and enforced
- Climate data need to be generated at micro level and required infrastructure & capacity need to be built
- Deployment/fresh appointment of expert or nodal officer in emergency section and in other key line departments

## DEVELOPMENT OF TRAINING MODULE

In an effort to garner support from higher-level organisations (e.g., the National Disaster Management Authority and various ministries), the programme plans to share its experiences and strive for scaling up and replicating these efforts by capturing the programme experiences in the form of a training manual. The main aim of this manual is to promote & support training capacity building on mainstreaming of CCA & DRR integration into developmental planning processes with a special focus on sub-national and urban area contexts. Specifically, the manual presents a practical approach of CCA & DRR integration & mainstreaming for an effective and realistic DDMP, learning from Gorakhpur & Almora. NIDM being the national policy think tank & capacity building institute is bringing out this training manual along with GEAG & ISET-I to provide training & capacity building support to practitioners, policy makers, officials & academicians to pave a way to mainstream climate & disaster risks in developmental planning. The module provides the pathways & approaches for integration of CCA and DRR so that we move together in the journey of Climate Smart & Risk Informed Development.

## DISTRICT COLLECTOR'S HANDBOOK

District Collector's Handbook on mainstreaming CCA-DRR will also be developed as a sort of quick guide (ready reckoner). There is tremendous potential for reducing vulnerability and risks through integration of DRR in national and state schemes through structured framework and operational measures which a collector can only help in proper implementation. It will give a quick overview of roles & responsibilities of collectors in disaster management and will guide the collectors on various issues of CCA-DRR mainstreaming into development planning of districts.

## RESEARCH PAPERS

Further in the process, the initiative will come up with two research papers which will demonstrate how Climate Smart DDMPs like that of Puri can be used to implement State Action Plan on Climate Change (SAPCC) and what are the key approaches to mainstreaming CCA-DRR in development planning.



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