

Building Resilience of Communities in Rural Areas of Himachal Pradesh-Capacity Building Programme in Himachal Pradesh - Climate Change Adaptation in Rural Areas of India (CCA-RAI)

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Abstract: *The Capacity Building Programme-Climate Change Adaptation in Rural Areas of India (CCA-RAI) in India was supported by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, in collaboration with the Ministry of Environment, Forests and Climate Change, Government of India. The project was implemented in the state of Himachal Pradesh, and one of the priorities identified after the exhaustive consultations is the building of capacities at different levels of governance. This paper briefly summarises and discusses how the capacity development programme as part of the CCA RAI project helped in moving a step ahead towards resilience. It focuses on understanding the impacts of climate change and potential adaptation options for Himachal Pradesh in rural areas. The capacity development programme supported enhancing the skills of technical officers at the national and sub-national levels in order to estimate the economic costs and benefits of climate change impacts, as well as appropriate adaptation options. Understanding the perception and knowledge about loss and damage from climate change at the micro and sectoral levels requires detailed information from households as well as within the sector. This data captures the contribution to productivity and the potential vulnerabilities these households face in rural areas and in different sectors. The results of this report and the response proposed are based on detailed primary and secondary information collected for the purpose of understanding the impacts of climate change and adaptation options from the bottom up.*

Keywords: Climate Change Adaptation, Capacity Development, Vulnerability, Resilience, Rural Himachal

1. Introduction

The Capacity Building Programme on Climate Change in Rural Areas of India(CCA-RAI) in Himachal Pradesh was a three-year programme, comprised of a series of sensitization programmes at the highest level of governance, sectoral level capacity building programmes at the state level, capacity building programmes at district/panchayat level; capacity building programmes for mainstreaming gender on climate change adaptation interventions, and a master trainers programme through training sessions interspersed with mentor-assisted, to enable trainees from across the state to develop an understanding of key climate change variables, variability, concepts and tools for adaptation planning and decision-making at local level in rural areas. Launched in July 2017, CCA-RAI addressed a consensus reached during a national bilateral consultation that a more comprehensive approach to mainstreaming climate change risks into planning processes was needed to ensure economically efficient climate change strategies at the sectoral, sub-national and national levels. This innovative programme aimed to identify gaps in capacity development needs in an area that is critical for formulating sub-national adaptation plans and accessing climate finance.

2. Objective

The intent of the CCA-RAI programme is very focussed that National and State Governments in India integrate adaptation to climate change in sectoral domains, policy decisions and rural development programmes to reduce the risks posed by climate variability and change. The intent of the CCA-RAI programme is very focused on integrating adaptation to climate change in sectoral domains, policy decisions and rural development programmes to reduce the risks posed by climate variability and change.

3. Approach

In order to achieve the objectives of the programme to address country's differing agricultural and climatic zones, the project encompasses the states of Telangana, Punjab, Tamil Nadu and Himachal Pradesh as the locations for its activities.

In Himachal Pradesh under CCA-RAI programme various initiatives and actions were taken to streamline the climate change concerns in planning process and thinking process of local communities besides the political province.

Under the programme the GIZ extended both financial and technical support to State of Himachal Pradesh in order to

take up the following actions:

- State level vulnerability and risk assessment
- Revision of State Climate Strategy and Action Plan
- Developing Road maps for testing adaptation measures- designing eco village development plans (EVDP)
- Climate proofing of public investments through rural development programmes-developing demonstration units
- Capacity development programmes

The capacity development programmes focused on the building capacities at various levels of governance. It followed a bottom-up approach in finding the awareness amongst local communities w.r.t climate change & its impacts in the rural areas.

3.1. Overview of Climate Change Vulnerabilities

The baseline period was chosen when the state climate action plan was prepared and the 2-3 years prior to that for which data from census and other official sources were available for the districts. This was compared with either the data after 2015 or projected for the period in 2017 wherever feasible. Principal component analysis method was used to compute the index after necessary normalization. For the projected figures only RCP 4.5 and mid-century scenario has been considered. In addition, sectoral vulnerability and impact have been computed under CCA RAI project of GIZ for mid-century and end-century scenario.

Result: The risk and vulnerability index for baseline 2011-12 and 2017 have been presented below:

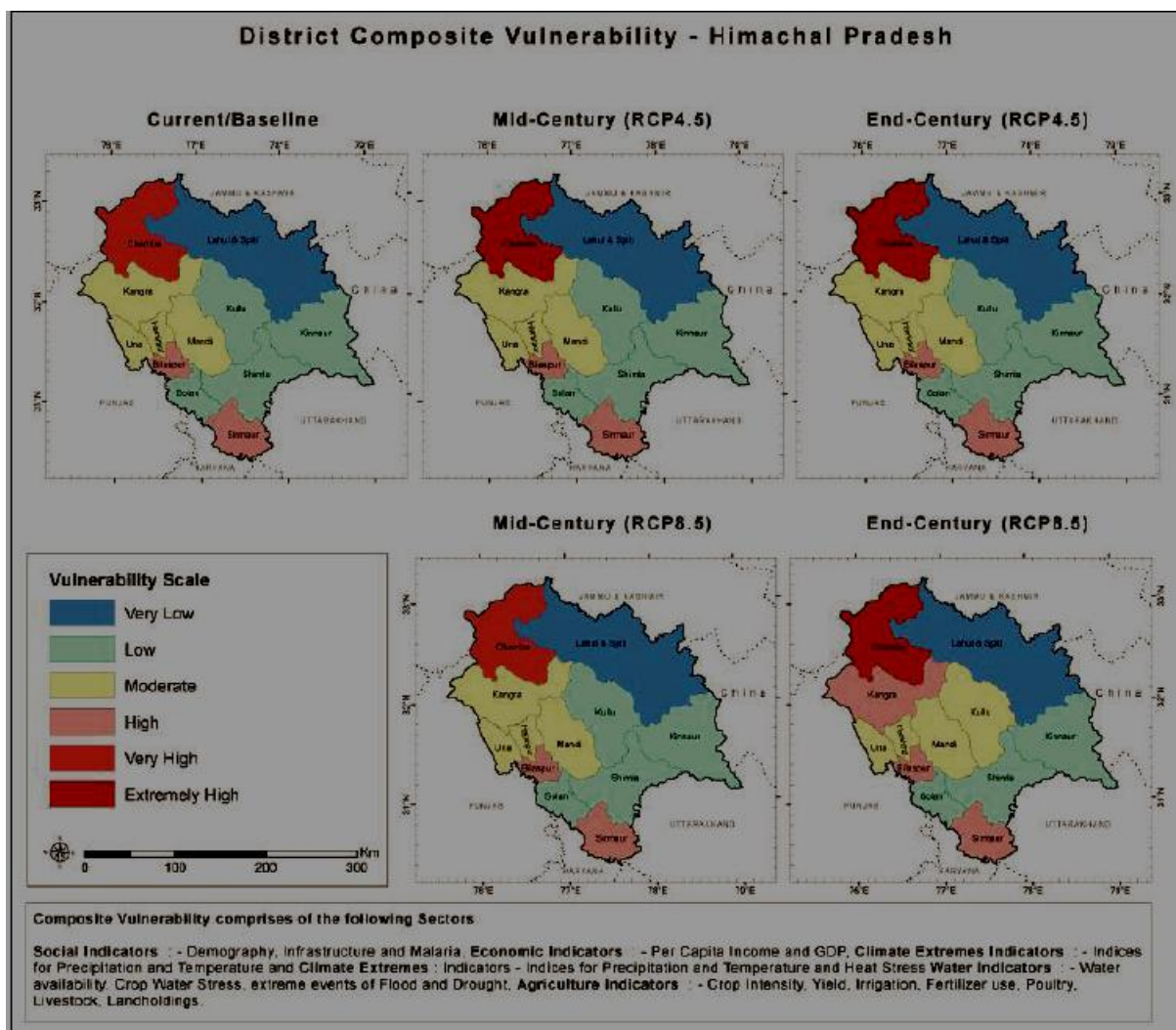


Figure 1: Current and Projected vulnerability under different emission scenario, Source: GIZ, 2018

The critical aspect to note that there is no significant change in vulnerability profile of districts in RCP 4.5 and mid-century scenario. There is also no major change in vulnerability under RCP 8.5 under end century scenario. The agricultural vulnerability under the NICRA project

highlights that Kullu, Shimla, Chamba, Bilaspur are highly vulnerable as far as agriculture related vulnerability is concerned. Similarly, the district of Kullu has strong GLOF related vulnerabilities.

Districts	Rank	CV
Lahul & Spiti	1	VL
Kinnaur	2	L
Solan	3	L
Kullu	4	L
Shimla	5	L
Hamirpur	6	M
Mandi	6	M
Kangra	8	M
Una	9	M
Bilaspur	10	H
Sirmaur	11	H
Chamba	12	VH

SV	ECV	AGV	CLV	WRV
VL	VL	VL	VL	VL
VL	L	VH	VL	VH
VL	L	M	H	VH
M	M	H	VL	M
VL	H	H	L	H
L	M	VH	H	L
L	H	H	L	VH
M	M	VH	M	H
M	M	L	VH	L
M	VH	L	H	VH
H	M	M	H	H
VH	VH	VH	L	H

CV: Composite Vulnerability, SV: Social Vulnerability, ECV: Economic Vulnerability, CLV: Climate extremes vulnerability, WRV: Water Resources Vulnerability, AGV: Agriculture Vulnerability

VL: Very Low, L: Low, M: Moderate, H: High, VH: Very High

Districts	Composite Vulnerability Index (CVI)						Water Resources VI (WRVI)						Climate Vulnerability Index (CLVI)								
	BL Rank	RCP4.5			RCP8.5			BL Rank	RCP4.5			RCP8.5			BL Rank	RCP4.5			RCP8.5		
		BL	MC	EC	MC	EC	BL		MC	EC	MC	EC	BL	MC		EC	MC	EC			
Lahul & Spiti	1	VL	VL	VL	VL	VL	1	VL	VL	VL	VL	VL	1	VL	VL	VL	VL	VL	VL		
Kinnaur	2	L	L	L	L	L	10	VH	VH	EH	VH	EH	3	VL	VL	VL	VL	VL			
Solan	3	L	L	L	L	L	9	VH	VH	VH	H	H	8	H	H	H	H	VH			
Kullu	4	L	L	L	L	M	4	M	H	H	H	VH	2	VL	VL	VL	VL	L			
Shimla	5	L	L	L	L	L	8	H	H	H	H	H	4	L	L	L	L	M			
Hamirpur	6	M	M	M	M	M	2	L	L	L	L	L	11	H	VH	VH	VH	VH			
Mandi	6	M	M	M	M	M	11	VH	VH	VH	VH	H	6	L	M	M	M	H			
Kangra	8	M	M	M	M	H	5	H	H	H	H	H	7	M	H	H	H	H			
Una	9	M	M	M	M	M	3	L	M	L	L	L	12	VH	VH	VH	EH	EH			
Bilaspur	10	H	H	H	H	H	12	VH	EH	VH	VH	VH	9	H	H	H	H	VH			
Sirmaur	11	H	H	H	H	H	6	H	H	H	H	H	10	H	H	VH	VH	VH			
Chamba	12	VH	EH	EH	VH	EH	7	H	VH	VH	H	EH	5	L	M	M	M	M			

BL: Baseline, MC: Mid-Century, EC: End-Century

VL: Very Low, L: Low, M: Moderate, H: High, VH: Very High, EH: Extremely High

Figure 2: District current composite vulnerability along with disaggregated subcomponents for Himachal Pradesh, GIZ 2018

Figure 3: Districts current and projected composite vulnerability along with disaggregated subcomponents for districts of Himachal Pradesh

Policy makers are still apprehensive about long-term climate models for their regular planning process. Nevertheless, districts having comparatively high vulnerability score and showing worsening of the situation as compared to the baseline period should be in the radar of policy makers to do more to improve the ability of those districts to reduce risk due to hazards, sensitivity and make all efforts for enhancing the adaptive capacity. While very little can be done in the short run to address exposure related risk, long term

measures should be planned for those areas. Similarly, in the medium-term issues related to sensitivity can be addressed. Finally, immediate steps can be taken to improve the adaptive capacity. The adaptation and mitigation strategy can unfold accordingly while giving more attention to capacity building.

3.2. State-level Vulnerability and Risk Assessments

Although there are numerous methods for assessing climate change vulnerability and risks, there is still a gap between global scenarios and local risk assessments, despite the development of new models and approaches. To assist decision makers and practitioners, the project has developed a cohesive approach for assessing vulnerability and risks associated with climate change in Himachal Pradesh. It also contributed to the development of infrastructure for conducting such assessments in Himachal Pradesh.

4. Initiatives under CCA RAI

4.1. Revision of SAPCC

The Sub national- State Action Plans on Climate Change (SAPCC) are intended to support India's environmental policy at the sub national level by incorporating climate change concerns into policies, plans and programmes that are consistent with national directives. The project aided with the development of action plan on climate change using a refined approach and guidelines issued by the Ministry of Environment, Forest & Climate Change (MoEFCC) and the most recent modelled data. The SAPCC has been revised and thoroughly consulted with stakeholders and the final draft has been approved and endorsed by MoEFCC in 2022. The revised SAPCC clearly established linkages with ongoing efforts of State Government through various plans and programmes, as well as possible adaptation strategies for climate change. The mitigation actions have also been brought in line under the SAPCC as per nationally determined contributions. SAPCC document also include measures for monitoring progress and reporting results on a regular basis for effective implementation.

4.2. Developing road maps for testing adaptation measures- designing eco village development plans

4.4. Capacity development programme

Under CCA-RAI project the human capacity development was one of the important prioritized and significant components. All the levels from political, policy to sectoral, marginal level were targeted under this in a systematic way to achieve improved capacities of the stakeholders to better comprehend the climate change adaptation. Over three years, the project developed a team of skilled trainers at the sub national and local levels, and it built up the capacities of many practitioners, decision makers and support organizations. A cadre of 32 Master Trainers has been built across the state with representation from all facets upon comprehensive climate adaptation specific capacity building. Integrated climate change adaptation into development

(EVDP)

Under the CCA-RAI project, an effort has been made in collaboration with the Department of Environment, Science, and Technology to develop and demonstrate several measures to address climate variability and change through evolving cross-cutting strategies by developing eco village development plans (EVDPs). Through Non-Governmental Organizations (NGOs) and other relevant stakeholders, the CCA-RAI has supported the state government of Himachal Pradesh and local communities in identifying, developing, and implementing hands-on adaptation measures in land use.

The program's target groups included rural marginal communities and poor farmers who are most affected by climate change and rely on natural resources for survival. Socioeconomic conditions and environmental services were evaluated to improve at two different demonstration sites, resulting in enhanced adaptive capacities of the communities in question.

4.3. Climate proofing of public investments through rural development programmes- developing demonstration units

The project supported the development of a climate proofing tool for policymakers and practitioners in order to ensure the sustainability of public sector programmes. This tool is used to determine whether climate change threatens the success of public projects and how planned measures can be adapted to account for the effects of climate change. In this context, the project assessed the rural development authorities' Watershed Development Programme, agriculture-horticulture sectoral interventions, and forestry sector initiatives to build climate resilience in vulnerable communities.



Figure 4: GIZ Climate-proofing tool

planning & policies by organizing various capacity building programmes at different levels.

4.5. Situational Analysis w.r.t Changing Climate - Role of Rural Communities and capacity building needs:

Himachal Pradesh is one of the Himalayan states amongst most affected by climate change. The threat is especially severe when more than 80% people's livelihoods depend on natural resources and Agri - Horti sector which is completely rain fed. In such areas climate adaptation measures take on a special significance for safeguarding rural livelihoods and ensuring sustainable development.

Under CCA-RAI project the capacity building and training was one of the most significant components that was implemented in the State with the support of GIZ with the focus to build upon the capacities of the common rural people w.r.t climate change. It was important to note, how communities, local people perceive the future and how they imagine climate might change. With the purpose to gather information from communities' questionnaires were prepared and data was collected. The Communities

acknowledged that the future will probably involve less water and, as a result, a changed farming and irrigation landscape mechanism knowledge is of utmost importance. The survey was conducted throughout the state in order to identify and assess the local needs and awareness of rural communities to the changing weather patterns.

5. Results/Discussions

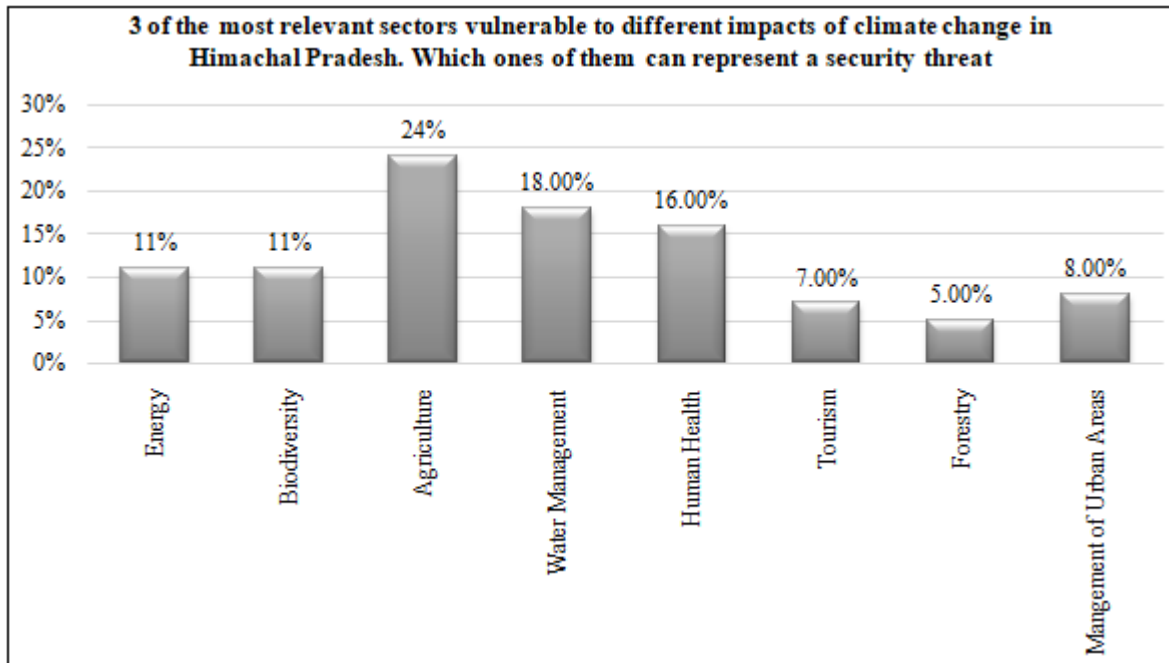


Figure 5: Response collected from community

The community response was very clear that agriculture is the most affected sector due to Climate change in Himachal Pradesh followed by water resource management and human health issues likely to threaten the community due to climate change. The community representatives also expressed their concern about biodiversity conservation and the unplanned urbanization subsequent management issues.

As per the survey report the main drivers to adapt to the effects of climate change could be better forest management followed by water resource management. The people also expressed equal weightage to the livelihood opportunities can lead to better adaptive capacity amongst the local communities.

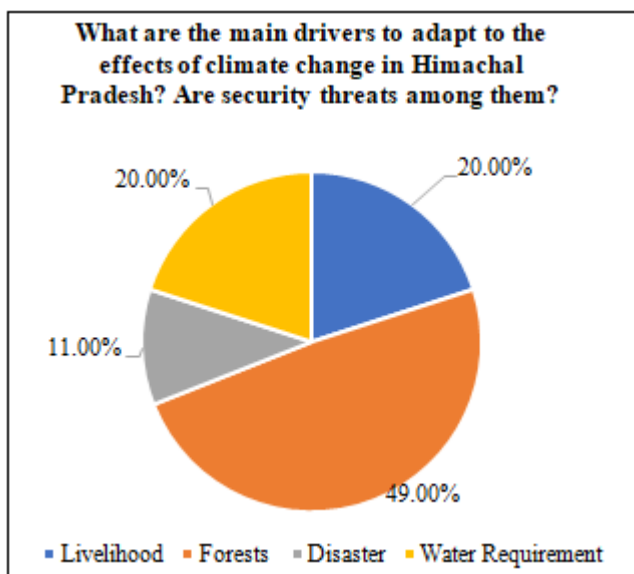


Figure 6: Community response on main drivers to adapt to the effects of climate change

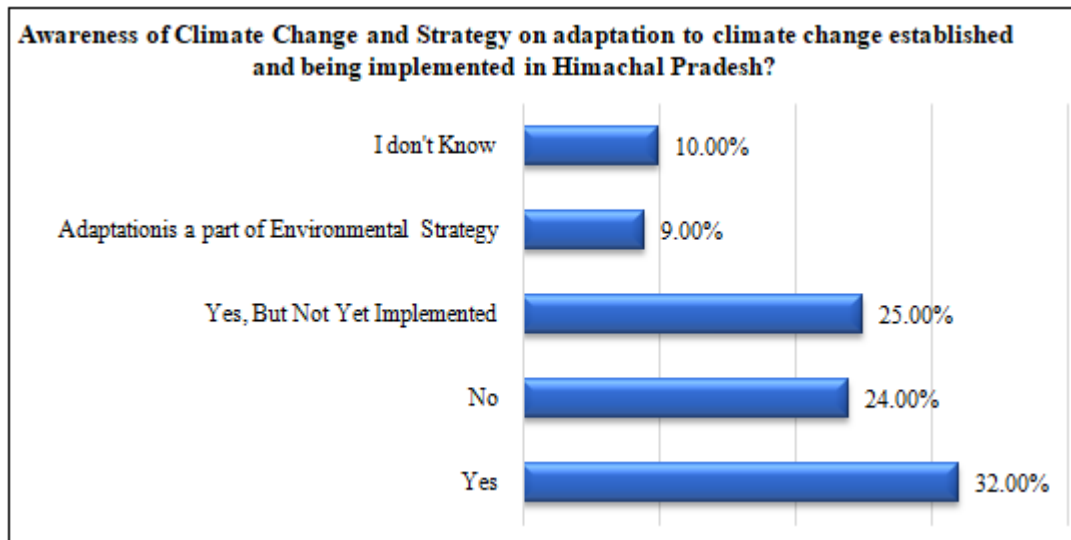


Figure 7: Community response to the awareness of climate change and strategy on adaptation

About 32% amongst total people surveyed said that they were aware of climate change and strategy to adapt to climate change being implement in the state. About 25% said that they are aware, but they were not clearly known to

whether it is being implemented or not. However, only 24% people said that they were not aware of any strategy being implemented in the state.

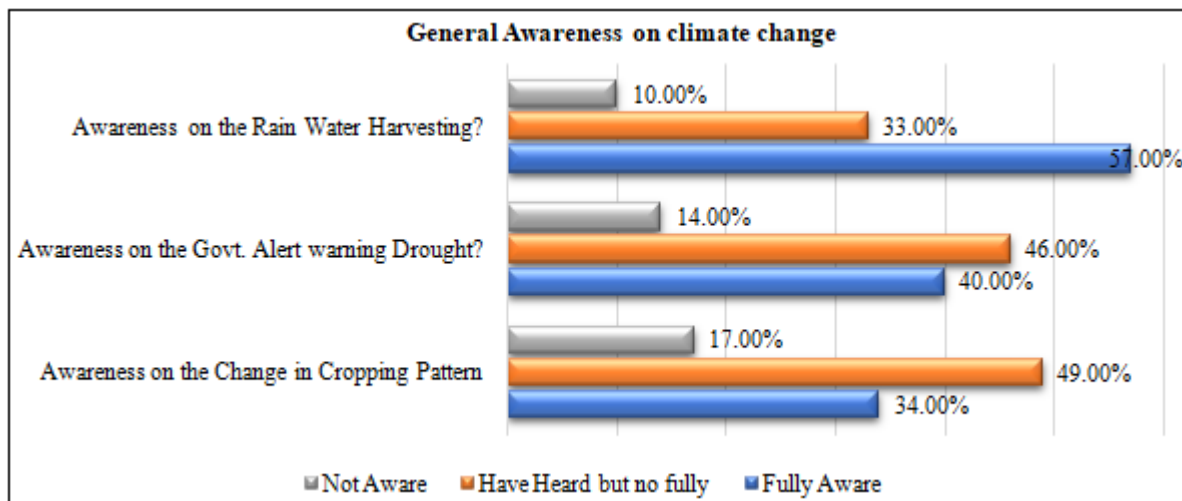


Figure 8: Community response on general awareness of climate change adaptation

About 57% of the people in the state were found to be aware of rainwater harvesting in the state and has adopted the rainwater harvesting, about 33% people said that they are aware about rainwater harvesting but they could not adopt or implement the rainwater harvesting practices due to insufficient resources. About 40% community was aware and following the weather-related warnings in the state, however, about 46% people said that they have heard about weather warnings but not fully depending on these kinds of advisories. Amongst these participants 34% said that there is a change in cropping patter due to climate change, however, 49% people said that they are experiencing change in cropping pattern but are continuing with the same cropping pattern.

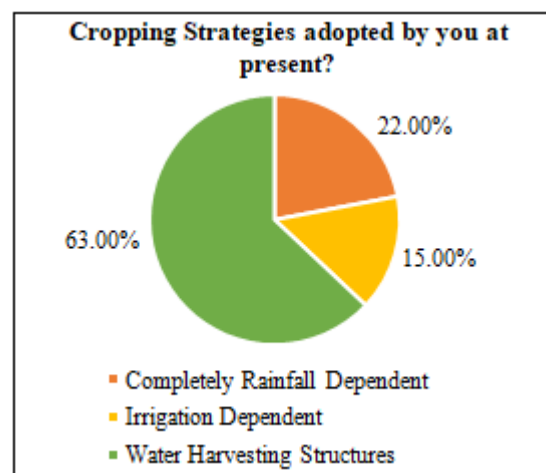


Figure 9: Community response to cropping strategies being adopted by them

About 63% people said that they are dependent on water harvesting structures and about 22% people were depending on irrigation facility provided by the state.

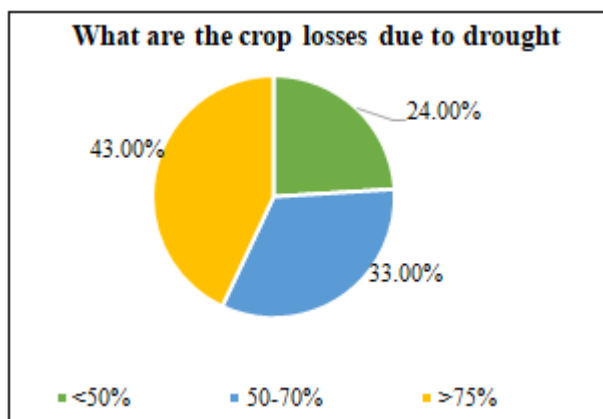


Figure 10: Community response on crop losses due to drought



Figure 11: Glimpses of the capacity building programme in the Tribal Areas of H.P., District Lahaul&Spiti



Figure 12: Block Pacchad, District Sirmaur, H.P.

About 43% people said that they have lost their most of the crop due to drought conditions. About 33% people said that the crop loss due to drought is more than 50% normally only 25% people said that the drought causes the crop loss less than 50%.

Above illustrations and interactions with community representatives, policy makers, sectoral experts, and local people from rural communities confirmed many previously identified trends (e.g., declining and ageing rural

populations; increasingly difficult climatic conditions; increasingly difficult socio-economic pressures; changes to water and drought policies; challenges associated with global influences on commodity prices; changing nature of Australian agriculture etc.).

During the process of implementation of the CCA-RAI project's capacity building component, the assessments revealed that the rural farmer communities are also experimenting and trying different techniques, crops, ways of growing, and methods. All insisted on providing locally based and technologically advanced support for the rural community farming sector. Farmers also said that this type of adaptation support may help during drought because it is a matter of the survival of livelihoods.

Rural areas appear to offer potential opportunities for development and uptake of effective adaptation due to the innate nature of experimentation in farming activity, in agriculture and horticulture sectors. Most people interviewed and filled out questionnaires acknowledged the importance of undertaking positive and practice-oriented activities in rural communities.

It was observed that the changing nature of agriculture is having significant flow-on effects on farming families and communities. As farms increase in size and complexity, the ability of farmers to work together and be serviced by local agri-business is diminished, and as a result, the natural sharing and learning between farmers is decreased. This is not to say that farmers are losing their professional and social ties to each other and the community, but rather that the once customary and effortless opportunities to engage are declining. Subsequently, service providers are facilitating regular organized social events in which this sharing between farms and farming families can still be supported, even under changing farming contexts.

Perhaps the most threatening for many rural communities is the pressures presented by broad rural demographic changes due to the impacts of climate change – an ageing and declining population base in rural areas, with an influx of retirees and low socio-economic groups. These shifts are introducing potential problems that, even without the added pressures of drought, pricing, and industry changes, significantly change the make-up of rural communities by many means.

Climate change adaptation actions must consider ways in which projected climatic changes are likely to alter the socioeconomics of rural communities, the responses of people living in these regions, and their willingness and ability to adapt. Effective adaptation involves working with people to gather knowledge about adaptive capacity and the strength and responsiveness of communities in the face of future climatic changes.

Rural communities in Himachal Pradesh have already started adapting to difficult and changing climates and are required to be provided with capacity to manage the projected impacts of climate change.

During the process of implementation of the programme, it was observed that communities are undertaking adaptation measures, the areas where adaptive capacity is lacking, and making efforts to change and adapt to whatever is being supported.

The experiences of the people living along river valley(s) were often distinct from those in the high hill region, given the rain-fed land areas' pressing need for irrigation water, although the emergence of water as a commodity was of concern to participants. While there were location or sector specific differences, some of the issues were common to rural communities, common to drought-affected regions, and/or common to agriculture in general. Besides this, the following key issues emerged:

- 'It's not just drought' or flash floods or excessive rains: water quality, rural demographic shifts and a changing farming pattern.
- Economic impacts: drought, drying and the demise of the family farm, animal conflicts, flash flooding land degradation.
- Future scenarios and climate change adaptation capacity building.

6. Conclusions

As stated, and analysed through this programme, Himachal Pradesh has and continues to experience changes in its traditional economic base (i.e., agriculture) and its socio-demographic structure. In many ways, flash floods, landslides, less rain, or drought-like conditions have accelerated what was already occurring. The socio-economic impacts of these shifts are comprehensive and complex, and as a result, existing support services are being extended with limitations.

Adaptation actions will require multiple support strategies and proactive approaches in envisioning, planning for, and adapting to different climatic and socio-economic futures. Through this process, it is vital to work with local people to gauge and utilise the practical knowledge, experiences and insights gained from confronting drought and climate change in real and locally specific ways (e.g., what did people do to deal with this and previous droughts? What worked and what did not? Would they have coped better with more or different resources or policy and if so, what specifically needs to be increased or changed? What are the specific principles that rural community members facing drought over the generations have worked out for surviving? How can these principles inform policy? etc.). Moreover, it will be important for rural communities to be well-supported through the processes of change, in ways that are respectful and revitalising for people who are fatigued from seemingly chronic climatic extremes in addition to non-climatic pressures.

The required proactive approach means that droughts, excessive rains, and flash floods should not be the centrepiece of government policy – in fact, it would be detrimental to continue with such a case-specific centric approach. As demonstrated, the issues facing these rural communities are more than just less rain, drought, flash floods, cloud bursts or climate change, and only

understanding and addressing them in this way will offer an effective means of support in a future that is inherently uncertain. At the centre of this is the need for government and local communities to work together to move beyond just coping and reacting to less rain, drought, flash floods, cloud bursts, etc. towards strategic planning that deals with ongoing change (climatic and otherwise) and uncertainty. There is also much evidence, despite the typically conservative nature of rural communities, of adaptation and openness to change, which offers opportunities for building and sustaining proactive and practice-oriented support services and programmes that accommodate future scenarios.

To implement the training capacity building programme amongst rural communities, we must adopt two techniques: to assess the magnitude of climate change damages; and cross-sectoral adaptation programmes, to understand how the agriculture-horticulture sector must adapt to needs-based. And to understand what is being done locally to address the climate change impacts.

The capacity building programme on the impacts and economics of climate change adaptation for strengthening the capacities of sectoral experts, trainers, and officers in Himachal Pradesh must be a continued effort as wider coverage is required. Marginal farmers need strong support from the local government in combating climate change impacts. Strengthening capacities for a better understanding of the economic impact of climate change is an ongoing process and must be implemented objectively. The pool of trainers created under CCA-RAI in Himachal Pradesh may be exposed to further master trainers' training with specific modules to continually achieve the targets in the future.

References

- [1] *Climate Proofing: Climate Change Adaptation in Rural Areas of India*. (2014, September). GIZ India. Retrieved January 27, 2023, from <https://www.giz.de/en/downloads/giz2014-en-cca-rai-climate-proofing-india.pdf>
- [2] *Climate Change Adaptation in Rural Areas of India (CCA-RAI)*. (2020, July 27). Department of Environment, Science & Technology, Govt. Of Himachal Pradesh. Retrieved January 28, 2023, from <http://dest.hp.gov.in/?q=climate-change-adaptation-rural-areas-india-cca-rai>
- [3] *Climate Change Impacts and Vulnerability Assessment*. (2018, December). <http://dest.hp.gov.in/sites/default/files/PDF/GIZ01Climate%20Change%20Impacts%20and%20Vulnerability%20Assessment.pdf>.
- [4] *State Action Plan on Climate Change 2021-2030*. (2021). Department of Environment, Science & Technology, GoHP. <http://dest.hp.gov.in/sites/default/files/PDF/SAPCC%202021-30-web.pdf>
- [5] *Eco-village Development Plans*. (n.d.). Department of Environment, Science & Technology, GoHP. http://dest.hp.gov.in/sites/default/files/EVDP_Baghali.pdf