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## Enhancing Agriculture Development and Groundwater Recharge in Salinity Affected Coastal Villages of Jamnagar District, Gujarat

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<b>Project period:</b>	August, 2008 to December 09
<b>Project location:</b>	Kalyanpur and Khambhaliya taluka, Jamnagar
<b>No. of villages covered:</b>	10
<b>List of villages covered:</b>	Bhogat, Hadmatiya, Gokalpar, Bamnasa, Bhatwadiya (Kalyanpur) Datrana, Goenj, Beraja, Movan, Nana Asota (Khambhaliya)
<b>Total Project cost:</b>	Rs. 86, 76,000
<b>Project Stakeholders:</b>	Kalyani Charitable & Welfare Trust, Sarvani Charitable Trust, Arid Communities & Technologies (ACT), Saurashtra Voluntary Actions (SAVA)

### Background:

The overall goal of the proposed interventions is to evolve a sustainable and people centric model for enhancing the water harvesting and recharge capacities in the salinity affected areas for enhancing the agrarian economy of the region. The objectives of the projects are: (i) enhancing the water storage as well as recharge capacities of small and medium farm lands through the construction of farm ponds; (ii) enhancing the economic returns for farmers from agriculture through increase in agricultural productivity as well as reduction in input costs; (iii) enhancing people's knowledge and attitude towards improved water management strategies and creating mass awareness about the use of water saving technologies; (iv) Soil and Moisture conservation activities to enhance the quality of the land holdings; (v) Promotion of community based pasture land development model; and (vi) strengthening the village level Community Based Organizations (CBO) to evolve as nerve centres for development of the village and region as a whole. The key activities would revolve around construction of individual farm level farm ponds, promotion of efficient irrigation techniques for use of the water stored in the farm ponds, implementation of appropriate stream treatment and water harvesting structures, promotion of appropriate improved cropping practices through trainings and demonstration plots of horticulture and vegetable cultivation, promotion of a community based pasture land development model in salinity affected village and strengthening of the village based Gram Vikas Mandals, which would be the institutional interface at the village level.

### 1. Physical Activities

#### a) Farm Pond Construction:

75 farm ponds in Kalyanpur and 3 farm ponds in Khambhaliya with a cumulative storage capacity of 3.18 Mcft. of surface water have been constructed. This will enable the 78 beneficiary farmers to give three support irrigations in 80 acres of land. The entire activity was run through a revolving fund model by the Gram Vikas Mandal established at village level. A farm pond of unit 1260 cubic meter is created with a cost sharing with beneficiary. Looking at the potential of more farm ponds, discussions are in progress for making a bankable model of farm pond.



**b) Farm Bund and Outlet**

After construction of three farm ponds in Nana Aasota village of Khambhaliya taluka, it was realized that farm ponds are not able to hold water due to pervious nature of sub-strata. On the other hand, farm bund and outlet have good potential of soil moisture retention. After consultation with local people and opinion from the Technical consultant, it was decided to implement the activities of farm bund and outlet in Khambhaliya. A total of 300 hectares of land belonging to 130 farmers have been covered under the activity. Initially it was planned to cover 100 hectares of land under farm bund activity but increased community demand and contribution led to cover 200 percent more land under the activity.

**c) Stream Treatment**

Stream treatment of three check dams by minor repairs, new construction and increased storage capacity on four streams of Kalyanpur and Khambhaliya have been carried out. The water harvesting structures lead to storage of total 38.26 Mcft of rain water. The stored water would irrigate 295.48 hectares of land. The structures got recharged three times this monsoon, leading to rise in ground water table of private irrigation wells.

**d) Pasture Land**

Demonstration of pasture land development has been initiated on 7 hectares of public waste land in Bhatwadiya village of Kalyanpur taluka by Kalyani Trust. The activity is being carried out by Pasture land committee consisting of 6 persons. The plantation of wind breakers and other species is done along the boundary to yield biomass (Sharu). In post monsoon period, the bunding and protection of the pasture land plots has resulted in germination of Jhinjvo, the native grass species. A system of harvesting the grass is in the process with the committee. Kalyani Trust has submitted the estimate for irrigation management in pasture land, which has been scrutinized and sanctioned. Main pipeline of 515 m length for irrigation has been laid. 5 tanks of 1000 liter each above 5 ½ feet constructed platform have been kept for irrigation. 1000 plant species including sharu, jetropha, banyan, pipal, neem, etc. have been planted in the land.

**e) Agriculture Activities**

The agriculture diversification is made part of project activities to address the risk minimization and ensuring livelihood of the coastal communities. Under this activity, 19 vegetable and 28 horticulture plots have been developed during the reporting quarter. However, due to heavy rain during July, 15 vegetable plots faced plant mortality beyond possibilities of replanting. Majority of the farmers i.e. 35 farmers adopted sprinkler irrigation in their vegetable plots to address efficient use of available water. Vermi compost activity has also been carried out with one farmer. 26 beneficiaries have been identified and selected for culture based compost. Plantation of brinjal, lady's finger, cluster bean (guvar), tomato, cucumber, bitter gourd, etc. has been done. In horticulture plots, plantation of mango, coconut, sapota, gunda and drumstick has been done. It was observed that in Kalyanpur the citrus plants could not survive due of pest attack and less tolerance in saline areas.



**f) Solar (zatka) Fencing**

The increasing saline wasteland in the coastal areas give way to fast spreading of *prosopis Juliflora*- abode to the wild animals like Nilgai and wild pigs. The raid of these animals in the cropped agriculture fields is one of the major demoralizing factors for the coastal farmers to

adopt or invest in farming. Looking at the gravity of the problem, an innovative technological solution of solar (zatka) fencing that runs on solar energy has been installed from June -09 in Bhogat village of Kalyanpur Taluka. The innovative guarding system has been procured from Monex Electro Limited at a cost of Rs. 31,636 for 60 bigha (9.6 hectares) land belonging to 6 beneficiary farmers. The cost includes fence machine, cemented pole, insulator and wire. The farmers found the performance of the technology satisfactory.

## 2. Institutional Capacity Building Inputs for Gram Vikas Mandal and Implementing Organizations

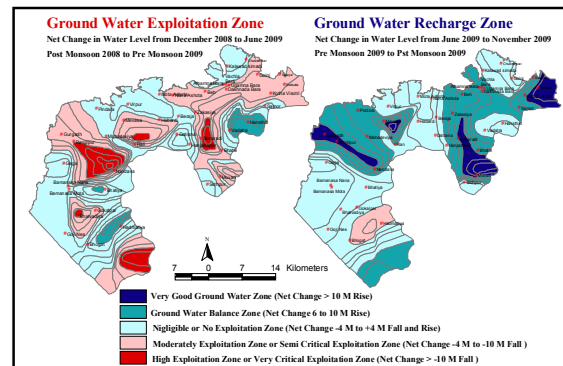
The activities carried out for capacity building are as follows:

- 7 trainings on accounts, agriculture activities and motivation training for adopting drip and sprinkler irrigation system addressing 71 beneficiaries were conducted.
- Looking at the long term goal it is essential to conduct an assessment to realize the future path of GVM for effective and efficient working. In this context, a GVM assessment exercise was conducted with 10 GVM.
- A kit has been prepared for analyzing the soils of individual farmers, thereby minimizing the cost on manure and fertilizers, etc.
- Process documentation of the farm pond project has been initiated by CSPC, wherein SAVA with CSPC coordinated the exercise. A draft report has been received and feedback on the same has also been shared with the consultant.

## 3. Activities carried out by ACT

Arid Communities and Technologies are responsible for technical support inputs for geo-hydrological profiling and preparation of the detailed village action plan of 30 villages of Kalyanpur and Khambaliya Taluka. Tasks carried out by ACT during the reporting period are as follows:

- Well monitoring of 57 observations wells is done wherein well monitoring of limited parameters i.e. pH, water level and TDS of these wells is being carried out on regular basis.
- Methodology for recharge potential zone and water harvesting strategies have been drafted and finalized.
- Field checking of framed water harvesting strategies has been done.



Following the experience of the project, preparation for the main phase of the project has been initiated. The villages for main phase of the project have been identified. Baseline information in the identified villages has been compiled for the further plan of activities.

## Learnings from the project

The project is giving an opportunity to gain knowledge about community mobilization process for implementing an integrated project. The key learnings are as mentioned below:

- In the loan based activity, the loan amount, recovery system, time line should be clear to the beneficiaries.
- In spite of hard efforts put in by Sarvani and Kalyani Trust for implementing vermi compost activity, they could not succeed due to low level of social acceptance to the vermi culture of the activity. It was learnt that the community needs to be sensitized for adopting the activity.
- The GVM needs support for its capacity building so that strong institutional interface could be developed which can later on take a responsibility of loan recovery from the beneficiary group.

- It is learnt that addressing salinity problem demand area specific approaches rather than blanket solution.
- Knowing local geo-hydrology is an important element in planning water harvesting as a solution for salinity problem. A holistic approach for natural resource management needs to be developed in consultation with the community as their knowledge and local traditional systems do play a crucial role in identification of appropriate technology and implementation mechanism.

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