

THE UNSUNG LEADERS



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The Unsung Leaders

Unfolding the roles of women and girls in
drought mitigation





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Foreword

Droughts have been affecting rural life in the Thar Desert and in other arid regions of India over a long period of time. With limited rain-falls, droughts lead to severe food and water insecurity, to poor health and to chronic poverty. Within the Thar Desert region, a population of about 30 million has to face the challenges related to droughts almost every year, in some form or another.

GRAVIS has been organizing various drought mitigation interventions in Thar over the last 35 years or so. Its activities range from organizing initiatives aimed at enhancing food and water availability, securing livelihoods and improving health status, along with community capacity building. About 1.5 million humans and about 6 million cattle are covered by GRAVIS' drought mitigation work.

GRAVIS also believes that while women play critical roles in its drought mitigation interventions and in managing droughts overall, their roles go unnoticed and remain unexplored for any strategic thinking or visioning. A need was felt to understand this critical aspect through a community-based study.

Under the ambit of its Communities led Drought Mitigation (CDM) Project and other similar projects, GRAVIS has conducted this study to unfold women's roles in drought mitigation in Thar and other arid zones.

The study is dedicated to Late Shashi Tyagi, the Founder of GRAVIS, a woman leader who worked relentlessly on drought mitigation throughout her life. I thank Dr. Meghadeepa Chakraborty for her lead role in compiling this study along with GRAVIS team and the members from the community. GRAVIS is grateful to EdelGive Foundation, India for their financial support that made this study possible.

We hope the study makes an important contribution in furthering women and girls' leadership in drought mitigation.

Prakash Tyagi

Executive Director, GRAVIS





Author's note

Not many studies in the past have looked at women's and girls' leadership in drought mitigation in rural areas. As a result, women's and girls' roles remain under-recognized and they are unable to participate in dialogues related to droughts, despite being important stakeholders. This study is an innovative effort to understand the critical aspect of women's and girls' leadership towards generating awareness on this issue.

Working on this publication was a stimulating and insightful learning experience. The process provided great learning and opportunities to understand communities' perspectives and their expectations. Despite pandemic related restrictions and challenges, active support from GRAVIS team and from local community representatives was very useful.

Conducting such a study is a collective work that requires continuous support from colleagues and communities, who provide valuable inputs to the contents and help, keep the progress on track.

I truly hope that the study and its contents are read widely and are disseminated among various stakeholders. It is my strong belief that the study will have an important contribution to guide women empowerment processes in the country, especially the drought impacted villages of Rajasthan.

I take this opportunity to thank the entire GRAVIS team including all senior team members who provided guidance and key advises, and field workers who supported data collection and validation. My sincere gratitude to the communities as well, who were patient and supportive despite the hardships caused due to COVID.

Meghadeepa Chakraborty PhD

Development Consultant





Executive Summary

Over the years, in many parts of the world, droughts have not only disrupted the environment and economy but have also affected the wellbeing of people.. The effects of drought are visible in every walk of life, be it the level of education, nutritional status, health and wellbeing, sanitation, and livelihood opportunities. Droughts have resulted in adverse environment for children, hardships for women and multiple vulnerabilities across all segments of poor population. Women and girls are more prone to the adverse impacts of droughts. While talking of relationship between women and their relationship with nature, two thought processes predominantly prevail.. One school of thought perceives women as victims of disasters like drought, whereas another considers women as agents of change who can contribute effectively and have all the abilities to deal with the daunting situations for their own and their families' survival. Although both men and women play their respective roles during the natural calamities, women have much more realistic adaptation capacities than men. Some argue women can be key agents to adaptation and mitigation of climate change as they are close to nature and can develop strategies for adapting to deal with the challenges thrown up by the environmental adversities. Studies have found that women follow much more realistic adaptation strategies than men. While planning sustainable development and adaptation strategies, women can play a key role because of their pragmatic approach. The decision- making process of the organizations must involve women as key stakeholders and should not confine leadership roles only to the males. The central idea of this study is to analyse the relevance of women's role in mitigation of drought in the arid zones. It attempts to highlight women's grassroot level actions for environmental conservation and for sustainable livelihoods. The study aims to reflect on how do women address their vulnerabilities, what kind of interactions they experience with the community and what has been their level of participation in dealing with the issues related to drought mitigation. The study data was collected from 10 villages located in two different blocks in Jodhpur and Bikaner district of Western Rajasthan, India.

The relationship between gender and environment has been considered as the theoretical lens for the analysis. This theoretical lens provided three perspectives to understand this relationship. The first perspective describes the involvement of women in utilising and interacting with environmental resources. Second perspective sees a close association between nature and women and consider women as nurturers of nature having more positive attitude towards environment conservation than men. The third perspective discusses the proactive role of women in conservational technologies which majorly elaborate the role of women in the revival and restoration of the environment. The research used a combination of qualitative and quantitative methodologies. The participants for the in-depth interviews were selected through purposive sampling. The baseline survey followed the stratum to get a representative sample from the target population. The study used multi-method guides for data collection which included

The analysis of the data highlights the issues faced by the women living in a drought-prone area and how women confront all the challenges while working by themselves to minimize the risk and become less vulnerable. This study develops an understanding that women take initiatives and formulate effective preventive, responsive, accumulation, survival and self-securing strategies.

Despite their lower social status, as compared to men, in the traditional societies, women play a major role in drought mitigation. Women are involved in the process, of adaptation and mitigation at the local level through responses based on indigenous strategies to deal with drought. Their engagement in



drought mitigation encompass self-protection as well as social protection measures for the entire community with the support of different organizations. GRAVIS' intervention for rural people has empowered the community as a whole and women in specific. The projects implemented by GRAVIS have served as vehicles for growth and change. The process of development always created space for people to avail opportunities to participate in the process of development and have ownership of whatever the community has developed. This resulted in empowering people to mobilize their capacities and become active players in addressing their problems and not to remain passive. GRAVIS has always considered gender issues while planning and appraising development projects. This study has also highlighted the best practices in the villages where GRAVIS is working as a catalyst to nurture the best practices such as recognizing the value of inter-generational transfer of knowledge, engagement of women in bringing changes, engagement of community women in maintaining and managing their traditional water sources ahead of the seasonal water scarcity, contributing labour for community goods, as well as the continued practice of factoring in gender issues in the planning and appraising the projects.

The study concluded with recommendations for encouraging women's collectives and enhancing their collective bargaining power, development of local-level resource hub, capacity building programmes for livelihood enhancement, awareness building programmes on gender-neutral practices, more work with convergence, and promoting good health practices.

1. Introduction

People's interaction with the natural environment is as old as human kind and there is an intense relationship between the preservation of the environment and the livelihood of the local people. Apart from being intense, the relationship is complex as well. While on one side, it is the human being who preserves the environment, it is the human being itself who causes damage to the environment. According to the fourth Assessment Report of the International Panel on Climate Change (2007), the visible unprecedented fast rate of environmental change is due to human interaction, which impacts human lives and human livelihoods. The damage to the natural environment translates into daily crises for the larger population. This is not only because they are directly dependent on nature and natural resources, there are other social, economic, and political and cultural forces that work, and their interplay is complex (Srivastava & Khothari, 2014). Understanding the complexities has always been quite daunting.

Unlike other sudden calamities such as floods, earthquake etc., that have immediate and visible impact on people's lives, droughts are slow-onset disasters that occur cyclically leaving direct and indirect impacts on human and natural systems. Drought is more specifically, hazardous for agricultural communities, where



Women in Thar

livelihoods depend on natural system (Diaz, 2016). Droughts and their impacts have always constituted challenges because drought as a phenomenon occurs within the premises of human - environment interactions which is complex in its own way.

Over the years, across the globe, events of drought have damaged not only the environment and economy but the wellbeing of people as well. As an event, it has ramifications for the society, affecting people, social activities, and social processes in various forms with several consequences. The effects of drought are visible in every walk of people's life be it education, nutrition, quality of health, sanitation, livelihood opportunities, and growth of children. Prolonged droughts mean increased hardships in women's lives and vulnerabilities across all segments of the population. There are ample evidences that demonstrate that the impact of drought



is not uniform across the populations and regions. Rather the effect of drought is more severe among the most vulnerable and marginalised segments of the population, especially those who are not only vulnerable due to geo climatic conditions but also vulnerable because of socio-economic and cultural factors. Women and girls are more prone to the adverse impacts of drought.

1.1. Vulnerability and Gender

Vulnerability is a multidimensional construct. Till 1970s, vulnerability was understood as an outcome of the natural hazards that resulted in disasters. Wide range of literature highlight that during 1970s, scientists, engineers and bureaucrats looked at disasters only as outcomes of the natural physical hazards, and offered solutions accordingly, overlooking the social and historical dimension of the hazards. Cardona (2004: 39) argued that technocrat approach failed to capture the conditions responsible for crisis and suggested a more holistic view that looks beyond physical vulnerability. Social scientists like Hewitt (1995) place attention to the conditions that make communities unsafe. In this line (Wisner & Luce, 1993) argued that vulnerable population come under risk not because of physical hazards, but also due to their marginality which is determined by various factors such as age, gender, ethnicity, disability etc. Gradually, with more discussion and debate, the understanding of vulnerability developed from the lexicon of literature on disaster and hazards that established connection between the environment and the society.

The context of vulnerability provides a frame of external and internal environment that directly impact people's livelihood in terms of poor asset base, reduced capabilities and restricted household activities with shocks, seasonal shifts and trends (Stege, 2002). Vulnerability is defined as 'set of conditions that reduce people's ability to respond to the hazards' (Warmington, 1995:1 as cited in Twigg, 1998). Vulnerability comes in multiple dimensions such as social, economic, demographic, political and psychological (ibid). In the domain of poverty, socio-economic vulnerability is considered as an integration across a range of stresses (not just biophysical, but also exposure to uncertainties within markets, political and social exclusion, and so on) and across the range of human capacities (i.e., not just food security, income or health) (Downing et al., 2006: 1).

In the context of livelihood, vulnerability is described as high exposure of the poor to shocks and low ability to cope with the shocks (Devereux, 2001). Adger (2000: 739) defined vulnerability as 'the presence or lack of ability to withstand shocks and stresses to livelihood'. It has been observed that the ability, and therefore strategies, to manage adverse situations vary among individuals, depending upon their capacity to prevent, mitigate and cope with such events. Davies (1996), looked into coping as short time strategy to manage a situation whereas adaptation as a long-term coping strategy.

Thus, vulnerability is just not a concept that combines exposure to threat with susceptibility or sensitivity to its adverse consequences as stated by Devereux (2001), but also has its own inner value that analyses the well-being not only for today but also for tomorrow's prosperity of individual and household.

Moreover, vulnerability not only damages life and property, rather it damages and disrupts livelihoods. The most vulnerable group finds it hardest to reconstruct their livelihood subsequent to hazardous events and women, especially rural women, are considered as one such segment who are mostly affected by any unfavourable conditions like drought.

There is literature that often questions why it is important to look into issues like climate change or intricate relationship with the natural environment through the lens of gender. A complex aspect related to drought is the significant gender differences in their livelihood activities. In a similar way, the adaptive abilities among the members of the communities have a significant gender difference (Algur, 2021). In a document by Parikh (ND), it is mentioned that women are more vulnerable to climate change as they have low or limited adaptive capacities that arise from existing gender discrimination, lack of access to

resources, lack of information etc (Kebebe, 2008, cited from Algur, 2021). Moreover, with climate change, sectors that are traditionally associated with women get affected which in a way enhances hardship. Women are highly dependent on locally available natural resources for the survival of their families and of their own. Women bear the burden to take care of their families which is disrupted with the environmental degradation in the rural areas. This in turn, threatens water availability and access to other livelihood resources. There are studies that mention how women are left behind due to male migrating out in search of work and they become the head of the household and bear double burden (Bardasi & Wodon, 2006). Other than that, there are ample of evidences that loudly state how with the outbreak of drought, inadequate food intake, irregularity or reduced food consumption, too much of mental and physical stress develop adverse health condition among women (Sahu, 2018)

The deeply entrenched patriarchal system has been subjugating women for innumerable years. The social

structure, especially in developing countries is such that it confines women merely within the four walls

of the house. Women, therefore, are required to deal with the day-to-day household chores, and are believed to be much more environmentally friendly than the men working outside. Women routinely need natural resources like water, fuel, and fodder and hence have to walk long distances to collect them. Environmental degradation, implying a shortage of these natural resources would simply mean longer and tiresome marches, thus decline in the health of the women, especially in rural areas. Moreover, lack of natural resources such as fuel would also lead to food shortages. It has been seen that women in developing countries are often expected to be 'sacrificing' in nature. This often pushes them to have the least amount of food as compared to the male members and children in the house. This brings to light how climate change reduces food intake among poor women.

The gender division of labour is also responsible for degrading the health of women in all possible ways. For instance, as water collectors, they are more prone to water-borne diseases such as cholera and dysentery. Also, since cooking is one of their main chores, rural women are bound to be in direct contact with the traditional fuels, thus suffering from respiratory diseases. Among women, drought leads to reduced or irregular food consumption which, with increased physical strain and mental stress, cause adverse health impact (Sahu, 2012). Reduced dietary intake is a common coping approach of drought-affected women as they try to moderate the impact on their families. In this process, they are at higher risk of severe malnutrition (Kodavalla et al., 2015)

The deep-rooted dominant idea that women are vulnerable often has been conceptualised as women been



Water fetching drudgery

passive beings during disaster situation (Branco, 2009). The hurdles to optimise their agency to deal with the crisis slacken down due to unequal power relation, gender inequities and discrimination within the society. Women bear disproportionate burden of unequal access to the natural and economic resources which is manifested in the form of poor access to adequate livelihood resources. So, in a way women have increased hardship with the drought happening in any region. Women are deprived of their own resources as they have lesser control over the resources in the patriarchal society. Poorer rural women are also not encouraged to take part in or are rather excluded from the decision-making process, despite being most closely connected to the environment.

The other school of thought establishes a strong belief and evidence that if women participate in environment protection and restoration and sustaining activities, they disseminate knowledge, experiences, perspective and information about ecosystems, sustained practices, and conservation techniques and can assume leadership roles (Denkhelen, 2010). Though men and women play their own roles in the interface of natural vulnerabilities, however women have been found to have much more realistic adaptation strategies than men. UN, WCMC report stated that rural women and young girls are considered as transformative agents for environment sustainability as they play a vital role in the management of natural resources and the wellbeing and livelihood of rural households' communities. It is further argued that women can be key agents to adaptation and mitigation to climate change as they are close to nature and so they can develop strategies for adapting to deal with the challenges posed by environmental calamities. It is equally important to have gender responsive approach to provide an opportunity to enhance the ability of women and girls to have better pre-disaster situation in order to reduce and mitigate risks and promote more equitable social relations. Plethora of studies show that women's positions and roles have been seriously neglected in practice of the environmental conservation and sustainable management of resources (ibid).

1.2 Women and their adaptation strategies towards climate change

The male-dominated structure of the society does not allow women to own resources such as land. Since they do not have any right over the land resources, they have lesser voice in terms of controlling those resources. According to Sydie, “women's reliance on natural resources increases their ability to acquire and disseminate



Women working at a pond renovation site



knowledge and information about ecosystems, sustained practices and conservation techniques” (Sydie 1994). However, their voices are not paid attention to even in the national adaptation strategies.

The research of H. Djoudi and M. Brockhaus focusses on the differences between the adaptation strategies followed by men and women. As a short-term strategy, the women aim towards technical measures such as improving health and nutrition. This would reduce the immediate vulnerability that they face in their day-to-day lives. As a long-term strategy, women also perceive education for both boys and girls to be extremely important so that the next generations have more opportunities and options of livelihood rather than simply depending on uncertain natural resources (Djoudi and Brockhaus, 2011)

As women have been found to have much more realistic adaptation strategies than men, the decision-making process must involve all the key stakeholders and should not be confined only to the males.

Despite resistance from the society, women play an important role in the process of environmental sustainability. However, majority of the literature discuss and highlight women as passive beings and they lack their own voices and power to exercise their own agencies to solve the problems of their life. The reductionist idea about women's roles and responsibilities and their actions to mitigate drought and to restore and revive the environment gets neglected. Therefore, it is important to capture the significant role women play in environment sustainability.

The central idea of the study is to analyse the relevance of women's role in the mitigation of drought in the arid region of Rajasthan. This study makes an attempt to highlight, women's grassroots action forenvironment conservation and the transformation in the community's livelihood sustainability.

The aim of the study is to reflect on, how do women see their life and livelihood, how they addressed their vulnerabilities, what kind of interactions women experience with the community and how they see their participation in dealing with the issues that threaten sustainable livelihood and overall quality of life and get in action for drought mitigation. The objectives of the study were in four folds:

1. To explore the roles women play at different levels of drought mitigation programmes
2. To develop an understanding on the drought mitigation factors that are strengthened (or not) by active involvement of women
3. To identify different constraints in women's participation and what promotes their active involvement
4. To explore some good practices laying recommendations for future

This study data was collected from 10 villages located within Jodhpur and Bikaner districts of Rajasthan, India.

1.3 The Thar Desert

The Thar Desert, also called Great Indian Desert lies partly in Rajasthan state, north-western India, and partly in Punjab and Sindh provinces, eastern Pakistan. It covers an area of 10.4% of the total geographic area of the country bordered by the irrigated Indus River plain to the west, the Aravalli Range to the southeast, the Rann of Kutch to the south, and the Punjab Plain to the north and northeast. Thar Desert that covers around

28.57 million hectares of area is a dry land with harsh climatic conditions, water scarcity, and regular famines leading to poor quality of life and concern for the community at large for overall development. The zone is the most densely populated Desert eco-system globally having 83 persons per sq. km.

Agro-Climatic Regions in Rajasthan are gifted with varying environmental situations which has resulted in dividing the state into various sub regions based on type of soil, rainfall pattern, sunshine, aridity, and relief.



The state is further segregated with heterogeneous landforms such as the mountainous region of central Rajasthan, the arid Desert of the west, and fertile plain with a suitable climate in the east.

The villages studied during the study experience an arid type of climate wherein the maximum percentage of rainfall is received during the southwest monsoon, which enters the district in the first week of July and goes off in mid- September. The region experiences extreme heat in summer and cold in winter. Rainfall is limited to about 2 months of the year and annual rainfall varies from less than 100mm in western Rajasthan to about 200 mm in some parts of the Desert.

Despite being the smallest Desert in the world geographically, it exhibits wide variety of habitats and biodiversity. Extreme climatic conditions and scanty rainfall in the region affect the flora and fauna. Moreover, climate change has shifted the rainy seasons in recent years. For instance, overall precipitation has been higher in the last couple of years but rains were neither spread out as per the traditional rainy seasons, nor did it come when it was most useful for agricultural purposes. In the absence of structures that could store water for household use and agriculture, and with existing agricultural seasons and practices, farmers are not able to make use of this water for agriculture or for household purposes. On the other hand, they end up paying high amounts to procure water for household use. The study data has been collected from GRAVIS' project sites within the Thar Desert, and hence should have relevance to various arid zones in different areas.

1.4 Theoretical Lens

There is an intense synergy between women and the environment probably due to two major reasons – firstly, both play a significant role in the creation and maintenance of life and secondly, women hold a close affinity with the environment and exhibit high level of dependency over the environment. It is believed that rural women having an instrumental role with respect to the conservation of the environment and they turn out to be an effective actor in the management of environmental resources if provided with information, training and empowerment centric activities (Ellis, 2000,). The notion developed that women are the natural custodians and thus play a significant role in natural resource management (ibid).

Theoretically, three perspectives elaborated the nature of relationship between women and environment and the combination of these three perspectives establishes synergistic relationship between women and environment. The first perspective describes involvement of women in utilising and interacting with environmental resources, second perspective sees close association between nature and women at the conceptual level and see women as nurturers of nature and consider women's more positive attitude towards environment conservation than men. The third perspective discusses the proactive role of women in conservational technologies which majorly elaborate the role of women in the revival and restoration of environment.

Considering, the intention of the study to get best insights on women's role in drought mitigation, theoretical lens will be considered as the background of the analysis where all the three perspectives will be followed as the evolved data suggests.



2. Study details

2.1 Study aim :

The study was planned with an aim to explore the livelihood vulnerabilities of the rural poor households and to understand the role of women in drought mitigation. **The Social Constructivist Paradigm:** This research predominantly emphasizes on social constructivist paradigm, the main goal of which is to understand the lived experience from the individual's point of view that lives it in the complex world (Schwandt, 1998). The constructivist paradigm advocates for the qualitative data collection method (Mackenzie and Knipe, 2006). This work deals with the everyday life of women in the studied areas, their vulnerabilities, and their resources utilization or behaviour to manage the situation at the micro level. The intention is to understand what interpretation and meaning women construct out of their social world with which they fight everyday for sustaining their livelihood and survival.

2.2 Sample Design:

The research used a combination of both qualitative and quantitative methodologies. The applied methodology helped in understanding the social phenomenon from the natural setting where poor interpreted their situation and constructed meaning of their lived experiences through interaction, development of shared meaning and communication.

2.3 Participant Selection:

The selection of the participants was based on the goal of setting up easy processes for identifying suitable participants (Hennink et al. 2010) who have the information, knowledge or the experience of the phenomenon under study. The participants for the in-depth interviews were selected through purposive sampling. The baseline survey followed stratum to get a representative sample from the target population.

2.4 Research Setting:

Rural people reside within an environment that constantly poses challenges to their livelihood and makes their livelihood vulnerable. In the target districts of two districts - Jodhpur & Bikaner, 10 villages were selected, a total of 100 households were interviewed followed with 10 in-depth interviews for the study purpose. People's livelihood challenges are associated with the problem of dry climatic zone due to inadequate rainfall, and people experience drought in a regular cycle and culturally there are many commonalities between the two districts.

The intention behind selecting 10 villages was firstly to analyse the evolved women leadership in drought mitigation and how GRAVIS as an organization can work towards strengthening the process of building strong women's agency in the for overall development of the community. Secondly, the villages were identified through a local needs assessment and are very remotely located and face severe drought conditions.

2.5 Data Collection

The study used secondary and primary sources for gathering data. Women participants were the primary source to provide the information and share their experiences whereas secondary data was obtained from different sources including NGOs' reports and guidelines as well as other institutions' reports and published and unpublished works from various e-resources such as articles, blogs, scientific journals, conference proceedings, books etc.

The data collection process took place at two levels. At the first level, household information was collected through survey, and the next level included in-depth interviews. Two sets of questions were used for data collection. In one set of questions, the researcher used unstructured interviews, non-participant observation, and focus group discussions. Many of the cultural aspects, and similarities and differences

between the groups of people within the community, were recorded. For the survey, interview schedule was used to get an overall understanding of a household's livelihood scenario in a complete sense. In all, women from 100 households were interviewed, and 10 in-depth interviews were conducted. During the survey, enumerators captured relevant observations which helped in having bird's eye view of the phenomena or events in the lives of these women within the community

Details of Thar Desert villages of India from where data was collected

S.No.	Name of village	Block and District	Population (Approx.)	Communities
1.	Srirampura	Bap, Jodhpur	1,100	General (Gen), Other Backward Class (OBC) communities
2.	Kalrawa bera	Bap, Jodhpur	1,050	Scheduled Castes (SC), OBC communities
3.	Malamsingh ki seed	Bap, Jodhpur	1,350	SC, Gen and OBC communities
4.	Kalyansingh ki seed	Bap, Jodhpur	1,780	SC, Gen and OBC communities
5.	Navneetpura	Bap, Jodhpur	900	SC, Minorities, and OBC communities
6.	Ambedkar Nagar	Bap, Jodhpur	900	SC, Scheduled Tribes (ST) and OBC communities
7.	Udat	Bap, Jodhpur	2,500	Gen, SC and backward Caste communities
8.	Udat	Kolayat, Bikaner	1,450	Gen and SC communities
9.	Khariya Patawatan	Kolayat, Bikaner	2,200	SC, ST, and OBC communities
10.	Rajiv Nagar	Kolayat, Bikaner	1,500	SC, Gen and backward caste communities
	Total		14,730	

2.6 Data Analysis:

There were quantitative and qualitative data. Survey data were compiled in the excel sheet by the internal members of GRAVIS. From the data, theme-wise information was drawn, and wherever possible concise information is presented either in table or graphical form in the main report. For the qualitative data, transcription of the interview was done followed will coding and categorization.

2.7 Limitation of the Study:

The process of data collection got delayed due to all India Lockdown for the unprecedented COVID situation. However, field workers collected data following all the COVID safety protocol and carried out the field work. Communities too cooperated in the process of data collection to the best possible extent.



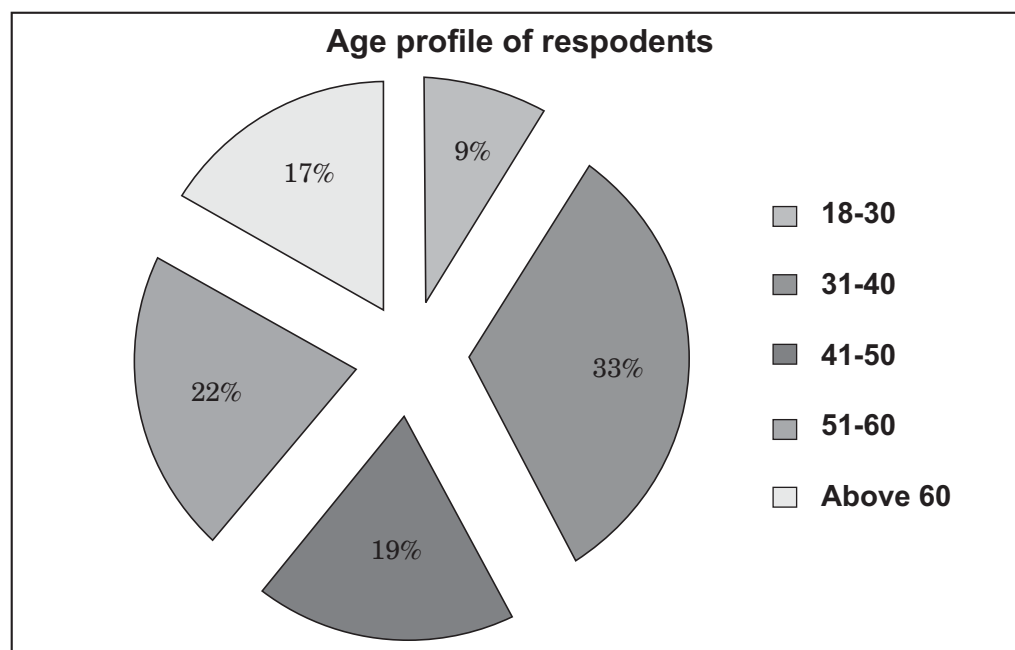
3. Study findings and discussion

The existing literature finds culmination of nexus between gender and drought where the roles of women and girls are manifested in managing environment in alignment with the sustainable development. There is constant dialogue over the question who have bigger stake or whose lives become more challenging, who are into constant battle with the outbreak of drought? No doubt, every single individual does get affected with natural vulnerability like drought, however considering the roles and responsibilities, women experience more burden than their counterparts. The explicit and apparent relationship between women and the environment garnered much attention and developed the necessity to discuss women's and girl's role in environment sustainability and attempted to understand how women contribute to addressing the issue of poverty and bring positive transformation. Work by Dankelman and Davidson, 1988, emphasised on women's roles and positions in protecting and sustaining the environment through engagement in land use, water management, forest use, conservation etc. They argued that women's reproductive and productive roles impacted adversely by climate change and there are major impacts on people's lives and livelihood, especially on those for which women are responsible.

This section makes an attempt to understand the ways women are more associated with environment and how changes in the natural environment increases their level of adversity and what role do they play to mitigate the situation like drought which is responsible for their vulnerabilities.

3.1 Demographic Profile

Data for the study was collected from women aged between 18 to 65 years, 33 percent of the respondents were from the age group 31 – 40 years, followed by the age group 51-60 years which is 22 percent. 19 percent of respondents were from the age group of 41-50 years. Only 17 percent of the respondents were above 60, and 9 percent were from the age group of 18-30 years. Majority of the women interviewed follow Hindu religion and 11 percent follow Islam. Most of the respondents (93 percent) were married, whereas 7 percent women were widowed and hence theirs were women headed households. Most of the widows are above 40 years. In terms of education qualifications, out of 100 respondents had no experience of formal education, which means none of the respondents have gone to school ever.

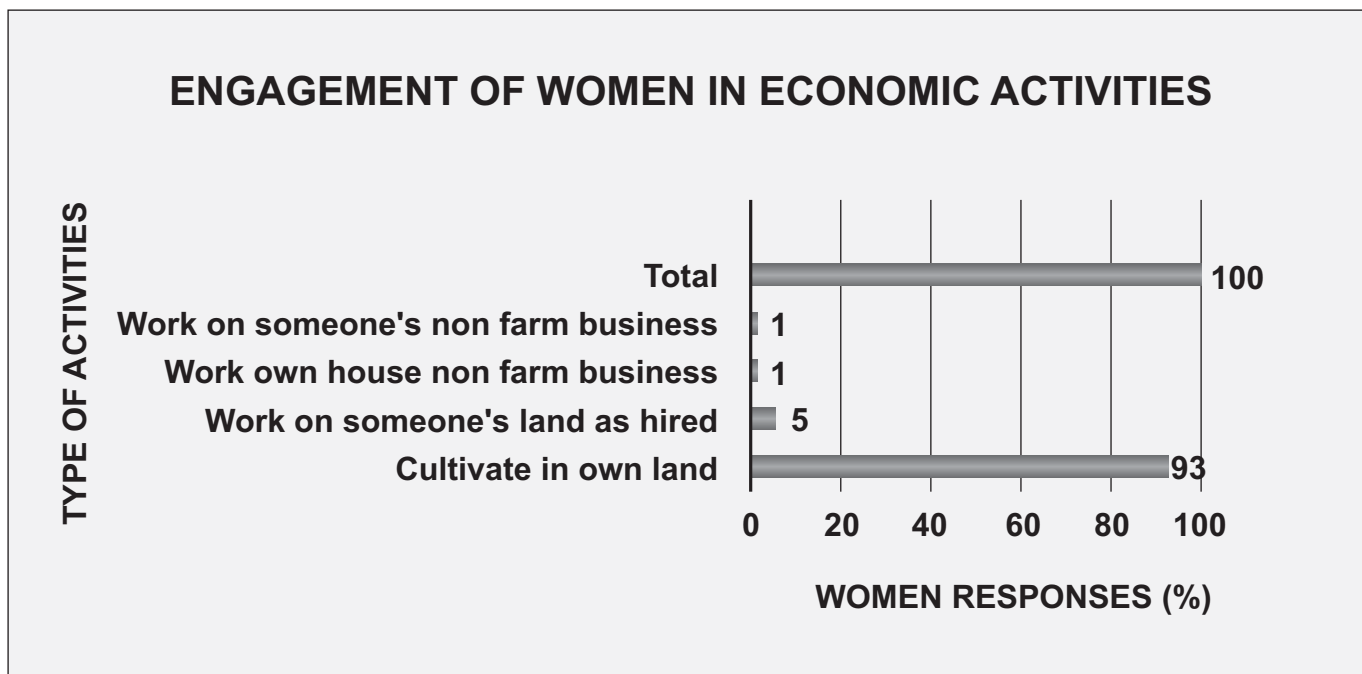




3.2 Engagement of women in economic activities

There is diversification in the employment status of the respondents. Majority (92 percent) of the women respondent work in agriculture where they substantially remain engaged primarily as unpaid family workers. Women are less engaged in wage employment. This pattern exists in normal days on regular basis, however, in case of drought, women do go and work in other's fields too. 5 percent women worked on others' land as agricultural wage labourer. 1 percent work on household non-farm business, 1 percent work on someone else non-farm business.

While women play an important role in agriculture and spend far more time in agricultural and allied activities than men, they do most of the invisible work and they are paid much lower wages for the same work in informal sector. Since they do not have legal title to the land and since they do not control the “breaking in” activity of tilling the soil, socially, women are customarily not given the status of farmers in their own right.





Role of women in farming

Farming activities	Women	Men	
Land leveling or watering land		✓	
Cleaning the field	✓	✓	If women are engaged in household farm
Buying seeds, fertilizer etc.		✓	
Weeding	✓		
Sowing	✓		
Ploughing		✓	
Driving tractor		✓	
Harvesting	✓	✓	
Spreading fertilizer	✓	✓	
Plucking, Shelling and cutting	✓		Men engages in castor cutting
Sorting	✓		
Packaging	✓	✓	
Storing	✓		
Stocking old seed	✓		
Selling in the market		✓	
Selling from home informally	✓		
Protecting farm field		✓	
Animal Husbandry			
Caring the livestock	✓		
Watering	✓		Mostly women, occasionally men
Feeding	✓		Mostly women occasionally men
Extraction of milk	✓		In case of wild animals, men
Taking for grazing		✓	Men, old men, children
Collection of fodder	✓	✓	
Taking to doctor in emergency		✓	
Selling of milk outside village		✓	
Ghee making	✓		
Buttermilk making	✓		
Mawa making	✓		
Selling of livestock		✓	
Feeding	✓		Children and sometimes men also help
Care	✓		Children and sometimes men also help
Selling within the village and local market	✓		
Cutting and trimming of trees		✓	

The table above shows that the engagement of women even in the process of production. However, when it comes to decision making within the family, the final call is taken by the male members of the family. The data collected during the study confirms this phenomenon. 18 percent of women were not sure about the process of decision making whereas 82 percent agreed that at household level all sorts of decisions are finalised by the male members of the family. This indicates the need to work towards building women's confidence and engage them in the process of decision making. Providing opportunities for leadership roles can support women to realise their individual capacity and act accordingly.

Sources of income at the household level



Women engaged in farming

As regards the sources of income at the household level, the identified sources were pension, daily wage, and remittance from migration. Households did not mention about the income they earn through selling of assets, or milk or crop sales. The annual income from daily wage ranges between INR 22,000 to 30,000 approximately. Migration, which is used as livelihood strategy is followed by the population in the studied villages and in most of the cases it is not by choice but by compulsion. With the male migrating out, the struggle of left behind women increases and their workload, roles and responsibilities increase double fold.

3.3 Women and droughts: Enhanced vulnerabilities

Vulnerability has its genesis in social, economic, and political processes that influence nature and degree of the impact of hazardous events. Vulnerability is characterised by a person's or group's capacity to anticipate, cope with, resist and recover from the impact of natural hazards, and hence it clearly establishes that in the wake of calamities, some groups in society may be more prone than others to the risks, damages, losses, sufferings etc. as per the contextual variations. Therefore, it is important to understand the experiences any particular group goes through about the challenges they encounter because of natural calamities in their life.

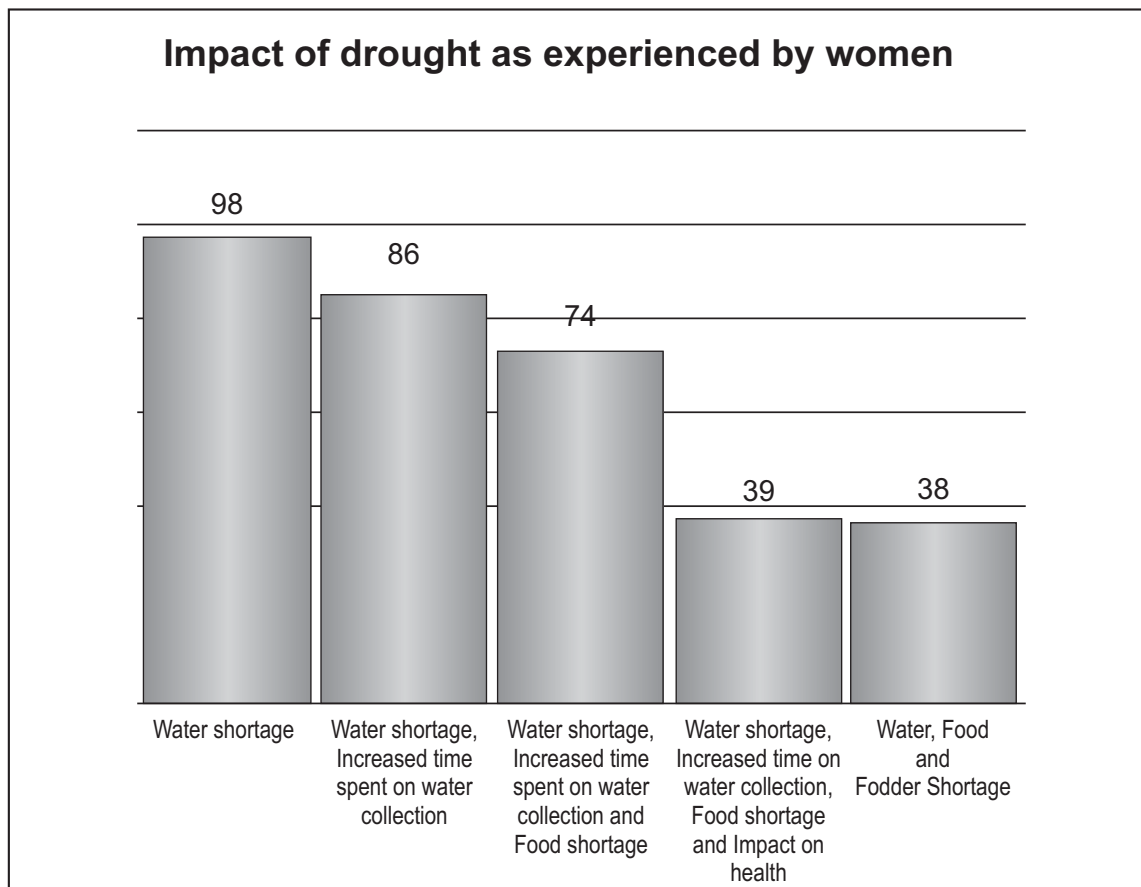


Although the idea of drought has mostly been described in terms of natural hazards, whereas there is much more to it when it is understood through the lens of human experiences. In this study, women were asked about their experiences of living within a drought prone area, with a view to capture the vivid ideas that shape up the meaning of drought in their lives. The expressions captured from the field about the notion of drought are multi-dimensional. It was observed that women's perception of the condition of drought is influenced by a range of factors including water scarcity, past experiences of struggle for survival without rain during droughts, frequency of the occurrence of such events, magnitude of the drought, as well as witness the sufferings of others.

3.3.1 Direct impact of droughts on women

All the respondents had experience droughts and most of them seemed concerned about the impact of droughts, especially from the point of view of food insecurities, health and livelihoods. An obvious finding was that most of the women (98%) were concerned about the acute water shortage because of the drying up of all the water sources. Along with this, in varying degrees, women's primary concerns revolved around food insecurities, health, and the increased amount of time that women and girls have to spend in collecting water for their households use.

In addition to these problems, it was also observed that droughts also result in livelihoods, impaired human capital, psychological stress, an increased dependency on others for help. Women also shared during the conversations that migration of males from the villages result in additional burden and responsibilities women and girls, loss of their economic freedom and there by quality life. It also toils their health and hygiene. It was found that for women drought has socio-economic and psychological and health dimensions as well.





Other than considering the impact, women even expressed the concern for the changing pattern in the occurrence of droughts in last one decade which according to 97 percent of the women drought is occurring more than before whereas for 3 percent it is normal. Despite of living in the world where technology is growing fast, 81 percent of the expressed disappointment for having no means to anticipate onset of drought whereas 19 percent said they do get the information through radio or television. This clearly highlights that the access to information depends on the asset holding at the household level. Majority, 43 percent said they can make assumption or do self-judgement about the weather forecasts which is the old way of prediction, where as 19 percent gets to know through radio or television and rest 39 percent through traditional knowledge sources.

People living in arid zones are always at risk which is a complex combination of vulnerability and hazards (Blakie et al. 1997). Vulnerable population experience hazards and suffer damages and loss of livelihoods. Women vulnerability especially becomes adverse as that is rooted in the social processes and structures. The gathered evidences from the field communicates that the impact of drought kind not only affects individual or a particular group, rather it has intense effect on the entire community. The population when lives in the unsafe conditions like the studied population living life in arid location where they do not have adequate water or favourable climatic condition, they are more prone to rapid disruptions.

3.4 Uncertainty with means of livelihoods

The main economic activities of the people in the studied villages are rainfed and irrigated farming along with maintaining a limited stock of livestock and selling out of their labour. People do sell livestock but they do not consider it in their regular income as that comes in very negligible form. There are households for whom a portion of their income comes from remittance. Since the villages have less livelihood options and the main occupations of agriculture is seasonal so population is pressurised to depend on wage labour for income. The outbreak of drought every 3-7 years forced people to diversify their activities in order to earn a stable income.

3.4.1 Farm production

These villages encounter considerable risks in their income from agricultural production because of the climatic variance. The rainfall is scanty so the villagers have limited production for which they are not left with sufficient amount to spend on households. Every day proves to be a challenge for them. Being in a semi-arid region, there is continuous threat to agricultural activities due to scarcity of water for irrigation.

Land is a very crucial resource for everyone and is considered to be a fundamental livelihood asset (DFID, 2002). All the women respondent confirmed that they belong to the marginal farming household and the land holding ranges between 1.6 Hectare to 5 Hectare. Despite of owning land household cannot maximize their production in that area of land when there is water scarcity. All the household expressed their dependency on rainfall for cultivation as in the studied villages people experience drought and there is no irrigation structure for agricultural activities; having effective irrigation structure for water source is most important. Households with agricultural land become useless and unproductive in absence of irrigation facilities. Therefore, they can only cultivate one crop, i.e., kharif. In fact, many a times they fail to take up single cropping because of the poor infrastructure Having physical assets such as bore-wells or tube-wells is an expensive affair for the households in the rural areas who mostly depend upon wage labour. Other than climatic vagaries, the harvest gets affected due to poor soil quality and pests. The problem of crop loss frequents in all villages. Villagers understood that early sowing or late sowing of the seed led to pest attacks and they have high possibilities of crop loss. It is important to start cultivation on the right time with a proper plan. However, small and marginal farmers often fail to do that as by the time



Barren farms in rural areas

they arrange all the inputs they sometime become late. However, there are many constraints in pursuing agricultural activities in all the 10 villages, even when households in the community give their utmost effort to do best and earn a living from it with the available limited resources.

In the context of farm activities, women contribute their labour to support male members of their households. In case of household with low economic income, where it is difficult employ labour, women work in their own field and support their men by sharing the labour around specific activities. The insufficient male incomes drive women to work to earn an income. The earning from the agriculture wage labour ranges between 3 to 7 months. The wage labour can be categorised into three segments – (1) labour for sowing crop (2) labour for crop harvesting (3) labour for tillage removing according to which wage of labour differ. However, there is wage variation as agricultural labourer among men and women. According to the data collected from the field, there is clear distinction in wages between men and women where women tend to earn less than their male counterparts. It has been informed that men are paid INR 200 where as women are paid INR 150 per day.

Among many reasons for poor agricultural productivity, inadequate institutional framework characterized by weak delivery system, poor market access, and poor cooperative structure is a very significant reason. This domain needs to be strengthened. So, to improve the agricultural production, priority has to be given to the creation of water harvesting structures through exploiting rainwater. Water reservoirs and water storages etc. should be taken up with renewed vigour.

Thus, there is a constant struggle for women in the studied villages to make their living from the resources. Their dependency upon the natural resources and common property resources such as land, water and forest for their, fodder, fuel, water etc., are the means of their livelihood. The well-being of these women depends upon the availability and accessibility of the resources from their environment that can provide income, health, dignity of life, quality of life. The problem of water scarcity, severe land degradation, lower yield, deforestation etc., in the rural areas challenges the lives and livelihood of these women.

Income inadequacy is one of the significant factors leading to vulnerability. In day-to-day life women have to manage their households with monetary crunch, insufficient food, insufficient household items. The



pressing cash crunch is common and very stressful problem among every household where (100%) of the interviewed respondents agreed that they borrow money from others thus indebtedness intensify households' economic condition. All the respondents mentioned that they borrow money from informal credit sources for their immediate need fulfilment. Only 8 respondents said that they borrow from Self-help groups. It is interesting to notice variations in the borrowing amount. It is less when it is from SHGs. The amount varies between INR 2000-5000, where the amount is more when it is from relatives which ranges between INR 2000 – 15000. Women borrow from SHGs for productive activities like agriculture, purchase of livestock etc. whereas for the purpose of health, education or other social functions they borrow from relatives. This in a way highlights the utilization of the social support when women feel the need and that is built upon the level of trust.

3.4.2 Borrowing to cope

In comparison to borrowing, habit of saving is low among the respondents. About 52 percent of the women mentioned that they save whereas 48 percent are unable to save. For the women who save, it is a monthly process and they save for education, family wedding, uncertain events. Out of 52 women who practice saving, 21 informed of saving in bank, 8 in Self Help Groups (SHGs), 3 at home. It is interesting to notice that in case of saving respondents prefers to save in bank but in case of borrowing they majorly depend upon their social support structure.

3.4.3 Responsibility of cattle rearing

Living life in the drought prone area is not only challenging for human being but equally for the animals. The main challenge faced in livestock breeding and keeping is the lack of water and scarcity of grazing areas. The interviewed households do have livestock such as bullocks, cows, buffaloes, goats; the discussion with the women revealed that presently it has become difficult to maintain livestock because of lack of availability of fodder to feed them. Generally, the fodder for the cattle is taken from the forest, pasture land, own field and market. But presently the available fodder is not sufficient as the amount of consumption is much more than the available fodder. In normal case it is the community grazing land where livestock gets their fodder which is not even sufficient, as no household own fodder in the nearby places. The collected data brings out the fact that there is degradation in the grazing land area. from what they had 20 years back. Because of the grazing problem some of the household in the villages have begun to practice stall feeding instead of sending animal for free grazing.

The fodder availability also changed over the period of time. The continuous decrease in availability of fodder from past few years has greatly affected in the quality of the livestock. Previously, in few of the village's fodder was available for 12 months which now have degraded to 5-4 months. Some villages avail fodder only for 1 or 2 months which is very much insufficient for the cattle herder. So, they have to purchase fodder from the market.



Livestock are important in the Desert

Majority of the households mentioned that they spend 30,000 INR a year on fodder which mean 2500 INR per month. There are households (3HH) who have responded that they spent 40000 INR per year which means more than 3000 INR per month. This spending become more during the outbreak of drought in absence of fodder bank or access to support structures. Though, 46 percent of the household confirmed that they get fodder from government during drought whereas 54 percent mentioned absence of any such support. Other than fodder availability of adequate water challenges livestock rearing. However, women stated that 20 years back there was abundance of plant and *Jhad* in the grazing area which has now degraded drastically. Presently, English *babool* is the common plant available in the grazing area. The availability of fodder and its relation to livestock directly depends upon two major factors. Firstly, rainfall and secondly land ownership. Low rainfall has negative impact on fodder production because due to the lack of rainfall there is low agricultural production which further results to low crop residue for livestock. Secondly, the amount of land one owns affects one's ability to support livestock because households with ample private land have the greater crop residues and may be able to raise fodder crops. But in surveyed villages' majority of the households are not economically sound enough to produce fodder crops for their livestock in large amount for which they need external support. Few of the households sell their livestock when they feel the need of cash and gain some income out of it.

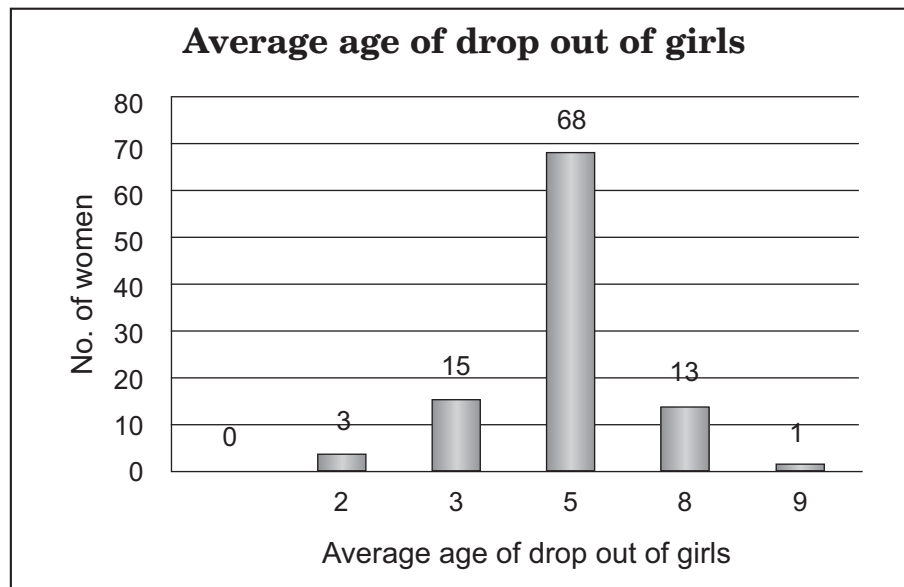
Even in livestock rearing, it is women who play an extremely crucial role. The day-to-day care is taken by women. Among the surveyed households, 100 percent of the women mentioned that it is their responsibility to herd their livestock for grazing either in the community land in the village or providing them crop residue. Though livestock rearing is considered as one of the common strategies to secure livelihood, however, it turns out to be burden as well in absence of proper institutional support, access to resources which are prerequisite for their survival and maintain them as a productive asset. Women spend time with livestock more in comparison to their male counterpart, so they undergo emotion stress when there is loss of livestock during drought.

In the absence of support in making fodder available due to which men of the households have to migrate out and there is chain of other issues cropped up which women face lonely. The data from the field clearly state that with the crisis in livestock rearing, women's burden increases as they strive constantly to have

access to resources. It has come from the discussion that access to resources varies between households. Those with better access to information, cash, networks, means of production, tools and equipment are less vulnerable and may avoid disaster. Thus, access to resource depends on the social and economic relation.

3.4.4 Impact on young girls

Most of the women seemed quite concerned about the impact of drought on young girls. There is a realisation among them that water scarcity and the need to spend time for collecting water, deprives their young daughters of opportunities for formal schooling. Majority of the women (68%) were of the opinion that most girls are unable to continue their schooling after 5th standard, while some (15) felt that compromising on school hours and diverting the time for water fetching responsibilities, prevent some girls to continue their studies after 3rd standard itself.



Women also felt that even when girls are able to attend schools, they do not have time for studies at home and pursuing higher education becomes a challenge. General health status and access to health facilities too directly get affected damaging the potential of young girls to lead a quality life. Having gone through the same experience of jeopardised education, the concern comes across as a real threat to the goal of equitable growth and gender just society.

3.5 Dealing with food insecurities

Food insecurity remain concern for the rural population. Rural women are generally considered as primary care giver in the families who take key responsibility to ensure food and nutrition at the household level. For every poor household, meeting their basic needs for food turns out to be a daily struggle and the studied population is no different from that situation. The situation become acute with the outbreak of drought with the increase unemployment or poor condition of land that hardly gives any income. While mostly material connotations are analysed to understand the poor household's conditions, but food insecurity develops psychological effects such as distress as every household i.e., 100 percent during the survey mentioned that there were months when they did not have enough food as per their need. To survive, families look for multiple options to satisfy their hunger. Almost 76 percent of the families mentioned that they change diet to cheaper or less favoured food sometime where 24percent never made that negotiation with respect to their food. All the respondents expressed that they go for alternatives and choose to eat wild food sometime when there is food insecurity.



As providing food for household members comes under the responsibility of women, women constantly cope up with the difficult times by reducing the quality, quantity and frequency of meals. The diet become monotonous, get dependent on wild food or get habituated to have anything that is available at that point of time. However, as women are custodian to traditional knowledge, which is key for their livelihood, they use traditional knowledge that support women to manage their kitchen during crisis and also on regular basis and also to maintain their culture and show resilience. The dissemination of inter-generational knowledge helps women to learn to manage household with the available resources and also how to manage for future. In the process to negotiate between food security and nutritional security, the concern for the food security comes first. The food intake is not standard that can add energy and calories to the people of all age group specially children and women, and thus good health becomes an issue. There is also need to work towards system that can take care of both food security as well as nutritional security.

3.6 Women as Water Users and Managers

Water is an essential resource which is required not only for performing household chores but also for growing food, doing cultural practices, and for sustaining the earth's ecosystem. However, this essential resource which is the major source of livelihood and quality life remains under threat in the studied locations. The challenges of growing water scarcity are heightened by degradation of soil in irrigated area, depletion of ground water, inappropriate use of developed structures for water supply etc. (Rosegrant et. al, 2002). The struggle to have adequate drinking water is constant among the studied communities. Sometime they need to make curtailment in other expenses like health care or medicine so that they can save money to buy food. Almost 61 percent of the household follows this as an option. Women expressed that there is feeling of shame and hesitation when they have to borrow food from others. It is never a great experience. On the contrary, it happens among the members who have strong social tie within the community. So, borrowing of food or money to buy food is very common among the households that is what all the interviewed women replied.

Dealing with water scarcity is one of the major problems stated by the villagers during the survey. Despite of having water structures, the issue of water scarcity is an ongoing struggle for the villagers, especially women. The available sources fail to provide assurance of water availability with sufficient quantity for a whole year. The sources of water in most of the villages are *naadi*, the water body that stores rain water, pond and tanka where rain water is stored for drinking purpose at homestead. The water stored in the tankas are generally used for domestic purposes and for other purpose people have to collect water from the other sources.

3.6.1 Water fetching, cleaning and storing

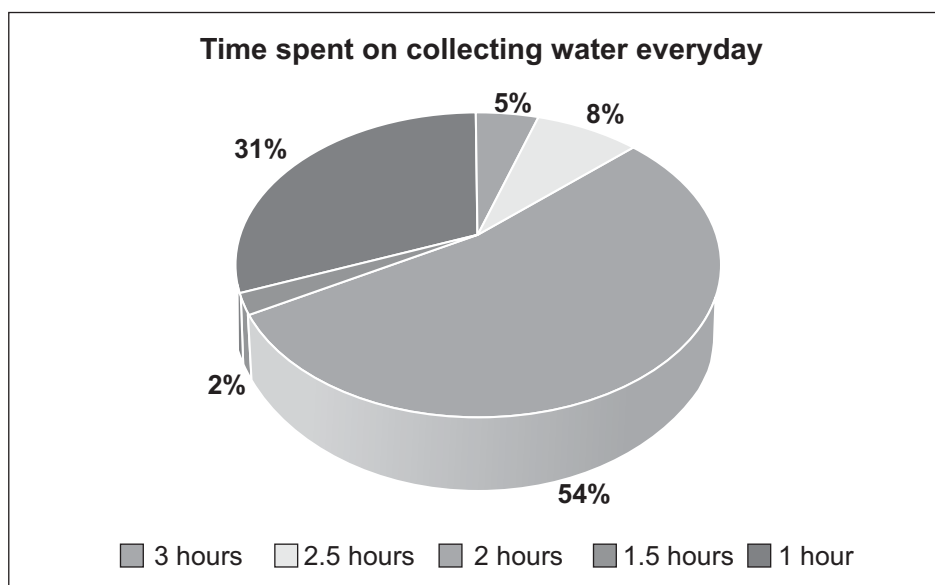
Undoubtedly, the direct burden of this struggle is majorly experienced by the women and girls of the community. All the respondents confirmed their struggle to deal with water scarcity. There are multiple other factors that contribute to the struggle. As per the respondents there is paucity of drinking water sources which are limited to public tap, tank or collection of rain water and water harvesting. These are the sources which majorly depends upon rains and during dry and wet season, having access to drinking water in the region become a matter of concern. About 75 percent of the women mentioned that their household depends upon rain water collection in tanks, or in water harvesting where as 25 percent of the respondents stated that they depend either on public tap or rain water collection in tanks. This data reflects the dependency of the population on rain water which is very less in the arid region where the study been conducted and secondly use of public tap are not common among the studied population.



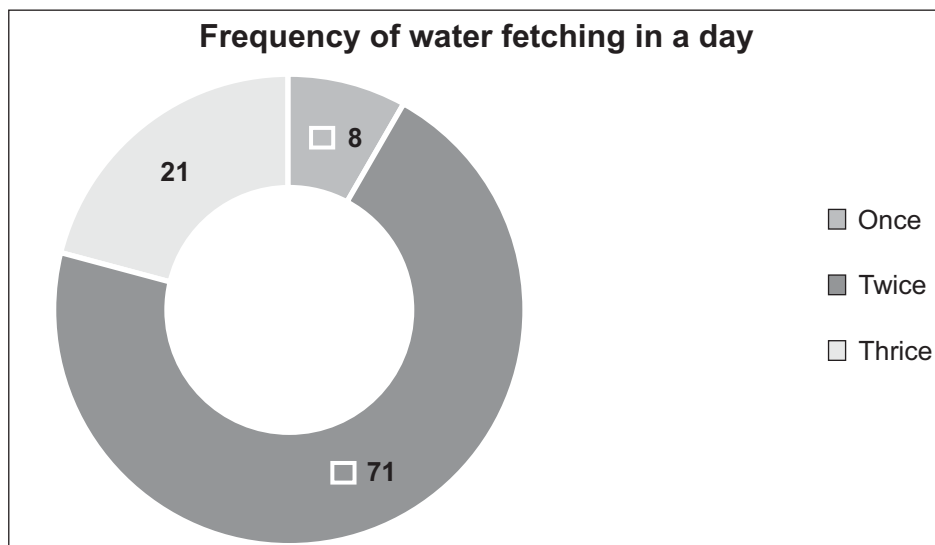
Dealing with water scarcity is one of the most daunting roles that each woman in the rural community plays. Hardship paramount among women during the dry season when the household's demand for the water remains same but access to water gets squeezed and they have to spend more time, physical energy and more cost to manage the productive as well as reproductive roles. Thus, the responsibility turns out as time – consuming and arduous.

Time spent on collecting water

The women in the studied villages expressed that with the outbreak of drought, fetching, storing and managing water becomes their and girl children's sole responsibilities that increases their burden.



Majority of the women (54 percent) mentioned they spend 2 hours, 31percent spend 1 hour, 8 percent spend 2.5 hours, 5 percent spend about 3 hours and 2 percent spend about 1.5 hours in collecting water. Data from the field clearly indicates that women spend substantial amount in fetching water which directly affects their daily lives and limits their participation in employment and thus hamper overall economy. In addition, it is not one time activity that women perform, almost for 71 percent of the studied women, they have to collect water twice a day and for 21 percent it is thrice a day. Other than women, life of female children gets affected as they support their mothers and share responsibilities.





About 89 percent of women were worried that their daughter's education gets into stake as they miss out their school or juggle between school and home to manage their household responsibilities. In a remote region, where public education is anyway confronted with the issues such as lack of services and infrastructure, recurrent droughts deprives them from the opportunities to education, and adding to the number of illiterate and uneducated female population.

3.6.2 Water Quality

Despite of sacrificing their own physical comfort and education, women find it difficult to get quality water which is again crucial for quality life. 88 percent of the women stated that they get poor quality water (muddy in quality), 7 percent mentioned they get salty water whereas 5 percent expressed that they get combination of muddy and salty water.

Women's responsibilities do not stop as water user at the household level, rather once they are done with collection of water, their water management activities initiate. While managing the essential household resources like water, women role becomes more crucial and sensitive. Women have to take care of water storage mechanism to keep drinking water clean and safe. Not too many options are available when it comes to storage and cleaning of water. Majority of the household, 55 percent keep water in Tankli/Tanka, whereas 39 percent store in clay pots and 6 percent in metal pots. To keep water clean, women have to follow the tedious filtration process. This data indicates the need for awareness building in the community about the easy water filtration process to have safe drinking water. The gender division of labour in the household chores specifically in relation to collection of water clearly brings out the presence of gender inequality in the studied villages.

Looking into the integral roles women and girls play for food preparation, nurturing children and healthcare which are also performed historically, the relationship of women with water become more complicated and difficult to carry out during the event like drought (Chakrabarti, 2009). This struggle is strongly visible from this study also.

3.6.3 Crisis response : Offering immediate solutions

Women as water manager, strategise utilization of water in their day-to-day life, although the adaptation strategies are not always positive in nature. The strategies where they need to compromise or sacrifice their personal choices, preferences that affect their quality of life, health and their human capital as whole, have negative repercussions in the lives of the women and their families and community at large.

As women are expected to manage the water, in the event of water scarcity, the first step that they take is often to compromise their personal hygiene which is not by choice but out of compulsion. Women need more water and more attention towards their hygiene during their menstrual cycle, unfortunately women do not give much attention to this need, which leads to culmination of many diseases. At the same time, there is decrease in the water consumption in the household level and other members also compromise with their personal hygiene.

There are certain roles that women perform when it comes to transforming the socio-economic condition of the household. When the event like drought occurs, the immediate adjustment is made by women in the form of consumption moderation, changes in the diet., compromise made as regards their health and hygiene, double their work stress. Children drop out from schools. Women sell their jewellerys, sell their livestock which they take care throughout the year, and liquidate their savings, whatever little they manage to save. While, these strategies reflect a level of sacrifice that women make in order to cope with the situation, these constitute their crisis management and immediate response mechanisms

3.6.4 Preventive strategies led by women

Women also adopt preventive strategies as they take action at individual level to minimize the risk of disaster. Women do plan for future and knowing the phenomena, preserve seeds, stock food, save money, and use resources judiciously. The store of grains or other staple food is the most important buffer



against expected seasonal shortage. The accumulation practice of small stocks develops a sense of security among the households. Women who maintain livestock, keep trying to increase the herd size in the good rain year that can support during the bad seasonal year.

Women in the family maintain good social relationship with others in the village and this comes in as a great source of support during crisis situations. In the maintenance of social network women play a crucial role. In crisis situations, it is easy for women to borrow money. They are more trusted and disciplined in on-time repayment. Other than self-securing strategies, women do come forward to support their spouse in income-generating activities. They step out from the house and get into agricultural fields.

3.6.5 Rising up to the need

Rural women often have low social status, however, group formation among fellow village women helps to give women confidence, legitimacy and mutual support to overcome status inferiority. The gathered data shows unsatisfactory participation of women. The participation of women in outside activities are either SHG (8) is very low, 9 in VDC, 83 have no participation. In the era, where we see SHGs as a transformative platform and it is considered as a movement, the poor data of non-engagement with SHG shows a challenging picture. Women cited lack of sufficient time as one of the significant reasons for their non-participation. This scenario in a way generates the need for the community and the project implementing agencies to work upon formulation of more groups and strengthen those groups that can work collectively to cope with drought. However, the women in the groups started to discuss their problems and seek solutions through different income-generating activities, sharing of information on different issues etc. This is helping develop their confidence to get into the decision-making process.

Although, it is not acknowledged, women's role in crisis management is quite important. The fact that women also play a critical role in inter-generational transfer of the knowledge that they gather during their lifetimes and nurture the progressive traditions, is equally critical in the context of drought and resourcelessness in the region.

3.7 Role of women in environmental management

In general, women and girls are perceived as victims of disaster, whereas in reality women are more adaptable to changes in the environment and they are closer to the environment having strong synergy between them and the environment. Thus, women can become an effective agent in the face of the environmental crisis where resources are degrading leading to a livelihood crisis. As an actor, the role of women can be reconstructed in an effective manner recognizing their capabilities and knowledge base to manage the environment. Women leadership is instrumental in the recovery of the environment. They also play an important role in achieving water structure restoration and sustainability.

This study confirms that when women have the ability to show their leadership qualities, they need to address the issue of survival. As women confront multiple challenges with the outbreak of drought, they prefer to work by themselves at the precautionary level to minimize the risk and become less vulnerable. Women in the studied villages gave importance to the mitigation plan before disaster occurred and remain prepared to deal with the onset of disaster like an outbreak of drought.

It is observed in the community that women get engaged at the local level, indigenous responses to drought that include people's own strategies to deal with drought. The engagement is the combination of self-protection and social protection by communities with the support of other organizations. Considering their own strength, women play their role in drought mitigation. The mentioned illustrations clearly show other than reproductive role, women do play an active role in preventing and protecting the community from the aftermath of drought.

3.8 Holistic approach of GRAVIS in the community

“Putting people first” in development project may be the first concern that can be regarded as an appeal to planners' humanitarian feelings (Cernea, 1985). The meaning ascribed to the statement is to give priority to what is the basic factor in development. An organization like that of GRAVIS follows this ideology in every aspect of their engagement with the community, thus making the presence of the organisation rooted and firm. GRAVIS follows holistic approach to support rural villages across western Rajasthan which is a drought prone area. To capture GRAVIS' idea of development, we can quote the definition of development stated by the UNDP Human Development Report (2001) which defined development as people centric, and that empowers individuals and groups rather than disempowering them. The essence of the idea of development is based on two-dimensional approach; one is building of human capabilities like improved health, knowledge and skills, and the other is the use of acquired capabilities for productive purposes and being active in social, political and economic and cultural affairs.

Nutritive support to rural women in Desert



Nizu Devi, who lives in Ambedkar village belongs to an unprivileged community. The only source of household income is agriculture on a small piece of land. The family was deeply in need of water resources at home so that girls could resume in their studies instead of fetching water. The family received a water tank along with fruit orchard near their house from GRAVIS. Because of immense hard work, Nizu Devi's orchard started fruiting soon. She has harvested *ber* (Desert plum). She uses organic manure and herbal pesticides for rich growth of the plants. Now she started growing vegetables in the space between two plants. She grows tomatoes, chilly, onion, eggplant, sweet pea and coriander in her small orchard. According to her when people come to visit her orchard, she feels proud when they praise her plants.” Nizu Devi has gained confidence with the development of expertise in her work. Her small horticulture unit is helping the family in coping with nutritional deficiency and also brings in the hope of an alternate income in future with surplus fruits and vegetables. There are a number of such examples wherein GRAVIS intervention for rural people has empowered community as a whole and women in specific. The implemented projects by GRAVIS have served as vehicle for growth and change.

Champa Devi has a *taanka* with support from GRAVIS



Poverty in Rajasthan is inextricably linked to the local environment. The region receives only 100 millimeter rainfall in a year which is also unpredictable. Champa Devi 47 years is an old woman living with her husband Shankerlal, two sons and one daughter in Ambedkar Nagar. Her two elder daughters are married and living with their husbands who are also wage earners. The family always strived to capture little income from few sources like MNREGA and mining in clay and salt mines to fulfill family needs. Women of family engage in water fetching exercise and other domestic work. Champa along with her daughter had to travel 2-3 kms daily to fetch water from a *Naadi* (village pond). There

was no *taanka* at home so it was also difficult for them to procure water from outside. At times they drew water from neighbour's *taanka* but it was a costly affair for family. Expense on water and illness because of lack of sanitation was continuously increasing and leading to the family towards debt. The overall solution was to have a *taanka*, that was recommended by VDC of village to GRAVIS. The *taanka* was constructed in 2019 and collected rainwater in 2020 and again in 2021 monsoon. The water harvested this time is sufficient for 5-6 months for this family. Last year Champa Devi saved INR 5,500 in six months. Her health also improved. Her daughter has sufficient time to study at home. Now Champa Devi does not need to travel long distances for water. She has started living a hassle-free life after a long time, thanks to GRAVIS.

Khadin brought prosperity in life of Neni Devi



Poverty in Rajasthan is inextricably linked to the local environment. Due to erratic and meagre rainfall, the food insecurity is higher for the people living below the poverty line as compared to the national average. Neni Devi is 45 years old woman living with her husband and children in a village of Jodhpur district. Her husband and sons work as wage labourers to meet necessary expenses of family. Though her family owns a piece of land, they are hardly able to grow anything in the lack of irrigation facility. Neni herself does farming but her only

hope is a good rain. Because of continuous drought and lack of adequate income through agriculture, the family was continuously trapped in vicious cycle of poverty. Neni Devi came to know about *khadin* for trapping rainwater within farm and that it allows land to produce crops with minimum rainfall. She constructed *khadin* with the help of GRAVIS and received satisfactory result within two years of construction. The productivity of her land is increased 1.5 times in first year and in the second year also she is expecting an increase of 1.5 to 2.0 times of production. In 20 *bigha* land she produced 10 quintals of millets and 50 kgs of moong after *khadin* construction and this year it will be increased as she expects. She herself does sowing, weeding and harvesting along with other women of family. Neni said that “after *khadin* construction, the water stays at her land and remains till sowing. This is a good start” said Neni Devi. She also observed an increase of 20 % in her family income. The sense of self-reliance is clearly observed in her eyes.



The above illustrations clearly communicate and portray that woman can play as agent of change when they get support from other agencies. Because of their engagement with natural resources and dependency on land, water and forests, women have acquired knowledge of local circumstances and changes. The unfavourable conditions provided women with a unique challenge to push their abilities and change their lives in society as well. However, the journey of women requires institutional support that can unleash the strength of women through capacity building, skill development, access to information, engaging them in decision making process. In the studied villages, GRAVIS played the role of support organization which has transformed the lives of women. The cases build up an understanding about how GRAVIS has justified the true meaning of empowerment in the context of women development. GRAVIS in an active, multidimensional process, helped women to define, challenge and then overcome the barrier with her increased abilities and shaped their life and environment positively. Gravis has worked to enable women to realise their full identity and power in every sphere of them of their life. In the studied villages, women out cry for supporting the community with water and fodder supply. However, they received water tanker from government during drought and 100 days' work under MNREGA programme, but difficult to get fodder. In such a condition, intervention of GRAVIS remain crucial. GRAVIS believes in sustainable development which retains for longer period of time, so they work around creating structures for water storage, restoring traditional water supply with the support of the community, water harvesting structures. The process encourages women to participate and share their existing knowledge and serve as frontline agents in conserving the environment. There are two case lets which describe how GRAVIS intervention had empower women in true sense.

A part from understanding the role of the women in drought mitigation and role of GRAVIS in bringing development in the remotest part of the western Rajasthan, this study has also helped to capture the good practices from the field, which could be possible due to the constant guidance, monitoring and deeper level of engagement of GRAVIS with the communities. Following are the best practices –

Community value the importance of inter- generational transfer of knowledge where women learn from their older generation about different resource management techniques. This helps to retain the traditional knowledge among the community members. There is visible engagement of women in bringing changes and taking responsibilities to identify their problems and resolve it considering their existing resources. Engagement of community women in maintaining and managing their traditional water sources before the seasonal water scarcity occurs is very encouraging. Contributing labour for community goods such has in restoring community water bodies reflects the positive mindset of women towards development



4. Suggested approaches for future interventions

GRAVIS and other organizations working on women and girls led drought mitigation may consider following approaches listed below in order to strengthen their programmes:

Enable women's collectives and enhance their collective bargaining power:

It is known that women need the time and the space to come together and rediscover their individual and collective strengths. GRAVIS and other organizations need to play pivotal role on building the self-esteem and self-confidence of women while consistently forming women groups. Women can be organised as groups around various activities and women's cooperative can be boosted for the economic upliftment of rural women, their families and communities as a whole. This will provide women with opportunities to have control over production resources and help them make independent decisions.

Development of local level resource hub:

The study confirms that traditional knowledge repository on the basis of which local people build up their survival strategies. However, this knowledge are waning away gradually. There is opportunity for GRAVIS to develop a fusion model based on traditional and modern knowledge base. Acquisition of traditional knowledge and skills and disseminating through modern technologies among larger sections of the communities can enhance agricultural activities that can be the means for empowerment. It is important to develop sound resource base through compilation and documentation of relevant technologies and a network for technology dissemination. All can be documented in the form of booklet in pictorial format or audio book, and can be played or shared or discussed in different meetings. The management of the resource hub should be given to the women of the community.

Capacity Building Programmes for livelihood enhancement:

Imparting trainings to women should happen on regular basis to enhance their skill sets that can add value to the process of securing and protecting their means of livelihood. It is important to tune them according to the needs and demands of the market that requires systematic approach. It is extremely crucial to have entrepreneurial and marketing skills which are usually not sound among the studied women. The content, methodology and materials of the trainings should be needs based and must consider the education and awareness level of the participants.

Awareness building programmes on gender neutral practices:

Gender training for both men and women in the context of resource control and management can be imparted by experts. There is urgent need to develop the realization among both men and women about gender neutral roles and slowly diminishing the social structures and constructs that hinder the complete participation of women in the process of development.

Convergences: GRAVIS can take advantage of its national and international network and can create multistakeholder platforms at the local level to develop single window hub for knowledge and resource building. Multiple agencies with their expertise can come and work together for the upliftment of the community. GRAVIS can help the community to establish good relationship with different government departments so that community and government people can come together and work intensively at the local level addressing local issues.

Promoting health and wellbeing: The study revealed how health became a major concern with the food insecurity during drought. Most of the time it is due to societal stigma and narrow mindset that women become the victim of the crisis and they have to pay costs in terms of their poor health. Organizations with mutual consent of the community can have health volunteers, who will be trained around all health-related good practices, know how on locally available healthy food, do's and don'ts during severe food



insecurity. They can act as agents and can have informal conversations among different groups within the community specially among younger generations on different discriminatory practices within the society and what would be the mechanisms to deal with such deep-rooted social problems.

Engaging women in revival, restoration and sustaining the traditional water bodies and preparing them to plan ahead for seasonal water scarcity is important. Engaging women in discussions related to gender discrimination, importance of understanding who controls resources, who holds power, why it is important to participate in decision making process etc. through different training programmes, exposure, demonstration, storytelling sessions etc, may be explored.

Concluding note

Engagement of GRAVIS in the process of development has been a long journey so far, which has influenced from the teachings of Mahatma Gandhi and his vision for rural development and social and moral upliftment of India's rural community. It is evident from GRAVIS' interventions that the organization looked beyond the reductionist understanding of simply providing goods and services; rather emphasised on raising the quality of life of the poor in a sustainable manner, which is a requirement for their empowerment.

The study to understand women's and girl's leadership role in drought mitigation concludes with an idea that vulnerability is not restricted within natural dimension only, rather women and girls experience multidimensional vulnerability in the wake of unfavorable climatic conditions and outbreak of drought which is a cyclic phenomenon. Data reveals that women and girls suffer the most from the inadequacies at different level. They are also the ones who compromise with the quality of their life while playing gender specific roles.

However, the study findings confirm that women are adaptable to the environmental changes and undoubtedly manage their resources judiciously in day to day living. Though their dependency on natural resource is high, they act as efficient managers of natural resources. There is a distinct role of water fetching for which women bear the maximum burden. The life of women and girls are constituted around the social structure which restricts their participation in major decision-making process. The presence of patriarchal structures compels women to overburden themselves in both their reproductive and production-based activities; whereas, women have minimum control and power to make decisions on the resources they manage. The study also identifies wide range of strategies that women knowingly or unknowingly follow for minimizing the risks that occur due to drought and for maintaining certain level of livelihood security.

Presence of GRAVIS and other development organizations, can be considered as actors solving multifarious problems, especially in improving and securing the livelihood of communities by following different routes of intervention like income generation activities, capacity buildings, microfinance, promoting entrepreneurship, and micro-environment movement. The role of organization like GRAVIS is not restricted within natural resource management rather there is also a need for continuous efforts to develop people's institutions that value women centric development and recognize the struggles, knowledge, abilities and skills of women and encourage them to be part of the development process.

There is scope for the development organizations like GRAVIS to work more actively in the domain of capacity building, awareness building around different issues related to the rural population, working towards gender sensitization, collaborative initiatives to restore traditional water infrastructure, strengthening of the best visible practices, creating multi stakeholder convergence for effective process of development.



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Acronyms

CDM	Communities led Drought Mitigation
GRAVIS	Gramin Vikas Vigyan Samiti
OBC	Other Backward Caste
SC	Scheduled Class
ST	Scheduled Tribe
SHG	Self Help Group

Glossary

Ber	Plum
Babool	A desert plant
Jhad	Shrub
Khadin	Runoff based farming system
Khariff	Monsoon crop
Naadi	Pond
Taanka	Underground water storage structure



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Gramin Vikas Vigyan Samiti (GRAVIS) or Center of People's Science for Rural Development is a non-governmental, voluntary organization that takes a Gandhian approach to rural development by working with the poor of the Thar Desert to enable them to help themselves. Since its inception in 1983, GRAVIS has worked with over 68,000 families across over 1,600 villages reaching a population of over 1.6 million, and has established over 3,800 Community Based Organizations (CBOs).

GRAVIS is registered under Rajasthan Societies Registration Act and under section 80 (G) and has tax exemption under section 12 A of IT Act, 1961 of Govt. of India.