

Village Level Disaster Risk Management through Participatory Learning and Action (PLA) at Uttarakhand Himalaya, India

Abhinav Walia and Indrajit Pal

Centre for Disaster Management, NIAR, LBS National Academy of Administration,
Mussoorie – 248179, Uttarakhand, INDIA.

Email: waliaabhi@gmail.com, indrajit.pal@nic.in, indrajit.pal@gmail.com

Abstract: *Participatory Learning and Action (PLA) approach was exercised in the village Jardhar situated on the foot hills of Himalaya above 1550 meters above the sea level, lying between Latitude 30° 32:25' -30 ° 34.08'N and Longitude 78°34.'-78°36'E. The total population of this village is around 1484. Rationale behind this study is to empower the rural communities and to follow the bottom up approach for the development of a village level disaster management plan. As we know in case of any disaster community is the first responder, so it is indeed required to analyze the risk on community level and to suggest the Village Level Disaster Risk Management solutions. While conducting the PLA, it was noticed that this small pocket of population has got benefits from various government (national and international) schemes. Government of India has specified all sorts of support to rebuild their livelihood. A number of schemes i.e. MGNREGA are implemented in the village which are beneficial in order to reduce the disaster risk and parallelly such schemes generates the employment for the village people.*

In the study risk mapping have been done through the personal interview methods and observations and later it has been converted into Geographical Information System platform for the location accuracy and analysis. A village level disaster management plan further suggested for the Jardhar to manage the risk of various hazards and disasters.

Key words:

Disaster Management, Geographic Information System, Remote Sensing, Participatory Learning and Action (PLA), Village Disaster Management Plan (VDMP).

Introduction:

Natural disasters have been an integral part of progress of human civilization, manifested in the traditional coping mechanisms, cultural practices and even myths. It is however, a matter of concern that the technological innovations notwithstanding, in recent years the increased frequency, intensity, magnitude and impact of many disasters have claimed many thousands of lives and caused immense material losses across the globe.

India's geo-climatic conditions as well as its high degree of socio-economic vulnerability, makes it one of the most disaster prone country in the world. A disaster is an extreme

disruption of the functioning of a society that causes widespread human, material, or environmental losses that exceed the ability of the affected society to cope with its own resources. Disasters are sometimes classified according to

whether they are “natural” disasters, or “human-made” disasters. For example, disasters caused by floods, droughts, tidal waves and earth tremors are generally considered “natural disasters.” Disasters caused by chemical or industrial accidents, environmental pollution, transport accidents and political unrest are classified as “human-made” or “human induced” disasters since they are the direct result of human action.

A more modern and social understanding of disasters, however, views this distinction as artificial since most disasters result from the action or inaction of people and their social and economic structures. This happens by people living in ways that degrade their environment, developing and over populating urban centres, or creating and perpetuating social and economic systems. Communities and population settled in areas susceptible to the impact of a raging river or the violent tremors of the earth are placed in situations of high vulnerability because of their socio-economic conditions. This is compounded by every aspect of nature being subject to seasonal, annual and sudden fluctuations and also due to the unpredictability of the timing, frequency and magnitude of occurrence of the disasters.

About PLA and study

Participatory Learning and Action (PLA) is part of a family of methods that enable local people to analyze, share and enhance their knowledge of life and situation, and to plan, prioritize, act, monitor and evaluate (Absalom et. al., 1995; Chambers, 1997). The methods and approaches evolved during the 1980s and 1990s in an effort to find ways to facilitate participation by communities in international development strategies, rather than rely on top-down projects designed and led by outsiders.

The principles of PLA1 remain the same throughout:

Learn directly from the local community – Local community members are the experts.

Hand over the stick (or pen, or chalk) – The facilitator may initiate the process, but the people participating lead the analysis of the information. The facilitator sits back and observes while the participants map, model, rank, score, diagram, analyze, prioritize and act. The outsiders’ role is to facilitate open sharing, but not dominate.

Learn progressively – Assume you will not learn everything immediately. Learn with conscious exploration, use methods flexibly, and be prepared to adapt to the situation. Have a plan, but allow for the unexpected.

Seek diversity and triangulate information – Do not assume that everyone in the community shares the same opinions. Seek out diverse groups of people and opinions, including people who are not in the mainstream, those who are often silent or marginalized, as well as leaders and experts. Cross-check information from various sources to identify patterns and themes. Be aware not only of what is being said, but what is not being said; watch body language and observe power dynamics.

Practice self-critical awareness – Try to be aware of your own biases. Be open to new ideas and ways of thinking. Embrace error; try to do better next time.

Share ideas and information – Encourage openness of dialogue and exchange in a non-judgmental atmosphere. When PLA exercises are completed, share the overall results with the general community.

Ensure respect and safety for people at all stages of the process – Take active steps to ensure (and don’t assume) that people are participating voluntarily, and that they understand that they can stop at any time. Make sure that everyone has the opportunity to speak up if they choose to, despite risks to themselves, and that they have the right to remain silent if they choose to. Ensure safety of vulnerable people in vulnerable situations.

Study Area

The study area Jardhar village is situated at Chamba block in Tehri Garhwal District (Fig 1). The village is an altitude of 1500 meters lying between Latitude 30° 32:25’ -30 ° 34.08’N and Longitude 78°34.’-78°36’E .The district stretches from the snow clad Himalayan peaks of Thalaiya Sagar, Jonli and the Gangotri group all the way to the foothills near Rishikesh. Lying on the southern slopes of outer Himalayas, Tehri Garhwal is one of the sacred hilly districts of Uttarakhand State. Its hilly terrain and lack of easy communications have helped it to preserve its culture almost intact. Access to Jardhar village involves a three kilometers trek from Nagni, which is the nearest road head on the Rishikesh-Tehri highway (NH94). The entire region of the village cutting across the boundaries of administrative blocks people refer to this entire region as Hemvalghati. The name comes from the river Hemval, which originates from the Surkhanda peak in

the Garhwal Himalayas and merges with the Ganges at Shivpuri, about 16 kms upstream of the town of Rishikesh.

Jardhar village nestling in serene and picturesque surroundings with pine forest and village grassland. Jardhar village has about 17 settlements/hamlets. The settlements are situated at quite a distance from each other, with about 3-4 families in every settlement, with the exception being Jardhar villlage proper, which is the earliest and largest. Cultivation is carried out in the valley, where most families own land on the terraced fields on the slopes. The total revenue land is 436.37 ha - of which 27.82 ha is irrigated land and 229.87 ha under Civil Soyam Forest (grassy wasteland in the vicinity of the village under the ownership of the Revenue Department).

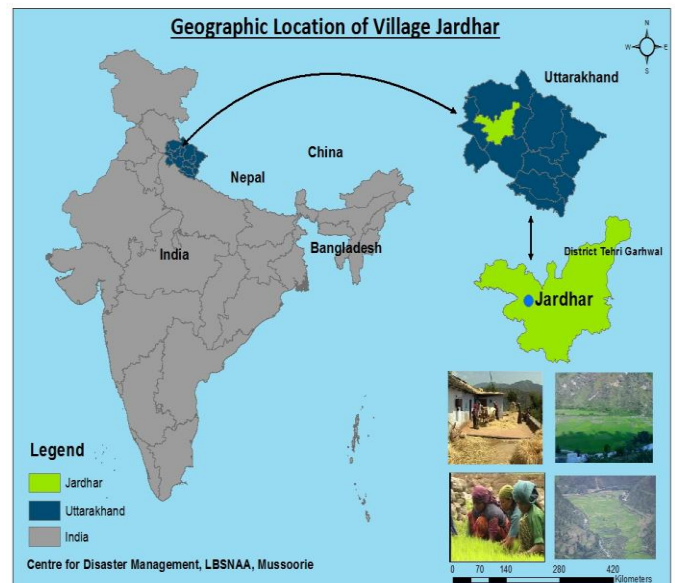


Fig1: Geographic Location of village Jardhar, Tehri Garhwal

Demography and Statistics of the Village:

No. of families	Total Population	Male	Female	Total Area	Cultivat ed Area	Not suitable for Agriculture	Current fello w land	Ar ab l e Fal lo w La nd	R es er v e Fo r e st a r e a
282	1484	687	797	437.27 Ha	185.49 Ha	6	11.2	13.6	2668

[Source: Chamba Block Development Offcie, Tehri, Uttarakhand]

Local Administration:

The Gram Sabha of Jardhar elects the Panches (members of the village council) to the Gram Panchayat (village administration) from 9 wards. The Jardhar Gram

Sabha meetings are generally held twice a year - after the Rabi and Kharif harvests. During three meetings the Gram Sabha discusses various development related issues under schemes like, Jawahar Rozgar, Yojana, Sunishit Rozgar Yojana etc. The Gram Panchayat is assisted in its functioning by the Panchayat Mantri who functions as a secretary to the Panchayat.

Geo-Climatic Profile of the Village

The climate in Tehri Garhwal district varies from cold temperate, tropical to sub-tropical. The northern and north western parts of the district experiences sub-zero temperature during the winter whereas the central and southern parts are comparatively warm and humid. In the southern part, at Narendranagar and west of New Tehri (e.g. Chamba, Dhanolti and Surkanda Devi), the weather is very cold in winter and pleasant in summer. Snowfall is quite common during the winter in these areas. Other parts of the district experience dry, hot summer and cold winter. The annual rainfall in Tehri Garhwal district is quite variable and ranges between 956 mm and 2449 mm.

Tehri Garhwal district comprises two broad physiographic divisions viz. Central Himalayan Zone (north of the Main Central Thrust) exposed in the north eastern part and Lesser Himalayan Zone (south of the Main Central Thrust) in rest of the area. The physiography of the village is characterised by high mountain peaks, deep gorges and valleys. The regional trend of major ridges is NNW-SSE, which is usually parallel to the strike of the country rocks. However, E-W, NW-SE and N-S trending ridges are also observed which are mainly structurally controlled.

Relevance of Study


It has been reported by different studies that an actively involved and empowered local population is essential to successful rural community development. Robert Chambers, a key exponent of PRA, argues that the approach owes much to "the Freirian theme that poor and exploited people can and should be enabled to analyze their own reality"^[1]. First international conference to share experiences relating to RRA was held in Thailand^[2]. This was followed by a rapid growth in the development of methods that involved rural people in examining their own problems, setting their own goals, and monitoring their own achievements. By the mid 1990's, the term RRA had been replaced by a number of other terms including 'Participatory Rural Appraisal (PRA)' and 'Participatory Learning and Action' (PLA). Practitioners such as James Mascarenhas, Parmesh Shah, Meera Kaul, John Devavaram and others in India collaborated with Chambers to explore emerging techniques and tools. These early pioneers were responsible for the spread of PRA to Africa and elsewhere. In Africa, the methodology found enthusiastic advocates in Kenya (Charity Kabutha, Daniel Mwayaya), South Africa (Kamal Laldas Singh and others), Zimbabwe (Sam Chimbuya, Saiti Makuku), Ghana (Tony Dogbe). Chambers raised funding for South-South Exchanges which

were seminal to the internationalization of the PRA community of practice. Kamal Laldas Singh who joined Chambers at the IDS, helped catalyse the South-South and in-country networking that attempted to encourage reflection and learning amongst practitioners. The rapid spread and adoption of the methodology led to issues of abuse and quality.^[3]

Methods and approach:

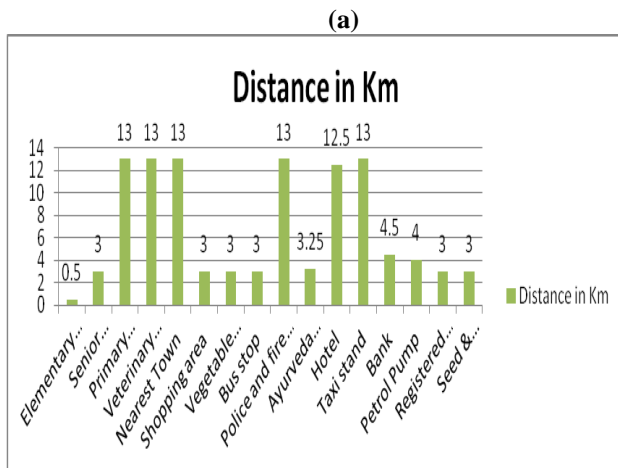
The methodology has been acquired on the basis of need assessment followed by reputed building and open questions with available secondary data.

1. The base map from the revenue department
2. The secondary data from the administration and from NGO
3. For community mapping, material with all the indigenous colors and related things.



	Settlement	Fields	Road	Settlement	Stream	Fields	Settlement	Fields	Forest	Forest	Fields	Village proper	Forest
Soil			Paved	Cement Concrete	Boulders		Cement Concrete		Pine	Pine, Oak, Deodar		Traditional cement/rock	Oak, Deodar
Slopes	Slope	Rat	Flat	Flat	10° slope	Flat	30° slope	30° slope terraced	30° slope	40° slope	Slope terraced	Flat	slope
Land Use	Shops/Habitation	Horticulture	Irrigation	Habitation	Irrigation	Horticulture	Habitation	Agriculture	Grazing	Grazing	Agriculture	Habitation	Unexploited
Vegetation	Bees/Walnut/Kashal	Paddy/wheat/maize		Pine, Sugarcane/Apple	Lantana	Paddy, Tomato, Beans, Wheat	Bees/Apple/Walnut	Bees, Onion, Wheat	Oak, Pine	Oak, Pine, Deodar	Wheat, onion, Rajma, Green peas	Apple, Walnut	Oak, Deodar, Poplar
Irrigation	Electrically Pumped	Irrigated		Seepage, Pumped		Irrigated	Seepage, Pumped	Rain fed			Rain fed	seepage	
Problem	Waste management	Poor water harvesting/Poor maintenance/Diseases of crops	Poor Maintenance, Embankments not done	Accessibility, illumination of the tracks and roads	Siting	Diseases, Monkeys, Wild Boar	Accessibility, illumination of the tracks and roads	Poor Water harvesting, Crop destruction by wild animals	Encroachment, soil erosion	Encroachment, soil erosion	Poor water harvesting/No irrigation, Wild animals	Poor hygiene, poor waste management	Encroachment, soil erosion
Opportunities	Biogas, Garbage pits, garbage cans	Check dam/ground level ponds, judicious use of insecticides	Beneficiary committees to supervise maintenance work	Awareness on hygiene	Proper Check dams with sluice gate/shutters	Electric fences using solar power in gullies	Construction of solar illuminated concrete pathways	Rain pits, Benched terraces, drought resistant and perennial crops	Vigilance and forestation, construction of gabions	Vigilance and forestation, construction of gabions	Rain pits, Benched terraces, drought resistant varieties, perennial	Construction of toilets, Garbage pits, garbage cans	Tube well/ Water connection through pipes

PLA was initiated with the introduction of participatory officials along with the villagers who were present during our first introduction to the village. Subsequently we have collected the information about the habitat of the village and divided our group into two sub-groups and moved in the North-East and South-West direction of the village (Fig 2a). Each group encountered with villagers one to one introduction and reviewed regarding the nature of habitat, types of activities involved and events inside the village. All the members were interacted with the villagers during the open questions and assessment was drawn about the technological input and their usage by them. All collected data from the village level were compared with the revenue data of agriculture, population, health and education (Fig 2b). The villager's ideas about all above fields were questioned and observed.



(b) Fig 2: (a) Snapshot of Trnasact Walk, (b) Distance from Village central point

Near about 60 villagers were participated (old man, woman, adults and children) in the community mapping exercise (Fig. 3). The map was drawn by the villagers with the coordination among all the participants.



Figure 3: Community mapping by the villagers

During the mapping, various points of developmental issues were emerged and discussed with the villagers for their suitable implementation. All the data collected from the villagers as well as by the team members were cross checked with the secondary data.

Asset-based community development (ABCD) is a methodology that seeks to uncover and utilize the strengths within communities as a means for sustainable development. The ABCD approach helps them become stronger and more self-reliant by discovering, mapping and mobilizing all their local assets. The first step in the process of community development is to assess the resources of a community through a capacity inventory [4]. After knowing the relationship of these factors the PLA can be made more precise.

Hazard Profile of the Village

Earthquakes

Village is located in the most sensitive seismic zones of the Himalaya, The possibility of the village being rocked by an earthquake is inevitable. Village comes under seismic zone IV. We can't predict earthquake in advance. Significant damage of human lives, cattle, agriculture and infrastructure have been occurred due to the earthquake stricked in year 1991, 1999 in the adjacent district Uttarkashi.

River Floods

Major river passes through the village is Hemval, though there are number of seasonal streams criss crossed the village. The district is getting perinneeal waters from Bhagirathi, Bhilangana, Alaknanda and their tributaries like Bal Ganga and Dharma Ganga. The village is Except some flash floods during rainy seasons the village is not much prone to riverine floods.

Land Slides, Cloud burst and Flash Floods:

After earthquakes, the next potential hazard of the district are land slides. During rainy season cloud bursts and flash floods are very common phenomenon eventually caused heavy land slides, which generally block the flow of water in various rivers or its tributaries. Similarly because of loose structure of soil in the mountain range along the banks of rivers, there is always a possibility of heavy landslides in the adjacent areas along the river banks.

Fires

A major part of the block as well as village is forest covered. During the summers forest fires have often taken place in the past resulting in loss of animal life and vegetation.

Drought

Drought is also not very uncommon in the village. In the year 2006 and 1987-88 the village district as a whole faced the drought situation. The drought in the village caused shortage of drinking water, fodder and agriculture losses have also been occurred. In year 2002, 50 % agriculture losses have been occurred in 1090 villages of the district.

Risk Profile of the Village

Village is prone to various type of hazards i.e. Earthquake, flash floods, landslide, forest fire etc. Below map is developed through PLA based interviews and observations, this map depicts the various types of hazards of the village. In below map, we can see the agricultural land marked in florescent green and some settlement pockets marked in pink colour are prone to floods. The orange patch showing the area prone to landslides and green circle around showing the forest fire probable area (Fig 4).

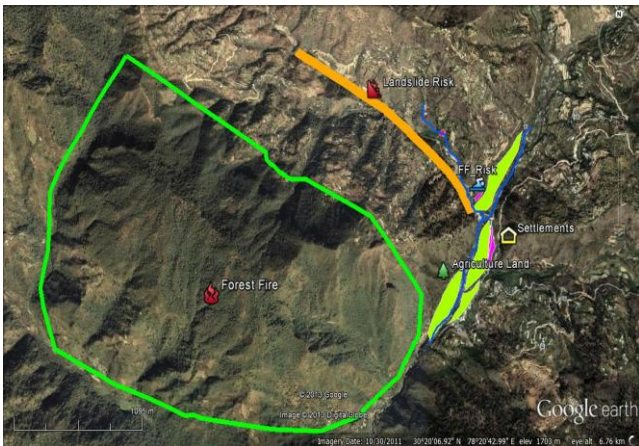


Fig 4: Risk Profile of the Village on GIS Platform

Need for Village Disaster Management Plan

Village Disaster Management Plan is the most important ingredient in implementing Community Based Disaster Risk Management in the village. It refers to a list of activities a village agrees to follow to prevent loss of life, livelihoods and property in case a disaster. It also identifies in advance, action to be taken by individuals in the community so that each one knows what to do when a disaster strikes or when a warning is received. The main objective is to empower the community to deal with disasters on their own as a way of life.

The paradigm shift in approach towards management of disasters accentuates the needs for risk reduction at the community level. It focuses on developing the capacity and skills of the community so that they can deal with the disasters in better manner. In the recent years, a number of initiatives have taken place for reducing the risks of disasters at the community level which have assumed the nomenclature of 'Community Based Disaster Risk Management (CBDRM)'. Making a village disaster management plan is a vital and indispensable component of CBDRM. The CBDRM approach provides opportunities for the local community to evaluate their own situation based on their own experiences initially.

The rationale for involving communities in disaster preparedness and mitigation activities is based on the assumption that community is the real sufferer and the first responder and it has developed its own coping mechanisms and strategy to reduce the impacts of disaster. It is imperative to appreciate this local knowledge and resources, and to build

on them in order to improve the capacity of the people to withstand the impact of disasters.

Steps involved for Village level Disaster risk Management:

It is necessary to give importance to the village level disaster risk management. Being the first responders community should be empowered for their involvement and contribution for the village level development planning and steps towards the disaster risk reduction both in structural and non-structural measures. The National Institute of Disaster Management, India developed a framework for village level disaster risk management involves four primary steps (Fig 5) which can be used to develop a village level disaster management plan.

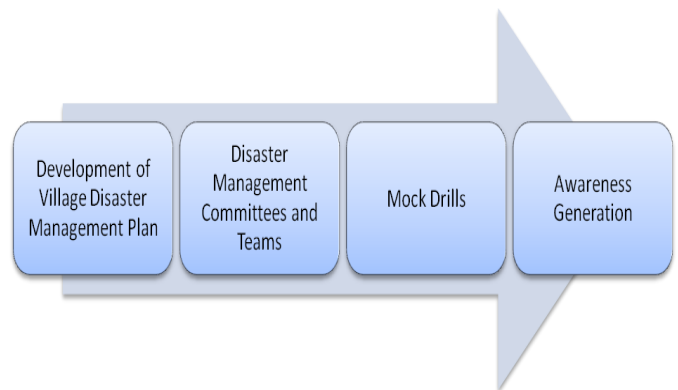


Fig 5: Important Steps for Village level Disaster risk Management:

Development of Village Disaster Management Plan:

It is known fact that there is an urgent need to involve people in the process of identifying their needs and problems as well as in the choice of the solutions. These solutions should favour the use of local resources. There are various ways of involving people in the analysis of problems, the planning, the implementation and the monitoring of development activities. Therefore, facilitators should be able to:

- Understand the values and norms of the community.
- Obtain information and share it with the community.
- Employ participatory techniques for the collection and use of information.
- Plan and conduct meetings between the different communities.
- Employ different communication techniques.
- Know how to work with adult communities.
- Have different working strategies with the community.
- Understand the local dynamics.
- Mobilize community resources and community actions.

1. Role and Responsibilities of Disaster Management Committee:

Pre Disaster Phase:

- Identifying and analyzing risk and deciding what to do about them.
- Identifying, selecting and prioritizing the most effective actions in implementing disaster risk reduction activities in the village.
- Awareness programme like distribution of pamphlets, tree plantation, channelizing the river etc.
- Mock drills involving the entire villages.

During Disaster:

- Be a part of the different task force involved in rescue and relief distribution.

Post Disaster:

- Cooperating district administration in proving the accurate damage assessment.
- Helping in documentaiton and lessons from the experience.

2. Mock Drills

Mock Drills need to be conducted at regular intervals on the basis of VDMP. Community need to get involved in each and every step. The mock drills will be a form of rehearsal in which the response of the community and the efficacy of the administration will be tested. The mock drill will also test the applicability of the village disaster management plan.

3. Awareness Generation:

Awareness has to be generated amongst the community through various medium like televisions, radio and print media. These campaigns are carried out through rallies, street plays, competitions in schools, distribution of IEC materials, wall paintings on do's and don'ts for various hazards. Meetings with key persons of a village such as the village head, health worker, school teachers, elected representatives and members of the youth clubs and women also motivate the villagers to carry forward these plans for a safer living.

Conclusion & Recommendation

Risk assessment and development planning is an integral part of Disaster Risk Reduction. Preparing village level disaster management plan aims at capacity building and community resilience to equip the vulnerable society with skills and generate awareness. Therefore, coping mechanism with various hazards becomes a way of life for the community. The framework of VDMP is built around the four pillars i.e., Development of Village Disaster Management Plan, Role and Responsibilities of Disaster Management Committee, Mock Drills and Awareness Generation. The present approach for preparing VDMP will not only involve the local community to become a part of creating plans and decisions, but also becomes a major player in its implementation.

According to the Disaster Risk Reduction Programme of Government of India and UNDP, 2002-07 emphasis has been

given on the Development of disaster risk management and response plans at Village/ Ward, Gram Panchayat, Block/Urban Local Body levels. Constitutions of Disaster Management Teams and Committees at all levels with adequate representation of women in all committees and team. (Village/ Ward, Gram Panchayat, Block/Urban local body, District and State.) Expected results would be higher degree of awareness starting from village to district to state levels. During the time of disasters, villages are the one who suffer most as rescue and relief reach comparatively slower than cities. In context to this, it is essential for all the villages to follow a proactive approach for a robust disaster management and all villages should develop village disaster management plan (VDMP) in advance using PLA Technique for the deep understanding of their risk and resources along with the community participation.

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