WORKING PAPER 35

BENEFITS OF COMMONING WATER:

Social Return on Investment (SROI) Assessment of the Water Commons Programme

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March 2016

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Registered under the Societies Registration Act XXI 1860, the **Foundation for Ecological Security** *was set up in 2001 to reinforce the massive and critical task of ecological restoration in the country.*

The crux of our efforts lies in locating forests and other natural resources within the prevailing economic, social and ecological dynamics in rural landscapes and in intertwining principles of conservation and local self governance for the protection of the natural surroundings and improvement in the living conditions of the poor. By working on systemic issues that can bring about a multiplier change, we strive for a future where the local communities determine and move towards desirable land use that is based on principles of conservation and social justice.

INTRODUCTION

a. **Title of the project:** Water Commons – Influencing Practice and Policy

b. **Location of the project:** The project is being grounded in 750 habitations across eight districts in the States of Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra and Rajasthan.

c. **Type of social project:** The project aims to center stage Water Commons as a viable and promising property regime alongside State and individual property regimes. The project focuses on:

   i. Establishing minor water bodies and groundwater as common pool resources and work towards managing them as common property regimes;
   ii. Improving the democratic functioning of the village institutions for better governance of land and water resources;
   iii. Integrating water conservation and demand side management of water intro existing work on restoration of common lands;
   iv. Influencing land, water and forest policies to ensure that conservation of water is the fundamental objective.

d. **Associated NGO:** Foundation for Ecological Security (FES) works towards the ecological restoration and conservation of land and water resources in the uplands and other eco-fragile, degraded and marginalized zones of the country, and, to set in place the processes of coordinated human-effort and governance. Our efforts to secure rights of use and ownership over common pool resources like forestlands, revenue wastelands and pasture lands for communities and village institutions have assisted 6.12 million people from around 9777 habitation level institutions in eight states of India to improve the management of common lands and water resources. We work either directly, or with and through a range of democratic village institutions, their federal bodies, and civil society organizations, set up through initiatives that are ecologically sustainable, socially and economically equitable and provide relief to the poor in particular.

The study was assisted by Anita Kumari, Archana Bilung, John Manish Bara, Sharad Saurabh and Shekhar Lal, students from Xavier Institute for Social Service, Ranchi who conducted the field studies across the project locations.

Building on our experiences that largely focused on land Commons, the Water Commons programme contributes to expanding and deepening FES's work on water in ways that improve social justice and good governance, ecological restoration and sustainability and better livelihoods. The project supports scaling up in the number of communities with whom FES works, as well as activities at multiple scales from farmers and habitations to Panchayats, blocks and river basins. In such landscapes, we strive to build our work on water Commons by improving understanding on geology, surface water availability and flows, groundwater, soil quality and organizing networks of well-governed institutions to manage the resources equitably and effectively. The project aims at engaging actively with Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) to leverage funds for rejuvenation of land and water resources.

e. **Funding Agencies:** The project is supported by cofounding from Hindustan Unilever Foundation (HUF), NABARD and with leverage from the MGNREGA. programme for implementation of physical activities.

f. **SROI Exercise Boundary:** The project is being grounded in 690 habitations across eight districts in the States of Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra and Rajasthan. Below is the location-wise distribution of habitations covered under the project:

In each location, the field teams are stewarding the project in one or more talukas/mandals; in Andhra Pradesh, the project is being implemented in NP Kunta and Rekkamanu of Anantapur District and Thamballapalli Mandal of Chittoor District; in Karnataka, the project is being implemented in Bagepalle Taluka; in Rajasthan, the project is being grounded in Kotri, Mandal and Mandalgarh blocks of Bhilwara; Choti Sadri, Peepalkunt and Pratapgarh blocks of Pratapgarh and Gogunda and Jhadol blocks of Udaipur; in Madhya Pradesh it is being implemented in Bichhiya and Niwas blocks of Mandla district; and in Maharashtra the project is being implemented in Ghatanji block of Yavatmal district.

The SROI exercises were undertaken in 28 of the habitations mentioned below:

Table-1 List of habitations for SROI Exercise

Sl. No.	Location	Habitations Covered
1	Udaipur	Chitrawas, Kanji ka Guda, Bhanpura, Luniyara, Thadi Beri
2	Pratapgarh	Meriyakhedi, Semalpur, Karwamunda, Chittodi, Karoli
3	Bhilwara	Phalased, Bhatkhedi, Kacholiya, Bateri, Hoslo ka Jhopda
4	Mandla	Urdali, Atariya, Berkheda
5	Anantapur	Pothulavandlapalle, Mukkavandlapalle, Mekkalacheruvu, Jovukula
6	Chickballapur	Gujjepalle, Tollapalle Colony, Bairapalle, Singappagaripalle, Nallasanivaripalle
7	Chittoor	Gummadikayalapalle

METHODOLOGY

Different stakeholders associated with the project were identified, along with the FES implementation teams; these included farmers, women, members belonging to marginalized communities like the Scheduled Castes (SCs), Scheduled Tribes (STs) and the Other Backward Classes (OBCs), landless, representatives from the

Panchayati Raj Institutions (PRIs) and from village/habitation level institutions, and beneficiaries of agriculture and livelihood related interventions. The following steps were undertaken:

- The SROI team interacted with the FES implementation teams to understand the various interventions undertaken in the study villages, the expected benefits from the interventions and the list of beneficiaries. Village level meetings were held in each of the study villages, wherein representatives from different sections of the community participated. A mind map was developed with active engagement of the community to understand their perceptions on the immediate and long term outcomes of the interventions made.
- Focused group discussions were held with different stakeholders such as farmers and livestock keepers who benefited from the agriculture and livelihood related interventions, women and other community members who work on MGNREGA work sites, MGNREGA mates, PRI representatives.
- An interview schedule was administered, during each of the discussions mentioned above, in order to better synthesize the responses.

The table given below encapsulates the stakeholders who were consulted:

Table 2: Stakeholders of the Project

Stakeholders	**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 constituency of this study.
Livestock owners	
Women	As most of the people working on NREGA work sites are women in the project locations, this stakeholder group was determined to be central.
NREGA Beneficiaries	
Marginalised 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 presence of dominant social groups
Village Institution (VI) Representatives/ Rural volunteers/Community Resource Persons (CRP), MGNREGA Mates	Form the executive of the VI and are the most engaged in project activities.
Panchayat & MGNREGA Officials	Given the emphasis on MGNREGA, we sought to speak to this stakeholder group whenever possible.
Panchayat Representatives	
Beneficiaries of 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

Time Frame of the Exercise: the current SROI exercise encompasses the financial year 2014-15 and has taken into account all the activities undertaken therein.

UNDERSTANDING AND DEFINING THE SCOPE AND BOUNDARY OF THE STUDY

Scenario Analysis

Water is a prized and over-exploited natural resource in India. The locations where FES is grounding the project are marked by the extremes of acute water shortage (locations in AP, Karnataka, Rajasthan and Maharashtra) and heavy rainfall (Mandla in MP) and the resultant soil and water run-off.

India is ranked at the top of the 10 nations that account for more than 72% of global groundwater abstraction. 225 cu.kms of groundwater is extracted in India as against 112 cu.kms in China and USA and 64 cu.kms in Pakistan and it is further estimated that there are more than 25 million groundwater structures in India (World Bank 2010); and this is only likely to grow. The consumption of groundwater has increased manifold in the last three decades or so. According to 4th Minor Irrigation Census (2006-07)[1], the number of shallow tube wells and deep tube wells increased from 8.35 million and 0.53 million to 9.12 million and 1.44 million respectively. More than 60% of the irrigation requirements presently are being met by groundwater alone, clearly indicating the increasing dependence on tube wells for the said purpose. When juxtaposed against the fact that more than 85%[2] of the drinking water requirements in India are met from groundwater, it is evident that the demand for groundwater is fast outstripping the supply available.

On the other hand, in places like eastern Madhya Pradesh which are marked by undulating terrain, deciduous forests and high rainfall, the problem is of deforestation and land degradation, which in turn causes high soil and water run-off, thereby rendering agriculture vulnerable. The looming prospect of climate change only promises to exacerbate the water crisis; with a fall in the number of rainy days dry spells threaten to be for a longer duration in the arid and semi-arid belts of India. At the same time, a lot of rainfall in a short duration means that in places experiencing increasing deforestation, soil and water run-off will be high.

It is within this context that the Water Commons project has been grounded. The activities undertaken as part of this intervention include:

- Assisting the communities in **mapping surface and groundwater flows**, interactions between water use, the catchment and command to value water and aquifers as common resource and reinforce the forest-farm-water interconnections;
- **Organizing inclusive institutions** at the habitation level that drive collective action and check behaviour where individualistic short-term interests conflict with collective success and longer-term survival.
- **Developing plans** for restoration of common land and water resources to improve soil and moisture regime, surface water availability and groundwater recharge.
- **Energizing MGNREGA** by supplementing the financial investments with institutional investments through better planning, implementation and monitoring processes and helping communities craft institutions for better management of the resources being created.
- Application of tools such as **participatory aquifer mapping, experimental**

1 Minor Irrigation Census looks at Dug wells, Shallow Tube wells, deep tube wells, surface flow irrigation and surface lift irrigation.

2 http://www.worldbank.org/en/news/feature/2012/03/06/india-groundwater-critical-diminishing

games, crop water budgeting and system dynamics to energize collective action, improve information and help in coordinating action for better water use.

- **Strengthening local capacities** at a large scale with the help of *Prakriti Karyashala* (Rural Colleges) for better planning and management of land and water resources and help in taking more informed decisions on resource use.
- **Livelihood and Agricultural Extension** by promoting seed treatment, participatory varietal trials, kitchen gardening, and such; with select farmers in order to address the immediate livelihood concerns of the rural communities and the long-term ecological considerations. The effort was also to demonstrate that with slight changes in cropping practices, it was possible to achieve significant water savings even while seeing an increase in agricultural productivity.

So far, the efforts have helped in stimulating discussions in the community on the shared nature of water (including groundwater). Communities have started developing integrated plans for restoration of common land and water resources and are implementing it by channeling funds from MGNREGA whilst also crafting rules for protection and management of the common assets created. The demand to initiate works on common land and water resources is also increasing amongst the communities. Subsequent to the field experiments and crop water budgeting exercises along with improved information on good agricultural practices and irrigation methods, there are examples of farmers across the project locations making a change in their agricultural practices, adopting seeds and crops that are less water intensive which has contributed to water saving while also improving the agricultural productivity and thereby enhancing incomes.

MIND MAPPING OF IMPACTS

The immediate and long term outcomes of the interventions mentioned above are captured in the mind map below. As mentioned below, the red boxes indicate the interventions while the green boxes indicate the outcomes perceived. Continuous lines indicate the benefits already perceived while dotted lines indicate benefits that the stakeholders expect in the long run. A plus sign along the line indicates a positive correlation between the two variables while a minus sign indicates that the variables are negatively correlated. The mind map primarily captures the stakeholders' assessment of the interventions in four dimensions: resource governance, better functioning of MGNREGA, resource rejuvenation (in terms of land development, augmenting water supply and water savings through demand side management) and livelihood enhancement. As is evident, each of these components are closely intertwined and supplement and complement each other.

a. <u>Resource governance:</u> As indicated in the diagram, strengthening village institutions, assisting communities in evolving shared norms, rules and regulations have been one of the focal areas of intervention. Interactions with the community while undertaking the SROI exercise revealed that this has helped in better management of land and water resources, improving accessibility of the poor and marginalized to benefits such as fodder, firewood and water from Commons and fostering unity in the village.

> *"Kuch log humare jungle me aa kar lakdi kaat rahe the. Humne socha aisa chalta raha toh hamara jungle khatam ho jaega. Toh hum logo ne meeting bulaya aur meeting me un logo ko dand diya aur wapas se danda system chaalu kar diya jisse surakhsa ache se ho sake."*
>
> - Members of Chitrawas village institution of Udaipur

In many of the villages, the community members also shared that the village institution is also proving to be instrumental in resolving conflicts pertaining to wide range of issues such as encroachment of common lands, catchment of tanks, boundary conflicts, trespassing of rules collectively formed etc. Further, they now participate more actively in the planning and decision making processes. At the same time, with increasing confidence and unity, village institution members, volunteers and paraworkers have also started engaging with Panchayat and other external actors.

"Humne niyam banaya ki sabhi ek baar pilayi kar lenge, uske baad hi dusri pilayi shuru kar sakte hai; jisse sabhi ko paani mil sake."

- Farmers in Phalased village of Bhilwara district.

Continued engagement with the community in Phalased village of Bhilwara District, Rajasthan has helped them in formulating specific byelaws for the common naadi (water pond) in their village. While there has been a shared understanding among the community to prefer water use for livestock and other domestic purposes over water for irrigation, formalizing it ensures the access of the poor livestock keepers and women to this naadi. Further, the people have resolved to keep the water source clean and any person found to pollute the water is punished. Similarly, nobody is allowed to take water for second round of irrigation from the pond unless, all the farmers have completed their first round of irrigation. The community shared that such initiatives can be helpful in improving access of the poor and marginalized to benefits from common pool resources and foster unity in the village.

b. Energizing MGNREGA: The interventions for improving MGNREGA functioning have been at different levels – from village to district, state and national levels. Efforts made have been towards creating an enabling environment at Panchayat/ Block/District levels such that more of the MGNREGA funds are channelized towards works on rejuvenation of land and water resources while training programmes were organized to enhance skills of the MGNREGA mates. Efforts at creating enabling environment led to sanctioning of plans for NRM based works in the MGNREGA annual action plans and improved responsiveness of the local officials. Skill enhancement of mates helped in improving the quality of work and ensured appropriate wages to the persons working on MGNREGA work sites. These have also helped in improving community's participation in MGNREGA work execution and maintenance of the community assets being created. In many of the villages, the communities have formulated byelaws for governing the resources that are being rejuvenated through the MGNREGA funds.

"Ab humein apne pashu ke peene ke liye paani ki dikkat nahi hoti hai. Hamare talab se teen gaav ke pashu paani peene aate hai."

- Livestock keepers in Semalpur kheda village, Pratapgarh district, Rajasthan.

The water pond in Semalpur kheda village of Pratapgarh district in Rajasthan has been one of the sources of water for the livestock for many years. The walls of the pond was made of gravel and mud and water would often seep, as a result of which water would not last for long after monsoon. The community with FES's assistance constructed concrete wall on the steeper side of the pond under MGNREGA. Water now stays in the pond throughout the year and is the source of water for livestock from three villages.

c. Resource rejuvenation: With increasing funds being channelized for restoration of land and water resources under MGNREGA, several works have been undertaken to develop common lands and construct / renovate water harvesting structures, The communities shared that while such interventions created wage employment opportunities within the village, these have also helped in checking soil erosion and water run-

off, improving the soil and moisture regime, fodder, firewood and water availability. Renovation and deepening of existing water harvesting structures has increased the duration for which water stays in the structures and recharging the groundwater.

"Pehle hamare gaav me sirf 25 kisaan hi dusra fasal le paate the. Boriband banane ke baad 43 kisaan gehu ki bhi kheti kar paaye."
Farmers in Amod village, Udaipur district, Rajasthan.

Boribands have helped in harnessing the base flows and improving the residual soil moisture in Aamod village. The farmers shared that the area under irrigation has increased from 10 ha to 14 ha. Further, with improved availability of water on an average there has been an increase of 7-12 quintals of wheat production per farmer. In order to ensure equitable distribution of the water, the farmers have also formulated rules for irrigation wherein they share a common pump for lifting water and each of the farmers are supposed to run it for only 2-3 hours so that water is available for all. The repair and maintenance cost of the pump is also to be shared by everybody.

With improvement in the scenario of the recharge of groundwater, the farmers have already begun to see an increase in the water column in wells. Farmers across the project locations have reported an increase in better availability of water for critical and assured irrigation and an increase in the gross sown area. With interventions such as boriband, farm ponds, land levelling and farm bunding some of the farmers have also shifted from single cropping to double cropping.

"Sanstha walo ne humein beej ke upchaar ke liye amrit paani banana sikhaya. Amrit paani ke istmaal karne se dawai par jo kharcha hota tha woh bach gaya aur fasal bhi achha hua. Isme paani ka bhi kam kharcha hua. "
- Farmers in Bhatkhedi village, Bhilwara district, Rajasthan

Promotion of better irrigation methods and techniques such as irrigation scheduling, exposure visits, training programmes, experimental games and crop water budgeting exercises were undertaken with the communities across the project locations. Farmers shared that they found such exercises very relevant to their livelihoods and adopted the suggested agricultural and irrigation techniques that helped in saving 1-2 rounds of irrigation while also improving the agricultural productivity. Simultaneously, seed treatment and seed varietal replacements also helped in improving germination, crop yields, agricultural productivity, water savings and reducing the cost of cultivation.

"Paani ki kami ko dekhte hue, humne is saal sujata gehu lagaane ka faisla kiya jisme kam paani ki zarurat hoti hai."
- Farmers in Bhatkhedi village, Bhilwara district, Rajasthan

Application of tools such as experimental games and crop water budgeting stimulated discussions at a community level on the water balance in their village and selection of seed/ crop that are water frugal yet profitable.

d. <u>Livelihood enhancement:</u> The communities across project locations shared that works on common land and water resources not only created wage employment opportunities for them in the village but have and will (in future) improve the fodder, firewood and water availability. With water lasting for longer duration of time, there is improved availability of water for livestock and domestic purposes. The communities hope that with improved fodder and water availability, they would be able to maintain more number of livestock that would also bring them cash income through sale of milk and meat. More number of livestock would also mean more of manure available which would help in improving the soil health, crop yields and reduce cost of cultivation in terms of expenses on chemical fertilizers.

"Jungle ke kam hone se hamare pashu ke liye chaara bhi kam ho gaya tha aur logbaag kam maveshi ki sankhya bahut kam ho gayi thi. Sath hi rasaynik khaad ke adhik upyog ke kaaran humari mitti bahut sakht ho gayi hai Jungle par kaam karne se hamare chaare ki dikkat khatam ho jaegi aur hum adhik maveshi rakh paenge aur gobar khaad ka istimaal kheti ke liye kar paenge jisse mitti achhi ho jaegi.".

- Farmers in Chitrawas village, Udaipur district, Rajasthan.

Some of the interventions such as kitchen garden and vegetable cultivation also led to increase in the income of farmers from the sale of these vegetables as well as saved on the expenses that was otherwise made on procuring these vegetables from the market.

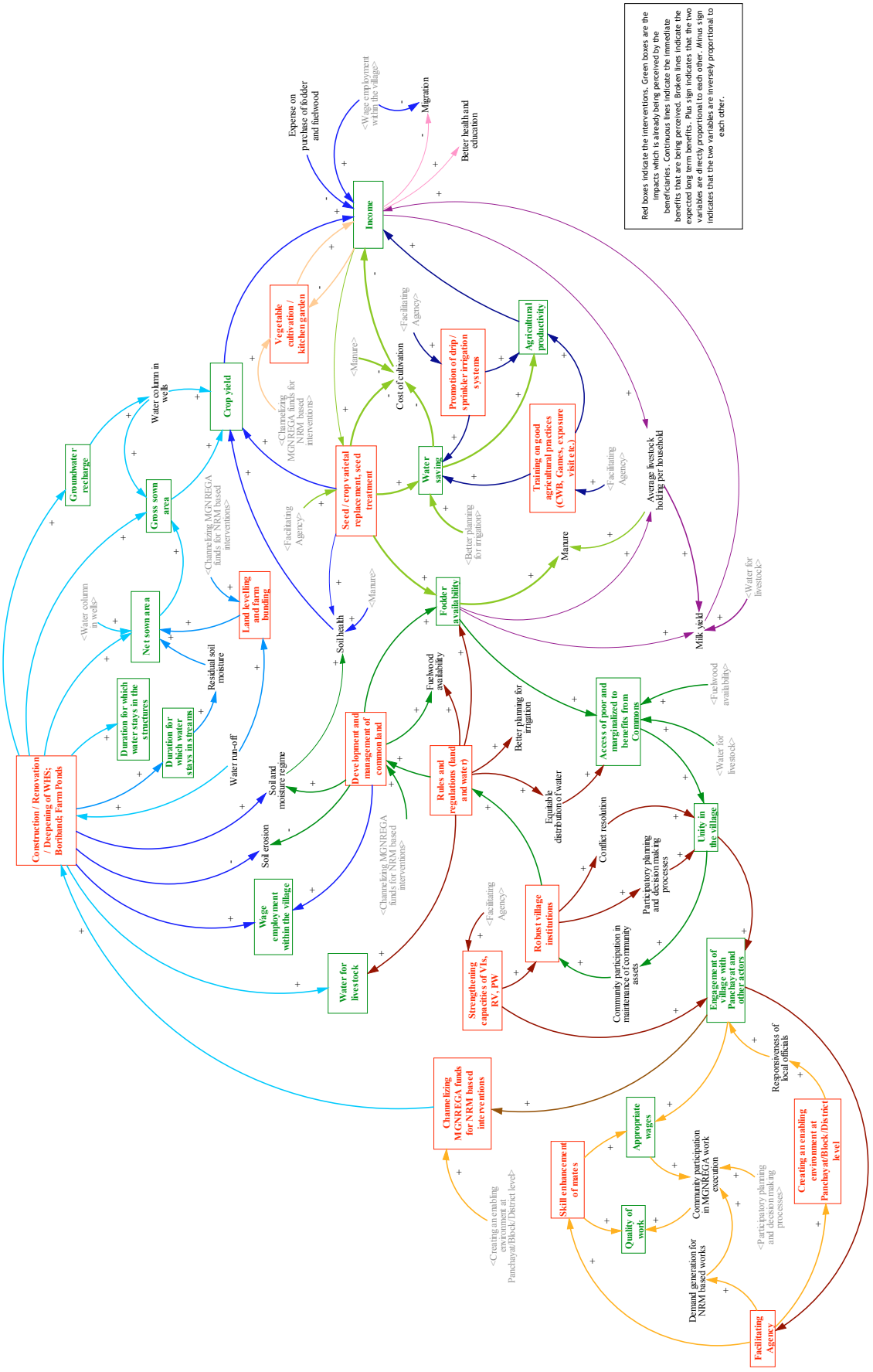
"Humne pehli baar apne khet me tamatar, baigan, methi aur pudina ki kheti ki. 3-4 quintal sabzi ho gaya tha aur humne tamatar 30 rupaye kilo becha, baigan 20 rupaiye kilo aur pudina dus se pandrah rupaiye kilo. Isse humko ghar me bhi bahar se sabzi nai laana pada, kuch paisa bhi aaya aur khet me kaam karne ko tha toh gaav ke bahar kaam karne ke liye nai jaana pada."

Farmers in Atariya village, Mandla district, Madhya Pradesh.

Kooragaayala vittanala vallana memu 2 nelala varaku kooralo konukkovalisina avasaram raa ledu. Due to the initiative to give vegetable seeds (under the kitchen gardening initiative), we did not have to buy vegetables for 2 months.

A woman farmer in Pothulavandlapalle village, Anantapur.

Figure 1: Mind Map



VALUATION OF THE BENEFITS ACCRUED

Preliminary analysis of the data from the SROI exercise and that from the MIS indicates that the following benefits have been accrued by the communities FES engaged with.

a. Water Savings

In all, 919.07 TCM of water were saved through improved agricultural practices, including varietal selection, seed treatment, line sowing, non-chemical agriculture, system of crop intensification and irrigation scheduling. The location wise-break up of the water saved is given below:

Location	Water Saved Kharif	Water Saved Rabi	Total	Cost per liter (Rs)	Total Value of Water Saved
Anantapur	33.45	21.77	55.22	0.001	55,220.00
Chittoor	11.33	4.25	15.58	0.001	15,580.00
Bhilwara	13.36	23.64	37	0.001	37,000.00
Pratapgarh	0	270	270	0.001	2,70,000.00
Udaipur	22.24	254	276.24	0.001	2,76,240.00
Mandla	55.75	163.34	219.09	0.001	2,19,090.00
Yavatmal	0	34.96	34.96	0.001	34,960.00
Bagepalle	11	0	11	0.001	11,000.00
TOTAL	**147.13**	**771.96**	**919.09**	0.001	9,19,090.00

Taken at a notional rate of Re.1 per 1000 liter, the total monetary value of the water saved through improved agricultural practices stands at INR 919 thousand.

b. Water Savings Potential Created

Cheruvu ripari vallana ekkuva neeru nilustundi; daani to memu yekkuva pantalu pettukovacchu; pashuvulako kuuda neeru labhistundi. Tanks repair has can help us increase production and ensure water availability for livestock.

-Farmers in Nallasanivaripalle, Karnataka

As has been mentioned in the context, tanks and other surface water bodies are an important part of the water security matrix of rural India. However, in many places where FES works—Andhra Pradesh and Karnataka for example—the roles that these tanks have been able to play in providing irrigation to these communities has diminished significantly owing to the state of disrepair in which they are found today. FES has striven to restore many of these surface water bodies through area treatment initiatives like pond deepening, increasing the height of waste weirs, drainage line treatments and so on. The following table gives a location-wise break-up of water potential created:

Table 4: Water Storage Capacity and Multi-Refill Capacity Created							
Location	**Water Storage Potential (TCM)**				**Multi-Refill (TCM)**		
	Water Storage Potential (TCM)	**Water Storage Potential (liters)**	**Value per Liter of water**	**Total Value of Water Potential Created (Rs)**	**Multi-Refill (TCM)**	**Multi-refill (liters)**	**Total Value of Water Potential Created (Rs)**
Anantapur	370	3700,00,000.00	0.001	3,70,000.00	97.49	974,90,000.00	97,490.00
Bagepalle	1,128.00	11280,00,000.00	0.001	11,28,000.00	43.73	437,30,000.00	43,730.00
Bhilwara	807	8070,00,000.00	0.001	8,07,000.00	1,938.00	19380,00,000.00	19,38,000.00
Chittoor	27	270,00,000.00	0.001	27,000.00	65.6	656,00,000.00	65,600.00
Mandla	252	2520,00,000.00	0.001	2,52,000.00	881.16	8811,60,000.00	8,81,160.00
Pratapgarh	857	8570,00,000.00	0.001	8,57,000.00	1,421.00	14210,00,000.00	14,21,000.00
Udaipur	511	5110,00,000.00	0.001	5,11,000.00	4	40,00,000.00	4,000.00
Yavatmal	58	580,00,000.00	0.001	58,000.00	71.4	714,00,000.00	71,400.00
Total	**4,010.00**	**40100,00,000.00**	**0.001**	40,10,000.00	**4,522.38**	**45223,80,000.00**	45,22,380.00

b. Improved Income :

Improved agricultural practices like varietal seed trials, seed treatment, crop replacement, irrigation scheduling and other improved methods of cultivation. These methods were applying across diverse crops, including wheat, groundnut, maize, lentils and millets. These methods resulted in an incremental production of 413.44 tons, valued at INR 10.3 million.

Location	Sum of Total Incremental Yield (ton)	Sum of Total value of Incremental Produce (Rs.)
Anantpur	131.43	52,57,200.00
Bhilwara	18.21	2,44,806.50
Chikkaballapur	2.08	28,288.00
Chittoor	17.16	6,86,400.00
Mandla	47.44	12,07,193.03
Pratapgarh	93.12	13,50,240.00
Udaipur	83.19	11,90,052.80
Yavatmal	20.82	3,40,973.19
Grand Total	413.44	103,05,153.52

d. Reduced Energy Consumption

One of the significant ways in which the agricultural extension services have impacted is by helping the households save on the number of hours for which they have had to use their tube wells. As has been explained earlier in this report, most of the locations where the WATER COMMONS PROJECT initiative is being grounded experience arid or semi-arid climatic conditions, where dependence on groundwater is very high. This excessive dependence has resulted in a drastic decline in groundwater levels, leading to several negative spin-offs like high fluoride incidence, purchase of drinking water, shortage of drinking water and increased drudgery for women. Therefore, any reduction in groundwater consumption can only be promising. In all, 10,913 pumping hours have been saved through adopting of improved agricultural practices. When extrapolated to all the locations in FES, this translates into 33844 pumping hours, valuing INR 7.05 million.

Table 6: Aggregate Reduction in Pumping Hours per Ha and the Value of the Pumping Hours Reduced Per Ha (Rs)		
Location	**Reduction in Pumping Hours per Ha**	**Value of Reduction in Pumping hours per ha (Rs)**
Anantapur	-51.07	-3747.02
Bagepalle	243.33	29166.67
Bhilwara	5308.25	248850.00
Chittoor	1107.50	1587187.50
Pratapgarh	542.92	27145.83
Udaipur	0.00	0.00
Yavatmal	3762.50	385825.00
Grand Total	10913.43	2274427.98

e. Improved Biomass Production

The efforts to restore and govern 6844 hectares of common lands, the communities effected an incremental increase in biomass to the tune of 7870 tons. In monetary terms, this is estimated to be worth INR 39.35 million. This is significant, for improved biomass translates into better fodder availability, which in turn is able to support livestock keeping in villages. As the mind map indicates, this is likely to translate into improved household income, owing to production of milk and meat.

Location	Total increased biomass in 1 year (Ton/ha)	Total Area under Pasture Development (Ha.)	Total increase in Biomass (Ton)	Value per ton of biomass @ Rs.5 per kg	Total Value of Biomass Created
Bhilwara	1.9	1474	2800.60	5000	140,03,000.00
Pratapgarh	1.3	384	499.20	5000	24,96,000.00
Udaipur	0.57	876	496.40	5000	24,82,000.00
Mandla	1.035	329.32	340.85	5000	17,04,231.00
Bagepalle	1.87	600	1120.50	5000	56,02,500.00
Anantapur	0.9	2180.75	1962.68	5000	98,13,375.00
Chittoor	0.65	1000	650.00	5000	32,50,000.00
Total		**6844.07**	**7870.22**	5000	**393,51,106.00**

f. Improved NREGA Functioning

There is increased participation of communities in MGNREGA planning and demand for works on common land and water resources. Almost all habitations have been involved in planning for the MGNREGA activities for 2015-16 and getting them approved by the Panchayats and Panchayat Samiti. In each project locations, plans have been made varying from one year to three years. Plans for more than 50 crores have been made under MGNREGA both as a Project Implementation Agency and Project facilitating agency (PFA). About 3000 TCM water potential has been created (from Apr 2012 till date) from these interventions.

The total leverage from NREGA, across all the locations stands at INR 65.1 million;

and additional wages generated through interventions like capacity building of NREGA mates, improved monitoring and measurements and so on stand at INR 4.5 million in the year 2014-15. A total of 524,277 man days have been generated in this year. The location-wise figures in this regard are given below:

NREGA Leverage and Aggregate Excess Wage Income Generated (Rs)				
Location	**Sum of Man days generated (nos)**	**Labor Amount Leveraged by FES (Rs)**	**Sum of Total Labor Cost as per government wage rate (Rs)**	**Excess Income Generated due to FES Interventions**
Anantapur	59,109.00	75,72,886.00	75,57,085.65	15,800.35
Bagepalle	52,665.05	88,63,059.60	98,10,972.77	-9,47,913.17
Bhilwara	1,36,858.00	164,21,353.00	127,75,694.30	36,45,658.70
Chittoor	25,953.00	35,20,054.33	31,13,840.94	4,06,213.39
Mandla	38,593.98	41,43,267.00	51,64,645.87	-10,21,378.87
Pratapgarh	1,08,284.50	106,14,642.00	108,69,598.11	-2,54,956.11
Udaipur	76,323.00	31,61,273.40	76,13,982.48	-44,52,709.08
Yavatmal	4,602.12	52,15,188.00	7,78,771.33	44,36,416.67
Grand Total	**5,02,388.65**	**595,11,723.33**	**576,84,591.45**	**18,27,131.88**

The figures mentioned above represent an increase from the corresponding figures in the previous year; the number of man-days went up by about 136% the amount leveraged increased by about 147%.

g. Trained Rural Cadre

Over 50,000 participants have been trained by the Prakriti Karyashala (Rural Colleges) on claiming common land and water resources, skills related to planning and implementing MGNREGA and in strengthening institutions. The capacity building programs organized by Prakriti Karyashala led to 250 Panchayats in Ajmer to pass resolutions for 170 works on common land and water resources worth Rs.240 crores through MGNREGA. Similarly in Andhra Pradesh, 150 villages have passed resolutions for plans on restoration of common land and water resources of around Rs.100 crores under the CPR-NREGA-IWMP program.

h. Institutions

The immediate outcomes of the interventions include the formation of habitation/village level institutions that are based on principles of universal membership, formulation of rules and regulations for the governance of water resources, improved conflict resolution mechanisms and greater unity within communities. As of now, 690 village/ habitation level institutions have been organized that are helping in better governance of around 16,682 hectares of common lands, including the area under tanks. In addition, the revival of tanks is helping revive or strengthen age-old tank management systems like the Neerugattudaarudu system (this is a person controlling the sluice gates that allow water to the lands in the command area). Local, resource-level management systems are not just social necessities but also economic propositions; for it is decidedly cheaper to manage a resource with people and resources that are available locally than to rely upon an apparatus that is far removed from the resource system. This not only makes management of the resource more economical but also ensures a management that is well-informed about

local realities; it also shortens the time needed to resolve conflicts. Important processes like the signing of terms of reference with the village community, the evolution of byelaws on water governance, baseline survey and the development of perspective plans have been completed in most of the habitations/villages. Anecdotal information from the field suggests that such processes are playing a critical role in improving community participation in the governance of water resources; there is also some anecdotal evidence to suggest that communities are striving to play a greater role in the overall functioning of NREGA in order to achieve desirable water natural resource governance outcomes.

Experimental Games for Better Water Governance

Experimental games were played in two mandals of Anantapur district in order to assess it as a tool to trigger collective action around groundwater. The exercise was also undertaken in order to understand the prevailing mental models of the rural communities in Anantapur. The second round of experimental games in Anantapur encompassed a total of 28 habitations across three mandals, viz NP Kunta, Gandlapenta and Tanakallu. The habitations were the same as those covered during the first round of the games. The reason for this was to assess if there had been any change in the mental models of the people vis-à-vis groundwater resources since the last time. It also gave us an opportunity to test the hypothesis that experimental games could be used as a tool to trigger collective action around groundwater. Given below are factors that make experimental games a significant tool:

Games are a Powerful Tool: Experimental games are a powerful tool to understand the mental models of rural communities vis-à-vis natural resources and to engage with rural communities on the issue of groundwater

Surfacing Commons Dilemmas: The communities noticed that those who earned well, were also those who consumed more groundwater. There were also a number of instances where people would not stick to the cropping decisions that were collectively made. In many cases, these people ended up making more money than the others. The absence of any form of sanctions meant that such actions went unchecked; and this was recognized by the community.

Gives Valuable Insights: the games helped us understand the factors that farmers took into consideration, in making decisions regarding groundwater.

Rural Communities Articulate their Dilemmas and Anxieties: The predicament that farmers face in their attempts to choose crops that can be financially rewarding while at the same time being economical, both in terms of and in terms of water, found voice during the games.

Creative Way of Interacting with Communities: Games are a creative way of communicating with the rural communities, as opposed to the traditional ways of engaging with communities that entail just giving or eliciting information

Helps in Challenging Community Narratives: Games are a brilliant tool to challenge dominant narratives within communities. A case in point is the classic understanding that groundwater levels are only dependent on rainfall, and that with rainfall, the groundwater situation would suddenly and dramatically change.

PERCEPTION INDEX

This section presents community's perceptions on the influence that FES has been able to have on Social and Economic aspects, particularly the implementation of MGNREGA. The level of involvement varies significantly from habitation to habitation. The average perception of the impact that FES has had on the quality of implementation is relatively high, although this varies across region, similarly the perception level of the impact of activities to increase awareness about provisions regarding the provisions under MGNREGA is relatively higher. While the perception of the impact on wage rate is quite moderate, however there is relatively high variation in the levels of perception across villages. Communities are also relatively highly aware of the importance of village institutions for the management protection of common pool resources and also other roles of the institutions in fostering. However some work requires to be done to ensure that.

The following table captures community perceptions regarding the impacts or the likely impacts of the various interventions undertaken as part of WATER COMMONS PROJECT.

	Rating Scale (1-5)	Perception Index (Average)
	Environmental Restoration	
1	Perception regarding impact of present interventions on reducing water run-off	2.92
2	Perception regarding impact of present interventions on reducing soil erosion	2.72
3	Perception regarding impact of present interventions on improving soil and moisture regime	2.68
4	Perception regarding impact of present interventions on increase in water column in wells	2.13
5	Perception regarding impact of present interventions on improvement in availability of surface water	2.45
	Total	
	Livelihood Enhancement	
1	Perception regarding impact of present interventions on availability of fodder	3.22
2	Perception regarding impact of present interventions on availability of fuelwood	2.52
3	Perception regarding impact of present interventions on availability of water for livestock and domestic purposes	3.14
4	Perception regarding impact of present interventions on availability of water for agriculture	2.50
5	Perception regarding impact of present interventions on yield rates from agriculture	2.89
6	Perceptions regarding impact of present interventions on increase in cropping area	1.96
7	Perceptions regarding impact of present interventions on capacity to cope with threats such as drought, increasing variabilities in rainfall etc.	2.15
8	Perceptions regarding impact of present interventions on household income	2.91
9	Perception regarding impact of present interventions on reduction in migration	2.56
10	Perception regarding impact of present interventions on reduction in work load of women	2.15
11	Perception regarding impact of present interventions on household's social status	2.43
12	Perception regarding impact of present interventions on better future for children	2.71
13	Perception regarding relevance of training	2.70
	Better Functioning of NREGA	
1	Perception on changes in wage rate under NREGA owing to interventions by FES	3.16
2	Perception of changes in quality of work under NREGA owing to interventions by FES	3.36
3	Perception of changes in quality of supervision under NREGA owing to interventions by FES	3.44
4	Perception of changes in other working conditions under NREGA owing to interventions by FES	2.52
5	Perception of changes in responsiveness of local officials	3.08

6	Perception of extent of change in people's participation in planning under NREGA	3.36
7	Perception of extent of change in people's participation in work execution	3.44
8	Perception of extent of change in people's participation in monitoring and supervision of NREGA	3.24
9	Perception of extent of change in access to information about NREGA	3.24
10	Perception on role of FES in bringing change in wage rate under NREGA	2.92
11	Perception on role of FES in bringing changes in quality of work under NREGA	3.40
12	Perception on role of FES in bringing changes in quality of supervision under NREGA	3.52
13	Perception on role of FES in bringing changes in other working conditions under NREGA	2.60
14	Perception on role of FES in bringing changes in responsiveness of local officials	3.16
15	Perception on role of FES in bringing changes in people's participation in planning under NREGA	3.40
16	Perception on role of FES in bringing changes in people's participation in work execution	3.32
17	Perception on role of FES in bringing changes in people's participation in monitoring and supervision of NREGA	3.28
18	Perception on role of FES in bringing changes in access to information about NREGA	3.32
	Governance of Land and Water Resources	
1	Perception of role of VI in planning for work to be undertaken under NREGA	2.89
2	Perception of role of VI in implementation of work under NREGA	2.86
3	Perception of role of VI in supervision of works under NREGA	2.82
4	Perception of role of VI in efforts for sustaining works undertaken on land and water restoration	3.32
5	Perception of role of VI in formulation and enforcement of rules and byelaws for governance of land and water	2.68
6	Perception of role of VI in conflict resolution	2.21
7	Perception of role of VI in improving access of poor and marginalized to benefits from land and water resources	2.36
8	Perception of role of VI in engaging with other actors for development of village	1.61

Understandably the perceptions regarding the impact of the interventions on livelihoods is limited; this is explained by the acute that has been prevailing in both AP and Karnataka, owing to which the interventions could not fructify to the extent expected. However, with improved water storage capacity and the possibility of a decent rainy season in the offing, these perceptions are likely to change.

MONETIZATION: SROI ESTIMATION

The total monetized value of the benefits accrued under WATER COMMONS PROJECT stands at INR 163.01 million;

S.No.	Change/Impact Indicators	0
1	Total MGNREGA Wage Rates Generated in Anantapur	7557085.65
2	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Anantapur	15,800.35
3	Total MGNREGA Wage Rates Generated in Bagepalle	98,10,972.77
4	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Bagepalle	-5,88,013.17
5	Total MGNREGA Wage Rates Generated in Bhilwara	127,75,694.30
6	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Bhilwara	36,45,658.70
7	Total MGNREGA Wage Rates Generated in Chittoor	31,13,840.94
8	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Chittoor	4,06,213.39
9	Total MGNREGA Wage Rates Generated in Mandla	51,64,645.87
10	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Mandla	-10,21,891.87
11	Total MGNREGA Wage Rates Generated in Pratapgarh	108,69,598.11
12	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Pratapgarh	-2,54,956.11
13	Total MGNREGA Wage Rates Generated in Udaipur	76,13,982.48
14	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Udaipur	8,37,229.92
15	Total MGNREGA Wage Rates Generated in Yavatmal	7,78,771.33
16	Additional income earned due to better wages under MGNREGA in supported interventions (E5-H5) in Yavatmal	44,36,416.67
17	Increased agricultural income due to kitchen garden / horticulture / vegetable cultivation	16,000.00
18	Increased agricultural production due to improved agricultural practices, including SRI, seed treatment, varietal selection, line sowing and so on	103,08,600.00
19	Potential savings in diesel motor / electricity costs due to irrigation scheduling/seed varietal replacement	70,53,434.38
20	Potential Savings in Water due to improved agricultural practices	9,19,090.00
21	Additional biomass produced due to work on common and agricultural lands	393,51,100.00
22	Additional agricultural production achieved by bringing additional area under cultivation; either bringing fallows under single crop or single crop under double crop.	44,39,900.00
23	Water storage potential created through area treatment, including tank deepening, dug out ponds, drainage line treatment and so on	40,10,000.00
24	Water conserved due to various area treatment activities	45,22,380.00
25	Cost of management of tanks saved due to strengthened institutions	20,44,000.00
26	Cost of management of forests saved due to the strengthening of village level institutions	251,85,000.00
	Total Benefits Monetized for sample 5 UGs/CIGs/VWCs/Panchayats	1630,10,553.71

Based on this, the current SROI stands at Rs.1.18 for every Rupee that is invested under WATER COMMONS PROJECT. The table for the same is given below:

SROI Estimation	
SROI =	Net Social Value / Investment
Net Social Value =	[Total Benefits Monetized – (Deadweight + Drop off + Displacement)]
Net Social Value =	163010554
Total Investment for ATP i.e. 1st year =	137629149
SROI (ATP i.e. 1st year) =	**1.18**

LIMITATIONS

The provisional report points to the trends seen in the implementation; however we will be in a position to furnish more details including case studies, anecdotes and community perceptions after have analyzed the data that we have collected from the field. Some of the limitations of the study are:

- In the time given we have not been able to analyze all the data that has been collected from the field, and to analyze the data from the MIS more fully.
- The relationship between institutions and water distribution and changes in the relationships between people and water resources owing to the presence of the institutions need to be understood better.
- Some of the intangible benefits such as conflicts being resolved by the village institution, members of the village institution voicing their concerns at the block/district level accruing to the increasing collective action in the project villages, are difficult to quantify and monetize .
- While an attempt has been made to value the improved fodder availability by monitoring the biomass in some of the pasture lands in the project villages, a more appropriate valuation of the biomass being created due to better governance of these lands can be done by comparing it with a pasture land without any such management.

We have not been able to valuate the increase in fuel wood availability that can be accrued to better governance of common lands.

Notes

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FES

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