

WATER COMMONS

- Influencing Practice and Policy

SOCIAL RETURN ON INVESTMENT REPORT

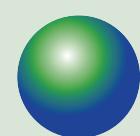
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FES

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INTRODUCTION

Water is an indispensable resource for various production systems, such as agriculture and manufacturing, as well as for basic needs such as drinking and cleaning. Historically, India has had an abundant supply of water; however, in recent times, the country has been facing an increasingly severe water crisis with recurrent droughts over large parts and increased exploitation and mismanagement of water resources. Both the availability and accessibility of water has deteriorated over the years making India a “water stressed” country. India has 17% of the world’s population but only 4% of its freshwater resources (Census of India, 2011). The per capita water availability is decreasing further, with estimates provided by the Central Water Commission pegging the per capita water availability at 1,588 m³. Estimates suggest that this will decrease further to 1,401 m³ by the year 2025 and 1,191 m³ by the year 2050.



The Water Commons Initiative

Foundation for Ecological Security (FES) in collaboration with Hindustan Unilever Foundation (HUF) has initiated a programme on Water Commons to improve the management and governance of land and water resources by strengthening community stewardship in more than 800 habitations across eight districts in the states of Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra and Rajasthan. **The Water Commons initiative focuses on:**

- a) **Commoning water**, i.e. establishing minor water bodies and groundwater as common pool resources and strengthening community stewardship at village and landscape levels for better governance of land and water resources;
- b) Establishing practices for **enhancing water conservation and water demand management**;
- c) Ensuring **more purposeful use of public investments** made under flagship programmes such as the **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)** by supplementing the financial investments with institutional investments and aligning the right to employment with right to resources; and
- d) **Strengthening rural livelihoods** through improved agricultural productivity and better adaptive capacities.

Social Return on Investment (SROI) Assessment

Over the last four years, Social Return on Investment (SROI) assessments have been undertaken annually to assess the impact of the Water Commons Initiative. Moving beyond a simple cost-benefit analysis, the SROI framework helps in assessing the social, environmental and economic changes from a stakeholder's perspective. The SROI assessments have tried to understand how the various initiatives under the Water Commons programme are influencing practices towards commoning water – what are the various triggers and motivators for getting people to collectively engage to improve water conservation and water demand management. Key indicators for assessing the changes were identified and monetary values (where possible) were used to create financial equivalents of the social and environmental returns such that the value of benefits could be measured against the value of the investment.

This report aims to share the findings from the SROI assessment undertaken during 2016-17, while the project is in its fourth year of intervention. The report is divided in four sections. In the first section we share the methodology used for undertaking the assessment, the stakeholders consulted, the steps involved in data collection and analysis, the key assumption and rationale for selection and valuation of indicators to measure impact. The second section highlights the value changes based on community's perceptions across all the project locations along the four broader objectives of environmental governance, ecological restoration, energizing MGNREGA and strengthening livelihoods that the project aims to address. In the third section we zoom in to present district highlights capturing impact or mind maps and a few stories of change. The last section of the report presents monetary valuation of the various social, environmental and economic benefits to calculate the SROI.

Some of the significant changes include:

- ◆ A gradual trend towards decoupling of land and water rights, with an increasing realization of groundwater being a shared resource and initiatives being undertaken by several farmers to share their wells and borewells.
- ◆ Initiatives being undertaken by local communities for formalizing rules related to water conservation and water use and establishing mechanisms for maintenance of water bodies. More than 200 water bodies have been brought under community governance over the last four years. There are also increasing trends of communities coming together to secure collective rights over water bodies such as village ponds and the resources therein.
- ◆ Communities having established strong rules and regulations for management of more than 30,000 hectares of common land, aiding in better governance of these hitherto degraded lands.
- ◆ Continued engagement with government, enabling capacities of MGNREGA mates and strengthening of local stewardship, which has helped in making more purposeful use of the public investment by ensuring better planning, quality of work and maintenance of the assets created in the long run.
- ◆ Land and water rejuvenation initiatives that have helped in improving the fodder, fuelwood and water availability. As much as 11,217 hectares of degraded land have been treated and 37,969 TCM water harvested due to various soil and moisture conservation initiatives. With improvement in water availability, the women have to spend lesser time in collecting water; the farmers are able to provide critical irrigation to their crops during times of stress and take second crop that helps them in meeting their domestic requirement for an additional two months on an average.
- ◆ Land and water rejuvenation initiatives that have helped in improving the soil moisture regime and increasing the water available for irrigation, which has helped the farmers in bringing more area under cultivation. More than 1,000 farmers across the locations have increased their cropping area. On an average, the farmer is able to grow crops worth INR 27,530/- due to the additional area brought under cultivation. This has also helped in creating additional wage days not only for the farmer's family but also for others in the village.
- ◆ Supporting the farmers in adoption of sustainable agricultural practices such as mixed cropping has helped the farmers in adapting to climate change. Application of line sowing and nutrient and pest management techniques have helped them in reducing their cost of cultivation by INR 1,517/- on an average.

METHODOLOGY

The Social Return on Investment (SROI) assessment involved interactions with various stakeholders to identify the inputs, understand the rationale behind undertaking the various interventions, and understand stakeholder perceptions of the various changes (positive and negative) that they see or hope to see subsequent to the interventions. Mind mapping and perception assessment exercises were undertaken with the different sections of the village community (who are the primary stakeholders) in a sample of 40 habitations across the eight districts where the initiative is being undertaken. Simultaneously, data on various social, economic and environmental indicators such as water saved, water storage potential created, changes in agricultural production, incremental wages generated under MGNREGA, common land and water bodies brought under community governance, collected across all the habitations were analyzed for valuation of the benefits accrued.

Box 1: Study Villages and Steps Involved

Anantapur – Papannagaripalle, Mukkamvadlapalle, Jowkula, Gopalapuram, Daniyancheruvu
Bhilwara – Dhapda, Thana, Meena ka Kheda, Kanti, Talai ka Jhopda
Chikballapur – Bukkanapalli, Kallurayuana kunta, Devarajupalle, Pokamakalapalle, Bommaiahgaripalle
Chitoor – Vepalapalle, Diguva Mutravaripalle, Kethireddygaripalle, Batthinagaripalle, Pulasaramvandlapalle
Mandla – Changaria, Urdali, Umardihi, Khamariya, Payli Bohor
Pratapgarh – Kataro ki Bhai, Surpur, Bildi, Choti Ambeli, Jodamahuda
Udaipur – Reechwara, Upli Sigri, Sultanji ka Kherwada, Neekor, Borawali Madri
Yavatmal – Jarur, Hiwardhara, Chandapur, Sharad, Mejda

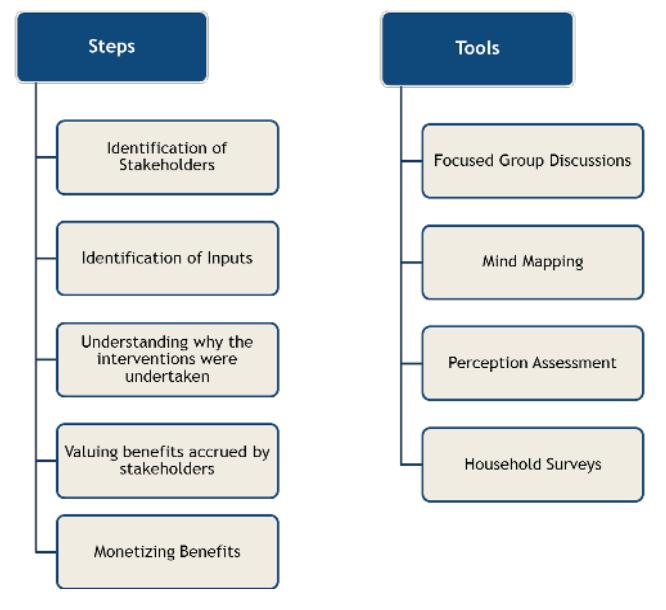


Table 1: Stakeholders Consulted

Stakeholder	Rationale
Farmers (across landholding sizes)	As the interventions focused on grazing land, agricultural land, and water resource development, farmers and livestock owners are the primary constituencies of this study
Livestock keepers	
Women	As most of the people working on MGNREGA work sites are women in the project locations, this stakeholder group was determined to be central
MGNREGA wage earners	
Marginalized Caste Groups/ Vulnerable Groups	It was felt that it was necessary to engage with potentially excluded social groups. Care was taken to ensure that these discussions took place away from the presence of dominant social groups
Village Institution (VI) Representatives/ Rural volunteers/ Community Resource Persons (CRP), MGNREGA Mates	They form the executive of the VI and are the most engaged in project activities
Panchayat representatives & MGNREGA Officials	Given the emphasis on MGNREGA, we sought to speak to this stakeholder group whenever possible
Farmers who made seed varietal replacement, seed treatment, and kitchen garden/vegetable cultivation interventions	Improving agricultural productivity and water savings through demand management is a prime focus area under the project. Thus, focused group discussions were held specifically with this stakeholder group to understand their perceptions and assess the behavioural changes
Participants in training programmes	Capacity building being another major component of the project, discussions were held with the participants in the various training programmes viz., claiming and securing Commons, work allocation and measurement under MGNREGA, agricultural training programmes
FES Staff	Discussions were held with FES staff to determine the activities undertaken within the habitations, identifying key personnel, etc.

Table 2: Key Indicators Measured and Methodology

Indicators Measured	Methodology	Rationale/Key Assumptions
ECOLOGICAL RESTORATION		
Area treated	The different area treatment activities that were undertaken and the extent of area treated by each of these activities was calculated.	To understand the different area treatment activities undertaken, and their resultant water potential created or water savings achieved.
Water saved	Calculation of water saved due to improved agricultural practices, availability of surface water for domestic purposes and water conservation efforts. Replacement Cost method was used. The value of water saved has been taken at a notional price of INR 0.005 per liter (based on the cost of water harvesting under the project).	Improved agricultural techniques were promoted with an aim to reduce water consumption and move towards a more sustainable model of agriculture which is based on less water consumption. It is therefore important to understand the extent to which water savings have been achieved.

Table 2: Key Indicators Measured and Methodology

Indicators Measured	Methodology	Rationale/Key Assumptions
Biomass and Carbon stock	<p>Biomass assessment of protected and control plot were undertaken in sample villages in each block and the values were compared to estimate the net change in biomass and carbon stock.</p> <p>Grass biomass - Standard rate of fodder at the rate of INR 5/- per kg has been used to estimate the added value of grass biomass.</p> <p>Standing biomass – For valuation of standing biomass, proportion of biomass used for fuelwood only is taken into consideration. Standard rate of fuelwood at the rate of INR 3/- per kg has been used to estimate the value of mean annual increment in fuelwood due to improved standing biomass.</p> <p>Please note that this does not take into account the timber value of the standing biomass.</p> <p>Carbon credit price as calculated as per the method prescribed in the 'Landowners Guide to Carbon Sequestration Credits' was taken to estimate the added value of carbon stock. The carbon credit price as per this method is INR 272/- per metric ton of carbon stock.</p>	<p>To estimate the changes in biomass (standing biomass, carbon stock, fodder) availability due to community governance and common land restoration efforts.</p> <p>Assumption: 2.8% of the standing biomass is used as fuelwood (Source: Ravindranath et al., 1997).</p>
Pumping hours saved	A significant reduction was achieved in pumping hours, due to improved agricultural practices. In calculating this, the pumping hours were converted into diesel consumption saved (@ average diesel consumption of 1.5 liters per hour, as per Ministry of Agriculture figures). Diesel was priced at INR 55/- as per prevailing prices.	The efforts to promote improved agricultural practices have resulted in a reduction in the number of hours for which pump sets are used to supply water to the fields. This is therefore a significant saving of energy consumption and needs to be quantified and monetized. The key assumption here is that all pump-sets use diesel. Although in many places electric pump sets are prevalent, it is easier to quantify when things are seen in terms of diesel.

Table 2: Key Indicators Measured and Methodology

Indicators Measured	Methodology	Rationale/Key Assumptions
ENVIRONMENTAL GOVERNANCE		
Cost of management of water resources	Number of Tanks being managed by the communities have been taken into consideration. It has been assumed that each tank is managed by one Tank Manager who gets paid @ the MGNREGA wage rate prevailing in the district. The total duration for which such a payment has been assumed is 3 months or 90 days of Rabi season when the tank water is actually used by the communities.	Community driven tank management is an age-old practice, especially in the villages of Andhra Pradesh and Karnataka. While the actual payment made to such tank managers is usually in kind, we have assigned the daily MGNREGA wage rate in each block in order to derive the value of the governance of water bodies.
Cost of management of land resources	There are a total of 1,142 patches of forest/ common land in as many panchayats. Each patch of forest has one manager who is paid @ INR 3,000/- per month for 4 months.	It is assumed that in the absence of community management, the government agencies (Forest Department, et.al) would have to deploy adequate manpower in order to achieve that governance. The cost of such deployment is taken as the value of community governance which amounts to INR 3,000/- per month for period of 4 months (during monsoon).
ENERGIZING MGNREGA		
Additional income due to better MGNREGA wages	Wages generated in works supported by FES vis-à-vis the Block average wage rate.	FES has striven to improve the quality of MGNREGA in its work areas. In doing so, we have been able to improve the average wage rate per person per day in some of the locations in comparison to the rest of the district where we are working.
LIVELIHOODS AND WELL BEING		
Agricultural income	<p>Additional crop production as a result of the intervention was valued by the price of the crop as per Minimum Support Price (MSP).</p> <p>To estimate the changes in crop yield due to improved practices, a sample of 20% of the farmers who adopted these practices was taken and the crop yield in demonstration plots were compared with that of control plots where the traditional practice was used.</p> <p>To estimate the changes in agricultural income due to soil and water conservation efforts and water harvesting structures, a sample survey of 10% of the farmers was carried out for collecting information on cropping area and crop yield before and after the intervention.</p>	<p>To estimate the changes in agricultural income due to: (a) improved practices such as SRI, seed treatment, varietal replacement, line sowing, application of organic manure and pesticides; (b) improved water availability.</p>

Table 2: Key Indicators Measured and Methodology

Indicators Measured	Methodology	Rationale/Key Assumptions
Savings on cost of cultivation	<p>With adoption of practices like line sowing, Non Pesticidal Management (NPM) and Integrated Pest and Nutrient Management (IPNM) the farmers are able to save farming expenses on seeds and chemical pesticides. The average cost saved per hectare due to adoption of NPM/IPNM has been taken at INR 3,000/- in Rajasthan and Mandla and INR 5,000/- in Karnataka, Andhra Pradesh and Maharashtra (based on discussions with farmers). The average cost saved per hectare due to line sowing instead of broadcasting has been taken at INR 2,000/- across all locations (based on discussions with farmers).</p> <p>With the adoption of better agricultural practices, the number of rounds of irrigation has reduced, which has helped in saving the costs incurred in pumping water. In calculating this, the pumping hours were converted into diesel consumption saved (@ average diesel consumption of 1.5 liters per hour, as per Ministry of Agriculture figures). Diesel was priced at INR 55/- as per the prevailing prices.</p> <p>The project has aimed at making incremental changes in the existing practices of the community rather than bringing in new technology or practices that could displace existing practices. For calculating the value of the incremental production of biomass and agricultural produce, the difference in the production in the intervened plot and the adjoining control plots have been considered, while in case of water harvesting structures, annual siltation rate of 5% has been considered to deduct the overall water harvested. For renovation or deepening of the structures, the storage prior to the intervention is discounted as dead weight.</p> <p>The calculation takes into account the valuation of the contribution of the community members in protecting and managing their common land and water resources.</p>	<p>To estimate the savings in cost of cultivation due to adoption of NPM/IPNM and line sowing.</p> <p>To estimate the savings in diesel/electricity costs due to better agricultural practices.</p>

ASSESSING VALUE CHANGES

At the core of the Water Commons Initiative is the belief that all water bodies such as ponds, tanks, canals, and groundwater are common pool or shared resources and need to be managed and governed as common property regimes. The Initiative focuses on carving out a space for community management between the extremes of centralized or individualized management of water resources. Major components of the initiative include: formalizing community institutions and strengthening collective action for restoration and management of common lands and water resources (which result in improvement in local livelihoods), promoting debates on judicious use of water resources in agriculture, and joining wider networks and policy dialogues. This section highlights the community's perceptions of changes due to the various initiatives undertaken along the four main focus areas of better governance, ecological restoration, energizing MGNREGA and strengthening agriculture based livelihoods.



Table 3: Summary of the Context, Inputs and Outputs of the Water Commons Initiative

What we did?	Why?	What did we achieve?
Creating common understanding of water, particularly groundwater as a shared resource.	Water rights attached to land rights and groundwater largely seen as a private resource	Rules and regulations for collaborative management of land and water resources established by the local communities over 33,539 ha of common land and 1,346 water bodies
Formalizing local rules and norms for collective management of land and water resources.	Collapse of indigenous systems of land and water management	11,217 ha of degraded land treated
Securing collective tenurial rights over land and water resources through various arrangements with government	Heavy degradation of common lands and catchments of surface water sources	37,969 TCM water harvested due to various soil and moisture conservation initiatives and 10,023 TCM water saved due to improved agricultural practices
Using tools and technology to enable more informed planning and decision making	Increasing dependence on groundwater and depletion of water table	INR 708.97 lakh of MGNREGA investment channelized for rejuvenation of land and water resources and systems established for maintenance of these assets by the local communities in the long run
Channelizing MGNREGA for land and water rejuvenation and aligning the rights to employment with right to resources	Limited local capacities in planning and execution of works under MGNREGA	
Supporting farmers in adoption of low external input and water-saving practices and increasing their crop productivity	Heavy soil erosion, increasing costs of cultivation, low agricultural productivity	

COMMUNITY PERCEPTIONS

3.1 Environmental Governance

The various stakeholders in the study villages shared that the level of participation of the people in planning and decision making has increased and more efforts are now undertaken for sustaining the land and undertaking water rejuvenation works. This change is particularly significant in the case of women and youth. During the perception assessment exercises, 40% of the villages this year shared that there has been **high to very high improvement in the participation of people in planning and decision making** as compared to only 3% of the villages last year. Similarly, 43 and 40 percent of the villages said there has been high to very high improvement in the participation of women and youth respectively, as compared to 14% last year.

Another change that can be seen is in terms of more instances of **formalization of rules and regulations for water conservation and usage, and increasing practice of sharing of wells / borewells** amongst farmers. While one of the reasons for increased instances of well / borewell

sharing is the improvement in water availability, the increasing realization amongst individuals that groundwater is a shared resource is also contributing to this shift in practice.

With higher participation and community institutions becoming more robust, the people also shared that there is **higher trust and confidence amongst them to talk and negotiate with Panchayat / Block and other external actors**. This has helped in **improving their access to government programmes and schemes** and fund flow for developmental works in the village. Of the study villages, 49% shared that there has been a high to very high improvement in their access to government programmes and schemes, as compared to only 14% of the villages who said so last year.

Indicators	No Change	Low Change	Moderate Change	High Change	Very High Change
Participation of people in planning and decision making	4	5	12	12	2
Participation of women	5	8	7	8	7
Participation of SC/ST/NT and other marginalized communities	14	7	2	4	6
Participation of youth	6	9	6	8	6
Numbers of wells or borewells shared	15	9	2	5	4
Number of times issues on conservation are discussed in villages	4	12	8	8	3
Number of conflicts being resolved by the village institution	13	7	7	4	3
Access to water (particularly for irrigation)	11	7	7	8	2
Efforts for sustaining the works undertaken on land and water restoration	3	6	10	11	5
Access to government programmes and schemes	3	6	9	14	3
Amount of funds being channelized through various programmes and schemes for development of the village	4	8	14	8	1

Source: Focused Group Discussion for Perception Assessment (2017)
Note: The numbers indicate the number of villages that perceived that there has been no/low/moderate/high/very high change along each of the indicators.

3.2 Ecological restoration

The various stakeholders in the study villages shared that the various area treatment measures supplemented with community institutions for land and water restoration has helped in **checking the heavy water run-off and soil erosion** that they hitherto experienced and there has been a moderate decline in the same. This has helped in improving the soil and moisture

regime. Nearly 75% of the farmers surveyed during the SROI assessment shared that there has been an **improvement in the soil and moisture regime in their agricultural lands** subsequent to the interventions (Source: Household survey, 2017).

Improved vegetation and percolation of water has helped in moderately **increasing the water column in wells**. Up to 34% of the farmers shared that their wells have been recharged due to the various interventions (Source: Household survey, 2017). Some of the villages, particularly those that have been managing their common lands for longer duration shared that there has been a **moderate increase in the duration of stream flows, availability of surface water and quality of drinking water**. Further, with decline in water run-off and soil erosion, improvement in the soil moisture regime and focus towards improving agricultural practices, there has also been an **improvement in the soil fertility**.

Indicators	No Change	Low Change	Moderate Change	High Change	Very High Change
Water run-off	0	9	7	16	1
Water column in wells	9	7	10	5	2
Duration of stream flows	11	11	5	4	1
Availability of surface water	7	12	6	7	1
Quality of drinking water	12	7	9	4	1
Soil erosion	2	12	10	8	1
Soil and moisture regime	3	20	6	3	1
Diversity of microbial species in soil crust	11	12	5	4	1
Soil fertility	3	10	5	15	0
Presence of pollinators (such as bees, butterfly, moths etc.)	12	9	5	6	1
Pest attacks	8	8	8	7	2
Forest fires	1	12	11	4	0

Source: Focused Group Discussion for Perception Assessment (2017)
Note: The numbers indicate the number of villages that perceived that there has been no/low/moderate/high/very high change along each of the indicators.

Results from the perception assessment exercises undertaken with the stakeholders this year when compared with last year's results indicate a positive shift along some of the key indicators used for measuring changes in ecological restoration. For instance, 51% of the study villages this year said that there has been a high to very high decline in the water run-off as compared to only 21% last year. Similarly, 24% of the villages said there has been a high to very high improvement in the surface water availability as compared to 14% last year. In terms of improvements in soil fertility, 45% of the villages this year said that there has been a high change in the soil fertility as compared to only 11% last year.

3.3 Energizing MGNREGA

During the SROI assessments, the stakeholders shared that the Water Commons Initiative has significantly increased their awareness on the provisions of the MGNREGA. Of the study villages, 52% shared that there has been **high to very high improvement in awareness about the provisions under MGNREGA** amongst the communities. Skill enhancement programmes for MGNREGA Mates, and increased interest and stake of the local communities in undertaking MGNREGA works have effectively led to significant **improvements in the quality of supervision and of the works** undertaken under MGNREGA. For instance, 40% of the villages this year shared that there has been high to very high improvement in the quality of work as compared to only 14% of the villages last year.

Network and liaison efforts made by the Project Teams has led to **more number of works being sanctioned and implemented for land and water rejuvenation** in these villages. Up to 40% of the villages shared that there has been high to very high change in the works implemented for land and water restoration in their village under MGNREGA, as compared to 27% of the villages last year. Further, 49% of the study villages also shared that there has been moderate to high **improvement in the responsiveness of the local officials** to their needs.

Table 6: Community Perceptions Regarding Changes Due to the Interventions for Energizing MGNREGA

Indicators	No Change	Low Change	Moderate Change	High Change	Very High Change
Awareness about NREGA provisions	2	7	8	16	2
People's participation in planning for NREGA	3	6	14	7	5
People's participation in work execution	2	7	19	3	4
People's participation in monitoring and supervision	7	7	14	4	3
Wage rate	3	7	11	10	4
Quality of work	7	6	8	12	2
Quality of supervision	10	6	11	2	6
On-site facilities	20	2	12	1	0
Responsiveness of local officials	11	7	12	3	2
No. of works implemented for land and water restoration under NREGA in the village	7	6	8	12	2
Access to information about NREGA	8	7	11	5	4

Source: Focused Group Discussion for Perception Assessment (2017)
Note: The numbers indicate the number of villages that perceived that there has been no/low/moderate/high/very high change along each of the indicators.

3.4 Livelihoods

The various biophysical initiatives undertaken by channelizing funds from MGNREGA, supplemented with improvement in local governance of land and water resources is helping in **meeting the basic requirements of fodder, fuelwood and water** of the local communities dependent on these resources. During the SROI assessment, the various groups in the village shared that there has been moderate improvement in the availability of fodder, fuelwood and water for livestock and domestic purposes. As much as 40% of the study villages shared that there has been a high to very high increase in the fodder availability as compared to 22% of the villages last year. Better availability of fuelwood and water has also meant **saving on a woman's time spent in collection of these resources** that are basic for the sustenance of their households.

Improvements in the soil and moisture regime and water availability have helped in **increasing the cropping area and bringing a change in land use** from fallow to cropped/single crop to double crop/rainfed to irrigated. Overall, 1,177 farmers across all project locations have brought 943 hectares of additional area under cultivation as a result of improvements in the soil moisture regime and water available for irrigation. On an average, a farmer is able to grow crops worth INR 27,530/- due to the additional area brought under cultivation.

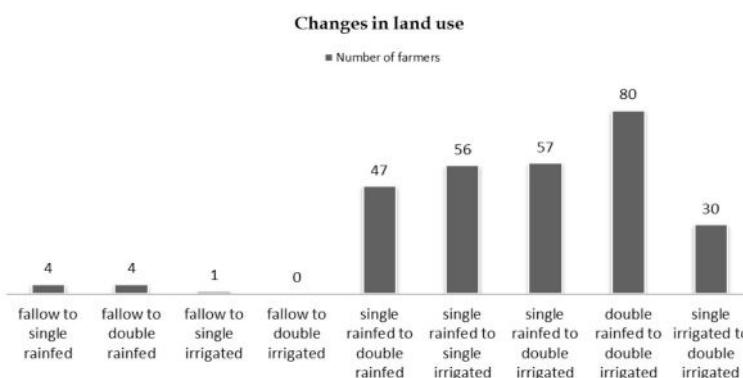


Figure 1: Changes in land use experienced due to the initiatives (Source: Household survey, 2017)

With increase in cropping area, the **income from agriculture and agricultural labour has also increased**. Up to 26% of the villages this year shared that there has been a high change in income from agriculture and agricultural labour. Also, 40% of the farmers shared that they employed additional persons for work on the farm during Kharif season, while 18% of the farmers shared that they employed additional persons for work on the farm during Rabi season (Source: Household survey, 2017).

Another major reason for improvement in agricultural returns include **adoption of improved agricultural practices** such as crop / seed varietal replacements, line sowing, seed treatment, application of organic fertilizers and pesticides that helped in not only increasing their agricultural yield but also **reducing cost of cultivation**. During the SROI assessments, the farmers shared that by practicing line sowing instead of broadcasting they are able to save more than one-third of the expenses on seeds. Similarly, application of *jeevamrut* (organic pest control) instead of chemical fertilizer is helping the farmers save INR 3,000/- to INR 5,000/- per hectare on an average. Overall, nearly 15,000 farmers this year adopted practices such as line sowing, Non Pesticidal Management (NPM) and Integrated Pest and Nutrient Management (IPNM) over more than 3500 ha of farm land, which has helped each farmer save INR 1,517/- on an average annually.

During the perception assessment exercise, 46% of the study villages this year shared that there has been an increase in the crop yield, as compared to 29% last year. Improvements in agricultural production have helped 74% and 54% of the farmers during Kharif and Rabi respectively, in **meeting their domestic requirements from their own farm produce for an additional 2 months on an average**. This implies that these households are able to save INR 3,697/- from their produce during Kharif and INR 2,678/- during Rabi, which they would have otherwise had to incur to procure it from the market. Also, 54% and 40% of the farmers during Kharif and Rabi respectively, shared that they were able to **earn additional income by selling the surplus from their farm**. The average increase in income due to this is INR 7,952/- during Kharif and INR 4,324/- during Rabi (Source: Household survey, 2017).

It may also, however, be important to note here that most of these benefits were perceived in Rajasthan, Yavatmal and Mandla. Due to the drought in Andhra Pradesh and Karnataka not much change could be seen in the cropping area or crop yield, though the farmers shared reduction in cost of cultivation due to application of *jeevamrut* and improvement in soil health due to application of gypsum.

Improved income, savings and investment

Subsequent to improvements in income due to MGNREGA wages or agricultural production, and savings due to reduced expenses on fodder and reduced cost of cultivation, the households shared that they are spending the additional income gained on various things. During the SROI assessment, it was found that around 40% of the households had 5 to 9 areas of spending while 38% of the households had 10 to 14 areas they are spending their additional income on. Food and fodder, education and health, purchase of agricultural inputs and agricultural assets are amongst the main areas of spending. The additional income has also helped in improving their household assets and mobility, and a lot of the households surveyed shared that they are using the additional money for construction or repair of their houses and for transportation.

Improved adaptation to climate change

Rejuvenation of natural resources and adoption of improved agricultural practices are also helping the farmers cope with the increasing invariations in rainfall and adapt to climate change. Supporting the farmers in practicing mixed cropping through the *Navdhanya* initiative in Chittoor and Anantapur, and promotion of bordered crops in Chikballapur helped the farmers cope with the drought this year. Similarly, in locations like Udaipur, line sowing and inter-cropping of Maize and Black Gram enabled the farmers cope with the losses when excessive rain damaged their standing maize crops in the fields this year.

DISTRICT HIGHLIGHTS

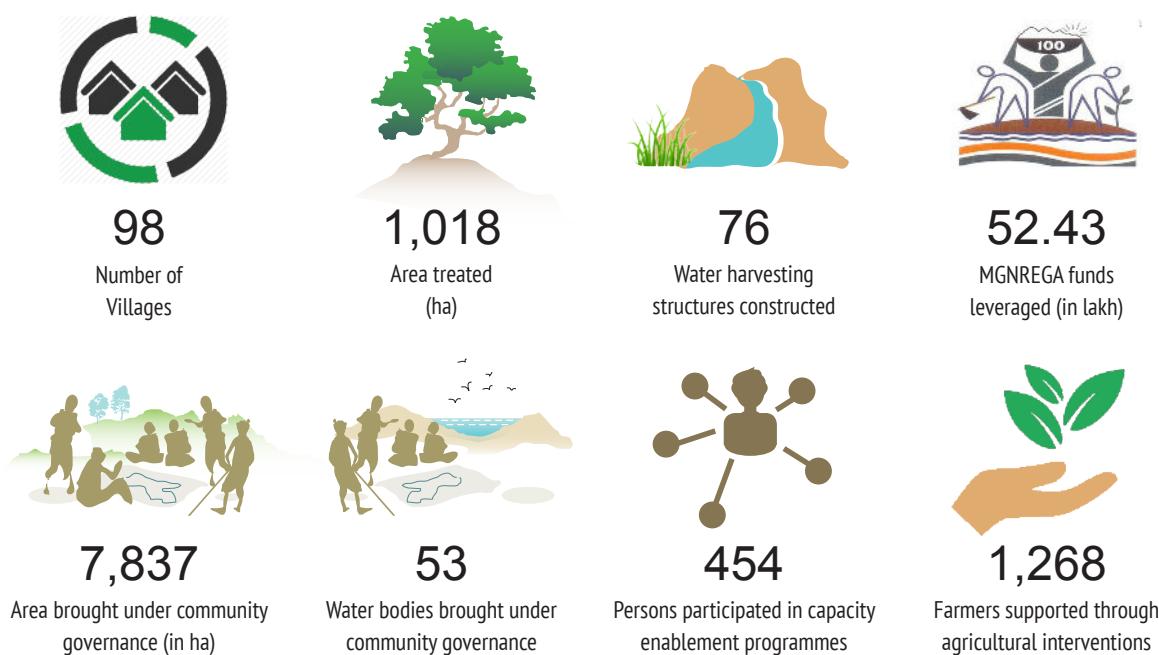
Anantapur

Anantapur is one of the chronically drought affected districts in the Rayalseema region of Andhra Pradesh. The district receives an average annual rainfall of 381 mm and ranks 7th in the Water Stress Ranking (RAPI). Recurrent droughts and collapse of traditional systems of managing surface water sources has increased the dependence on groundwater. Over the last few decades, there has also been a significant shift towards cultivation of water-intensive cash crops, such as tomatoes, from millets thereby compounding the demand for groundwater. Failing borewells, crop failure and farmer distress are the most pressing problems in the region. The Government of Andhra Pradesh has initiated the *Neeru-Chettu* programme to help the state attain 'drought proof' status within five years and is aimed at eradicating poverty and reducing economic inequalities through water conservation and water management.



In this context, the focus of the project team in Anantapur has been to foster convergence of the *Neeru-Chettu* programme with MGNREGA and channelize MGNREGA funds for rejuvenation of water resources. Alongside the efforts towards augmenting the water supply, the team has also been putting in energy towards managing water demands and reducing agrarian stress amongst the farmers. Sustainable agricultural practices such as seed varietal changes, mixed cropping, cultivation of traditional millets (a non-water intensive crop), irrigation scheduling and water saving techniques, and community managed seed system schemes have been promoted to improve the resilience of farmers to droughts and check the persistent depletion of water tables.

SCALE OF INTERVENTION IN ANANTAPUR



Community Testimonies

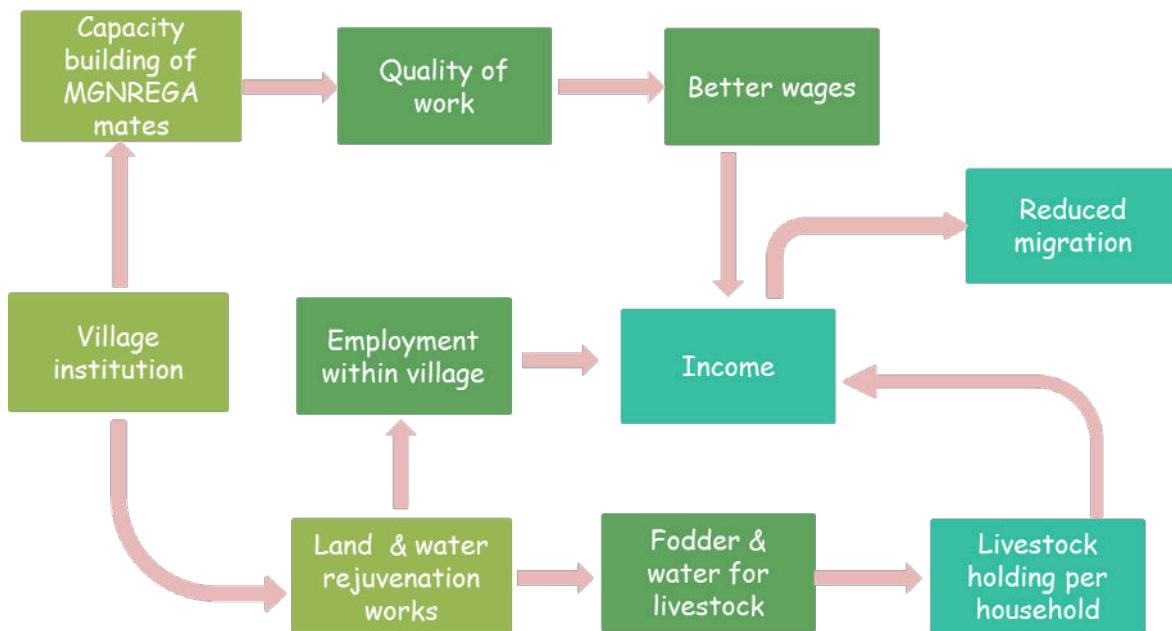
“Sendriya paddathulu patinchadam valla raithuku pettubadi kharchu chaalamatuku thagguthundhi. Ee paddhathi patishe manchidhe. Panta naanyatha baguntundhi.” P. Madhava Reddy, Jowkula.

“Farmers can reduce input costs by adopting Sustainable Agricultural practices. It is a good practice. One can get quality yields,” shared one of the farmers when asked about his experience of adoption of sustainable agricultural practices.

“Gypsum tho chodu bumullo kuda panta pandinchavacchu,” V.Venkatramana Reddy, DNC, Anantapur.

“One can grow crops even in saline soils by using Gypsum,” shared a farmer when asked about his experience of adoption of Gypsum.

Mind Map



Case Study: Restoration of common land through MGNREGA increases water available for agriculture

Venkataramana Reddy is a marginal farmer owning 2 acres of land close to the village common land in Daniyancheruvu village. In order to get good agricultural production, particularly during Rabi, he had a dug borewell four years ago. However, due to the low water table the borewell used to run dry after only two months. When staggered contour trenches were dug to restore the common land through MGNREGA, it aided in percolation of water and recharging the wells and borewells that were located close to the common land. Mr. Reddy shared that due to a good monsoon and the common land development work undertaken, he now had sufficient water to grow Groundnut even during the Rabi in 2016. Further, improved awareness of good agricultural practices also motivated him to apply Gypsum in his field. Subsequently, he was able to get 20 bags of groundnut from his farm during Rabi, half of which he kept for domestic consumption, while the other half he sold in the market earning INR 19,000/- He invested the income gained to purchase a drip set worth and INR 16,000/- and used the remaining money for procuring tomato seedlings.

Valuation of Key Indicators	
Water harvested and water saved (in TCM)	1,926
Value of water harvested and water saved (in INR)	96,314,736
Transaction cost saved due to community management (in INR)	568,680
Change in value of fodder, fuelwood and carbon stock (in INR)	48,250,848
Change in income from agriculture (in INR)	3,161,431
Potential savings in electricity/diesel costs due to irrigation scheduling/varietal replacements (in INR)	154,184

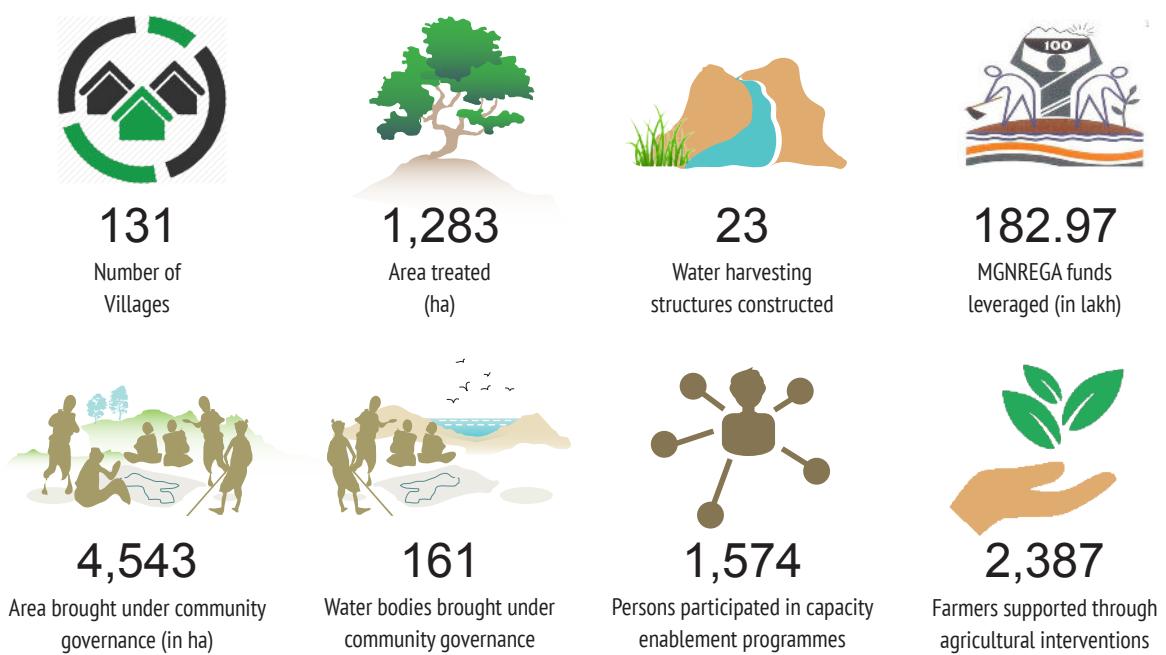


Bhilwara

Bhilwara is located in the central region of Rajasthan, characterized by an undulating terrain and high preponderance of common lands. The district receives an annual average rainfall of 650 mm; the rainfall decreasing as one moves from south-eastern to north-western parts of the district. Increasing use of groundwater for textile and mining industries in the region, agriculture and domestic purposes has led to the over-extraction of groundwater, as a result of which all the blocks in the District have been classified as 'over exploited' by the Central Groundwater Development Board. Heavy land degradation, weakening complementarities of agriculture and livestock production systems and the increasing shift towards high external input agriculture are amongst the most pressing concerns that the local communities are facing. Frequent drought conditions in the area result in distress migration of poor livestock keepers for fodder and water.

The focus of the project team in Bhilwara has been towards strengthening the commons-agriculture-livestock inter-linkages, secure collective tenurial rights of local communities over common lands, strengthening local stewardship to check unmindful extraction of groundwater and improve land and water governance, and energize MGNREGA for land and water restoration.

SCALE OF INTERVENTION IN BHILWARA



Community Testimonies

“Ab kuch saal se gaon mein hi kaam mil jaata hain toh bahar kyon jayenge?” Pokhar Lal, Thana.

“Why should I leave my village when I am getting work here itself?” said a resident in Thana village on the benefits of MGNREGA.

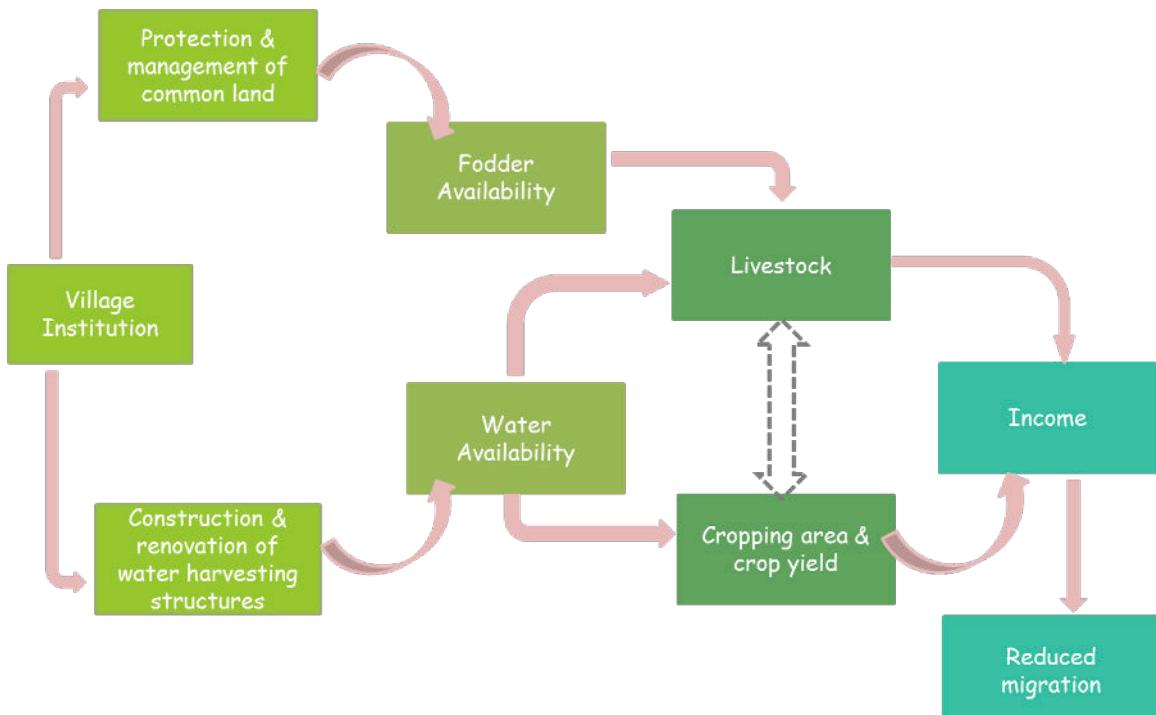
“Pehle stithi bahut kharab thi, Sabzi bhi nahi botey they. Mazdoori aur kheti se halka phulka kama lete they, jisse ghar chal jaata tha. Ab stithi kaafi achi ho gai hain. Vegetable kit se humein kaafi fayda hua hain,” Motia Devi, Meena ka Khera.

“Previously, the situation was quite grim. We could not grow vegetables in our farms. Our sources of earning were limited to growing crops in our fields and earning wages by indulging in labour intensive works. Now the situation has improved quite a lot. We have benefited a lot from the vegetable kit,” shared a farmer when asked about his perception of support provided in vegetable cultivation.

“Humara masala udyog kaafi achaa chal raha hain. Log humarey masalo ki kaafi tareef kartein hain. Jab humlog sabkoi train se Calcutta jaa rahein they tab humara 1 thela masala train mein hi bik gaya tha,” Hemlata Rawat, Bhilwara.

“We are able to run our masala udyog pretty well. People keep praising the spices that we prepare. While on our way to Kolkata, we managed to sell cartload worth of Masala in the train itself”, shared a woman as part of a group has started a small enterprise for processing spices.

Mind Map



Case Study: Improved water availability through water harvesting structures

Restoration of common land and construction of water harvesting structures through MGNREGA in Kanti village has not only helped in improving the biomass and water availability for livestock, but also in improving the soil moisture regime and recharging the groundwater. Kalyanji Gujjar, one of the farmers, shares that prior to the work undertaken, the water in his well was not sufficient for his crops and he was able to irrigate for only 4 hours; but now he is able to irrigate for 6 hours. Subsequently his crop productivity during Rabi has increased from 12 quintals of wheat per bigha to 16 quintals (one bigha = 0.2 ha). This has helped him earn an additional income of INR 13,300/- . Moreover, he also states that he can save INR 7,000/- from the additional fodder that he has been harvesting.

Valuation of Key Indicators	
Water harvested and water saved (in TCM)	10,272
Value of water harvested and water saved (in INR)	51,361,563
Transaction cost saved due to community management (in INR)	552,000
Change in value of fodder, fuelwood and carbon stock (in INR)	20,702,444
Change in income from agriculture (in INR)	2,366,566
Potential savings in electricity/diesel costs due to irrigation scheduling/varietal replacements (in INR)	115,091

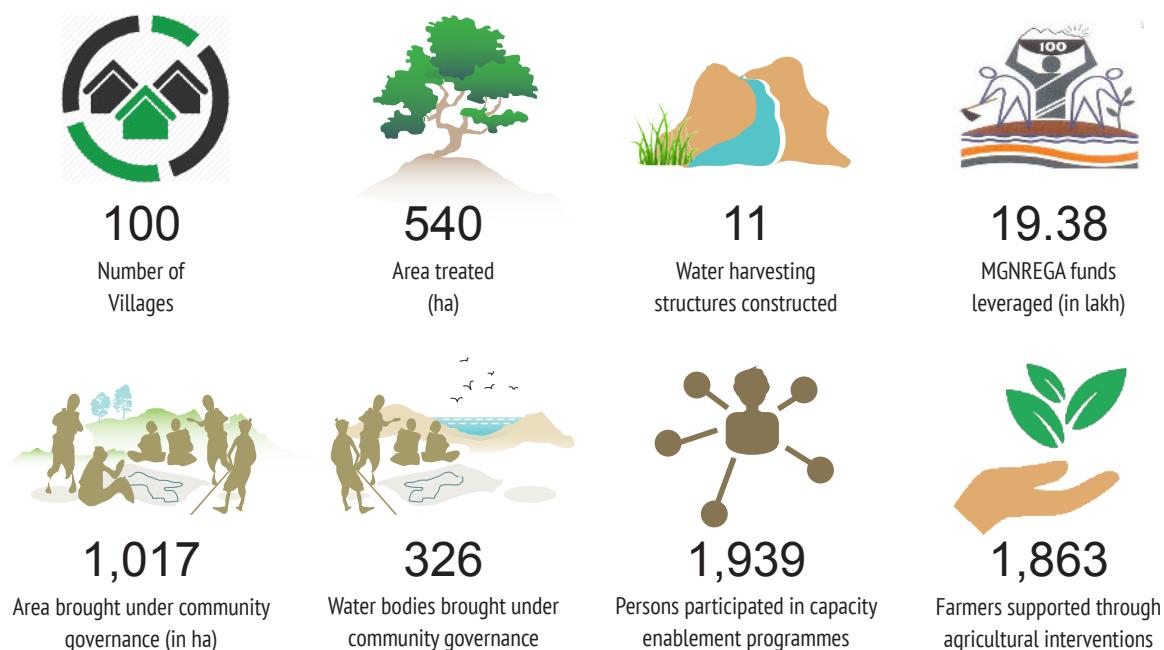


Chikkaballapur

Chikkaballapur is located in the upper catchment of Papagni River, a tributary of River Pennar, in south Karnataka. The area is rainfed and prone to droughts. Traditionally, the cascading tanks in the region have been the lifeline of the communities in this region, providing water for irrigation, livestock and domestic uses. Land use changes, degradation of catchments of tanks, and erosion of local institutions for managing tanks have made these surface water sources defunct. The shift from tank to groundwater for irrigation, and from millets to water intensive cash crops over the last few decades has been on the rise and resulted in alarming depletion of water tables. Most of the district has been declared as Dark Zone by the Central Groundwater Development Board.

The focus of the project team in Chikkaballapur has been to revive the tank and other surface water sources, strengthen community stewardship for better water governance, sensitize communities on the shared nature of groundwater, surface discussions related to crop choices and water use on a common platform, and bring in behavioral changes towards more judicious use of land and water.

SCALE OF INTERVENTION IN CHIKKABALLAPUR



Community Testimonies

“Gaddi vitthalanalu veyadam valla pettubdi kharchu thaggindhi, paala dhigubadi perigindhi,” Venkata Narayana, Devarajupalle.

“One can reduce input cost by growing fodder seed. Milk yield can also be increased,” shared one of the farmers when asked about his perception of the efforts towards promotion of fodder crops.

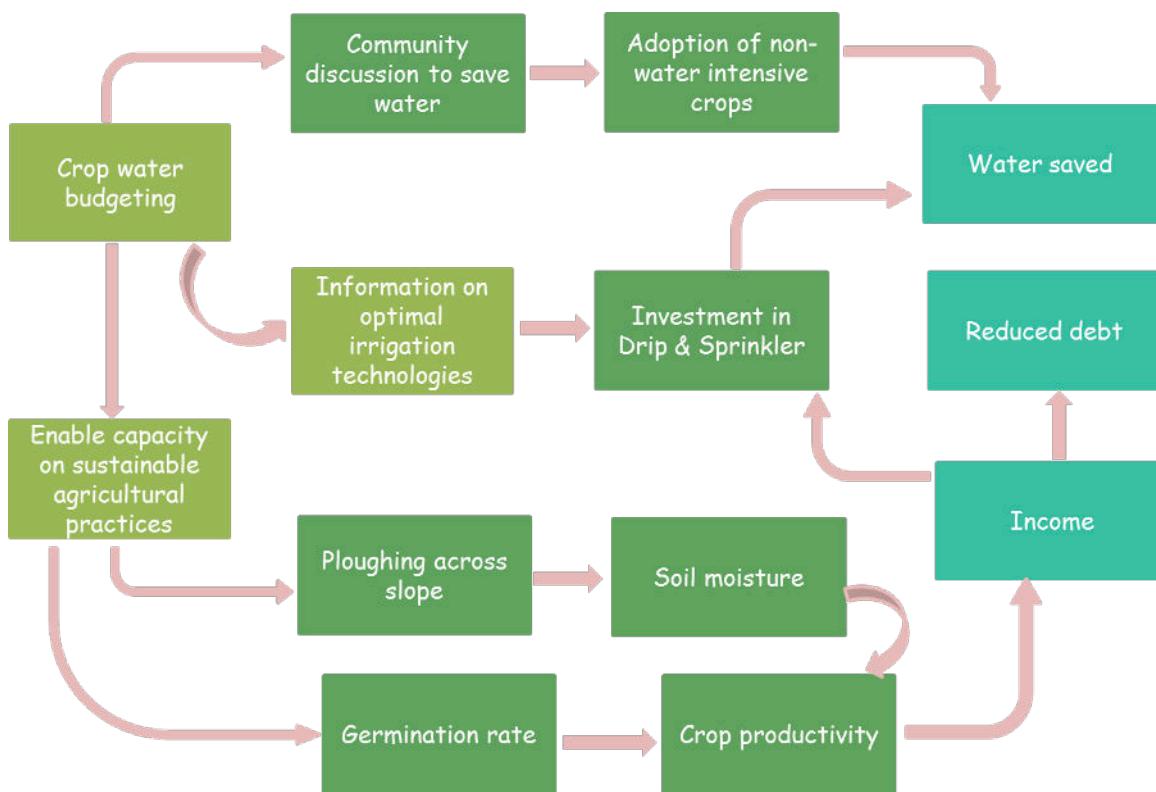
“Gypsum veyadam valla vudalu baga vasthaayi, bhumi saaravanthamga vuntundhi,” Chalapathi, Devarajupalle.

“Gypsum helps with the forming of groundnut pods. It is good for soil fertility,” shared one of the farmers on his experience of Gypsum application.

“Namma graamastrella oggattagi yiruvadharindhra oragade indha anudhaanagalunu padiyutthiddheve,” Lakshmi Narayana, Pokamakalapalle.

“We are getting external grants/funds solely as the outcome of the unity among community members in the village,” shared one of the village residents.

Mind Map



Case Study: Adoption of Sustainable Agricultural Practices

Ramanajappa is a small farmer in Devarajupalle village owning 4.5 acres of farm land that is rainfed. When he came to know of the sustainable agricultural practices, he was initially hesitant to take a risk and make a shift in his traditional farming practice. With continued interaction with the FES team, he decided to experiment with these practices on half an acre of his farmland. Therefore, while he used the traditional method of sowing groundnut that he had been practicing for several years in most of his farmland, on half an acre he sowed the K6 variety of Groundnut. He treated the seeds with Trycoderma, applied Gypsum in his field, and practiced line sowing along with mixed cropping (one row of gram after every two rows of groundnut and jowar in the bunds). Ramanajappa shared that with improved practices, he was able to get 2.5 quintals of groundnut from 0.5 acres of his farmland as against 0.5 quintals of groundnut from the land where he used the traditional method of farming. Besides groundnut, he was able to get red gram and jowar from his own farm land this year.

Valuation of Key Indicators	
Water harvested and water saved (in TCM)	3,700
Value of water harvested and water saved (in INR)	18,500,010
Transaction cost saved due to community management (in INR)	818,520
Change in value of fodder, fuelwood and carbon stock (in INR)	3,870,604
Change in income from agriculture (in INR)	558,939

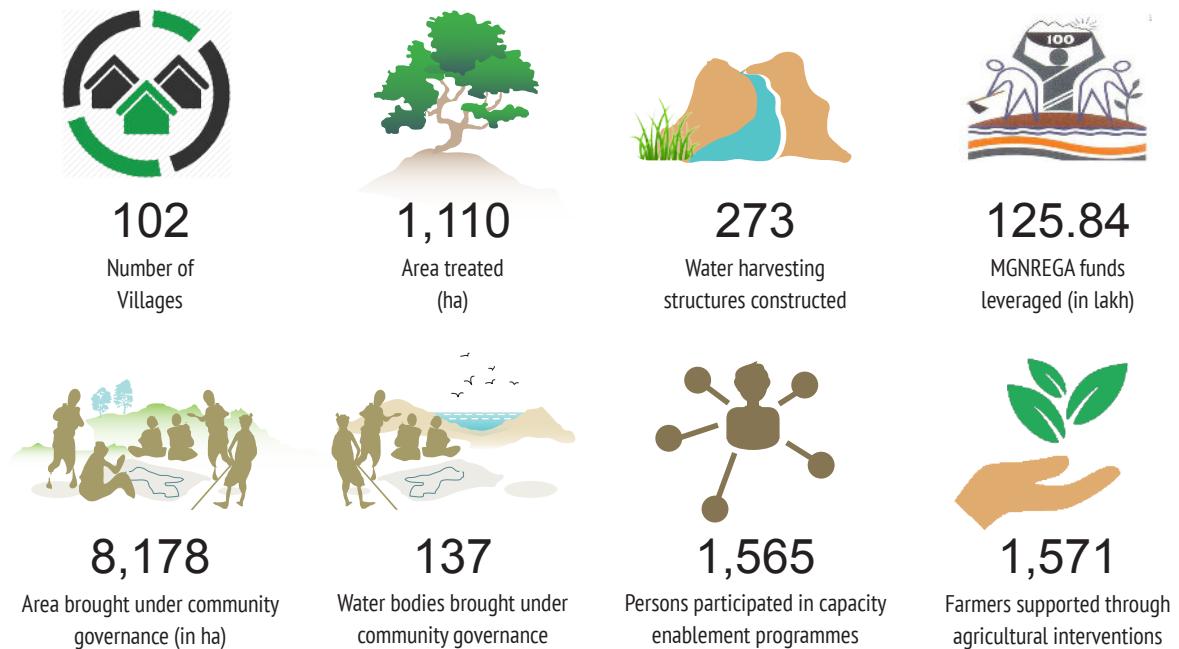


Chittoor

Chittoor district, located in the Rayalseema region of Andhra Pradesh, receives an average annual rainfall of 900 mm. The area is rainfed, and the recurrent droughts resulting in agrarian crisis have led many of the farmers to migrate to nearby towns and cities. The recurrent droughts have also aggravated fodder shortage forcing farmers to sell livestock and milch cattle, particularly in the western blocks of the district. The Government of Andhra Pradesh has initiated the *Neeru-Chettu* programme to help the state attain 'drought proof' status and is aimed at eradicating poverty and reducing economic inequalities through water conservation and water management.

The focus of the project team in Chittoor has been to foster the convergence of the *Neeru-Chettu* programme with MGNREGA and channelize MGNREGA funds for rejuvenation of land and water resources. Alongside efforts towards augmenting the water supply, the team has also been working towards managing water demands and reducing agrarian stress amongst farmers. Sustainable agricultural practices such as seed varietal changes, mixed cropping, cultivation of traditional millets (a non-water intensive crop), irrigation scheduling and water saving techniques, and community managed seed system schemes have been promoted to improve the resilience of farmers to droughts and check the persistent depletion of water tables.

SCALE OF INTERVENTION IN CHITTOOR



Community Testimonies

“Yeruvulu konte yekkuva kharchu avuthundhi. Sanna jeevaalu vunte yervula mida pette kharchu thagguthundhi,” T. Masthan Naidu, Batthinagaripalle.

“If we purchase fertilizers, the input cost goes up. But if we have small ruminants the input cost will come down,” reflected a farmer on the complementarity of agriculture and livestock.

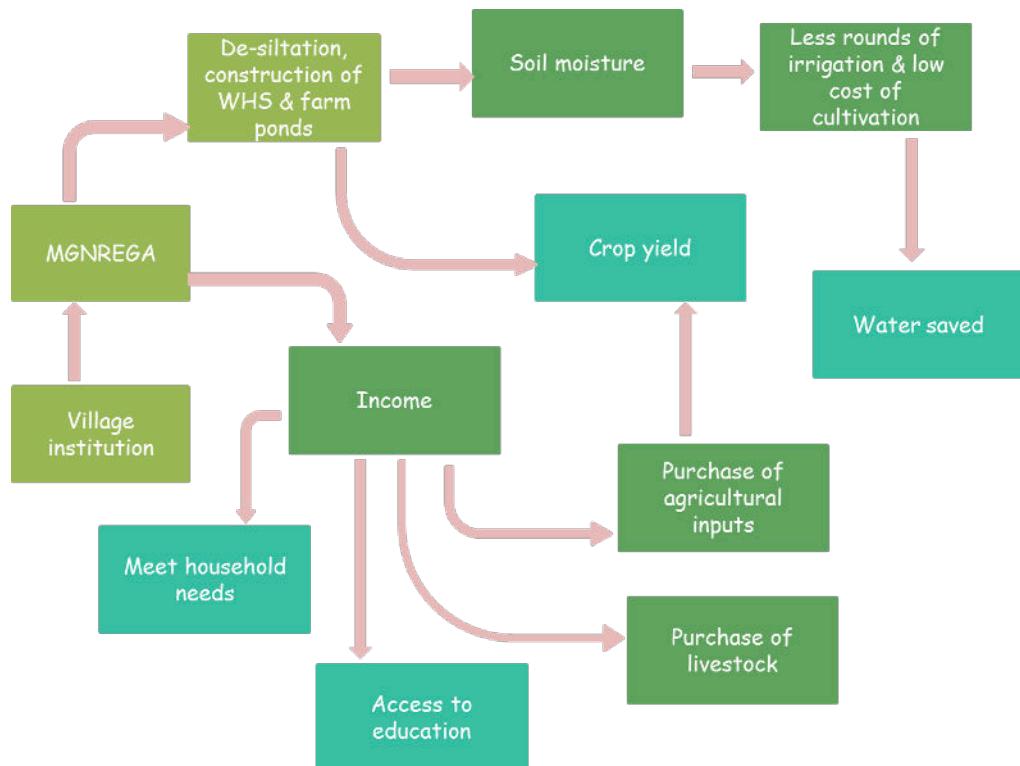
“Vupaadhi pani mammalni yenthagaano aadhukuntunnadhi, aa pani lekunte vere praanthaalaku valasa poyi vaallaamu,” P. Viswanatha Reddy, Kethireddigaripalle.

“MGNREGA works are very helpful for us. If there is no such work we will migrate to other places,” shared one of the village residents on his perceptions of the benefits of MGNREGA.

“Raagulu, sajalu thinetappu baaga satthuva vundedhi. Aarogyamga vundevaallamu, yetuvanti jabbulu levu,” Venkata Mallappa Naidu, Pulasaramvandlapalle.

“We could derive a lot of strength from eating millets. We were healthy. There were no diseases like now,” reflected a farmer on his perception of the increasing shift from millets to cash crops.

Mind Map



Case study: Vegetable cultivation

E. Sreeramulu is a 62-year-old farmer residing with his son, daughter-in-law and grandchildren in Pulasaramvandlapalle village. He has 5 acres of land and a borewell to irrigate his farm. With support from the FES team he was able to grow seven types of vegetables this winter – cluster beans, radish, ladies' finger, brinjal, beetroot, cow pea, and broad beans (*chikkudu*). He was able to save INR 720/- from the vegetables that he now got from his own farmland and did not have to purchase from the market. He also sold some of the vegetables in the Market that earned him INR 2,220/-.

Valuation of Key Indicators	
Water harvested and water saved (in TCM)	4,902
Value of water harvested and water saved (in INR)	24,509,011
Transaction cost saved due to community management (in INR)	598,320
Change in value of fodder, fuelwood and carbon stock (in INR)	60,289,410
Change in income from agriculture (in INR)	13,361,149
Potential savings in electricity/diesel costs due to irrigation scheduling / varietal replacements (in INR)	7,556,085



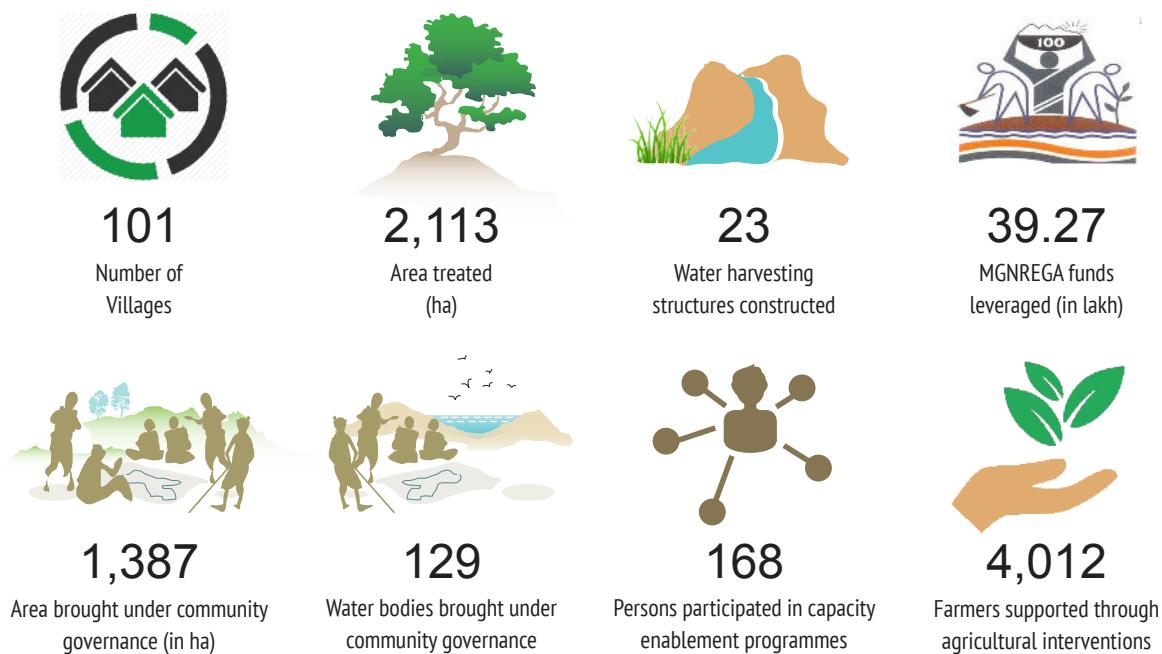
Mandla

Mandla is located in the Mahakaushal region in eastern Madhya Pradesh. It is nestled in the Satpura-Maikal range and cuts across the biodiversity rich zone of Kanha National Park. The terrain is mostly hilly and undulating that results in high water run-off and heavy soil erosion.

The area is predominantly inhabited by tribal communities, primarily the Gond and Baiga tribes, who are dependent on forests for their livelihoods and live in extreme poverty. High degradation of forests, heavy infestation of invasive species, low productivity of farmlands and distress migration of local communities are the most pressing problems in the region.

The focus area of work for the project team in Mandla has been towards commoning water by helping communities secure collective rights over surface water bodies in the village and establish rules for collective use and management of these resources and equitable benefit sharing. Simultaneously, the team has been working towards eradication of invasive species and plantation of native species in convergence with other programmes to improve forest conditions and check the high water run-off. This is supplemented with efforts of reviving the defunct surface water sources (for irrigation purposes), and promotion of diversified agricultural practices to improve returns and strengthen resilience of farmers.

SCALE OF INTERVENTION IN MANDLA



Community Testimonies

“Plantation ka kaam bahut achaa hua hain. Mohua ke ped main zyada chaov rehti hai aur iski hawa bhi sabse zyada thanda hoti hai,” Ram Pyare, Khamariya.

“The plantation work has been going very well. Mahua trees provide a good shade and a cool breeze too,” shared one of the village residents when asked about his perception of the plantation initiative.

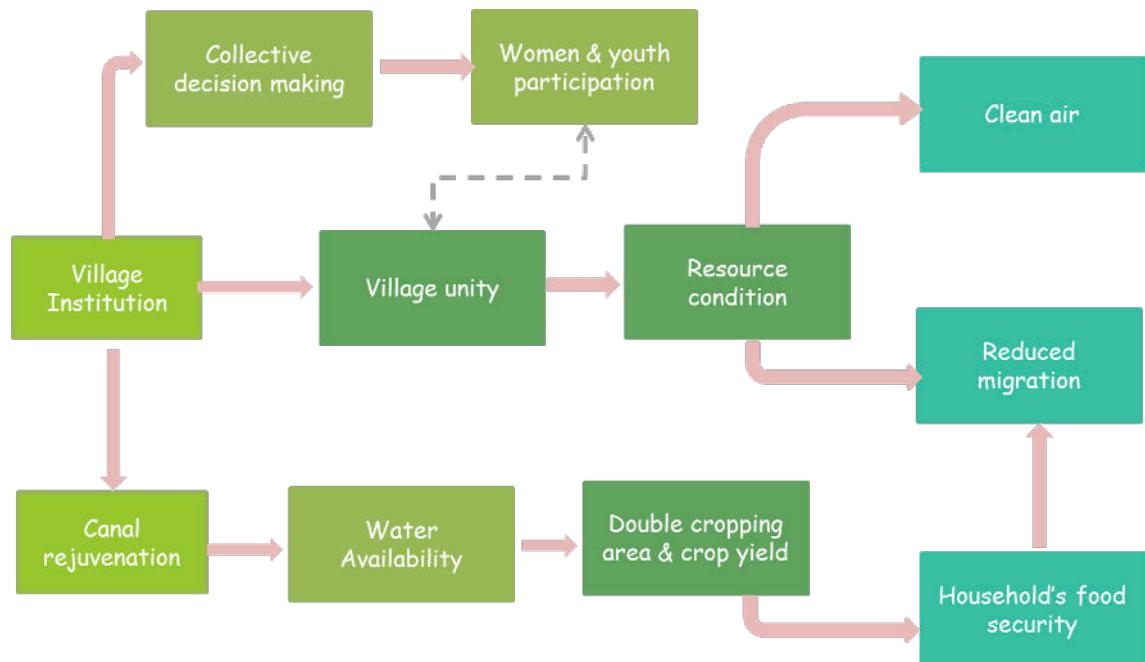
“Pehle sinchayi ka sadhan nahi tha jisse thand mai gehu zyada pak nahi pata tha. Par ab bori bandh banne se aur pani milne se gehu ache se pakk jata hai aur dhaan bhi ab acha pakta hai pehle se,” Sevlal Marari, Umardihi.

“In the absence of irrigation facility during winters previously, the wheat production was not much. But with the boriband we now have water and good yield of wheat as well as paddy,” shared a farmer when asked about his perception of the benefits derived from boriband.

“Pehle toh khaad kharidna padta tha par ab FES sanstha waalo ne jab se khaad banana aur beej upchar sikha diya hai tab se na toh fasal me keede lagte hai aur na hi fasal barbaad hota hai. Isse fasal me badhotri aayi hai aur mitti ki upjao shamta bhi badh gyi hai,” Hanshram Purnu, Payli bahor.

“Previously I had to buy fertilisers but after learning about the techniques of seed treatment and preparation of organic manure I am able to save my crops from pests and prevent crops from getting damaged. My yield has increased and the productivity of the soil has also improved,” shared a farmer.

Mind Map



Case Study: Commoning water

The construction and use of village ponds has provided a unique opportunity of institutionalising the idea of water commons and bringing it into the mainstream. Khamariya village, situated in Niwas block of Mandla, has a pond in the village which has water all year round. With efforts being made by the FES team towards commoning water, discussions were floated during the community meetings towards better management and usage of the water in the pond. The village institution decided to try pisciculture. Rules and regulations were formalized in the presence of all the villagers and recorded in the village register. Members of the executive committee of the village institution were entrusted with the responsibility of planning, procurement of fishes and ensuring maintenance of the pond. Two persons from the village itself were appointed as guards to keep a watch so that anybody found fishing without the knowledge of the village institution could be brought to their notice and fined INR 200/-. Once the fish were mature enough to be harvested, the date for harvesting was decided. A collective decision was made that the members of the executive committee should be given a kilogram of fish each for their services and the rest of the fish should be sold at the rate of INR 80/- per kilogram. Further, those who were involved in fishing would be given half a kilogram fish for their time and energy in spent in fishing.

Valuation of Key Indicators	
Water harvested and water saved (in TCM)	5,782
Value of water harvested and water saved (in INR)	28,912,208
Transaction cost saved due to community management (in INR)	410,970
Change in value of fodder, fuelwood and carbon stock (in INR)	26,607,548
Change in income from agriculture (in INR)	7,794,729
Potential savings in electricity/diesel costs due to irrigation scheduling / varietal replacements (in INR)	2,009



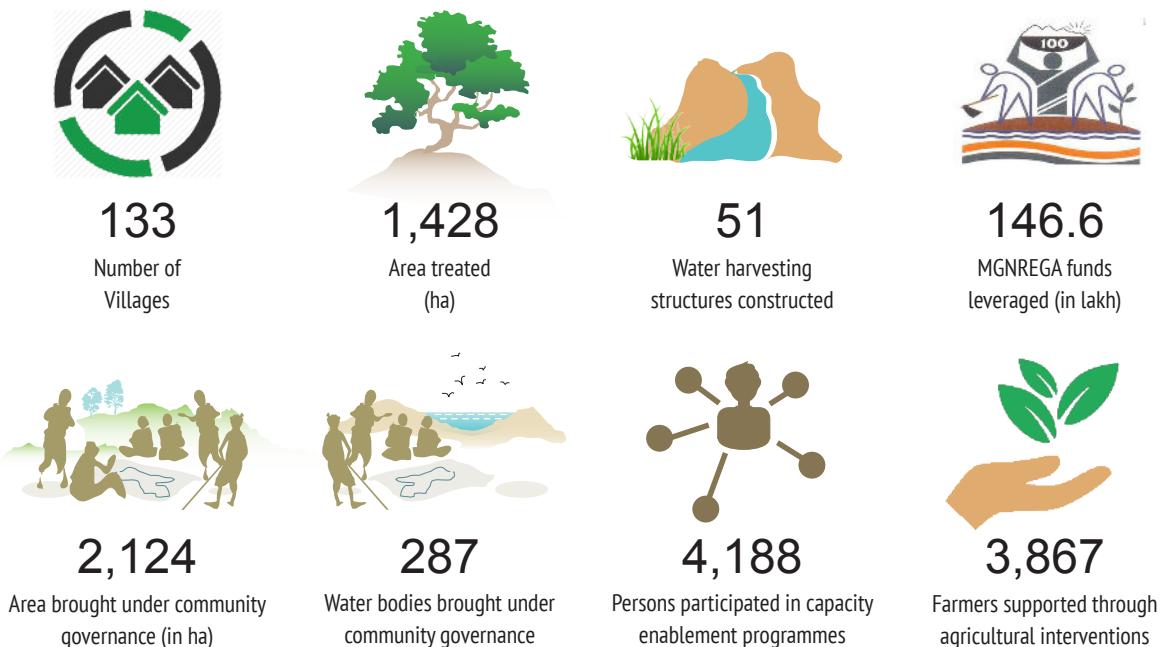
Pratapgarh

Pratapgarh district is located in south Rajasthan, at the junction of the Aravali hill ranges and the Malwa plateau, thereby exhibiting characteristics of both regions. The terrain is mostly undulating with low, small hillocks and mounds dotting the landscape. The average annual rainfall is 850 mm which is sufficient for growing two crops a year. But with limited options of surface water storage, most of the farmers are able to take crops only during Kharif. The geohydrology in large parts of the area does not offer good recharge potential.

Forests and common lands constitute nearly 60% of the geographical area. Though a forested landscape, the area has suffered from biodiversity losses and land degradation. Over the past two decades there has also been an increasing shift in the crop choices and cropping practices of the farmers from maize (their staple crop) to soyabean (cash crop) and from organic to chemical fertilizers, resulting in soil degradation.

The project team's focus areas include channelizing MGNREGA funds for construction and renovation of water harvesting structures, restoration of forests and common lands, strengthening local stewardship for better management of resources, improving information and supporting farmers in adoption of improved agricultural practices such as line sowing, seed varietal replacements, and low external input agricultural systems.

SCALE OF INTERVENTION IN PRATAPGARH



Community Testimonies

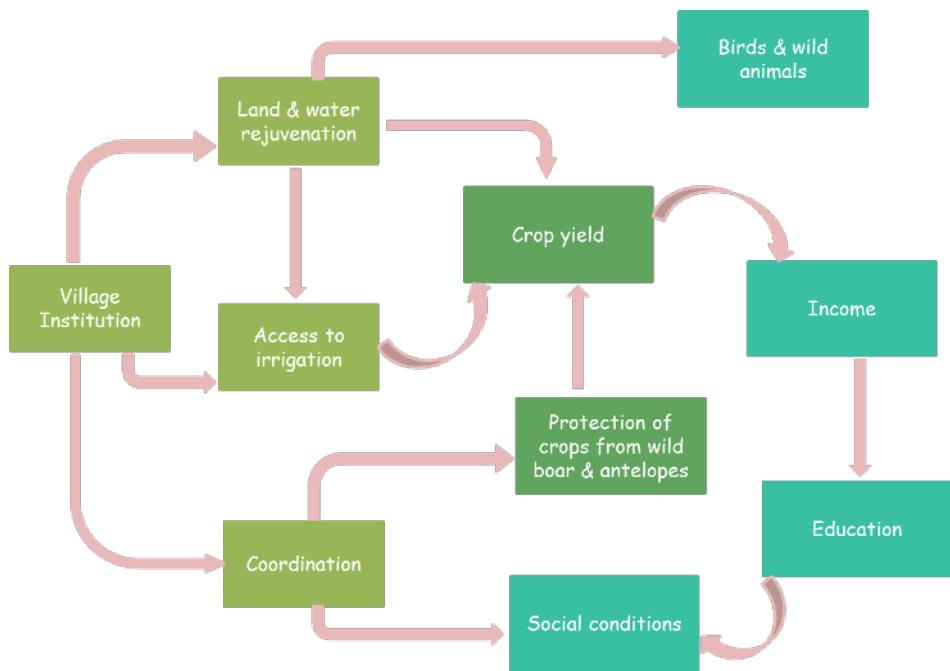
“Pehle humein MGNREGA mein sau rupay miltey they par ab humein jyada paisa milta hain aur kaam karnein mein bhi achaa lagta hain. Jitna kaam utna daam,” Badrilal, Surpur.

“Previously we would get just Rs 100 in MGNREGA but now we get more money. Moreover, we also enjoy the work that we are doing. The wage is given according to the work that we do,” shared one of the village residents when asked about his perception on the impact of interventions on MGNREGA.

“Pehle sab kuch mujabani rehta tha magar Jati panchayat ka register banney se aane wali peedhi ke liye nirnay lene mein sahayta milegi. Kuch bhi samasya aane par woh register dekh kar nirnay le sakenge. Sach saamne nikal kar ayega. Koi gareeb ameer ka bhed bhav nahi rahega,” Ambalal, Joda Mahuda.

“Previously everything was done orally but now, with the introduction of the register, the next generation will find it easier to take decisions. They can refer back to the register if they come across any problem, allowing the truth to be revealed. There will not be any barriers between the rich and the poor, in seeking justice and getting it,” reflected a resident when asked about the changes in the social dimensions due to the initiative.

Mind Map



Case Study: Formalizing conflict resolution mechanisms at village level

Jodamahuda village presents a unique experiment in documenting their conflicts in a Register at the village in order to strengthen the delivery of justice. This idea emerged from the maintenance of *prastav* or Resolution Registers, something that had proven to be quite effective in coming to a conclusion on decisions needed to carry out developmental works in the village. Ambalal ji, a resident of the village, recounted some of the issues that would emerge previously when they had to rely on oral testimonies for justice delivery. In the absence of a recorded mechanism, often groups or individuals changed their statements and there would be an inconsistency in facts over a period of time. The community shared that earlier, the villagers had to rely on the police for resolving their conflicts. This delayed the process significantly and they also incurred a cost to the tune of INR 1,000-2,000. Documenting the discussions and decisions related to the conflict in the Register allows the conflicting parties to come to a conclusion in a more time efficient manner. Seeing the benefits perceived by the community in Jodhamahuda village, the nearby villages have also started adopting the practice of formalizing conflict resolution mechanisms.

Valuation of Key Indicators	
Water harvested and water saved (in TCM)	9,738
Value of water harvested and water saved (in INR)	48,688,028
Transaction cost saved due to community management (in INR)	192,000
Change in value of fodder, fuelwood and carbon stock (in INR)	12,136,644
Change in income from agriculture (in INR)	25,245,300
Potential savings in electricity/diesel costs due to irrigation scheduling / varietal replacements (in INR)	618,590

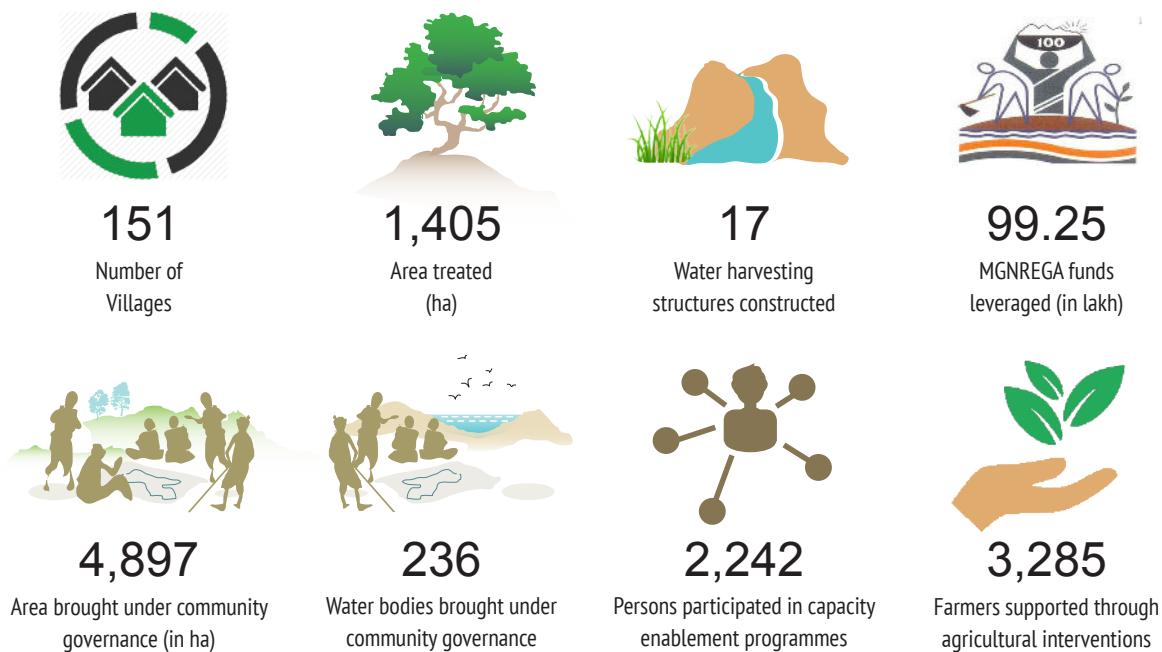


Udaipur

Udaipur is located in southern Rajasthan and presents an ecotone between the grassland and teak dominated forests. About seventy five percent of the land is dominated by forests and common lands that stand guard against the eastward march of the Thar Desert. The terrain is mostly hilly, and plain lands for agriculture constitutes only 20-25 percent of the landscape and average landholding size of a farmer being not more than half a hectare. The area is inhabited predominantly by the Garasiya and Gameti tribes who practice subsistence agriculture and are dependent on the forest for minor forest produce. They share a unique relationship with the forests and have traditionally had strong institutions for managing forests that eroded over time. Forest degradation and biodiversity losses, high water run-off and heavy soil erosion, low agricultural productivity, lack of access to government programmes and schemes, high migration are amongst the most pressing concerns in the region.

The focus areas of work of the project team in this region is to help communities formalize rules for forests, land and water management building on customary institutions, channelizing MGNREGA funds for common and private farm lands development, harnessing base flows for longer duration of stream flows, improving information and supporting farmers in adoption of improved agricultural practices.

SCALE OF INTERVENTION IN UDAIPUR



Community Testimonies

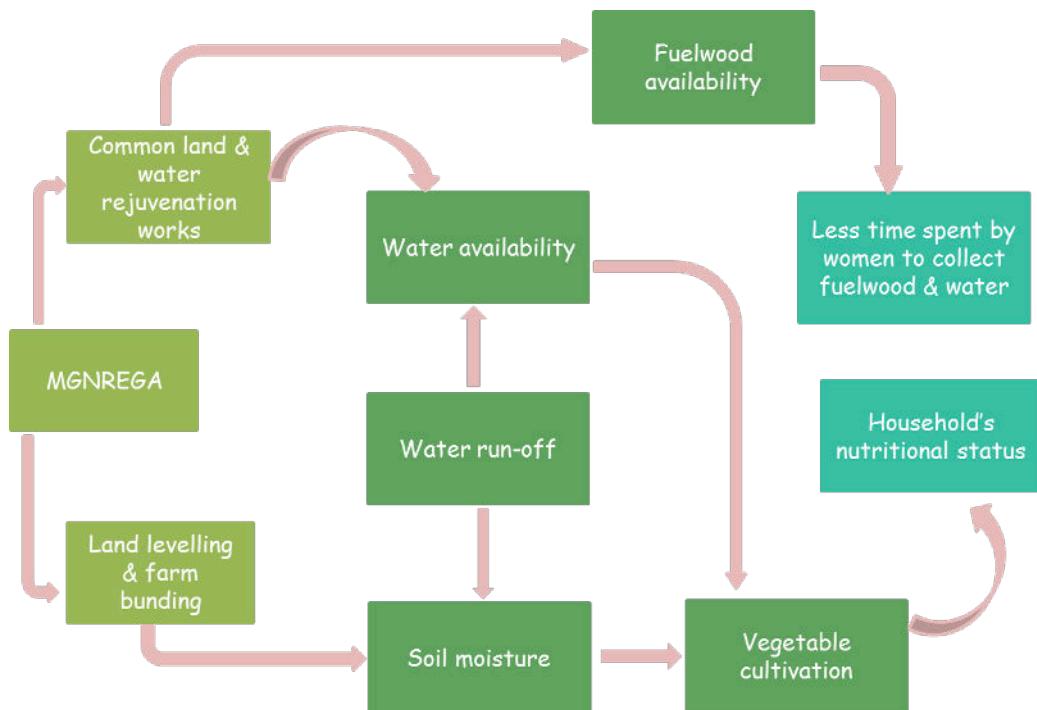
"Amrit paani se bahut faida hua hai. Lagbhag 1.5 bori chaney ki upaj badh gai hai or iska chidkaav hum saare fasal par karte hain," Bhima Ram, Reechwara.

“I have benefited a lot from the application of Amrit Pani. The yield of gram on my farmland has increased by almost 1.5 bori. Therefore I spray it on all the crops that I grow on my field,” shared a farmer on his experience of application of Amrit Pani.

“Jab kuch-kuch log ko judte dekha toh hum bhi jud gaye. Charaghah par sab ki haqdari hai. Pehle ke hisab se ab vikas jyada ho raha to humko laga humko bhi judna chaiye,” Sanda Ram, Neekor.

“After seeing the involvement of a few people, I also started getting involved. The pasture land belongs to everyone. At the moment, a lot of development is taking place and I felt I should also be a part of the process,” shared one of the residents in the village.

Mind Map



Case Study: Enabling local capacities in low cost method for preventing crop diseases

Crop disease is one of the key problems faced by the farmers in Reechwara village. Efforts made at improving information and knowledge of the farmers in preparing *amrit paani* (organic pesticide prepared from a mixture of cow dung, honey, and water) has helped the farmers in preventing crop disease in a very cost effective manner. Bhima Ram, one of the farmers who applied *amrit paani* shared that he used to sow 20kg to 25kg of gram in 2 *bigha* to 3 *bigha* of land (one hectare = 4.25 *bigha*). The yield was restricted to 1.5 quintals only due to pest attacks that used to damage almost half of his crop. The remaining crop was sufficient only for domestic household consumption. The use of *amrut paani* had significantly improved the yield, with at least 3 quintals of gram from the same parcel of land. He can now sell the remaining 1.5 quintals of gram and earn an additional income from this.

Valuation of Key Indicators	
Water harvested and water saved (in TCM)	3,613
Value of water harvested and water saved (in INR)	18,067,207
Transaction cost saved due to community management (in INR)	468,000
Change in value of fodder, fuelwood and carbon stock (in INR)	56,339,640
Change in income from agriculture (in INR)	15,173,295
Potential savings in electricity/diesel costs due to irrigation scheduling / varietal replacements (in INR)	456,960

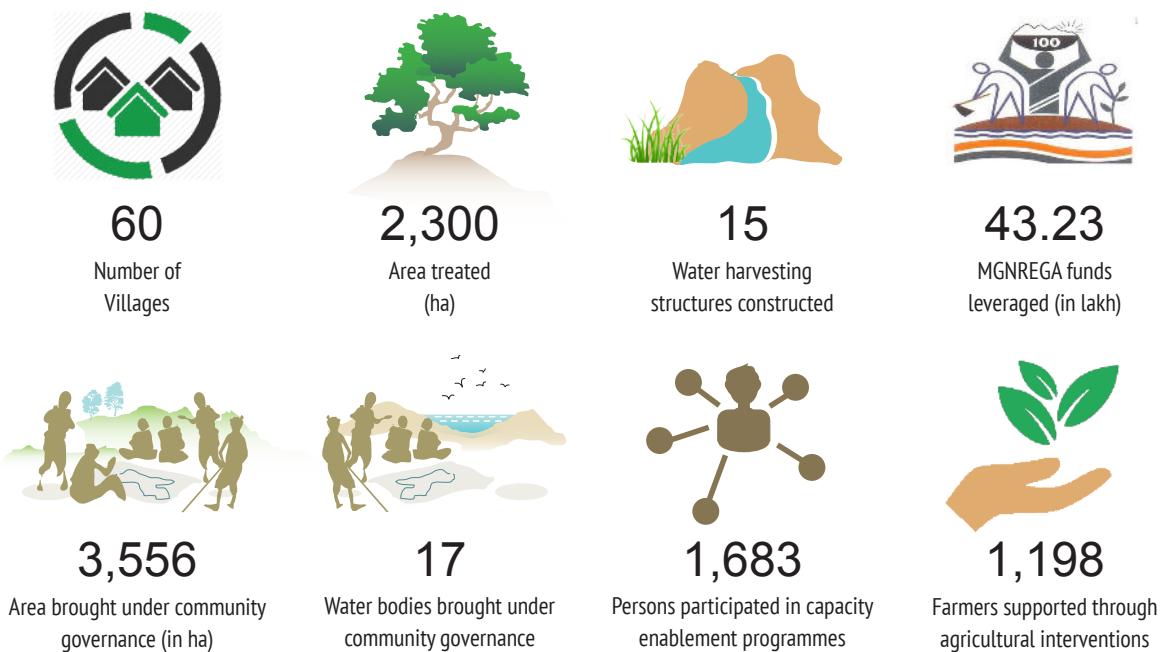


Yavatmal

Yavatmal is located along the Waghari River in the Vidarbha region of Maharashtra, listed as one of the country's 250 most backward districts. The area is primarily rainfed, and mono cropping is practiced with majority of the area under cotton or soyabean. Presence of compact Deccan basalts, which permit very little water recharge, together with high-risk cultivation of cash crops, rising agricultural input costs, and absence of formal credit avenues have added to the distress faced by the farmers in this region. The *Jalayukt Shivar Abhiyaan* launched by the Government of Maharashtra with the larger vision of making Maharashtra a drought-free state by 2019 offers opportunities to rejuvenate water resources.

The focus of work of the project team in Yavatmal has been towards restoration of the catchment of Waghari River by leveraging opportunities under *Jalayukt Shivar Abhiyaan*, MGNREGA and other government programmes. Alongside the efforts towards restoration and better local governance of land and water resources, the team has been focusing on improving agricultural practices through promotion of drip and sprinkler irrigation systems, silt application, application of *jeevamrut* (organic pest control) and other such practices.

SCALE OF INTERVENTION IN YAVATMAL



Community Testimonies

"Rasayanik khatacha vapar karun mi mazi zamin kayale kharab karu. Sagalya lokana aapli jamin kharab karun jast utapadan milavaicha aahe. Pan mi mazi jamin kharab karnar nahi," Ujaval Jivtode, Jarur.

“Why will I make my land saline by using more chemical fertiliser? Everyone wants more production by degrading the fertility of their productive land. But I will not do the same.”

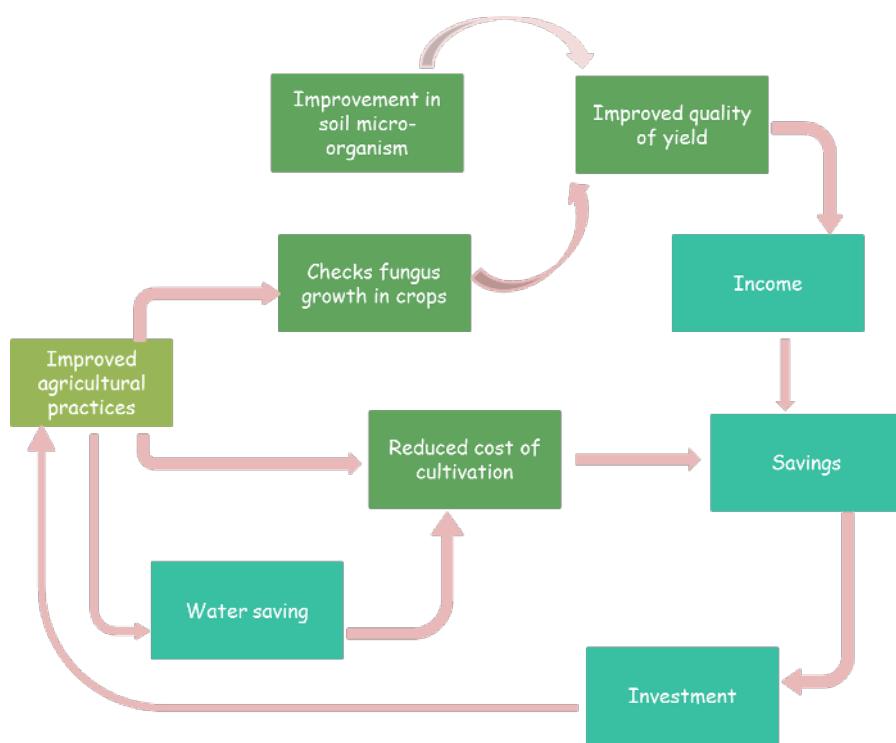
"Mala yacha khup fayada zala. Agodar mazi sheti pausvar avlumbun hoti pan ata nala madhun pani gheu shakato. Jamin suddha supik zali, ty mule utpadanat wad zale. Tya paishamule muleche lagna lau shakalo." Name?

“It has helped me a lot. Earlier my agriculture was totally dependent on rainfall but now I can extract water from the nala. Land has also become more productive, which has led to an increase in the yield. From the income that I earned, I could pay for my daughter’s wedding,” shared one of the residents on the benefits gained from improved water availability.

"Ata mi khup sukhi and samadhani ahe. Tya jasta fayadya tun mi 5 acre jamin ghetali ahe. Ani ata mi purn vel shetat ghalavato ani baher kamala jat nahi. Pudchyavarshi suddha mi silt waparnar ahe," Anil Gautam Kamble, Sharad.

“I am very happy and satisfied with the silt application. The extra income and savings I was able to buy 5 acres of land. Now I am able to stay here and work on my land. In the next Kharif season, I will use the silt to earn more income,” shared one of the farmers on his experience of silt application.

Mind Map



Case Study: Increasing agricultural productivity through silt application

Silt application has helped in improving the soil-moisture regime of the farm lands, and also reducing the need for irrigation. Anil Gautam Kamble, a small farmer in Sharad village, shares that his land had become non-arable due to increased salinity from excessive irrigation. In order to improve the fertility of his land, he decided to apply silt. He enlisted his name when this drive was being carried out in his village. He applied 250 tractors of silt on all of his land. Due to this, the production of soybean in his field doubled from 20 quintals to almost 40 quintals. He could earn an additional income of almost INR 50,000/. He also received more fodder from this increased production and thereby managed to save about INR 4,000/- that he earlier had to incur on purchase of fodder. Moreover, he also sowed gram in addition to wheat and cotton during Rabi.

Valuation of Key Indicators	
Water harvested and water saved (in TCM)	8,057
Value of water harvested and water saved (in INR)	40,285,226
Transaction cost saved due to community management (in INR)	17,280
Change in income from agriculture (in INR)	24,457,001
Potential savings in electricity/diesel costs due to irrigation scheduling / varietal replacements (in INR)	2,313,282

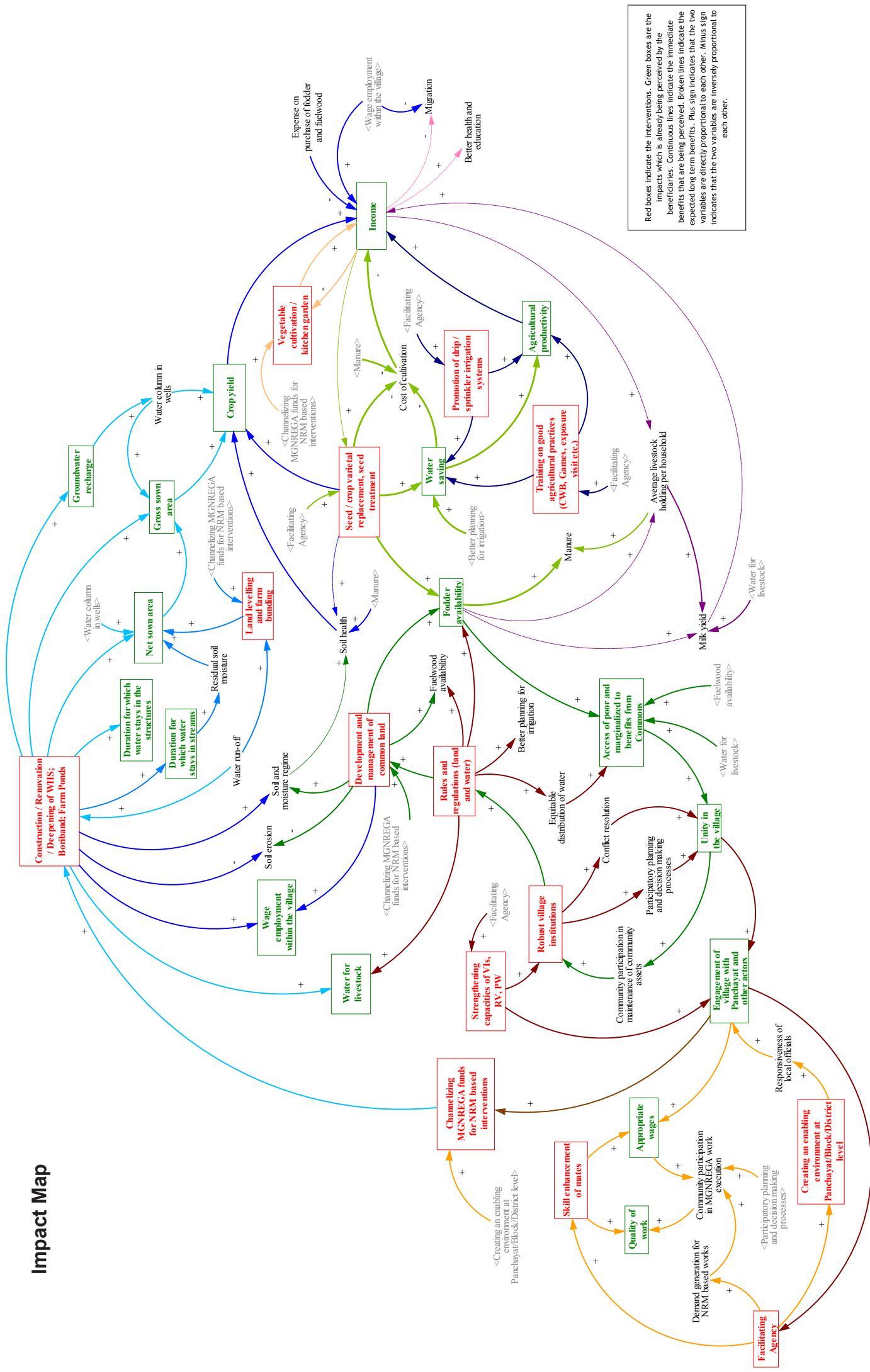
IMPACT MAP

Building from the various mind maps developed with the different stakeholders in the villages where the SROI assessments were undertaken, a unified impact map was developed. The Impact Map (on the next page) represents the stakeholders' perceptions of the impact (immediate and long term) of the various interventions. The red boxes indicate the interventions, while the green boxes indicate the impact perceived by the communities. Solid lines indicate the immediate changes that are already being perceived while dotted lines indicate the expected long term changes. The Plus sign indicates that the cause and effect are directly proportional to each other, and minus sign indicates that they are inversely proportional. Different coloured arrows have been used in the Impact Map to highlight the interactions (the cause and effect dynamics) along the focus areas of governance, ecological restoration, energizing MGNREGA and livelihoods.

Some of the key interconnections that one sees are:

- ◆ As village institutions become more robust and rules are formalized establishing systems for equitable benefit sharing and conflict resolution, access (particularly of the poor and marginalized) to benefits from Commons increases, improving participation of different sections including the youth, women and marginalized in planning and decision making. This has helped in fostering unity in the villages and making the village institutions more robust.
- ◆ As MGNREGA funds are channelized for undertaking initiatives on land and water rejuvenation, there is an improvement in the condition of resources. This coupled with secure rights of the village communities and rules for managing, benefit sharing and conserving the resources results in improved participation of the communities in managing resources.
- ◆ Land and water rejuvenation initiatives have helped in meeting fodder and water requirements of livestock as a result of the increased duration of water availability in streams and water bodies and improved fodder availability.
- ◆ Land and water rejuvenation initiatives have helped in checking water run-off and soil erosion and improved soil moisture regime. In the long run this would also help in improving biodiversity, nutrient flows and aid in pollination and pest control.
- ◆ With improved availability of water the net and gross sown areas have increased, enhancing crop yield and helping farmers meet their domestic food requirements for longer duration as well as higher income from sale of the surplus. Further, supporting farmers in farm bunding and horticulture through programmes is helping in improving the nutritional status of households.

Impact Map



MONETIZING BENEFITS

The total value of returns at the end of four years is INR 13,728 lakh while that for 2016-17 alone is INR 6250.51 lakh. The SROI value for all four years is, therefore 2.55 while that for 2016-17 alone is 4.01. The highest return is from the incremental change in the biomass with the support of the initiative. The returns from biomass contribute to 36% of the total returns. Similarly, the return from water savings and water harvested contributes to 32% of the total returns. Returns from improved agricultural production due to various area treatment and water conservation initiatives, behavioral changes in terms of adoption of improved agricultural practices and vegetable cultivation constitute 21% of the total returns.



Monetizing Benefits					
Variables	2013-14	2014-15	2015-16	2016-17	Grand Total
Biomass produced		39,351,100	228,122,672	228,197,138	495,670,910
Governance		27,229,000	4,383,660	3,625,770	35,238,430
Change in income from agriculture due to SWC measure		14,764,500	130,913,296	32,571,846	237,796,206
Change in income from agriculture due to behavioral shifts				59,546,564	
Income from agriculture due to change in land use				32,402,596	32,402,596
Agricultural savings due to adoption of sustainable agricultural practices				16,006,580	16,006,580
MGNREGA wage	24,250,385	65,161,049	1,106,775	1,529,925	92,048,135
Opportunity cost avoided	1,358,640				1,358,640
Pumping hours saved		7,053,434	2,731,273	11,216,201	21,000,908
Water savings and water harvested		9,451,470	191,887,126	239,954,728	441,293,324
Grand Total	25,609,025	163,010,554	559,144,802	625,051,348	1,372,815,729

SROI Estimation	
SROI =	Net Social Value / Investment
Net Social Value =	[Total Benefits Monetized – (Deadweight + Drop off + Displacement)]
Net Social Value (in lakhs) =	13728.16
Total investment across all four years (in lakhs)	5392.88
SROI (2013-2017) =	2.55

Contributions at Household level		
Indicators	Number of households	Increase in income / Expense saved per household (INR)
Increase in income per household subsequent to additional production due to improved agricultural practices, including SRI, seed treatment, varietal selection, line sowing etc.	16,994	2,439
Increase in income per household due to shift in agricultural practices during Rabi subsequent to Crop Water Budgeting	1,428	5,926
Increase in income per household due to additional production subsequent to area treatment and water harvesting initiatives	1,475	9,411
Increase in income per household due to change in land use subsequent to area treatment and water harvesting initiatives	1177	27,530
Increase in income per household subsequent to construction of boribands	1,356	13,783
Increase in income per household due to vegetable cultivation	1,029	9,361
Potential savings per household in diesel motor / electricity costs due to irrigation scheduling/seed varietal replacement	5,332	2,104
Potential savings in agricultural expenses per household due to line sowing and application of NPM/IPNM	14,494	1,517
Expenses saved per household due to improved availability of fodder	46164	2843
Expenses saved per household due to improved availability of fuelwood	42520	952

Annexures

A) SROI – Detailed Calculation Sheet

Year	S.No.	Change/Impact Indicators	Amount (INR)
2014-15	1	Total MGNREGA Wage Rates Generated in Anantapur	7,557,085
2014-15	2	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Anantapur	15,800
2014-15	3	Total MGNREGA Wage Rates Generated in Bagepalle	9,810,973
2014-15	4	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Bagepalle	588,013
2014-15	5	Total MGNREGA Wage Rates Generated in Bhilwara	12,775,694
2014-15	6	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Bhilwara	3,645,659
2014-15	7	Total MGNREGA Wage Rates Generated in Chittoor	3,113,841
2014-15	8	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Chittoor	406,213
2014-15	9	Total MGNREGA Wage Rates Generated in Mandla	5,164,646
2014-15	10	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Mandla	-1,021,892
2014-15	11	Total MGNREGA Wage Rates Generated in Pratapgarh	10,869,598
2014-15	12	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Pratapgarh	-254,956
2014-15	13	Total MGNREGA Wage Rates Generated in Udaipur	7,613,982
2014-15	14	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Udaipur	837,230
2014-15	15	Total MGNREGA Wage Rates Generated in Yavatmal	778,771
2014-15	16	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Yavatmal	4,436,417
2014-15	17	Increased agricultural production due to improved agricultural practices, including SRI, seed treatment, varietal selection, line sowing and so on	10,324,600
2014-15	18	Potential savings in diesel motor / electricity costs due to irrigation scheduling/seed varietal replacement	7,053,434
2014-15	19	Potential Savings in Water due to improved agricultural practices	919,090
2014-15	20	Additional biomass produced due to work on common and agricultural lands	39,351,100
2014-15	21	Additional agricultural production achieved by bringing additional area under cultivation; either bringing fallows under single crop or single crop under double crop.	4,439,900
2014-15	22	Water storage potential created through area treatment, including tank deepening, dug out ponds, drainage line treatment and so on	4,010,000

Year	S.No.	Change/Impact Indicators	Amount (INR)
2014-15	23	Water conserved due to various area treatment activities	4,522,380
2014-15	24	Cost of management of tanks saved due to strengthened institutions	2,044,000
2014-15	25	Cost of management of forests saved due to the strengthening of village level institutions	25,185,000
2013-14	26	Total Man-days income generated out of project-related works In Udaipur	811,439
2013-14	27	Additional Income earned through increase in wages In Udaipur (E5-H5)	367,470
2013-14	28	Total Man-days income generated out of project-related works In Bhilwara	5,064,528
2013-14	29	Additional Income earned through increase in wages In Bhilwara (E7-H7)	726,692
2013-14	30	Total Man-days income generated out of project-related works In Pratapgarh	6,770,642
2013-14	31	Additional Income earned through increase in wages In Pratapgarh (E9-H9)	672,573
2013-14	32	Total Man-days income generated out of project-related works In NP Kunta	4,213,535
2013-14	33	Additional Income earned through increase in wages In NP Kunta (E9-H9)	132,160
2013-14	34	Total Man-days income generated out of project-related works In Thamballapally	611,217
2013-14	35	Additional Income earned through increase in wages In Thamballapally (E9-H9)	2,650
2013-14	36	Total Man-days income generated out of project-related works In Bagepalle	3,951,540
2013-14	37	Additional Income earned through increase in wages In Bagepalle (E9-H9)	-246,852
2013-14	38	Total Man-days income generated out of project-related works In Mandla	1,061,328
2013-14	39	Additional Income earned through increase in wages In Mandla (E9-H9)	111,463
2013-14	40	Overall opportunity cost avoided by reduction in travel time to fetch water, once the availability of water from near by harvesting structures increases.	548,640
2013-14	41	Opportunity cost avoided from watering cattle from sources closer on hand	810,000
2015-16	42	Additional wages generated in Udaipur	157,831.80
2015-16	43	Additional wages generated in Bhilwara	1,131,894.44
2015-16	44	Additional wages generated in Pratapgarh	-715,725.99
2015-16	45	Additional wages generated in Mandla	-342,488.12
2015-16	46	Additional wages generated in Yavatmal	-26,164.44

Year	S.No.	Change/Impact Indicators	Amount (INR)
2015-16	47	Additional wages generated in Chikkaballapur	-39,912.04
2015-16	48	Additional wages generated in Chittoor	1049874.97
2015-16	49	Additional wages generated in Anantapur	-108535.63
2015-16	50	Value of community governance of water resources	206,7660
2015-16	51	Value of community governance of common lands	2,316,000
2015-16	52	Total value of additional fodder, fuelwood and carbon stock produced	228,122,672
2015-16	53	Value of increased agricultural production due to improved agricultural practices, including SRI, seed treatment, varietal selection, line sowing and so on	28,319,643
2015-16	54	Value of increased agricultural production achieved by bringing additional area under cultivation; either bringing fallows under single crop or single crop under double crop through area treatment and soil and water conservation efforts	90,572,593
2015-16	55	Value of increased vegetable production	12,021,060
2015-16	56	Potential savings in diesel motor / electricity costs due to irrigation scheduling/seed varietal replacement	2,731,273
2015-16	57	Value of water saved due to improved agricultural practices	13,017,751
2015-16	58	Value of water harvested due to various area treatment and soil and moisture conservation initiatives	173,320,000
2015-16	59	Value of additional water available for domestic use	5,549,375
2016-17	60	Additional wages generated in N.P.Kunta	210,928
2016-17	61	Additional wages generated in Rekkamanu	9,229
2016-17	62	Additional wages generated in Mandal	-2,117,803
2016-17	63	Additional wages generated in Mandalgarh	2,806,570
2016-17	64	Additional wages generated in Bagepalle	69,534
2016-17	65	Additional wages generated in Thamballapalle	-595,495
2016-17	66	Additional wages generated in Bichiya	406,865
2016-17	67	Additional wages generated in Niwas	314,744
2016-17	68	Additional wages generated in Pipalkhund	98,598
2016-17	69	Additional wages generated in Pratapgarh	153,682
2016-17	70	Additional wages generated in Gogunda	-51,016
2016-17	71	Additional wages generated in Jhadol	163,143
2016-17	72	Additional wages generated in Ghantanji	-22,054
2016-17	73	Value of community governance of water resources	166,9770
2016-17	74	Value of community governance of common lands	1,956,000
2016-17	75	Total value of additional fodder, fuelwood and carbon stock produced	228,197,138

Year	S.No.	Change/Impact Indicators	Amount (INR)
2016-17	76	Value of increased agricultural production due to area treatment measures, improved agricultural practices, crop water budgeting and vegetable cultivation	237,796,206
2016-17	77	Potential savings in diesel motor / electricity costs due to irrigation scheduling/seed varietal replacement	11,216,201
2016-17	78	Value of water saved due to improved agricultural practices	50,111,778
2016-17	79	Value of water harvested due to various area treatment and soil and moisture conservation initiatives	189,842,950
Total Benefits Monetized (2013-17)			1,324,406,553

B) District-wise summary of increase in income / Saving in expenses due to interventions

District	Agriculture	Water harvested & water saved	Biomass	Savings in electricity/diesel costs	MGNREGA	Governance cost	Total
Anantpur	3,161,431	9,631,476	48,250,848	154,184	303,157	568,680	62,069,775
Bhilwara	2,366,566	51,361,563	20,702,444	115,091	688,767	552,000	75,786,431
Chikkabalapur	558,939	18,500,010	3,870,604	0	69,534	818,520	23,817,606
Chittoor	13,361,149	24,509,011	60,289,410	7,556,085	-595,495	598,320	105,718,480
Mandla	7,794,729	28,912,208	26,607,548	2,009	721,609	410,970	64,449,073
Pratapgarh	25,245,300	48,688,028	12,136,644	618,590	252,280	192,000	87,132,842
Udaipur	15,173,295	18,067,207	56,339,640	456,960	112,127	468,000	90,617,229
Yavatmal	24,457,001	40,285,226	0	2,313,282	-22,054	17,280	67,050,734
Total	92,118,410	239,954,728	228,197,138	11,216,201	15,29,925	3,625,770	576,642,171

C) Comparative assessment of people's perceptions of changes in some key indicators as compared with last year

Indicators	Comparative assessment with last year
Water run-off	51% of the villages said there has been a high to very high change in water run-off as compared to 21% last year.
Availability of surface water	24% of the villages said there has been a high to very high change in the availability of surface water as compared to 14% last year.
Soil fertility	45% of the villages said there has been a high change in soil fertility as compared to 11% last year.
Pest attacks	24% of the villages said there has been no change in pest attacks as compared to 62% last year. 27% of the villages said there has been a high to very high change in pest attacks as compared to 11% last year.
Participation of people in planning and decision making	11% of the villages said there has been no change in peoples' participation as compared to 84% last year. 40% of the villages said there has been a high to very high change as compared to 3% last year.

Indicators	Comparative assessment with last year
Participation of women	43% of the villages said there has been a high to very high change in women's participation as compared to 14% last year.
Participation of SC/ST/NT and other marginalized communities	28% of the villages said there has been a high to very high change in participation of marginalized communities as compared to 14% last year.
Participation of youth	40% of the villages said there has been a high to very high change in the participation of youth.
Access to government programmes and schemes	49% of the villages said there has been a high to very high change in their access to government programmes and schemes as compared to 14% last year.
Awareness about MGNREGA provisions	52% of the villages said there has been a high to very high change in the awareness about MGNREGA provisions as compared to 38% last year.
Quality of MGNREGA works	40% of the villages said there has been a high to very high change in the quality of work as compared to 14% last year.
Quality of supervision of MGNREGA works	17% of the villages said there has been a very high change in the quality of supervision as compared to none last year.
Responsiveness of local officials	49% of the villages said there has been moderate to very high change in the responsiveness of local officials as compared to 33% last year.
Number of works sanctioned for land and water restoration under MGNREGA in the village	29% of the villages said there has been a high to very high change in the number land and water restoration works sanctioned under MGNREGA as compared to 14% last year
Number of works implemented for land and water restoration under MGNREGA in the village	40% of the villages said there has been high to very high change in number of land and water restoration works under MGNREGA as compared to 27% last year.
Availability of fodder	40% of the villages said there has been high to very high change in the availability of fodder as compared to 17% last year. Further, while 22% of the villages last year said there has been no change in fodder availability, none of the villages this year perceived so this year.
Availability of firewood	68% of the villages said there has been moderate to high change in the availability of firewood as compared to 59% last year.
No. of earners in family	23% of the villages said there has been high change in number of earners as compared to 16% last year.
Income from agriculture and agriculture labour	26% of the villages said there has been high change in income from agriculture and agriculture labour as compared to 14% last year.
Crop yield	46% of the villages said there has been high to very high change in crop yield as compared to 29% last year. Further, while 14% of the villages last year had said there has been no change, none of the villages perceived that this year.
Cropping area	29% of the villages said that there has been high to very high change in the cropping area as compared to 11% last year.

D) Analysis from Household Survey

Changes in percentage of farmers growing different types of crops subsequent to interventions				
Type of crop	Kharif		Rabi	
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Cereals	71	73	48	55
Pulses	41	47	29	36
Vegetables	7	16	5	10
Oilseeds	13	16	13	14
Cash Crop	40	40	6	5
Fodder crop	19	21	12	13

There has been quite a significant increase in percentage of farmers growing cereals, pulses and vegetables.

Impact of various interventions on household income, saving and food security			
Type of impact	Increased soil moisture	Improved water availability due to well recharge	Improved water availability due to direct irrigation
Median of additional income earned (INR)	3,000	6,400	3,500
Median of additional saving (INR)	7,200	10,250	7,400
Median of additional number of days domestic food requirement met from crops during Kharif	78	90	90
Median of additional number of days domestic food requirement met from crops during Rabi	34	60	40

Percentage of households spending on different things subsequent to improvement in income & savings	
Food & fodder	89
Domestic Energy	50
Transportation	68
Communication (Mobile)	45
Entertainment (Cable Connection)	20
Alcohol, Tobacco	53

Percentage of households spending on different things subsequent to improvement in income & savings	
Education	77
Medicine	85
Agricultural Inputs	66
Agricultural Assets	47
Household Assets	31
Construction / House Repair	62
Loan repayment	38
Festival / Celebration	74

Source: Household survey, 2017

Hindustan Unilever Foundation (HUF)

Future demand for water resources will increase significantly as the population, rate of economic development, and consumption grow. Estimates tell us that by 2030, the supply of water in India could be significantly lesser than the demand. The adverse impact of climate change on agriculture will further compound problems arising due to linkages between food, energy, and livelihoods in the country. To understand and partake in meeting this challenge, HUF was formed in 2010.

By 2020, the cumulative impact of our collective action are expected to generate:

- Water potential of 500 billion litres
- Employment of more than seven million person days
- Annual additional agricultural production of 0.1 million tonnes

HUF is a not-for-profit company that anchors various community development initiatives of Hindustan Unilever Limited. HUF supports national priorities for socio-economic development through its 'Water for Public Good' programme. Its projects also comply with the requirements of the Companies Act, 2013.

Foundation for Ecological Security (FES)

Registered under the Societies Registration Act XXI 1860, FES was set up in 2001. Spread across diverse ecological and social geographies, FES works towards conservation of nature and natural resources through collective action of local communities. In India, FES has played a pioneering role in furthering the concept of Commons as an effective instrument of local governance, as economic assets for the poor, and for the viability of adjoining farmlands. Globally, FES hopes to see an increasing influence on two fundamental issues in governing shared natural resources – a 'socio-ecological systems' approach and a 'Commons paradigm', which together could have far-reaching impact on world views on 'development'. FES has initiated work on compiling, consolidating and making available accurate and comprehensive data to facilitate informed decision making on forest, land and water resources and Commons in particular. An effort to make available real-time data on a scale and scope that systematically removes asymmetries in information for action on ecological and social concerns. This is an initiative to foster and enhance multi stakeholder efforts of cooperation, collaboration and management involving local communities and institutions with varied concerns and levels of decision making. By working on systemic issues that can bring about a multiplier change, FES strives for a future where the local communities determine and move towards desirable land-use that is based on principles of conservation and social justice.



FOUNDATION FOR ECOLOGICAL SECURITY