

CHECKDAMS: DHARAMPUR & KAPRADA



The Scenario

Water has been a pressing concern in Gujarat for several decades. With the coming of the Green Revolution, the demand for water escalated and like the rest of the country, the water table in Gujarat steadily started dropping. At the turn of the millennium, the State, with the help of its citizens, launched a massive scheme to recharge its groundwater – the Sardar Patel Participatory Water Conservation Project. The project's mission was the large-scale construction of small water harvesting and ground recharge structures through people's participation. Most of these structures have been built on community land and reports indicate that there has been a commendable increase in the water table, resulting in better returns to farmers. Since the time this project was launched, Gujarat now has about six lakh water harvesting structures. At a time when the water table is still dropping in the rest of India, Gujarat is among the only states where it is rising. Farmers are now not only able to harvest the kharif crop, but are also able to cultivate rabi crops when monsoons are normal.

A note on benefits to poor farmers on account of assured irrigation support and agricultural diversification is in Attachment-1.

Opportunity for CSR

- **Repair of checkdams:** A large number of checkdams built across the State over a period of nearly 15 years are in need of repair. Problems such as silting, damaged gates and broken structures need to be addressed for optimal water harvesting.
- **Irrigation:** Water-harvesting structures such as checkdams are the starting point for increasing the area under irrigation. However, for poor farmers to actually reap the benefits of better land and water productivity, they need to be able to lift the water from the checkdams and convey it to their farms. They need assistance for portable diesel pumps and flexible pipes as they are usually too poor to purchase these on their own, and therefore fail to meaningfully benefit from water harvesting initiatives.
- **Agricultural diversification:** With better and more reliable availability of water through checkdams, the farmers have the opportunity to make a transition from the cultivation of their traditional low value crops, to high value varieties including vegetables. Agricultural diversification can be facilitated for these farmers by providing them assured access to quality seeds, fertilisers and extension services.

Potential Project Area: Dharampur & Kaprada

Dharampur and Kaprada talukas are located in Valsad district of south Gujarat. Jashoda Narottam Public Charity and Trust (JNPCT), a Valsad-based NGO has constructed various types of checkdams over the last decade in these two talukas. Many of these checkdams that have already been constructed are in need of repair and maintenance.

A note on JNPCT and its work is in Attachment-2. A note on checkdams identified for upgrading and repair is in Attachment-3.

Opportunities for CSR in Dharampur & Kaprada

- **Identified checkdams:** Twelve checkdams have been identified for repair work. The extent of repair required per checkdam will vary depending on the damage sustained by each dam.
- **Implementing Agency:** JNPCT has been working with poor farmers in Dharampur and Kaprada and has good knowledge and experience of field realities. Companies interested in CSR in Dharampur and Kaprada can collaborate with the Trust for the implementation of their project.
- **Irrigation kit:** A portable diesel pump and 600 m of HDEP flexible piping can be provided per farmer to enable them to transport the water from the checkdam to their farm.
- **Agricultural diversification kit:** A kit consisting of quality seeds and fertilisers can be distributed to farmers in the command area to help farmers make a transition to high value crops.
- **Extension services and technical support:** These services can be provided to farmers so that they can diversify to high value cultivation in a scientific manner.

Estimated Project Costs

- **Checkdam repair:** About Rs. 1.5 lakh – Rs. 2 lakh, depending on the extent of repair work required.
- **Irrigation kit:** Each kit will comprise a portable diesel pump worth about Rs. 40,000 and 600 m of HDPE flexible piping worth about Rs. 55,000, which will be suitable for one check dam. Total cost towards irrigation support will depend on the number of check dams being taken up.
- **Agricultural diversification kit:** The total cost of the agricultural diversification kit that includes quality seeds and fertilisers for farmers in the command area would be about Rs. 3 lakh per check dam depending on the command area which is likely to be irrigated
- **Extension services:** The total cost of providing extension services and other technical support would be an estimated Rs. 1 lakh per check dam. This cost can be reduced if more than one check dam is supported.

Developing the CSR Project

The Gujarat CSR Authority (GCSRA) can be approached for further details and assistance for developing a checkdam-based agro initiative in Dharampur and Kaprada talukas. They can also facilitate the tie up with the implementing agency.

GCSRA can also provide support, on charge basis, for development of a project report, execution level support and monitoring.

Project Benefits

- **Water security:** Currently, the damaged checkdams cannot hold water to their optimum capacity. After repairs, their water holding capacity will be optimised, bringing water security during critical stages in farming cycles, and consequently, improved economic situation for farmers.
- **Equity:** With the distribution of irrigation kits to poor farmers, equity in access to water is ensured. Typically, it is the wealthier farmers who gain most from checkdams as they have the means to invest pumps and pipelines for lifting water from the checkdams. However, by providing poor farmers with diesel pumps and pipes, equity in access to water is ensured to farmers, regardless of the economic strata to which they belong.
- **Agricultural diversification:** A large section of farmers cultivate indigenous, low-yielding varieties of crops since the changeover to high-value crops is expensive. By providing them kits with quality seeds and fertilisers as well as extension services, they can cultivate high-value crops and vegetables such as bottle gourd, okra, bitter gourd, etc.
- **Improved farmers' income:** The integration of water security, irrigation and farm level interventions will ultimately translate into better incomes for economically backward tribal farmers. One, they will be able to cultivate both rabi and kharif crops, and two, they will be able to diversify to crops that have better market value. Assured irrigation support along with crop diversification is expected to pull the participating families out of poverty.

Financing structure

Participating farmers are expected to contribute Rs. 2,500 per acre as joining contribution for taking up cultivation of vegetables. In return they will receive support for high performance seeds, fertilizers, pesticides, and if needed, technical support, packing crates, etc.

They are also expected to bear the cost of diesel as and when they use the diesel pumps for irrigation and contribute Rs. 30 per day of use of diesel pumps. This daily contribution will be used for periodic replacement of engine oil and maintenance of the pumps.

Remaining cost, as mentioned earlier, will have to be contributed by the sponsoring Company.

Benefits to the Sponsoring Company

The support of sponsoring companies will be acknowledged in the following manner:

- a. Every repaired check dam will carry a signboard mentioning the financial contribution by the sponsoring company. A photograph of the repaired check dam along with the sign board will be sent to the company for use in its annual report;
- b. Details of individual farmers benefitted, extent of their annual income, their photographs and name of the sponsoring company will be displayed at the website of the GCSRA and also sent to the sponsoring company; and
- c. GCSRA will carry out an independent impact assessment survey and send a copy to the sponsoring company, besides displaying the report at its website.

Whether the proposal is supported by the district administration?

Yes.

I. ROLE OF IRRIGATION IN POVERTY REDUCTION

Dillon, A. (2011), *The effect of irrigation on poverty reduction, asset accumulation, and informal insurance: Evidence from Northern Mali, World Development, 39(12), pp. 2165-2175.*

- Empirical evidence suggests that irrigation projects have positive impacts on agricultural production and the reduction of poverty for farmers. Households with irrigation save between 4.5 and 6.4 more total livestock units.
- Irrigation investments increase agricultural production by increasing land productivity.
- Significant positive increases in total household consumption, agricultural production and livestock holdings are estimated for households who have access to irrigation.
- The cost of small scale irrigation projects are quite small and gains in assets, annual production and consumption estimates suggest a positive benefit-cost ratio along with secondary effects like asset accumulation and informal sharing within village.

II. AGRICULTURE AND POVERTY REDUCTION

Christiansen, L., Demery, L. and Kuhl, J. (2010), *The (Evolving) role of agriculture in poverty reduction, an empirical perspective, United Nations University- World Institute for Development Economics Research, Working paper No. 2010/36, pp. 1-37.*

- Results suggest that agriculture is significantly more effective in reducing poverty among the poorest of the poor. It is also up to 3.2 times better at reducing \$1-day headcount poverty in low income and resource-rich countries.
- Agricultural multiplier probably lies in the range of 1.6 to 1.8 for Asia. Every dollar in direct income generated in agriculture, triggers another 30 to 80 cents in second round income gains elsewhere in the economy.
- Poor people stand to benefit much more from agricultural growth than non-agricultural growth because they live mostly in rural areas and earn their living in agriculture or related activities. Growth in agriculture (which is highly labour intensive) is the most poverty reducing, followed by manufacturing and construction. Larger the share of land cultivated by small and medium farmers, the lower the observed income inequality, and thus the greater the impact of growth on poverty.

III. CROP DIVERSIFICATION FOR POVERTY REDUCTION

Birthal, P. S., Roy, D. and Negi, D. S. (2015), *Assessing the impact of crop diversification on farm poverty in India, World Development 72, pp. 70-92.*

- Though the agriculture sector currently contributes only 14% to the national income, it engages about half of country's workforce. Over two-thirds of households cultivate farms measuring less than or equal to 1 ha.
- Crop diversification out of staples towards high value crops (HVC) is one of the alternatives that can augment incomes, generate employment and reduce poverty.
- The capacity to bear risk is lower for small farmers and riskiness of HVC is very high. The poverty impact of such diversification is related to participation of small farmers and labour intensity of this activity. Poor farmers have relatively high labour endowments. There is a distinct inverse relationship between farm size and productivity.
- Diversification towards HVC occurred largely by replacing low value coarse grains and not rice and wheat.
- HVC are highly labour intensive as many field operations cannot be accomplished by machines and require human labour.

IV. AGRICULTURAL INPUTS AND POVERTY

Abro, Z. A., Alemu, B. A. and Hanjra, M. A. (2014), *Policies for agricultural productivity growth and poverty reduction in Rural Ethiopia, World Development, 59, pp. 461-474.*

- Agricultural productivity has a positive impact on improving the indicators of welfare of rural households and has a direct impact on poverty reduction.
- Doubling the amount of fertilizer consumed will lead to a rise in real value of output by nearly 16%.

Kassie, M., Shiferaw, B., and Muricho, G. (2011), *Agricultural technology, crop income, and poverty alleviation in Uganda, World Development, 39(10), pp. 1784-1795.*

- Adoption of high yielding varieties have a positive impact on household well-being.
- Farmers that adopted improved ground nut varieties have a higher surplus (200 kg), compared to non-adopters (62 kg) to sell. Non-adopters mentioned lack of access to seed (57%), lack of credit (30%), and lack of information about new varieties (14%). About 29% of adopters were constrained by seed and credit availability from expanding production. Incidence of adoption was higher among average to small farm owners, compared to large farm holders. Lack of access to seeds and distance to main market are negatively associated with adoption.
- Impact of adoption on crop income decreases with farm size and increases with educational level.

V. HORTICULTURE AND AGRICULTURAL DIVERSIFICATION

Singha, K., Chaudhary, R. and Vishnu, K. (2014), *Growth and diversification of horticultural crops in Karnataka: An inter district analysis, Sage Open, July-September, pp. 1-12, accessed from <http://www.uk.sagepub.com/aboutus/openaccess.htm>, downloaded on 24/06/2015.*

- Horticulture has been one of the fastest growing sectors within the larger agriculture activities in the state having high profitability with scope for higher employability and raising income of farming community. Area under horticultural crops in the country has increased from 12,770,000 ha in 1991-92 to 21,825,000 ha in 2010-11 accounting for CAGR of 2.7%. Horticultural crops in the country covered an area of around 7% of the total cropped area, of which, 2% is under vegetables.

Weinberger, K. and Lumpkin, T. A. (2005), *Horticulture for poverty alleviation- The unfunded revolution, AVRDC- The World Vegetable Center, AVRDC Publication No. 05-613, Working Paper No. 15, pp. 1-16.*

- Organic trade from developing to developed countries is currently growing at over 20% per year. The horticulture export industry provides an important source of foreign exchange generates substantial employment and has contributed to the upgrading of agricultural production skills. In Africa Asia and Latin America high value crop exports are female intensive industries, with women dominating most aspects of production and processing. Horticulture produce has high value added and income generation potential, and due to a relative lack of economies of scale their production is attractive especially for small-scale farmers has a comparative advantage particularly under condition where arable land is scarce, labor is abundant and markets are accessible. And transportation infrastructure has seen dramatic improvement.
- Horticulture crops tend to be riskier than staple crops, since higher cost associated with production impose a greater income risk. In addition, the profit of horticulture crops tends to be more variable because they have both more variable yield and more variable prices. In addition, government usually do not regulate the price of horticulture crops.
- A major limitation of fruit and vegetable production in many developing countries is the availability of good quality seeds. Individual markets are too small to attract the interest of the private sector. Seeds are often contaminated by seed transmitted pests and diseases, and are genetically diverse.
- Horticulture production is severely constrained by post harvest losses which reduce profit to farmers and marketers. Horticulture crops are often highly perishable.

ATTACHMENT – 2: JASHODA NAROTTAM PUBLIC CHARITY TRUST

Jashoda Narottam Public Charity Trust (JNPCT) is an NGO that works towards rural development in the tribal areas of Valsad district, Gujarat. Its aim is to improve the socio-economic conditions of the tribal people and to facilitate ecological balance by harnessing, conserving and developing natural resources. The focus areas of the Trust are health, education and natural resource management.

With the support of Tribal Development Department, Government of Gujarat, it has constructed 30 check dams at the cost of Rs. 325 lakh in the last ten years in Kaprada & Dharampur talukas of Valsad district. These checkdams have been constructed on Kolak River and its tributaries, Par and Damanganga. The Trust has been shortlisted vide circular No. VKY/2009/872/DSAG dated 29/03/2010 by DSAG for construction of Check Dams, Group Wells and installation of Lift Irrigation (LI) Structures under IWADP/RKVY Project in Kaprada Taluka of Valsad district.

Since the state government has now stopped assigning the construction of checkdams to NGOs, JNPCT has, in the last three years, started repairing and renovating old damaged check dams so that these check dams remain functional for another 10 to 15 years. After successful completion of repair work, river water can be stored in the dam reservoir and lifted for irrigation with the help of diesel pump set and HDPE pipelines.

For the year 2015-16, JNPCT has identified 12 sites in Kaprada and Dharampur talukas for checkdam repair work, and thereafter installing mini LI schemes. The estimated cost for the entire project is Rs.55.40 lakh.

Modalities for repair of checkdams by JNPCT:

1. Locate the probable sites for checkdam repairs and need for LI systems, and thereafter to assess the demand of local farmers for carrying out above works.
2. Survey for site selection, the number of interested farmers and their agricultural land holding.
3. Arrange site meeting with village farmers and discuss about their participation in the schemes.
4. Formation of Water Committees and appointment of office bearers for each checkdam site.
5. Formally inform Taluka Development and District Development Officers for checkdam repairs on behalf of the respective the Water Committee.
6. Implementation of repair work of checkdam and installation of LI system.
7. Open Savings Bank Account of Water Committee.
8. Guide office bearers of Water Committee to make savings through contributions by member farmers in order to maintain the scheme efficiently, and also to encourage internal lending.

Sample of Repair Work Facilitated by JNPCT



ATTACHMENT – 3: CHECKDAMS IDENTIFIED FOR REPAIR WORK IN DHARAMPUR AND KAPRADA TALUKAS OF VALSAD

Sr. No.	Village	Hamlet	Taluka	Name of River/ Branch	Type of Work	Approximate Storage Capacity In Million Ltrs.	Approximate No. of Beneficiaries	Approximate Command Area In Acres	Estimated Amount for Checkdam Repair in Rs.	Estimated Amount for Mini L.I. in Rs.	Total Rs.
1	Sildha	Hatseri	Kaprada	Kolak River Branch	Providing & fixing M.S. Gates, Up Side cc Work, Apron & Toe Wall Repair, Existing Key Wall	50	18	25	294755.788	90000	384755.788
2	Karjun-1	Jamlipada	Kaprada	Kolak River	Providing & Laying R.C.C. Cover On Checkdam Body Wall, Repairing Of Key Wall, Apron & Wing Wall	45	17	21	502076.8221	90000	592076.8221
3	Karjun-2	Barada	Kaprada	Kolak River	Providing & fixing M.S. Gates & CC Work.	105	15	22	376766.4808	90000	466766.4808
4	Khadakwal	Fanaspada	Kaprada	Kolak River	Providing and laying C.C. Work	150	18	30	540479.5033	90000	630479.5033
5	Divasi-1	Nishal	Kaprada	Kolak River Branch	C.C. Work, Top and Slope Coping, New Key Wall	65	12	15	307628.89	90000	397628.89

6	Divasi-2	Takmal	Kaprada	Kolak River Branch	Providing & fixing M.S. Gates & CC Work, New Check Wall, De-Silting Work	25	16	20	368033.8549	90000	458033.8549
7	Nichalakuda	Vachalu	Kaprada	Par River Branch	Providing & Laying R.C.C. Cover On Checkdam Body Wall, Repairing of Key Wall	35	12	15	396609.2661	90000	486609.2661
8	Chichapada	Bodinga	Kaprada	Par River Branch	Providing and laying C.C. Work	70	15	22	355525.494	90000	445525.494
9	Veribhavada	Karval	Kaprada	Par River Branch	Providing & fixing M.S. Gates, Jali with Plaster	65	14	20	396776.4977	90000	486776.4977
10	Sadadvera	Patel	Dharampur	Nar River Branch	Providing & fixing M.S. Gates	10	8	12	233754.5602	90000	323754.5602
11	Khadaki	Holi	Dharampur	Nar River Branch	Providing & fixing M.S. Gates, Jali with Plaster	37	12	17	399970.1844	90000	489970.1844
12A	Kaprada 1	Mulgam	Kaprada	Kolak River Branch	Providing and laying C.C. Work	21	10	13.5	111527.4052	90000	201527.4052
12B	Kaprada 2	Mulgam	Kaprada	Kolak River Branch	Providing and laying C.C. Work	68	13	12	86893.85812	90000	176893.8581
Total						746	180	244.5	4370798.605	1170000	5540798.605