

# TRANSCENDING BOUNDARIES



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# TRANSCENDING BOUNDARIES

Powerful reflections from the LEAD project  
in the Thar region, India





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Transcending boundaries

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Powerful reflections from the LEAD project  
in the Thar region, India

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## **Author's Note**

The world is confronted with a myriad of challenges, and I believe the most pervasive among them is climate change. It not only poses a threat to the existence of resources but also compels multiple generations to deal with the damaging effects it has on resources. Soil, water, land, air, all of which are crucial for survival, have become increasingly victims of irreversible and irreparable processes associated with climate change. Yet, there is hope. Despite the pervasive effects of climate change, there are examples of resilience, self-reliance and sustainability that have resonated with communities in the Thar region, India.

This publication draws on the learnings of the LEAD project anchored by an organization with whom I have had the privilege of engaging with over the past couple of years. GRAVIS has emerged as an important stakeholder in addressing climate change. Armed with four decades of experience, expertise and exceptional commitment to empower communities, GRAVIS has reinforced the need to focus on strengthening systems, processes and institutions grounded in indigenous knowledge and community participation.

I am thankful to the team at GRAVIS for their constant support and collaborative efforts in empowering communities in climate action. Their work in the domain of climate action, drought management and natural resource management has proven to be one of the most exceptional models and hallmarks of commitment. I hope this document successfully captures the value of their contribution in empowering local communities to address drought and climate change.

**Jyotsna Sripada**  
**Public Policy Practitioner**

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## Executive summary

Climate change is pervasive and problematic. It often disrupts ecosystems and economies, collapsing pillars of development and growth, including agriculture, fisheries, etc. The Thar desert region is often described as a climatic and socio-economic anomaly. A region that experiences aridity, drought and rainfall variability, sand and dust storms, had, once upon a time, harboured tropical rainforest taxa.

The hostile conditions in the Thar region are compelling enough to identify means in which resources can be made available, accessible and sufficient for everyone, irrespective of their social, economic, cultural and topographical determinants. What is far more compelling are the experiences and stories of resilience emanating from interactions with the people and communities.

This document captures powerful reflections from the Local Empowerment by Addressing Droughts (LEAD) project anchored by GRAVIS in five villages in Rajasthan, India. The document seeks to weave the rich and insightful experiences emerging from the field and provide a compelling and comprehensive narrative. Spread over five chapters, the first few chapters provide a deep insight into the purpose, design and impact of interventions undertaken as part of the LEAD project.

The LEAD project, also known as the Local Empowerment by Addressing Drought, acknowledges the role and strength of communities, the value of traditional knowledge and wisdom they possess and the collective strength and power they wield. One of the underlying objectives of this publication is to highlight the gendered impacts of climate change and how the LEAD project has prioritised empowering women and important levers of climate action. Women face institutional barriers, social and economic marginalization, and even physiological pressures that contribute to their increased vulnerability to climate change and its effects. This reduces their ability to adapt. The LEAD project has contributed to overturning this narrative. Women are no longer at the receiving end of harsh social and cultural impositions but have emerged as important voices in the climate action process. They have found a voice amongst themselves that is powerful enough to steer change, particularly in the context of climate change. Women are able to attend community meetings, communicate their opinions, advocate and demand for changes, ensure effective implementation of community-based organizations and disseminate knowledge and traditional wisdom to the next generation.

The project emphasises the roles of women as effective resource managers, changemakers and custodians of traditional knowledge and wisdom, all of which directly contribute to climate action. Through components such as institution building (by setting up community-based committees), training/capacity building, constructions (direct interventions), and periodic engagement with the beneficiaries, the project has achieved significant progress in water, food and nutrition and income security.

The LEAD project has been designed to incorporate three key components-direct interventions, leveraging from traditional methods, that seek to encourage rainwater harvesting such as taankas, khadins, AHUs and

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AFUs. The second component of this project is training and awareness generation-both of which have reiterated the importance of orienting communities to approaches that are proven to be effective in combating climate change. The third is effectively documenting and archiving learnings emerging from the project to ensure that future generations equally benefit from this process. A common thread that weaves together all these three components is the emphasis on community as the lever, anchor, and driver of climate action. The LEAD project has taken one of many important steps towards the journey of achieving a sustainable ecosystem in the Thar region. Through recommendations such as installation of community seed banks, introduction of digital and financial literacy, vocational training, and installation of bio-sand filters in schools and anganwadis, it is hoped that the impact of the LEAD project can be strengthened and deepened further



## Chapter 1: Introduction

### **The Thar region of India- A climatic and socio-economic anomaly**

Climate change is pervasive and problematic. It often disrupts ecosystems and economies, collapsing pillars of development and growth, including agriculture, fisheries, etc. The Thar region, located in the State of Rajasthan, India, is no exception to the pervasive impact of climate change. In fact, it is often described as a climatic and socio-economic anomaly. A region that experiences aridity, drought and rainfall variability, sand, and dust storms, had, once upon a time, harboured tropical rainforest taxa (Lakhanpal & Bose 1951; Kaul 1951; Singh 1969). Evidence of a thick cover of vegetation in this arid region has been traced back to The Tertiary period, which existed almost 66 to 2.6 million years ago. Tectonic and climatic shifts in the Thar region gradually shaped the arid environment that expands across an area of 2,00,000 square kilometers as of date. The Thar is home to one of the most densely populated arid regions in the world and has also witnessed the significant increase in precipitation and vegetation in the last few decades. The greening trends in the desert region, documented in the past few decades, have further added to this anomaly. While the excessive groundwater irrigation is said to have contributed to the greening effect, groundwater tables have continued to deplete, raising questions about the sustainability of this effect and more importantly, the implications it has on the population.

Despite the hostile and unpredictable climatic conditions, the people of this region have constantly had to depend on rain-fed agriculture as their means of occupation and survival. Agriculture and animal husbandry, both of which are significantly impacted by climate change, are two fragile lifelines of hope for the people of this region. The lives of 80% of the population that depend on rainfed agriculture in this region of climatic and socio-economic anomaly remain a concern. This is further exacerbated in the case of vulnerable and marginalized communities, whose access is marred by socio-economic, cultural and systemic inequities. Women and young girls, for instance, face multiple barriers to accessing key resources, despite playing a central role in sourcing water for their families from extremely far off distances, in acutely challenging conditions. Similarly, people belonging to marginalized caste groups often find themselves neglected and, in many cases, abandoned, when it comes to accessing basic resources for their survival. Older persons are often at the bottom, when it comes to prioritizing access and distribution of necessities and essential services. People in the Thar region experience multiple levels and dimensions of inequity in this region that have a direct bearing on their access to water, food, nutrition, and income.

The hostile conditions in the Thar region are compelling enough to identify means in which resources can be made available, accessible, and sufficient for everyone, irrespective of their social, economic, cultural and topographical determinants. What is far more compelling are the experiences and stories of resilience emanating from interactions with the people and communities. They have taken it upon themselves to fight the pervasive effects of climate change through strategies rooted in traditional and indigenous practices



and have emerged successfully.

This document captures powerful reflections from the Local Empowerment by Addressing Droughts (LEAD) project anchored by GRAVIS in five villages in Rajasthan, India. The document seeks to weave the rich and insightful experiences emerging from the field and provide a compelling and comprehensive narrative. Spread over five chapters, the first few chapters provide a deep insight into the purpose, design and impact of interventions undertaken as part of the LEAD project. The next few chapters offer recommendations to strengthen and expand the gamut of interventions spearheaded by GRAVIS



*Thar desert*



## **Chapter 2:**

### **About GRAVIS and the LEAD Project**

The Thar region experiences a wide array of challenges including increased temperatures, altered rainfall patterns, acute water scarcity, all of which pose a greater challenge to the population and livestock dwelling here. The scarcity of resources deeply impacts the health, development, and quality of life of inhabitants of this region. Despite these adversities, the people of this region have demonstrated indomitable spirit and resilience. For over decades now, the people of this region have been at the forefront of combating climate change, and one of the key factors that has enabled this process is the belief in community centric, community led and community owned action. GRAVIS has been instrumental in steering this process in many drought-stricken villages of the Thar; slowly and steadily, these villages have emerged as leading examples in drought management and addressing climate change.

Gramin Vikas Vigyan Samiti (GRAVIS) or Centre of People's Science for Rural Development was established in 1983 by a group of Gandhian development activists. The core objective of this organization was envisaged as to organize rural development activities in the remote parts of Thar Desert. GRAVIS operates through its main office in Jodhpur and 18 field centres throughout rural Rajasthan, Bundelkhand region of Uttar Pradesh and in Uttarakhand. Through its interventions, GRAVIS has reached out to 1.55 million people across 1,600 villages.

Over the past four decades, GRAVIS has evolved into an important participant and contributor of change in the domain of natural resource management and drought management in the Thar region. These long years of experience and expertise, augmented by research, evidence building, direct interventions, capacity building, awareness generation and advocacy, have played a pivotal role in transforming the lives of people in this region. The transformation has been quite powerful, transcending social, economic, cultural, and topographical barriers. While the next few chapters will elaborate upon this transformation, this chapter seeks to highlight the purpose and design of the LEAD project and provide a deeper insight into the principles that predominantly drive the work undertaken by GRAVIS.

The LEAD project, also known as the Local Empowerment by Addressing Drought, acknowledges the role and strength of communities, the value of traditional knowledge and wisdom they possess and the collective strength and power they wield. It is driven by a singular goal of contributing to local communities' empowerment through drought mitigation interventions and promoting the replication and scale up of the model. In a region where rainfall is anywhere between 100 and 500mm, the lives and livelihood of people hang on a fragile ray of hope. Limited availability of resources most certainly translates to acute poverty, acute scarcity of clean water, malnutrition, increased risk of diseases and medical complications, etc. In order to overcome these challenges, GRAVIS has been anchoring a wide array of projects that focus and prioritize specific components of work that can contribute to alleviating poverty, malnutrition, acute shortages and scarcities, etc, thereby empowering communities in the desert region to lead sustainable



lives.

The LEAD project has been designed to bridge gaps in accessing, securing and utilizing resources and these interventions have been implemented for approximately 10,000-15,000 beneficiaries across five villages in Jodhpur and Bikaner districts of Rajasthan, of whom 2,200 people are direct beneficiaries. It weaves together components such as strengthening community-based organizations, building water harvesting structures, establishing agro-forestry units and disseminating these through a streamlined system of education and awareness generation. More specifically, the LEAD project is driven by the following set of objectives:

Specifically, the project objectives is driven by the following objectives:

- Firstly, facilitating the formation and strengthening of local Community Based Organisations (CBOs) and to ensure their full involvement in the project and in community development in the longer run.
- Secondly, enhancing water security and improving water quality in project villages through construction of rainwater harvesting structures and bio sand water filters (BSWF)
- Thirdly, supporting rural livelihoods by strengthening agriculture, horticulture, agro-forestry and animal husbandry
- Lastly, research, documenting drought mitigation approaches and promoting replication of model and enhanced learning through Drought Management Academy (DMA)

Like many of the other interventions and projects undertaken by GRAVIS, the LEAD project is driven by two key principles-Sarvodaya which means ensuring the last person is first and Swaraj, which means self-governance. GRAVIS's work in the field has aimed at bridging inequities and empowering persons from the most marginalized groups. Furthermore, these projects place significant emphasis on the importance of community led climate action. These principles form the foundation of their work and have successfully been translated at the field level as well. The following chapters will delve into the interventions and impact of the LEAD project.



## **Chapter 3:**

### **Gendered impact of climate change**

The Thar region is often described as an arid, hostile, and inhospitable region. The region grapples with rainfall ranging between 100 mm and 500 mm, most of which occurs only for a few days during the year. This periodicity of rainfall is barely sufficient to sustain households for an entire year. These inadequacies/shortages in rainfall have a direct bearing on the health and well-being of the community, be it the quantum of agricultural produce, quality and diversity of nutrition that is absorbed by individuals, health concerns, significantly high possibilities of water borne diseases and conditions stemming from consumption of saline water, etc. Constantly confronted with paucity of resources, the per capita consumption of resources is further impeded by factors such as distance, availability, quality, safety, and sustainability. The paucity of water resources compels one to think of solutions that can be grounded in effective, efficient, and judicious strategies. Community owned and community led solutions have emerged as an important strategy as these build a sense of self-reliance and resilience. Community led action also helps achieve a sense of accountability given the fact that effective and optimal use of the limited availability of resources needs to be ensured. It is strongly believed that communities are best equipped to determine how resources can be preserved, consumed, and regenerated. This belief stems from the fundamental reasoning that generations of traditional knowledge, wisdom, coupled with rich experiences have strengthened the role and impact of community participation. Communities are no longer passive recipients but active participants in the process of leading climate change.

Recognizing the role and potential of community-led climate change, GRAVIS has built this project on the core principles of Sarvodaya and Swaraj, both of which strongly warrant the presence, participation and commitment of members of the community. The design and purpose of the LEAD project acknowledges and promotes the role of multiple stakeholders, more specifically, the role of women and young girls, whose contribution to climate action is indispensable.

One of the underlying objectives of this publication is to highlight the gendered impacts of climate change and how the LEAD project has prioritized empowering women and important levers of climate action. Women face institutional barriers, social and economic marginalization, and even physiological pressures that contribute to their increased vulnerability to climate change and its effects. This reduces their ability to adapt (Jorgeson and Jain, Yale). Evidence shows that women tend to spend more time in amelioration after events such as floods, which leads to higher rates of contact with waterborne illnesses (Hallegatte et al. 2016) while men are more likely to migrate for employment (Mueller, Gray, and Kosec 2014), which could result in exposure to new health risks for which they have no immunity or could result in access to greater food security and higher quality health services (Schwerdtle et al. 2018). While women and young girls tend to face a disproportionately higher burden of climate change, their ability to respond to or cope with climate crises is determined by lack of access to physical endowments, pervasive gender norms, and increased care work and household protection tasks. Women are often confronted with unequal access to



loans and assets that in turn affects their ability to cope with climate shocks. Pervasive gender norms imposed on women often compel them to deal with climate shocks all by themselves, forcing them to stay in environmentally vulnerable areas while the men of the family migrate to other places in search of work. Women are less able to migrate for work (Amirapu, Asadullah, and Wahhaj 2022). This is exacerbated following shocks (Allard et al. 2022; Afridi, Mahajan, and Sangwan 2021) and women who do manage to migrate often face higher risks, greater barriers to accessing resources for displaced populations, and impediments to remigration (Sierra Club and UN WOMEN 2018). The physical and emotional drudgery that women and young girls face as a result of care and household protection work is not often acknowledged among family members. This exacerbates due to climate induced migration, resulting in deteriorating health, decreased participation and reduced bargaining power in household decision making. Responses to climate shocks at a household level impact women and young girls more as the losses from such shocks are offset by reducing investment or deprioritizing channels such as girls' education, women's health, and redirecting them to the primary source of income, which is often agriculture of animal husbandry.

In the Thar region, women's vulnerability to climate change is also, in part, the result of their concentration in more vulnerable sectors of employment, which is agriculture. Climatic factors contribute to soil salinization, increased occurrence of drought and heat, extreme rainfall and floods, pest attacks, and severe cold weather all affect agriculture productivity. With increasing out-migration of men from rural areas driven by climate-induced decline in crop yields and worsening economic hardship, there is an increasing trend towards the 'feminization of agriculture', where women in developing countries now make up almost 50% of the agricultural labor force (UNFCCC 2023).

Women's' role in community led climate action is imperative and undisputable. The value they bring to the process of climate action transcends the traditional, cultural impositions and limitations, reiterating the fact that they are significant contributors, custodians, and champions of climate action. The interventions undertaken as part of the LEAD project clearly articulate the need to overcome the above-mentioned challenges faced by women and young girls, as part of the community led movement against climate change. The project attributes to women specific characteristics, as part of their larger role in the community, that are necessary to address the gendered impacts of climate change. These are discussed below.

### **Women as reliable and resourceful influencers**

Women's role has been traditionally envisaged as procurers of water for household consumption and domestic use. They are expected to undertake painstaking and arduous treks in the desert region to fetch water that is reasonably clean and safe for drinking, washing, cooking and cleaning. The physical and emotional drudgery they go through is unimaginable and often impacts women across all age groups. Young girls to old women are all expected to devote even their last ounce of energy in securing water for the family. Several hours of physical strain in unrelenting heat throughout the year causes significant damage to their physical and mental health, yet, they see no respite from this. On the other hand, given their roles as primary procurers of water, women and young girls are best equipped to ensure judicious usage. Women

are extremely careful, resourceful, reliable and can ensure optimal storage and utilisation of water. It comes naturally to them to be able to predict the availability of water, plan to procure and store them and distribute the available resource for multiple and competing interests at a household level. This innate characteristic has been recognized and leveraged as part of the LEAD project. The project positions women and reliable and resourceful influencers to determine how community-based resources can be judiciously used at a household level. Furthermore, the project also envisages women and key contributors to enhancing the availability of resources in a more sustainable manner, through interventions such as taankas, khadins, etc. Redefining the role of women in the context of climate change and climate action is extremely necessary to be able to prioritise the role of women and young girls and empower them. The LEAD project seeks to amplify these roles, while simultaneously reducing the physical and mental drudgery endured by women and young girls. The impact of these interventions will be discussed in greater detail in the next chapter.



*Celebrating World Water Day*

### **Women as champions of change (Key agents of change/changemakers)**

It is often said that the generation that bears the maximum impact of climate change is the one that has least contributed to it. Given the gendered impacts of climate change, it can be argued that young girls of today face an unfathomable task of protecting themselves from climate shocks, preparing themselves to cope with the exiting crises and finding ways to navigate through the social, economic, cultural barriers that amplify their battle against climate change. On one hand, traditional and patriarchal structures make it extremely difficult for women to imagine themselves as active participants in decision making processes, and on the other hand, young girls are compelled to drop out of school or sometimes drop the idea of education itself. There is not much hope for women in terms of non-agricultural income either because their families object to it or because they do not have the skills or resources to pursue it.

The LEAD project has significantly contributed to overturning this narrative. Women are no longer at the receiving end of harsh social and cultural impositions but have emerged as important voices in the climate action process. They have found a voice amongst themselves that is powerful enough to steer change; particularly in the context of climate change. Women are able to attend community meetings, communicate their opinions, advocate and demand for changes, ensure effective implementation of community-based organizations and disseminate knowledge and traditional wisdom to the next generation. Through community-based interventions such as intergenerational learning groups (ILGs), women have overcome generational barriers, cultural impositions to emerge as leaders of the change making process. These mediums have also contributed significantly to the next generation of climate change advocates among young girls.

### **Women as bearers/custodians of knowledge and traditional wisdom; and managers of resources**

The Thar region has a rich landscape of indigenous practices that have been relied upon to combat climate change. Be it the traditional water harvesting structures or the farming dykes (the history of which date back to the 15th century) or the importance of growing and consuming fruits, vegetables and greens of indigenous varieties of crops (which are also climate resilient); all of these have played an important role in sustaining the availability of resources for the current and future generations. Women in the Thar are naturally disposed, among other things, to determine what is the most appropriate way (cropping patterns and techniques) to grow fruits and vegetables, what nutritive purposes to serve and what is the best way to consume them. At both household and community levels, women bring to the table their personal experiences, knowledge and wisdom that shape decisions in the form of resource management. This contribution is of particular significance in the Thar region given the disproportionately high percentage of people who are dependent on a limited pool of resources, be it water, food, nutrition, land, credit, etc. The transition of knowledge to its application is incredibly important and must be guided by those who spent years or even decades ensuring that resources are equitably distributed within the household; and in the Thar, women and young girls are viewed as catalysts of the process of transitioning knowledge to practice.



*Training of Trainers*



In the LEAD project as well, this role of women and young girls in community led climate action has been articulated with utmost importance. The project emphasizes the roles of women as effective resource managers, change makers and custodians of traditional knowledge and wisdom, all of which directly contribute to climate action. Through components such as institution building (by setting up community-based committees), training/capacity building, constructions (direct interventions), and periodic engagement with the beneficiaries, the project has achieved significant progress in water, food and nutrition and income security.



## Chapter 4:

### LEAD project: Interventions and impact

The LEAD project weaves together components of direct interventions, capacity building, knowledge dissemination and resource mobilisation to empower communities in the Thar region to be self-sufficient and self-reliant. These interventions are built around empowering communities to effectively manage community-based resources in a streamlined, effective and efficient manner, all of which will eventually contribute to achieving sustainability.

#### Laying the foundation for community led climate action

One of the foremost priorities of the LEAD project is the strengthening and formation of community-based organizations. Community based organizations or units form the strongest level of governance. The fact that members of such units are perhaps the most familiar with the socio-economic and cultural contexts, policy and political environments, drivers and barriers of development, and are, in most cases, directly impacted by intrinsic and extrinsic factors, contributes significantly to the decision-making process. Community based units are equipped with information knowledge and wisdom that can steer decisions that are most relevant and appropriate to climate action. For instance, such units can take significant steps in determining and ensuring how water resources are accessible to all, including the most vulnerable and marginalized. These units can promote collective and coherent action to ensure that the resources are used reasonably, without wasteful consumption. In many cases, the community-based units have the power to determine whose needs can be prioritized, how the resources can be allocated, how can it be conserved and optimized to facilitate allied progress as well. The LEAD project draws on the principles of community centered, community led and community managed action. While it does consider the gendered impacts of climate change, the project places equal emphasis on creating institutional settings and spaces through which such objectives can be achieved. These institutional spaces have become an important in the sense that they facilitate articulation of demands for interventions, they provide space for the most vulnerable and marginalized to seek interventions that can transform the means through which they manage their resources; they also enable effective participation of beneficiaries from diverse socio-economic groups to advance the cause of community led climate action.

The LEAD project has invested a significant amount of time and resources in strengthening CBOs such as village development committees (VDCs) and ILGs. VDCs are a heterogenous representation of communities at the village level, comprising men and women, whose primary role is to identify and prioritize needs to the most vulnerable and marginalized. These committees are empowered to facilitate construction of interventions such as taankas and khadins. ILGs are a representation of a multi-generational group of women and young girls who participate and discuss a wide gamut of issues such as health, nutrition, education, hygiene, agricultural practices, micro-savings, etc. The ILGs coordinate with VDCs to identify those who need interventions to be implemented. The ILG is a dynamic group that meets every month to



orient women and young girls about traditional and modern practices that contribute to the larger purpose of water, food and nutrition, health and income security. The LEAD project has witnessed the active participation of several ILGs in the transitioning process of knowledge to application and has benefitted several households. For many beneficiaries, the CBOs are the first line of contact through which they express their concerns and requirements to enhance their access to resources. These CBOs have emerged as a lifeline to enable communication, coordination, facilitation and conservation of facilities that promote conservation of resources. Through the course of the LEAD project, 314 members of the committees (both VDCs and ILGs) in two districts have been oriented to the role of community led action in achieving sustainability. These training sessions have enabled sensitization of the members of VDCs and ILGs to the effects and challenges of climate change and how communities can coherently and collectively address the same. The members of these communities have gained significant knowledge in terms of strategies, practices, and approaches to implementing interventions. These trainings have also empowered communities to make decisions independently, taking into consideration the best interests of the vulnerable and marginalized sections.

### **Harvesting water resources**

Every drop of water that is available in the Thar region is rationed to serve competing interests-be it drinking water for all members of the household or community, cooking and cleaning at home, personal hygiene and for livestock. Some of these are often prioritized or compromised depending on which pathway would be most effective for survival and sustainability. In the process of ensuring that some of these interests are realised, many times, the ones that are neglected are the ones that impact the vulnerable communities the most. For instance, given the water scarcity, it is the young girls and women who are expected to procure water from far off sources, enduring extremely difficult physical conditions. Apart from enduring the physical and mental drudgery, they are also expected to forgo their education, forgo opportunities to develop vocational skills, opportunities to explore income augmentation or even opportunities to discuss/exchange their experiences. Forgoing opportunities for social or economic engagement for women and young girls is deeply rooted in the cultural setting in the Thar, where women and young girls are expected to remain behind their purdah, far away from the potential that awaits to be unleashed. Traditional methods of water conservation have emerged as a lifeline for many households in the Thar. When compared to options such as private tankers and pipelines that are impractical, expensive, and unsustainable, the traditional interventions such as *taankas* have reinvigorated the water security situation for 50 households, benefiting over 500 people. Taankas are cemented structures that measure 10 foot in depth by 10 foot by breadth; these are structures are slightly raised to prevent infestation and are equipped with safety locks and wire meshes/filters to prevent impurities from flowing into the water. Taankas require minimal material cost and labour. These structures have the capacity to store almost 20,000 litres of water, that is sufficient to cater to all the needs of a household for six to seven months in a year. The LEAD project has also ensured the installation of bio-sand filters along with *taankas*. Bio sand filters are built with naturally and locally available material such as sand and gravel that act as multiple levels or layers. When water procured from rainwater is stored in *taankas*, these can be further purified

using biosand water filters. These filters adapt the traditional slow water sand filtration system that thrives on biological and physical processes that can remove pathogens, suspended solids and heavy metals in the water. These are effective, easy to use and involve minimal cost for maintenance and are therefore considered an appropriate method of water filtration. These filters have significantly contributed to preventing and reducing the occurrence of water borne diseases in the Thar region. As part of the LEAD project, 50 bio-sand filters have been installed and it is hoped that this method will be replicated across several villages and districts as well.

The installation of *taankas* and bio sand water filters have had a direct implication on the time, energy and productivity of young girls and women, who solely shoulder the burden of sourcing water. Women are able to use the time and energy gained in equipping themselves with skills such as tailoring, micro-enterprising, etc that enable them to be financially independent. They are able to spare more time and augment income of the household, which has led to them becoming a more active participant in the decision-making processes at the household level. Their ability to contribute to and make important decisions at the household level has given them an incredible amount of confidence. This has further led to a positive change at the community level as well. Collectively, women's bargaining power has increased multifold; they are able to advocate for significant changes/progress in various dimensions. Through periodic training and awareness generation sessions conducted as part of the LEAD project, the importance of leveraging traditional means of water conservation have been re-emphasized, empowering communities to manage them effectively. The LEAD project has facilitated ten training sessions and these sessions have contributed significantly in terms of disseminating knowledge, information and skills required to build, maintain, and repair the structures. These sessions have also sensitized the beneficiaries to use the resources judiciously.



*Beneficiary of taanka intervention as part of the LEAD project*



### **Strengthening livelihoods**

The quantum and diversity of agricultural produce is directly proportional to the amount and periodicity of rainfall that the Thar region experiences. While the rainfall has been consistently erratic and unpredictable in the Thar region, it has not dented the spirit of people dwelling here, as they rely significantly on traditional means to conserve whatever resources are available to them. Like taankas, khadins or farming dykes are another example of traditional/indigenous means that have transformed the agricultural landscape in the Thar. Previously, farmers had to depend on a limited amount of rainfall to grow a restricted number of varieties of crops. These were barely sufficient for household level consumption. Also, the probability of these crops failing was quite high given the arid conditions. Khadins are large embankments built along farming land that prevent run-off water and retain the moisture in the soil. The moisture retained in the soil has led to an exceptional increase in the quantum of crop production, securing the food and nutrition requirements of households. Those families whose farmlands are equipped with *khadins* have witnessed a multifold increase in the crop produce, including local and climate resilient varieties like pearl millet, sorghum and cluster beans. These crops are rich in nutrients and play an important role in improving the nutritional and health status of all, especially children and senior citizens. Khadins have not only ensured that resources such as soil, water and moisture are easily available but also secured in the long run. Challenges such as soil erosion, erosion of top -soil due to run-off water from the sporadic spells of rainfall have been overcome through techniques that were used by the Paliwal Brahmins of Jaisalmer in the 15th Century. These time-tested methods of conservation have proven to be effective in embedding sustainability to processes undertaken as part of the LEAD project. More importantly, these methods have reinforced the belief that climate change can be effectively addressed through traditional/indigenous knowledge that entails minimal inputs, labour and cost. The LEAD project has paved the way for 70 khadins benefitting nearly 350 family members.

Another important intervention integrated as part of the LEAD project that propels food and nutrition security is the setting up Arid Horticulture Units (AHUs). The AHUs are essentially a multi-cropping system where diverse crops such as ber (desert plum), anar (pomegranate), lemon, karonda and sahan (drumstick/moringa) are cultivated. These plants are desert friendly, drought resistant and have been tested earlier by GRAVIS in different project areas. Plants such as cauliflower, spinach, mustard, coriander, radish, carrot, garlic, onion, mogri, methi, potato, green chili, etc. are grown here. The survival rate of the plants are more than 80-95 percent in these AHUs. The plants are grown in 3\*3\*3 pits and are nourished with compost, manure and neem leaves. Sufficient care is taken to ensure that the AHUs are protected from any damage caused by animals by way of constructing a barbed wire fence. The AHUs yield multiple benefits including a diverse and sustained produce of organically produced fruits, vegetables and greens for the families. It has also contributed to enhanced income for the family as they sell excess produce in the neighboring villages or in the markets. Fodder and firewood are essential by products obtained from AHUs that the beneficiaries utilize carefully. The LEAD project has facilitated the setting up of 35 AHUs in the project sites. That apart, the project has also channelized its energies towards setting up two agro-forestry units (AFUs), in order to take forward the intent of sustainability, self-reliance and resilience. AFUs are

essentially diverse systems that intentionally integrate trees with crops and/or livestock on the same land management unit. AFUs yield several positive impacts. For instance, trees in agroforestry systems can act as carbon sinks, absorbing atmospheric carbon dioxide and storing it in their biomass and soil. These units can improve water infiltration, reduce runoff, and help maintain water quality. These systems can also provide shade, green pastures and fodder for livestock. Trees can enhance soil fertility, reduce erosion, and improve soil structure, leading to better conditions for crop and livestock production. AFUs are an excellent example of fostering interactions between agricultural, forest and livestock management systems that converge together and enable successful drought management. Given the fact that agriculture and livestock management are the two most important sources of livelihood for people living in the Thar region, these interventions are imperative.



*Samdo with her khadin*

Apart from investing in setting up rainwater harvesting structures such as taankas and introducing conservation techniques such as khadins and AFUs, the LEAD project has placed significant emphasis on conducting training sessions for the beneficiaries. The sustainability of any intervention is contingent upon the skills, capacities, and commitment of those who are entrusted with the responsibility of managing such interventions. It has to be strongly grounded in the understanding that the community is best placed to determine how resources can be managed and distributed to address competing priorities. One way of ensuring that communities and beneficiaries commit to this process of taking responsibility and ownership of resources is through periodic training and reiterating. The participation of beneficiaries in such training sessions is essential to ensure that they are well equipped with the necessary knowledge and skills to manage the interventions at a household and community level. Furthermore, these training sessions instill a sense of purpose and confidence amongst beneficiaries. By acknowledging beneficiaries



as custodians of the interventions such as *astaankas* and *khadins*, the LEAD project has proven beyond doubt that community members can be efficient resource managers and leaders in ensuring resilient and sustainable growth. The LEAD project facilitated four drought management training sessions that were attended by 125 beneficiaries. The training sessions not only reiterated the need for and importance of traditional drought management and mitigation strategies but also entailed discussions on how the community and beneficiaries can effectively take responsibility for ensuring that these interventions are well maintained, functional and judiciously used. The pedagogy of these training sessions has significantly drawn from the strengths and weaknesses of community led climate action methods. It has also positioned community members, especially women and young girls and levers who steer the process of initiating and achieving climate action. All the learnings emerging from the LEAD project have been documented and incorporated into this publication.



## Chapter 5: Way forward

Climate change is no longer an emerging issue, but it has evidently established itself as a global concern, pervading through climatic, regional, social, economic, and cultural ecosystems. While it has disproportionately affected those who belong to the vulnerable and marginalized sections, it is an issue that necessitates responses not merely at policy or programmatic levels but from the grassroots, where the impact is the most. The strongest responses to climate change are rooted in local, traditional, indigenous and community centric approaches that are time tested and transformative in nature. The LEAD project perfectly encapsulates the role and relevance of community led climate action rooted in an integrated, coherent, and convergent approach; one that acknowledges the power and potential of communities to fight climate change with whatever limited resources that are armed with.

Community led climate action is one of the most effective ways of addressing the pervasive impacts of climate change. The LEAD project has been designed to incorporate three key components-direct interventions, leveraging from traditional methods, that seek to encourage rainwater harvesting such as taankas, khadins, AHUs and AFUs. These interventions are effective, efficient, require minimal inputs and are highly sustainable. They are anchored by the community, with women operating as key drivers of the process. The second component of this project is training and awareness generation-both of which have reiterated the importance of orienting communities to approaches that are proven to be effective in combating climate change. The third is effectively documenting and archiving learnings emerging from the project to ensure that future generations equally benefit from this process. A common thread that weaves together all these three components is the emphasis on community as the lever, anchor and driver of climate action. The LEAD project hinges on community as not only the key actor of climate action but also the primary recipient of all the positive impacts drawn by addressing climate change. These two facets of the project have played a pivotal role in ensuring that the community is given the opportunity to determine how resources are preserved and distributed, considering a wide range of inequities that exist in the region. Furthermore, it empowers specific groups of stakeholders such as women and young girls, whose role in climate action is undeniable.

While the LEAD project has demonstrated success in all the objectives that were envisaged at the inception stage, going forward, some of the things that can be considered to strengthen and deepen the impact of these interventions are discussed hereunder

1. Community seed banks: In addition to direct interventions that augment food and nutrition security, GRAVIS may consider establishing community seed banks (CSB) in the field sites. CSBs essentially are yet another example of how the community can take lead in procuring, storing and distributing resources in an effective and judicious manner. These banks are necessary to store local and indigenous varieties of seeds that are drought resistant and can yield abundance crop produce. A seek



bank in the field site can encourage farmers to grow more local varieties and enjoy the surplus production comprising diverse, nutrient rich produce. CSBs have emerged as an important measure to cushion against sudden shortages or shocks that impede access to local varieties of crops. As a community level, this is becoming increasingly popular as a measure to safeguard and protect communities in the time of climatic distress. GRAVIS may also consider incorporating specific modules on CSBs as part of the training sessions to demonstrate its importance and viability. The VDCs may play a lead role in ensuring that communities adopt this measure and collectively manage the process of running CSBs. The intervention has proven to be extremely useful and reliable in several arid regions and can be pursued as part of the LEAD project as well.

2. Vocational training: Apart from empowering communities, the LEAD project has also successfully demonstrated the role of women and young girls in climate action. As changemakers and advocates for interventions, women and young girls in the Thar region have climbed to a higher pedestal, overcoming socio-economic and cultural barriers. In order to ensure that they continue to anchor this process in the future, GRAVIS may consider expanding the vocational training component for women. They may conduct training sessions on various income generation activities; skills such as setting up kitchen gardens, creating nutrient rich diets etc that may be used to benefit the household and the community.
3. Imparting digital and financial literacy: Digital and financial literacy are extremely important to empower communities and ensure timely access to information on various aspects including climate, agricultural practices, government sponsored welfare schemes etc. GRAVIS may consider including these as part of the training sessions so that communities are well informed, aware, and equipped to access services and entitlements including education, pension, healthcare, credit facilities for agriculture, etc. Women may be encouraged to share their experiences from the literacy sessions so that it can be seen as value addition to themselves and their households.
4. Install water filters in schools and Anganwadis: Since bio-filters have proven to be an effective technique of water purification at a household level, these interventions may also be set up in schools and anganwadicentres. GRAVIS may actively persuade the village development committees to persuade the local authorities to install these filters. It can go a long way in ensuring children have access to clean drinking water and sufficient water to maintain proper hygiene and sanitation.

The LEAD project has taken one of many important steps towards the journey of achieving a sustainable ecosystem in the Thar region. While it acknowledges the paucity of resources, it also transforms them into effective tools to address climate change. It is earnestly hoped that these effects and impacts will continue to permeate to all those who are vulnerable, and marginalised; furthermore, it can be said with utmost conviction that this project will cause a paradigm shift in how communities respond to climate change.

## Case Study 1:

### Intergenerational Exchange of Learning through ILGs – A Case Study from Khakhusar Village

Khakhusar village, like any other village society in the Thar region, has its socio- cultural challenges like pardapratha (veiling), caste discrimination, unwillingness to educate and restriction on women's mobility. GRAVIS has initiated efforts to overcome these challenges, under Project LEAD, by forming an ILG in the village. This initiative has directly benefited 4 elderly women (aged 50), 3 adolescent girls (aged 10 - 17), and 4 middle aged and young adult women, impacting 11 families in total. Initially, the ILG was introduced to GRAVIS as an organization, the ambition and the vision of Project LEAD and its potential positive impacts on the community. The women were encouraged to participate in community meetings to develop awareness and leadership qualities. However, the process was not smooth, as they were hesitant from joining such meetings and participating in collective decision making. Several efforts were made to help them come out confidently. They were attended and convinced personally to participate actively, by the team of GRAVIS in field. They were made to involve in Panchayat meetings to enable them to overcome their timid behaviour in public, especially in the presence of men.

Eventually, the women of Khakhusar began attending meetings regularly. The members of ILG, who were once hesitant to join the group now voluntarily run it and speak out confidently in the meetings. This ILG has helped in influencing other aspects of these women's public life such as being more active outside their homes, sharing and exchanging knowledge (traditional and modern), resuming secondary and higher education, using technology like mobile phones, improving sanitation and taking more decisions for themselves and their families.

Their participation in discussions and decision making has increased visibly and their opinion is now valued by other members of their society. Their public presence has significantly improved through better communication with functionally operating mobile phones; and better mobility. These developments under the Khakhusar ILG have opened spaces where the community, women in general, have started discussions about girls' education, leadership, awareness, and capacity building. This group has become a platform for empowering women, promoting education, and enhancing awareness about health and financial inclusion.



## Case Study 2:

### Improving food and nutrition security through khadins

Kamla Devi from Nokhda village in Bikaner owns a *khadin* at her agricultural field, provided by Project LEAD. The landscape of Thar does not hold water in its soil making it less productive and agriculture a tough task for farmers like her. Kamla Devi, 50, lives with a family of 7 members. She has two cows and 10 goats as livestock and 25 bighas of farming land. The lack of moisture in the land does not let meet the water demand of the crops and causes soil erosion and surface run-off during rains. This leaves all their efforts in vain. The *khadin* provided to her has helped in preventing the loss of soil and in retaining the moisture in the field. It has instilled hope and confidence in Kamla Devi and her family, by helping in preparing their land and making it more favourable for growing different varieties of crops like wheat, bajra, sorghum, cluster beans and moong. It has also increased the scope of multi-cropping, a beneficial farming practice. Besides a good yield improving their income, they can also plant shade-giving trees for greening and a pleasant environment.



### Case study 3:

#### Preserving every drop of water and facilitating access

Jethi Devi (45 years) lives in Khakhusar village with her family of six, including her husband Jiwan Ram and their children. The family does not benefit from any government schemes and comes from an underprivileged

Background. She put forth her demand for a *taanka* for her family in the ILG (Intergenerational Learning Group), where her problem was brought to the attention of the VDC (Village Development Committee). Her settlement being 4-5 km away from the main village makes accessing water for household needs tough. The family fetched water from a nearby taankli in the neighbourhood, to which it contributed Rs. 1000 per tanker, lesser to its benefit. This situation mostly compelled Jethi Devi to fetch water from the main village, 4-5 km away. The members of Jethi Devi's family were not able to take care of their hygiene and health. The water scarcity also affected their children, who often had to engage in supporting their parents in arranging water, which impacted their education indirectly. GRAVIS intervened under Project LEAD by providing a personal *taanka* to Jethi Devi. This *taanka* sustains stored water for 3-4 months, unlike before when water could be stored only for a week. It helped the family in saving costs on tankers, which they had to call more frequently, earlier. The *taanka* has brought positive impacts to their lives in manifold ways. Besides ensuring clean drinking water in abundance, it has relieved them of the stress and anxiety arising from limited availability of water, giving them time and energy to devote to their growth. They are able to manage their water. Development of people like Jethi Devi is possible only by freeing from the cycle of poverty, requiring the community to become independent, self-sustaining, and empowered. Clean water is the most basic entity to start with.





## Acronyms and glossary

AHU-Arid Horticulture Unit

AFU-Agro-forestry Unit

CBO-Community based organization

CSB-Community Seed Banks

ILG-Intergenerational learning group

LEAD- Local empowerment by addressing drought

VDC- Village Development Committee

**Anganwadicentre** - Anganwadi centers focus on improving the overall well-being of young children, addressing their nutritional and health needs, and preparing them for formal schooling.

**Taanka** - It is a traditional rainwater harvesting technique, common to the Thar desert region of Rajasthan, India. It is meant to provide drinking water and water security for a family or a small group of families

**Khadin** - It is an ingenious construction designed to harvest surface runoff water for agriculture. These are embankments built across the lower hill slopes lying below gravelly uplands.

**Swaraj** - Village self-rule

**Sarvodaya** - Gandhian philosophy of all rising, but the last person first



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**GRAVIS is a leading Non-Governmental Organization working in rural India in the States of Rajasthan, Uttarakhand, and the Bundelkhand region of Uttar Pradesh. Since its inception in 1983. GRAVIS has worked in over 2,000 villages reaching a population of over 2.7 million and has established over 4,000 Community Based Organizations (CBOs). GRAVIS believes in participatory community development that blends traditional knowledge and modern sciences and promotes equality.**

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