

**Converting Calamity into Opportunity:
Natural Resource Enhancement through Participatory
Drought Relief Programme**

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1. Introduction

This paper gives a detailed account of the approach adopted by VIKSAT in drought in Gujarat. Through this case study, we are attempting to provide a set of guidelines that we believe will be useful for adoption during drought relief activities, but also towards drought proofing. We have found in our experience that working with people's institutions both at village and at a regional/taluka level goes a long way in planning, implementation and tackling drought on a long term.

The paper discusses some perspectives on drought in the following section followed by description of the case study.

2. Perspectives On Drought

Droughts are long seen as a manifestation of scarcity of water caused due to untimely and inadequate rainfall. This is further intensified due to human interventions, often on unsustainable basis. Although droughts are not a new phenomenon and people in certain parts of India have been coping with drought on a regular basis, it is certainly not a happy scenario to be in. The effects of drought are felt on almost everyone, though differentially and with a time lag depending upon a complex set of factors that are linked to so-called development indicators. The impact is most felt in the rural areas with the poor and those living off directly on natural resources (such as land and water) bearing the brunt.

Similarly, drought is felt less in urban areas where the wherewithal to meet the exigencies are available in higher quantum. Further, the high density of vote banks compels the political administration to meet the urban requirements even in the face of drought conditions by hook or by crook. The efforts of administration to meet the drinking water crisis in urban areas by having piped water supply schemes installed at huge cost sourcing water from large distances from the countryside prove the point. By such efforts, the problem is only enhanced or transferred, and seldom mitigated, the key reason being that the resource management is skewed towards supply side. A recent review of the common pool resource management by VIKSAT has thrown up the near absence of demand side management of ground water that explains the ever depleting water levels and unsustainability. This in spite of the widespread watershed

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development programmes promoted by the government wherein demand-side management forms an important integral component (Mudrakartha S, Chopde S, Subrat Dash and Jaya M, 2002).

Policy responses that concentrated on food needs, on access and entitlements to food (Calow, R *et al* 1999) too have made impressive figures of food production at macro (country) level but did not make much difference to the communities, owing to a host of distribution related issues, and more importantly, due to lack of sustainability of such an approach. People recognize the value of water, especially the farmers in the agrarian India. Ensuring some sort of "empowerment" where people take water management decisions will alone address drought. One of the main requirements of people to remain in their villages and often the first problem faced is not access to food, but rather availability of water (Eele, 1993).

Conventionally, drought is defined be based upon the effect that they have made on people's lives. Bandhopadhyaya (1988) listed four types of droughts, namely (i) meteorological drought, (ii) surface water drought, (iii) ground water drought and (iv) soil-water drought. Whereas the National Commission on agriculture in India (1976) defines three types of droughts, namely, meteorological, agricultural and hydrological droughts. Meteorological drought occurs when there is a significant (more than 25%) of decrease in rainfall from the normal value over the area. Agricultural drought occurs when soil moisture and rainfall are inadequate during the growing season to support healthy crop growth to maturity and causes crop stress and wilting. Hydrological drought may be a result of a prolonged meteorological drought results in marked depletion of surface water and consequent drying up of reservoirs, lakes, streams and rivers, cessation of spring flows and also fall in groundwater level (CAZRI, 2000:5). This may be referred to as the thematic approach. However, today, drought is not a mere definition but a stark reality that cuts across all types of population simply because the individual "thematic" types of drought have come to occur collectively in more than 50% of India year after year. The thematic solutions such as drilling scores of borewells, installing scores of check dams, tanks, or plantation schemes have either not worked or have become untenable any more². There is a need for re-orienting the drought approaches from sustainable livelihoods perspective where the local and regional understanding becomes important. A whole range of livelihood alternatives combined with the thematic solutions would define a sustainable livelihoods approach especially when dealing with uncertain meteorological conditions such as in the arid and semi-arid³ regions.

² Perhaps this might form one explanation for the ineffectiveness of the huge sums of money spent year after year on drought mitigation programmes such as in Rajasthan and Gujarat. Drought allocations for Rajasthan have increased from a mere 226 lakhs in the first five-year plan (1951-56) to a massive 113,763 lakhs in the IX Plan (1997-2002). Yet, more than 48% of human population, 54% of livestock population is perennially affected. In other words, 60% of arid² Rajasthan state, Kachchh, Saurashtra and North Gujarat areas of Gujarat state, Rayalaseema and Telangana regions of Andhra Pradesh continue to suffer from perennial drought conditions. For Rajasthan and Gujarat, it is the 5th and 4th years of latest spell of drought.

³ In the arid region, the average annual rainfall is below 400 mm whereas in the semi arid region it ranges from 550 mm to 800 mm. Only a couple of districts such as Baran and Sawai Madhopur receive rainfall more than 850 mm. Moreover, this rainfall is extremely erratic and unreliable.

In both Rajasthan and Gujarat states, the drought is persisting for the past 4-5 years. While famine is no more relevant in India, desertification is however taking place which is perhaps one of the direct fall outs of continued drought conditions.

In the above perspective, water is seen as the most basic resource that needed to be addressed. Hence, the whole approach was "water-focussed" indicating the lopsided approach that was always adopted. Another such example is the plantation drive⁴.

In VIKSAT, we have been viewing drought as one that related intricately to the livelihoods of the communities and water management happens to be one of the most effective methods to cope with drought. To give an example, Kachchh has evolved their skills in handicrafts as an effective means of coping with perennial drought conditions wherein the "water dependent agriculture" is reduced to supplementary source of income. With people in the center in this sort of an approach, VIKSAT works through the people's institutions to address drought conditions from sustainable livelihoods perspective. To elaborate, this implies that the local people's definition of drought, their concept of drought mitigation strategy and the way of use of the common and private resources becomes significant. The role of the NGO or the GO then becomes one of facilitating the above, and introducing efficient and effective means of resource management through people's participation.

1.1. Project on Drought Relief Intervention

VIKSAT is facilitating strengthening and evolution of People's Institutions, with a focus on Water Management, in the Satlasana taluka of Mehsana district since 1993. Mehsana is an intensely cropped district of Gujarat. Of the total geographical area of 0.901 Mha, the net area sown is 0.605 Mha and the gross cropped area is 0.815 Mha. Groundwater accounts for 97% of the irrigated area in the district. The average annual extraction of groundwater for irrigation exceeded recharge several times resulting in serious depletion problems throughout the district. The Satlasana taluka also faces similar problems. All the 17 project villages of VIKSAT are located along the foothills of the Aravalli range in the Satlasana taluka. Rainfall is erratic with the average rainfall being 680mm. This part of the taluka is underlain by shallow and phreatic alluvial aquifers. The area forms a major recharge zone of the Mehsana Multi-Aquifer system. The most common mode of extraction of groundwater is through open wells. Earlier, with high natural recharge rates, the water level in the area used to be at shallow depths. However, due to continuous over-exploitation of groundwater for irrigation, the estimated net annual draft reached 191.58 MCM against an utilisable recharge of 90.63 MCM. This overexploitation coupled with increased deforestation has resulted in reduction in the natural recharge leading to a significant decrease in groundwater availability. Seasonal variations in the water level are also found to be quite large. During drought conditions, several of the wells go dry. The erratic and sparse rainfall during the monsoon of 1999-317.60 mm as against the annual average of 680 mm-adversely affected the livelihood of the people in the project villages. Twelve out of the 17 project villages were drought-affected.

⁴ Single species plantation programme was forcefully implemented as a government policy in the early 70s and 80s resulting in severe damage to the natural biodiversity of various regions in India. A huge civil society reaction to the approach has given way to the policy change, but not before significant damage was done, that promoted a natural regeneration and protection approach as part of Joint Forest Management in India since 1980.

As of now, VIKSAT had not worked in drought relief intervention. However, in response to the people's immediate needs, VIKSAT, in April 2000, took up survey of 12 drought affected villages in its project areas. Meetings were held with the *Gadhwada Sangh*⁵ to develop an effective methodology for efficient implementation. OXFAM (India) and Sir Dorabji Tata Trust supported the 4-month project from May to September 2000.

1.2. Effect of Drought on Livelihoods

A survey conducted by VIKSAT revealed that the drought impacted all the 17 villages in various ways. In most of the villages, the continued drought conditions have affected the already fragile water resources. Drinking water wells had gone dry compelling people to fetch water from some low, intermittently yielding farm wells located at a distance of about 2 kms. Most of the villages were entirely dependent on government tanker supplies for drinking water. Groundwater, the only source of irrigation in the area, had depleted to the point that over half the wells had water sufficient for just 30 minutes of pumping twice a day. The other wells had no water. Prices of essential commodities such as Oil, Wheat and *Bajri* had escalated. Dairy farming, a major complementary source of income, was also affected. The average milk production per cattle head decreased to 50% in 8 villages, and to about 33% in the others. The crop yields of major *Kharif* and *Rabi* crops drastically declined. A total of 46 buffaloes died in six villages within a period of one month (March/April). Fodder was obviously in short supply.

The drought compelled most families to reduce their vegetable intake by half, largely to only potatoes and onions. Consumption of green vegetables became negligible. Oil and ghee consumption was also markedly reduced. With milk production having declined, the intake at household level was only for an occasional tea. In contrast to normal situation, children went without milk. In some of the villages, people started drinking *Ukalo* (tea without milk). More than 50% of the well owners in all the villagers invested in deepening their wells or digging new borewells. In all, of the 243 wells deepened (in 12 villages) only 19 struck water. The average investment in each well was around Rs.17,000/- leading to huge debt being incurred by well owners. In most villages, around 20% of entire households had migrated. In another 20%-30% households, the male members had migrated.

2.3 Interaction with People's Institutions and Sourcing of Funds

In the meanwhile, VIKSAT called a meeting of the *Gadhwada Jal Jameen Sanrakshan Sangh*⁶ on May 8, 2000 at its Satlasana field office to explain the efforts being made

⁵ VIKSAT has facilitated evolution of People's Institutions (PIs) in all its project villages. These Village Institutions have representation from all the households in the village. Over the past three years, VIKSAT has developed capacities of these institutions through training programmes, exposure visits and awareness programmes. Today, these institutions are capable of managing programmes by themselves to a good extent. The PIs are members of a regional federation called the *Gadhwada Jal Jameen Sanrakshan Sangh* promoted by VIKSAT.

⁶ VIKSAT has facilitated evolution of People's Institutions in all the project villages. These People's Institutions have representatives from each of the households in the village. Over a period of three years, VIKSAT has developed capacities of these institutions through training programmes, exposure visits and awareness programmes. Training on institutional aspects such as leadership, accounts maintenance and conflict management have also been provided. These institutions are capable of managing programmes related to natural resource management such as plantations,

for mobilizing funds for drought work. Pending funds availability, the *Sangh* was being consulted to develop a methodology of working through PIs for efficient implementation. Not being sure of the size of the funds, VIKSAT asked the *Sangh* members to rank the villages in descending order of drought impact. To address this query, VIKSAT facilitated a *Situational Analysis* leading to the *Sangh* to decide upon the order in which relief work should be started in different villages. The *Sangh* decided to begin work immediately in 4 villages identified as the worst affected among the 12 villages.

Simultaneously, VIKSAT also sourced Rs.10 lakhs from Sir Dorabji Tata Trust by June 1, 2000 which was decided to be used in one large village called Bhanavas. By the end of May 2000, the exact amount of money available for VIKSAT from OXFAM was clear, from which it was deduced that it was sufficient for only 7 villages.

VIKSAT adopted a uniform implementation strategy for all the villages irrespective of the source of funding support.

2. Ground Water Status of Mehsana district

Mehsana is one of the intensely cropped districts in Gujarat. Of the total geographical area of 0.901 Mha, the net area sown is 0.605 Mha and the gross cropped area is 0.815 Mha. Groundwater accounts for 97% of the irrigated area in the district. With the average annual extraction of groundwater exceeding recharge many times, over-development of groundwater for irrigation has resulted in widespread depletion problems throughout the district. The water levels have been falling alarmingly every year in the district. The Satlasana taluka in Mehsana district also faces similar water depletion problems.

2.1. General Condition in the Case Study Villages

VIKSAT's 17 project villages (including those where drought interventions were made) are located along foothills of the Aravalli range in the Satlasana taluka. Here the average temperature ranges from 40-42 to 8-10°C; the average annual rainfall, also erratic, is around 680mm. Hence, this has semi-arid conditions. This part of the taluka is underlain by shallow and phreatic alluvial aquifers. This area forms a major recharge zone of the Mehsana Multi-Aquifer system. Groundwater extraction is through open wells. Earlier, with the natural recharge taking place at very high rates due to the presence of thick forests covering the Aravalli hill ranges and limited extraction, the water level in the area was shallow. But gradually, due to over-exploitation of groundwater for irrigation, the estimated net annual draft in the taluka is 191.58 MCM against utilisable recharge of 90.63 MCM. Combined with massive deforestation, this overexploitation resulted in the reduction in natural recharge manifest in the form of significant drops in groundwater availability. Seasonal variation in the water levels is also quite high. During droughts, several wells go dry.

construction of water harvesting structures etc. All arrangements required for fodder supply including transportation, monitoring and distribution were handled by PIs at village level. The apexing institutions having representation from various PIs is called the *Gadhwada Jal Jameen Sanrakshan Sangh*.

The loose & sandy soils and ravines occurring over a large area in the taluka are highly vulnerable to water and wind erosion. Soil erosion causes serious damage to the agricultural (private) land during the monsoon; the streams also carry silt from the ravine areas and deposit it in the agricultural lands in the plains. Due to this, every year, more and more fertile agricultural land is gradually converted into wastelands. According to the taluka-wise ecological data, out of the total geographical area of 95,419 ha, wastelands occupy 11,561 ha.

All this put together has resulted in making the taluka a water scarce area with precarious livelihood conditions.

3. The Monsoon of 1999 at Satlasana and its Effect on Livelihoods

The widespread drought of 1999 in Gujarat also affected VIKSAT's project villages. The below average and erratic rainfall during 1999 monsoon of the order of 317.60 mm (against the annual average of 680 mm) caused adverse impact on the livelihoods of the people in the area. 12 out of the 17 (project) villages of VIKSAT were drought-affected. The following section describes the impact of drought based on survey conducted by VIKSAT in all the 17 villages.

3.1. Drinking Water

In response to the scarcity conditions, two new borewells were drilled by Panchayats of two villages in the month of March 2000 after which the drinking water availability improved. However, in the remaining villages, the common wells that served drinking water needs had gone dry forcing people to fetch water from farm wells located at about 2 kms distance. Even with this, the availability was inadequate. In 7 other villages, tanker supplies were started by the government which indicated the severity.

3.2. Status of Irrigation Water

As mentioned in the foregoing, groundwater is the only source of irrigation in the area. As of first week of April 2000, in one village, 50% of the wells had water that could be pumped for half an hour in one stretch, two times a day. For 85%-90% of the wells in the remaining villages, water could be pumped only for 15 minutes at a stretch twice in a day. Rest of the farm wells in the project villages had gone dry.

For instance, in a village called Bhanavas, out of 27 wells, only 3 wells yielded water for one hour in a day; 22 wells for half an hour and 2 wells were completely dry.

3.3. Price escalation of commodities

Prices of essential commodities such as oil, milk, wheat and bajri during 1998 summer were Rs.40/, Rs.16/-, Rs.6.25 and Rs.5/- respectively for per kg.; whereas, in 1999, the prices had registered an increase of 10-50%.

3.4. Milk Production

Dairy occupation accounts for a major supplemental source of income in the area. Due to the drought conditions, while the average milk production per cattle had reduced to

50% in 8 villages, it reduced to about 33% in rest of the villages. Nevertheless, the price of milk remained unchanged.

3.5. Crop Yield

Major Kharif crops in the project area are Groundnut, Castor and Gobar. Due to unavailability of critical irrigation due to the drought conditions, the crop yield reduced drastically. For example, Groundnut, which is a cash crop, *failed* (a term used to mean that the yield was lesser than the seed quantity used in sowing) in two villages, the yield was 5% of the normal monsoon yield in one village, 10% in five villages, 20% in one village and 40%-50% in the rest of the villages. The production of Castor, also a cash crop, dropped in almost all villages to 20%-25%. Gobar crop, a highly nutritious vegetable used for household consumption as well as market sale, almost failed in four villages. The yield reduced to less than 20% in 4 villages and to less than 35% in 2 villages.

Wheat and Tobacco are the major Rabi crops. Tobacco, which is a major cash crop, was sown only in two villages, the yield of which reduced by 50% as compared to normal monsoon year. Wheat crop failed in one village and the production was less than 15% of normal yield in three villages. While its yield reduction ranged between 25%-35% in four villages, it was about 50% in another four villages.

Bajri is the only summer crop taken in the area. The sown area ranged between 5% and 30% only in the summer of 2000 due to non-availability of water. Most of the farmers did not expect the crop to yield grains but it might serve as wet fodder only.

3.6. Cattle Mortality

About 46 buffaloes died in six villages in one month (March-April) by April 7, 2000, even before the severe summer had set in. In percentage terms, it was about 2% of buffalo population in three villages and about 6% in another three villages. In Bhanavas itself, 25 cattle died within the same period.

3.7. Fodder Scarcity

As of April 2000, around 40% of the farmers in each village had dry as well as wet fodder enough to sustain their cattle for about a month. Others (mostly women) had started resorting to collecting dry leaves from nearby forest areas. They had to trek around 8 kms daily, spending around 5-6 hrs per day for this purpose. In two villages, people had stopped going to the forests as the dry leaves were not available any more. As regards quantum of fodder given to cattle, 6 villages were providing 10 kg/day (50% of the normal requirement) and the remaining villages, a mere 5-6 kg.

3.8. Food & Human Nutrition

Most of the villagers had reduced their vegetable intake by half, which consisted of only potatoes and onions. Consumption of green vegetables was negligible. There was also a marked reduction in the consumption of oil and ghee. With the production of milk having declined, as described in the foregoing, the intake at household level was only for occasional tea as against it being given to children during normal years. In some of the villages, people had started consuming *Ukalo* (tea without milk).

3.9. Cash Flow

More than 50% of the well owners in all the villagers had invested in deepening their wells or digging new borewells. In all, out of 243 wells deepened in 12 villages, only 19 struck some water. Each farmer invested on an average was around Rs.17,000/- on each well. This had led to intense indebtedness among the well owners. For this, loans were raised from credit societies, traders and relatives, mortgaging land or jewellery. The difficult conditions created a demand and the interest rates charged by private lenders were quite high. The credit societies and traders charged 2% and 3% per month (or 24-36% per year) respectively. The traders gave loan at 3% interest against mortgage of jewellery; without mortgage, the rate was 5% per month (yes, 60% per annum)!

Around 50%-60% population in every village went for daily labor in earthwork, deepening wells, masonry work, diamond cutting and pipeline work. The work too was available for only 15-20 days in a month.

In Bhanavas, 17 well owners deepened their wells at an average cost of Rs. 20,000/- each. However, only 2 or 3 wells struck water. As many of them did not have personal savings, they took loans at an interest rate of 3% from traders and relatives. 3 households were in such a bad position that they had food only on the days they got labour.

3.10. Migration

In most of the villages, around 20% of the households had migrated with families and livestock. From another 20%-30% of the households, only the male members had migrated. This percentage in some villages such as Bhanavas was as high as 50%. These people left the village as early as February (2000) as they clearly foresaw difficult drought conditions. They migrated to other relatively "better" villages/ talukas/ districts with irrigation support and took up shared cropping (against 1/5th share of the produce). 5% of the households left their non-milch cattle with their relatives in other talukas/districts.

4. Key Objectives Of The Drought Relief Programme

The key objectives of the drought relief programme taken up by VIKSAT were :

- Providing minimum fodder required for sustenance of cattle; and,
- Providing Cash/Food for Work (mainly through Soil and Moisture Conservation Activities).

4.1. Fodder

People value cattle as assets and hence wanted to sustain them by providing fodder. Further, in Gujarat, people worship cattle as *gaumata*⁷. Hence, as decided by the *Sangh*, fodder was made available at the rate of 8 kg. per cattle head (assumed at 2 cattle per household, which is also the average cattle holding) for all the households at a subsidised

⁷ Implying that cattle is given the status given to that of one's own mother.

rate of Re. 1 per kg. as decided in the *Gram Sabha*. The amount collected from this distribution would be used for village development activities majorly related to drought mitigation.

4.2. Cash / Food for Work

Due to drought conditions, local employment avenues had reduced drastically resulting in increased migration. In most of the cases, women, children and elderly had stayed back. VIKSAT considered present drought as an opportunity for rejuvenating local water resources along with providing employment for immediate relief. Thus Soil and Moisture Conservation (SMC) activities such as check dams, rejuvenation/construction of water tanks, trenching, drainage line treatment, vegetative measures and farm bunding were implemented. These structures while enhancing groundwater capture, would act as a *drought proofing* mechanism for future years.

The remuneration for labour was a *package of fodder, foodgrains (wheat) and cash*. Wheat was distributed at a uniform rate of 3 kgs/day (the bare minimum requirement of a household to meet the nutrition needs). This was built into the project to avoid use of remuneration for purposes other than *Food & Nutrition* enhancement in the family.

5. Implementation

The key elements in the project implementation included liaising with the Government, discussions with the Gadhwada Sangh, conducting village level meetings (the Gram Sabhas) and putting in place systemic requirements. viksats decided to make the Gadhwada Sangh jointly responsible for the drought planning and implementation. Thus, during the two Gadhwada Sangh meetings, norms and guidelines were evolved on the entire implementation strategy. Priority ranking of the drought affected villages was also done very fairly by the Gadhwada Sangh. The Gadhwada Sangh has also decided to give priority to the vulnerables, widows and physically challenged persons. The operational principles were equity, efficiency and sustainability, which they understood and followed during the entire implementation.

The project was implemented over a period of 4 months. (March - June 2000 intensively; in some villages it was continued for a few weeks more). Fodder distribution was closed on June 30, 2000 coinciding with the arrival of the first monsoon showers. This decision was taken in view of the difficulties in fodder transportation, storage and distribution during rains. Construction of SMC structures (to provide employment) continued over the entire project duration with payments made on a weekly basis.

A notable feature of drought implementation carried out through the *Gadhwada Sangh* and the Village Level People's Institutions was the division of responsibilities of various tasks in relation to strengths of respective individuals. Examples are:

- The task of monitoring and carrying out measurement of works for payment was assigned to educated persons;

- Physically challenged persons who were capable of keeping a tab on disbursements were assigned the role of maintaining records;
- Old aged women/destitutes/widows who could not work as laborers at site were assigned the task of providing drinking water to those working on relief sites;
- Persons who could not do physical work on site and who had no family member to support them were provided prescribed food grains quota on a weekly basis; and,
- Fodder of prescribed quantum was made available at subsidized rate to all the laborers irrespective of whether one owned cattle or not.

5.1. Liaison with the Government

Prior to starting drought work, VIKSAT met the District Collector of Mehsana on May 7, 2000 to inform him about its intention to take up drought relief activities in its project villages. On VIKSAT's request, the Collector issued a *No Objection Certificate* and also a *Permission Letter* for inter-district transportation of fodder. He also issued letters to the concerned taluka level officers for their cooperation. This step helped in avoiding delays and problems in the drought work.

5.2. Gram Sabhas

VIKSAT conducted *Gram Sabhas* in all the villages before commencing relief activities. The norms and guidelines evolved by the *Gadhwada Sangh* were by and large ratified by the *Gram Sabhas*. This helped maintain uniformity across villages and take care of the gender and equity aspects. The vulnerable, widows and the destitute, were given special consideration.

The following were among the key points adopted by the Gram Sabhas in each village:

- Dry fodder would be given preference over wet fodder due to problems of handling and risk factor of poison. Dry fodder would be distributed at a subsidised rate of Re.1 per kg only to participants of SMC activities. For non participants, the rate would be Rs.4 per kg;
- Similarly, the rates for wet fodder for participants and non-participants were fixed at 25 paise and Rs.1 per kg, respectively;
- In case of those without cattle, fodder would be provided as per above, which they could sell to others;
- Required tools would be provided to villagers, the cost of which would be repaid in 3 installments starting from the second wage payment;
- Committees would be formed having representation from all of the communities to take care of fodder storage and distribution as well as planning and implementation of SMC activities;
- Location of storage space was identified. This space would be provided free of cost by the village;
- The options of various activities were discussed. The villagers finally decided to prefer SMC activities on commons on a priority basis such as rejuvenating the existing tanks, creating new tanks, construct check structures (gully plugs, check dams, trenches) and plantations. Private farm bunding would be taken up as a last option and towards the close of common activities.
- The respective *Panchayats* would give a *No Objection Certificate* for carrying out SMC activities in commons. In addition, the village level People's Institutions would submit a resolution of cooperation and management of the entire drought relief activities in the village.

Systemic Arrangements

As envisaged, the planned activities were carried out with the active involvement of village level institutions. VIKSAT placed one field worker in each village and a supervisor (VIKSAT representative) for every two villages. The worker assisted the respective PI in fodder distribution, planning works and maintaining stock of fodder. The supervisor was responsible for monitoring and reporting of the progress of planned activities as well as future fodder, material and cash requirement from time to time. As agreed in the *Gram Sabhas*, the Fodder Distribution and SMC Committees performed their roles superbly. The SMC works were carried out in small groups (6 persons of the same clan). One person from each group also acted as the group leader. The group leaders apprised the worker who in turn interacted with the supervisor. In addition, the local health practitioners (government officials) for cattle and for the community visited the villages once a week. Overall management of the relief work including maintaining accounts of expenses was done by VIKSAT.

Maintaining systems and procedures on every transaction (kind or cash) during the relief project was key to running an efficient and effective delivery mechanism. Realising this, VIKSAT spent considerable time developing formats in consultation with the *Gadhwada Sangh*.

The following are some of the key transactions for which formats were developed:

- Procurement and distribution of wheat (foodgrains). Stock register of daily wheat inflows and distribution. Coupons with "numbers" showing quantity of wheat as wage payment in kind;
- Record of procurement and distribution of fodder was maintained through stock register. The format included details of distribution through fodder payment sheet with names of individuals, number of days of work, entitled fodder quantity, signature of receiver, supervisor, witnesses (from Fodder and Food Grain distribution committee) and Coordinator.
- Purchase and provide tools for earthwork;
- Measurement and payment sheets showing names of individuals, quantum of work, rate of work, total amount payable, part payment in quantum of wheat, part payment in cash, signature of Receiver, Witnesses during payment (from SMC committee), Site Supervisor, Coordinator, Accountant and Director.
- Record of collection of amount (at subsidized rates) paid by villagers for purchase of fodder as per the entitlement;
- Record of daily inflow and outflow of all construction materials (stock registers containing pages for cement, aggregate, sand, bricks etc.) for every site;

The above formats helped VIKSAT assess the outreach and study the impact of the intervention strategy.

Table 1: Drought relief activities at a glance

Village	Recipients	Soil and Moisture Conservation Activity (No./cu.m/Ha)	Fodder Distribution (Tonnes)	Wheat Distribution (Kg)	Cash Payment (Rs)
<i>Kubada</i>	57	Desilting old checkdams 4	39.84	14003.50	145096
		Renovation of old CD 2			
		New Check Dams 2			
		Gully Plugs 7			
		Trenches 100			
		Plantations 15 ha.			
		Farm Bunding 4125 Cu. M.			
<i>Semor</i>	72	New Pond 3	27.80	12800	204936
		Plantation 15 Ha.			
		New Check Dams 4			
		Gully Plugs 4			
		Trenches 2			
<i>Nedardi</i>	125	Excavation of Old Pond 1	51.32	14985.50	130272
		New Check Dams 2			
		Gully Plugs 1			
		Plantation 10 ha			
<i>Nana Kothasana</i>	135	Desilting Existing Pond 1	67.33	33276.50	294166.50
		Desilting Old Check Dam 1			
		Plantation 10ha			
		Farm Bunding 5250 Cu.M.			
		Nala Plugs 154			
<i>Samrapur</i>	135	New Pond 1	41.83	16889.50	266450
		New Check Dam 1			
		Gully Plugs 4			
		Plantation 10 Ha.			
<i>Vansada</i>	100	New Pond 1	14.9	7896	125441
		Under Ground Checkdam 2			
		Farm Bunding 6375 Cu.M			
<i>Bedasma</i>	105	New Pond 1	0	3630	62356
		Gully plugs 3			
<i>Bhanavas</i>	120	New Pond 1	72.54	15982	286570
		New Checkdam 1			
		Gully Plug 8			
		Plantation 15 Ha.			
		Farm Bunding 4125 Cu.M.			

Achievements under the Drought Relief Programme

- 41,700 person-days of employment generated during 4 months;
- 848 families outreached;
- 315.488 tonnes of fodder distributed;
- 1,21,792 kg of Wheat distributed, and
- Rs.15,01,932 Cash paid (excluding payment for skilled labour).

5.3. Seed Distribution

Apart from upsetting the economy of the region, drought also decreases seed availability. Often, farmers borrow from moneylenders and traders at a high rate of interest (from 36% to 60%) for meeting their crop needs. To address this issue, it was planned to distribute free grain seeds which would reduce the input cost for the *Kharif* crop and helped stabilise the food grain availability in the subsequent months. Grain seeds worth Rs.120 per household were distributed free of cost as given below:

Table 2: Distribution of Kharif Seeds

Village	Recipients
<i>Kubada</i>	58
<i>Semor</i>	72
<i>Nedardi</i>	71
<i>Nana Kothasana</i>	129
<i>Samrapur</i>	130
<i>Vansada</i>	97
<i>Bhanavas</i>	120
Total	677

5.4. Taking Care of the Marginalised

As decided by the *Gadhwada Sangh* and the *gram sabhas*, wheat was distributed free of cost to support the vulnerable (old, physically challenged and widows) who were incapable of participating in the SMC activities. The quantum of wheat distributed was 75 Kg/month per family of less 3 members and 150 Kg./month per family with more than 3 members.

Table 3: Taking care of the Vulnerable

Villages	Recipients
<i>Kubada</i>	3
<i>Semor</i>	3
<i>Nedardi</i>	5
<i>Nana Kothasana</i>	7
<i>Samrapur</i>	5
<i>Vansada</i>	2
<i>Bedasma</i>	5
<i>Bhanavas</i>	0
Total	30

5.5. Monitoring

Monitoring was done through a team constituted to address issues, provide guidance for smooth, efficient implementation and suggest midcourse corrections if any. The team comprised the VIKSAT Director, Chief Accounts Officer & Secretary-NFD, a donor representative and two representatives from the *Gadhwada Sangh*. This team formally met thrice during the project duration and reviewed the work. However, there was a continuous interaction with all the members in an informal way facilitated by the VIKSAT Director.

5.6. Participatory Evaluation of the Drought Relief Programme

Meetings were held from September 19–22, 2000 in all the 8 project villages to review the entire drought relief programme. The following were the findings in the 7 villages (the other village did not have fodder distribution component):

Table 4: Benefits from Fodder

Sr. No.	Villages	Total cattle/ cattle saved from dying	Increase in Milk Production from/to	No. of migrated families returned	Collected seeds from the Jowar fodder
1.	<i>Bhanavas</i>	450/300	2/3	10	
2.	<i>Samrapur</i>	700/250	3/5	15	
3.	<i>Kubada</i>	400/300	2/3	1	*
4.	<i>Vansada</i>	250/15	3/5	10	
5.	<i>Semor</i>	200/100	1.75/2	10	*
6.	<i>Nana Kothasana</i>	700/350	5/6	62	*
7.	<i>Nedardi</i>	350/200	2/3	50	*

Note: Fodder was not distributed in *Bedasma* as relief work was taken up in August. The decision to stop fodder by June 30, 2001 was already taken.

Fodder distribution helped women as they did not have to walk long distances for fodder collection. It also increased the organic manure availability to the villages.

Table 5: Additional Benefits to Women

Sr. No.	Villages	Women participation in the activities	No. of families who made Jewelry from the money saved
1.	<i>Bhanavas</i>	30%	7
2.	<i>Samrapur</i>	30%	10
3.	<i>Kubada</i>	40%	5
4.	<i>Vansada</i>	25%	5
5.	<i>Semor</i>	35%	8
6.	<i>Nana Kothasana</i>	50%	0
7.	<i>Nedardi</i>	45%	1
8.	<i>Bedasma</i>	32%	3

Other benefits accrued by the community due to drought relief intervention included:

- The community did not have to search for alternative employment during the drought;
- Reduction in their debt burden;
- Received help in the input cost of *Kharif* crop; and,
- Reduced migration.

Table 6: Wheat Distribution

Sr. No.	Villages	Vulnerable families
1.	<i>Bhanavas</i>	0
2.	<i>Samrapur</i>	4
3.	<i>Kubada</i>	3
4.	<i>Vansada</i>	2
5.	<i>Semor</i>	4
6.	<i>Nana Kothasana</i>	5
7.	<i>Nedardi</i>	3
8.	<i>Bedasma</i>	0

The villagers were able to get grains in the village itself in quantities sufficient to maintain their health and nutrition to a reasonable extent.

Performance of Water Harvesting Structures

We attempted to collect data through the involvement of the village institutions from the water harvesting structures constructed during the drought of 2000 in the succeeding monsoon year. The following provides a glance on how the data was collected and maintained.

S. No.	Name of the Village	Type of Structure	Water Harvested till July, 2001 (in litres)	No. of Times Filled to Capacity
1.	Kubda	Check Dam – 1	56,250	Once to Full Capacity
2.	Kubda	Check Dam –2	56,250	Once to Full Capacity
3.	Semor	Percolation Tank– 1	30,40,000	Once to Full Capacity
4.	Semor	Percolation Tank– 2	24,000	Upto 2 ft. Filling
5.	Semor	Percolation Tank– 3	24,000	Upto 2 ft. Filling
6.	Nedardi	Pond	93,75,000	Upto 4 ft. Filling
7.	Samrapur	Percolation Tank	1,80,000	Upto 2 ft. Filling - Three Times
8.	Samrapur	Check Dam	1,31,25,000	Once to Full Capacity
9.	Samrapur	Underground Check Dam – 1	31,50,000	Water impounded subsurface in the Dhamani river
10.	Samrapur	Underground Check Dam – 2	31,50,000	Water impounded subsurface in the Dhamani river

S. No.	Name of the Village	Type of Structure	Water Harvested till July, 2001 (in litres)	No. of Times Filled to Capacity
11.	Vansada	Pond	2,50,000	Upto 2 ft. Filling - Two Times
12.	Bedasma	Percolation Tank	4,80,000	Upto 3 ft. Filling - Two Times
13.	Bhanavas	Percolation Tank	72,00,000	Upto 2 ft. Filling - Three Times
14.	Bhanavas	Check Dam (3 times overflowed)	28,35,000	Three Times Full Capacity
Total Water Harvested/ recharged into subsurface till July 15, 2001			4,29,83,000	

It may be noted that by July 15, 2001, when the rainfall incident was just 25%, about 4.3 crore litres was harvested which would suffice to meet two critical support irrigations to a *Kharif* crop in an area of 80 acres. The assumption is that 80 percent of total recharge is available for use as groundwater. In a good monsoon year, one could expect a harvest of 17 crore litres through the above structures which would bring in stability especially in the *kharif* and rabi crops. We are planning a research study in this direction.

5.7. Seed Distribution

Drought decreases availability of seeds apart from upsetting the economy of the region. This makes it difficult for farmers to invest in desired inputs for agriculture. To address this, one of the components in the relief programme was free grain seed distribution. Grain seeds worth Rs.120/- per household were distributed free of cost to all the SMC labourers in all the villages.

5.8. Monitoring

A team was constituted to monitor the progress of the project, address issues, provide guidance for smooth, efficient implementation and suggest midcourse corrections. It comprised of VIKSAT Director, Chief Accounts Officer & Secretary-NFD, one donor representative and two representatives from the *Gadhwada Sangh*. This team met thrice formally in the project duration and gave necessary suggestions. Informally, there was continuous interaction with all the members.

The above table demonstrates the potential of water that could be harvested from the structures created by VIKSAT.

6. Key Learnings

The experience has provided several key learnings :

- By and large, a majority of people has self-respect and would like to be paid for their work. The newspapers were agog with news at that time (summer of 2001) about people not turning up for government drought relief work and that the relief sites were either not functional or being shut down. A minimum wage of Rs. 25/- was also fixed as an alternative. Overall, there was not much happening at government sites in the district. Our initial apprehension that people may not turn up for drought work was belied when we saw that the entire village(s) was attending work. Within two weeks, a majority of those who migrated also returned and joined the work (except those who committed to share cropping elsewhere). This indicates that people do not willingly migrate but do so on compulsion.
- The Gadhwada Sangh and the village level institutions have shown exemplary maturity in prioritizing the drought work interventions. They have also decided upon appropriate rates for different soil conditions and proved that they are good decision makers.
- The entire work of Rs.70 Lakhs was implemented in 8 villages over a period of 4 months without any serious conflict⁸ which goes to prove that the federation and the village institutions can plan and implement developmental schemes with minimum support from external agencies. They have proved that they are efficient implementation managers.
- That a properly planned and implemented strategy would also address equity and gender elements most satisfactorily is proved by the above approach.
- Thinking and installing systems is very essential for both efficient implementation and transparency. VIKSAT installed an overall implementation procedure as well as established systems for every activity. Formats were developed for all activities as part of control and monitoring mechanism which helped avoid confusion and duplicity, while increasing transparency.
- The systems that were established and the formats devised have helped in proper accounting whose significance became highlighted at the time of auditing by the donor agencies. VIKSAT's work and maintenance of accounts have come to be appreciated after auditing by OXFAM appointed auditors.

⁸ It is pertinent to mention how a village level institution has resolved a potential conflict all by itself. A few days after the commencement of drought relief activities, in one of the villages, a leader has "instigated" the people to demand for higher rate for earth work. As mentioned in the foregoing, the Sangh has decided two rates in consideration of the local soil conditions which was ratified by each Gram Sabha. When people did not come for work, VIKSAT left it to them to solve the issue. In a matter of three days, people increasingly represented to VIKSAT to re-start the work, realizing the mischief over the non-issue. VIKSAT refused to intervene and told them that they have to solve the matter themselves. Surprisingly, on the fourth day, all the people resumed work "abandoning" the leader who eventually had to follow suit.

7. Other Aspects of convergence

- Use of remote sensing for drought mitigation and planning through the involvement of the Remote Sensing Application Centres will help hasten natural resource regeneration. Areas for remote sensing application include identification of villages, crop yield and crop status, water resources status, identification of surface water bodies for recharge, and scope for recharge through rainwater harvesting.
- Villages must be involved in the process of village identification, implementation and monitoring. Where present, involvement of the local federation would help set in people's processes in motion. This approach will also ensure that conflicts are kept to a minimum; even if there were one, the institutions themselves would find a solution having a clear understanding of the local dynamics.
- Involvement of a local NGO with credibility will go a long way in mobilizing the people, ensuring transparency and success of the drought programme. This is because local NGOs generally would have developed a good rapport with the communities.
- A drought proofing committee should be formed in drought prone areas in order to ensure that government schemes are properly planned and implemented to strengthen livelihoods and develop resilience. This Committee should ideally be composed of the district collector, panchayat, relevant government department heads and local leading NGOs. In times of drought, this committee will identify villages, prioritise activities at a broader level and recommend release of funds. It will also monitor and evaluate the programmes and submit reports to the state government. The deputy chairperson should be from the local NGO or the federation while the District Collector may be the chairperson. Dates for meetings should be pre-determined and held as such in the interest of smooth work.
- Village level committees should be given the responsibility of deciding the activities and implementing them under the overall responsibility of the federation or a local NGO.
- A well thought out fodder management plan is critical. The Forest Department should prepare and announce its plan of release of fodder and grasses collected from the forest areas and stocked in its warehouses. The district committees should have a say in the allotment of such fodder and grasses in times of crisis.
- Like the JFM programmes, watershed programmes should be also promoted specifically in drought prone areas as described in an earlier point.
- Water harvesting is the key to drought proofing. Tanks and ponds, which formed a good source of groundwater recharge need to be restored and developed, combined with regular maintenance.

- Artificial storage of rainwater in aquifers has a great potential to minimize water scarcity and water stress during drought situations (Mudrakartha, S and S. Chopde, 2002). Hence, rainwater harvesting in normal and excess rainfall years should become an important component in the watershed and other government schemes at the district level.

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