

# CREATING HEALTHY COMMUNITIES



**Gravis**



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Capturing Learning from Community based  
Drought Mitigation (CDM) Project





# **Creating Healthy Communities**

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## Author's Note

Natural calamities and disasters have affected human life since time immemorial. Over a period of time, experts have found ways to deal with these calamities. Advances in technology have enabled predicting the occurrence of disasters and early warnings in many cases may help communities prepare to deal with them. However, droughts, because of their unpredictable nature, prolonged durations and wide expanse, remain the most challenging of the natural disasters. Poverty and inability of the establishment to reach out to the most affected remote populations result in severe ramifications for resource deficient communities. Many regions in India keep getting affected by droughts, however, the Western Rajasthan region of the Thar Desert in India witness recurrent droughts and the impact of it can be seen on every aspect of peoples' life in this area.

Drought affects human health in several ways; some of its effects are immediate and short term while others can be seen only over a period of time. In the Thar Desert, excessive heat causes sickness, and water scarcity in the long run results in dwindled food production, inability to maintain personal hygiene, have nutritious food and so on. Evidence suggests that socio-economic vulnerabilities aggravate health impacts of drought and enhancing the adaptive capacities is one of the key strategies to neutralise such impact. GRAVIS has been supporting Desert communities through adaptive as well as mitigation strategies to help them overcome the health crisis triggered by droughts and water scarcity. Time tested rainwater harvesting techniques and health services are major components of GRAVIS' interventions through which access to water, sustainable food and nutrition security and improved nutrition are being enabled towards achieving the goal of improved health profile of Desert communities.

In collaboration with EdelGive Foundation, GRAVIS has been implementing Community based Drought Mitigation (CDM) project that directly reaches out to about 15,000 people in two districts of Western Rajasthan and helps creating environment for improving better health. Impact of GRAVIS' intervention can be seen in the form of improved health and nutritional status achieved through food and water security, better sanitation facilities, awareness about disease prevention and control and ability to access health care services. As the communities remain the epicentre of GRAVIS' work on drought mitigation and health care, health status and health seeking behaviour is steadily changing in the Desert districts of Western Rajasthan. Preparing to meet the demands of an even larger groups and varied geographies in the same regions is the next challenge to conquer.

**Neetu Sharma**

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# 1. DROUGHTS AND HUMAN HEALTH

Being unpredictable and long lasting are just a few distinguished features of droughts that make drought mitigation has remained most challenging among all the natural calamities for the professionals engaged in disaster risk reduction and policy makers engaged in disaster management. Difficulties in establishing accurate early warning systems and unpredictable durations make droughts a very complex calamity to deal with. Sluggishness that defines its onset can normally be seen in its retreat too leaving lasting impact on the population, especially in terms of their health, quality of life and overall wellbeing. In drought prone regions, water is not only insufficient; its limited availability is marred with its inadequacy too, in terms of its quality. It is because of this, that the poor communities in the drought prone regions find themselves unable to maintain hygienic environment and consume nutrition food making them constantly exposed to infections and illnesses.



*A drought effected village*





Complexity of drought has rendered it as one of the most difficult natural disasters to deal with. Even today droughts are least understood especially from the point of view of preventing and managing them, partly because of the fact that its impacts often depend upon the nature of socio environmental background in the region, and affects more people than any other disaster. Within the framework of disaster management now, it is not only viewed mainly as a meteorological or physical phenomenon but more often as a complex environmental and social challenge. The regions that are constrained in terms of resources, and are poverty stricken tend to have a compounded effect of droughts. Other factors such as demography, level of education and skills among people, social norms, etc., eventually determine the resilience levels. Areas with inadequate institutional support and public investment in facilities, or inability of community to access such facility bear the most excruciating impacts of droughts.

Excessive heat, dry weather and sand storm directly and immediately cause health hazards for poor population constantly exposed to hot sun. For people who are dependent on agriculture and livestock there is no way to avoid heat. Women who not only contribute to agriculture and supportive activities, but also travel long distances every day to meet water needs of the family are extremely vulnerable to health hazards associated with droughts. As girls are also involved in water fetching, their education and health get compromised leaving an irreversible and intergenerational health impact for the population.

Drought induced water scarcity affects the whole eco system, ranging from humans to cattle and farming. Dryness in soil and delays in rains may cause crop failures or insufficient product of foodgrains. Similar impacts are also expected on cattle because of scarcity of fodder. Elusive rains may affect soil quality in long run and may push farming communities to adopt strategies that are non-sustainable, such as mono-cropping, ground water extraction or excessive use of chemical fertilisers. All these factors have direct implications for health and wellbeing of people. As recurrent droughts intensify financial crisis for penurious communities, health expenses become unaffordable and are subsequently avoided.

## 2. WATER SCARCITY IN THE THAR AND PUBLIC HEALTH

Expansive dry lands of the Thar Desert region in Western Rajasthan present a quite unwelcoming scenario defined by extremities of climate. Many administrative units or regions in the state of Rajasthan are recurrently declared as drought affected. Elusive rains leave the water sources parched and human life deprived of basic survival needs. For the people in the Thar Desert, however, water scarcity is an integral part of life that cannot be ignored. Dependence on rainfed agriculture is nothing less than an anomaly in a perennially water starved region. Rural lives, however, continue to endure the difficulties and embrace the perennial droughts., but not unscathed. Water scarcity has immediate effects on agriculture and livestock, but it leaves long lasting impacts for human life.

### a. Drought and health: Direct and immediate impact

Drought-like situations are typically characterised with long dry spells, excessive heat waves and inadequate availability of clean and safe water for human and animal use. Unbearable temperature rise affects the human body directly leaving people dehydrated, breathless and parched. Heat waves that are common sights in the Thar Desert may directly result in heat strokes or other kinds of discomforts for the human body. In Desert areas, dehydration related health issues are very common especially among children and the aged. Lack of adequate quantity of safe drinking water triggers abdominal infections and non-availability of water jeopardises sanitary facilities creating a fertile ground for many contagious and vector borne diseases. As sand storms are common in the dry regions, eye infections, allergies and long term problems affecting vision are also common in the Thar region. The state of Rajasthan is also home to the largest number of people with lung related ailments, more than one among 10 in the age group of 60 years and above were diagnosed with lung related diseases in Rajasthan which is highest in the entire country<sup>1</sup>.



*Women walk long distacnes in Thar to fetch water*

<sup>1</sup>Longitudinal Ageing Study in India (LASI), Ministry of Health and Family Welfare, 2017-18, , accessed on December 1st 2022.

## b. Loss of livelihoods

A significant portion of Rajasthan's economy is agrarian. More than 70% of the population in the state resides in rural areas and is primarily dependent on agriculture to make a living. With only one fourth of the total agricultural land being irrigated, rest of the three fourth of the agriculture in the state is entirely rainfed. This translates into a sizable population in the state being largely dependent on rains for their livelihoods. This situation is an even bigger problem for the population residing in parched, dry and mostly infertile arid areas of the states. For agrarian societies in rainfed arid zones, delays or deficits in rains directly results in loss of livelihoods and financial crisis at community and family levels. As educational levels are also not optimum and skill building has also remained largely confined to urban areas, scope of alternative livelihood opportunities also remains meagre.

In such a situation of despair and an absolute dearth of productive resources and assets, each aspect of human life gets affected. Always being in the want of finances to support the families, health checkups or health care never finds a space among priorities. Over a period of time, rural communities adapt their health seeking behaviour to suit their limited abilities and deprioritise their health needs, which is partially a result of low incomes.

## c. Livestock

An inextricable link between agriculture and livestock management explains the aggravated form of livelihood crisis rural communities in the Thar Desert have to experience. For the farming communities, dependence on livestock increases during droughts when the food production plunges. With decreased availability of cereals, farmers turn to dairy production and consumption to an extent. However, severe and prolonged droughts that result in village ponds drying up and water table depleting to precariously low levels, endanger livestock too, leading to insufficient fodder for cattle, that in turn affects the source of dairy for consumption as well as the prospects for ermine income from the sale of milk and milk products. Direct impact of such loss of nutrition and income can be seen on the health profile of the rural communities, especially children, adolescent girls, women and older people.



*Water scarcity deeply affects livestock*



#### **d. Low income - less nutrition**

Drought affected areas generally have limited sources of healthy and nutritious food. A very limited number of fruits are grown in the desert and fresh vegetables are also not easily available. During droughts, scarce fruits and vegetables are neither easily available, nor are they affordable for the population already hit by a financial crisis because of livelihood loss. Acute food shortage coupled with the inability to buy even essential food items takes a toll on the nutrition status of the families and eventually the entire poor rural community, leaving them susceptible to chronic undernutrition, various forms of infections and diseases.

#### **e. Access - no institutional support, public health facilities**

Water scarcity and droughts in remote areas of Thar Desert cast an even more belligerent impact on the indigent rural population. Their inability to seek support is constantly fringed by the absence of institutional support. An already flimsy public service system that lacks the capacity to respond to the health needs of remote communities gets further pressured by droughts and ensuing resource crunch. Excessive heats and long distances demotivate provision of services and outbreak of diseases in such situations may become extremely challenging to address. Weak institutions including hospitals, primary and tertiary health care centres, outreach etc., that are already located at distance, are difficult to approach because of lack of awareness among people as well as prioritisation of health needs over other survival needs. Skewed norms for coverage by the public health care facilities that are based on population and do not factor in the distance required to travel, become reasons for excluding a large number of people from the public healthcare support systems.

#### **f. Disproportionate gender dimension**

As in the case of other traditional societies, vulnerable groups bear a much sharper brunt of drought. Impact of droughts, however, is not gender neutral. Since women and young girls are primarily responsible for collection of water for the household as well as cattle, their woes increase multi-fold during longer dry spells as community water sources also become scarce and elusive. Women and young girls end up travelling longer distances to fetch the same amount of water. Already overly burdened with housework, childcare and elderly care, drought causes additional agonies for women and girls. Physical health of women also gets affected due to unmet food and nutritional needs as women and girls are the ones who end up eating last and hence the least. Falling sick may be life threatening for women and girls as the families may not afford or be prepared to invest in accessing private health facilities.

Mental stress is also caused by their constant struggle to deal with the responsibility of feeding everyone in the household. However, mental health of women and girls is also affected by the seasonal migrations by the young adults. In the absence of any viable livelihood opportunity, when men move out, women are supposed to assume responsibility of providing care to elderly as well as children in the family, causing extreme mental pressure on them.



## g. Older people

Age plays a significant role in determining human health. Growing older is generally associated with reduced body strength, dependence on others for fulfilling needs, inability to make productive contributions to family income, and many a times disease and infirmity. As older people are not able to involve much in physically strenuous work, they find it difficult to work in agriculture, which is the primary vocation of rural families in the Thar. Surrounded by a situation of scarcity and deprioritised health and food needs, older people find themselves in a situation wherein their health needs are not recognised and fulfilled. Their financial as well as physical dependence create barriers for them for accessing health care exposing them to aggravated health issues and problems. Inadequate diets in terms of quantity and nutrition also cause health related problems for older people or just add further complications to existing ones.



*Older women are vulnerable to water crises and its health impacts*

Among older people, older women are much more vulnerable when it comes to their health needs and this is entirely because of the gender norms that are entirely unfavourable to women. In an age when older women need to rest and take care of their health, they may be pulled into water fetching duties amidst prolonged and difficult droughts. Such drudgery in old age with unmet nutritional needs.

## h. Child health and nutrition outcomes

Food shortages, lack of adequate sanitation and nutritious and diverse food has an intergenerational impact on the nutritional levels and health status of the population. Children are able to eat only limited types of food and water scarcity affects their sanitation facilities too. Low nutrition and an environment that is very much conducive for disease outbreaks, have direct outcome in the form of malnutrition among children too. In the state of Rajasthan, drought affected areas contribute to disproportionately to the number of malnourished children in the state. Nutritional indicators place the state of Rajasthan lower than the national average for most of the child nutrition indicators. As depicted in figure 1, mortality rates and anaemia is comparatively higher in Rajasthan as compared to the national average. Stunting and wasting that are outcomes of chronic and severe malnutrition, respectively is also high in Rajasthan. Poor performance on health and nutrition indicators in Rajasthan is a direct result of droughts and water scarcity in the region.

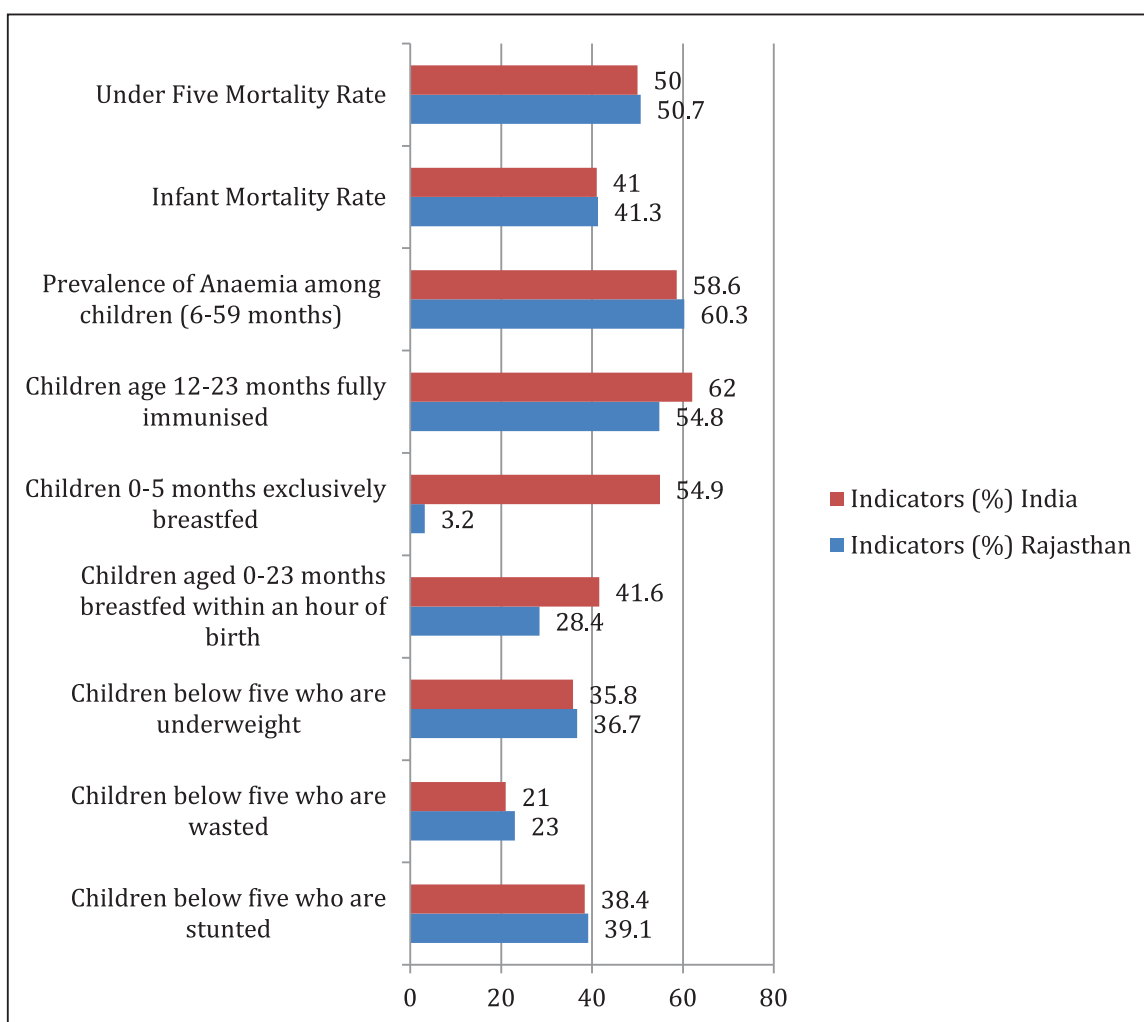


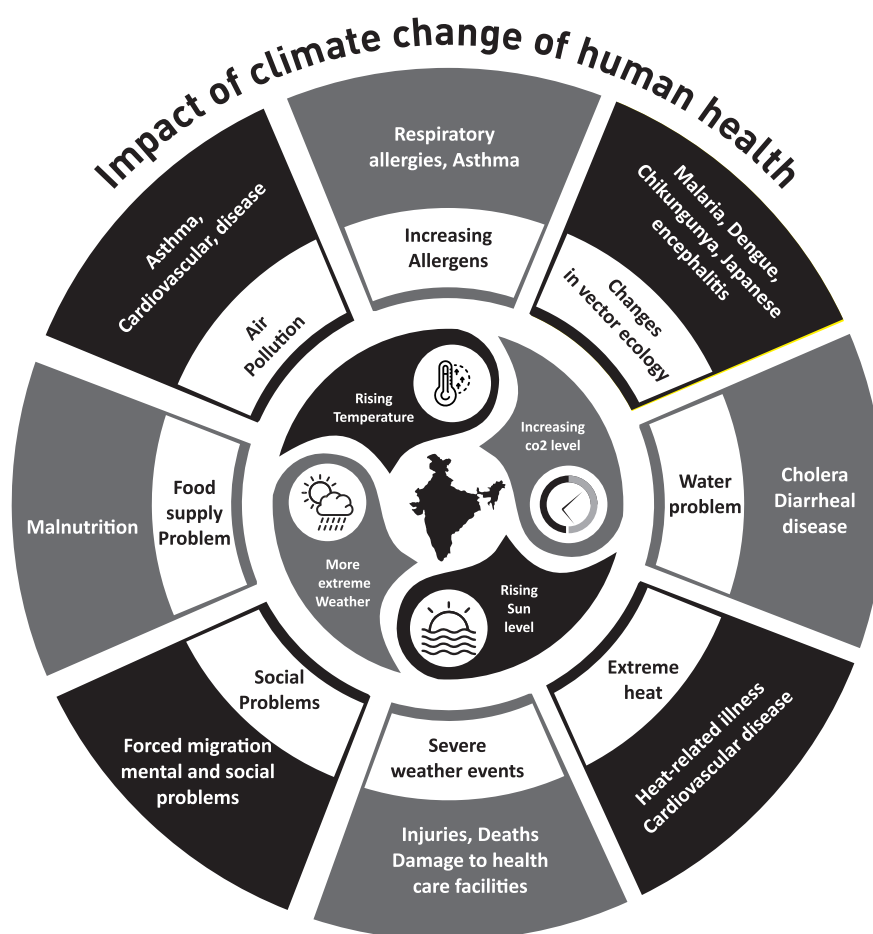
Figure 1 - Nutrition in Rajasthan and India: A comparative view

## i. General health profile and overall wellbeing

Adverse impact of drought and climate change gets reflected in the overall health and nutrition profile of the region. Partly because of repeated spells of drought, the state of Rajasthan has one of the most poor nutrition profiles as compared to the rest of the states in India. High incidences of maternal and infant mortality, prevalence of stunting and wasting among children, low birth weights, and other such nutrition outcome indicators are quite discouraging. Undernutrition, especially triggered and propelled by droughts, becomes intergenerational and affects the overall wellbeing of families and communities.

## j. Climate Change: A multiplier of drought related woes

Humanity is confronted with the greatest challenge in the form of climate change that has come to affect all parts of the globe and all sections of the society in different ways. Impact of climate is much harsher on the low income and developing regions across the world as they lack resources to combat its effects on their lives and livelihoods. Adverse effect of climate change gets multiplied in the context of the Thar Desert that is already reeling under water scarcity and drought-like conditions. Climate change in a drought prone region affects physical health directly as well as indirectly by causing harm to the natural



Source: National Health Portal, India, [https://www.nhp.gov.in/health-and-climate-change\\_pg](https://www.nhp.gov.in/health-and-climate-change_pg)

Figure 2 - Impact of climate change on human health

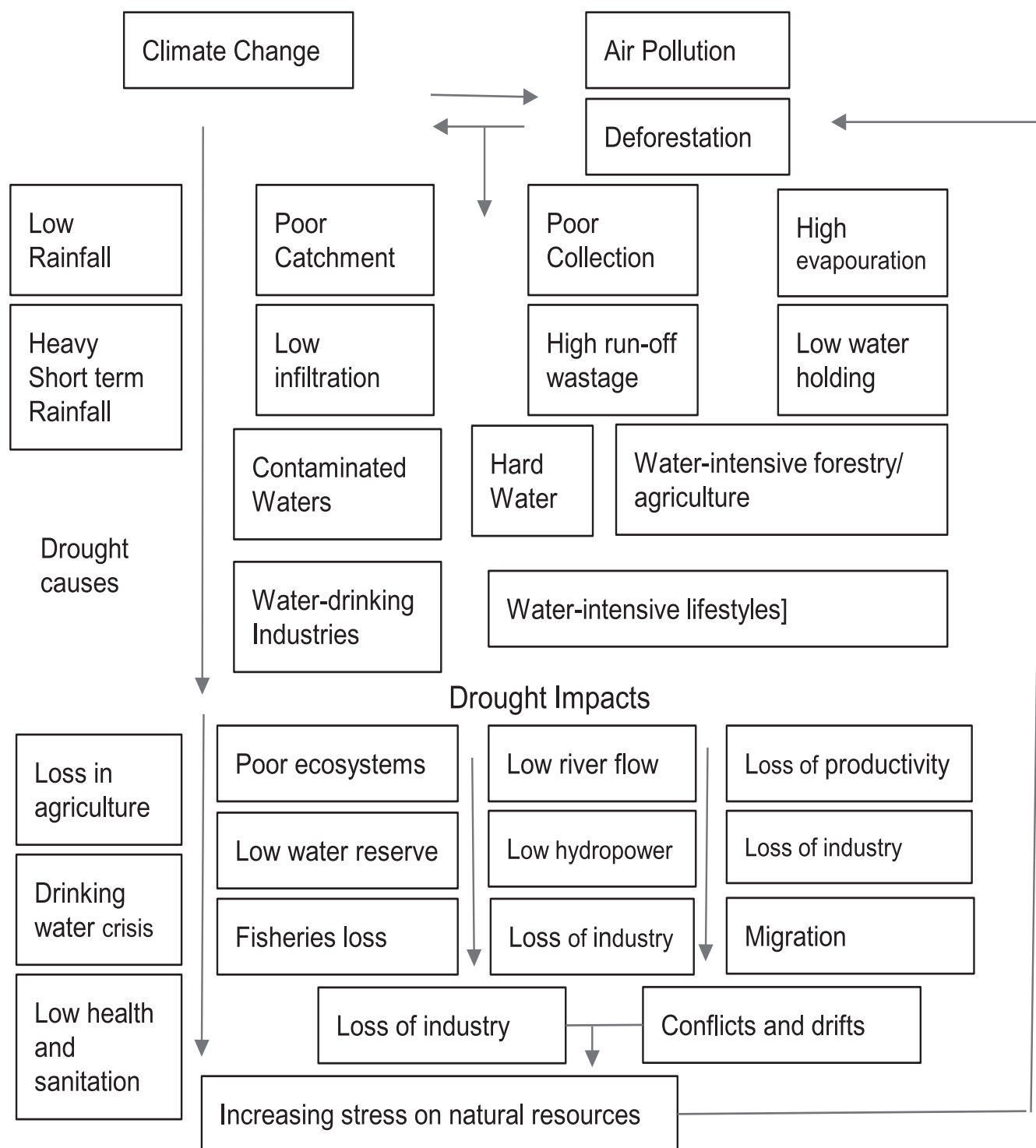


Figure 3 - Drought and climate change ecosystem<sup>2</sup>

<sup>2</sup>Anil K. Gupta, Pallavee Tyagi and Vinay K. Sehgal, Drought disaster challenges and mitigation in India: strategic appraisal, Current Science , 25 June 2011, Vol. 100, No. 12 (25 June 2011), pp. 1795-1806 Published by: Current Science Association



and livelihood resources. The Thar region of India is one of the most challenging climatic zones in the world for human existence. As climate change is making dry places even drier and wet regions more wet, the impact of climate change for drought affected regions may have to be understood in the context of increased heat, extreme weather conditions, increased water scarcity and volatility of water availability.

As portrayed in Figure 2 climate change affects several aspects of human health, either directly or indirectly. Enhanced intensity of extreme weather, rising air pollution levels, soil erosion and rising sea levels, all result in serious implications for human health, be it physical health, mental health or even excessive burden on health infrastructure. In the Thar Desert, erratic rainfalls have been the most challenging aspect of climate, especially considering that communities in the region are highly dependent on rains for their food, nutrition and livelihoods. Farmers in the region face difficulty in predicting the rains and remain clueless about the sowing and harvest timings. That apart severe weather events, including the heat waves, flash floods, and other phenomena typically associated with climate change such as soil erosion, sand storms, etc, either directly affect human health and nutrition, or magnify the impact of droughts.

A concerted multidimensional approach is needed to address health impacts of droughts. Frain public health care system, not only require devising alternative strategies but also demand factoring in social and cultural issues that have direct bearing on integrated community development, including access to health care and nutrition in the Thar region.



### 3. MITIGATING DROUGHTS AND BUILDING HEALTHY COMMUNITIES

Large and lonely expanse of the Desert remains not only aloof but also deprived of adequate support from the government. Parched lands and excessively hot weather make it challenging for even non-governmental organisations to reach out to poor rural communities in the Thar. Amidst this hostile environment, Gramin Vikas Vigyan Samiti (GRAVIS), an NGO working in the state of Rajasthan, has been standing steady to support the rural communities to develop resilience and lead a life with improved quality. For the past close to four decades, GRAVIS has been working with the community and community based organisations in the remotest villages of the Thar Desert to make the basic amenities available to them and improve their quality of life. With an impeccably strong faith in integrated development of rural communities, GRAVIS envisions a community that is supported in all aspects of life, addressing all needs but with full participation and engagement leading to community ownership and sustainability. Equitable well-being through integrated community development initiatives has been at the core of GRAVIS' work. Drought and water scarcity being the most difficult challenge in the Desert, GRAVIS strives to resolve all the problems in the community especially those directly linked with droughts and their impact. As drought has serious implications for health, most of the interventions of GRAVIS have a sharp focus on improving the status of public health in the region.

We specifically chose from other agencies including the Government. Every year, we try to cover/reach out to people who have been unreached. The Thar is home to about 28 million in the State of Rajasthan alone hence the need is still very large and the scope of integrated community development at the foundation of drought mitigation is very significant.

#### **Community based Drought Mitigation in Thar**

GRAVIS has been working with the rural communities located in the geographical areas and populations which are severely needy and are completely deprived of interventions. In the process, GRAVIS has been able to reach out to about 1.35 million people in the Thar Desert over close to 40 years. With drought mitigation as the key strategy, GRAVIS worked towards resolving core community problems pertaining to food insecurity, education and health. Health care and support have always remained as one of the most critical needs for communities in the Thar Desert and hence most of the projects of GRAVIS have an ingrained element of addressing health needs of the poor in the region.

Since 2018, with financial support of EdelGive Foundation, GRAVIS, Rajasthan has been implementing the project titled '*Community Led Drought Mitigation (CDM)*' in drought affected blocks of Bikaner and Jodhpur districts in Western Rajasthan. The project aimed at enhancing food and water security, developing communities' capacities and ownership, enhancing drought mitigation understanding, facilitating education, and improving the health status of people living in the Desert. CDM project specifically focused on three important aspects:

- enhancing food and water security in the communities for humans and livestock
- improving the health and nutritional status of communities and,
- mobilization of communities, building their capacity and developing local skills in drought mitigation along with gender equality.

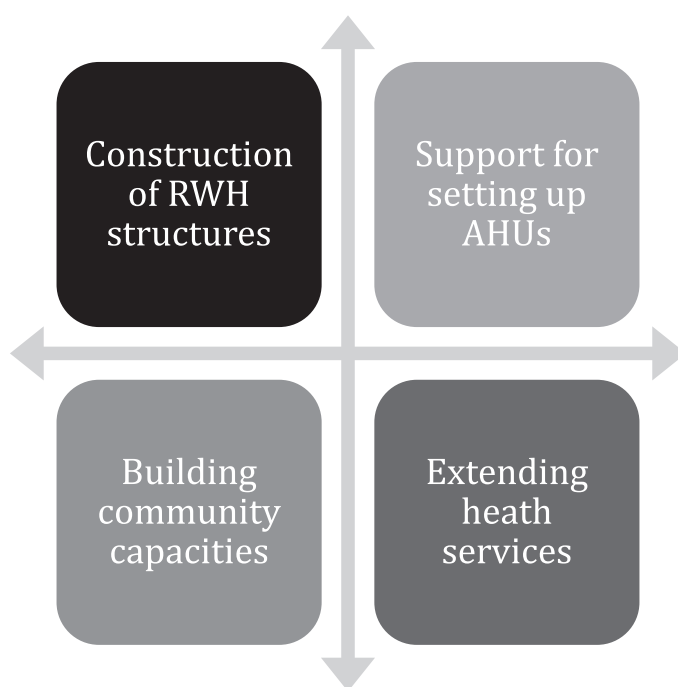


Figure 4 - Project interventions

Table 1 - Project Outreach

Sl. No.	Village	Block and district	Population (Approx.)
1.	Srirampura	Bap block, Jodhpur	1,100
2.	Kalrawa bera	Bap block, Jodhpur	1,050
3.	Malamsingh ki seed	Bap block, Jodhpur	1350
4.	Kalyansingh ki seed	Bap block, Jodhpur	1780
5.	Navneetpura	Bap block, Jodhpur	900
6.	Ambedkar Nagar	Bap block, Jodhpur	900
7.	Udat	Bap block, Jodhpur	2500
8.	Udat	Kolayat block, Bikaner	1450
9.	Khariya Patawatan	Kolayat block, Bikaner	2200
10.	Rajiv Nagar	Kolayat block, Bikaner	1500
	<b>Total</b>		<b>14,730</b>



*A taanka constructed under CDM project*

All these interventions directly or indirectly contributed towards improved health and nutrition status of people living in the project area. Over a period of more than four and half years the project reached out to a population of about 15,000 located in 10 villages the most backward and blocks of Bikaner and Jodhpur districts in Rajasthan. About 15% or about 4,500 people were directly impacted by project activities. The project focussed on special needs of women, children, elderly and disabled.

The project also envisaged setting up a Drought Mitigation Academy (DMA) as a training facility to support NGOs, researchers, students, local communities and Government Departments in the process of learning technical aspects of drought mitigation and understanding the process through exposure to community based interventions. DMA's primary role is to impart trainings to researchers, village development committees, and NGOs and also conducting research on various aspects of drought mitigation including, role of women, impact of drought mitigation of health status of the community and role of community in the process of drought mitigation, and other such relevant themes.

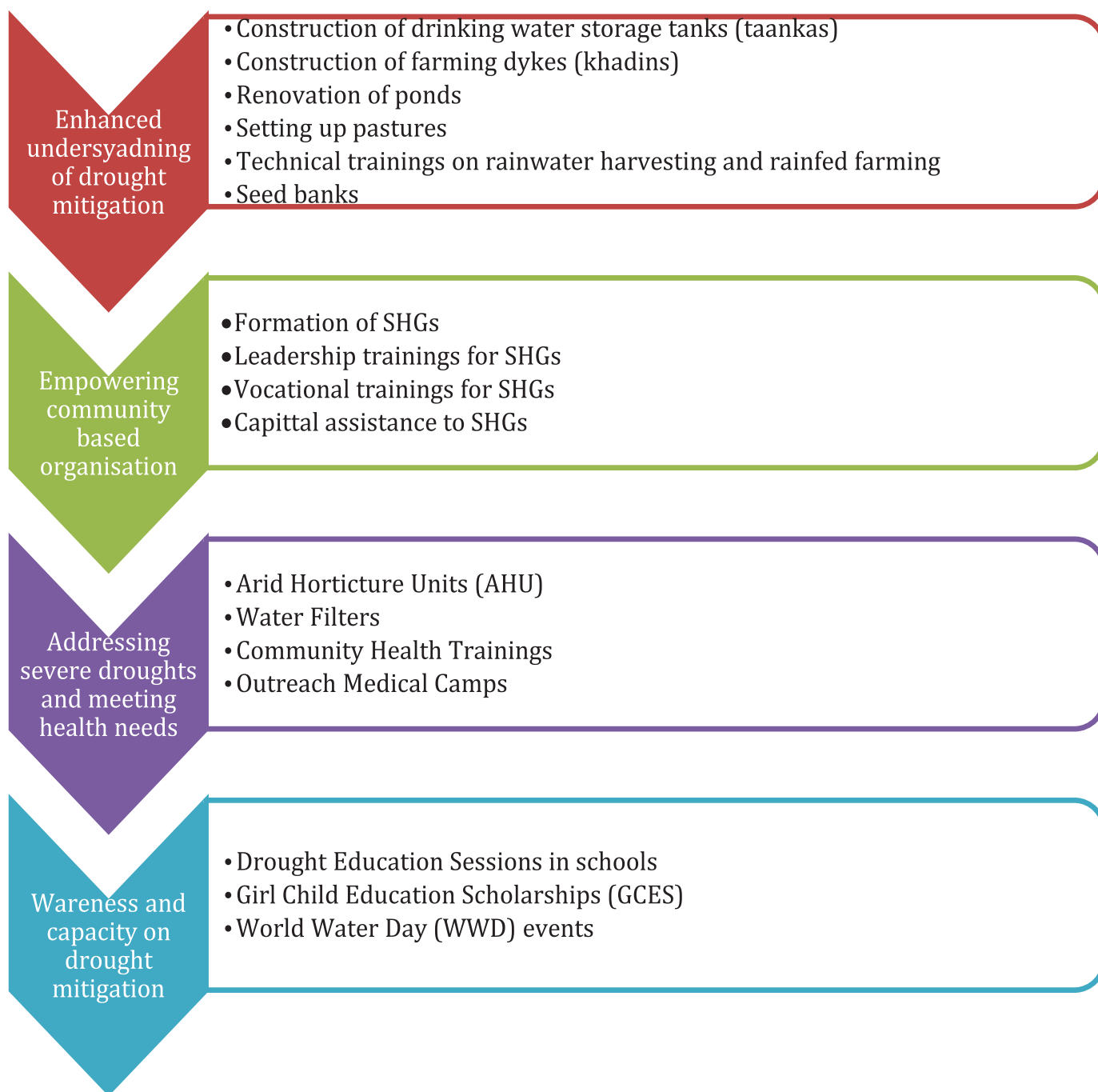


Table 2 - Direct outreach through RWH and DM

Intervention	Outreach	
	Direct (families)	Indirect (families)
Taankas	200	0
Khadin	200	0
Renovation of ponds	Overlapped	4500
Medical camps	1800	All population
AHU	200	0
Water filters	200	0
SHGs	220	0
DM education	3200	All population
Scholarships	160	0



An AHU under CDM project



## 4. IMPROVED HEALTH AND NUTRITION THROUGH MITIGATION OF DROUGHT

Relationship between healthy communities and drought is well established. In the regions that are able to deal with drought effectively, health status of people is not of that much concern as in the case of rural areas of the Thar that are backward and excluded from the mainstream public institutional support for health. Various governments have come up with a number of strategies and policies to overcome adverse effects of droughts and have focused on environmental conservation, judicious use of groundwater and ensuring sufficient amount of foodgrains and fodder for human and cattle needs. These have been supplemented with agro-economic interventions and alternative employment generation for rural poor. While all these strategies have their own relevance, in the context of rain deficit regions of the Thar, rainwater harvesting (RWH) has emerged as the most crucial and effective strategies to deal with droughts and their impact on human life. RWH complemented by specific interventions to address nutritional needs have been successfully experimented by GRAVIS in the Thar Desert. A combination of these interventions has direct implications for the health status of the poor people in the region. A study was conducted to assess and record the impact of drought mitigation interventions by GRAVIS in 10 identified villages on the general health of people in this region. This study collected evidence, in the form of data, narratives and also case studies to articulate and demonstrate the relationship between drought mitigation and improved health status of desert communities.

### (i) Sufficient water for household use

In the desert region, most of the rural impoverished families struggle to access sufficient water for household use - for drinking, washing, cleaning and bathing. As community water resources recede and eventually get dry during prolonged droughts, women and girls are either forced to walk even longer and spend most of the day fetching water, or the family has to spend money to buy water. In either case, family's miseries just increase, as it means compromising on girls' education, severe impact on the health of women and girls, or additional debt for the family. In both cases, the health status of family members takes a toll on family members, especially women, girls, children and elderly.

Household water tank (*taanka*), which is one of the many rainwater harvesting structures innovated and constructed by GRAVIS for thousands of families, is one of the most effective and sustainable tools to address water related needs of a family. As part of CDM project, GRAVIS enabled construction of about 200 *taankas* in 10 villages that served immediate water needs of 1600 people. As *taanka* traps the rainwater and stores it for future use, water is available for Desert communities. even during prolonged spells of droughts. During the dry season, *taankas* avert the water crisis as sufficient water is available within the household for drinking, cooking, cleaning, sanitation and maintaining personal hygiene. As discussed earlier, lack of sanitation facilities and inability to maintain personal hygiene are major factors responsible for outbreak of diseases.



## A rainwater harvesting tank



A joyful Laxmi was beaming with joy as she took visitors to see her *taanka* that she considers her emancipator. Laxmi (35 years) lives with her husband and 4 children in small mud house in Ambedkar Nagar village in Jodhpur. Her husband is a wage worker and usually works outside in clay mines and bricks making. The family struggles to make the two end meet with the erratic income from irregular daily wage work and some money earned from mines. Laxmi along with her eldest daughter had to travel 2-3 kilometres every day, to fetch water from the nearest ground level water reservoir which also goes dry during summer, adding another couple of kilometres to their daily excruciating walk. There was no large tank at home thus making it difficult for them to procure water. Neither did the family afford to buy water from private vendors. The family lived in very isolated hamlet far from main village. She and other family members used to fall sick very often and the family found it difficult to spend on health care. When she got to know about GRAVIS' efforts to create water secure villages, she approached the village development committee (VDC) in her village for construction of a *taanka* in her backyard.

Considering the situation in the family, VDC of village approved her request and on their recommendation, GRAVIS facilitated construction of *taanka* as part of the CDM project in 2022. Even with some showers during the monsoon, *taanka* was filled with rainwater and the family had sufficient water for household use during winters. As summer approaches, Laxmi is not worried about water as in the past. It has considerably reduced the time spent in fetching water from far away. Now her daughter is also going to school regularly. She has also sufficient time to study at home. Laxmi is grateful to GRAVIS and the donor for this contribution.



GRAVIS team supported 200 households by constructing *taankas* within the premises of their households. These *taankas* ensured year round provision of water for the family, especially for cooking, washing, cleaning and other such purposes. An estimated population of 1600 got benefited by *taankas* as part of the CDM project. It was reported that as families had access to sufficient water, women and girls could either avoid or substantially reduce the number of hours spent in water fetching, leaving more time for them to relax and spend time on other productive things. Adequate quantity of water was available for washing, bathing and other uses, enabling people maintain personal hygiene and cleanliness within the house. Water from these *taankas* could also be used for drinking after treatment, and all of these resulted in reduction of incidences of diseases that spread from contamination etc. Women and girls also avoided excessive heat and yet ensured that food could be made available for everyone in the household. Time spent assessment indicated that most women were spending time in the range of 2 to 4 hours every day that got drastically reduced, leaving them with more time for themselves. Many women have become members of self help groups (SHGs) that help them learn about anything including good health practices, importance of hygiene and nutrition, etc.

## **(ii) Safe and clean drinking water and health**

Water is not only scarce in the Thar Desert, the limited water that is accessible is not clean and safe for drinking too. Poor communities who do not have access to water cleaning resources and knowledge in some cases, are often forced to consume unclean water, which is very often high on fluoride content that causes several preventable illnesses among children and others. The state of Rajasthan witnesses thousands of deaths every year due to diarrhoea that is caused either by lack of clean drinking water or absence of proper sanitation facilities. In the year 2016, for example, more than 47,000 people died because of diarrhoea<sup>3</sup>. While this does justify the need for making safe drinking water available to rural households, there are no sustainable mechanisms available. Recognising this as a major issue that has serious implications for health, GRAVIS provided water filters to 200 poor households in 10 identified villages, Bikaner and Jodhpur. These water filters became the sole and most important source of clean and safe drinking water for the communities struggling with recurrent outbreaks of waterborne diseases.

### **A new hope of life for Seema Devi**

Seema was clueless as to why everyone in the family keeps falling sick one after the other. She always used rely on the home remedies suggested by her mother in law, as she could not afford a visit to the doctor every now and then. In the want of water, her family was not able to get sufficient water and she had to walk about 6 kilometres every day, along with her daughter to provide for water for the family.

<sup>3</sup><https://www.copenhagenconsensus.com/publication/rajasthan-priorities-water-sanitation-larsen>





Seema is a middle-aged woman of 40 years belonging to the *Sadh / Jogi* community. She lives with her husband and 3 children in small house in Kalyan Singh Ki Sid village in Jodhpur. Her husband is a wage worker and a *jogi*. The family strived to earn through different sources like begging and irregular daily wage work. Seema worked as local domestic worker. Along with her eldest daughter, she had to travel 2-3 kilometers every day, to fetch water from the nearest pond which also goes dry during summer. There was no tank at home thus making it difficult for them to procure water. The family lived in very isolated land and was making it difficult to even share water from the closest neighbours. The overall solution was to have a *Taanka*, recommended by VDC of village to GRAVIS and the same was constructed under the CDM project in 2022. With good rains in June, the *taanka* is now filled with rainwater. It has reduced the time of fetching water from far away. This has resolved the main concern for water access and the family is now relaxed and hassles free. Her children have sufficient time to study and continue to go to school.

*“Taanka has given us a new lease of life. But I feel being healthy is one of the greatest gift that has taanka has given us. All problems can be resolved if our health is fine.”* Seema says.

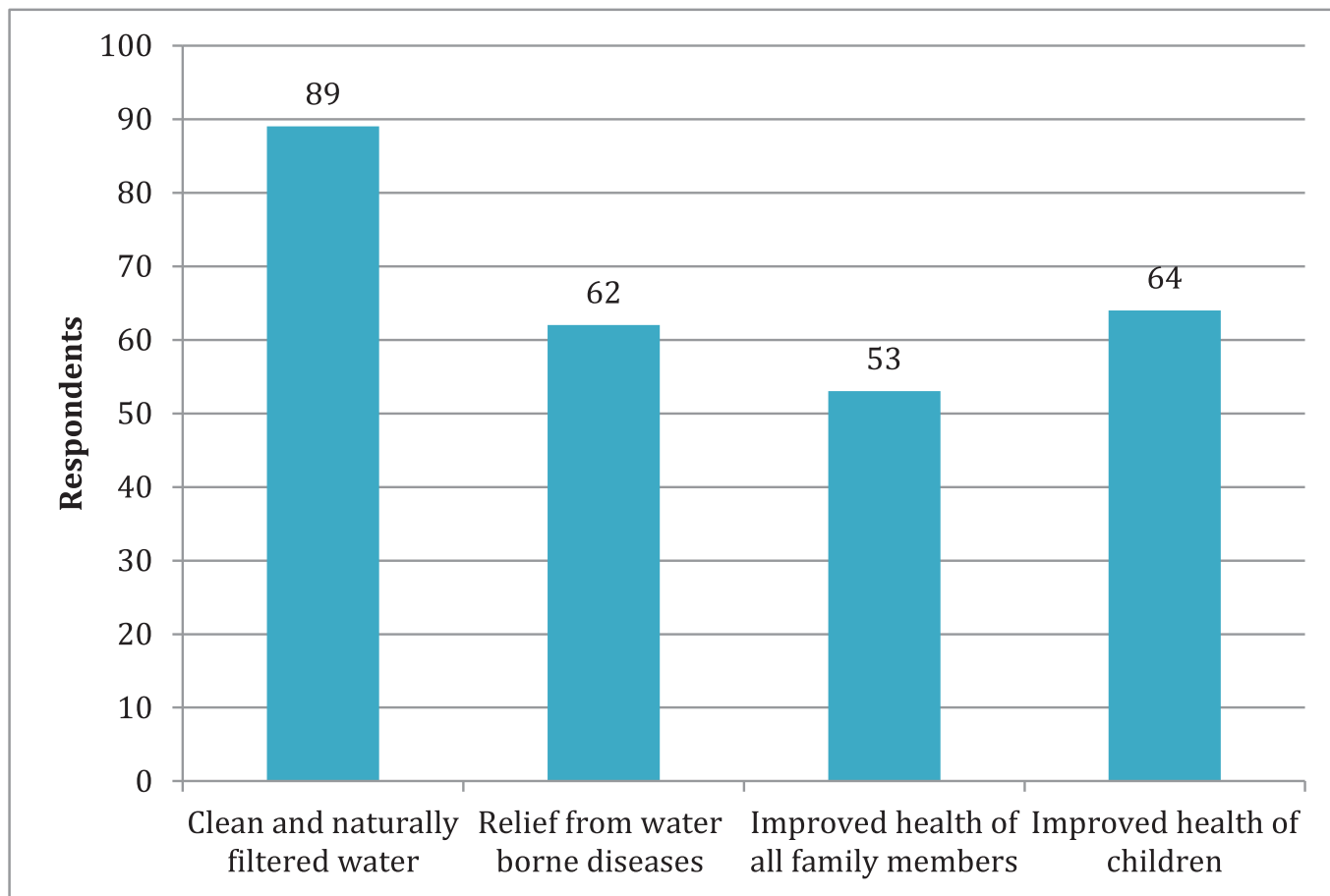


Figure 5 - Most crucial benefits of water filters

During the study it was found that all those who were provided with water filters found them quite useful. As shown in the figure above, about 90% of respondents, all of them being women were particularly happy that they could get clean water within their homes without much trouble and without spending additional money. As many as 62% of the beneficiaries felt that there was certainly a downward trend in the number of times people are falling sick due to diarrhoea and other water borne diseases. 53% and 64% respondents were particular happy with the fact that there is a sustained improved in the health condition of family members and especially children, respectively. Effectiveness of the water filters for improved health within a short duration is a remarkable. GRAVIS complemented the provision of water filters with trainings on their maintenance and generating awareness among community on using them religiously for a healthier body.

### (iii) Food security through revived agriculture

Prolonged and recurrent dry spells are bane for the rain fed agriculture that affect the agricultural productivity and endanger food security for communities that are dependent on it. Ensuring food security is a prerequisite for maintaining good health. In cognisance of this fact, GRAVIS supported agrarian communities in the 10 identified villages and enabled them to harvest even the scanty rains, for

agricultural use. Parched and sandy lands in the deserts do not retain moisture as the rain either evaporates and/ or runs off the field. With a view to prevent that, GRAVIS facilitated construction of ## *khadins* in different farms. *Khadins* are indigenous constructions designed to harvest surface runoff water for farming. The land saturated thus from the water stagnated because of *khadin* is used for growing crops. A population of about 1600 has directly got benefitted with the enhanced foodgrain production, leading to creation of drought resilient and food secure communities. All the recipient of this benefit reported 25-40% increase in agricultural production, leaving them with sufficient food for the whole year even after selling a part of in open market. Although empirical data is yet to point towards direct health link, it is common knowledge that the availability of sufficient food that is organically grown by farmers is definitely having positive impact on the health condition of farming communities.



*A khadin under CDM project*

### **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 leads the greater proportion of people living below the poverty line even much higher than 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 but hardly grow anything in 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 from agriculture, the family was continuously trapping by vicious cycle of poverty. Neni Devi came to know about *khadin* for trapping rainwater within farm and that it allows land to produce 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 this year also she is expecting an increase of 1.5 to 2.0 times. In 20 *bigha* land she produced 10 quintal millet and 50 kgs lentils after *khadin* construction and she expects that it will further increase in subsequent years. She herself does sowing, weeding and harvesting along with other women of family. Neni said that after *khadin* construction, the water stops 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. She recognizes that *khadin* in the farm has ultimately resulted in better food and health for the entire family. With ample amount of food on their plates, she, her husband and children feel healthier with increased strength to do the heavy labour on their field.

Success of *khadins* construction may also be credited to training and awareness programmes organised by GRAVIS through which the utility of *khadin* for enhanced foodgrain production was communicated and farmers were trained in construction as well as maintenance of *khadins*. The ripple effect of this intervention is manifesting in increased number of farmers expressing interest in erecting *khadins* in their farms. Technical trainings on sustainable rainfed agriculture for farmers helped them improve the production both on terms of quantity and quality. Use of organics manure and fertilisers and making chemical free farming financially viable had a positive impact on both soil, water and health of community.

#### **(iv) Nutrition through horticulture units**

Hidden hunger that connotes high incidence of malnutrition among population is a direct outcome of lack of food diversity and complete dependence on the carbohydrate rich food grains. Regions that receive less rain are not conducive for growing several fruits and vegetables and poor people living in these areas cannot afford them, leaving a huge micronutrient gap and corresponding illnesses triggered due to their deficiencies. Arid Horticulture Units (AHUs) are attempt at ensuring an affordable and sustainable nutrition security for rural households. As the name suggested, established in the arid regions, drought

resilient plants of fruits and vegetables are grown in these horticulture units for meeting the nutritional needs of people. As GRAVIS has successfully experimented AHUs in the Thar Desert, its utility in the firm of health benefits is well established. As part of CDM project, GRAVIS supported establishment of 200 AHUs in the 10 villages that became source of regular nutrition for poor households.

### An AHU

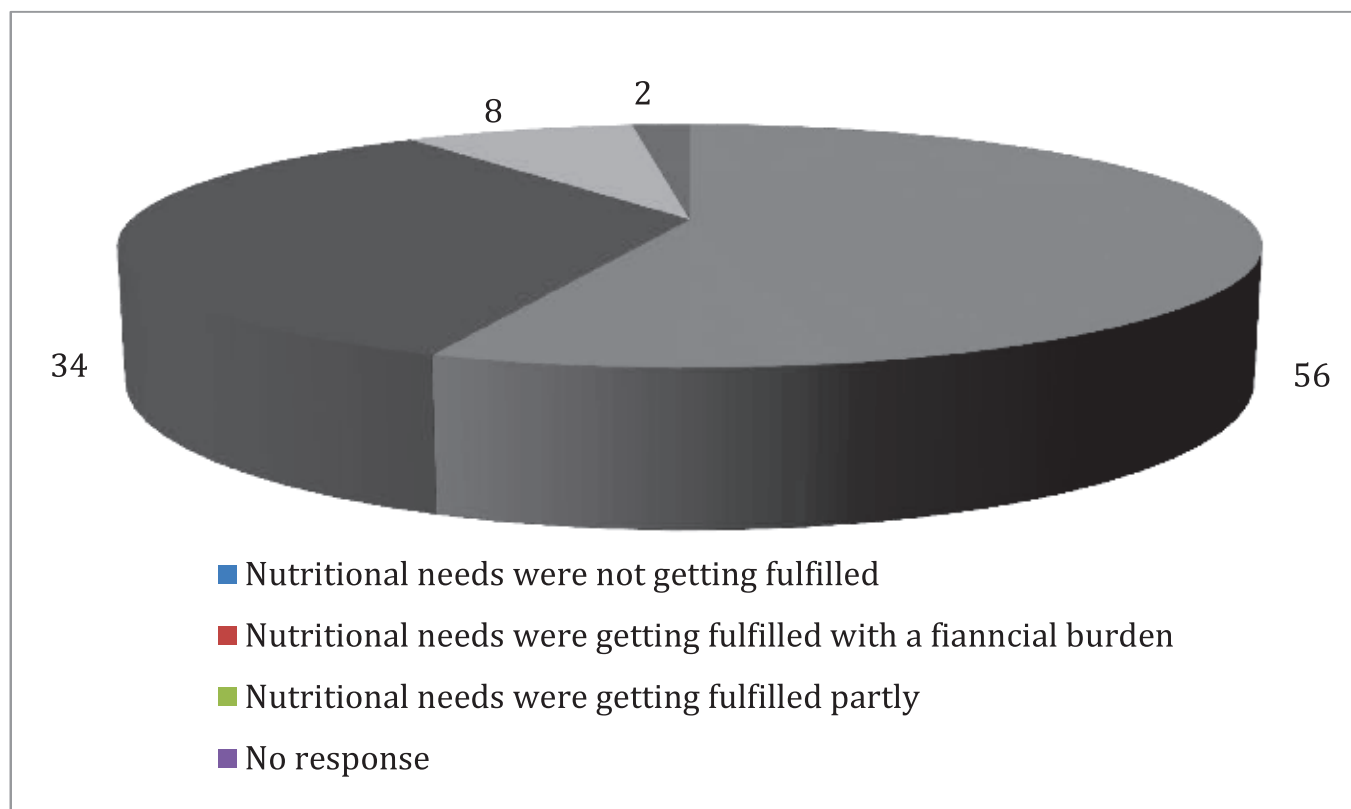


52 year old Chandi Devi lives in Malamsingh ki seed village with her husband and four children. She belongs to unprivileged *Meghwal* community. The family does not have any sustainable income. The only source of income is agriculture from little piece of land. Her all four children are very young and the whole family precariously depends on wage work and farming activity. Her daughters have to manage water needs for family while their mother goes to field to cultivate something to eat. The family was in a terrible need of water at door step so that girls could resume their studies. Chandi Devi discussed her problems with a neighbour who told her about the *taankas* and fruit orchards. She found out more about it, and after discussions it was decided to support Chandi Devi with a *taanka* and an AHU.

Chandi Devi takes care of the AHU. She gives her time to maintain her orchard and nurture them like her own kids. Because of immense hard work of Chandi Devi her orchard has started fruiting within no time. She has harvested *ber* (Desert plum) and generously distributed it to others. She uses organic manure and herbal pesticides for rich growth of the plants. Now she started growing vegetables in space between two plants. She grows tomatoes, chilly, onion, eggplant, sweet pea and coriander in her small orchard. Now she devotes more time in taking care of the plants. According to her “I am happy to have fruits and vegetables at door steps. In old age I can't work in field but this orchard gives me immense sense of confidence. My children are getting fruits and it was like a blessing in the time of *mahamari* (pandemic).” She paid thanks to donor for this contribution. Chandi Devi is particularly aware that the regular consumption of fruits and vegetables has helped the family remain healthy during these difficult times.



Consumption of local and organically grown fruits and vegetables is without any doubt a game changer as far as nutritional levels and health status of communities is concerned. As reported during the study, poor families are now able to consume seasonal vegetables every day, which used to be a luxury in the past. Some of the AHUs have already started getting harvest of seasonal fruits that are not only consumed within the families and among the households in the community, but are also sold in market for additional income. Improved nutrition leads to better health status and prospects for enhanced income build ability for accessing health facilities.



*Figure 6 - Nutritional needs before AHU*

### **(v) Milch cattle and improved health**

Livestock is a crucial and substantial component of traditional and agrarian economies and milch cattle are one of the key nutrition and livelihood sources for farming communities. As water dries in community ponds, milk production comes down. By providing water sources closer to home, GRAVIS ensures availability of water for animals too. With increased crop production, enabled by construction of *khadins*, sufficient fodder is available and consequently milk produce is enhanced. De-silting of village ponds that are a major source of water for cattle ensured uninterrupted supply of water for cattle. Dairy products are abundantly available in household with well-fed cattle. Nutrition, especially for children, is taken care of with milk and milk products. Very often, families also sell milk and milk products to make additional income.

## (vi) Addressing specific health needs

Villages in the Thar Desert always struggle to access health services even in the times of dire need. Droughts and ensuing water security create a fertile and conducive environment for outbreak of several water borne and illnesses. Women, who toil to fetch water from far off sources, older people, and children, need constant support to be able to prevent serious illnesses. Such situation demands supportive health care services for drought affected population that get pushed to the periphery in the wake of droughts when public resources are already stretched. As part of CDM project, GRAVIS directly reached out to more than 1800 individuals and addressed their immediate health needs. Medical camps organised by GRAVIS facilitated identification of illnesses such as infections, respiratory and other health issues.

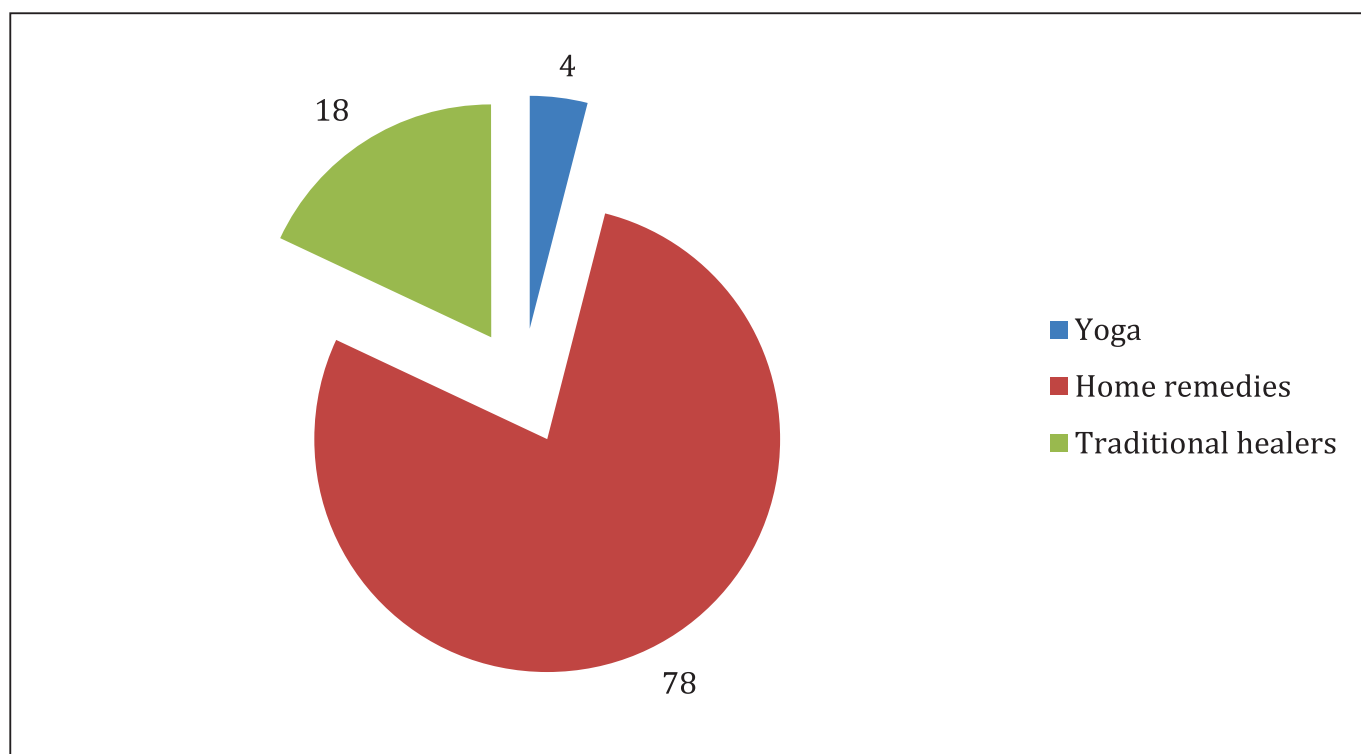


Figure 7 - Commonly used health support in the absence of community health outreach

It is important to note that in the absence of adequate health services available in vicinity, most villagers used to depend on home remedies for common illnesses or used to visit traditional healers when someone in the family was seriously ill. In some cases people ended up falling prey to quacks. Availability of medical services at doorstep emancipated people from the uncertainty and inadequacy of health services. Along with health support, in the form of medical camps, community health sessions were also organised among the community. Awareness on good health and nutrition practices, selfcare, need for maintaining clean and hygienic environment and importance of sanitation facilities were discussed at length in community health sessions. In addition to community in general, group of women and girls also participated and got benefitted from these awareness sessions. 100% participants of these trainings found the training useful and very important for leading a healthy life.

## (vii) Alleviated financial status

Inability to invest in health care and afford health services has had a long lasting impact on the health status of people in the Thar region. In many cases financial constraints were the only reasons that kept people from visiting private hospitals and quality health care services. Drought mitigation efforts by GRAVIS have contributed towards sustained improvement in income and financial status of farming communities. RWH structured such as *khadins*, led to increased and surplus food production along with enabling multiple harvests and crops in a year. Similarly, sale of excess fruits and vegetables grown in AHUs became source of additional income. Many families who had availability of clean and safe drinking water within their homes, through construction of *taankas* and installation of water filters, ended up saving the money spent of buying water and expenditure that they normally used to incur on medicines in case of outbreak of communicable and infectious diseases. Ability to maintain hygiene and adequate sanitation facilities also saved them from recurrent illnesses and thereby helped them save money.

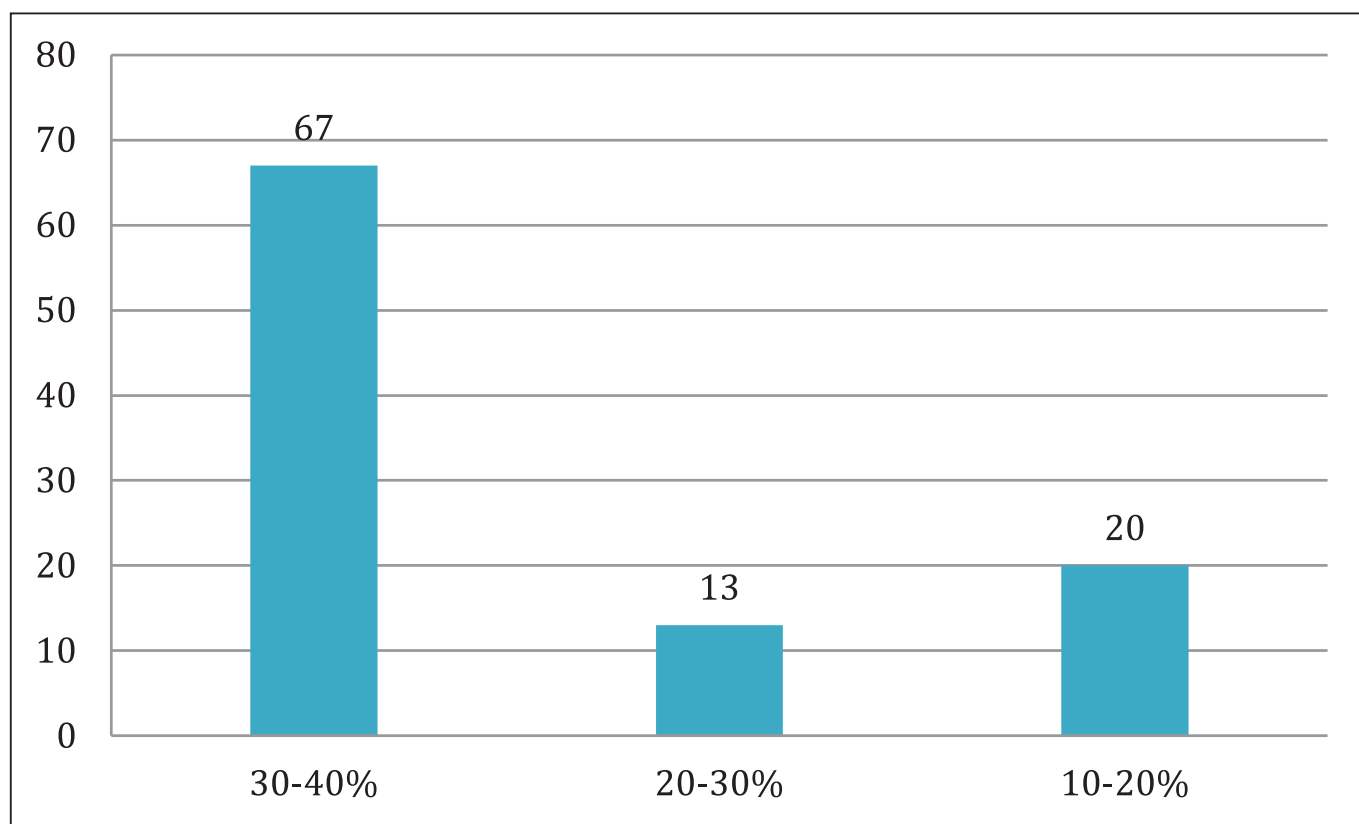


Figure 8 - Increase in income

It was noted that more than 67% of the respondents reported 30-40% increase in their income owing to one or more drought mitigation interventions supported by GRAVIS. 20% respondents were of the view that their income increased somewhere between 10 to 20% while about 13% estimated the increased between 20 and 30%.

### **(viii) Knowledge: the catalyst**

During the period of past few years, a number of training programmes, sessions, exposure visits and workshops have been conducted for farming communities, especially with a focus on women. Self-help groups (SHGs) of women were formed and trained on several health-related aspects, along with AHU care, maintenance of RWH structures and sustainable agriculture. Interactive knowledge sharing sessions helped women assimilate and absorb technical information and know how on all these aspects. As these women groups constantly interact with each other, sharing of experience happen in an organic manner, eventually leading to creation of communities that are aware and have the capacity to mitigate droughts on their own and maintain good health profile. The knowledge that they gathered during various training sessions will remain with them and will hopefully be passed on to the future generations. Knowledge has a major role in community well being and training initiatives by GRAVIS are a major step towards it.



*SHG meeting*



### **(ix) Collective community efforts for better health**

Community development initiatives as part of CDM project are undertaken under the collective community leadership facilitated through community-based groups such as VDCs and SHGs. Representation of all social groups and democratic decision making process, lends wider acceptance of the decisions taken by these groups among community. VDCs, SHGs and other such groups help mobilise people and serve as vehicles for carrying out interventions, and ensuring inclusion in the process. Decision pertaining to beneficiaries and training programmes is led by community based groups which ensures that the community development process is grounded in community aspirations, equity and holistic development of the entire community.

### **(x) Leadership of women**

Gender mainstreaming has been one of the hallmarks of GRAVIS' drought mitigation strategies. As water scarcity affects women and young girls in a much more fiercely, provision of water within households through RWH structures was of immense use for them. However, the most important aspect of the project was evolution of women's leadership in drought mitigation efforts through formation of their groups and women's ownership of RWH structures. Information communication cross groups provided women with a platform to discuss their health issues with their peers and ability to maintain and own RWH structures inculcated confidence among them to take on any challenge. Addressing community health issue in a drought affected area demands extra ordinary efforts and people centric approach towards social problems. Women's leadership has ensured that have been able all sections and age groups are able to access health benefits from drought mitigation interventions.

CDM project has turned out to be a successful initiative for improving health conditions through droughty mitigation. It is imperative to reflect on its achievements and discuss the most suitable directions in which future progress should be made.





## **5. FUTURE OF PUBLIC HEALTH AND DROUGHT MITIGATION**

Improved health and nutrition status achieved through drought mitigation in 10 villages in Western Rajasthan is a result of a combination of factors. Complex socio economic and climatic conditions dampen the efforts and pose new challenges. Ensuring steady progress towards improved health status of population demands further vivification and intensification of endeavours. Along the way, in addition to preserving the outcomes of the process so far, deliberate and focused measures may help multiply the impact.

### **Need for regular availability of health services**

Through community outreach GRAVIS has facilitated access to health care services to a large number of people, something that was not available to them otherwise. These services made remarkable difference to peoples' life in terms of quality of life and improvement in health. Many of these were first time users of health care services and found it very useful. It is important that these healthcare services are not available to them only as an event or one off the things, there is a need to ensure regularity in these services, to build trust and shape healthcare seeking behaviour of people. GRAVIS must make sure that health care services are made available to people in the project area to start with, on a regular basis so that rural communities can rely on them on a longer term. This is very much needed especially in the case of women, children and elderly, who may need to have access to health care services more often than the others. Gaps in provision of services otherwise may derail the journey towards achieving better health for the community as a whole.

### **Intergenerational discussions and dialogues**

CDM project witness a massive amount of knowledge sharing and capacity building on a wide range of issues that have direct bearing of peoples' day to day life in the Thar Desert. Incorporation of an intergenerational approach to learning will further substantiate the project outcomes and the positive impact on peoples' life. Possibilities of having focussed discussions with mixed groups representing various community based organisations along with other women, children and especially adolescents, may be explored to trigger knowledge sharing and articulating emerging issues and challenges. Such participatory discussions may also be used as platforms for discussing and exploring new ideas and identifying potential community resources for drought mitigation, and maintenance of good health. Knowledge acquired through these discussions will help future generations be prepared for novel challenges, for instance climate change, and pandemic etc. In addition, a culture of rain water harvesting and sustainable use of water will also become part of their lives.

## Consolidating women's leadership

Women have a central role in drought mitigation and health and nutrition status at household level. CDM project has optimised their role towards greater ownership, impact and sustainability in an equitable manner. Going forward, the focus must also be on consolidating their leadership and position women's groups as forerunners in drought mitigation. This will entail investing in capacities and confidence building through a number of initiatives for women, including facilitation exposure visits, interactions with peoples' representatives and policy makers and creating mechanisms for exchange across different forms of community groups. Involvement of ground level government functionaries involve in delivery of health and nutrition services for women and children. Involvement of adolescent girls in such interactions that demonstrate for them the linkages between drought mitigation strategies and health management will work as a lubricating factor in a society marred with extreme gender imbalance.



*A training for rural women*



## **Replication and scaling up**

In addition to the villages identified as part of the project, GRAVIS has been working in other remote villages too, towards building communities' resilience and capacities and creating better and healthy lives for them. However, a large number of villages, communities and villages are still languishing in water scarcity. It is pertinent to reach out to those communities and create similar opportunities for them too. The whole process will entail identification of such populations and communities, estimation of resources needed to address their health related needs, generating resources and then reaching out to them. Technical expertise of GRAVIS in the area of community mobilisation and resource mobilisation will come in handy in this exercise.

## **Building civil society capacities**

Expansion of drought mitigation requires identification and on boarding of a large number of actors. Geographic expanse of the region that has similar nature of water scarcity issues and public health challenges requires proportionate degree of capacities to respond to such challenges. Intense and rich experience gathered along the way positions GRAVIS as an expert resource agency and this expertise must be utilised to build capacities of other civil society organisations and agencies involved and interested in community-based drought mitigation in the Thar region. Orienting the drought mitigation efforts towards sustainable rainwater harvesting practices and drawing its link with good health and wellbeing of community as a whole, needs to be shared with other organisations. This will also entail handholding the organisations and potential leaders in their journey to make the best of this opportunity.

## **Advocacy for increased investments**

Creation of assets and enhanced capacities are definitely the most crucial factors leading to suitability of health impact of drought mitigation interventions by GRAVIS. Institutionalisation of measures that have proven positive outcomes will ensure increased public investments and prioritisation of the specific needs of rural communities in the Desert. Civil society dialogues and discussions with policy makers along with the sharing of evidence on the health outcomes of rainwater harvesting and other drought mitigation endeavours may persuade policy makers to increase public investments towards accessible and quality health care as well as micro initiatives to mitigate droughts. Technical agencies for disasters risk reduction, drought mitigation and healthcare are needed to roped in for such discussions, and to ensure that the drought mitigation is oriented towards improved health and nutrition status and overall wellbeing of Desert communities.



## ACRONYMS

AHU	-	Arid Horticulture Unit
CDM	-	Community-based Drought Mitigation
GRAVIS	-	Gramin Vikas Vigyan Samiti
RWH	-	Rainwater Harvesting
SHG	-	Self Help Group
VDC	-	Village Development Committee

## GLOSSARY

Beri	-	Percolation Well
Gram Swaraj	-	Village Self-rule
Khadin	-	Earthen Bund, Dyke
Naadi	-	Village Pond
Sarvodaya	-	Universal Uplift
Taanka	-	Drinking Water Storage Tank



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## NOTES

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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 with over 75,000 families across 1650 villages reaching a population of over 1.7 million and has established over 4,000 CBOs. GRAVIS believes in participatory community development that blends traditional knowledge and modern sciences and promotes equality.**

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