

Understanding People's Perceptions on Climate change and
Disasters in Eco Fragile Mountain Areas of Chamba District, HP

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by

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Under the Supervision and Guidance of

Prof. Rahul Ghai

CERTIFICATE

This is to certify that Adarsh Singh in partial fulfillment of the requirements for the award of the degree of MBA (Rural Management) from the IIHMR University, Jaipur has successfully completed his dissertation at Pragya during March 22, 2021 to June 19, 2021.

Place:
Date:

Preceptor/Head of the Organization
Name of the organization

CERTIFICATE

This is to certify that dissertation titled **Understanding People's Perceptions on Climate change and Disasters in Eco Fragile Mountain Areas of Chamba District, HP** is a record of the research work undertaken by **Adarsh Singh** in partial fulfillment of the requirements for the award of the degree of MBA (Rural Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

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Date

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Abstract

Climate Change and Disaster are considered to be simultaneous and there are many underlying scientific factors which are causing a continuous increase in the various catastrophic events like Earthquake, Landslides, Floods, Avalanche, Forest fire, Cyclones, GLOF, Drought etc. People have different perception and experience based on their location, knowledge and attitude, the perception of people living on plains and mountains are different due to their geographical location and they have different experience as well, the mountainous people are vulnerable to kinds of hazards. To find out the experience and perception of people living in the mountainous region a survey was carried out at Chamba district of Himachal Pradesh and on the other hand various secondary data was analyzed to find out the vulnerability index and the ethics of the disaster management and the ways to mitigate the effects of the disaster. To understand the experience and perception a questionnaire was prepared consisting on questions based of the frequency of disasters faced by the locals, most threatening disaster, reasons of the disaster, ways to tackle or mitigate the disasters, outcome of the pertaining disaster and so on.

The study concluded that almost all the disasters are faced by the concerned area and the risk category of them ranges from very high to high and the people who are at the most risk are children, old aged people, gender based, LGBTQ, and person with disability. The people living at Chamba have witnessed the disasters on an average of 30-35 times in their life. As per the survey the people perception regarding the main reason of such catastrophic activities came out to be the forest and wildlife depletion along with the population explosion and as the result it could be reversed only if there is a control on population and the increased reforestation and wildlife conservation activities otherwise the climactic change and increase disasters will ultimately lead to the famine situation and maybe the end of this world.

It was concluded that the local people perception and experience can be used as a tool to mitigate the disaster consequences. The participation of the people in the risk planning will increase the confidence of the people in government intervention and their experience will give strength to the planning and programmes of the disaster management, community will also understand the measures to be taken to safeguard themselves from the frequent disasters in the town.

There are also few recommendations like the increase of Vegetation cover on the landslide prone areas, Mapping of the sites should be done and the people should be avoided to settle or go to work in that location with the help of hazard map. Population control programs must be launched and implemented at such areas. Appropriate design criteria must be made available for cutting of hill slopes for the construction purposes.

Understanding People's Perceptions on Climate change and Disasters in Eco Fragile Mountain Areas of Chamba District, HP

1. Introduction

The existence of human civilization on earth is about 6 thousand years old and they have been evolving from period to period, a rapid increase in the human population and therefore the activities since the beginning of industrialization started. The abundance of natural resources is taken for granted and exploited to the level that it is dying a slow death and would vanish if not managed sustainably. Climate change is one of the latest results of the human induced activities like deforestation, land degradation, burning of the fossil fuels etc. and it is the direct result of the global warming. Climate change is the variation to the standard temperature, whether extreme cold or hot or rainfall, as compared to the normal scenario. Such deviation destroys the equanimity of climate and consequently leads to catastrophic calamities like avalanche, draught, flood, loss of biodiversity, degradation of the natural resources, damage to livelihood of the people, increased cases of the disease, low productivity of the crops, increased migration of the people etc. Different people with diverse backgrounds have their own views on climate change, that could be same or heterogeneous as well. But the thing that matters the most is that at least they should have some view, and not totally ignorant to this giant problem. To know everybody's perspective is important because how we see things shape what we choose to do.



People perception varies based on their age group, location, occupation, education level etc. One of the reasons that people may not take action to mitigate climate change is that they lack first-hand experience of its potential consequences. From this perspective, individuals who have direct experience of phenomena that may be linked to climate change would be more likely to be concerned by the issue and thus more inclined to undertake sustainable behaviours. The urgent need to mitigate and adapt to climate change is becoming more widely understood in scientific and policy circles, but public awareness lags behind therefore it is important to find out the reason and the mentality that whether they are neglecting it or they think that it is not a matter of great concern. Usually the perception of teenagers and children is not considered as they are thought to be the people with less experience and knowledge but in last few years it has been seen that how the children are getting aware about their surrounding and the devastating human activities which is hampering their future, in last few year a new teenage activist named Greta Thunberg became famous for leading largest climate strike and she became face of the youth climate movement, her bold attitude changed the views of people regarding the perception of children and therefore it has become important to consider and bring their views in the main stream.

Disasters have been increasing at an alarming rate and the most important reason behind it is the climate change from past several years and the communities who resides in the remote mountainous regions are among the most affected people from the disasters like earthquake, floods, landslides, GLOF, avalanche etc. These hazards not only cause loss of life and property but also the loss of livelihood opportunity as the majority of the population is dependent upon the agriculture as the primary and basic means of livelihood which get interrupted by these frequent disasters therefore there is strict need of mitigating these hazards by the proper disaster management. Disaster Management act 2005 led the creation of the National Disaster Management Authority (NDMA) which is headed by SDMA and DDMA to maintain and look after all the essential measures to be taken during any disaster.

1.1 Hazard Vulnerability and Risk Profile of Chamba, Himachal Pradesh¹

Himachal Pradesh is a mountaneous region which is know for its rich flora and fauna and the mesmerising scenery. The state has a rich source of natural resources and the communities residing there from decades are extensively dependent on these resources for their livelihood and survival besides its beautiful side the state is the epicenter of numerous natural calamities be it the earthquake which always keeps the state on alert beneath which a large number of tactonic activities goes on and other disasters like flash flood, landslides, forest fire, avalanche, GLOF, Cloudbrust as well road accidents. Chamba district lies in nothwestern part of the state with an area of about 6522 km square and a population of about 6.5 lakh among which 90% of the people lives in the remote rural areas, The city lies at the junction of the Ravi river and the height above mean sea level is 1006 meter. Despite of its beauties the city is always at a risk of various disasters and the population living there is the most vulnerable one and over the years the district has faced many natural and man made calameties, and the risk profile below shows the hazards vulnerability.

Table 1: Hazard threat in district Chamba

S.No.	Hazard Category	Risk Analysis
1	Earthquake	Very High
2	Landslide	Very High
3	Forest Fire	High
4	Avalanche	Medium
5	Flood	High
6	Cloudbrust	High
7	GLOF	Medium
8	Road Accident	High
9	Drought	Medium

Source: HP SDMP

Earthquake¹ – When it comes about hazard the eathquake tops the table, it is called as the sudden movement and trembling of the rocks underneath as there are always tectonic activities going under the ground which shakes the dictict very often and most of the households in the area has cracks all over their houses which can collaspe any day and could prove fatal to the households as they are not earthquake resistant. For over many years their has been an event of over 8-10 earthquake ranging from 3.5 magnitude to 5 magnitude on the richter

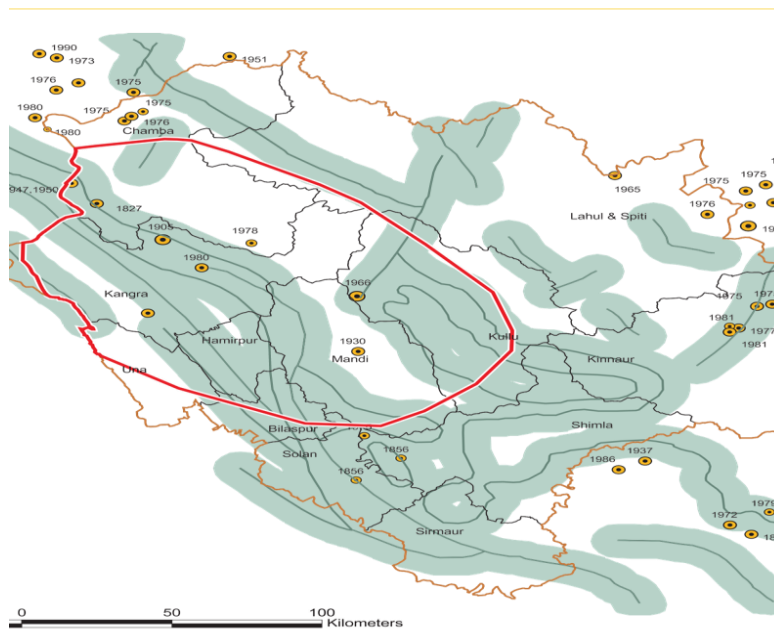


Figure 1 Earthquake - Seeds 2009

scale which proved to be devastating and damaged many houses and caused the loss of property and the human as well as the cattles life. The following map drawn above shows the

areas affected by earthquake and the severity, the red line is the zone V and the brown line is the zone IV which shows the areas which are mostly affected by the earthquake and the yellow circles are the epicenter which shows the from which area the waves of the earthquake were originated, and the black lines in the map shows the thrust and the fault lines underneath as per the scientific findings and therefore as per this data it can easily be said that the risk of earthquake is very high in the Chamba District.

Landslides¹ – The movements in the layers of the upward or downward soil and rock material of the mountains due to the gravitational pull and the combined effort of the heavy rain causes the layer of rocks and soil to slide which could be fatal for any living being comes in contact with it, landslide is also encouraged by the frequent earthquake which weaken the connectivity of the soil layer and thus it can slide at any point of time. Chamba district is always at the high risk of landslides due to

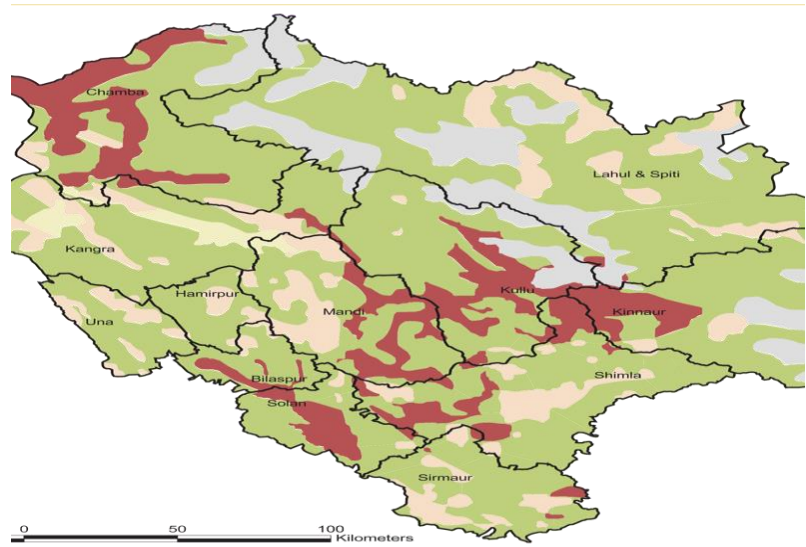


Figure 2 Landslide - Seeds 2009

its geographical location and the rainy season is highly risky. Landslides often damages the kaccha, pucca houses and also causes loss of livestock as well as the human life. The above map shows the vulnerability of the landslide in the various districts of the Himachal Pradesh and in the one can easily understand the risk category of the landslide in Chamba, the red portion which covers a large part of Chamba is the area with severe to very high category of landslide risk, and the area with green color is the area with high risk, the area which pink color depicts the area with low or moderate risk and the area with light green is one with no chances of landslide and the area with blue color is the area covered by the snow. Therefore, the map easily shows that Chamba is always at of high risk of landslide hazards vulnerability.

Forest Fire¹ – Forest fire is the natural and even man-made fire in the combustible region of the forest area where there is dense wilderness and the vegetation covered by the dry leaves and grass which easily catches fire in the summer season specially in the June. The forest proves to be fatal if it is reaches to the nearest settlement, in that case it causes the

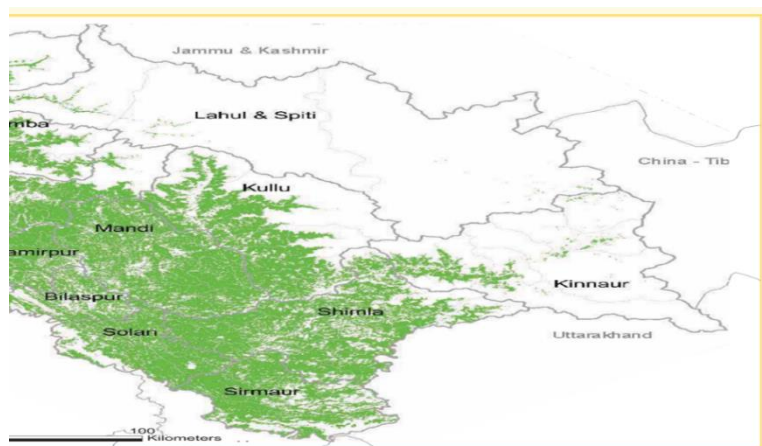


Figure 3 Forest Fire - Seeds 2009

loss of property and even the human and animal life. In Chamba district about 5022 square km of the area is covered under the forest area and therefore the risk of forest fire is considerably high in the region. The above map shows the forest cover of the various districts of the Himachal Pradesh and as one can see the Chamba region which is also highly covered with the forest therefore it shows that how it is risky during the summer season for the human as well as the wild animals and the livestock. The hazard vulnerability has been identified as high.

Avalanche¹ - It is basically the downward sloping of the snow in the high snow capped mountain due to the gravitational pull and the frequent earthquakes makes it even more dangerous. Chamba has high ranges of mountains and among them snow capped mountains are also there which gives birth to the Ravi River, Below the snow capped mountains

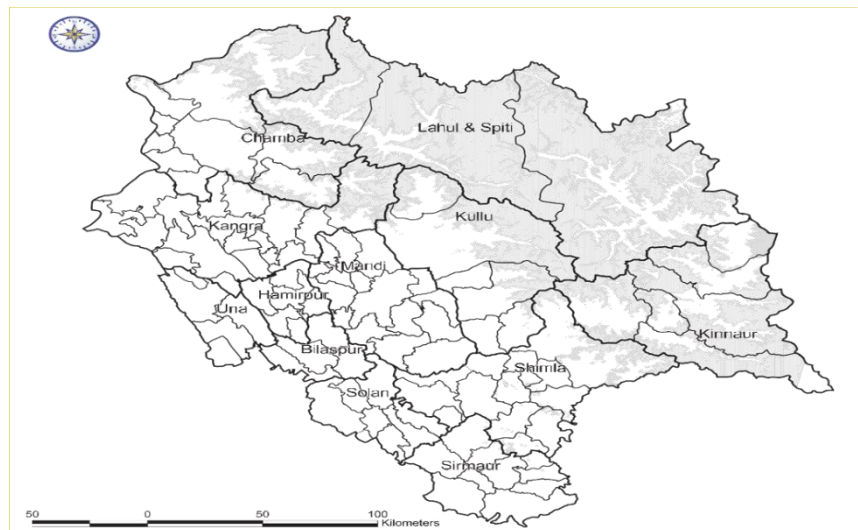


Figure 4 Avalanche - Seeds 2009

region a large percentage of people also resides there but the risk of the avalanche is comparatively low but the people residing in those areas are constantly at risk during the winter season. In the above map one can easily see the chamba region and the snow cover area around it. The dark blue color area in the map is the snow-covered area which is highly prone to the avalanches in which a large mass of the snow slides down and covers everything which comes in its way. So as per the data one can say that the Chamba area is at medium risk of the hazard in comparison to the other hazards.

Floods/Flash floods¹ –

Rivers are originated from the glaciers which is a continuous cycle and when there is a sudden increase in the melting rate of the glaciers due to the climate change and the deforestation and also due to the increase in the water level of the river in the rainy season during the heavy rains, In these conditions the level of water sometimes rises to a

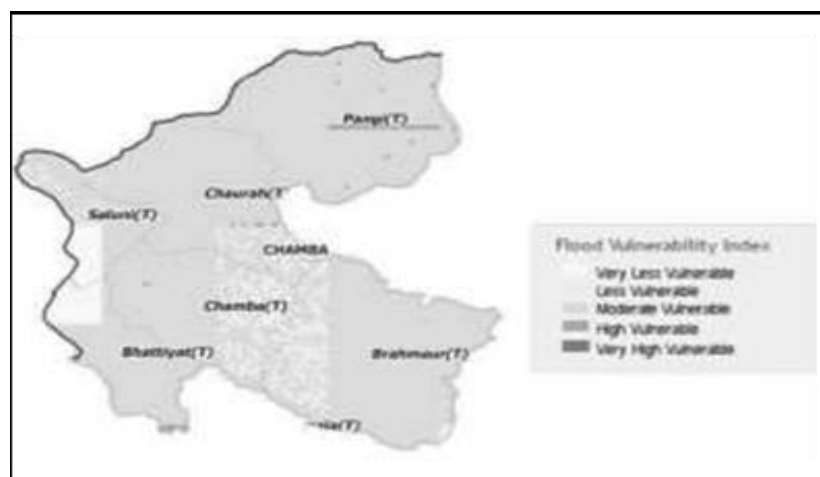


Figure 5 Floods - Seeds 2009

high level and takes the form of flood which has no boundaries and just keeps destroying whatever comes in its way and on the other side flash flood is originated when the glacier lakes outbursts and a high volume of water comes to the human settlement, it is also caused by the cloudburst during the monsoons. Chamba district resides at the junction of the Ravi River which is originated from the glaciers in the Himalayan ranges and in previous many years there has been several cases of the flood/flash floods when hundred numbers of people died and large area of land was evacuated. Chamba possess all the conditions of the flood/flash flood which makes this hazard highly vulnerable and even the dams sometimes release a large volume of water which takes the form of flash flood and could prove fatal to the communities living at the downstream.

Cloudburst¹ – Cloudburst is basically the sudden heavy rainfall which is more than 10 cm per hour and proves to be fatal to the life and the property, As the average elevation of the Himalaya is about 6100 meter and the mountains are arch shaped, the topography of the Himalaya is favorable for the vertical development of the clouds therefore during the rainy season the summer monsoon wind enters into the region and rises in the vertical direction with the slope which leads the vertical development of the clouds and sometimes these clouds causes a sudden heavy rainfalls for hours which develops the situation of the flash floods in the area. Chamba district being at the junction of the Ravi River and an ideal place for all the favorable geographical condition for the cloudburst makes it highly vulnerable, also in the past many years there have been many cases of the calamities due to the cloudburst at several settlements in the area, Climate change has always been an important factor which leads to an increase in the frequency of this natural calamity.

GLOF¹ – This is a kind of flood due to the outburst of the lakes in the glacial of the ice caped mountains, it happens when the dams which holds the lakes fails and the water takes the form of flash flood and washes off everything that comes in its way Chamba district has low chance of the damage by GLOF as there is a smaller number of settlements nearby the ice caped mountains. The power of

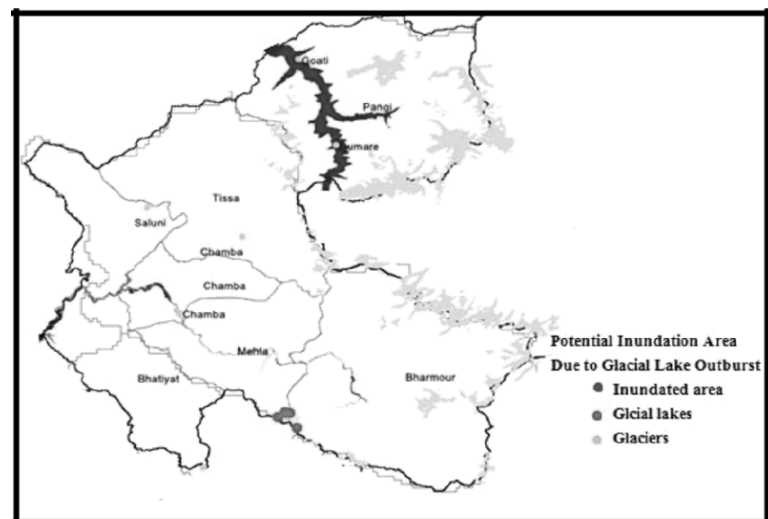


Figure 6 GLOF - Seeds 2009

GLOF could be imagined by the history that once the GLOF in 1997 washed off the 6 bridges in the Sutlej River and it completely cut off the entire district of Kinnaur for over a month. From the map below we get see those black marked dots and areas which shows the position of the glacier lakes and therefore we can see that Chamba district is at very low risk of getting affected by the GLOF.

Road Accident¹ – Unlike the plains, the accidents in the mountain regions are mostly in the form of fell off from high cliffs which is deadlier and more vulnerable. Roads in the mountainous region area are constructed by cutting the mountains and these roads are very curvy and steeper and sloppy which makes them very dangerous. Chamba district has a large network of these curvy, steeply and sloppy roads which makes it highly vulnerable in this category of risk. Accidents in these areas are mostly due to the reckless driving, unskilled drivers, unmaintained vehicles, landslides, no use of horns in the turns and use of alcohol.

Drought¹ – When there is a prolonged period with no rain in the monsoon season, especially in the agricultural season when the crops are harvested and therefore because of that it becomes difficult to grow the crops and the communities lose their primary mode of livelihood as about 90 % people in the mountainous region are dependent upon the agriculture for their livelihood.

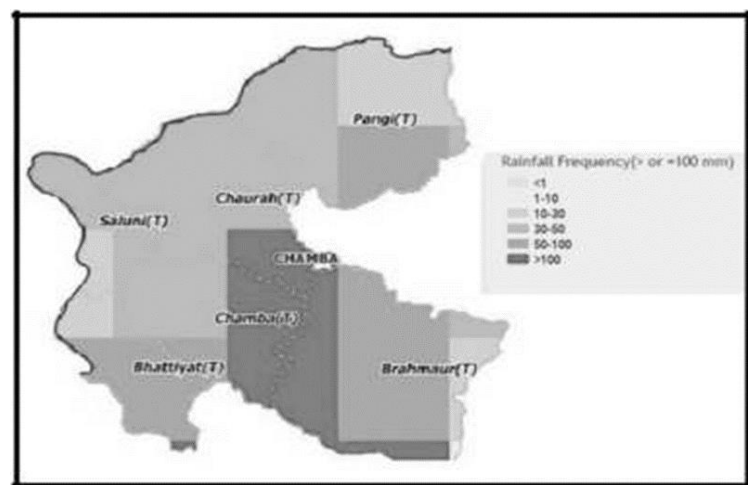


Figure 7 Drought - Seeds 2009

Chamba district being at the junction of Ravi River fall at the category of the low risk of drought as the monsoon in this region is pretty good and the people rarely facing the situation of drought but now the conditions are changing due to the climatic changes and people sometimes get affected with untimely weather.

1.2 Humanitarian Charter and Sphere Standards in Humanitarian Response²

The sphere handbook which was created with a aim to improve the quality of the humanitarian responses and to made them accountable for their actions, the sphere was created when a group of Non-governmental organizations, Red Crescent movement and came together with the core beliefs that the people who gets affected by any disaster or conflict should get a right to live their life with dignity along with the right to assistance, and for that each and every possible steps should be taken to lower or reduce the sufferings of the people coming out of the disasters or conflicts. The humanitarian charter and minimum standards in response do the work of putting these beliefs into action, it is backed by the protection principles to inform all kind of actions to be needed and the standards of the humanitarian commits to support the accountability globally. This is the most widely referenced

humanitarian resources globally. In the society there are various category of people who needs a special attention during the crisis as the vulnerability varies among the different groups of the peoples and they are at the greater risk of being affected during the situation of the crisis. The different category of the people has been defined as follows.

Children -

Children are among the most vulnerable section of the community and during any crisis or hazard the number or the proportion of children who gets affected are often less visible but in actual they comprise a significant proportion or number among the people affected by the crisis. Children are also equally entitled to get the basic after crises services. Children can suffer from a number of life-threatening risks during the crisis such as malnutrition, trafficking, sexual or physical abuse, joining in the armed groups, being separated from their family therefore they need and immediate and quick action during the crisis. There are many factors which affects the kind of risk they can get for example the adolescent girls are in the risk of facing sexual violence, children with disability are mostly to be neglected and left alone, adolescent boys are likely to be recruited in the armed groups. These are among the most vulnerable group which should be given extra focus to help them to lead a healthy and dignified life after the crisis.

Older People -

Older people are the other important section of the society which are mostly left or neglected in the humanitarian responses, they constitute a large portion among the population who gets affected during the crisis due to their physical weakness, declining mental capacity, chronic illness and being isolated in the family all these factors make the old age people among the vulnerable section towards whom special attention should be paid during the humanitarian response and every accessible service should be given at each stage.

Gender-

Gender basically means the social and ideological differences constructed by the society among the men and women, it varies from culture to culture and determines the difference between the roles and responsibilities among the men, women and girls, boys. During the crises the gender shouldn't be the obstruction in the humanitarian response. Gender should not be confused with sex which means the biological identity, gender roles constraints the girls and women and on the other hand it is influenced by the masculinity for the men and boys. Often there are many gender-based violence which could be much more intensified during the period of crisis like the child marriage, trafficking and the sexual violence. The humanitarian response should take all precautions and steps to deal with such cases with focus.

Person with disabilities-

Persons with disabilities constitute about the 15 percent of the world's population and the disabilities include the physical, mental and sensory impairments which obstruct the normal living of the people as they are not able to fully and effectively participate in the society. These people are more likely to face the difficulties in getting the basic facilities or rights like

the physical environment, information, transportation and other services. The needs of these kinds of person should be considered in a special manner during the crisis.

LGBTQ-

LGBTQI are the people who are identified as the Gay, Lesbians, Bisexual, Transgender, Queer and Intersex. These people face various kinds of disgrace even in the normal life, they are discriminated and are treated as unwanted part of the society. They face barriers in accessing the healthcare, education, housing and employment and other humanitarian facilities. During the period of emergency or crisis these people need an additional attention as they are already deprived of their rights.

1.3 The Protection Principles²

There are basically 4 protection principles in the humanitarian charter which should be followed during the crises

To enhance the safety, right and dignity of the people and should not let them be harmed further.

To provide impartial assistance to the people and their needs should be met without any further discrimination.

To help people recover from the physical and psychological effects of the crisis or violence.

To help them to get back their every kind of rights.

Water Supply Sanitation and Hygiene Promotion

People affected during the crisis become vulnerable to various health issues and particularly the infectious diseases and diarrhea which could prove fatal and could eventually cause the loss of life, these kinds of disease are caused due to poor hygiene, inadequate sanitation and impure water supply. There are different pathways by which these infections are spread such as the unhygienic food, feces, flies, fluids etc. The WASH programme aims to reduce the risk of getting infected by promoting various important and hygienic activities such as, Providing safe drinking water, sanitation facilities, hygiene practices and healthy environment etc. Wash programme manages the entire sanitation and water channel to ensure a healthy environment and access to hygiene.

Food Security and Nutrition

When it comes to food security and nutrition, each one of the people has the right to have adequate food and to be free of hunger. During any crisis the most important and basic need is to get the access to the food and but nutrition otherwise the victim of the crises may get undernourished which ultimately reduces the ability of the victim to recover, it leads to weaker immune system which increases the chances of chronic illness and it is severe in the

case of children who are already vulnerable, there are the short term and long term consequences of getting undernourished as the people may face disabilities, morbidity, cardiovascular disease, and low mental growth. Food security and nutrition is the most important during the crisis otherwise the chances of getting a good recovery for the patient becomes less.

Shelter and Settlement

Shelter and settlement during the crisis are important to make the victim feel safe and secure which is a must for a better mental condition, it provides a safe environment for the growth. Shelter is important in the way that it not only helps to get protection from the weather but also it provides a stable and safe environment which is important for health promotion, provides security, dignity and livelihoods. During any crisis the shelter and settlement helps people to get access to all other facilities which is essential for their growth and well-being, this is one the minimum charter standard.

Healthcare

Healthcare during the crisis play an important role in reducing the morbidity and mortality and it is the right of everyone to get timely and appropriate healthcare, the minimum standard of healthcare signifies the right to have access to the healthcare at any point of time and specifically during the crisis situation and there should not be any kind of discrimination in providing this basic need, it is very critical in the initial stage to provide the lifesaving healthcare. There could be an increase in the cases of malnutrition and communicable diseases due to the overcrowding, poor sanitation, impure drinking water, and low food security therefore the need of healthcare is not only important in the earlier stage but in every stage of life. A good health system ensures a better treatment and quality of life to the victims of the crisis therefore the new and existing health system should be developed accordingly to benefit the population at any point.

1.4 Code of Conduct for the International Red Cross and Red Crescent Movement and Non-Governmental Organizations (NGOs) in Disaster Relief³

This is about the fundamental right to receive or to give the humanitarian assistance to the needy and it should be applied by all the citizens of the country. As a human it should be our prime duty to reduce the suffering of the people during any crisis and the humanitarian aid should not be viewed as political or partisan act.

Aid should be provided to each and every individual irrespective of its caste, nationality or creed. It should be prioritized only on the availability and the need of the victim, life should be treated equally whether it is of same country or different country, the victims have the equal access to all the amenities.

Aid should not be given on the basis of any political or religious base I.e., special treatment as per the position should not be there as everyone has the equal right over it and it should give only on the basis of the need or the emergency of the victims. One should not try to entertain or impress the people from the high positions.

The agency which works for the aid during the crisis are independent from the government and they act only as per their own policy and interest which is the humanitarian in nature, the agency does not act for any political party, military, or under any foreign police, they take their own independent decision for the welfare and mitigation of the suffering of the individuals.

The agency should respect the cultures, customs and the structure of the communities and the region where they work for the humanitarian activities.

We shall look for the development of the locals or the communities where the disasters strike so that their position can be strengthened by going vocal for local and should also involve them in the planning and implementation of the program with the local government so that in case of emergency, they can response better and can thereby mitigate the losses.

In the relief and rehabilitation program the beneficiaries should also be included during the planning, management and implementation programmes so that the beneficiaries can get the maximum benefit out of it.

Relief aid should not only be focused to meet the current needs but should also focus to try to mitigate the future vulnerabilities to disaster. It is about forecasting the future possible events and try to plan and implement with the local agencies to mitigate it if that situation occurs in future.

We often act as a bridge between the one who seek resources and the one who wish to provide the resources or assistance, we are accountable to both of them and there should be transparency and openness and there should be reporting both on the basis of financial assistance and about the effectiveness. Proper monitoring on the distribution of aid and the disaster impact assessment should be there.

The victim should be recognized as a dignified person in the publicity and advertising activities I.e., they should not be recognized as a hopeless person or object, the respect of the person should be maintained and his capacities and aspiration should be portrayed not only about his vulnerability, these should be mutual respect throughout the period.

2. Review of Literature

Landslides in Himalayan Mountains: A Study of Himachal Pradesh, India⁴ Landslides in Himalayan mountains consists of various mass movement consisting of different types of rock fall, topple and debris flow, Himachal Pradesh is known for its Himalayan mountains ranges and is inherently prone to disasters, the development in the state is hampered by the frequent natural disasters, the spatial and temporal dimensions of landslides have the critical zones of highly concentrated landslides activities, it has been seen that there is an increasing trend in the annual frequency of the landslides which are due to the combined effect of natural and human induced activities, natural factors are like steep slope, weak rocks,

earthquakes, intense rainfall etc and besides it the human induced factors are increased anthropogenic activity like mining, road expansion, deforestation, increased settlements, and extensive agricultural practices.

Abhay S. Prasad, Bindhy W. Pandey, Walter Leimgruber & Ripu M.

Kunwar,'Mountain hazard susceptibility and livelihood security in the upper catchment area of the river Beas, Kullu Valley, Himachal Pradesh, India⁵ (2016) the kullu district is located in the pir-panjal range of the western Himalayas in Himachal Pradesh bounded by Lahul, Spiti and Kangla. Besides it beauty the Kullu district faces a number of natural hazards which have a significant impact of life, livelihood and property in the region, the frequent occurrence of hazards such as landslides, snow, avalanches, floods and other disasters are becoming common, the people's perception regarding the origin of hazards and techniques of control to the hazards showed that indigenous and lowland communities are more susceptible to hazards. Deforestation, slope cutting, construction of road and heavy rainfall are the highly responsible factors. Hazards cannot be avoided but it could be lessened through planning measures, infrastructure and risk transfer mechanism. The sustainable livelihood of Beas River may be enhanced by technologies of bio engineering and resilience of change.

Praful Bidwai' Climate Change, India and the Global Negotiations' October 11, 2012⁶

Greenhouse gas emissions are the biggest reason of the climate change which has become a great threat to the planet Earth. Frequent and gradual increase in temperature can be seen with increased weather condition, large number of people being migrated as the living conditions are getting unsuitable and the means of the livelihood is also decreasing which is ultimately causing economic devastation. Developed countries with rapid industrialization is the prime source or reason of the climate change and the effects are being felt by the developing economies. The world has failed to keep a halt or reduce the impact of the activities by any means of agreement which is causing an imbalance in the nature. Even the developing economies like India is not performing their bit responsibility regarding the climate change. On the one hand India passes different acts and activities in sake of fighting climate change but on the other hand it promotes non environmental activities. There is a need of grassroot level interventions to fight the current scenario.

Lorraine Whitmarsh (2008) Are flood victims more concerned about climate change than other people?⁷ Human are in a big threat due to the climate change and this is the ongoing concern but despite this people usually don't consider it as the personal threat and tries to neglect it as a common scenario and therefore they are least interested in taking any sort of action to mitigate the effect, although few people consider it as the risk and tries to take preventive action towards the same, usually the people who has some experience related to the effect caused by the climate change like flood, air pollution are the one who pays attention towards this serious concern. According to a survey people who survived flood and the people who suffered due to the air pollution, the perception of these people is different from the non-victims and they usually consider the emissions and the pollution created by cities as the major source of the crisis and they even think and try to do their bit or part to reduce the effect.

Canadian Centre of Science and Education (February 19, 2014) Climate change is a nowadays a matter of big concern which has been diagnosed by the government and the

scientists as it puts a threat to the environmental, social and economic development. According to survey it has been found that 71.1 % of the rural population are aware about the effect and impact of the climate change and they it well that how the climate change is harming their interest in terms of the uneven rain, low productivity, increased flood, food security, and other natural calamities harming their livelihoods, they also know that it is the human activities which is the reason of the ongoing climate concern in spite of that there are people who are still engaged in the harmful environmental activity like bush burning as it lowers their labour cost. It raises a concern about the behavioural change and the perception. There is a need to look after the ways to mitigate and overcome such behavioural aspects with the help of education and the awareness through different NGO'S at the grassroot level.

3. Research Question

Q1 – What are the perception and experience of people regarding withstanding natural disasters in the mountainous regions?

Q2 – How community experience and perceptions can be used to mitigate the climate crisis?

4. Research Objective

To understand how local bodies and communities respond to and withstand natural disasters.

To ascertain impact of climate change on rising incidence and intensity of natural disasters.

To explore how perceptions of communities residing in mountains can mitigate impact of disaster and climate change.

5. Research Methodology and Framework

Study area – Chamba Valley

Duration – 3 months

The study is based on the primary as well as the secondary data, this study is based on the various literature review which were based on the study area region of the Chamba and the secondary data collected from various literatures, journals, articles, government website. For the primary data there will be questionnaire based on the topic of climate change and perception and accordingly the data will be collected through the designed questionnaire and later the data will be analysed with the help of appropriate statistics tools. The concerned study on the people perception on climate change and disaster management follows a simple framework of analyzing the perception of the common people residing at mountainous region and the study of perceptions, their relation with scientific findings especially about the seasonality and the resultant vulnerability.

The framework is about conducting a survey among the locals, the basic idea about conducting this survey is to get to know their perception regarding the experience of climate change on them and the possible solution which they consider to mitigate these effects, these

different people will have their own perception based on their location, experience and the knowledge.

6. Organization Profile

Name – Pragya

Year of Foundation – 1995

Type – Non-Governmental Development Organization

Operating Countries – India, Nepal, UK, US, Kenya

Programme Areas – Natural Resource Management Disaster Management, Enterprise & Livelihoods Development, Rights, Welfare and Social Development, Appropriate Technologies

Mission - ‘To shape & enable holistic, sustainable development with a focus on vulnerable and neglected communities and ecosystems.’

Pragya is a non-governmental development organization established in 1995. Initiated in the global South, our current operations span India, Nepal, Sub-Saharan Africa, UK, and USA. It works for the development of fragile ecosystems and vulnerable communities in the most remote and difficult areas of the world that lie in the shadow of policy & development attention. The organization was set up with a concern for last-mile communities neglected and marginalized in the development process, and unique ecosystems that suffer the destruction brought about by overuse of resources and inappropriate development. The initial grassroots work was focused on the high-altitude belt of the Himalayan region across India and Nepal. Today, the organization has reached out to remote regions and isolated communities in other continents in the drive to address the development needs of all such areas and people in the world. The organization has one of their field offices at Chamba which basically works for the Disaster Management. The project has been down till now in 2 different phases. In phase one there were 10 clusters and each cluster has 5 villages therefore 50 villages in total and currently Phase 2 has been implemented which has 13 clusters and each cluster has 5 villages therefore in total there are 65 villages to be surveyed under the DMS project. Disaster Management Project follows a specific model under which there are different teams which are interlinked with each other in such a way that during any sort of emergency or natural calamity the damages can be reduced to a greater extent.



MDR52, Himachal Pradesh 176310, India

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GMT 02:02:14 PM	Monday, 06-28-2021



MDR52, Himachal Pradesh 176310, India

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Local 07:26:22 PM	Altitude 1038 meters
GMT 01:56:22 PM	Monday, 06-28-2021



SH 33, Sapra, Himachal Pradesh 176319, India

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GMT 01:53:09 PM	Wednesday, 06-23-2021



MDR52, Himachal Pradesh 176310, India

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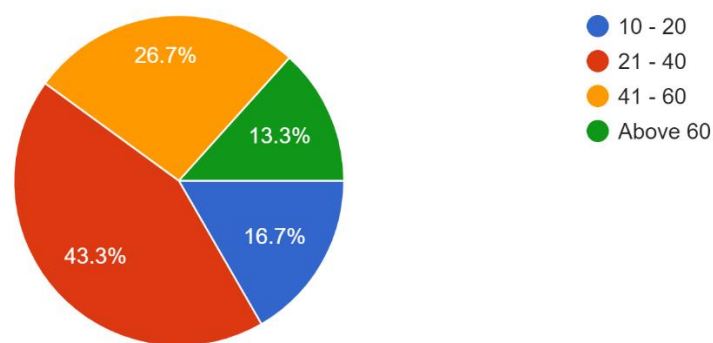
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7. Data analysis of the survey conducted regarding the experience and effect of disaster on people of Chamba

Total of 9 questions were asked during the survey from the people residing in Chamba to find out the perception and common understanding of the people regarding the ongoing issues like climate change in the world.

Age

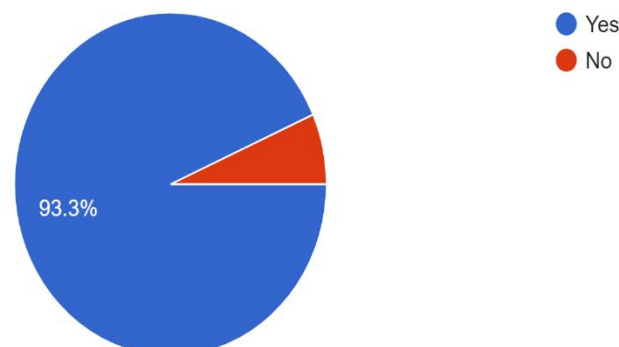
30 responses



During the survey a total of 30 responses were collected among which 43.3 % i.e., 13 were between the age group of 21-30, 26.7 % were among the age group of 41-60 which is 8, and 16.7% were between the age group of 10-20 which is 5, and 13.3% were between the age group of 60 and more. From these different age groups of people, I got to hear about several different kind of thoughts and perception.

Are you aware about the climate change?

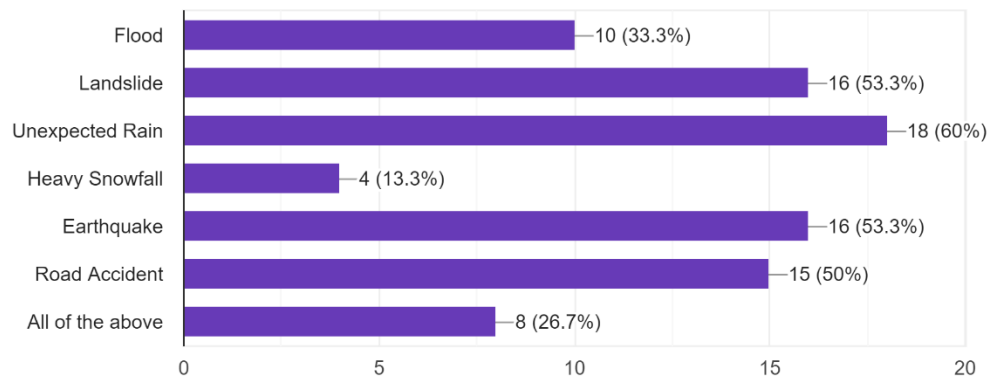
30 responses



The most basic question to find out the awareness of people regarding the climate change was to ask whether they are aware about the ongoing climatic change and as per the response it was concluded that nearly 93.3 % of the people which is 28 were aware about the climate change and their now perceptions about the reasons behind it. This shows that climate change is being experienced and suffered by almost every age group person.

What sort of Catastrophic activities do you observe?

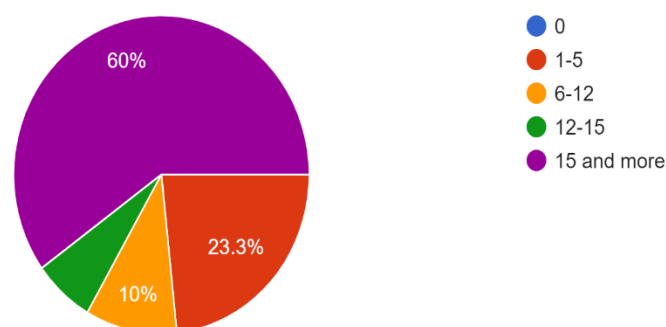
30 responses



Another question for my interest was that what sort of catastrophic activities did the people of Chamba has experienced in their lifetime and for the result it was concluded that 10 people have experienced the flood, 16 people have experienced the landslides, 18 people have experienced the unexpected rain throughout the year, 4 people have experienced the heavy rainfall, 16 people have experienced the earthquake, 15 people have experienced the road accident and 8 among these all have experienced all the kinds of the catastrophic activities in their lifetime. The data shows that the unexpected rain has become a part of the most frequent activity which shows that among all the disaster the climate change is an integral part and all the other catastrophic activities are directly or indirectly related to each other.

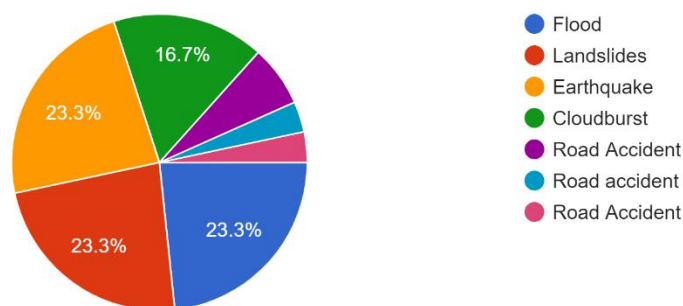
How many times in your lifetime you witnessed any kind of catastrophic activity in Chamba?

30 responses



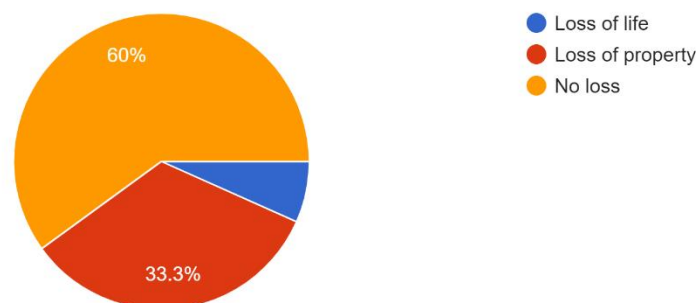
To my interest about all the catastrophic activities which has been experienced by the people in Chamba I asked the question about the number of times they have experienced or witness any kind of catastrophic activity in their lifetime, the result showed that almost 60 % of the people who responded have witnessed the catastrophic activity for more that 15 times in their lifetime, 23.3 % have witnessed or experienced it in between 1-5 times among which mostly responders were 10-11years old, 10 % people witnessed it for 6-12 times and 6.7 % people i.e. 2 responders have witnessed or experienced it for 2 times. This data shows that it is very common for the people residing in Chamba to experience any sort of catastrophic activity.

Which catastrophic activity you witnessed was the most threatening?
30 responses



Another question was regarding the most threatening catastrophic activity which was witnessed by the responder in their whole life and for the result I found that the almost all the catastrophic activities be it earthquake, landslide and road accidents has been showing their devastating nature from time to time which has been witnessed by the people from different ages at different time period and cloudburst has also devastated the people from different ages.

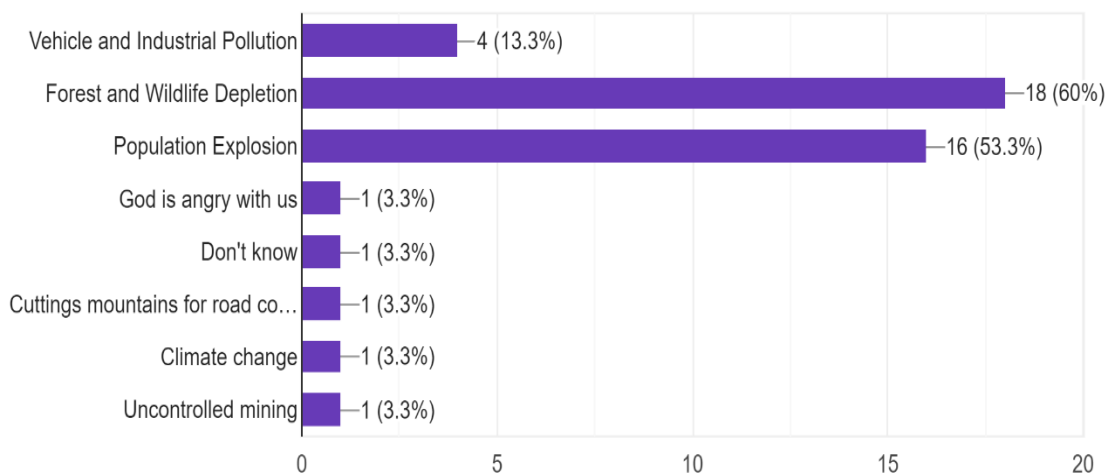
Did you suffered any sort of loss during the disaster?
30 responses



As people have been facing many sort of catastrophic activities in their lifetime so as a general query I wanted to ask that whether they have faced any loss of life, loss of property or no loss at all and as per the result it was found that about 60% people had no loss, 33.3% had suffered loss of property and 6.7% have suffered the loss of their loved ones due although there are various catastrophic activities occurring at a high frequency but the people in Chamba has learned to live with it know how to mitigate their loss.

What is the main reason behind unexpected catastrophic activities ?

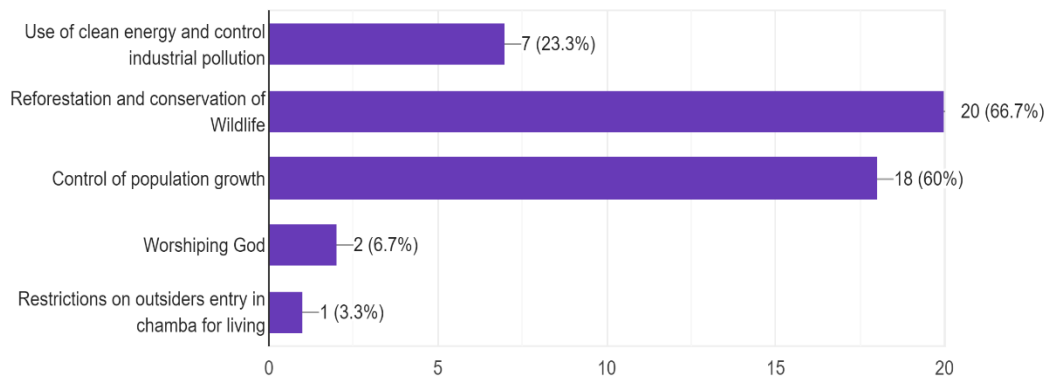
30 responses



For the further query I asked the responder about their perception relating to the reason behind the unexpected catastrophic activities, and for the result it was concluded that 13.3% (4) people voted for the vehicle and industrial pollution, 60% (18) people said that it is because of the forest and wildlife depletion, 53.3% (16) people said that the reason behind the activities are the population explosion, 3.3% (1) voted for the statement that god is punishing us for our wrong deeds, 3.3% (1) people said that they don't know, 1 said it is due to the cutting of mountains for the roads construction, another 1 person among the responder said it is due to climate change and 1 person said that it is due to the uncontrolled mining, this shows that the majority of the people are well aware about the non humanitarian activities going on around them.

How can we reverse the climate change?

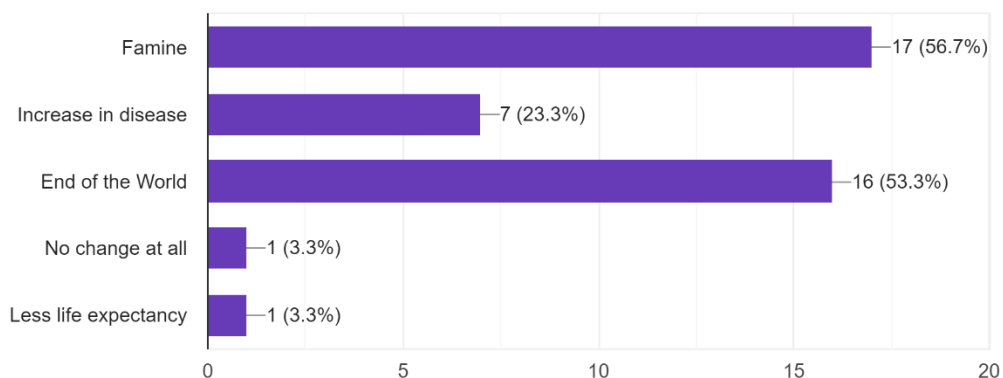
30 responses



For the further query regarding the perception the next question to the responder was that according to them how that climatic change could be reversed and for the answer it was concluded that the most people said that with the reforestation and the conservation of the wildlife, after that the next highest vote went in favor of the control in the population growth, and then people went for the option of using the clean energy and control industrial pollution, besides that people also said that worshipping to god and restrictions on outsiders entry in Chamba can also solve the issue of climate change.

What will be the consequences of climate change?

30 responses



For the last question I asked the responders that if the problem of climate change continues the way it is going on right now then in that case what will be the consequences and for the result it was found that the majority of the people said that famine will be the utmost consequence and alongside that it was also believed that if the climate change continues in the way it will lead to end of this world, and among the other people 7 people said there will be increase in disease and 1 said that the life expectancy will be reduced and the other 1 responder said nothing will happen it will just keep going on the same way.

Findings

It was concluded that the people residing at Chamba have a wider understanding of the activities going around them, among which they showed their vulnerability toward the earthquake and landslides which have been increasing at an alarming rate and they shared their respective experiences attached to a certain catastrophic activities when they thought that it was their final time and nothing could be done to save them. For e.g. one person talked about the flood in 1995 which reached to his house located high at the mountain point and one person talked about the landslides when he was standing right in between two consecutive landslides and he had nowhere to go.

These terrified moments are a part of common lifestyle here as almost most of the respondents have faced one of other kind of the hazard in their lifetime when they lost their hopes to survive. They have a perception that all these activities are linked to the manner in which development processes have been carried on in the mountains without any consideration to the fragile ecology. The results have been top soil loss, water holding capacity and the mud comes in their way on a frequent basis which has caused loss of life. This destroys their cultivable lands and harms their livestock.

It was found during my study period that; people had an understanding of the adverse situation and fragility of life around. Most, people have suffered almost each type of natural and man-made disasters among which the unexpected rain (60%) landslides (53.3%) earthquake (53.3%) and Road accidents (50%) was among the most recurring and devastating hazards which caused a loss of life and property of the people.

Although people have a understanding of the risk prone areas and the kind of risk they are surrounded by they blamed the deforestation and the wildlife exploitation (60%) and population explosion (53.3%) as the main reason of the increment in the catastrophic activities on the other side few people also showed their anger toward the cutting and exploitation of mountains on a continuous manner as a reason and as they consequences they are afraid that soon they will be facing famine (56.7%) and even the end of the world (53.3%).

On an average the people have faced more the 30 times the hazards in their lifetime and they blame the government intervention which did not help them in any way. People's knowledge, understanding and fearless attitude towards the hazards can be used to mitigate the climate crisis by training and giving them the required tools and techniques as per the government intervention to reduce the hazards as the most of them have traditional ecological knowledge and if they get the appropriate help from the government, they can mitigate the disaster to a great extent.

8. Conclusions

The current study has been conceived for a comprehensive understanding of the perception and experience of people, ecological conditions and disaster response of the people living in the hilly areas of Chamba which is situated at the bank of Ravi River and is a vulnerable region as of various catastrophic activities accounted on a continuous basis like earthquake, landslides, flood, GLOF, Avalanche etc. and a number of anthropogenic activities like deforestation, population explosion, construction and mining are the reason behind the increased number or occurrence of hazard.

It could be concluded that the knowledge and experience of the mountainous people can be used as a useful input for disaster preparedness and risk reduction plans for the blocks and district disaster management programs and this could be done using their perception in a proactive manner. The participation of the people in the risk planning will increase the confidence of the people in government intervention and their experience will give strength to the planning and programmes of the disaster management, community will also understand the measures to be taken to safeguard themselves from the frequent disasters in the town.

9. Recommendation

The increased catastrophic activities have put the lives of the mountainous region people at risk and therefore to mitigate it there should be some intervention such as training of local bodies or the Disaster Response team at the village level so that in case of emergency they can guide the people and government relief agencies to reach the spot in no time.

Vegetation cover on the landslides prone areas could be beneficial in reducing the hazard as the soil will be held tightly by the roots.

Mapping of the sites should be done and the people should be avoided to settle or go to work in that location with the help of hazard map.

Population control programs must be launched and implemented at such areas.

Appropriate design criteria must be made available for cutting of hill slopes for the construction purposes.

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