

Rejuvenate Ground Water through Watershed Approach: A Case Study of Sembaliya, Gujarat, India

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Abstract

VIKSAT took up the Sembaliya Watershed Project in seven villages in Gujarat and Rajasthan in 2007 which was vastly impacted by issues of soil and water erosion, lack of irrigation facilities, poor vegetative cover, and large-scale deforestation, further enhanced by naturally occurring undulated topography. Agriculture the backbone for the six villages was characterized by use of their own seeds, use of fertilizers from local traders applied irregularly, no mechanization, no availability of banking system and people's institutions to address the problems faced by the people. VIKSAT in association with NABARD, established and carried out watershed project focused on conservation measures capacity building, knowledge sharing, and implemented People's Institutions (PIs). As a result of which, reduction in soil and water erosion, levelling of land, rise in ground water table, improved agricultural production and animal husbandry, leading to better socio-economic status and increased community level participation in watershed and developmental activities has been observed.

Background

The Watershed Development Programme was initially designed as a measure to bring about sustainable development through participatory management of natural resources. The project in the Khedbrahma taluka of Sabarkantha district has played an important role in the development of the tribal villages peripherally located in the district. The area has been neglected from any significant interventions by the civil society organizations, agriculture institutions or government district headquarters.

In 2004, during a 'Food For Work' survey undertaken by VIKSAT in the tribal belt of Poshina in the Khedbrahma block of Sabarkantha district, it was found that the villages therein were remotely located and situated far away from the district as well as taluka headquarters. The area was lacking in basic infrastructure like roads, health and education facilities. It was observed that the area was nearly cut off from the mainstream developmental work by either the civil society organizations and/or the government departments. VIKSAT identified this as a challenge and initiated integrated rural development activities since 2005.

The project has harmonized the use of soil, water and vegetation; in a way to conserve the resources, maximize their productivity, minimize land degradation and decrease the pressure of the environment. The rise in water table due to the project

activities has increased availability of water and changing the pattern of irrigation. Appropriate technology promotion in agriculture and domestic purposes has contributed to conservation and efficient use of bio mass resulting to climate change mitigation. It has also helped in reduction in use of electricity and fossil fuel for pumping water per hector of land. The increase in cropping intensity and vegetative cover has also resulted into better microclimate. With increased availability of food, fuel and fodder there has been reduction in drudgery.

Introduction

The semiarid regions of Gujarat in North-West India are facing the emerging issue of a decline in the groundwater table. The development of recent year reveals an increasing water stress potential in summer months due to a higher abstraction rate of groundwater, which cannot be equalized anymore by the natural recharge of the aquifers. This leads to the demand for sustainable water management, with sustainable measures not only considering natural resources, such as water and soil, but also in a social, technological and especially in an economical sense.

A comprehensive assessment of Sembaliya watershed programme was taken up under the present study to assess the impact of watershed development program.

The specific objectives of the study were to:

- i) To assess the impact on groundwater availability and crop production
- ii) To assess the impact of watershed development on crop production, crop and fodder productivity, improved livelihoods, minimizing land degradation and groundwater availability in the micro watershed

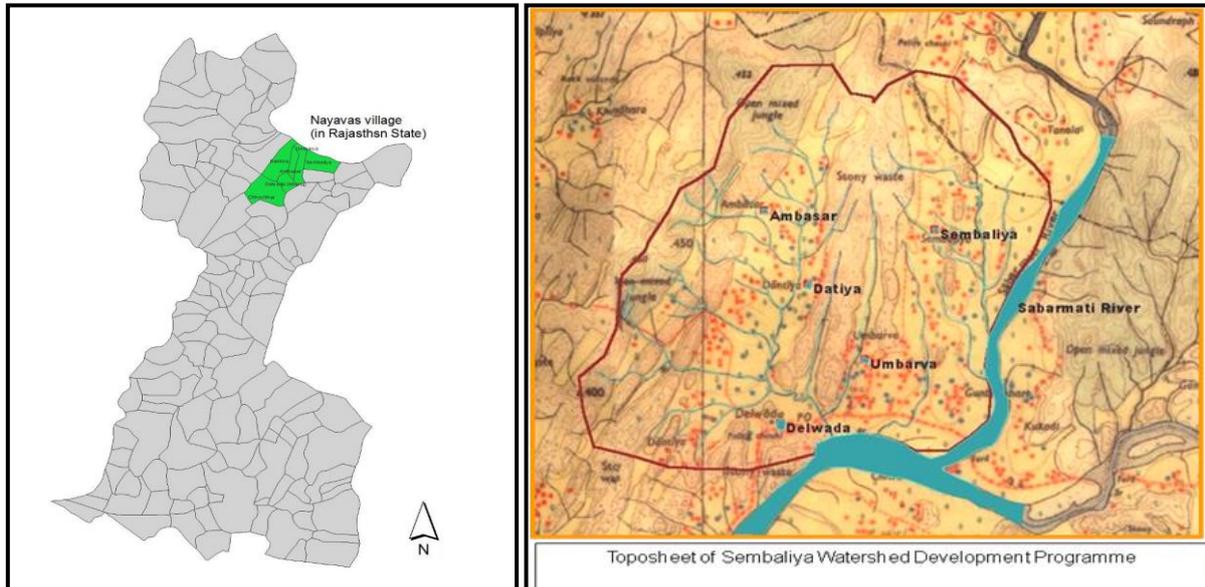
With this background in place, VIKSAT began its soil and water conservation intervention through watershed development project, with the objective of not only improving natural resource management (NRM) but also improving the socio-economic conditions of the seven villages. This paper will present the project in five different sections; the problem statement describing the need for the Sembaliya Watershed Project, the process of implementation focusing on the various watershed measures, results and discussion focusing on these impacts of the measures, future scope, and concluding remarks on the overall work of the project.

Project Area Description

The Project area of study is located in Northern part of Sabarkantha District Khedbrahma taluka of Sabarkantha District, Gujarat. The project area includes Sembaliya, Dantiya, Ambasar, Chhochhar, Delvada, Umbarva of Khedbrahma taluka, Sabarkantha district and a very small portion of Nayavas of Kotda taluka of Udaipur district, Rajasthan. The project area villages falls under poshina tribal belt of Khedbrahma Taluka of Sabarkantha District and catchment area of Sabarmati River. The total geographical area of project villages is 4090.8 Ha as per Census and government records, out of which 1705.47 ha was delineated watershed area.

The region is characterized with semi-arid climate, hot summer and cold winter. The area receives southwest monsoon starting from mid-June up to the end of

September. The average annual rainfall is around 730.80 mm (average from 1980-2012), which is uneven and highly erratic in nature. The annual potential evaporation is 1750 mm, which is estimated to be at least twice the annual rainfall. The temperature is at maximum during April to June (Average 43.1°C), while minimum during Dec and Jan (Average 10.3°C).



Location Map of Sembaliya Watershed project in Sabarkanth District

In project area, soil depth is found varying from d2 to d5. The 47% of the land is having soil depth more than 45 cm whereas degraded land is 53%. The soil type is medium. Currently, groundwater is available for utilization due to various governmental schemes under the Tribal Development Program. This has allowed the villagers to dig new open wells, deepen existing wells, and construct tube wells. However, disproportionate installations and utilization of tube wells will have an impact on the groundwater availability and will have a negative impact on efforts of soil and water conservation practices.

The entire area is dominated, by tribal community dependent on rain-fed agriculture. on fragmented land with an area of less than 1ha/household with rocky and low soil depths. Agriculture is followed by animal husbandry as a major occupation. The main crops are maize (50.67%) and in some areas, they grow pigeon pea along with maize as mixed crop. The Rabi crops include wheat (51%) and cotton (but only when there is good monsoon) (21.9%) and green gram in summer depending on the water availability and affordability of installing irrigation facilities such as tube wells, open dug wells.

Agricultural inputs are purchased from local traders, including seeds and fertilizers. Farmers are known to use seeds from previous years to sow as well as purchase from market. The net quantity of fertilizer usage is considerably lower and irregular due to small areas of lands/household. Mechanization is not central to this form of agriculture and the farmers are mostly dependent on draught animals for agriculture labour. Only one co-operative sold fertilizers which saw accumulation of wealth in the hands of few people. Lack of banking system for farmers paved the way for traders

to become moneylenders thereby having a negative impact on the financial situation of already economically distressed farmers. There were no people's institutions, or organizations to promote collective actions to address these problems at the village level.

Problem Statement

Sembaliya Watershed Project was designed to address the problems of excessive soil and water run off due to undulating land, lack of irrigation facilities, poor vegetative cover, and large-scale deforestation, lack of awareness about improved agricultural and animal husbandry practices, poor literacy rate and hindering social customs, large scale migration, lack of access and control over natural resources, and lack of credit and market linkages leading to a negative impact on the environment, agriculture, livelihood, and socio-economic conditions in those six villages.

Process and Procedure of Implementation

Community Mobilization

Community Mobilization was undertaken through individual contact, orientation meeting and orientation training programmes.

Shramdan

A mandatory period of 4 days of Shramdan was undertaken by individual household under watershed development programme.

Capacity building phase (CBP)

10% of area of total watershed area was taken in this phase, wherein the capacity and willingness of the community and organization to participate in the rigorous and long term measures were tested and all the watershed treatments were demonstrated in small patches.

Formation and Nurturing of People Institutions

- 1 Village watershed committee
- 5 Farmer Clubs already formed
- 66 SHGs already formed

Participatory Net Planning in watershed area

The participatory net planning was done in all survey numbers with participation from the farmers for deciding the nature of watershed treatment in their fields before implementation of soil moisture and water conservation (SMC) activities.

Meeting with Village Watershed Committees (VWCs)

The meetings with people institutions of area were conducted for sharing project objectives and modalities. The VWC is responsible for the project implementation. Since VWC members do not have past experience of development process, VIKSAT has been supporting them in conduction of meetings, record keeping, banking and in the process of decision taking. The VWC is registered under Bombay Public Trust Act 1950 and Society Registration Act 1860. The annual accounts are audited also.

VWC meetings are organized at public places to ensure transparency in decision-making.

Full implementation Phase (FIP)

The remaining area (90%) was covered under the FIP phase. In this phase, the various programmes were converged with watershed programme to build the livelihood resilience of tribal community.

Convergence:

- Soil and water conservation activities converged with IGWDP/NABARD watershed programme
- Improved agriculture programme with SRTT and CInI
- Micro irrigation system programme converged with John Deere Foundation
- MARCH programme converged with John Deere Foundation

Physical Activities and Measures

The physical activities under project area included soil moisture and water conservation, improved agriculture development, irrigation resource development and livelihood activities. The activities undertaken have a cumulative impact on area leading to upliftment of the rural economy and improvement in the quality of life of the hitherto neglected tribal people in the Poshina belt.

Capacity Building

In order to generate awareness among people about soil & water conservation activities and improved agriculture practices, awareness meetings, trainings, exposure visits and farmer field school were organized. The capacity building programmes has resulted in helping the farmers adopt soil moisture and water conservation activities, improved varieties of seeds and thereafter understand and follow the package of practices (PoPs) recommended for improved agriculture and micro irrigation system.

Soil moisture and water conservation

The participatory net planning was done with active participation of all the farmers for deciding about the nature of watershed treatment in their fields before implementation of soil moisture and water conservation (SMC) activities. The activities undertaken in the watershed program include soil and moisture conservation measures like CCT (Continuous Contour Trenches), SB (Stone Bund), FB (Farm bunds) with SO (Stone Outlets), SGP (Stone Gully Plug), plantation of forest species and horticulture on fields, plantation of forest species on waste land, plantation of Agave, seed sowing of forest species, grass seeding, WAT (Water Absorption Trench), Gabion, Earthen Bund with Stone Pitching, Waste Weir, Percolation tank, Check dam, Nalla plug etc. and irrigation resource development programme was taken in project area.

Capitalizing the gains from Watershed development programme

VIKSAT, with support from SRTT, carried out watershed plus activities like crop demonstration, Seed Kit distribution, Exposure Visits, Trainings and Supplies of Agricultural inputs to farmers. Under a programme called KMS (Kharif Maize Stabilization) and Wheat programme efforts were made to ensure that households in the area get covered.

Women empowerment and drudgery reduction

Women, though unrecognized and unaccounted for, are predominantly involved in all the activities of agriculture. Adequate support through community mobilization, capacity building programmes, access to improved tools and equipments, provision of health care services and livelihood options, access to easy to pay, customized and tailored financial services are some of the steps to ensure that women reclaim their status as strong and potential contributors in agriculture sector and reduce their drudgery. The details of each activities is attached in Annexure- 1

Results & Discussion

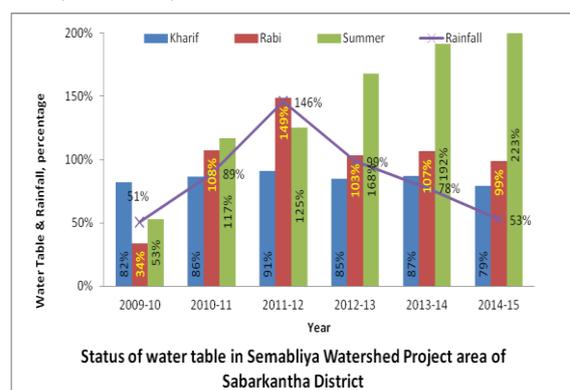
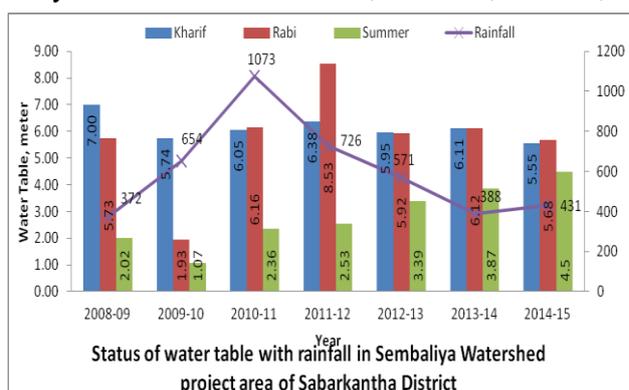
The SWC activities have led to gradual recharge of the groundwater aquifers as evidenced by increase in water levels and rise in number of wells, reduction in soil erosion, increase in cropping intensity, change in cropping pattern leading to higher value crops, increase in crop productivity, reduction in rural and urban migration, and rise in overall bio-mass in the watershed.

Rise in ground water table

The SWC measures like CCT, earthen bunds, stone bunds, Gully plugs, Gabions, Nala plug and Check dams have reduced the slope of land, soil erosion, speed of the water and have helped the same to slowly percolate into the underground aquifers.

The study revealed that ground water table in project area is gradually increasing although the rainfall has remained below average over the past five years.

In the rainfall graph shown below, the amount of rainfall received by the area was below normal during the monsoons of consecutive three years, i.e. 2008 (372 mm), 2009 (654 mm), 2011 (726 mm), 2012 (571 mm), 2013 (388 mm) and 2014 (431) whereas in the year 2010 it was 1073 mm, above normal. Considering 100% of avg. rainfall of area in over year (736 mm), the rainfall received in the consecutive years can be shown as -49.5%, -12.6%, 31.4%, -1.4%, 28.9%, -4.1% and -51.6%.



As shown in the graph, the water level shows significant change due to the rainfall received coupled with the SWC measures. The water level in Kharif (July to Oct) showed a decrease in three years (18%, 14%, 9%, 15%, 13 and 11% respectively) as compared to the level of 2008-09. It may be noted that from year 2009 the rainfall is less than average rainfall whereas in the year 2010 it was 1073 mm, above normal and onset of rainfall was delayed by a month (monsoon onset varies in last of week of June and 15th July).

The Rabi season (Nov. to Feb.) recorded a decrease by 66% in 2009-10, followed by increase in next four years by 8%, 49% , 3%, and 7% respectively and followed by decrease in 1% in 2014-15. In case of summer season (Mar-June), the water level recorded a decrease of 47% in 2009-10, increase of 17 % , 25%, 68%, 92% and 123% respectively from 2010-11. One can infer that irrespective of the fact that rains were on the lower side, the underground aquifers showed a positive change and this could be attributed to the Soil and Water Conservation measures. (Fig 1.). Prior to the project, the total irrigated area was 1171.20ha which increased by 17% to 1376.48ha post the watershed development project due to the implementation of lift irrigations, and other watershed designs.

Economic:

The land development, increase in irrigation facility and increased awareness about advanced agriculture practices have led to gradual improvement in food, fodder and fuel sufficiency.

Towards food and nutrition sufficiency

The study reveals the availability and requirement of food per capita per month in monetary value to measure the food gap as well as security. In 2007-08, per capita food secured was only 72.64% against requirement at Household level, while the food security increased significantly to 93.38 % in 2011-12 during the mid term review and further increased 101.70% in 2013-14. This was due to the overall development activities of soil moisture conservation and improved agriculture activities due to additional water availability through rainwater harvesting and groundwater recharging helps to take additional crop. The farmers have also started cultivating vegetables and installed MIS leading to addition of vegetables in their food basket in addition to the staple crop. This helps in provision of nutritious food for the people.

Table: Showing Gap in food security in corresponding periods

Particulars	Unit	Before Year 2007-08	Midterm 2011-12	After Year 2013-14
Total Population	No	12362	12776	12776
Total House Hold	No	2008	2208	2208
Income from all sources				
Total Agriculture income	Lakhs	574.06	1234.07	1455.32
Income from by product of fodder and fuel	Lakhs	121.17	158.35	182.9
Cost of Cultivation	Lakhs	138.52	457.04	553.71

Particulars	Unit	Before Year 2007-08	Midterm 2011-12	After Year 2013-14
Net Agri. Income	Lakhs	314.37	618.68	718.71
Other income from labour and other	Lakhs	210.71	347.55	359.13
Total Income	Lakhs	525.080	966.225	1077.843
Income Availability per HH	Rs.Lakhs/Year	0.261	0.438	0.488
Income Availability	Rs./month	2179.12	3646.68	4067.94
Income Requirement	Rs./month	3000.00	3905.00	4000.00
Food Gap Rs.(Reqir-Avail)		-820.88	-258.32	67.94
% of food security		72.64	93.38	101.70

Ref: State specific poverty lines for 11-12, GOI, Planning Commission, July 2013

Towards fodder sufficiency

The fodder sufficiency has increased from 33.86 % in 2007-08, to 52.16% and 89.91% in 2011-12 and 2013-14 respectively. This is due to the increase in vegetative growth, introduction of the rabi crop for example wheat, and growing of lucerne fodder in cultivable and common land. These changes are seen due to increased availability of ground water which again is the product of soil moisture and water conservation and intensification of agriculture efforts in project area.

Table: Showing Gap in fodder security in corresponding period

Particulars	Unit	Before Year 2007-08	Midterm 2011-12	After Year 2013-14
No. of Cow ,Buffalo and bullock	No	6142	6214	5309
Sheep & Goat	No	6583	6346	4583
Total Animal	No	12725	12560	9892
Cultivable Area	Ha	2603	2723	2417.72
Common Area	Ha	1636	1636	1635.9
Fodder Production				
By product as a Dry Fodder Production	Ton/yr	6872.88	7557.66	8231.67
Fodder Production	Ton/yr	0.00	3359.19	8231.67
Fodder from Common area	Ton/yr	1187.87	1564.43	1539.22
Total Fodder Availability Ton./year		8060.74	12481.28	18002.56
Fodder requirement for Cow & buffalo	Ton/yr	20503.84	20744.20	17723.03
Fodder requirement for Sheep & Goat	Ton/yr	3304.67	3185.69	2300.67
Fodder requirement	Ton/yr	23808.50	23929.89	20023.70
Fodder Insecurity per village	Ton/yr	15747.76	11448.61	2021.14
% of fodder security		33.86	52.16	89.91

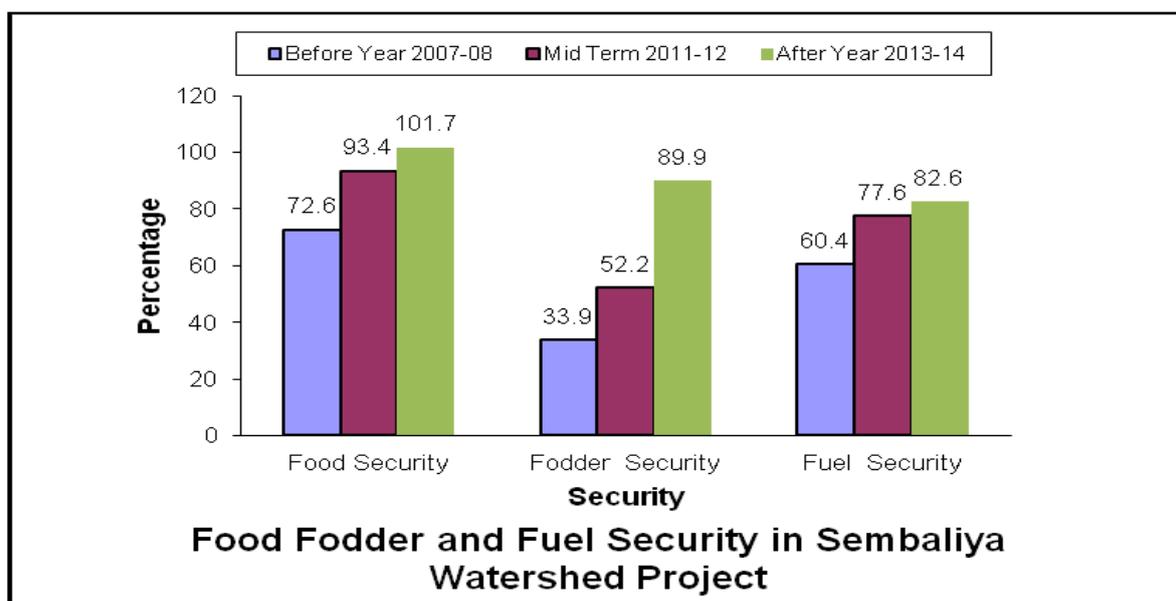
Women have now less botheration

Women do not have to travel long distance to fetch fuel wood. With crops like Cotton and Castor expanding in the area, women are a happier lot. The fuel security has increased from 60.39 % in 2008-09 to 77.59% and 82.62% in 2011-12 and 2013-14 respectively.

Table: Showing Gap in fuel security in two corresponding period

Particulars	Unit	Before Year 2007-08	Midterm 2011-12	After Year 2013-14
Total Population	No	2008	2208	2208
Common Area under fuel	Ha	1635.90	1635.90	1635.9
Private Area under fuel	Ha	662.85	786.06	748.67
% of Area under fuel				
Production of crop residue for feul	Ton/year	235.20	511.91	487.56
Production of others feul	Ton/year	1092.55	1363.92	1510.06
Total Production	Ton/year	1327.75	1875.84	1997.62
Fuel requirement	Ton/year	2198.76	2417.76	2417.76
Insecurity of fuel	kg/year	-871.01	-541.92	-420.14
% of fuel security		60.39	77.59	82.62

The overall impact of soil moisture conservation, improved agriculture practices, irrigation resource development and optimizing the use of water interventions helps the increase in food, fodder and fuel security in project area villages. The change in traditional practices with scientific package of practices in agriculture crops showed the increase in productivity of major crops. Though the area under the cereals crops reduced in project area but productivity was enhanced. The investment so made by the intervention and in association with the farmers group has bought in additional income to each of the households benefitting from this. This could be seen from the increased food security and also from the production of cash crops.



Agricultural Economics

The farmers in the villages prefer growing Maize which is often grown in combination with other crops – Black gram and Pigeon Pea (both Lentils). Due to additional irrigation, farmers have started cultivating cash crops like cotton, wheat and green gram. There is an increase in growing wheat crop as subsistence food and maize in summer. Earlier due to lack of irrigation, maize was grown in Kharif season only. With assured irrigation facilities, land development and increased awareness about improved agriculture practices, people of area are also growing more cash crops like cotton, castor, cotton seed plots and vegetable cultivation that fetch a sizeable income.

The following table illustrates the four fold increase in gross as well as threefold increase in net income of production and resultant income per hector of land. The productivity has increased by 10%.

The net increase in production and income per hectare are as follows:

Details	Before Year 2007-08	Midterm 2011-12	After Year 2013-14
Average Production Qtl/Ha	15.37	18.1	16.88
Average Gross Income Rs./Ha	15964	40312	86750
Average Net Income Rs./Ha	11081	20210	50757
Cropping intensity (%)	174.17	187.95	187.60

In cropping pattern, pulse crop has decreased by 27% while cereal crop has increased by 2%. Vegetable crops, fodder and other crops such as cotton seed production were not part of the agricultural production within the seven villages of the watershed region. These three were added as part of the development program which contributed to the total aggregate production.

Table: Showing the cropping pattern in two corresponding period

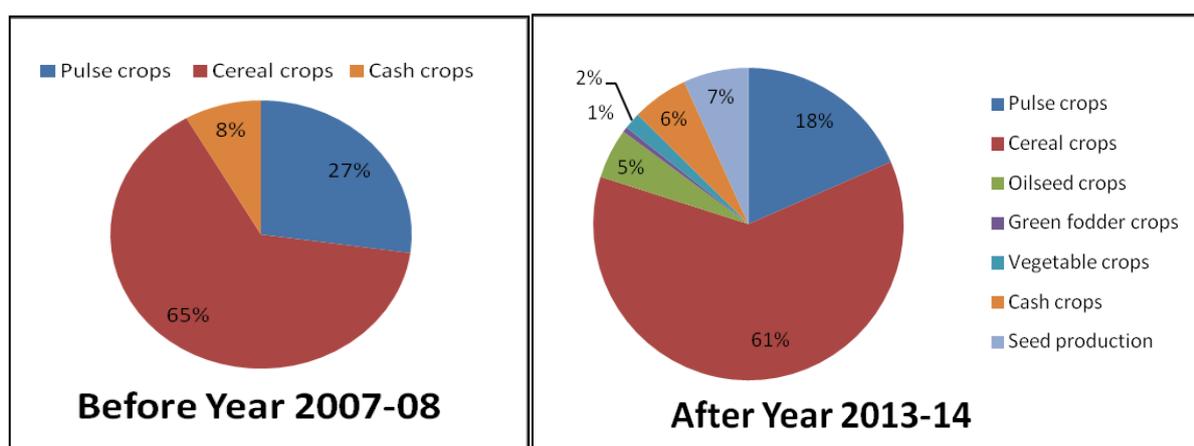
Cropping Pattern	Before Year 2007-08	Mid Term 2011-12	After Year 2013-14
Pulse crops – Ha	771.4	549.27	564.42
Cereal crops – Ha	1831.52	1930.34	1875.37
Oilseed (castor) crops – Ha	0	166.49	158.57
Vegetable crops – Ha	0	10	16.52
Cash crops – Ha	0		53.30
Green fodder crop – Ha	234.01	187.21	178.31
Cottonseed production – Ha	0	217.94	207.57

SWC work has also helped in making the productive use of the available land

There has been a notable increase in the land use pattern as a result of SWC work. With the increase in the water availability for irrigation in wells there is an increase in area under agriculture during all the three seasons. : Kharif, Rabi and summer. One of the fallout of the programme is that farmers feel secure to invest in agriculture today than they were before the intervention. The youth is also getting attracted towards agriculture thereby strengthening the activity and decreasing the effects of

urban pull. There is a decrease in area under single crop by 21%. The area under two crops (Kharif and Rabi season), long duration crop and three crops (Kharif, Rabi and summer season) has increased by 16%, 133% and 17% respectively, thereby increasing the vegetation cover by increasing the cropping intensity from 174.1% to 187.6%, in private landholdings .

Land Use Pattern	Before Year 2007-08	Mid Term 2011-12	After Year 2013-14
Single crop – Ha	1431.72	1098.24	1133.13
Two crop (two season) – Ha	943.67	1132.04	1093.39
Long duration crops – Ha	234.01	571.64	544.45
Three crop (three season) – Ha	227.53	254.33	266.57
Fodder crop – Ha	0	5	16.52



Graph showing cropping pattern in two corresponding year

Sustainability of Project:

Over the years of interaction with the community in the project area of Khedbrahma, VIKSAT has ensured creation of institutional spaces. The peoples' institutions were created with two basic objectives: (1) To empower the village community so that they take ownership of the village development plans (2) To strengthen the village institutions and capacitate them to execute development programmes.

VIKSAT has formed 493 people institutions covering 5564 households in the area such as SHGs Federation (Mahila Sang), Self Help Group, Village Organization, Village Watershed Committee (VWC), Farmers Clubs, Farmer Producer Organizations and Aravali Agriculture Resource and Training Centre (AART).

The details of people institution in Khedbrahma Taluka of Sabarkantha District as follows:

Sr. No.	Name of People Institution	Total People Institutions	Total members
1	Aravali Agriculture Resource and Training Centre (AART)	01	13

Sr. No.	Name of People Institution	Total People Institutions	Total members
2	Farmer producer Organization	02	2000
3	Village Watershed Committee (VWC)	4	52
4	SHGs Federations	4	74
5	Self Help Groups (SHGs)	437	5564
6	Farmers Club (FC)	23	2204
7	Village Organizations	22	437
	Total	493	10344

Conclusion

This programme has been directed towards the promotion of overall economic development and improvement of the socio-economic conditions of the resource poor sections of tribal people inhabiting the programme areas through natural resource enhancement.

- There was avg. 0.41 meter (1.34 feet) increase in ground water level and Availability of water will increase by 1 to 2 months in the wells in watershed area
- The rainfall on the rainfed lands was conserved with various SMC measures. This saves the soil from erosion by reducing surface runoff, thereby mitigating the impact of droughts & floods, and minimizing siltation of reservoirs. This is in addition to optimizing the productivity of rainfed lands.
- Improving productivity and production in rainfed croplands and promotion of horticulture development, particularly vegetables and fruits increased the food and nutritional security.
- Efforts to increase fodder availability for cattle is also emphasized to improve milk production for domestic consumption. Organizing medical camps for human beings as well as cattle also constitutes part of health programme.
- Increase in water availability for irrigation and efficient irrigation water management would lead to increase in irrigated land leading to increased vegetation cover.
- Plantation on waste land will also lead towards improvement in the overall environmental quality of the area.

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Annexure- 1

The details of watershed measure in Sembaliya Watershed Development Project as follows:

Sr. No.	Treatment	Achievement	
		Physical units (Ha/nos.)	Grant utilized
		3	4
A.	Area treatment activities		
A-1	Crop Cultivation (CC)	636.63	Ha.
1	Farm Bund (0.63)	35043.60	1282973
2	Farm Bund (0.72)	15558.05	560679
3	Stone Outlets (SO)	518.00	127504
4	Stone Bund (0.42)	12680.12	2936428
5	Plantation on bunds (Plant)	18584.00	30447
6	Horticulture Plant	948.00	37898
7	Grass seeding	14.86	4680
	Total		4980610
A-2	Grassland with Trees (GT)	106.68	Ha.
1	Farm Bund (0.72)	518.4825	17082
2	Stone Outlets (SO)	0	0
3	Stone Bund (0.56)	510.111	119919
4	Continuous Contour Trenches (0.18)	1550.71	69558
5	Water Absorption Trench (0.75)	219.28	12792
6	Stone Gully Plug (SGP)	1831.96	1465704
7	Plantation on wasteland	8900	26268
8	Agave plantation	10850	56370
9	Grass seeding	44.23	12500
	Total		1780194
A-3	Forest Land Development (FD)	473.92	Ha.
1	Continuous Contour Trenches (CCT)	512.22275	23692
2	Stone Bund (SB)	2215.15	237153
3	Water Absorption Trench (WAT)	2210.1825	136739
4	Earthen bund with stone pitching (EBSP)	38	19205
5	Grass seeding	25.73	12999
6	Seeds Sowing	10	7302
7	Supervision cost for FDA		38607
8	Waste Weir (WW)	2	46762
	Total		522459
	Total (1+2+3)	1217.23	7283263
B	Drainage treatment activities		
1	Gabion Structure (GB)	47.50	74571
2	Nalla Plug (NP)	120.50	629403
3	Earthen bund with cement spillway	1.00	67055
4	Check dam (CD)	11.00	1618597
	Total		2389626
	Total (A+B)		9672889
C	8% supervision charge		346850

Sr. No.	Treatment	Achievement	
		Physical units (Ha/nos.)	Grant utilized
		3	4
	Total (A+B+C)	1217.23	10019739
D	Training & Demonstration for villagers		
1	Training & awareness	19	102573
2	Crop demo. plot	25	73421
3	Fodder Demo.	10	15604
4	Compost pits	32	9720
5	Vermicompost pits	5	20000
6	Cattle medical check up & treatment camp	2	48972
	Total		270290
	Grand Total (A+B+C+D)	1217.23	10290029
F	Women development		
	Livelihood support for landless & women		300000
	Cost/ Ha (Rs.)		10925

Photographs of activities:



Soil and moisture conservation activities taken up in all villages under WDF-NABARD programme