

Check Dams- Impact on Rural Life in Alwar and Sikar districts of Rajasthan



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**Asian Education Society (Regd.)
for
PHD Chamber of Commerce and Industry**

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Foreword

In 2017, the PHD Chamber of Commerce and Industry entrusted The Asian Education Society with the task of a research and survey based project on the impact of check dams built by the Rotary Clubs in the rural areas of Alwar and Sikar districts of Rajasthan. Our findings revealed that the check dams had been instrumental in improving the livelihoods and life styles of the villagers who were able to grow more crops, have better livestock and arrange education and other facilities for their families. These villagers are aware of the benefits of the check dams and grateful for the Rotary initiatives. During our survey we visited a number of villages and spoke to Sarpanches, local leaders, women and children. Their lives have changed since the building of the dams and they have better homes, transport and toilets. They have much higher incomes and the men do not have to migrate to urban areas to look for work. They look forward to more check dams coming up in their areas and are willing to lend a hand in building and maintenance.

Mr Sushil Gupta, Trustee Rotary International recommended us for this project. Dr. Kadambari from the PHDCCI briefed us and gave us working material. She assigned Mr Banwarilal to be our guide and tour the districts with us. He was a storehouse of information and introduced us to village heads and local people.

Satinder Ragobur, an eminent academic and expert in social work, did the research and led the survey team from Asian Education Society. She wrote the report which was edited by Chandni Luthra. The Report is based on our research, observations, interviews and the data available in records.

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About Asian Education Society

The Asian Education Society (asianeducationsociety@gmail.com), is a premier training institute that builds professionalism among citizens of India. The Society conducts training and awareness programmes in computer technology, retail management, corporate strategies, tailoring and fashion designing and public speaking and holds seminars and workshops on social issues such as the RTI Act, Global Warming, Women Empowerment and Tourism Capacity Building. It organises sports events such as golf tournaments to encourage the overall development of the youth. It undertakes research projects and surveys on cultural and civic issues such as the impact of Tibetan culture on the ethnic population, Missing Children and problems of migratory workers in Chandigarh. The Society has, on its panel, experts on diverse fields. It is based in Chandigarh and is a registered NGO.

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Introduction.

1. The development of rural areas is imperative for India's development. With 69% of its population currently living in the rural areas, concerted efforts are required to give the rural economy the big push for growth and sustainability. The interventions call for development of partnerships between government, civil society and private sector. Rotary India is a dynamic partner in the rural development process. It has sponsored projects in water conservation in rural communities, which includes 82 villages in Rajasthan.

Backdrop: Brief Situation analysis of water availability and the justification for conservation initiatives in Rajasthan.

Rajasthan is one of the largest States of the country with a population of 68.6 million. It is also one of the most water deprived regions with vulnerability to drought. 75% of its population lives in rural areas. Access to clean water is a need and also considered to be a part of the Right to Life, impacting health and livelihoods. Rajasthan is a water deficient state. The UN Sustainable Development Goal 6 – is about ensuring availability and sustainable management of water and sanitation for all by 2030. The 22nd of March is observed as the World Water Day to create awareness and actions for water conservation and sustainable management of water resources. Futuristic forecasts on water resources tend to be gloomy and solicit governance, civil society and private sectors to take proactive measures for sustainable water use and management.

The water scarcity situation in Rajasthan is further challenged by rising demand for water due to increase in the population, rising demand from industry and agriculture. The development implications call for efficient management of the deficit water situation and for meeting rising demand. No major rivers flow through the state of Rajasthan. Therefore water has to be conserved and actions implemented to meet demand and sustain supply. Holistic approaches are required which includes, rainwater harvesting; recycling used water and sustainable use of underground water resources which currently furnishes ¹90 per cent of the drinking water supply and around sixty percent of irrigation needs. The ground water needs to be protected as the annual water table loss in Rajasthan is reported to be in the range of one to three meters annually. Rajasthan is stated to have the *greatest climate sensitivity and lowest adaptive capability*. ²The interventions for addressing the precarious stock of water availability in Rajasthan requires participatory and collaborative actions of communities and civil society to support government interventions and create capacity to manage and prevent water crises. Given the vagaries of climate conditions in Rajasthan, resilience has to be created. It has been stated that check dams are changing the face of water-scarce areas near Alwar in Rajasthan and elsewhere where the check dams have been introduced or revived. ³Several Civil society organizations are promoting water conservation and water harvesting programs in Rajasthan to support and transform rural

1 <http://water.rajasthan.gov.in/content/water/en/waterresourcesdepartment/guidelines/reportstudy/summaryofvyas-committeereport.html>

2 World Bank Group. ()Rajasthan Water Assessment . Accessed from the web. <https://www.ifc.org/wps/wcm/connect/073e2400407496c1b157b1cdd0ee9c33/Water+Assessment>

3 <https://www.indiatoday.in/magazine/cover-story/story/20020819-things-that-make-india-proud-check-dams-7>

livelihoods. Rotary India made its mark in 2003 by supporting construction of check dams in Alwar and Sikar districts .

Rajasthan has amongst the highest infant mortality rate in the country. The IMR for rural areas is 51 per thousand live births compared to the national average of 43⁴ of (2013)⁵ ⁶Access to safe water enhances child health and survival.

a) Resume on the engagement of Rotary India in the domain of water conservation and capacity building for managing scarce water resources in Rajasthan.

Rotary India is supporting the government of Rajasthan to conserve water resources through the building of check dams across rivulets and streams. The Rotary India Water Conservation Trust (RIWCT hereafter) was created in 2003 with the objective to provide solutions for water conservation and contribute towards the Millennium Development Goals adopting the participatory development approach. The Rotary India is lending support for water conservation in water deficient regions. The Rotary India works in collaboration with the PHD Rural Development Foundation. Under the water conservation initiative, RIWCT selected Rajasthan for the water conservation projects as it is a semi arid state, the need for water conservation is the greatest. Under the project, 82 check dams have been constructed in the districts of Alwar and Sikar over the period 2005 and 2017⁷. The check dams have a varied water retention capacity ranging from of less than four months to twelve months⁸. Twenty check dams are reported to hold water all year round.

Table One- Distribution of Check Dams in Rajasthan

District	Number	District Population	Rural Population
Alwar	37	36,74,179	30,19,728
Sikar	36	26,77,333	20,43,427
Jaipur	01		

Source: Data of Rotary on Check dams and census 2011.

Annual Rain fall trends .Table Two presents the Annual Rain Fall (ml) 2008-2017 for **Rajgarh** and **Neem Ka Thana** Tehsils.

Table Two Annual Rainfall 2008-2017

4 http://unicef.in/CkEditor/ck_Uploaded_Images/img_1364.pdf

5 http://www.wcd.nic.in/sites/default/files/RHS_1.pdf Government of India. Ministry of Health and Family Welfare-Statistics.

6 Animal Husbandry is a major economic activity of the rural peoples, specially in the arid and semi-arid regions of the Rajasthan. Development of livestock sector has a significant beneficial impact in generating employment and reducing poverty in rural areas. Livestock contributes a large portion of draft power for agriculture, with approximately half the cattle population and 25 percent of the buffalo population being used for cultivation.

7 <https://www.rotary.org/en/check-dams-increase-farm-incomes-in-India>

8 Hussain Madhumita(2014) A Step towards the Social WellBeing in Alwar and Sikar Districts of Rajasthan through Revival and Revitalization of Johads Checkdams

<http://iosrjournals.org/iosr-jhss/papers/Vol19-issue10/Version-6/A0191060104.pdf>

District	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Alwar	1152	478	714	701	770	790	611	520.0	713.0	NA
Rajgarh	713	336	1229	938	734	714	689	683.	751.0	
Neem Ka Thana	.									
Sikar		683.	751.0	NA						

Source: Government of Rajasthan.

Table two reflects that the average over 2008 to 2016 was in range of 716.5ml for Rajgarh and 754.1 for Neem Ka Thana. The rainfall is erratic therefore a heavy reliance on ground water reserves which needs to be recharged for sustainability of livelihoods and environment.

District	Area sq. Km	Total Population	Urban%	Rural%	Vil-lages	2013	2014	2015
Alwar	8380	36,74,179	17.8	82.2	2021	33	70.7	
Sikar	7732	26,77,333	23.7	76.3	1162	05	71.9	

- b) **Brief on the structure of the check dams.** The check dams are constructed across streams or over low lands by building walls up to 14 feet high with 7 feet foundations. Their catchment basins range in length from 3 to 7 kilometers located midstream or at the end state of the stream. In the past rural communities in Rajasthan used to conserve rain water through a system of small check dams called johads that involved collecting water on the surface which also facilitated recharging of groundwater and drinking water availability in the wells.

Annex 1 contains the list showing the location of check dams built through Rotary Club Intervention in Alwar and Sikar districts.

Picture One- A typical structure of a check dam



Objective of Impact assessment study

The success of a project can be measured through its impact on sustainable enhancement of quality of life and livelihoods, ownership and contribution to capacity building and social capital. It includes intended and not intended changes.

This study is essentially a qualitative assessment analyzing the patterns of social and economic change. The dimensions analyzed ;

- Direct impact on agriculture and livestock rearing;
- Asset creation
- How have the target beneficiaries, enhanced their livelihoods and quality of life?
- Impact on poverty and migration
- Sustainable development.
- Environment
- Impact on the roles and conditions of women.
- Political economy of check dams in the two districts. How is local governance involved with the check dams. How important are check dams on village development agenda.
- The effect on overall water availability and ground water table. How do people perceive the effect? Has the table improved significantly, moderately or modestly?

I. Methodology

a) Analysis of Base Line and evaluative study.

- i) **Baseline-** extract data on situation at outset of the project. What was the ground water level in 2003 what is the current situation? Have any wells dried up? New Bore holes?

Wells had not dried up in the villages visited since the check dams have been built.

b) Rapid Rural Assessment method.

Conduct Key informant interviews.

Persons to be targeted. In depth interviews and focus group discussions with formal and informal leaders; village inhabitants; progressive farmers; women; youth ; landless agriculture labor; site visits and observation study; case study of families.

CHAPTER TWO

ALWAR



Fieldwork data to assess impact: Villages in District Alwar.

Field work was undertaken in the villages of Losal Brahmin, Shyaluta, Khodreeba and Vyas. They are all located in Rajgarh tehsil.

1. **Losal:** Losal (also referred to as Losal Brahmin). As per the Census 2011, the Village Location Code of Losal is 073250. Losal village is located in Rajgarh Tehsil of Alwar district in Rajasthan, India. It is situated 18km away from sub-district headquarter Rajgarh and 54km away from district headquarter Alwar. The total geographical area of the village is 814 hectares. Losal has a total population of 1,017 people, 548 Males and 469 Females. There are about 177 houses. Village Talab is the Gram Panchayat for Losal village. Check dams are also under construction in the vicinity of Talab village. The pictures collected through field visits also serve as material for analysis of the impact.

Picture Two: Average House in village Losal



The house is well maintained by local village standards; the laundry drying can be taken as an indicator of water availability to the household. Twenty years ago there were only 3 concrete houses in the village.

Picture Three –Village home in Losal, showing young boys curious about the visitors to the village. The boys in the picture are adequately dressed for an average winter day.



The residents of Losal utilize mechanical equipment to work in the fields. Animal power in form of camels and bullocks was not visible. During the site visit not a single camel was sighted by the team in Losal.

- a) Observation of Check dam. The check dam visited was Bodya Wala, located at a distance of one and a half mile from the village. It did not have any water on the surface. Crops were standing in the area which retains water in the check dam (See Picture Four and Five below). Farmers utilize the land for agriculture if the water in the check dam area dries off. It was reported by the farming household that they can manage to grow the wheat crop in three to four watering instead of six as the soil in the area retains moisture

The conclusions from observation and picture analysis is that the check dams though currently devoid of surface water, are sustaining agricultural activities in Losal village because ground water is available. There were fields of wheat and gram in the vicinity of the check dam and some vegetables also which needed protection from the peacocks. It may be concluded that the check dams are sustaining livelihoods for the village community.

Picture Four and five : Check Dam Bodywallah Village Losal. The front of the check dam and the water collection area



Bodyawala check dam Losal.(Brahmin) The wall boundary at the end of the fields demarcates the village land from a private farm house.





b) Focus Group interviews. (The pictures of participants are shown in, Annex Two)

Record of Interactions:1

Questions	Responses
Can you tell us something about the village and its development ?	<i>20-25 years ago we had a situation where the rain water would immediately run off as we are situated on sloping land. We had difficulty with water and our lands became barren (banjar).Now make up to three crops.</i>
What crops are you growing ?	<i>Makka, Bajra and jowar for the rabi. Kharif crops are wheat , gram and mustard(sarson). Tinda and Bhindi vegetables are grown in between</i>
Where do you market the vegetables?	<i>First we used to carry our vegetables to the “mandi “but now the buyers take it from us directly.</i>

Questions	Responses
Can you tell us what is a check dam and how it is constructed?	<i>Check dams are barriers (bandh) created to catch the water from a nalla or flow of water from sloping land. The system worked in the past also. The farmers used mud to stop the flow. Now we use stones and cement. Concrete mixture is more durable. We have learnt the technique and all villages in this area use the check dam system. We also share our knowledge with other villages and can advise them how it is done.</i>
How were check dams introduced and revived in your village?	<i>Idea popularized by Tarun Singh.</i>
Can you tell us what you think has been the effect on check dams on the village ?	<i>Firstly, people are engaging in agriculture and are able to make a livelihood. All people have water and over 70 percent families have livestock for milk. They have good animals and use the milk for consumption and sell the extra milk. In the past there was scarcity of water for the animals. Sometimes when women would draw water from pump or well, half way through the water would finish so the animals did not get adequate supply for drinking. It is not the case now. This year we had a bad monsoon and no water in the check dam now but the villagers are still able to manage as there is water in the wells and boreholes, "Mind you, we have to be careful as we do not know what can happen."</i>
How is the ground water level measured? Who undertakes this task? Where can we get the records?	<i>"Firstly, you will not find any data on ground water levels. What we do is the traditional way. We send a rope down the well to the end and then measure the part that is wet. This way we know of the changes."</i>
On whose land are check dams constructed?	<i>Usually check dams are made on common land but people who own lands which have nallah or other water flow, cooperate for common benefit . It benefit s them as well as others. Water is sacred. People cooperate on issues relating to water.</i>
Is there any impact of check dams on animal husbandry?	<i>Majority of villagers have good quality buffalos or cows.</i>
Is the milk sold?	<i>Only part of the milk is sold. People sell the extra milk.</i>
What about other livestock? Goats and sheep for example?	<i>The number of sheep and goats has come down. only around 3-4 families are herders. "People take to rearing sheep and goats when there is no alternative but now with water available, there is agriculture and cultivation."</i>

Questions	Responses
So how has the availability of water impacted people and their life? Standard of living.	People have made progress. People have better houses made of concrete. They have toilets . “Most families have one if not two motorcycles.”(Proudly stated).
What about cars and tractor?	Only one family in the village owns a car and three families own tractors.
What other things do people have now which were not so common in the past?	TV; Fridge; (70% households have these items. Some have coolers and washing machines also.
And mobiles?	“Every one has mobiles these days- even the bakriwallh (shepherd) consults his phone before moving out for the day”.
Do all families have toilets?	Almost all.
Are you worried that water from septic tanks may pollute ground water?	“No. The water goes into a septic tank. The residue is emptied into the fields as manure. It dries up and looks like soil”
Have families also incurred more debts since the check dams came up?	Yes people take loans but that is for progress. Some sacrifice has to be made. But government also helps us as we have a kisan card. The debts usually arise due to expenditures for wedding of children(bayaah –shadi ke mamla).
What is the status of education in the village.	All children go to school. All girls also. Girls are showing better results than the boys, surpassing them in studies. (All the male youth present had secondary education and one young man who had explained how check dams are made was a tertiary level student) .
Question for youth Will you move out to a town or city in the future?	Response-Pause- silence and giggles. Depends on the work. May be , maybe not.
Are children taught about check dams in school?	Not so specifically. But yes in social science they learn about water conservation

c) Focus Group Meeting – Women (Refer to Picture #2 and 3 in Annex two).

Photo number two in Annex II shows the participants in the focus group. Comprised housewives of mixed age and young school going girls.

Questions	Responses
What is a check dam . Can you explain how it is made and functions.	It’s a <i>johad</i> . The group asked a school going child to answer this. She did so briefly and shyly as she was embarrassed for being put to test her knowledge so openly. (Had some knowledge but not profound knowledge).

Questions	Responses
How has the check dam affected your lives?	<i>It has replenished the underground water. Before that while drawing water the pump would stop functioning as it had no water. Now there is more agriculture activity and fodder for the cattle.</i>
How have women benefitted from the check dams? Impact on your work and life?	<ul style="list-style-type: none"> • When there is water in the check dam, the animals graze around there and drink the water. Thus when the cattle return, we do not have to draw water to quench their thirst. • Since incomes improved, families are able to acquire facilities to reduce work load. Now milk is not churned the old traditional way, we use machines. Many families have taps so do not have to draw out water; families also have washing machines. Refrigerators help to store food besides providing cold water. • Girls in the village go to school. Women stated that they do not force the girls to do household chores to train them for it but they do it themselves and learn through observation. The married women participating in the group had only some primary schooling except one who had secondary schooling. • Women can also have leisure and watch TV. many women watch TV till midnight

d) Interview with educated youth from Losal village.

According to the youth the village has better livestock but less. In the past the villages had many animals but of lesser quality which they left to graze in the forests . This way without having to make too much effort, the villagers had some back up for milk. Further when agriculture was bad there was no option but to resort to herding goats and sheep. The stock of sheep and goats has gone down because there are other options . For miles around here, the villages know about check dams.

“Everyone in the village has mobile phones- even the shepherds.”

e) **Interview of family farming on the check dam site.**

The pictures show that the dried out surface of the check dam was being cultivated. Wheat and grams were sown in the low land area. Next to it in a higher elevation some vegetable plants were sprouting. The cultivators had to chase off the peacocks attacking the tender plants. The family keeps vigil, living in a make shift shelter. They need to push off the wild animals that come there at night and are a threat to the crops. (See picture four annex two)

Record of Interactions:3

Questions	Responses
What have you planted?	<i>Wheat and Gram</i>
You are irrigating the field.?	<i>Yes, there is water in the well although we had a low rainfall season. We are able to draw the water using a pump.</i>
How is the water quality?	<i>Very good. Please have some. Water was drawn out manually with a bucket tied to the rope and offered for drinking. It tasted good.</i>
How often do you irrigate ?	<i>If all goes well may be maximum of two more irrigations. This is the second one. Need to irrigate less on this land as it is moist.</i>
Do you stay here all the time?.	<i>The children and bahu go back but we stay to keep vigil against wild animals.</i>
What wild animals?	<i>Neelgai; wild boar; leopard at times. Even a tiger was sighted. They come in search of water and food.</i>
What do you do to push off the animal?	<i>We just shout and make noise. Observation- the family did not keep a dog and oddly, nor was there any in the vicinity. Need to build walls along the bandh to keep of the wild animals. Like the one you see on the distant farm.</i>

f) **Site Visit to check dam in Talab.**

The pictures below show that a check dam was under construction in the vicinity of Talab village. The work is being carried out by the MNREGA workers on forest Department Land. It was reported that the check dams also provide a drinking source for the wild life. It can be concluded from the site visit that the water conservation using check dams is robust. The construction is in the outskirts of the village of Talab.

Talab Village Check Dam



2. Village Shyaluta.

Shyaluta village is also found in Rajgarh Tehsil and numbered on the 073348 Census Handbook , Alwar 2011. Land Area 1,140.00 HA. Households 349 Population about 2100. Dominant group are Gujjar Community.

Field work data collected through Observation and interviews.

a) Inter views with members of Gram Sabha.

Gram Sabha Members-Lekh Raj Gujjar; Sita Ram; Dara Singh; Jhandoo Singh; Mohar Singh.

The village has a women Sarpanch, Shrimati Nirmala Devi Gujjar. Her husband Lekhraj Gujjar is Sarpanch Pati. (Husband of the Sarpanch)

Record of Interactions

Questions	Responses
Can you tell us about the check dams , who initiated them and how were they constructed?	<p><i>There are about eight check dams in the village vicinity. The Village population gave shram daan (labor)but now the work is done through MNREGA.</i></p> <p><i>To make a check dam, the gram sabha has to give an NOC.(no objection certification)Most of the check dams are on government land but a few are on private land also. The owner has to give a no objection certificate to make the check dam on their land.</i></p>

Questions	Responses
Do not the owners object to the proposal to make a check dam on their land?	<i>There has been no opposition so far because only a small percentage of the private land is used and the owner actually benefits</i>
When were the check dams made?	<i>Reply of Pradhan Pati. Check dams were made some eight years ago . Mohar Singh present here was associated with the construction work at the outset. The village had contributed towards the construction of check dams through labor and provision of stones. Due to poor rainfall in 2017, all the check dams are dry. The villagers have been living off the ground water reserve and we have managed so far.</i>
Can we visit the check dams ?	<i>Yes, But there is no water in any of the dams. We had very poor rain fall. Normally the water stays longer. Now desilting work is being carried out . We hope that by digger deeper into the bed, the dam will hold more water.</i>
Who is responsible for the check dams:	<i>The gram sabha as it is a village matter.</i>
How are check dams monitored and maintained?	<i>The committee and the people look after the dam. Right now as the dams are dry, desilting work is being carried out.</i>
What is the average income of households in the village?	<i>Gram Panchayat members-It is a large village. The average income of the village families should be in the range of Rs. two to three lakhs per year.</i>
What has been the effect of check dams on the life of the village?	<ul style="list-style-type: none"> • <i>Before the construction of check dams there was scarcity of water which affected agriculture. Cultivators had no option but to depend on the monsoon and thus managed one crop and harvest per year, which was mainly bajra(millet). Many persons had to find work outside the village. Now the situation is different , production has increased to three crops. Vegetables produced are sold at the Mandi (market) . Incomes have doubled and overall the village has seen prosperity.</i> • <i>Livestock too has improved and contributes to family income and nutritional status.</i> • <i>The year 2012 to 2015 were good years for check dams and agriculture.</i> • <i>There are more trees and vegetation in the village.</i>

Questions	Responses
	<ul style="list-style-type: none"> • <i>When there is water in the check dams the wild animals get water and they do not need to stray into the village.</i> • <i>All children are going to school . Those following higher education may get work outside the village but they will not abandon the village as a base.</i> • <i>At the time when the check dams were constructed there were around 20 tractors. Now there are forty tractors.</i> • <i>Before check dams there were no cars in the village. Now people have cars but less than 5%.</i> • <i>There are about one hundred two wheelers.</i> • <i>Most families have a television though not all.</i> • <i>Many families have refrigerators and coolers.</i>
<p>What about people who do not own land? What do they do?</p>	<p>People who do not have land work on the land of the cultivators. They also take land on batwara¹⁰ basis. They can earn a living staying in the village and do not need to migrate . Work is available locally too.</p>
<p>It is observed that there are many abandoned building, and some of these are close to the panchayat office. Why is that?</p>	<p>As incomes increased , housing also improved. The abandoned houses you see are of families who have made better homes in their fields. All homes have toilets and washrooms. The government gives Rs 12000 and the families top up the rest. The average cost of a toilet is Rs 24000.</p>
<p>Is there a threat of ground water contamination due to so many septic tanks?</p>	<p>No, the septic tanks are not so deep and constructed at a distance from water source.</p>
<p>How has the life of women changed over the last eight years? i.e. since check dams became operational.</p>	<p>All the respondents (males) felt that life is better for women.</p> <ul style="list-style-type: none"> • <i>Women have water.</i> • <i>They have opportunity for employment in the village.</i> • <i>They do not have to collect wood from the forest as most families are turning to gas; a wood and dung fuel is used as well.</i> • <i>Before the construction of check dams less than 2 percent households had cooking gas.</i> • <i>Now days women are getting all the opportunities and benefits</i>

b) Interview Sarpanch (Head of the Village) - Shrimati Nirmala Devi.

Nirmala Devi is Sarpanch of the village since 2014. She is aware of check dams and its benefits for agriculture and women's work. The family are relatively well off and own a lot of land. The younger generation of women are studying at university and wear more modern attire- jeans a stark contrast to Nirmala Devi and other married women in the family and village who cover their faces and wear traditional clothing.

According to Nirmala Devi the check dams have contributed to economic progress and social development. The village is making social progress. There are three schools; children get school meals; aganwadi for children.

Life was more difficult for women of my mother in law generation as water become scarce and women had less facilities. Currently there is a shortage, all the check dams are dry. But this year we have been able to survive because water recharging through check dams was still available. If the rains fail again we do not know what will happen.

Nirmala Devi's husband actually looks after village issues. Nirmala goes to the panchayat office twice in a month. Rest of the issues are dealt with at home. Nirmala Devi is interested to contest elections and become "sarpanch" (meaning the head of the village) again.

c) Site visit and interaction with women working on desilting of check dam.

The check dam Papadawala is located within the village with homes nearby. The house of the sarpanch is also not so far off. Women were working on the check dams under MNREGA. There was not a drop of water in the check dam surface area. Digging work was in progress to desilt and deepen the check dams. Picture no 7 and 8 show the site and the group of women.

The women reported that they were happy to work on the project to desilt the check dam. They were happy with the opportunity to work. Most women workers had also livestock.

Who looks after your animals when you are here at work?

We do the work before coming and when we return home ,will attend to them. The respondents were also deriving some income from the livestock. Did not have to churn the milk manually unless they preferred the manual churning.

Women reported that they were able to live better than before, had water and were able to spend on family needs. It was reported that expenditure of ten lakhs was a norm for a wedding. The women either managed to save the total amount or part of it and were also able to take a loan from the bank for the wedding of their children. The women considered it a matter of pride to hold lavish weddings for their children.

9 Batwara is a system of sharing half the costs and harvest with owner of the land.

How has the check dam affected your lives?

We get work.

We also have water.

What about domestic violence? Do women suffer from domestic violence in your village?

No, not really. It happens in very few families and only when there is usually a problem of alcohol; people realize that if there is a problem of violence and alcohol they will find it difficult to get a match for their son.

2. Field Data from Village Vyas

Vyas village is very picturesque set amidst the Aravalli Range in the valley. It was very green with crops of wheat, gram, mustard and also vegetables. This village also falls in Rajgarh tehsil.

However no water bodies were seen and the check dams are all dry with no crops in the check dam location.

Observation-

All the check dams are dry and have no water. But agriculture in the village was thriving with diversity of vegetation and crops. Animals also looked healthy and well fed and women were very busy attending to the evening chores for milk time. Women could also be seen operating the fodder cutting machine.

Feedback from youth group

The youth were in the average age of 22 years and all were studying in the towns and cities. They were home for the forthcoming Holi festival.

The youth maintained that their families were able to improve their financial situation following water availability else they would today not be in a position to follow university education outside their village locality.

The youth acknowledged that the check dams are dry now but they learnt to swim in the check dams. Even some women used to swim.

When the check dams dry out the wild animals are driven to come down to the village in search of water and hunt.

The youth stated that though they do not think they will ever cut off ties with the village, they will go where ever they get employment after completing their education.

3. Analysis of data. Impact Analysis

Losal

Direct Impact.

- a) The project objective for building check dams was to help the village to conserve and recharge the underground water resources. The check dams have impacted by increasing the water availability for agriculture and domestic use. This has improved incomes.

Situation Before Check Dam	Situation after Check Dam
Only one crop planted per year depending on rain.	Three Harvests
Little or no vegetables	Plantation of vegetables as from March(bhindi) Additional revenue from vegetables.
Livestock quality not so good and less people had milk yielding animals	People more selective with milk yielding livestock. Fewer but Better quality milk yielding animals as people are able to buy better quality stock. Majority of families have cattle.
More people driven to subsistence work like herding goats and sheep.	Less people herding sheep and goats because they have another option. People are moving away from very subsistence activities as there is conscientization for progress.
Little action on harnessing water and conservation	Strengthened knowledge and awareness of check dams the benefits of which have been felt by the community. Capacity building created for building and monitoring check dams.
Few livelihood opportunities for the villagers in the village at the time when the check dams were introduced.	Strengthened employment opportunities through agriculture.
Women had to spend a lot of time and effort for drawing water from wells and handpumps that would also dry up midway.	Women's work made easier through recharging of groundwater that facilitated bore wells. It was reported that when there is water in the check dam, the animals graze around and return after drinking water at the check dam.

Indirect Impact

- a) People have improved their standard of living and created assets both durable and equipment. Housing has improved and households have electrical appliances and transport. Asset creation is one of the building blocks for poverty alleviation.
- b) Life is easier with facilities of transport for mobility and connectivity which enable the residents widen their horizons .

- c) Television access opens up to information and awareness nationally and internationally.
- d) Better livestock due to water availability improves both nutrition and income .

Views on way forward.- the interest in check dams needs to be sustained through adult education and formal education. The commitment to conservation requires sustainment and more strength.

The role of the panchayat as a locus of authority and responsibility for check dams indicates institutionalization and local ownership of check dams as a development concern at level of local governance.

a) Impact on Knowledge-

The participants were very conversant with the check dams and understood the impact of check dams on water conservation. They were able to explain how the check dams are created and used the term johad to refer to check dams. Indigenous knowledge was there but the project has contributed to revival and strengthening of knowledge on water conservation.

There is understanding of the importance of check dams as substantiated by the statement, “2017 was a lean monsoon and not much water was collected. The villagers are surviving on the recharged water reserves”.

However, children’s responses to what is a check dam were not very coherent. It is possible that shyness was a factor but also indicates that future generations need to be roped in and feel a sense of ownership for sustainability.

b) Impact on women’s work loads

Owning milk yielding livestock is almost a universal practice among households. Looking after domestic animals is the work of women and includes collecting fodder from the fields. Good quality animals also need care. So work of women has not reduced but the drudgery has reduced due to pumped water and home appliances. There is a direct impact on women’s workloads when there is water in the check dam.

“When there is water in the dam, animals graze in the area and drink water before returning so women do not have to provide water for the livestock.”

Availability of water has facilitated washing of clothes and cleanliness in the home.

c) Indirect Impacts on women .

Life has improved and has had other impacts on the family – they have been able to create assets- build concrete house, better animals, own transport, milk is churned with machine, people even have coolers, and there is TV .” all women watch TV- some of them watch serials until midnight!”

Families are able to educate their children. The women stated that they do not make their school going daughters do housework but the girls do it on their own by observing us and what goes on in the home.

Impact Analysis- Shyluta and Vyas

Situation Before Check Dam	Situation after Check Dam
Agriculture output low; usually one harvest per year.	Two to three harvests and better crops and yields.
Poor livelihood opportunities	Livelihood opportunities improved due to availability of water for cultivation and rearing of cows and buffalos.
Forced to migrate	People do not need to migrate for manual work as it is available locally
No cars in the village	5% families have Cars due to improved incomes.
Twenty tractors	Number of tractors doubled.
Wild animals strayed into village in search of water	Wild animals stay away
Many livestock	Better livestock
People unemployed.	Check dams provide manual work for landless labor such as desilting and maintenance work.
Traditional homes many kutchra houses	Villagers have improved their housing even those who have concrete homes have shifted to better and more spacious homes.
Poverty and low incomes	Average household incomes estimated by gram sabha members to be in the range of Rs 100,000 to 200,000 thousand per year.
Subsistence living does not facilitate investment in education for children.	Children receiving education , basic, secondary and tertiary. It is possible that children will migrate to towns but it will be progressive and not not distress migration.
Many families had absent fathers/ husbands because the males migrated in seach of livelihoods	Less families with absentee fathers/husbands. Strengthened families.

Analysis: Feedback from youth

The direct impact of check dams is development of skills- the youth learnt to swim and have a store of joyful memories .As the families of youth progressed economically, they were able to invest in higher education outside the village.

CHAPTER THREE

Case Study



Case study: Prosperous farmer

Case study of a prosperous farmer in village Khodreeba, Rajgarh district. Pradhan is Shri Ganna Lal. Four Check Dams in the village constructed through Rotary help. Rishi Prasher Check dam is located in Khodreeba village area. At time of visit all the check dams are dry.

The case study reflects a pattern of the social and economic impact of check dams in the village.

a) Data on respondent

Name: Niranjana Lal Sharma. Studied up to high school but wife is not educated.

Three brothers, all of them live in the village and do farming. Has four sons. Three are with him and one son is in the city and works in a commercial undertaking. Sister married and educated up to eighth class. Daughter studying at University. Live in joint family.

Occupation- Cultivation of crops; livestock and shop owner. Also a priest and astrologer.

The family lives in a spacious house in the outskirts of the village close to the fields.

Niranjana Lal's brothers also have good homes.

Family situation prior to construction to check dams.

Before the check dams were constructed, cultivators relied on wells. Wells used to dry out. Farmers could grow only one crop and that too crops like mustard and millets which can survive on less water but also fetch lower returns.

Niranjana Lal migrated to Delhi in order to make a living. He worked in Delhi (a whole sale market for grains and spices) as laborer carrying heavy bags of grains and lentils. It was a difficult life away from family and carrying weights. He stated with pride and gratitude that now he has over 200 bags of his own grains to store.

When the check dams were made ten years ago and water levels changed, Niranjana Lal returned to the village and took up cultivation of food crops. His children were also of tender age. The family owns a lot of land but are unable to cultivate all of it. All the brothers are also farming. Before there was also copper mining in the area where work was available but the copper mine is closed now.

Impact on agriculture and livelihood activities.

Before the construction of check dams the village was barren and desolate. Only one crop a year.

“As water became available, we shifted to growing better crops. Before the main crop was mustard and grams”

Shifted to wheat which requires at least four waterings but better returns.

Niranjana Lal's family used to own sometimes two and sometimes three buffalos. Now with availability of water the family owns ten good quality animals comprising buffalos and cows. The family sells the surplus milk to the milk company and also at their shop in the village, thus increasing and diversifying the sources of income for the family.

The income is good and the family has made progress shifting from the smaller house in the heart of the village to the present premises. His brothers to have made progress and have better homes. It is more expensive to maintain the old kutchas as the materials are more expensive and the forest department controls the felling of trees.

Able to educate children. *There are many schools in the village and my grand children go to a private English medium school.*

Invested in the shop which my son manages.

Owns a tractor and motorcycles. Owns most electric gadgets like fridge, TV, coolers, churning; grinder.

Invested in the shop which my son manages.

Owns a tractor and motorcycles. Own most electric gadgets like fridge, TV, coolers, churning; grinder.

What is the impact on children?

All children go to school. Better nutrition (palan poshan). There are doctors in the village. People are more aware of health and hygiene. More families have toilets in their homes.

You say that you have a critical situation with respect to check dam water recharging system. What are you doing about it?

“There is a Committee for Check Dams made of some ten members. They look after the maintenance and related issues. When needed the villagers collect money. But so far no need. Over eight to ten years there is very little repair needed. Mostly sometimes due to people taking out the stones for personal use.”

We are managing the current situation by collectively agreeing to grow more of those crops that need less water. Vegetables require more water and pesticides.

Besides facilitation of irrigation for agriculture what are some of the other impacts of check dams?

- Animals get water to drink.
- Check dams control overflow.
- Check dams recharge the underground water stock.
- Wild Animals get water to drink. Since Check dams are made at a distance, wild animals do not need to come into the village area. There are panthers and other wild animals.

What is the impact on migration?

I do not think that men will migrate for menial jobs. For that they can work around here. But yes educated people will move out most likely to where ever they get employment.

What are some of the negative impacts?

Check dams do not have any negative impact!

What has been the impact of check dams on women?

Women manage the livestock and the home. They cut the fodder and milk the animals. Women also help in the fields. Women work a lot and have a lot to do.

Conclusion: The construction of check dams has impacted strongly upon the crop yields and increased the number of harvests. In turn this has had a positive economic and social impact-increased income; spending power; improved health and education.

How have you transferred knowledge of check dams on to children?

Children do not know much about the check dams. The check dams are at a distance and children normally do not go there.

What has been the effect of the check dam and developments there on poverty reduction in the village?

5 to 10% of the families are economically weak. The economically weak families tend to rear goats and sheep(bakri palan) but now they are facing difficulties because the forest department has put restrictions

Interview with Shrimati Nilanjali Lal and daughters in law.

1. What have been the changes in your life since the check dam projects started.

We used to get water from the well. Now we have motor to pull out the water.

2. How has your work load changed?

The work has increased a lot. More work in the fields. More work related to livestock care. More agriculture means more work for women. But more benefits also. More gains via better income.

3. Do you have appliances to help you in your work?

Yes. Most women are not churning the milk in the traditional manner. They use the machine unless they prefer the traditional methods. Mixers and grinders are now a household item. There are washing machines too but still we prefer the hand washing methods. Its better. Estimated that 75% homes have a washing machine.

4. How about television? How has it impacted your life.

No time for TV.

5. How about washrooms and toilets.

Since the last four to five years people have started building toilets and washrooms.

6. Other than the home, are there other income generating activities for women?

This is a big village. We have teachers, bank officers, , staff working in government departments who travel to work from other areas or live in the village now. So some women are providing tiffin service.

7. Any impact of check dams on family life?

The men do not have to migrate so the family is together. It is good for the family.

8. What of domestic violence issues in the village?

Overall low incidence about 4% in the village and that too amongst lower castes. Its only where there is an addiction problem that domestic violence surfaces.

9. What are your plans for your daughters?

One daughter has dropped out after class 8. She is not very bright. We will train her in household work and we are looking for a good match to marry her off.

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Pictures below captured the interview with Shrimati Niranjallal.



Chapter Four

SIKAR



1. Choodla Village.

Village Choodla Sikar: The 2011 census reported population of 1090, 183 Houses .Pincode 332707 and location code is 082351 as per census handbook 2011 .Land is 820 Hectare acres. The check dams in Choodla were constructed with the help of SAIL . One is built on a rivulet called Kali Nadi.

It was reported that in the past it was a rich area and even cultivated sugar cane.

There was water in the check dams.

Check Dam at Choodla Village in Sikar. Visited on 27th February 2018.
Life line of the village for water resources.



a) Observation

Very Dry. Most Fields were left fallow. Two ladies who were doing volunteer work at the recently constructed Gow Shala (shelter for stray cows) escorted us till the check dam along with facilitator.

Held one focus group meeting with mixed male group and interviewed some women at random.

b) Discussion and interviews with villagers.

The picture in Annex two shows the participants.

Questions	Responses
What has been the effect of check dams on the village.	Both humans and animals have benefited by getting water since the construction of check dams. The check dams are the life line for ten villages in this area.
How are you benefitting from the check dam now?	Livelihood opportunities improved due to availability of water for cultivation and rearing of cows and buffalos. This year we all had to abandon agriculture and give priority to water for domestic animals as we can at least fall back on milk production for our needs and for sale to get income. If we did not get water from the check dam in the bore wells, the animals would die. Population in the radius of fifteen kilometers are able to survive. The check dam needs to be made five feet higher to improve water holding capacity.
What has been the financial gains from check dams for the farmers?	Before the check dams, we relied on rains only and , sometimes one and sometimes two crops. We usually planted crops requiring less water like mustard, bajra. With the check dams we had more water and were able to plant wheat and vegetables also. Vegetables require more water so right now the cultivation of vegetables is suffering as well as fodder for livestock. When there is problem of water for drinking, how can we think of planting vegetables? Villagers are purchasing Chara (fodder) from Haryana. Four five families pool in and this reduces the cost.

Questions	Responses
Have the check dams contributed to improvement in homes and purchase of goods?	Yes, before the check dams , we had more kutchha homes. Now only ten to fifteen percent of population have kutchha homes. Most people have been able to improve their housing stock by adding more rooms or moving to a bigger house in the outskirts of the village. People were able to purchase good livestock, transport. Now there are some 25 tractors; no car; fifty percent population have fridge; around five percent population do not have TV. Ninety five percent of population have mobiles.
Negative Impact?	What can be the negative impact?

c) Interview with shop keeper.

The shop keeper, Shri Narendra Kumar Sharma had migrated to a city here he was doing contractual work for telephones. His work in the city became unsustainable so he returned to the village and set up shop.

In his view the check dams have no impact. What is the use if the rains fail and the check dams don't get filled up. It is not sustainable.

Narendra Kumar sells consumer items(no grains) , light snacks; mobile phone recharge.

d) Interview with women

Record of Interactions#:6

Questions	Responses
How have the check dams impacted on women and their work.	When there was water then we had a lot more to do. Now it is very worrying if the rains do not come. We cannot fight nature but it is worry for us. Children are going to schools.
Negative impact	Cannot think of negative impact of check dams. It has provided us with water. Yes when the crops were good people started spending and competing with each other. Many households purchased big television sets. People felt the good times will last.

2. Loharwas Village

Loharwas village is located in Tehsil Neem Ka Thana .The tehsil has 192 villages The village location code of Loharwas is 082347 (Government of India Census Handbook Sikar :2011). The village area is 813 HA . Population as per 2011 census is 777 persons 431 Male and 346 female. The Check dam in Loharwas is called Retalawal Mauda wala . The Key informant was Shri Bhanjrang Lall. (see picture Annex Two)

1. Observation

Relatively isolated village surrounded by hills and forest land. The check dam had water but considerably diminished. Most villagers had abandoned cultivation of their fields due to shortage of water and rationing . No plantation even on the dried out bed of the check dam. A water tanker was filling water from a village bore well.

Forest Department staff was watering the trees planted near the check dam on forest land from their tanker.

2. Interview with women.

Questions	Responses
What has been the effect of check dams	<i>We are having water and this is beneficial for all of us , for agriculture; for livestock; for families.</i>
How does it affect families	<i>We have water all the time. Have made some progress. Children studying.</i>
Effect on work of women?	<i>Women have a lot to do. Women also help in the fields.</i>
So your work has increased?	<i>Yes but there are benefits too. There is some gain.</i>

3. Site visit to check dam and interview with farmer Shri Bhajranglall.

Questions	Responses
What has been the effect of check dams	<i>We were able to get water. We have water available all the time for domestic use. Individuals need livelihoods. When there was no water, young men were forced to flee and work as laborers in big cities</i>
Did you also have to leave your village when there was water scarcity?	<i>Yes, I worked as laborer in Delhi, In Khari Baori, Delhi where there is a grain market.I used to carry bags of wheat for a livelihood. Now I produce bags of wheat for my self.</i>
Why Khari Baori? Why did you choose to go there?	<i>People in the village and surrounding villages used to go there so it became known as a destination to find work.</i>

Questions	Responses
Impact of check dams on livelihoods-agriculture	<i>The families got good income from agriculture which some families have tried to diversify by investing in shops/transport. If the check dam reaches full capacity and over flows, we know for the next couple of years we have water. But 2017 the rain was very little and you can see the outcome.</i>
Economic impact	<i>Better incomes. Able to improve housing; educate children.</i>
Impact on women	<i>Women have to work harder but also have economic gains.</i>
How has the check dam contributed towards the environment	<i>Although you see the water scarcity in the dam, daily some 300 liters are used up by wild animals and stray cattle. Thus the animals too are surviving.</i>
Do the wild animals come into the village also.	<i>Very rare. They drink the water from the dam and go off from there.</i>
What are some negative impacts? Mosquitoes?	<i>No negative impact; the check dam is too far off from the village for mosquitoes.</i>
We hope that this year the rainfall will be good. However, if not what will you do?	<i>Well, cannot fight nature. We will have to look for alternatives and plant crops needing less water. The worst scenario is we will have to take up manual labor work(mazdoori).At this point my brothers and myself have kept our fields fallow.</i>

4. Jaitpura

Village Jaitpura in Neem Ka Thana is numbered 082342 on census handbook for Sikar . It has an area of 681.98 ,Hectares’ ; 158 Households. Check Dam under construction- kala Khet Wala.

The picture reflects that the construction of check dams is increasing and work is continuing in this domain as an issue for rural development .





5. Analysis of Impact based on data from Sikar.

Questions	Responses
Only one crop feasible , if lucky another one depending on rains.	<i>Two crops facilitated with irrigation and growing crops that yield better income.</i>
Growing vegetables difficult	Able to plant vegetables with availability of water.
Livestock modest	Able to purchase better quality livestock and can sell milk.
Wild animal stray into village in search of water.	Wild animals drink at the check dam and do not need to come to the village.
More people had poor quality housing.	Asset creating through investment in home improvement and construction of better homes.
Less Income	People able to purchase transport vehicles, more tractors, fridge (safer food storage and cold water facility in summers) ; TV.
No effect responses	The shop keeper maintained that there was not effect of check dams on income and spending. Yet the villagers are buying some snacks and consumer items like soap; shampoo etc.

Questions	Responses
Impact on Education	Families able to invest in education
Environment	More trees and vegetation
Institutional	Check dams part of rural development interventions; promotion of small technologies and engagement of communities in decision making and problem solving.

Chapter Five

Conclusions and the way forward



The methodology and Impact assessment.

The method adopted for studying the impact of check dams in this assignment was qualitative. Patterns of impact are discernible. Generalizations may be drawn by asserting the patterns as mainstream where ever the check dams are constructed. Rotary has built check dams in about eighty villages of varying size. Taking one hundred households per village as a minimum figure, it may be asserted that eight thousand households have improved their livelihoods through improved agriculture, livestock rearing and increased employment opportunities as a result of water availability. It was found that as the incomes increase, the households invest in better livestock, better housing, transport and education of children. It demonstrates improvement in quality of life, lifting the families above subsistence survival and distress migration to town and metropolitan areas.

Could the villagers have made the check dams on their own? The fact is that when people are surviving at subsistence level, they have no resources they can expose to bring changes in their lives. Thus some support provided by government schemes , private sector or civil society becomes instrumental in the process of communities participation in developmental actions. Contacts with officials and civil society also enlarges the social capital of rural populations.

1. **Impact-** emergence of a rural elite? There is evidence of a rural elite forming . People are investing in better homes in the village .A random answer to a question asked about real estate: There are so many flats coming up in the outskirts of urban localities. Are villagers buying these flats? Response: No, it is people who work in towns. Village people can have better homes in the village now that we have all facilities like transport, electricity, television, we can have a better life here. Very few people from the village move into the housing projects.
2. **Impact on livelihoods** Better incomes but agricultural activities need a back up. In the case study the pattern was that the farmer had diversified into shop and selling milk. The construction and maintenance of check dams is also benefiting landless and poor families in the village.
3. **Impact on housing.** Since the construction of check dams, along with improvement in agriculture is improvement in housing,
4. **Education** The larger villages have more than one school. Families are sending their children to school, specially girls.
5. **Political economy-** The check dams are constructed through the involvement of the local governance . Some villages had non panchayat members on the committee for check dams. But Panchayats are also involved and figure on the agenda of the village.

The way forward

- a) It can be asserted with certainty that check dams have had a positive impact on agricultural activities and raised farmer incomes and assets. The progress needs to be sustained. However, the reality is that the check dams too depend on rains and if the rains fail, check dams get little or no water. Thus the efforts of villagers can become unsustainable under harsh weather conditions. It was suggested by the respondents that the walls be raised so that check dams can store more water. This aspect needs to be studied for feasibility and implications.
- b) To create sustainability, the significance of check dams needs to be passed on to the next generation. It is suggested that the rural development process includes check dams on its information and communication agenda by engaging with local governance and youth.
- c) One of the effects of increased farm incomes is investment in education of children. Educated youth will move out of the villages to take up professional and non agricultural occupations. One of the objectives of the project was to stop emigration from the villages. To some measure, the impact through education will nurture outward migration but with a difference that it is not pushed by distress but planned in a progressive way. Educated persons comprise a significant component of social capital for rural populations and this should not be lost. Ways should be explored to tap the potential of the Diaspora to sustain links with the village and its development.
- d) Poverty alleviation. The project has impacted on poverty alleviation as people in the village have been able to create assets and increase incomes and improve food availability. Moving to a higher level, reducing energy costs contributes to making available more resources for the rural families. Rotary may wish to sponsor projects on solar energy which could enhance quality of life of the rural populations. The idea can be launched through local governance and capacity building training imparted for sustainability.
- e) Given the challenges emanating from climate change and the erratic rainfall trends in Rajasthan, alternative livelihood strategies need to be developed so farmers are not forced to flee the village in distress. If farmers can get work in rural industries near to their homes, they can supplement their incomes when agriculture is lean.
- f) The rural development department and Rotary could consider planting of trees, particularly those variety of trees that will not compete with crops for water.
- g) Strengthen potential for rural tourism through landscaping and waste management. It was observed that plastics and wrappers were ruining the village landscape.

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Annex one A

Key informant tool.

s.no	Impact domain	Questions	Responses
1	Awareness about the recharge structures	When was the check dam built? What was your role and contribution? How has the check dam changed life in the village?	Engaged in discussions about check dams. Could not remember exact dates. Some seven eight years ago.
2	Access to water	Is the water adequate to meet the needs?	Yes. People have a regular flow of water as the pumps and wells have not dried up as the check dams are facilitating the recharge.
3	What is the quality of the water?	Good Average Not good	The villagers are getting good quality water to drink from pumps or bore well.
4	Impact on livelihoods-agriculture	Crop Production Livestock Fisheries	Getting two to three crops instead of one. The villagers own fewer but better cattle. Majority of inhabitants are vegetarians.
5	Income impact	How has the economic status been affected as a result of the check dams.	Families with land are cultivating and those who do not own land can get work in the village itself.
6	Social Impact	Self help group actions Migration Cultural change	Less villagers are migrating. TV and education has brought in cultural change
7	Children and Health (Infant and child mortality rates reflect on the level of socio-economic development and quality of life- safe water is an important determinant of child health)	Child Health Community health- Environment	Children are healthy and attend school.
8	Women's activities	Water storage Livestock related	Women help in the fields. Bringing fodder from the field/forest remains primarily the woman's responsibility.

Annex One B

LIST OF VILLAGES ASSISTED BY ROTARY INDIA

ALWAR	VILLAGE AND BLOCK	SIKAR	VILLAGE AND BLOCKBLOCK
Losal	Rajgarh	Loharwala	Neem ka Thana
Vyas	Rajgarh	Choodla	Neem ka thana
Shyaluta	Rajgarh	Jaitpura	Neemka Thana
Khodreeba	Rajgarh		
PAHAAD WALA		KHORA WALA	
BODYA WALA		GADIWARWALA	
BHAIRU KA RADA WALA		BUJAWALA	
KALIBHAT WALA		GHATI WALA	
KALIMAIDI WALA		BAMRODI KA NALAWALA.	
PAPDAWALA		DHANKAVWALA	
DHOLPAPDAWALA		GIRATI WALA	
GADHA KHOLWALA		SARANWALA	
TEENCH WALA		KALADEH WALA	
PHUTYA WALA		MAUDA WALA	
KAANCH WALA		BIRWALA	
CHOKHANDYA WALA		LAKHODI WALA	
MUSANDYA WALA		RETALA WALA	
RAM SWARUP KI GHATI		PUTHIYA WALA	
DHER WALA		NAYAKUWAN WALA	
ALEVA I		BANKHLA WALA	
ALEVA II		BERLA WALA	
KHOLI WALA		JOSHI WALA	
GUANA WALA		BANDHAI WALA	
HATHI PAPRAWALA		LONI WALA	
RADI WALA		MOUTALA WALA	
BAGRIYA BHATA WALA		SAIDA WALA	
NARYANIMATA WALA		BABA WALA	
RISHI PRASHAR DHAM WALA			
BADANALA WALA			
KALAKHANA WALA			
PIPLIWALA			
BHOJKALA WALA			
LAL KUNA JOSHI WALA			
BABA CHANDCHAK NATH WALA	GORGAON	BUDHLEEN WALA	MEWAT
		BADI KHOLI WALA	MEWAT

Annex Two: Pictures of fieldwork

Losal: Interaction with Key informant and Village Males



Interaction with Women Losal







The new rural elite

Interaction with Village Pradhan Shyaluta Nirmala Devi and Pradhan Pati



With Village Pradhan Pati



Interaction with women working at the check dam Shyaluta. The women took a break from work to talk to the visitors.



No More lifting bags of grains in Khari Boari Delhi. Now he harvests 200 quintals of grains



Loharwaas. Women who responded to questions on check dams .



Barren fields in Chudla. The picture shows the cut back on agriculture activities. During this period, the crops are normally standing and the landscape green.

The picture shows the state of the fields at the time of the visit. The pipe visible in the picture is the water life line.



**IMPACT OF CHECK DAMS CONSTRUCTED IN THE PAST BY PHDRDF WITH
SUPPORT OF ROTARY INDIA WATER CONSERVATION TRUST**



Landscape Post construction of Loni Wala Check Dam in Sikar Rajasthan sponsored by Rotary



Landscape Post construction of Radiwala Pond in Alwar Rajasthan sponsored by Rotary



Landscape Post construction of Bandai Wala Check Dam in Sikar Rajasthan sponsored by Rotary



Landscape Post construction of Joshiwala Wala Check Dam in Alwar Rajasthan sponsored by Rotary



Landscape Post construction of Bagariya Bhata Wala Check Dam in Alwar Rajasthan sponsored by Rotary



Sanjay Bhatia
Chairman, PHDRDF

Message by Chairman, PHDRDF

PHDCCI's (PHD Chamber of Commerce & Industry) Rural Development Foundation (PHDRDF), has had the privilege of working with the Rotary India Water Conservation Trust (RIWCT) over the years, and our accomplishments in the field of water conservation are remarkable. RIWCT has been instrumental in contributing to the all inclusive growth of the districts of Rajasthan. In over a decade of work in this area, PHDRDF with donor support from RIWCT has completed more than 90 water harvesting structures. Thus 90+ structures have become operational through the RIWCT-PHDRDF collaboration.

The much needed construction of water harvesting structures in the state of Rajasthan and Haryana has led to a widespread improvement in the socio-economic status of people. This has led to an overall increase groundwater level. The water harvesting structures have facilitated increase in agriculture yield and productivity. With the increase in the area under cultivation and irrigation, there has been an increase in crop production, which has boosted the income of the people. The income increase has helped farmers to increase their livestock, build pakka houses, pay off their loans and buy fertilizers, pesticides and tractors to facilitate their agricultural produce. Economic effects of this initiative are quite evident and going to grow multiple folds in coming times. This would not only lead to rural development but would also promote inclusive growth of the state in the coming times.

Our grateful thanks to RIWCT & its partner organizations namely; Latter-Day Saint Charities of USA; Pranik Healing Foundation, India; Hager Foundation, Germany; numerous Rotary Clubs located in USA, France, Germany, Canada, UK, Russia, India and other parts of the globe; and other individual donors for joining hands with PHDRDF. Special thanks to PRID & Trustee Rtn. Sushil Gupta, PDG Rtn. Ranjan Dhingra, Rtn. PP Atul Dev, Rtn. PP Philippe Dangelser, PDG Rtn. Ellias Thomas III and Rtn. Sanjeev Saran to name a few who have worked closely with us and given great support and encouragement for accomplishments. And without doubt, all credit to the PHDRDF team which works tirelessly to reach higher goals – all for social good.

About Rotary India Water Conservation Trust (RIWCT)

Rotary India Water Conservation Trust (RIWCT) was set up by Rotarians in India under the visionary President Emeritus PRID Trustee Sushil Gupta as a follow-up of the Delhi Declaration held in New Delhi December 2003. The objective of this Trust is to serve as a catalyst for solving water problem in the country. The Trust works towards sensitizing water concerns as every body's business by disseminating knowledge about water conservation techniques including the traditional methods. RIWCT encourages community participation through an integrated and sustainable water management approach. At RIWCT, Rotarians focus towards development and taking up model projects for sustainable water management to serve as a store house for Rotary work in this area. We have been actively involved in supporting the cause of water conservation through construction of water harvesting structures across different dry states of India, especially Rajasthan.

About PHD Rural Development Foundation (PHDRDF)

PHD Rural Development Foundation (PHDRDF) was established as Trust in 1981 under the Indian Trust Act, 1882, 80G of the IT Act, 1961 and the FCRA under the aegis of PHD Chamber of Commerce & Industry with an objective to work towards betterment of less privileged. PHDRDF works as a catalyst to enable the resource poor to achieve self reliance and improve quality of life through integrated socio - economic development.

PHDRDF is supported by PHD Chamber of Commerce and Industry (PHDCCI), a 108 years old proactive and dynamic multi-State apex organization working at the grass-root level serving 12 Northern including Uttarakhand and Central Indian States along with Bihar, Jharkhand in the Eastern region and Union Territory of Chandigarh. It has direct and indirect membership of about 48,000 and also in regular touch with nearly 60 counterpart chambers abroad.

PHD Rural Development Foundation, as a social arm of PHD Chamber of Commerce & Industry work as CSR implementing partner of different Corporates', Government organizations and PSU's and is actively implementing projects in the areas of *healthcare, watershed management, Training & Skill Development, Sanitation, School Development, Baseline Line Survey & Evaluation* and other need based community welfare activities. PHDRDF has impacted lives of over 20 Lac people across 9 States including Rajasthan, Haryana, Punjab, Madhya Pradesh, Uttarakhand, Delhi, J&K, Himachal Pradesh and Uttar Pradesh. We have recently also taken up a project across 22 states in India including North East.

PHDRDF is registered under the 'Foreign Contributions Regulation Act' (FCRA) and funding to PHDRDF is exempted under Section 80G of the Income Tax Act. We have also been empanelled by the Government of India through **Niti Aayog-NGO Darpan** and for **Shaala Sarthi** by the Department of School Education & Literacy, **MoHRD** for social development projects.

Work by PHDRDF in Water Conservation has been recognised at National and International forums; received the award of "**Best NGO for Revival of Rural Water Resources**" by Water Digest Awards in 2013-2014 and one of the finalist for Best CSR project in the 10th Edition of The World Chamber Competition held in Sydney by International Chamber of Commerce, 2017.

PHD Rural Development Foundation Team

1. Mr. Sanjay Bhatia, Chairman
2. Dr. Kadambari, Chief Executive
3. Ms. Anjana Kumar, Sr. Project Officer
4. Ms. Shreya Verma, Manager – Resource Mobilization
5. Mr. Sandeep Kumar, Assistant Manager
6. Ms. Apurva Sharma, Assistant Manager – Resource Mobilization
7. Ms. Anuradha Kashyap, Project Assistant
8. Ms. Meera, Project Coordinator

Water Field Team

9. Mr. Mukti Lal, Rural Development Officer
10. Mr. Goverdhan , Community Mobiliser
11. Mr. Banwari Lal Chaturvedi, Community Mobiliser
12. Mr. Dinesh Choube, Community Mobiliser

The Asian Education Society Team

Ashwini Luthra retired from the Indian Revenue Service as Chief Commissioner of Income Tax and founded the Asian Education Society in 2004. He is a seasoned traveller, a former President of the Rotary Club of Sainik Farms and a member of the Executive Committee Of the Delhi Golf Club. He also organises seminars and workshops and gives talks on social issues.

Satinder Ragobur retired as Dean of the University of Mauritius and currently heads the Social Work Department at the Amity University, Noida. She has vast experience in leading research and survey based projects in her field. Satinder did her Masters from the Delhi School of Social Work.

Chandni Luthra started her career as a journalist with The Times Of India and retired as Senior Vice President from India Tourism Development Corporation. She started two Travel Magazines and was Director Modernisation Projects at the Nehru Memorial Museum and Library, Delhi. She is a Consultant and takes up Research and Feasibility studies. She has been a member of the Rotary Club of Garden City, Delhi.

Impact Assessment of Check Dams

Summary

The study assignment was undertaken to assess the socio economic impact of check dams on the villages and its inhabitants in Rajasthan to learn about the consequences and outcome of the projects undertaken by the **Rotary India Water Conservation Trust** and the **PHD Rural Development Foundation (PHDRDF)** to promote accessibility of water using simple and user friendly methods for water conservation in rural Rajasthan . This largest state of India is categorized as water scarce with deficient rainfall . The annual recharge of groundwater is reported to be less than the annual ground water consumption. This imbalance requires very robust strategies to protect the water resources for sustaining the agricultural and livestock based livelihoods and prevent poverty conditions and distress migration. The people have to be empowered with knowledge and resource support to engage in sustainable water conservation.

Qualitative social research methodology was adopted for data collection and information gathering, which included site visits, focus group discussions, interviews with village leaders and case study. Fieldwork was conducted in selected villages in Alwar and Sikir districts of Rajasthan where the check dams have been built. The methodology suited the time and resource frame of the assignment. If required, the findings of this report can be used to quantify the patterns identified.

The impact assessment study affirms the social acceptability of the check dam projects evidenced through responses of the interviewed persons and the fact that more check dams are being built; Check dams are also on the local governance agenda.. The interviews revealed that the villages had developed ownership for the project and were aware of the fragility of the water and agriculture nexus. They have the know how to build and manage check dams.

The check dams have succeeded recharging the water table , facilitating expansion of agricultural activities and improvement in quality of livestock , both of which require intensive water use.. The outcome is that rural incomes and consumption have improved, enhanced food availability which in turn impacts to improve nutrition for the family, particularly children.

The availability of sustained supply of underground water has halted the distress migration among land owners who can profitably work their land and also increased opportunities for those without land as they can find work with the farmers locally instead of moving out. Respondents stated that before the construction of check dams adult males and heads of households were migrating to Delhi and working as labor in the grains market. The position today is that they are now owners of their own stock of grains and living with the family. Instead of one crop a year, farmers are able to produce three crops.

With water availability incomes and consumption of farmers has improved , enabling the rural households to invest in education for their children, better housing , transport and electronic equipment which contributes to asset building and helps to alleviate poverty. Because

of a disappointing monsoon in 2017, the villagers in Chudla, Loharwas and Shyluta stated that they had cultivated less crops this year compared to the previous year to rationalize use of water.

Women's workload was stated to have increased as a result of expanded farm activities but women were quick to add with a smile that there is also increased income. Availability of water has facilitated household chores and enabled families to acquire labor saving gadgets refrigerators and coolers though it is not universal for all households yet.

The villagers claimed that even the wild life has benefitted from the check dams. When there is water in the check dam, the wild animals come to drink at the site and go back instead of having to stray into the village area in search of water.

It is inferred from the data that check dam projects have had a positive impact as stated by a group of respondents, "thanks to the check dams we are still able to have water in our wells despite a poor monsoon. But if monsoon fails again, we do not know what will happen. But we are optimistic." The statement reflects the fragility of the land, livelihood water situation and calls for sustainment of the water conservation projects and more innovative interventions for rural development. The possibility of strengthening the water holding capacity of check dams on rivulets/rivers should be given consideration along with other measures for managing limited water resources. Rural diversification is required to back up agriculture.

