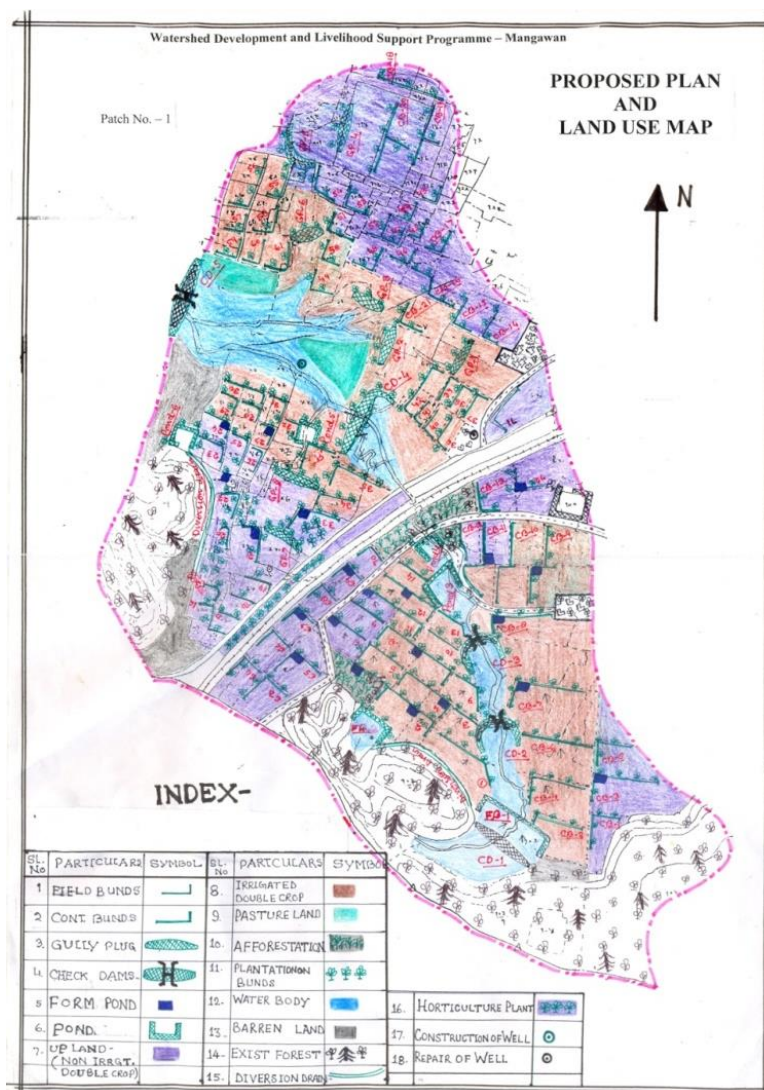


Integrated Watershed Development: A Success Story from Bundelkhand

Supported by
Sir Dorabji Tata Trust (SDTT) & Allied Trust



Implemented by

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ABSSS-SDTT &AT: Integrated Watershed Development: A Success Story from Bundelkhand



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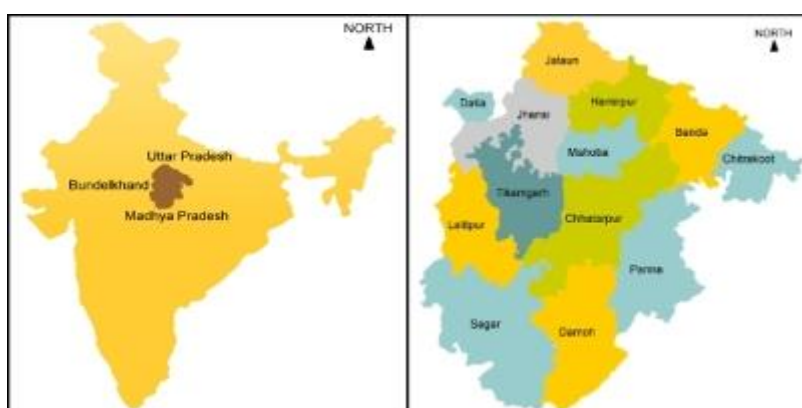
Regards
Ishita Sharma
Jayant Kejriwal
Kaushik Suresh
Tata Administrative Service (TAS)

Introduction:

Bundelkhand is a cultural and agro-ecological region which includes several districts of southern Uttar Pradesh and northern Madhya Pradesh. The name is derived from the Bundela Kings who reigned here and the region has a rich historical legacy. The Hindu God Rama is said to have spent a part of his exile here. Medieval rulers built world-renowned monuments like the temples in Khajuraho which attract millions of tourists every year. The legendary freedom fighter Rani Laxmibai also hailed from this area.

Today this largely agrarian region is facing enormous problems of crushing poverty and lawlessness. According to the Sarma Committee (Sarma, 1997), all districts of Bundelkhand except Jhansi rank among the 100 most backward districts of India. The falling quantity and increasingly erratic nature of rainfall over the past decade has exacerbated these problems. Driven by issues of marginal landholdings and falling productivity, 50-70% of households in these districts have at least 1 member migrating to towns annually or permanently (ABSSS, 2002). Other sociological and developmental issues include a feudal overhang, high illiteracy, low status of women, etc.

Fig 1: *Location of Bundelkhand and the districts*



The Akhil Bharatiya Samaj Seva Sansthan has been active in the region since its inception in 1978 (ABSSS). A 2 pronged approach incorporating non-violent struggle and livelihood development has been followed to bring about the uplift of the poorest of the poor. ABSSS has worked to free bonded labourers, ensure redistribution of land, educate the tribals and other backward sections, enhance incomes, etc. In association with Sir Dorabji Tata Trust (SDTT) and PRADAN, the NGO embarked on 2 watershed development projects in Chitrakoot and Banda districts in 2007 with an emphasis on aiding small and marginal farmers.

The rest of this document is organized as follows: We have provided a brief macroeconomic and sociological overview, described the context and location of the projects, detailed the planning and activities and analysed the results and benefits. Finally we have distilled learnings for application in future projects.

Economic and sociological overview

Macroscope – Agriculture in India

The agriculture sector accounts for ~17% of India's GDP and employs around half the population (CIA World Factbook, 2011). The green revolution in the 1960s and 70s helped India move away from a "ship to mouth existence". India is among the world's leading producers of rice, wheat, cotton, sugar, etc. However, per capita availability of foodgrains and pulses has declined over the past 2 decades. While population growth has slowed in this period, food production has slowed even more sharply. An area of major concern is that per hectare productivity lags global standards (FAO, 2010). For example, the average rice yield in India is 2.3 tons/hectare which is far lower than the world average (4.4), China (6.5) and Australia (10.1). In wheat too, India (2.9 tons/hectare) lags USA (3.1), China (4.8) and France (7). In the Global Hunger Index, India ranks 67 among 81 countries and has the largest number of malnourished children under the age of 5 in the world. All of these point to the need for urgent, major interventions in agriculture – both in production and supply chains (to reduce rampant wastage).

Another major issue is the falling availability of water. Currently, the total utilizable water in India is 1,122 bcm annually which is just enough to meet our current needs. According to estimates by the Water Resources Group (WRG, 2009), half our water demand would be unmet by 2030 if present trends continue. In terms of usage, agriculture accounts for 85% of the consumption and is a highly inefficient user (IIR, 2011). Agriculture is also a highly inefficient user. For example, water productivity of rice in India is 0.2-0.26 per cubic metre which is half of China's. In case of wheat, it is 0.32-0.42 per cubic metre which is one-third of China (Cai, 2003). A great deal of government focus has been on expanding irrigation by large canal projects which are capital intensive and inefficient (Shah, 2011). Excessive groundwater exploitation (partly fuelled by supportive government policies such as financing and free electricity) has led to a sharp lowering of the water table, increasing salinity and quality problems in many parts of states such as Punjab, Rajasthan, Gujarat, Tamil Nadu and Uttar Pradesh (Gandhi, 2011). The emphasis on groundwater based irrigation has also increased inequity since richer farmers can afford more powerful pumps while the costs (in terms of falling water table and quality) are borne by all.

Hence, we need to increase access to water for agriculture while promoting more efficiency in usage to ensure that both food and water security are taken care of.

Bundelkhand – a profile

Bundelkhand has a population of around 18 mn as per 2011 census which implies a population density of less than one-third of the UP state average. While there is no clear consensus on the extent of poverty, it is generally agreed that over 40% of the population lives below the poverty line and a large fraction are clustered around it. Access to healthcare and sanitation remain areas of concern. In terms of education, the Sarva Shiksha Abhiyan (SSA) has resulted in the opening of schools in most villages and pushed up enrolment. Further progress is expected with the implementation of the RTE (Right to Education).

Economy: Over 80% of the workforce is involved in agriculture. Several households (especially those with low or no landholdings) supplement their incomes by collecting forest produce like mahua flowers, tendu leaves, etc. There are very few large industrial units in the region. The beedi industry and the government are the largest non-agricultural employment providers (ABSSS, 2009). Gradual reduction of the forest cover and policies such as the Reserve Forests Act have reduced the incomes derived by tribals from forest produce – most of them are now agricultural labourers with marginal holdings.

Climate: The region is subject to extremes of climate with temperatures exceeding 50 degrees at times during summer and falling close to freezing point during winters. Rainfall is moderate and ranges from and averages around 1000 mm – most of it between June and August. However, rainfall is highly erratic leading to droughts or floods at times. 4 districts have been classified as drought prone and the region suffered from a shortage of water as recently as last year and twice in the last decade.

Demographics: The region is overwhelmingly Hindu and highly stratified along caste lines. Violence against women is commonplace and largely uncontested. Landholdings are concentrated among the upper castes.

Fig 2: *Mining activities (especially stone) has denuded soil and damaged agricultural land*



Description of watershed sites

Location

The Mangawan site on Patha plateau is located in Manikpur block of Chitrakoot district and falls in the agro ecological zone (AEZ) 11 of India. The Baraichha site located in Banda district is an undulating alluvial tract typical of the Bundelkhand part of AEZ 4.

Demographics

The Mangawan site comprised 8 hamlets of 4 Gram Panchayats (GPs). Four hamlets, viz. Mangawan, Chhiwlaha Motwan and Gursarai, fall under Mangawan gram panchayat. Two hamlets—Masnaha and Tikariya—are in Tikariya panchayat and one hamlet each viz., Doda and Bambiha, are from Doda and Bambiha panchayats respectively.

Mangawan is the largest of the 4 GPs and a total of 330 households live in its 4 above-mentioned hamlets. Additionally, the project covered around 270 households living in the 4 hamlets of Tikariya, Doda and Bambiha panchayats.

Mangawan and Tikariya are the largest hamlets and the only ones in project site to be connected by tar road. While Motwan and Chhiwlaha hamlets are adjacent to Mangawan hamlet, Gursarai hamlet is at a considerable distance, in a remote jungle area that was frequently attacked by dacoits in the past and was hence abandoned by households. Tikariya and Masnaha hamlets are adjacent to each other. Doda is a very small Kol hamlet, with less than 20 households.

Around 66% of the households (HHs) covered by the project at Mangawan site are of Kol tribals, classified as SC in Uttar Pradesh (Kols are ST in MP), who are target group of the project. They constitute 90% of the HHs in the 4 hamlets of Mangawan panchayat but in other hamlets, other than Doda, they are in a minority. Of the total HHs covered, 25% belong to General category castes, 6% to OBCs and 3% are Muslims. The breakup of social background of HHs is given in Table 3.

Table 1: *Social structure in Mangawan*

| Village | Households (HHs) by social category | | | | Total HHs |
|-----------------------|-------------------------------------|-----------|------------|-----------|------------|
| | SC | OBC | Gen | Muslim | |
| Mangawan (+3 hamlets) | 294 | 6 | 14 | 16 | 330 |
| Bambiha | 50 | 28 | 82 | 0 | 160 |
| Tikariya (+1 hamlet) | 37 | 3 | 54 | 0 | 94 |
| Doda | 18 | 0 | 0 | 0 | 18 |
| <i>Total</i> | <i>399</i> | <i>37</i> | <i>150</i> | <i>16</i> | <i>602</i> |

The Baraichha site comprised three villages—Baraichha, Neduha and Chandpura (also known as Chandrapura)—of which one, Baraichha has two hamlets: Chunwapura and Salmatpur. SC households comprise nearly 30% of the total population and OBCs form 50%

(Table 4). Muslims constitute 8% of the population. Salmatpur hamlet is entirely inhabited by Muslim HHs.

Table 2: *Social structure in Baraichha*

| Village | Households (HHs) by social category | | | | Total HHs |
|-------------------------|-------------------------------------|------------|-----------|-----------|------------|
| | SC | OBC | Gen | Muslim | |
| Baraichha (+ 2 hamlets) | 32 | 106 | 8 | 21 | 167 |
| Neduha | 70 | 121 | 23 | - | 214 |
| Chandpura | 59 | 42 | 40 | 22 | 163 |
| <i>Total</i> | <i>161</i> | <i>269</i> | <i>71</i> | <i>43</i> | <i>544</i> |

Topography and drainage

The Mangawan watershed is surrounding by hillocks in southern part. Falling within the catchment area of Paisuni River in western side, it consists of irregular uplands with outcrops of rock intermingling with lowlands. The average level difference between the ridges and valleys found in the area is 10 m. The general slope is from south to north and varies from 1.0 to 2.5%. The soil is entirely disintegrated sandstone overlying a substratum of rock and is never very deep. This tract was largely under forests, which now stand almost denuded. One river, Kali Barah, passes through the watershed from south to north, and falls into Paisuni River. Another nala named Sarbhanga passes along the boundary of watershed in southern side.

The Baraichha watershed area falls within the catchment area of Ranj River, a tributary of Baghain River which finally joins the Yamuna. The level difference between the ridges and valleys here is 5 m. The general slope of the area is from south to north, varying from 1.0 to 2.0%. The watershed area largely consists of irregular uplands with outcrops of rocks intermingling with mostly lowlands, frequently under water during rainy season. The soil is mostly Mar and Kabar, eroded and converted into ravines. One rivulet (nala) named Gharar passes along boundary of watershed from western- northern side and falls in Ranj River. Another nala named Patihar passes through watershed from southern- northern side and falls in Rang River. Two hamlets, Baraichha and Nedhuwa, are on the bank of Rang River in west side and Baraichha is on the east side bank. The Gharar Nala and Rang River have perennial flow from south to north.

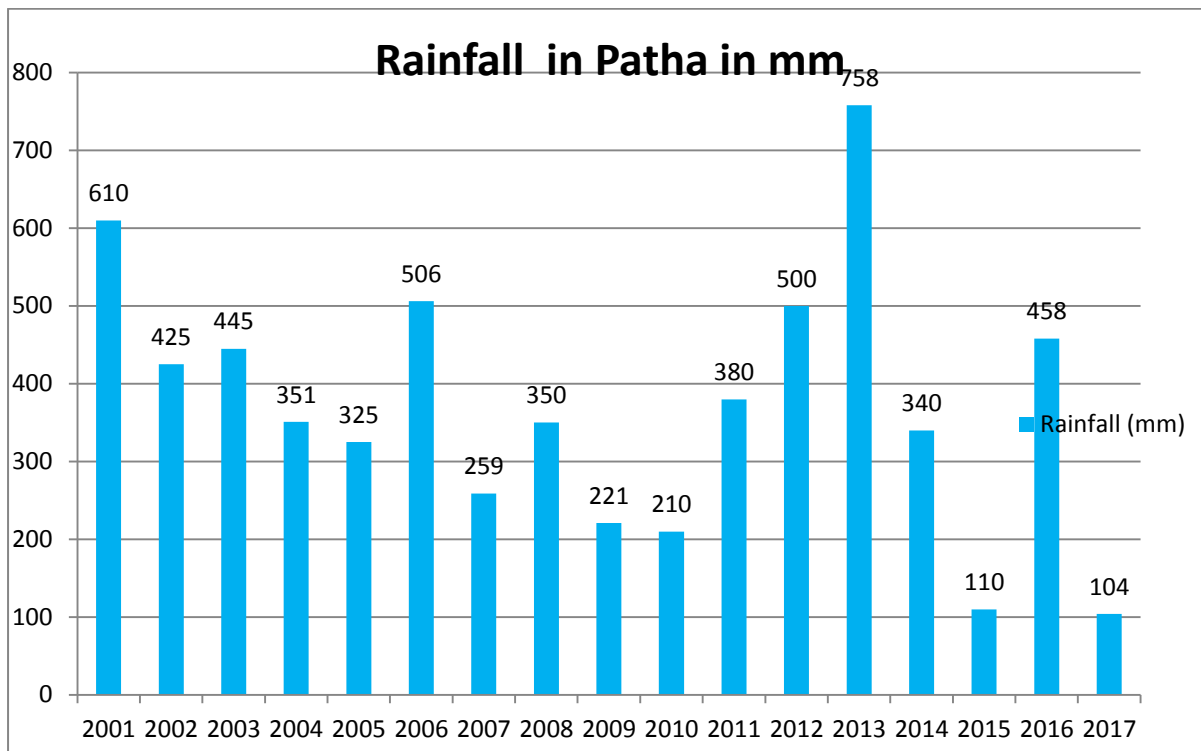
Agro climatic conditions

The Mangawan (Patha) site experiences extremes of climate with temperatures exceeding 45 degrees during summer and falling close to freezing point during January which is the coldest month. The Patha region receives extremely poor rainfall. The pattern is becoming increasingly erratic and 7 of the last 11 years saw rainfall falling below 400 mm which is the cutoff used to declare an area drought prone.

The graph below shows the rainfall recorded during 2001-11, at a rain gauge maintained by the State Irrigation Department, at a dam site in Patha close to Mangawan. Very significant is

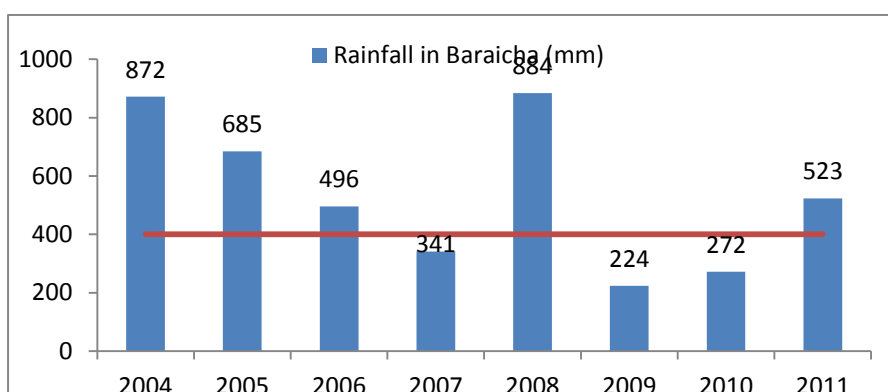
that fact in 7 of the 11 years, rainfall was below the 400 mm mark, which is generally used to declare an area as drought-prone. It must be noted that low rainfall was experienced for 5 years since 2007 – the period over which the watershed program was carried out.

Fig 3: Rainfall in Patha (Mangawan)



In the Baraichha site, the normal rainfall is much higher as shown in the graph below, which shows data available for 2004-11 from a rain gauge near the site. However this site too experienced low rainfall in 2009 and 2010.

Fig 4: Rainfall in Baraichha



At both sites the onset and withdrawal of monsoons is highly uncertain. Long intermittent dry periods are common as also brief and strong spells of rain. As such both sites prone to drought as well as flooding especially down barren slopes where there is a quick run off.

Land use

As shown below, the area of watershed demarcated in Mangawan is 1219.15 hectares (ha). A total of 145 ha fall under reserved forest and NGOs are not permitted to carry out any treatment work there. Privately owned lands available for treatment amount to 1009.75 ha. The Baraichha watershed is slightly smaller but has virtually no reserved forest. Hence the privately owned land available is almost the same as in the Mangawan site. Over three-fourths of the watershed areas were targeted for treatment under the project. At each site 500 ha was targeted for intensive in situ treatment.

Table 3: Land use in Mangawan & Baraichha watershed in ha

| Use | Mangawan | Baraichha | Total |
|------------------------------|----------------|----------------|---------------|
| Privately owned agri land | 1009.75 | 995.16 | 2004.9 |
| Reserved forest | 145 | 0.06 | 145 |
| Land used for other purposes | 49.5 | 58.5 | 108 |
| Uncultivable wasteland | 14.9 | 22 | 36.4 |
| Total | 1219.15 | 1075.72 | 2294.3 |
| Watershed treatment area | 813 | 946.6 | 1759.6 |
| Area under in situ treatment | 500 | 500 | 1000 |

Ownership

In both sites almost all HHs own land. However, in Mangawan we found that around a fifth of the Kol households had pattas allotted by government, but no demarcation had been done. Through the project's efforts, these households could gain possession of land during 2009-2010. Hence, as per last information, in the Mangawan site, there were only 24 HHs with no agricultural land at all—16 of them are Kols. However, the conventional understanding of landlessness is not applicable in the Mangawan site as before the project, a large number of Kol households with land had not cultivated their lands for years. In effect, they too had been landless.

Most land owners have only marginal or small holdings, as evident from the table below. Many of the holdings are in scattered plots of 0.07 to 0.5 ha each. Land ownership is skewed in favour of upper castes: while Kols constitute 66% of households in the Mangawan site, they own only 43% of the total privately owned land.

Table 4: Distribution of holdings in Mangawan (598 holdings) and Baraichha (525)

| Size of holding | Holdings (%) in Mangawan | Holdings (%) in Baraichha |
|----------------------|--------------------------|---------------------------|
| < 1 ha (marginal) | 50 | 48 |
| 1-2 ha (small) | 37 | 34.1 |
| 2-5 ha (semi medium) | 10 | 13.8 |
| 5 - 10 ha (medium) | 2 | 4 |
| > 10 ha (large) | 1 | 0.1 |

Soil properties and cropping patterns

Other than the land owned by upper caste landlords, most of the farmland in Mangawan has poor quality soil. As per soil testing done under the project, the soil has low organic content, low zinc and sulphur, average nitrogen and medium to high potash. In Baraichha the land is relatively more fertile. However, productivity was hampered by undulating terrain. While wheat, mustard and gram were the main rabi crops in both sites before the project, there was considerable crop diversity in kharif in the Baraichha site. In Mangawan, there was virtually no kharif cultivation; a small amount of paddy was grown depending on rainfall.

Table 5: Main pre-project crops in project sites

| Season | Mangawan | Baraichha |
|--------|----------------------|-------------------------|
| Kharif | Paddy | Jowar, arhar, groundnut |
| Rabi | Wheat, mustard, gram | Wheat, mustard, gram |

Though most families owned agriculture land and did cultivate it in years of average to good rainfall, the Kols in the Mangawan site were not truly 'farmers'. Brought to the Patha several generations ago for cutting forest wood, their involvement with agriculture was limited to cultivation of coarse cereals in clearings. Over the past two generations, there was a clear shift towards growing wheat, and coarse cereals have (unfortunately) gone out of the diet of most Kols. Even so, knowledge about good agriculture practices remained average to poor. In the entire watershed area, there were less than half a dozen Kol families who could have been considered 'good farmers'. Given the soil and water conditions in the area, there was little incentive to focus on agriculture. As observed by us, cultivation and production of crops by households was marginal in years of poor rainfall. In 2007-08, less than 5% of land owned by Kols was cultivated in kharif and in rabi only around 20% was cultivated. Big landlords of upper castes having considerable holdings and resources did of course cultivate a higher proportion of their lands. There was negligible vegetable production in monsoon. In Baraichha there was some vegetable cultivation along banks of streams.

Biomass

Pre-project biomass in Mangawan site was restricted to around 800 mature trees on private lands, or less than 1 tree per ha. For meeting fuel wood requirements, poor households exploited denuded jungles, at a distance of 5-10 km from the hamlets. Fodder was scarce and no fodder crop was grown. In Baraichha, the tree population was somewhat higher and many livestock owners were meeting fodder needs through jowar and wheat crop residues.

Livestock

As per a baseline survey of Mangawan gram panchayat, total livestock owned by 330 households was 1104 animals, the majority of which were cows (435) and goats (269). Most animals were of poor quality. Average production of milch animals was 2 litres/day. Nearly a third of households owned no livestock.

Income

An intensive survey conducted under the project at the Mangawan site in May-June 2008 on a sample of 77 households (around 10% of total households) showed that, even in the best of years, agriculture constituted only around a sixth of total income. The main source of income was wage labour (45% of total income) followed by sale of fuel wood (27%) procured from jungles. The average annual net income of 60% of surveyed households was less than Rs 36,000 and only 9% had income above Rs 60,000 - none of these were Kol households. Food accounted for 38%-83% of total expenses of households, with the proportion of expense rising inversely with the total income.

Fig 5: Baseline planning and interviews with villagers:



Project strategy:

According to the Parthasarathy Committee report (Ministry of Rural Development, 2006), existing watershed programs suffer from a major weakness – that time is not allocated setting up durable, village level institutions and participatory processes are not put in place. Hence, the report advocated an 8 year program divided into 3 phases – a 2 year preparatory phase (involving baseline surveys, planning, impact assessment, etc), a 4 year implementation phase with yearly reviews and finally a 2 year “sustainable livelihood and productivity enhancement phase”.

Having a similar approach in mind, we divided our project into 3 parts. The first 6 months were devoted to planning, surveys regarding incomes, demographics, employment, etc. The technical staff also carried out surveys of the land and made baseline plans. The 2nd stage involved construction of the planned structures. A part of this has also been dedicated to building agricultural knowledge. There is some overlap with the last phase since livelihood based initiatives such as SRI (System of Rice Intensification) were also carried out during this 4 year period.

The project design followed 2 broad strategic strands. The first strand was that the entire Bundelkhand region calls for integrated development of land and water resources with attendant farming systems. In other words, the land and farming systems must be so developed/ managed such that rainwater is used to the maximum extent possible where it falls in the farmers' fields instead of being allowed to escape as runoff. The bulk of monsoon rains fall in short and intense spells, often separated by several days or weeks, allowing little time for the rainwater to penetrate the soil. Therefore, much of the rainwater runs away and only a fraction is available locally. The approach used in this project was to arrest the rainwater close to the plants that needed it as far as possible while following a watershed plan. Leveling lands, making field bunds and impounding rainwater in each field were the main techniques used.

Bunding, leveling and terracing are widespread practices in rain-fed regions all over the country – indeed, all over the world. Unfortunately, farmers in rain-fed regions tend to be poor and do not have the capital to undertake these practices themselves on a large scale. This disability has become more acute over time as land availability per capita has declined, further reducing the ability to accumulate capital. Hence there is need for external funding.

Complementing the *in situ* approach outlined, some larger water impounding structures were planned in the lower reaches, to help capture water seeping through the ground.

The second strand of the strategy was to harness the riverine resources in the region. Little of the available water in the rivers was used before the project. Small lift irrigation schemes with buried PVC pipes to transport river water to farm fields within a distance of 1500 m were chosen as an eminently cost-effective option to utilize river water.

These activities were augmented by livelihood enhancement efforts which will be intensified in the next phase.

ABSSS-SDTT &AT: Integrated Watershed Development: A Success Story from Bundelkhand

The above activities were customized based on the needs and terrains of each of the watershed sites. At the Patha site, more intensive land development was carried out, with both in-situ or on-farm water harvesting (through PRADAN's 5% farm pond model and bunding) and ex-situ water harvesting (earthen checkdams), besides development of open wells, lift irrigation and tree plantation. In the relatively flat region in Baraichha, the main activities were land development through leveling and bunding, lift irrigation, and tree plantation. At both locations, agriculture development was carried out along with capacity building in specific areas. Women's self-help groups were formed to initiate the practice of household savings, to build capital for emergencies and farm investment. SHG members were also motivated to do vegetable cultivation in small plots near their homes.

A total of 1000 ha was to be covered under land development and in-situ rainwater harvesting and 50 ha was to be covered under land use diversification, including forestation. Importantly, considerable work was to be done through convergence with government agencies and programmes.

Objectives

Under the goal of "Improved food security, sustainability of livelihoods and wellbeing of the poor", the project had the following objectives:

- Develop micro watersheds with people's participation and an emphasis on sustainability
- Prevent soil erosion & increase water availability
- Preserve and regenerate vegetation
- Develop awareness among people to adopt new agricultural practices
- Increase agricultural production and productivity
- Empower women through active participation in decision making process, increase income and access to resources
- Improve socioeconomic conditions food security of the poorest of the poor

Project management team:

The project was implemented by a small team of ABSSS with close consultation and guidance from Pradan, and experts, including members of a specially constituted Project Advisory Committee (PAC).

The project team, apart from part-time director, was as follows (headcount in parentheses):

- Project coordinator (1)
- Engineer (2)
- Agronomist (1)
- Community organiser (4, including one woman)
- Accountant-cashier (2)
- Documentation (1)

Works were executed with locally hired labour according to a quarterly and monthly schedule. Progress and quality of work were supervised on a continuous basis and progress reports were filed weekly. Weekly staff meetings were held to discuss issues of concern. Documentation of number of cultivating households, cultivated area, etc was done as per cropping season. Apart from production data, data on inputs and production costs were obtained for different crops from samples of farmers at both sites. The woman community organiser was in bi-weekly contact with women in all hamlets covered by the project. Monitoring of water levels in sample wells at both sites was done every month.

For facilitating community-led management of water resources, 5 'sajla samitis' were formed with a total of 51 members. Of whom 15 were women and 33 belonged to SC groups. The sajla samitis met almost every week. Apart from this, 5 water user associations (WUAs) were formed for lift irrigation schemes in Baraichha. The WUAs have a total of 47 members including 9 women and 19 persons from SC groups. A total of 88 WUA meetings were held till March 31, 2012.

Guidance and inputs were received on various issues as stated below:

- Land development and in situ rainwater harvesting: Dinbandhu Karmarkar (PRADAN)
- Agriculture related issues: Prabhat Pandey (PRADAN), Dinbandhu Karmarkar, Dr Yashwant Singh (PAC member) and local KVK officials
- Technical guidance for lift irrigation: Randeep Sadhu
- Impact measurement: Ashok Gopal
- Feedback and evaluation: Abhay Gandhe and Bhaskar Mittra (SDTT)
- Overall strategic guidance: Vinod Jain (PAC) and Gopalbhai (ABSSS founder)

Project execution

As designed with technical assistance from PRADAN, the main activity of the SDTT-ABSSS project was development of land and in situ rainwater harvesting, with some ex-situ rainwater harvesting. Greater emphasis was on in situ measures, which were allocated ~42% of the total budget. Around ~16% allocation was for ex situ measures. Secondary aspects of design and implementation were water resource development, land use diversification (forestation), and agriculture development.

Vis-à-vis the two project sites, greater emphasis was laid on the Mangawan site and the aim was to develop it as a model for similar efforts in Patha and other remote, chronically poor regions of Bundelkhand with degraded soils. The project effort at Baraichha was treated more like a pilot, for learning and demonstrating cost benefit of developing fertile but undulating ravine land.

Project implementation was done in a phased manner with focus on different sets of activities in each year:

- Year 1: Focus on detailed planning, community mobilisation, site/beneficiary selection for soil conservation and in situ rainwater harvesting
- Year 2: Most of the ex-situ and much of the in-site work was completed
- Year 3: Completing in situ work
- Year 4: Building agricultural knowledge

Construction work carried out

The entire area planned to be covered by water harvesting measures was done as per schedule by March 2012. A 6 month extension was taken after this since surplus funds were available and these were used to support improved practices for the kharif crop.

Work was hampered in 2009-10 at the Baraicha site due to the undulating terrain which made manual levelling very difficult. This was exacerbated by the low availability of manual labour – owing to the nature of the work, people preferred taking up employment under MGNREGA. Hence, ‘Rajasthani tractors’ were used to do levelling. Subsequently, efforts were made to come as close as possible to the target of completing all land development and in situ water harvesting work by the end of March 2011.

Despite poor rainfall during the years of the project’s execution, a great deal of involvement and cooperation was received from the locals. However, there was a setback due to dacoit attacks in Mangawan site in 2010-11, which led to stoppage of work for several weeks. As a result, the target of completing all physical works by end of March 2011 could not be achieved. The setback was made up with vigorous efforts in 2011-12.

Under the head of water resource development, the major achievement was design and execution of lift irrigation schemes in the Baraichha site. Each scheme, constructed at a low cost of Rs around 3.3 lakhs, lifts and transports water for a distance of 500 to 1 km, covering

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approximately 18.50 ha. Water user associations have been formed to manage distribution of water and recover fees to cover pumping and maintenance costs.

A summary of the construction work carried out is given in the tables below and maps are shown in the appendix:

Table 6: Details of in situ measures

| Activity | Mangawan | | | Baraicha | | |
|--------------------|----------|--------------|---------------|----------|--------------|---------------|
| | Number | Area covered | HHs benefited | Number | Area covered | HHs benefited |
| Land bunding | | 392 | 220 | | 370 | 450 |
| Land leveling | | 53 | 91 | | 44 | 62 |
| Earthen gully plug | | 16 | 15 | | | |
| Farm ponds | 32 | 63 | 51 | | | |

**This includes coverage by convergence; area in hectares*

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एवं बड़ैछा

मुख्य क्रियान्वयन एवं सुगमकर्ता संस्था
अखिल भारतीय समाज सेवा संस्थान

सहयोग
सर दोराबजी टाटा ट्रस्ट

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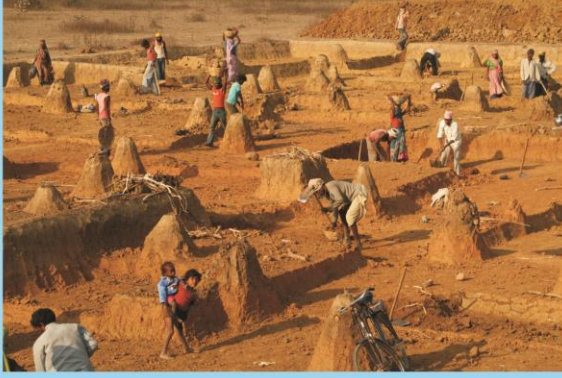
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Table 7: Details of ex situ measures

| | Mangawan | | | Baraicha | | |
|-----------------------------|----------|--------------|---------------|----------|--------------|---------------|
| | No. | Area covered | HHs benefited | No. | Area covered | HHs benefited |
| New check dams | 6 | | 51 | | | |
| Check dam renovation | 1 | | 25 | | | |
| Ponds renovated | 2 | | 8 | | | |
| Renovation of earthen bunds | 1 | | 2 | | | |
| Stone gully plug | 21 | | 5 | 14 | | 14 |
| Nala excavation | | | 9 | | | |
| Diversion drain | | 225 m | | | | |
| Masonry outlet | | | | 3 | | 3 |
| Gabion | 3 | | | | | |

समेकित जलागम विकास एवं आजीविका संवर्द्धन कार्यक्रम



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Table 8: *Details of water resource development measures*

| | Mangawan | | | Baraicha | | |
|-----------------------|----------|--------------|---------------|----------|--------------|---------------|
| | No. | Area covered | HHs benefited | No. | Area covered | HHs benefited |
| New well construction | 4 | | 13 | 1 | | 3 |
| Well renovation | 2 | | 25 | | | |
| Lift irrigation | | | | 5 | 119 | 210 |

The irrigated area went up substantially in both sites as shown below:

Fig 6: *Irrigated area before and after interventions*

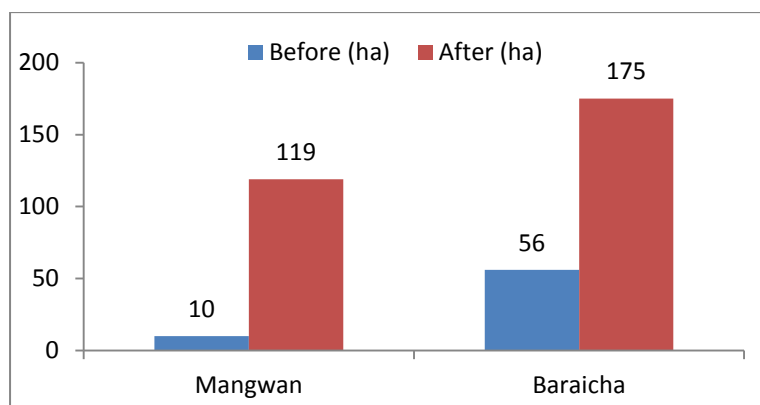


Fig 7: *In-situ measures - farm pond and bunding*



Fig 8: *Ex-situ measures – check dam and gully plug*



Fig 9: *Water resource development - Lift irrigation in Baraicha*



GPS Location of the structures

| S.N. | Name of structure | ELEV | Latitude-N | Longitude -E |
|--|-----------------------------|------|------------|--------------|
| In-Situ Land Conservation & water harvesting: | | | | |
| 1 | Farm Pond-Arjun | 932 | 24,59,530' | 080,51,728' |
| 2 | Farm Pond-Arjun(Bade) | 915 | 24,59,510' | 080,51,731' |
| 3 | Farm Pond-Sukhdeiya | 935 | 24,59,498' | 080,51,711' |
| 4 | Farm Pond-Munnial | 932 | 24,59,503' | 080,51,702' |
| 5 | Farm Pond-Lalawa | 924 | 24,59,558' | 080,51,728' |
| 6 | Farm Pond-Gujratiya | 923 | 24,59,586' | 080,51,793' |
| 7 | Farm Pond-Rajkarayan | 934 | 24,59,517' | 080,51,914' |
| 8 | Farm Pond-Pyarelal | 907 | 24,59,654' | 080,51,935' |
| 9 | Farm Pond-Pappu | 923 | 24,59,495' | 080,52,184' |
| 10 | Farm Pond-Chhoti | 952 | 24,59,531' | 080,52,184' |
| 11 | Farm Pond-Habib | 915 | 24,59,809' | 080,51,822' |
| 12 | Farm Pond-Pale (FP 6) | 905 | 24,59,939' | 080,51,597' |
| 13 | Farm Pond-Tadouki | 969 | 25,01,036' | 080,51,211 |
| 14 | Farm Pond-Jugul | 961 | 25,01,101' | 080,51,182' |
| 15 | Farm Pond-Sitaram | 987 | 25,01,188' | 080,51,055' |
| 16 | Farm Pond-Badri | 980 | 25,01,285' | 080,51,218' |
| 17 | Farm Pond-Munni | 962 | 25,01,137' | 080,51,240' |
| 18 | Farm Pond-Kamata | 926 | 25,00,715' | 080,51,657' |
| 19 | Farm Pond-Shripal | 938 | 25,00,636' | 080,51,738' |
| 20 | Farm Pond-Jaleel | 939 | 25,00,827' | 080,51,572' |
| 21 | Farm Pond-Dude | 924 | 24,59,752' | 080,52,500' |
| 22 | Farm Pond-Dadu | 948 | 24,59,759' | 080,52,376' |
| 23 | Farm Pond-Bhailal | 917 | 24,59,844' | 080,52,402' |
| 24 | Farm Pond-Rajaram | 989 | 24,59,676' | 080,52,349' |
| 25 | Farm Pond-Pappu | 911 | 24,59,402' | 080,52,285, |
| 26 | Farm Pond-Bachhraj | 920 | 24,59,504' | 080,52,605' |
| 27 | Farm Pond-Jagda | 912 | 24,59,810' | 080,52,651' |
| 28 | Farm Pond-Surajbhan | 906 | 24,59,894' | 080,52,475' |
| 29 | Gully Plug & Farm Pond-Kodu | 922 | 24,59,760' | 080,51,722' |
| 30 | Gully Plug-Tadauki | 977 | 25,01,019' | 080,51,205' |
| 31 | Gully Plug-Gopal | 930 | 25,00,577' | 080,51,620' |
| 32 | Bunding-Motwan | 921 | 24,59,519' | 080,52,634' |
| 33 | Bunding -Chhiwlaha | 915 | 24,59,877' | 080,52,588' |
| 34 | Bunding -Chhiwlaha | 952 | 24,59,837' | 080,52,568' |
| 35 | Bunding khadraha | 930 | 25,00,577' | 080,51,620' |
| 36 | Bunding Gursayan | 946 | 25,01,119' | 080,51,174' |

Promoting new agricultural practices and capacity building

As per the project plan, emphasis in the first three years was to be on completing planned treatment works and on improved agriculture in the last part of project period. Nevertheless, considerable efforts were devoted towards promotion of new practices in the earlier years too.

Select farmers were motivated and guided to increase yields, through input support for specific crops and green manuring, as shown in the table above. Additionally, on-field training with input support was provided to motivate 39 farmers to adopt System of Rice Intensification (SRI) and 22 farmers to adopt System of Wheat Intensification (SWI).

Table 9: *Number of farmers given input support (both sites)*

| Activity | Families benefited | |
|----------------------------------|--------------------|----------|
| | Mangawan | Baraicha |
| Paddy, Wheat ,Gram & Mustard PoP | 54 | 57 |
| Green manuring | 19 | 36 |
| Improved variety seeds | 231 | 199 |
| Seed for vegetables | 11 | 43 |
| SRI | 18 | 15 |
| SWI | 9 | 13 |

A major activity conducted in 2010-11 was an intensive awareness campaign on good agriculture practices, conducted at both sites before the rabi season. Over 500 farmers were covered and the overall feedback given was that the effort was “highly useful”.

In 2011-12, the effort to agriculture awareness was stepped up through farmer learner groups, formed with the objectives of:

- Facilitating learning among farmers through discussion, sharing of information, and knowledge inputs
- Encouraging individual and collective reflection on agriculture issues among farmers
- Promoting agriculture planning and problem-solving through community forums

As on March 31, 2012, in Mangawan site, 7 farmer groups were active with around 100 members, of whom 10% were women. In Baraichha site also there were 7 active farmer clubs with around 80 members, of whom 14% are women. In the 11 months from inception of this activity in August 2011, the clubs at both sites had a total of over 200 meetings. Meetings guided by Project staff were used to discuss, and share knowledge on a number of topics like crop planning, seed varieties, use of insecticides, benefit of dhaincha cultivation, etc. Meetings were also used to plan for activities like training programmes, tree plantation and making arrangements for timely irrigation.

Apart from all this, training programs were conducted on specific topics as shown below:

Table 10: *Capacity building programmes conducted till March 31, 2012*

| Topic | Participants |
|--|--------------|
| Orientation to watershed | 35 |
| Organic fertilizers | 30 |
| Nursery development | 6 |
| Improved agriculture | 37 |
| Lift irrigation & social study (2 times) | 32 |
| Household planning | 15 |
| SHG training, APMAS | 42 |
| Rabi crop awareness program | 540 |

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| | |
|--|-----|
| Farmer awareness campaign | 14 |
| Agriculture trend study | 12 |
| Kharif crop orientation & training | 40 |
| Reflection on achievement of SAJALA programme | 142 |
| Farmers learning programme | 34 |
| Meet with experts, NABARD | 79 |
| SHGs strengthening- training, APMAS | 5 |
| Common guidelines for watershed development, SIRD , Lucknow | 2 |
| SHG book-keeping, APMAS | 5 |
| Enabling SHGs to graduate to microenterprises, BIRD, Lucknow | 2 |
| Financing for producers company, BIRD, Lucknow | 2 |

A number of exposure visits were conducted for farmers:

- 29 farmers visited model farms in Sidhpur (Barwara) and lift irrigation project in Sitapur, Chitrakoot district
- 8 farmers visited model farms in Jatara, Tikamgarh district (MP)
- 14 farmers visited model vegetable farms in Naraini, Banda (UP)
- 40 farmers visited Kissan Mahakumbh organised by Agriculture Department, Banda
- SHG exposure visit, APMAS, Hyderabad
- Exposure on watershed & post- watershed approaches at NM Sadguru Water and Development Foundation , Dahod, Gujrat

Preservation and regeneration of green cover

Efforts to increase the vegetation, especially tree cover, were limited by distance of project sites from large nurseries. This greatly increased landed cost of saplings. Hence, saplings were obtained from government agencies, and a small nursery at ABSSS head office. Volumes available from these sources were low. A total of 21,086 trees could be planted in Mangawan site, on structures and lands of 166 farmers. In Baraichha, 19,673 trees were planted on structures and lands of 266 farmers. Appropriate local species like amla, neem, mango, subabul, guava, bel, mahua, beheda and karvanda were planted. The overall survival rate was 62.5%. There is need for intensification of this activity and this would be carried out during the next phase.

Empowerment of women

20 SHGs with a total of 219 members were formed as platforms for women to meet and talk about income generating possibilities and also to accumulate savings that could be used for productive or emergency purposes. By March 31, 2012, 18 SHGs had bank accounts. Total saving in bank accounts as on March 31, 2012 was Rs 2.34 lakhs or around Rs 12,000 per SHG. A total of 106 interloans amounting to Rs 1.26 lakhs were taken by members for purposes such as starting a kirana shop, buying inputs vegetable cultivation and basket-making, and for meeting marriage expenses. The substantial difference between amount loaned and accumulated savings is due to the fact that there are few viable and low-risk business opportunities available at either site. Further, at both sites, the women are more

interested in building a cushion against shocks like major illnesses or drought and also in building savings for major life expenses like marriages of children.

The formation of SHGs has benefited poor families substantially since the loans taken from SHG savings typically carry interest rates of 0.5-1% per month as compared to 5-10% when loans are taken from moneylenders. Most of these women do not have the knowhow or collateral to access bank credit by themselves – even the paperwork for the SHG accounts was carried out by ABSSS workers.

The details of SHG activities are summarized below:

Table 11: *Summary of SHG related activities*

| Detail | Mangawan | Baraicha |
|--------------------------------------|-----------------|-----------------|
| SHGs formed | 7 | 13 |
| Total members | 82 | 137 |
| Bank accounts | 7 | 11 |
| Total meetings | 302 | 287 |
| Total savings till Dec 31, 2011 (Rs) | 95,768 | 85,206 |
| Balance in saving A/c (Rs) | 1,73,068 | 61,470 |
| Interloaning (Rs) | 88,500 | 37,860 |
| Interloans taken (no.) | 67 | 39 |

Convergence with governmental schemes

An important aspect of the project was convergence with government schemes. Around 25% of programme investments were to come from this source. Considerable success was achieved in this respect, especially by leveraging MGNREGA. Sanctions for convergence work amounting to over Rs 1.20 crores were obtained, and till March 31, 2012, Rs 68 lakhs were spent under different activity heads are shown below.

Table 12: *Expenditure through convergence till March 31, 2012*

| Activity | Amount spent (INR) |
|---|---------------------------|
| Land bunding | 10,37,940 |
| Land levelling | 6,15,000 |
| Ex situ rainwater harvesting | 26,82,540 |
| Lift irrigation scheme | 9,15,162 |
| Forestation | 3,91,454 |
| Demonstration of improved agri techniques | 38,960 |
| Purchase of farm machinery for increasing yield | 11,24,600 |
| Total | 68,05,656 |

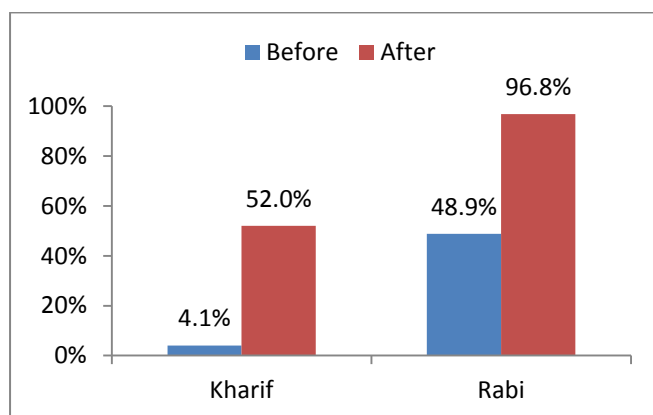
Impact:

Increase in cultivated area

As a direct consequence of the project, the irrigated area in both watershed sites went up manifold. The improved availability of water ensured greater cultivation in the kharif season. Before the interventions, low availability of water had made cultivation uneconomical in the kharif season. This was especially true for small farmers who could not afford powerful pumps to tap groundwater sources. At the Mangawan site, the number of cultivating their

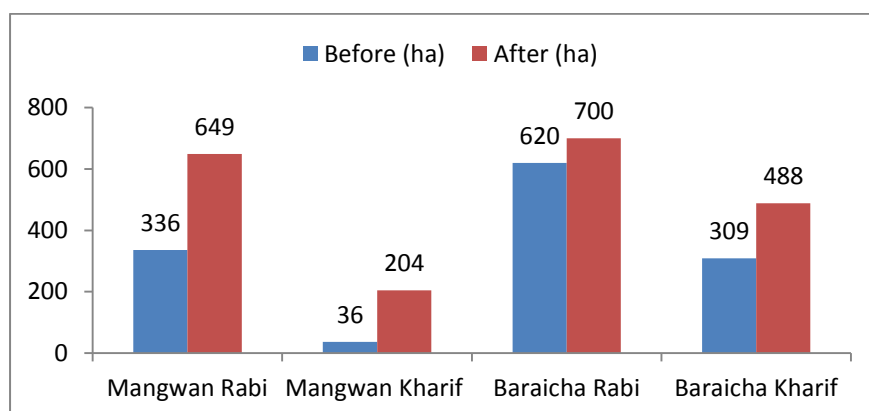
lands went up each year and this reached 95% by the end of the project even though almost all the years witnessed drought-like conditions.

Fig 10: *Percentage of households cultivating their holdings*



The area under cultivation also went up substantially in both sites as shown below.

Fig 11: *Area cultivated – season and watershed-wise*



The impact was more pronounced in the Mangawan site since it was an area with low fertility soils that received a great deal of focus whereas Baraicha had fairly intensive agriculture even before the interventions. However, as seen later, the area under wheat cultivation went up substantially in Baraicha which indicates that farmers were able to increase their returns as the water content in the soil went up.

Higher production and yields

As mentioned earlier, most of the project duration witnessed drought-like conditions in both the watersheds. Despite this, improvement in food security for the poorest families was achieved at the sites – especially in Mangawan which was witness to chronic shortages earlier. Even in Baraicha, where agriculture was fairly intensive before the project and interventions began a year after Mangawan, there were significant increases in production and paddy cultivation was begun for the first time. The increases in production of crops are shown in the table below.

Table 13: Rise in production of major crops in both watersheds

| Crop | Prodn in Mangawan (kg) | | Prodn in Baraicha (kg) | |
|--------|------------------------|----------|------------------------|----------|
| | Before | After | Before | After |
| Wheat | 1,12,610 | 4,95,750 | 2,33,770 | 4,05,990 |
| Paddy | 6,170 | 52,081 | 0 | 17,010 |
| Jowar* | NA | NA | 1,09,253 | 1,70,950 |
| Gram | 5,620 | 18,818 | 86,572 | 1,67,935 |
| Arhar* | Negligible | 7,430 | 38,795 | 80,890 |

Due to improved water availability coupled with interventions promoting proper usage and improved agricultural practices like SRI and SWI (System of Wheat Intensification), productivity went up sharply in case of most crops as shown below.

Table 14: Changes in productivity at the watershed sites

| Crop | Mangawan (kg/ha) | | | Baraicha (kg/ha) | | |
|---------------|------------------|-------|----------|------------------|-------|----------|
| | Before | After | % change | Before | After | % change |
| Kharif | | | | | | |
| Paddy | 340 | 1,518 | 346% | - | 1,572 | NA |
| Til | 213 | 60 | (72%) | 311 | 79 | (75%) |
| Arhar | 282 | 288 | 2% | 155 | 288 | 86% |
| Jowar | - | - | - | 437 | 608 | 39% |
| Groundnut | - | - | - | 708 | 1,058 | 49% |
| Mung/urad | - | - | - | 405 | 130 | (68%) |
| Other kharif | - | 279 | NA | - | 132 | NA |
| Rabi | | | | | | |
| Wheat | 970 | 1,802 | 86% | 1,755 | 2,037 | 16% |
| Mustard | 469 | 540 | 15% | - | - | - |
| Gram | 296 | 326 | 10% | 386 | 706 | 83% |
| Linseed | - | 398 | NA | - | 4,073 | NA |
| Barley | 780 | 958 | 23% | 1,062 | 1,114 | 5% |
| Other rabi | 184 | 357 | 94% | 290 | 140 | (52%) |

Change in cropping patterns

Due to a combination of the increased availability of water and persuasion by ABSSS workers, many households modified their cultivation patterns. Sown area in kharif went up substantially as seen above. In Mangawan, til has emerged as a popular new crop and area under pulses trebled in kharif. During rabi, area under wheat came close to that mustard or exceeded it. This was made possible by the increased availability of water. The changes in cropping patterns can be observed in the graphs below.

Fig 12: Changes in cropping pattern in Mangawan in kharif and rabi

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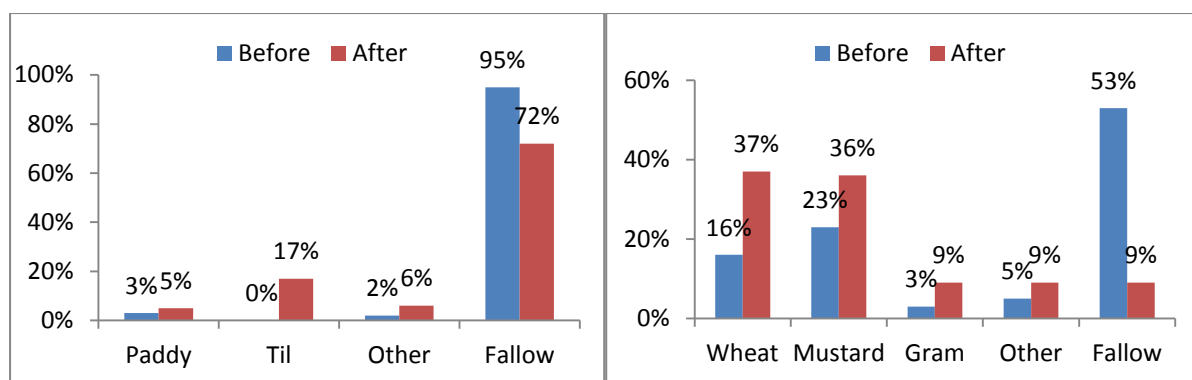
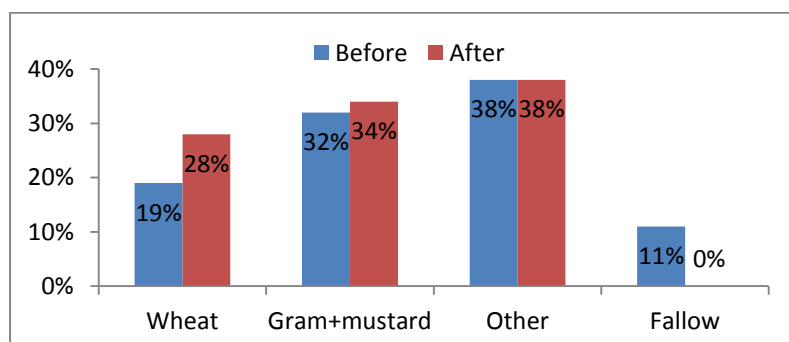
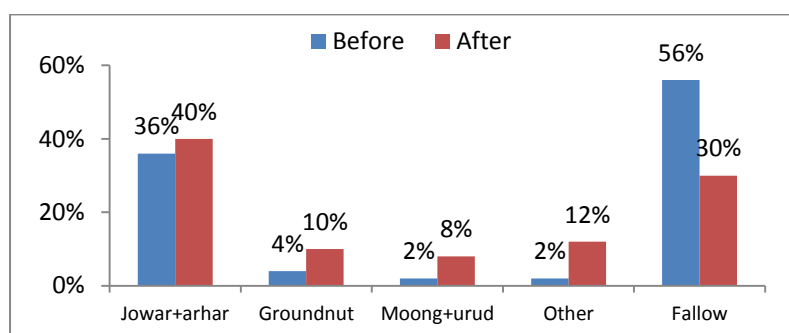
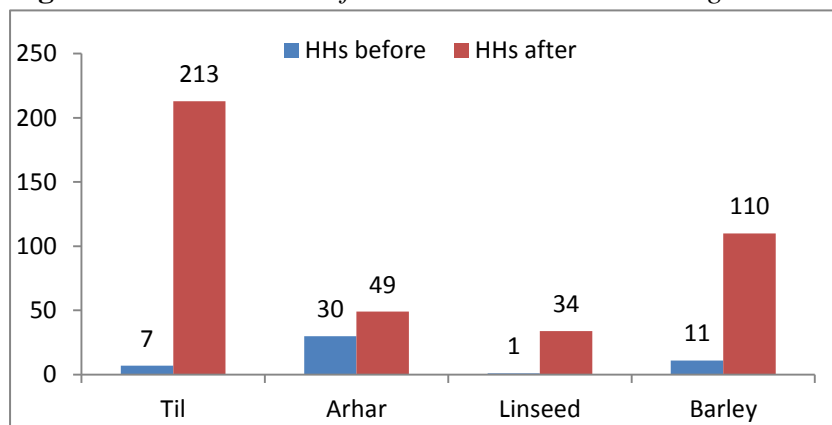


Fig 13: Changes in cropping pattern in Baraicha in kharif and rabi



The concerted efforts of the project team also led to an increase in cultivation of alternate crops. As shown in the figure below, many households in Mangawan began to grow linseed, barley, etc. In Baraicha, paddy was added to an already diversified crop basket. In a region with erratic rainfall and poor soil quality, this diversification will help poor households get some returns even in worst case scenarios such as prolonged dry spells, pest and animal attacks, etc.

Fig 14: Number of households in Mangawan growing alternate crops



Efforts were also made to promote vegetable cultivation. As a result, nearly 20 HHs in Mangawan and over 30 HHs in Baraichha grew a variety of vegetables for the first time with input and technical support from the project. The results demonstrated to the people that even from small plots one can grow a variety of vegetables to enhance nutritional status of family, and also gain additional income.

Vegetable cultivation was thus demonstrated as a good source of income, as shown in table 18, which shows gross value of some vegetable production in 2011-12. As the data shows, gross value of vegetables cultivated per HH was nearly Rs 2000.

Table 15: Gross value from some vegetable production in 2011-12 (both sites)

| Vegetable | HHs cultivating | Area (sq m) | Output (kg) | Value (INR) |
|---------------------|------------------------|--------------------|--------------------|--------------------|
| Tomato | 23 | 2,324 | 1,941 | 22,634 |
| Potato [^] | 9 | 2,629 | 4,380 | 43,800 |
| Onion [^] | 10 | 2,675 | 2,000 | 12,000 |
| Garlic [^] | 4 | 117 | 80 | 4,800 |
| Chillies | 17 | 2,437 | 841 | 25,235 |
| Bhindi | 9 | 1,793 | 2,428 | 24,280 |
| Total | 72 | 11,975 | 11,670 | 1,32,749 |

*Some HHs cultivate more than one vegetable. [^] Only in Baraichha site

Nevertheless, vegetable cultivation it is not an option for all farmers because of the following reasons:

- Only HHs with water harvesting structures close to their lands can meet irrigation needs – this issue is gradually being addressed
- On area basis, vegetable cultivation requires more investment than food crops. This is an issue for small farmers since many of them lack capital and access to affordable credit.
- Vegetables are also highly susceptible to frost/hail and 1-2 days of such weather can ruin the crop.

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- Local market for vegetables is limited due to lack of a large urban centre, and possibility of transporting produce to long distance destinations is hampered by lack of infrastructure (cold storage, inadequate transport facilities).
 - Due to issues with market access, farmers cannot easily monetize their vegetable produce to purchase other food items – hence growing some cereals to ensure food security is necessary.

Hence, vegetables cannot be a major crop in any season – especially for small farmers.

Fig 15: *Vegetable cultivation by small farmers*



Empowerment of women

As mentioned earlier, the formation of SHGs and accumulation of savings has provided a relatively inexpensive source of financing for women, especially when it comes to needs like cropping loans. The cost of borrowing from the SHG corpus is far lower than from moneylenders – 0.5-1% per month as compared to 5-10%.

This development has helped free families with small holdings from the clutches of the zamindars and consequently they have begun to voice their opinions regarding village development and usage of common resources more vocally. For example, spontaneous action was taken by women in November 2009 to prevent farmers outside the watershed area from lifting water from a checkdam's reservoir using large diesel pumps. The women compelled the farmers to shut down the pumps and called for a meeting to determine the commercial terms on which outsiders could take water. This is particularly remarkable since the women leading the process were Kol tribals; many women from this tribe used to be forced to be the concubines of the powerful as recently as a generation ago.

Women have also begun to take the initiative regarding increasing their incomes and diversifying the sources. In September 2010, following a suggestion given by SDTT official Abhay Gandhe, a women's SHG in Mangawan started fish farming in a checkdam reservoir, with 22,000 seedlings. Many women have also taken to vegetable cultivation and have expressed keen interest in other income-generating activities.

Reduction in migration

Fragmented landholdings, low productivity and the rainfed nature of Indian agriculture usually induce seasonal migration by a number of small and marginal farmers – they usually seek employment as manual labourers in brick kilns, construction sites, etc. There are no official statistics regarding the number of migrant workers but estimates vary from 30 to 100 million per year annually across India.

One of the impacts of increased area under cultivation noticed in Baraichha was that a number of HHs that used to migrate routinely for 6 or months stopped doing so. From discussions in villages it emerged that seasonal migration had substantially or totally stopped in 170 HHs (51 in Baraichha, 119 in Nedhua), of whom 78 were SCs.

Kol tribals detect climate change



Kol tribals of Chitrakut on a water recharge project

Bharat Dogra
Chitrakut (UP)

For as long as they can recall, Kol tribals in the Chitrakut district of Uttar Pradesh, depended on the forest for food and livelihood. The jungle was an old and trusted friend yielding nutritious mahua, anla and chiranjui. Tribals could earn money by selling such forest produce and by plucking tendu leaves.

But since the last five years, this tried and tested support system is crumbling. The tribals do not know why. Yet, they speak in unambiguous terms about the losses suffered by them.

"We have been eating mahua in different ways during different seasons," explains Phulmatiya, a Kol woman. "It is extremely good for our health. Till a few years ago, we were able to collect enough mahua for our needs all the year through. We could also sell mahua and earn some cash. But, during the last season when we went to collect mahua, we hardly got anything."

Phulmatiya comes from Mangawaan village of Manikpur block in Chitrakut. Other villagers, too, were keen to stop and talk despite the winter chill.

"Earlier, collection of tendu leaves was a significant source of livelihood for us," says Prema, another Kol woman. "But now such few leaves are collected that our earnings have declined considerably. Some of the leaves we pluck are so small that even after we've worked hard to collect them, they are rejected. Buyers say that such small leaves cannot be used to roll bidis."

Kunni, an articulate middle aged Kol woman said, "Previously, we did not worry so much about hunger. Even if it was a rainy day and we couldn't

go for work, we could always go to the forest to collect roots and tubers like Birain and Angitha. Once I boiled or cooked these, there was enough food and no one would remain hungry. But these have become so rare now."

Kodan Kol remembers his favourite Parora, a vegetable available in the forest and relished by all. "Now its availability is just 10 per cent of what we obtained a few years ago," he says.

Most villagers here are small farmers who have been adversely affected by erratic rainfall in recent years. According to government data, rainfall in Chitrakut district was deficient by 14 per cent in 2004-05, 8 per cent in 2005-06, 22 per cent in 2006-07 and as much as 60 per cent in 2007-08.

But people say such statistics do not convey the right picture of their problems. It is not just the amount of rainfall, but the timing of the rain that matters. If rainfall fails when crops need it the most then it doesn't matter if it rains excessively some other time.

When rainfall and overall weather patterns became more erratic, more unpredictable and don't fall in line with established cropping patterns, then farmers and their crops suffer much more than by shortages in annual average rainfall. This is what has been happening in recent years in these villages.

"Due to hotter conditions the wheat crop matures earlier than usual and grain formation is adversely affected," says Raja Bua, a senior activist of the Akhil Bhartiya Samaj Seva Sansthan (ABSSS), who has worked in Chitrakut for several years. "It is these kind of changes which indicate a more durable alteration in weather patterns, distinct from the temporary change caused by a bad year, or a year of lower rainfall."

Discussing the decline of the palash tree, known for its beautiful flowers, a tribal says, "So rarely the tree flowers now."

Weeds like lantana and parthenium are spreading fast while there is an increasing scarcity of fodder. Cows yield much less milk and for a shorter duration. At this moment, a tribal woman blurts out, "It is not only cows, women also have less milk." Several villagers start laughing, but further questions reveal a much more serious fact. Earlier, it was customary to breastfeed babies for nearly two years. Now babies are breastfed for less than one year.

As we moved on to speak with the people of Tikariya, Dhonda and Amchur Neruva villages, we found further confirmation that the changes taking place in recent years, particularly during the last six years, go beyond the occasional drought - induced changes which are temporary and reversible.

Kusuma Kol says for two years the crop loss on her fields was so complete that she did not even try to harvest it. Sagrati Kol says mahua and tendu leaf collections are just 25 per cent compared to a few years back while a weed called Gundhalla is spreading widely.

Dharma Narain Dwivedi is a leading farmer of Amchur Neruva village, owning about 65 bighas (25 acres). Till a decade ago, his fields provided adequate food all the year through for his nine-member family, apart from significant cash earnings. Today, his farm yield doesn't provide food for even six months, he says.

Ramdukh Kol says he has 13 bighas from which he used to get 15 sacks of paddy in good times. One sack contained about 80 kgs. But in recent years, the land has just lain uncultivated. He didn't risk

farming on his fields because of the uncertainties. Ramdukh recalls that over a decade ago ABSSS made an effort to get tribals a better return for the mahua they collected. Some tribal families of Amchur Neruva village collected 20 sacks of mahua. Now we can barely collect a little mahua to eat once in a while, he says.

Gokul, a honey collector, says that honey collections have gone down very heavily. Other gatherers of forest-produce lament the heavy reduction in the collection of chiranjui seeds and anla fruits, both high nutrition products that also yielded a good income when they were available in plenty.

To check this decline in livelihood and nutrition under farming and forests, the ABSSS has initiated significant watershed development projects. The watershed plan in Mangawaan panchayat extends over 1500 hectares and is supported by Sir Dorabji Tata Trust. Two initiatives in Itwaan Paatin and Maakundi-Amchur Neruva villages, extending to 3500 hectares, are supported by NABARD.

These initiatives involve treatment of the hills and valleys to ensure that rainfall is saved in fields, pastures and tree lands so that crop yields and produce of indigenous trees like mahua, anwala and other fruits can increase. In the Mangawaan watershed project the objective is specific to increase the tree cover ten times. An earlier, smaller effort in Tikariya, supported under the drought-prone area programme, has resulted in increased crop yields for some of the poorest farmers. The water-table has risen and so have the number of trees. Such efforts are accompanied by social mobilisation to increase the capacity of communities to work together for the overall welfare of their villages.

Villagers with much improved water and moisture conservation have more trees and better pastures. Such an environment is conducive for improving livelihoods and nutrition. Bhagwat Prasad, Director of ABSSS, says, "We've learnt valuable lessons from our earlier experiences in Tikariya. This area called Patha has an old history of water scarcity. We'll try to convince people to accord first priority to drinking water needs of people, then to the drinking water needs of farm animals, and only then use water for irrigation. We'll be emphasising environment friendly farming. The aim is sustainable development of the village community with special emphasis on the poorest."

Recalling the old days Gaya Prasad Gopal, founder-director of ABSSS, says, "From the outset we emphasised the land rights of Kol tribals, and this base will give us to strength to ensure that these initiatives provide the most help to weaker sections, particularly Kol tribals."

At a time when climate change and adverse weather conditions are causing far reaching changes leading to adverse impacts on livelihoods, nutrition and health, it is a relief to know that at least some efforts are being made and some signs of hopes are emerging.

This report was written under the CSE Media Fellowship on Climate Change

Cost benefit analysis of the interventions

The economics of the cost of cultivation for the major crops were worked out in the pre and post intervention periods for each of the watersheds. The cost of cultivation was worked out item-wise (seeds, fuel and machines hired for irrigation, fertilizers, etc). In certain years, the contribution (revenues from output less variable costs) was even negative for crops like wheat (due to lack of irrigation in winter) and til (due to untimely rainfall).

The watershed interventions were successful in both the areas. The crops considered for the analysis were as follows:

- Kharif: Paddy, til, arhar. Jowar, groundnut, mung/urad
- Rabi: Wheat, mustard, gram, linseed, barley

Apart from these, the production of several other minor crops grew as shown below:

| Output in kgs | Mangawan | | Baraicha | |
|---------------|----------|-------|----------|-------|
| | Before | After | Before | After |
| Kharif | 60 | 5580 | 0 | 2580 |
| Rabi | 2655 | 275 | 580 | 1450 |

Also, cultivation of vegetables was begun in garden patches for the 1st time by many small farmers. However, these are not factored into our analysis.

Discussions of assumptions

- In both areas, the quality of soil is improving with agriculture becoming more regular. Hence, we assume a high growth of productivity for the next 2-3 years (12% in Mangawan and 6% in Baraicha) and then a steady state annual growth for 2 years
- The life of structures has been assumed as 20 years for Mangawan and 18 for Baraicha
- The output price growth has been taken to be 4% (approximately the same as long term food inflation). The pre-project revenues have been grown at this rate in order to compute the increase in profits
- The opportunity cost of working in one's own fields needs to be considered since a number of small farmers were working as manual labourers within the village or elsewhere. For Mangawan, the data was available. In Baraicha, we have the data for fall in migration and consider this to be the number of families not working as manual labourers any more. The wage rate has been taken to be the average NREGA wage
- All costs have been grown at 4%. The wages have been grown at 6%
- The discount rate has been assumed to be 10%

Sensitivity analyses have been done for all key variables.

Results for Mangawan

The Mangawan watershed was intended as a model of sorts for our watershed projects since this is an area where agriculture was not carried out too intensively. As recently as 2 decades ago, this area had known bonded labour and a number of small farmers were allotted pattas which were rocky and unirrigated

We calculated a benefit-cost ratio of 3.3 considering only the improvements as a result of the work carried out in this phase. The returns will increase substantially without much extra cost if livelihood and improved agriculture oriented improvements are carried out. The results of these were seen in a few plots in this phase when SRI and organic farming were carried out and improved yields were obtained with far lower investments in seeds and other inputs. On the flip side, these techniques are more labour intensive than is the case now.

The results are summarized below:

| | |
|------------------------------------|-------------|
| NPV of interventions (Rs) | 9,00,28,327 |
| Cost of interventions (2013 value) | 2,71,64,467 |

Benefit cost ratio **3.3**

| | | <u>Days of wage labour</u> | | | | |
|------------------|------------|----------------------------|------------|------------|------------|-----|
| | | 70 | 75 | 80 | 85 | 90 |
| 3.3 | | | | | | |
| 6% | | 5.8 | 5.5 | 5.3 | 5.0 | 4.7 |
| 8% | | 4.6 | 4.4 | 4.2 | 3.9 | 3.7 |
| Disc rate | 10% | 3.7 | 3.5 | 3.3 | 3.1 | 2.9 |
| | 12% | 3.0 | 2.8 | 2.7 | 2.5 | 2.4 |
| | 14% | 2.5 | 2.3 | 2.2 | 2.1 | 1.9 |

| | | <u>Productivity growth steady state</u> | | | | |
|-------------------------|-----------|---|------|------------|------|------|
| | | 1.0% | 1.5% | 2.0% | 2.5% | 3.0% |
| 3.3 | | | | | | |
| 2% | | 0.8 | 1.0 | 1.2 | 1.4 | 1.6 |
| 3% | | 1.7 | 1.9 | 2.2 | 2.4 | 2.7 |
| O/P price growth | 4% | 2.7 | 3.0 | 3.3 | 3.6 | 4.0 |
| | 5% | 3.9 | 4.3 | 4.6 | 5.0 | 5.4 |
| | 6% | 5.3 | 5.7 | 6.1 | 6.6 | 7.1 |

| | | <u>Initial high growth</u> | | | | |
|------------------|------------|----------------------------|-----|------------|-----|-----|
| | | 8% | 10% | 12% | 14% | 16% |
| 3.3 | | | | | | |
| 6% | | 3.8 | 4.5 | 5.3 | 6.0 | 6.8 |
| 8% | | 3.0 | 3.6 | 4.2 | 4.8 | 5.4 |
| Disc rate | 10% | 2.4 | 2.8 | 3.3 | 3.8 | 4.3 |
| | 12% | 1.9 | 2.3 | 2.7 | 3.1 | 3.5 |
| | 14% | 1.6 | 1.9 | 2.2 | 2.5 | 2.9 |

| | | <u>Life of structures</u> | | | | |
|------------------|------------|---------------------------|-----|------------|-----|-----|
| | | 16 | 18 | 20 | 22 | 24 |
| 3.3 | | | | | | |
| 6% | | 4.0 | 4.6 | 5.3 | 5.9 | 6.3 |
| 8% | | 3.3 | 3.7 | 4.2 | 4.6 | 4.8 |
| Disc rate | 10% | 2.7 | 3.0 | 3.3 | 3.6 | 3.7 |
| | 12% | 2.2 | 2.5 | 2.7 | 2.9 | 3.0 |
| | 14% | 1.9 | 2.0 | 2.2 | 2.3 | 2.4 |

Results for Baraicha

The Baraicha watershed required some mechanized work since a lot of the work was focussed on levelling apart from lift irrigation. Soil quality was better in this watershed although a lot of it had been eroded into ravines and some of the fertility had been lost where the land lay fallow for some years. Hence, the assumptions regarding productivity growth have been modified to some extent.

We calculated a benefit-cost ratio of 4. In this case too, the ratio will be far higher once interventions planned in the next phase are carried out.

The results are summarized below:

| | |
|------------------------------------|-------------|
| NPV of interventions | 5,92,04,823 |
| Cost of interventions (2013 value) | 1,46,27,021 |

| | |
|---------------------------|------------|
| Benefit cost ratio | 4.0 |
|---------------------------|------------|

| | | <u>Days of wage labour</u> | | | | |
|------------------|-----|----------------------------|------------|------------|------------|-----|
| 4.0 | | 80 | 85 | 90 | 95 | 100 |
| <u>Disc rate</u> | 6% | 8.0 | 7.3 | 6.6 | 5.9 | 5.2 |
| | 8% | 6.4 | 5.8 | 5.2 | 4.5 | 3.9 |
| | 10% | 5.1 | 4.6 | 4.0 | 3.5 | 3.0 |
| | 12% | 4.1 | 3.6 | 3.2 | 2.8 | 2.3 |
| | 14% | 3.3 | 2.9 | 2.5 | 2.1 | 1.8 |

| | | <u>Productivity growth steady state</u> | | | | |
|-------------------------|----|---|------|------------|------|------|
| 4.0 | | 1.0% | 1.5% | 2.0% | 2.5% | 3.0% |
| <u>O/P price growth</u> | 2% | -0.6 | -0.2 | 0.3 | 0.7 | 1.2 |
| | 3% | 1.0 | 1.5 | 2.0 | 2.6 | 3.2 |
| | 4% | 2.8 | 3.4 | 4.0 | 4.7 | 5.4 |
| | 5% | 4.9 | 5.6 | 6.3 | 7.1 | 7.8 |
| | 6% | 7.3 | 8.1 | 8.9 | 9.7 | 10.7 |

| | | <u>Initial high growth</u> | | | | |
|------------------|-----|----------------------------|-----|------------|-----|-----|
| 4.0 | | 3% | 4% | 5% | 6% | 7% |
| <u>Disc rate</u> | 6% | 4.9 | 5.7 | 6.6 | 7.5 | 8.4 |
| | 8% | 3.8 | 4.5 | 5.2 | 5.9 | 6.6 |
| | 10% | 2.9 | 3.5 | 4.0 | 4.6 | 5.2 |
| | 12% | 2.2 | 2.7 | 3.2 | 3.7 | 4.2 |
| | 14% | 1.7 | 2.1 | 2.5 | 2.9 | 3.4 |

| | | <u>Life of structures</u> | | | | |
|------------------|-----|---------------------------|-----|------------|-----|-----|
| 4.0 | | 14 | 16 | 18 | 20 | 22 |
| <u>Disc rate</u> | 6% | 4.5 | 5.5 | 6.6 | 7.7 | 8.9 |
| | 8% | 3.7 | 4.4 | 5.2 | 5.9 | 6.7 |
| | 10% | 3.0 | 3.5 | 4.0 | 4.6 | 5.1 |
| | 12% | 2.4 | 2.8 | 3.2 | 3.6 | 3.9 |
| | 14% | 2.0 | 2.3 | 2.5 | 2.8 | 3.0 |

Conclusion

Key learnings

The following are key findings/learning from the programme:

- Despite extremely low rainfall in Mangawan, there has been a remarkable increase in cultivated area in the project site, thus indicating that a majority of the HHs are keen on pursuing agriculture as a viable source of income and thus avoiding or minimizing migration
- Despite poor rainfall, farmers following good agriculture practices could secure yields equal to or higher than average yields reported for UP Bundelkhand. This is clear evidence of the benefits of soil and water conservation in degraded soils of this region.
- While vegetable cultivation is more remunerative, scope for vegetable cultivation is limited by factors like high capital/labour requirement, poor transport infrastructure for daily transport of produce, and distance from large markets/cities.
- Farmers in both sites are keen on increasing yields/returns from agriculture by enhancing their agriculture-related knowledge.
- Apart from trend of poor rainfall, poor knowledge about and access to improved agriculture technologies (improved variety seeds, nutrient use based on soil test reports, etc) are key constraints to increasing yield.
- There is good scope for converging soil and water conservation work with MGNREGA.

For the reasons stated above, there was need for a `watershed plus` project after the end of the current project, focussing on plugging gaps in agriculture knowledge and technology through a participatory approach.

Issues of concern

Though the project was successful in attaining its main objectives, there remained some issues of concern:

High production costs due to local factors

As there are very few good-quality draught animals in Mangawan, all farmers at this site use tractors for ploughing, apart from diesel pump sets for irrigation. Both machines have to be hired from a few large farmers of the area, who charge exorbitant and varying rates, as per demand. As a result, expense incurred on ploughing and irrigation is unreasonably high, and affects overall profitability. The problems was partly resolved by obtaining a tractor and diesel pump through convergence (Table 13), but this is not enough to meet the needs of all farmers. SHGs will have to be supported and motivated to raise funds and buy more units of this equipment, which can be given on hire to members at reasonable rates.

Knowledge and technology gaps

Analysis of yield data from project sites across years showed that there was wide variation in yields and a large number farmers were getting less than optimum yields, with the result that

ABSSS-SDTT &AT: Integrated Watershed Development: A Success Story from Bundelkhand

while cultivation of food crops partially met food security needs, agriculture was not very cost-effective for them.

At the same time, the project demonstrated that higher yields are possible. Significantly, many of the farmers who got good yields were small and marginal landholders with limited investment capacity. That is, their yields were not related to ability to make high investments in inputs. Through focused group discussions, explanations were sought for each farmer getting high yields, and invariably, participants gave one or more of the following reasons:

- The farmers getting high yields are “knowledgeable” about farming; they know how to do “good farming”.
- The farmers use good amount of fertilisers, including relatively high amount of manure.
- The farmers “take care of their crops better”.

It is thus clear that the yield-gap is a result of a gap in level of agriculture knowledge and management.

While considerable effort was made in the project to fill the knowledge gap, and agriculture education was the major activity for the last year of the project, a more intensive effort needs to be taken, focussing on:

- large number of closely monitored participatory demonstrations of improved seed varieties and agriculture methods
- systematic farmer learning programme for improving yields through good agriculture practices

Recommendations

Based on lessons learnt from the project, ABSSS suggests that when undertaking or supporting similar projects in areas of Bundelkhand with under-developed agriculture, the development agencies concerned should look at following issues:

- Introducing agriculture education and planning as a major activity from the very start of the project (after the planning phase) through farmer groups/clubs
- Enabling the creation of on-site nurseries at the start of the project, for supply of large volumes of appropriate tree species for forestation/bund plantation
- Grant support for purchase of power tillers/diesel pumps by SHGs/farmers’ groups
- Support for community-managed revolving fund, to enable poor households to access finance at low rate of interest, for purchase of inputs of right quantity and quality
- Creating an institutional setup to manage common watershed assets from the very start of the project, rather than at the end

Bibliography:

ABSSS. (n.d.). Retrieved from <http://www.absss.org.in/>

ABSSS. (2002). Retrieved from Bundelkhandinfo: http://www.bundelkhandinfo.org/development/poverty/2002_bpl.html

ABSSS. (2009). *Industry in Bundelkhand*. Retrieved from Akhil Bharatiya Samaj Seva Sansthan: http://www.bundelkhandinfo.org/economy/industry/industry_bundelkhand.html

Cai, X. a. (2003). World Water Productivity: current situation and future options. In R. B. J.W. Kijne, *Water Productivity in Agriculture: Limits and Opportunities for Improvement*. CAB International.

CIA World Factbook. (2011). Retrieved from CIA World Factbook: <https://www.cia.gov/library/publications/the-world-factbook/geos/in.html>

FAO. (2010). *FAOSTAT*. Retrieved from Food and Agriculture Organization Statistics: <http://faostat.fao.org/site/567/DesktopDefault.aspx?PageID=567#ancor>

Gandhi, V. P. (2011). Groundwater Irrigation in India: Growth, Risks and Challenges. *India Infrastructure Report*, pp. 90-117.

IIR. (2011). *India Infrastructure Report*. Mumbai: IDFC.

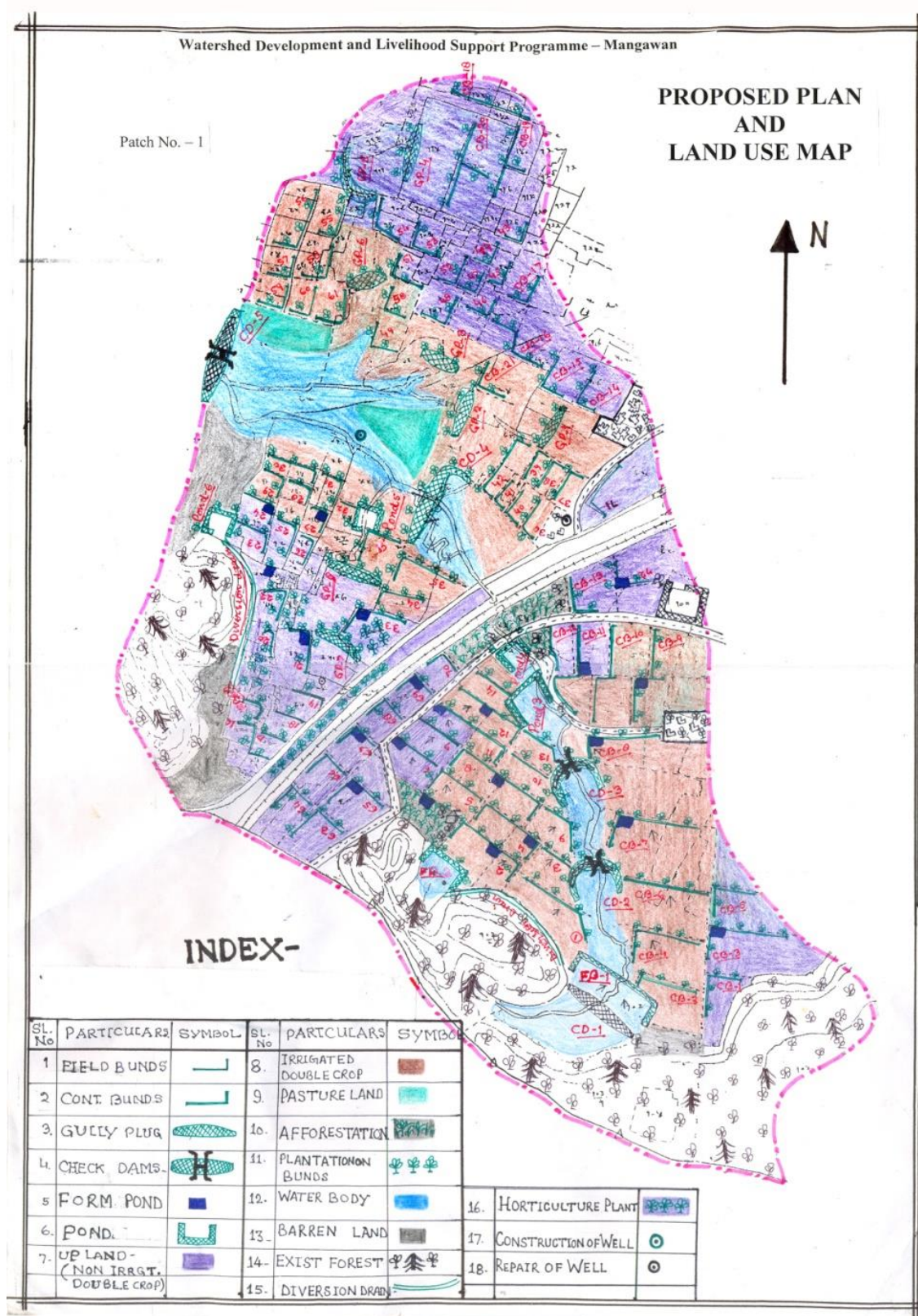
Ministry of Rural Development. (2006). *From Hariyali to Neeranchal: Report of the technical committee on watershed programs in India*.

Sarma, E. (1997). *Report of the Task Force of Planning Commission*. Gol.

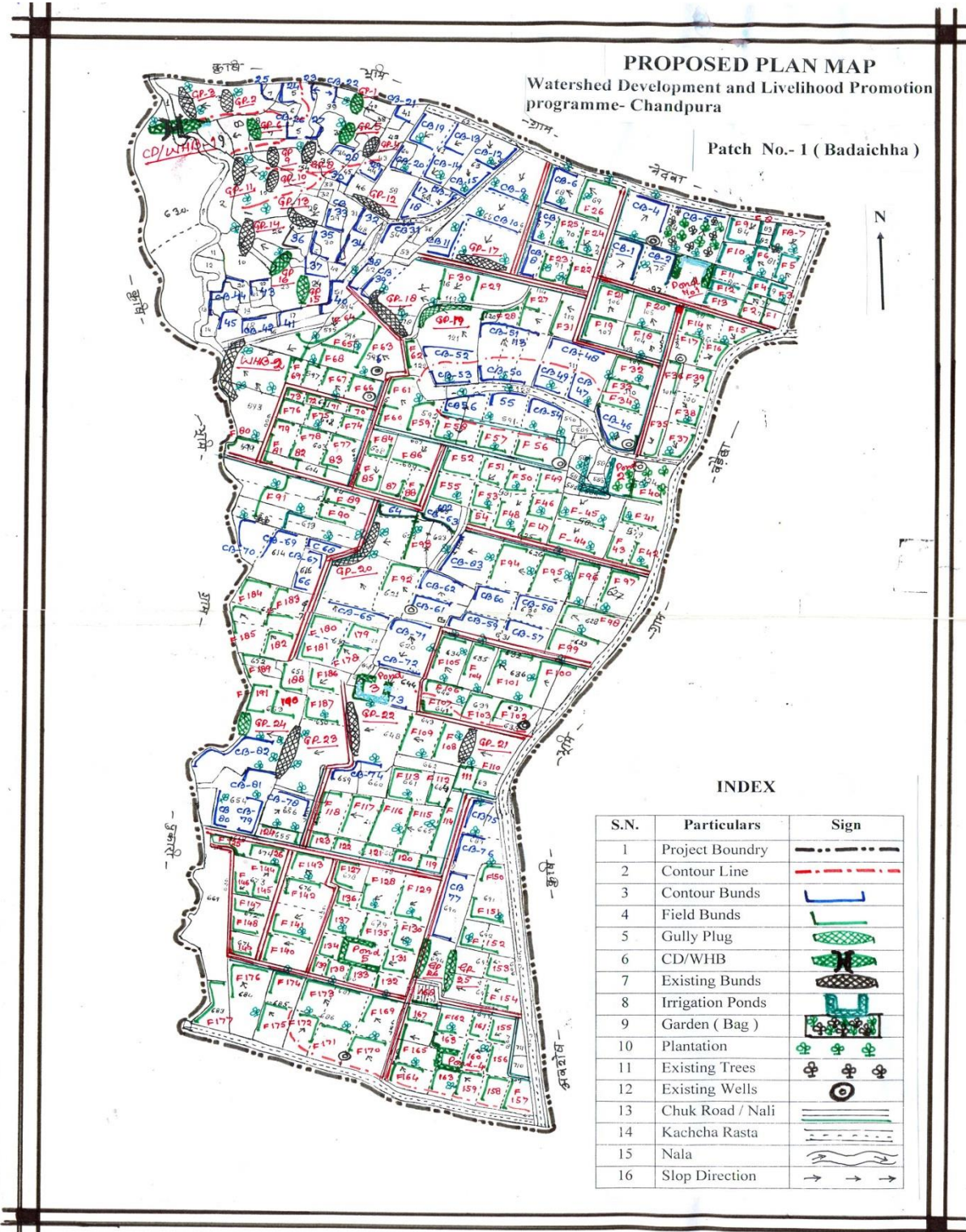
Shah, T. (2011). Past, Present and Future of canal irrigation in India. *India Infrastructure Report*, pp. 69-89.

WRG. (2009). *Charting our water future*. Water Resources Group.

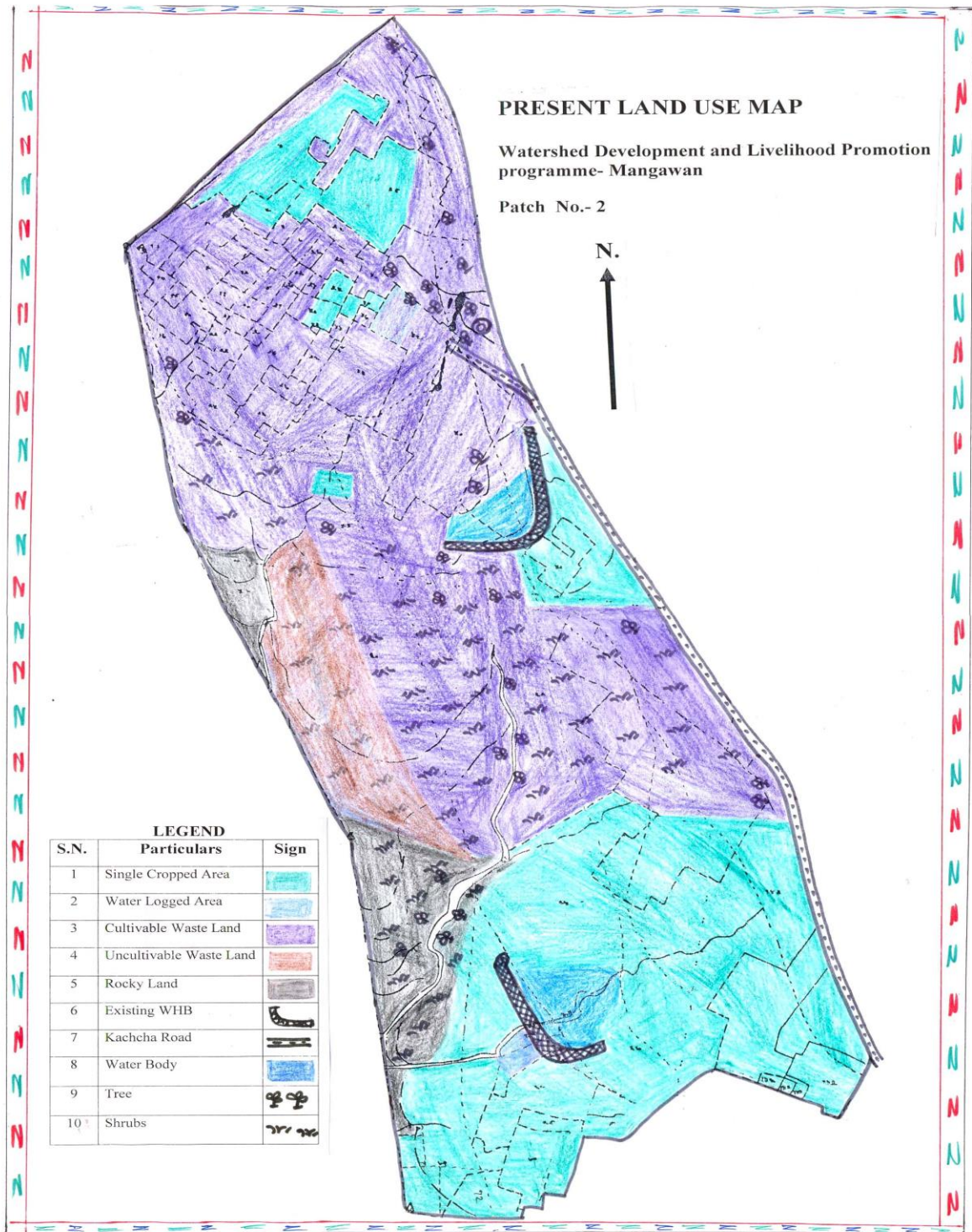
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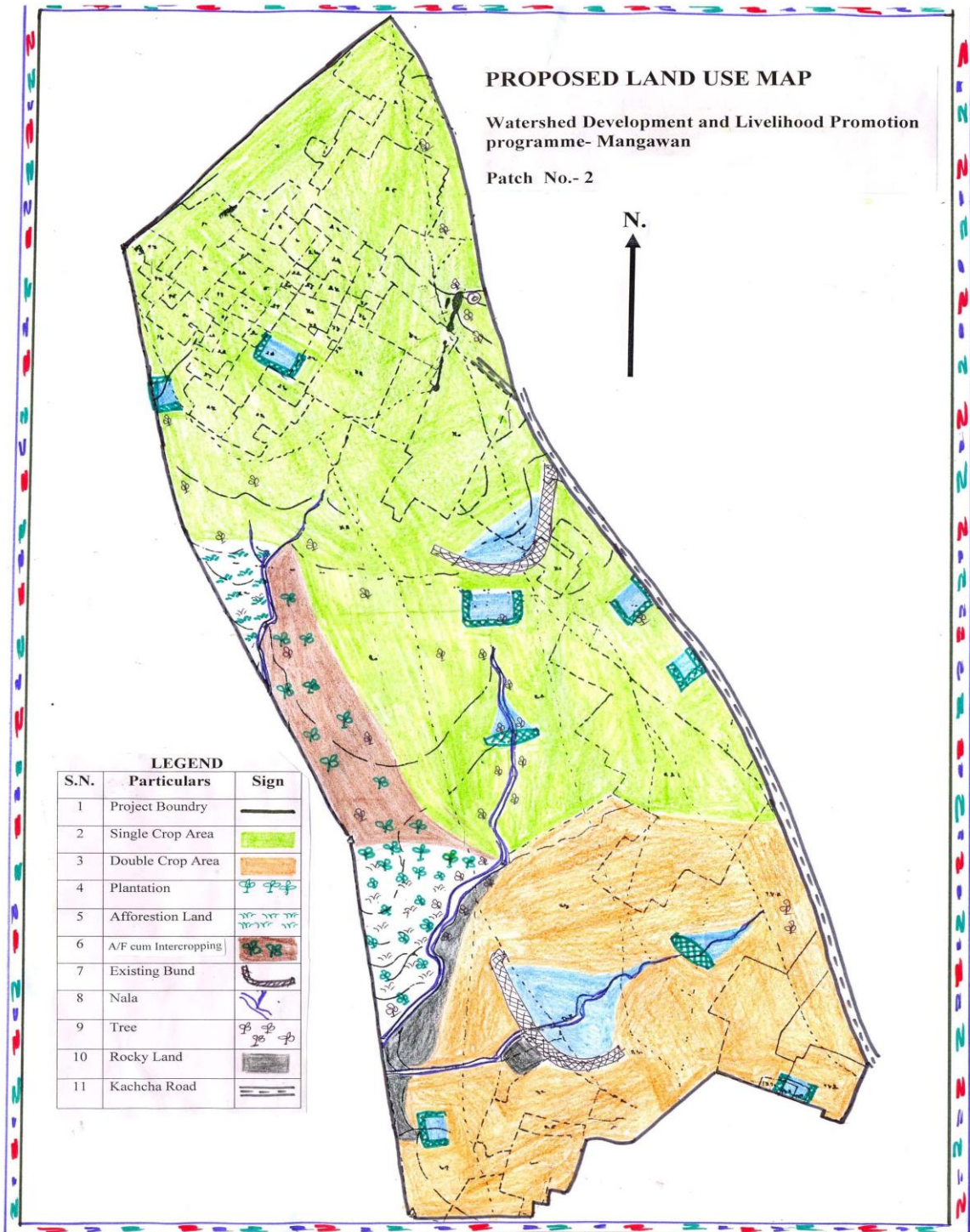


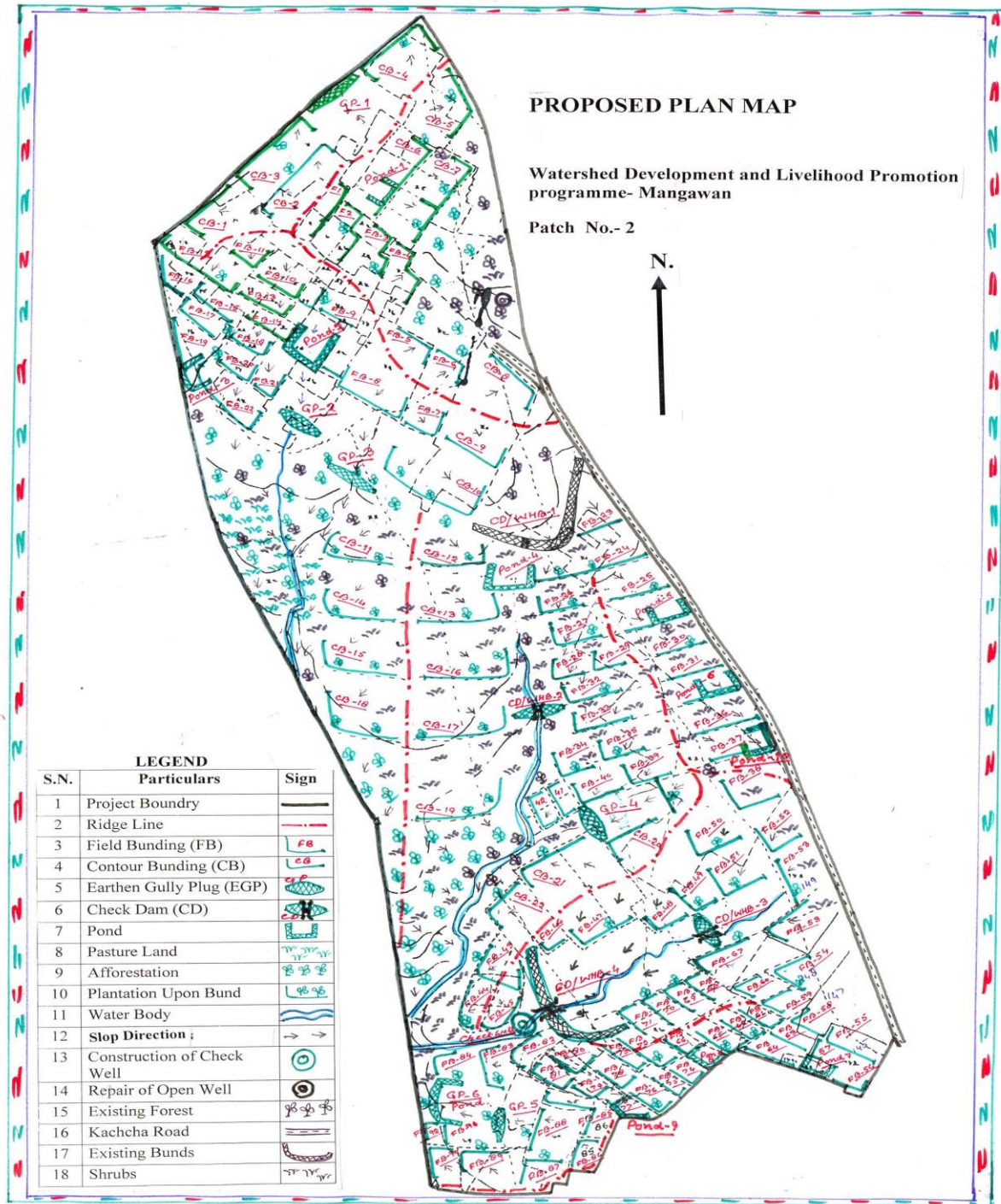
Appendix 1: Locations of watershed structures in Baraicha

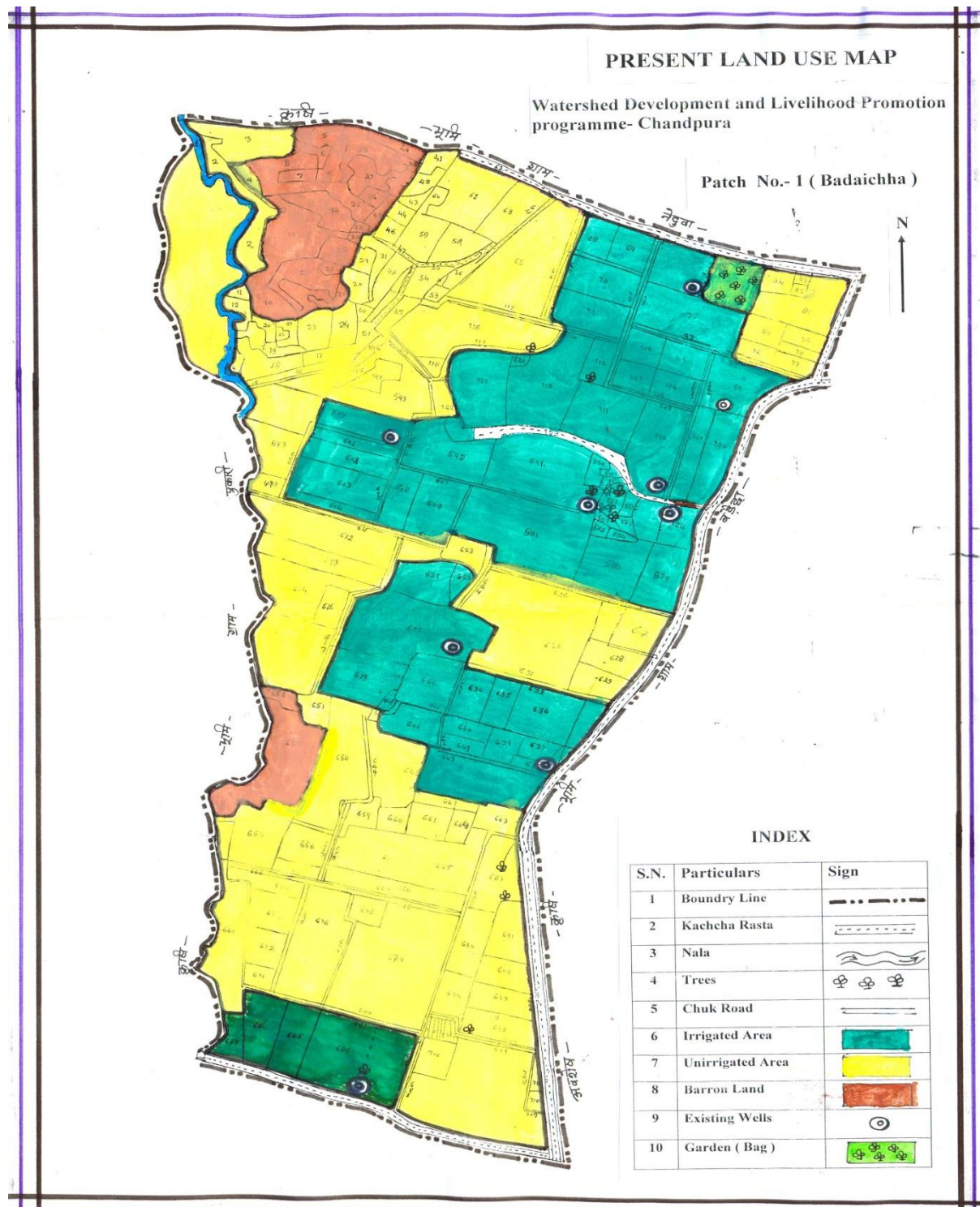


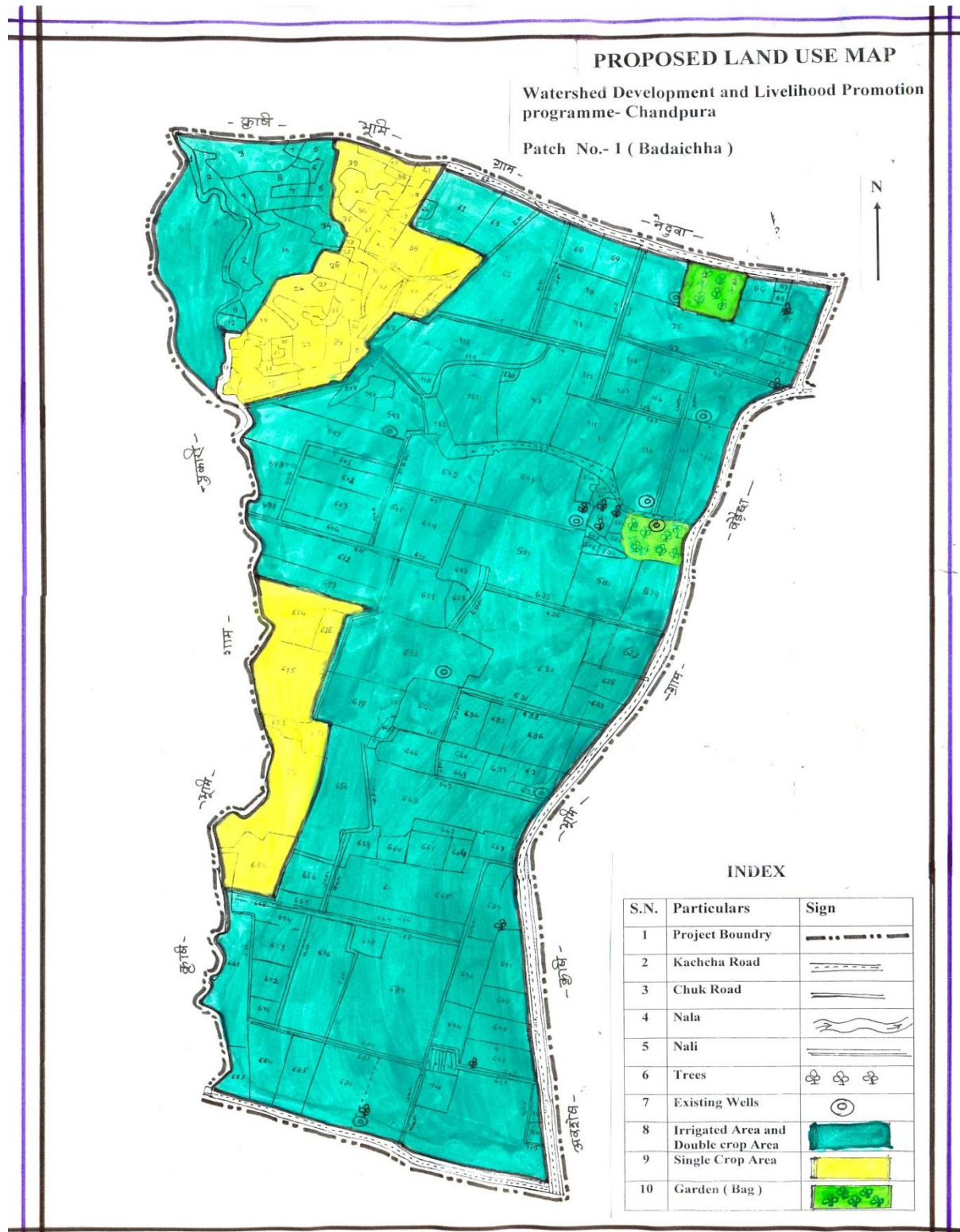
Appendix 2: Locations of watershed structures in Mangawan











To Whom it My Concern

दलीप कुमार गुप्ता
आई०ए०एस०
जिलाधिकारी



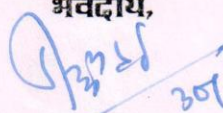
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दूरभाष : कार्यालय) : 05198-235118
आवास : 05198-235016
फैक्स : 05198-235305

दिनांक दिसम्बर 30 , 2011

अनुरांसा पत्र

चित्रकूट जनपद मे स्थापित अरिबल भारतीय समाज सेवा संस्थान की गतिविधियों से मैं अवगत हूँ। इस संस्था ने प्राकृतिक प्रबन्धन प्रमुख रूप से जलागम के क्षेत्र में चित्रकूट जनपद में उल्लेखनीय कार्य किया है। संस्थान द्वारा आयोजित कार्यक्रमों तथा क्षेत्र में संचालित गतिविधियों को मैंने देखा है। यदि इस संस्थान को कार्यक्रम दिया जाता है, तो मेरा विश्वास है कि यह प्रभाषिकता के साथ काम करेगी। इस संस्था का प्रशासन के साथ भी अच्छा समन्वय है।

मैं संस्थान के उज्जवल भविष्य की कामना करता हूँ।

भवदीय,

(डी०के०गुप्ता)

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February 21, 2012

TO WHOM IT MAY CONCERN

We are aware of Akhil Bhartiya Samaj Sewa Sansthan (ABSSS), who have been a partner of the Trust since 2008. They have implemented a project supported by the Trust titled - Empowering People through Integrated Watershed Management. This project was implemented in - Mangawan, Manikpur Block of Chitrakoot District and Chandpura, Naraini Block of Banda district of Uttar Pradesh.

The quality of work of ABSSS in this project was very good and there has been a perceptible difference in the lives of people in the region. They enjoy very good working relation with government departments and have also been able to mobilize funds on convergence mode.

Based on the success of the above project, we have sanctioned another project for them in Teekamgarh district of Madhya Pradesh.

We wish them the very best in all their endeavours.

Bhaskar Mittra

**(Bhaskar Mittra)
Senior Program Officer**

News

Supporting Materials



Enclose copy of brochures, photographs; any other supporting material that you feel will be useful in the evaluation process.



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WATER WISE: THE JOURNEY FROM BONDED LABOURERS TO WATER WARRIORS



By: Shehfar

Impoverished tribals (bonded labour) living in Bundelkhand (one of the most drought-prone and backward area of Northern India) show how barren and deserted land can be revived and made into a fertile land by simply working unitedly.

The Bundelkhand region was prominent for their rainwater harvesting structure, being home to a succession of enlightened kingdoms through the millennia, the kings of the Bundela dynasty built and maintained innumerable rainwater harvesting structures, which ensured abundant supplies of water throughout the year. The water bodies were mostly ponds and tank (small, medium and large) which got filled up during the rainy season and which in turn recharged the groundwater. Thus, the wells in the villages had plenty of water

ABSSS-SDTT &AT: Integrated Watershed Development: A Success Story from Bundelkhand

throughout the year. Even in the years when the monsoon was below normal, there was no shortage of drinking water for humans and animals. The degradation of such ponds and catchment areas, encroachment on forest lands, deforestation and lack of avenues for storing the rainwater have wreaked havoc on water availability. The net result is that the wells which were once used for drinking and irrigation are not providing enough water now. Bundelkhand has become famous for its poverty, drought, farmer suicide and politics on water, employment and relief.

The kol adivasi (kol tribals classified as schedule cast in Uttar Pradesh and schedule tribe in Madhya Pradesh) of Manikpur block of Chitrakoot district of Bundelkhand region had obligated to spend their life as a bonded labour. In 1997 after being released from the bondage, they got lands and began farming (The government issued pattas of land to landless kols). However, the lands allocated were degraded and barren and the kol farmers had no idea how to increase the productivity of the land. From 1997 to 2008, they used less than 5 per cent of their land for agriculture purposes and cultivated only sorghum and pigeon pea.



Santo Devi, village Mangawan

Agriculture in this region is dependent on the rainfall which is unpredictable. Usually the wells, which were the single source of drinking water dried up during the summer months resulting in acute water scarcity. The women folk had to travel everyday to fetch water from rivers. "Sometimes we thought to ourselves that our living conditions were better when we were bonded labours, however with our husbands shifting to agriculture and lack of water availability resulted in irregularity in earnings. Our condition now is disastrous" said 37 year old Santo of village Mangawan in Manikpur block.

As a result of the scanty monsoons in a row, the kol tribes had crop failures and this forced them to consider rainwater harvesting as a solution to the impending problem. However the farmers did not have the technical knowhow for the same.

Rainfall data

| Year | Rainfall (mm) | Deficiency (% normal rainfall) |
|------|---------------|--------------------------------|
| 2001 | 610 | 29 |
| 2002 | 425 | 51 |
| 2003 | 445 | 48 |
| 2004 | 351 | 59 |
| 2005 | 325 | 62 |
| 2006 | 506 | 41 |
| 2007 | 259 | 70 |
| 2008 | 350 | 59 |
| 2009 | 221 | 74 |
| 2010 | 210 | 75 |
| 2011 | 380 | 56 |

Source: C.S.Azad University of Agriculture & Technology, Kanpur

In 2008-2009, Akhil Bhartiya Samaj Sewa Sansthan (ABSSS) a nonprofit organisation based in Chitrakoot, started a project in Mangawan, Bambia, Tikaria Jamunihai and Doda Mafi villages to improve the agriculture, livelihood and water situation in these villages. These villages are located in 'Patha' plateau in the agro-climatic

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region of Central Plateau and Hills Region. Forty three year old kol adivasi called Bhau (from Mangawan village) was the first farmer from kol tribal community to start farming with the help of ABSSS and the state government in 1997. Bramin another adivasi from the same village gave a part of his land to make a water pond to sustain the nearby well and to support irrigation. Slowly all the tribal families of all the four villages started to build farm ponds, ponds, check dam and gully plug to conserve rainwater. Within a short span of three years the kol farmers were benefited and in spite of low rainfall, almost 61 farm ponds and ponds had overflowed with rainwater and the wells did not up dry up during the peak summers. Eventually the crop production increased many folds.



Water warriors, village Mangawan

The road to success for the Mangawan people has not been an easy one. The villagers of Mangawan had been suppressed and had lived for a very long time under the fear of the powerful landlords (dadus). Sajla Samiti was successful in winning their trust. "The biggest achievement for the samiti has been that they have been successful in reducing the migration rate of the villagers and now the local people are happy and content that they get water and livelihood at their native place", exclaimed Bhagwat Prasad.

"Behind the success of the kols in Patha plateau (Chitrakoot), is their strong unity. The Sajla Samiti played a strong role in building active committee, comprising of 51 men and women belonging to the kol tribes and the scheduled caste communities, " said Gopal Bhai, a social activist and founder of ABSSS. They have been working in the region since 2009 added Gopal. The Sajla Samiti is instrumental in uniting and spreading awareness in the four villages during the period of 2009 to 2011. As a result of the initiative taken by the samiti the schedule tribes and schedule class communities of the villages have come together and made a

number of check dams and farm ponds in their lands to conserve water and prevent soil erosion, under the watershed development programme commenced by ABSSS. The groundwater levels in these villages have increased due to the water conservation actions undertaken by the local people. The groundwater level has raised by more than 2 meters. The well water is now being used for crop irrigation as well as drinking and other domestic proposes. Almost 35 households in the village irrigated over 201 bighas of agriculture land in 2011-12.

"Since 2010, we did not face drinking water scarcity, I am happy because I do not have to go outside and walk for 3 to 4 kilometres to arrange water in the scorching heat. There is enough water for domestic needs, cattle and irrigation proposes. My time is saved and health has improved and I can spend that time in my field says Santo of Mangawan.

| Wells Name | Year | Rainfall in MM | Month in groundwater table in meter below ground level (mbgl) | | | |
|----------------|---------|----------------|---|-------|-------|-------|
| | | | March | April | May | June |
| Mangawan well | 2009-10 | 221 | 6.90 | 11.95 | 15.30 | 15.50 |
| | 2010-11 | 210 | 8.05 | 9.80 | 10.30 | 16.10 |
| | 2011-12 | 380 | 9.45 | 12.5 | 13.7 | 11.20 |
| Chhivlana well | 2009-10 | 221 | 5.2 | 7.95 | 8.15 | 8.75 |
| | 2010-11 | 210 | 7.85 | 6.1 | 6.9 | 7.7 |
| | 2011-12 | 380 | 5.73 | 5.85 | 6.43 | 8.5 |

Source : ABSSS reports

"We had started to build check dams and ponds in our land. Our main objective was to use the rainwater for irrigation and not let it flow out and get wasted. ABSSS and Sajla Samiti members helped us and gave us the

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technical knowledge. Initially I was apprehensive. We had bumper harvest crop and there is enough money, food and water for my family to live with content", said Harish of the same village.

| Crop | 2008-09 | | 2011-12 | | Production increases in per bigh (in %) |
|---------|---------------------------|------------------------|---------------------------|------------------------|---|
| | Cultivated area in Bighas | Production in Kilogram | Cultivated area in Bighas | Production in Kilogram | |
| Paddy | 25 | 600 | 116 | 38,261 | 1374 |
| Wheat | 182 | 19,910 | 643 | 190,920 | 271 |
| Mustard | 196 | 3,695 | 552 | 53,637 | 515 |
| Gram | 69 | 2,560 | 170 | 11,465 | 182 |

Source : ABSSS reports



Well full to brim and green farm land in Mangawan.

Despite poor rainfall in Patha plateau, drinking water is available throughout the year at an accessible distance. The farmers follow good agriculture practices and are able to secure yields equal to or higher than the average yields reported from the state of Uttar Pradesh. There is a clear evidence of the benefits of water conservation in such degraded soils. 'I am happy, I bought 250 grams silver to give my daughter on her wedding, next month, said forty three year old Bhau, a small-built kol adivasi of village Mangawan. 15 years back he could not even afford a simple sari for his wife and medicines for the children. I used to manage with difficulty only two square meals for my family and earned 1 kg food grain a day against fifteen long hours of manual work under the scorching sun he added.

<div class="disqus-noscript">View the discussion thread.</div>

Tags:

- Rural water
- Case Studies
- Rainwater Harvesting Structure

2.



ABSSS MP
<abssmp@gmail.com>

FW: [Rockstars!!!] FW: [sriindia] Micro water harvesting projects have turned around rural life in the water-starved Bundelkhand region

The soil's thirst quenched

[BHARAT DOGRA, The Hindu | June 17, 2012](#)

Green growth: SRI is a great help



Renewed hope: Water harvesting has rejuvenated the land



Micro water harvesting projects have turned around rural life in the water-starved Bundelkhand region

The Patha area in Uttar Pradesh's Chitrakoot district was for long regarded as one of the most water-scarce areas from where stories of thirsty people and animals searching for water in scorching summer have been told time and again. Large tracts of cultivated land remained barren due to lack of water and moisture. A prolonged drought-like situation in recent years had further worsened the situation.

It was against this backdrop that a voluntary organisation — Akhil Bhartiya Samaj Seva Sansthaan's (ABSSS) -- promising effort to conserve and harvest rainwater has brought hope to three panchayats and water-shed areas of Manikpur block. These three small projects together has shown the usefulness of small-scale water harvesting projects when implemented and managed properly.

The three projects taken up in Mangavaan, Ittwa and Tikariya panchayats in the Bundelkhand region were supported by Dorabji Tata Trust, NABARD and the District Rural Development Agency. The projects (two of which are on-going) have so far incurred a total cost of Rs. two crore, out of which Rs. 1.20 crore has been paid to the poorest families in these villages as wages.

The workers were employed in high labour-intensive works like constructing bunds and contour-bunds and contour trenches, creating new water tanks and restoring old ones, checking dams, farm ponds, gully plugs, land-levelling and tree-planting to harvest and conserve rainwater. The broader aim of the projects, taken up on a ridge-to-valley approach, is to slow down and check the rainfall water as it flows down plateau slopes, so that maximum possible water is either conserved or contribute to groundwater recharge. It is a win-win situation as about 60 per cent of the funds directly reached the poorest local families in the form of wage payments and as a result of water and moisture conservation, conditions for short-term as well as long-term improvements in agriculture, animal husbandry and agro-forestry have improved. The water-table in the wells in and around these villages has gone up and there is more greenery.

Bundelkhand has been facing adverse weather conditions for several years now and the rainfall in the project area has been much below the normal level. However, ABSSS' director Bhagwat Prasad says, "These projects have been planned to provide at least some protection even in low rainfall years." One such method is System of Rice Intensification (SRI), based on better spacing of plants as well as improved weeding practices. Promotion of organic farming leads to more moisture retention by soil.

Farmers' groups and self-help groups make timely advice and resources available to farmers. Watershed and livelihood committees have been formed which oversee the planning of all work, while transparent functioning ensure that workers are well-informed and satisfied with their payment. All payments are made by cheques, and all entries, whether piece-rate or daily wage payments, are recorded in three copies of a wage-book.

ABSSS' earlier campaign for distribution of land among poorest Kol tribals is another contributing factor for the latter's obtaining better benefits. During the course of the Mangavaan watershed project, the area under kharif crop went up from just 3 per cent of the total cultivable area in 2007 to 30 per cent in 2011, while the area under rabi crop went up from 47 per cent to 90 per cent. The production of paddy increased from 6,170 kg to 52,081 kg and that of wheat from 112,610 kg to 495,750 kg. Similarly there were big increases in the production of mustard, gram, sesame and vegetables.

Thousands of trees were planted, but survival rate has been below expectation due to uncontrolled grazing. However, a beautiful 11-acre plantation in Tikariya has emerged as an oasis of greenery with its anvla, mango, guava, bel, lemon and karonda trees.

Despite a few setbacks and many hurdles, on the whole, these projects have brought new hope to an area.

BLOOMING RESERVOIR



ground water more robust, whether through deep or shallow aquifers in the hills, every drop should be retained in villages," said Bhagwat Prasad, an elderly farmer who owned the reservoir.

The scheme, in itself, was unambitious. Just two months before, the government had proposed to build a dam on the river to create a reservoir. The dam would have cost ₹ 100 crore and would have created a reservoir of 100 TMC ft³. But the government had to scrap the plan because of the high cost and the fact that the dam would have flooded the area, displacing thousands of people.

HARVESTING A DREAM IN PARCHED TERRITORY

Centuries to the dormant hope of being parched and unyielding

Diveshwar Bhagwat / Mayurpur, Chhatarpur



AS AN old middle-class farmer, Diveshwar Bhagwat was not used to the heat and dust of Bundelkhand. But in the scorching summer, it felt as if the sun had been laid to rest on his head. The heat was not just a nuisance; it was a threat to his livelihood. The water table in the area was so low that even the wells had dried up. The only way to get water was to go to the nearby reservoir, which was also parched. The situation was dire, and the government had to step in to help.

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POCKETS IN PARCHED TERRITORY

Pockets in Bundelkhand are responding to specific water projects

Diveshwar Bhagwat / Mayurpur, Chhatarpur



It was during the construction of the dam that I first saw the water. The dam was built in the hills, and the water was stored in a reservoir. The water was then pumped to the villages through a network of pipes. The water was so precious that it was used for drinking and cooking only. The farmers used the water to irrigate their crops, but the water was so scarce that it was not enough to grow crops. The situation was dire, and the government had to step in to help.

The water was so precious that it was used for drinking and cooking only. The farmers used the water to irrigate their crops, but the water was so scarce that it was not enough to grow crops. The situation was dire, and the government had to step in to help.

water in these areas, then it will be a success. The government has to invest in the water infrastructure, and the farmers have to be encouraged to conserve water. The government has to provide the farmers with the necessary tools and equipment to conserve water. The farmers have to be educated about the importance of water conservation. The government has to provide the farmers with the necessary financial support to conserve water. The farmers have to be encouraged to use the water wisely. The government has to provide the farmers with the necessary technical support to conserve water. The farmers have to be encouraged to use the water efficiently. The government has to provide the farmers with the necessary information to conserve water. The farmers have to be encouraged to use the water sustainably. The government has to provide the farmers with the necessary resources to conserve water. The farmers have to be encouraged to use the water responsibly. The government has to provide the farmers with the necessary support to conserve water. The farmers have to be encouraged to use the water wisely and sustainably.

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चित्रकूट : नईदर में चंदेलकालीन कुआं व वहां बन रहा चेक डैम।

पाठा में हरित क्रांति लाने को एबीएसएसएस ने ठानी

चित्रकूट ब्यूरो

अखिल भारतीय समाज सेवा संस्थान ने पाठा के कोलों में जागृति की क्रांति लाने के बाद अब पाठा में हरित क्रांति लाने की ठानी है। इसके चलते पाठा में बारिश के दिनों में होने वाली वर्षा के जल को संचय करने की जगह-जगह पर वाटर शेड के कार्य किए जा रहे हैं। ज्ञात है कि आज से तीन दशक पहले जब पाठा में जाने पर कोल समुदाय लोगों को देखकर जंगल की ओर भाग जाते थे। तब अखिल भारतीय समाज सेवा संस्थान के संस्थापक गोपाल भाई ने आदिवासी समुदाय के लोगों के बीच तमाम संघर्षों से जूझते हुए उनमें जागृति लाने के कार्य कर उन्हें राष्ट्र की मुख्य धारा से जोड़ने का अभिनव कार्य अपनी दृढ़ इच्छाशक्ति के बूते कर दिखाया है। आज पाठा के आदिवासियों में अपने हक के प्रति खासी जागृति देखने को मिल रही है। आदिवासी समुदाय के लोग अब जोर-जुल्म का खुलकर खुद विरोध करने लगे हैं। शिक्षा, स्वास्थ्य एवं अन्य कार्यों के प्रति भी उनमें खासी जागृति देखी जा सकती है।

अब इन लोगों व पाठा के सर्वसमाज को हरित क्रांति से

जोड़ने को अखिल भारतीय समाज सेवा संस्थान बड़े पैमाने पर वाटर शेड के कार्य पाठा में करवा रही है। मानिकपुर ब्लॉक के इटवा गांव के मजरा छोटी पाटिन गांव के पास आज उजड़े हुए नईदर गांव का पत्रकारों ने भ्रमण किया। यहां अखिल भारतीय समाज सेवा संस्थान नाबार्ड द्वारा वित्त पोषित जलागम विकास निधि कार्यक्रम का सफलतापूर्वक संचालन करता हुआ देखा गया। दुर्गम क्षेत्र में स्थित इस उजड़े हुए मजरा का गौरवशाली इतिहास बताया गया है। यहां जंगल में चंदेलकालीन अष्टकोणीय विशाल कुआं आज भी मौजूद है। कुएं में 90 फुट तक पानी होना ग्रामीणों ने बताया है। ग्रामीणों का मानना है कि इस कुएं से छोटी पाटिन गांव को पेयजल आपूर्ति की जाए तो गांवों के खराब पड़े 23 कुओं की भरपाई हो सकती है।

यहां कुएं के पास एक छोटी सी गढ़ी भी है। बताते हैं कि नईदर चंदेलों का पड़ाव स्थल था। यहां आज भी दस एकड़ में मकानों के अवशेष मिलते

हैं। यहां छोटी पाटिन गांव के हीरामन द्विवेदी डकैतों के मारे जाने के बाद बीते साल से अपनी 20 बीघा जमीन पर खेती करने लगे हैं। उन्होंने इस कुएं से अपने खेतों की भरपूर सिंचाई की, लेकिन वह कुएं को खाली नहीं कर सके। गांव के जमींदार धरमपुरहाजी ने दो सौ वर्ष पहले नईदर नाले में छोटा सा बांध बनवाया था। इस बांध से क्षेत्र के किसानों के खेतों की सिंचाई होती रही है। ग्रामीणों ने दस्यु समस्या के कारण खेती करना बंद

कर दिया था। इससे नईदर क्षेत्र बीहड़ जैसा बन गया है।

संस्थान ने इस स्थान का मुआयना कर कुछेक किसानों को यहां खेती करने को प्रेरित किया। संस्थान हरियाली लाने को नईदर नाले में 20 मीटर लंबा और दो मीटर ऊंचा चेक डैम बना रहा है। इससे लगभग दस हेक्टेयर क्षेत्रफल में जल भराव होगा। इस जल से आसपास के 22 किसानों की 240 बीघा भूमि सिंचित होने से हरियाली फलेगी। संस्थान ने इन किसानों के खेतों में बंधीकरण एवं

♦ उजड़े हुए नईदर में किसानों ने शुरु कर दी खेती

छोटे-छोटे तालाबों के निर्माण का कार्य शुरू करा दिया है। इसके अलावा संस्थान के पाठा क्षेत्र में वाटर शेड के अन्य कार्य भी हो रहे हैं। भ्रमण के दौरान होने वाले कार्यों की विस्तृत जानकारी संस्थान के संस्थापक गोपाल भाई, निदेशक भामब्रतजी, राज सिंह व बुआराम ने दी है।

आज

चित्रकूट

कानपुर
1 जुलाई 2009 5

जलागम विकास के तहत जल संरक्षण का काम जारी

चित्रकूट 30 जून। मनगवां गांव में हरित क्रांति लाने एवं गांव को माडल के रूप में देखने का बड़ा लेकर सजला समिति मनगवां, मोटवन, छिवलहा, बंबिहा, मसनाहा आदि गांवों के कुल 1100 हेक्टेयर क्षेत्रफल में जलागम विकास के सम्बंधित कार्यों से आदिवासियों को जीविका से जोड़ने का पुण्य कार्य कर रही है। अखिल भारतीय समाज सेवा संस्थान के निर्देशन व मार्गदर्शन में मनगवां एवं मोटवन गांव की सजला (समेकित जलागम विकास एवं अजीविका संवर्द्धन) समितियों ने अभीतक 296 हेक्टेयर क्षेत्रफल को दो अलग-अलग खण्डों मनगवां व गुरसराय में बांटकर वर्षा जल के एक-एक बूंद को संरक्षित करने का कार्य कर रही है। समेकित जलागम विकास गतिविधियों के अन्तर्गत अन्तः जल प्रबन्धन, सतही जल प्रबन्धन एवं जल भण्डारण का काम किया जा रहा है। खेत का पानी खेत अथवा गांव का पानी गांव में के नारे को लेकर एवं जलागम की सही सोच को ध्यान में

रखते हुए सजला समिति ने परम्परागत भूमि व जल संरक्षण गतिविधियों से हटकर नमी संरक्षण संरचनाओं जैसे फार्मपाण्ड, 5 प्रतिशत माडल का निर्माण किया है, 5 प्रतिशत माडल में 17 फार्म पाण्डों को 100409 रुपये व्यय करते हुए 4140 मानव दिवसों का सृजन कर बनाया है। 5 प्रतिशत माडल खेत के पांचवे भाग में गहरी संरचना निर्मित की जाती है। जिसमें सारे खेत का पानी आकर भूगर्भ जल स्तर को बढ़ाता है। इनसे 3.926 हेक्टेयर मोटर पानी का लाभ 42 किसान ले सकेंगे। इस प्रकार सतही जल का प्रबन्धन करते हुए 86.60 हेक्टेयर क्षेत्रफल भूमि पर मेडबन्दी कर 426 मानव दिवस सृजित किये गये हैं एवं 41 किसानों को लाभान्वित किया गया है। मेडबन्दी में 498116 रुपये व्यय कर 3.890 हेक्टेयर मोटर जल इकट्ठा कर नमी संरक्षण का कार्य किया गया है। खेतों को काटने वाले छिड़ले नालों में 4 जल भराव बंधियों पर 299922 रुपये व्यय कर 1809 मानव दिवस का

सृजन करते हुए 2.682 हेक्टेयर मोटर पानी का एकत्रीकरण किया गया जिसका 10 किसान लाभ उठा सकेंगे। दो तालाबों को मरम्मत करते हुए 909 मानव दिवसों को सृजित **अखिल भारतीय समाज सेवा की पहल** किया गया एवं 106262 रुपये खर्च कर 3284 हेक्टेयर मोटर जल भराव का प्रयास किया गया है। एक चेकडैम का नया निर्माण एवं एक चेकडैम को मरम्मत करते हुए 1790 दिवसों का रोजगार सृजित करते हुए 1.299 हेक्टेयर मोटर जल भराव कर 24 किसानों के खेतों में पानी पहुंचाने का प्रयास किया गया है। इन चेकडैमों में 802022 रुपये व्यय किये गये हैं। 602 मानव दिवसों का सृजन कर दो नये कुओं का निर्माण एवं दो पुराने कुओं को मरम्मत में 149604 रुपये व्यय कर चार किसानों को लाभ पहुंचाने का प्रयास किया गया। ऊबड़ खाबड़ जमीन को उपजाऊ बनाने के उद्देश्य

से समतलीकरण कार्य भी किया जा रहा है। मोटवान-छिवलहा गांव से पश्चिम देवी जी हार में फार्म पाण्डों को मनोरम श्रंखला तैयार की गई है जो अपने आप में एक माडल क्षेत्र विकसित होगा। राजनारायण त्रिपाठी के बंधा से मनगवां राजस्व को सीमा तक नाले में फार्म पाण्ड, तालाब व चेकडैम की भी श्रंखला खड़ी की गई है जो अद्भुत है। बीच-बीच में पत्थर के छोटे-छोटे गलीप्लग देकर नाले के बहाव को कम कर सिल्ट जमा करने का प्रयास किया जा रहा है। उपर्युक्त गतिविधियों के अतिरिक्त फसल प्रदर्शन, वृक्षारोपण हेतु तकनीकी विशेषज्ञों, सरकारी प्रतिनिधियों, कृषि वैज्ञानिकों का भ्रमण कराकर समिति, किसान व समुदाय को क्षमता वृद्धि व कौशल विकास का प्रयास किया जा रहा है। समेकित जलागम एवं आजीविका संवर्द्धन कार्यक्रम मनगवां में अबतक 296 हेक्टेयर क्षेत्रफल पर कार्य चल रहा है। लक्षित 330 परिवारों के साथ 96 परिवारों को लाभान्वित कर 49.130 हेक्टेयर

क्षेत्रफल को उपचारित करते हुये 21.802 हेक्टेयर मोटर पानी रोकने व नमी संरक्षित करने का प्रयास किया गया है। 60 कोल परिवार लाभान्वित हुये हैं। इस कार्यक्रम हेतु सरदोराब जी टाटा ट्रस्ट, मुम्बई से मनगवां जलागम के 1100 हेक्टेयर क्षेत्रफल के उपचार गतिविधियों के लिए 122304000 रु. एवं परियोजना प्रबन्धक सहित 13809925 रु. की सहयोग राशि स्वीकृत हुई है। अबतक रु. 9289000 प्राप्त हो चुके हैं जिनमें मई 2009 तक 3344238 रु. व्यय किये जा चुके हैं। स्वीच्छक संगठन के प्रतिनिधि राजबुआ, विजय सिंह, डा. आर्यस यादव, सुश्री शशि निगम सजला समिति मनगवां को तकनीकी, कृषि विशेषज्ञ, महिला विकास, सामुदायिक सद्भाव निर्माणकर्ता के रूप में मार्गदर्शन व सहयोग प्रदान करते रहते हैं। सजला समिति के सदस्यों श्रीमती कला भाईलाल कोल, रामप्रताप व भरतलाल का सराहनीय योगदान इस पुनीत कार्य हेतु प्राप्त हो

हिन्दुस्तान, मंगलवार, 1 सितम्बर, 2009, कानपुर

गैर सरकारी प्रयासों से पाठा में जगी उम्मीदें

मनगवां क्षेत्र में सामाजिक संस्था ने किए जल संग्रह के प्रयास

निज संवाददाता चित्रकूट

भूख, प्यास, बदहाली पाठा क्षेत्र की निशानी बन चुकी है लेकिन ऐसा नहीं कि यहाँ पूरी तरह सब कुछ तबाह हो गया हो। उम्मीद की किरण से लेकर यहाँ खुशहाली के लिए सार्थक पहल भी हुई है। सरदोराब जी टाटा ट्रस्ट के सहयोग से अखिल भारतीय समाज सेवा संस्थान ने मनगवां, टिकरिया, छिवलहा, मसनहा, डोंडी, बंबिहा इलाके में बहते बरसानी पानी को रोकने के उपाय किए हैं। फिलहाल यह योजना 11 सौ हेक्टेयर की है जिसमें 359 हेक्टेयर में तो जल

- लक्ष्य 11 सौ में 359 हेक्टेयर में जलसंचयन की तैयारी पूरी
- ग्रामीणों को लक्ष्य पूरा करने के लिए भरपूर बारिश का इंतजार

संग्रह के उपाय भी कर लिए गए हैं। जानकार बताते हैं कि सरकारी खर्चों की तुलना में यह कार्य एक चौथाई की लागत में हुआ है। पाठा क्षेत्र के गांव के ग्रामीण खुश हैं और एक भरपूर बारिश की उम्मीद संजोए हैं ताकि उनके खेतों में बने फार्म पाठन भर जाएं और वह अच्छी फसल ले सकें। सामाजिक संस्था के कार्य से 330

परिवार लाभान्वित हैं। यहाँ 11 सौ हेक्टेयर खेत में काम होना है जिसके लिए दो करोड़ 69 लाख 79 हजार 850 रूपए स्वीकृत है जिसमें 43 लाख रूपए खर्च कर 359 हेक्टेयर भूमि में जल संग्रह के उपाय कर लिए गए हैं। बताते हैं कि यह कार्य सरकारी मशीनरी द्वारा डेढ़ से दो करोड़ में हो पाते हैं। भूमि संरक्षण विभाग के अधिकारी भी यहाँ आ चुके हैं। डीएम हर्देश कुमार एवं मंत्री दहू प्रसाद ने भी इस कार्य को अनुकरणीय बताया है। इस कार्य का मार्ग दर्शन कर रहे समाज सेवी गोपाल भाई बताते हैं कि सतही जल संचयन के

लिए चेकडैम, तालाब मरम्मत, पत्थर गली का निर्माण किया गया है। जल स्रोतों के संरक्षण के लिए कूप निर्माण व प्राचीन कूपों की मरम्मत की गई है। खेतों में फार्म पांड बनाकर बहते पानी को रोकने का उपाय किया गया है। थोड़ी सी बरसात हुई है उसमें ही इन स्थानों में पर्याप्त पानी भर गया है। योजना से लाभान्वित हुए किसान राजकरन, प्यारेलाल, रामनिहोर, मुनीलाल, हबीब कहते हैं कि उपाय अगर पहले हो जाते तो उनके इलाके में खुशहाली हो जाती। अगर ठीक ठाक पानी बरस गया तो गेहूँ, चना, मसूर की अच्छी खेती उगाएंगे।



बहते पानी को रोकने का अनूठा प्रयास

मनगवां को आदर्श गांव बनाने की मशक्कत



कक्षा में विद्यार्थी के रूप में उपस्थित विद्यार्थी।

जागरण

कठिन कवायद में जुटे गोपाल भाई



गोपाल भाई

मैनेजमेंट की गृह संरचना को 'बरसात का पानी जहाँ गिरि बई रोको' जैसी विशुद्ध देहाती बोली में ग्रामीणों को उनकी बात समझ आ रही है।

'अखिल भारतीय समाज सेवा संस्थान' के संस्थापक गोपाल भाई कहते हैं कि पिछले पैंतीस सालों से उन्होंने पाठ में लड़ाई पानी की ही लड़ी है। उनका सपना है कि पाठा का प्रत्येक व्यक्ति जल पुरुष बन जाये। जल प्रबंधन की तकनीकी को सही रूप में जानने और मानने के बाद ही यहाँ की मूल समस्या गरीबी का निदान संभव है। बताते हैं कि उन्होंने मानिकपुर ब्लाक के गांव मनगवां को आदर्श ग्राम बनाने की ठानी है।

यह पंचायत कुछ ही दिनों में बिना किसी सरकारी मदद के आदर्श ग्राम बन भी जायेगा। इसके लिये पूरी तैयारी करके ही मूल रूप में परिणित करने की बात करते हैं। कहा कि 6 महीने पहले देश के कृषि, बागवानी और जल के कुशल विशेषज्ञों के साथ क्षेत्र भ्रमण कर कार्ययोजना बनाई गई। व किसानों को गेहूँ, चावल, जड़ी बूटी, कंद और फलों को उगाने में मदद करेंगे। हर किसान के पास एक छोटा तालाब रहेगा, जिससे वह सिंचाई की जरूरत पूरी करेगा। उसे प्राकृतिक खाद बनाने की प्रक्रिया समझायी जायेगी, ताकि वह रासायनिक खादों के भरोसे न रहे। इससे पशुधन तो बढ़ेगा ही साथ ही जैविक खादों के प्रयोग से खेती से प्राप्त होने अनाज को खाने से लोगों को बीमारियों से भी निजात मिलेगी।

चित्रकूट, संवाददाता : जल, जंगल, जमीन, जानवर और जन! जी हां इनके ही सहारे पाठ के गांधी गोपाल भाई ने अब सीधे तीर पर वर्षों से पानी की कमी से कराहते दर्दिले पाठ के मनगवां गांव को आदर्श गांव बनाने की हसरत पाली है। यह उनका दिवास्वप्न नहीं बल्कि इसके लिये वे पूरी तैयारियां भी कर चुके हैं। 'भौगोलिक डाटा' दिमाग के कंप्यूटर में फीड करने के बाद अब उन्होंने इस ग्राम पंचायत के किसानों को बाकायदा पाठ पढ़ाना भी चालू कर दिया है।

उनकी कक्षा के विद्यार्थी भी ऐसे लोग हैं जो पढ़े से ज्यादा कड़े हैं। उनकी कक्षा में वे विद्यार्थी भी हैं जो अभी नवसाक्षर हैं। इनमें महिलाओं की संख्या काफी है। इस मामले में गोपाल भाई कहते भी हैं कि खेती का ज्यादातर काम महिलायें ही करती हैं। उन्हें मालूम होना चाहिये कि खेती के लिये क्या उपयोगी हैं व क्या अनुपयोगी। वैसे उनके द्वारा पढ़ाये जा रहे विषयों में मूल रूप से जल प्रबंधन ही है। सरल भाषा में वाटर

अमर उजाला - 29 जनवरी 2010

बीस साल बाद चले 'हल' तो लहलहा उठी फसल

डकैतों और पुलिस के उत्पीड़न से वीरान हो गया था गुरसराय



हिम्मत : बीस साल बाद सबसे पहले हल चलाने वाला किसान जुगुल।

वहाँ के वीरान जंगल में बसे गांव डकैतों के भय और पुलिस उत्पीड़न से उजाड़ हो गए थे। सभी किसान गांव को छोड़ पलायन कर गए थे। लेकिन जुलाई 2007 में दस्यु ददुआ के लगभग एक दर्जन साथियों के साथ मारे जाने और शेष गैंग के सदस्यों के आत्म समर्पण कर देने के बाद पाठा से खौफ की धुंध अब छटने लगी है। मानिकपुर ब्लाक के मनगवां ग्राम पंचायत में गुरसराय राजस्व मजरा है। जो बीस साल से पूरी तरह से उजाड़ था और वहाँ के खेतों में हल नहीं चलते थे। गांव की परती पड़ी भूमि में बीते साल एक किसान जुगुल ने साहस दिखा कर हल चलाया और फिर उसके पीछे मेहनतकश लोगों का कारवां चले निकला। आज वह गांव अखिल भारतीय समाजसेवी संस्था के सहयोग से जिले का विकास माडल बनने के लिए तैयार है। जुगुल और समाज सेवा संस्थान के निदेशक भागवत प्रसाद ने बताया कि गुरसराय में मवइया परिवार रहते थे। जो डकैतों और पुलिस के भय से गांव को छोड़ कर बाहर मजदूरी कर पेट पाल रहे थे। अब यहाँ पर वर्षा जल का संचय कर हरित क्रांति लाने का अनूठा प्रयास चल रहा है। खेत का पानी खेत में कार्यक्रम को अपना कर 16 मवइया परिवार अच्छी खेती करने लगे हैं। बताया कि संस्था ने किसानों को उन्नत बीज और तकनीक दी जिससे कि नब्बे प्रतिशत किसानों पथरीली जमीन भी फसलों से लहलहाने लगी है। गुरसराय के सीताराम मवासी ने तो धान की अच्छी उपज प्राप्त की है। उसने दो बीघे में धान रोपी थी और उससे 5 कुंतल उपज की है।

अमर उजाला | कानपुर, बुधवार, 16 अक्टूबर, 2008

बारिश की एक-एक बूंद है कीमती

चित्रकूट। बांदा से आए किसानों को जलागम अभिमुखीकरण एवं सहभागी प्रबंधन के लिए प्रशिक्षण दिया गया। कार्यक्रम अखिल भारतीय समाज सेवा संस्थान परिसर रानीपुर भट्ट में किया गया। इसमें वनों के समाप्त होने पर चर्चा की गई और बारिश की एक-एक बूंद को सहेजने के लिए प्रेरित किया गया। अखिल भारतीय समाज सेवा संस्थान के प्रमुख गोपाल भाई ने कहा कि धरती में जल संकट से उबरने के लिए गांव के किसानों की सहभागिता जरूरी है। कहा कि पर्यावरण संतुलन के लिए जंगलों का क्षेत्रफल कुल जमीन का 23 फीसदी होना चाहिए लेकिन यह अनुपात लगातार घट रहा है जो चिंता का विषय है। उन्होंने कहा कि बारिश की एक-एक बूंद को सहेजने की जरूरत है। बांदा के नरैनी ब्लाक के चंद्रपुरा गांव के घनश्याम ने कहा कि खेतों की उपजाऊ मिट्टी निरंतर कटाव से बह जाती है। एग्रीनामिस्ट मान सिंह ने सस्ती जैविक खाद बनाने की विधि का विस्तार से वर्णन किया।

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Harvesting a dream in parched land

Biswajeet Banerjee ■ Manikpur
(Chitrakoot)

Driving down the parched Bundelkhand areas in the scorching heat of June, one sees nothing but dark brown land devoid of greenery with people struggling for water everywhere. The long rows of coloured jerry cans near hand pumps testify how scarce water is here and the pains people take in getting it. Women and children treading heavily with earthen pitchers filled with water on their heads is a common sight and speaks of the region, known more for starvation, deprivation and poverty. People here often come to blows even for a glass of water!

Passing through this dusty land, the sight some storks is reassuring for it points to the presence of water nearby. Following the storks, one reaches a vast reservoir of water spread across Mangawan village in Manikpur block of Chitrakoot. The abundance of water in this otherwise parched region is no less than a wonder.

"We are harvesting a dream... to retain every drop of rain water for sustaining

life and bringing prosperity in this region," says Bhagwat Prasad, Director of Akhil Bhartiya Samaj Sewa Sansthan (ABSSS in short).

Prasad points out that the aim of the watershed project is simple — to retain rain water in such a way that it remains in field from one monsoon to the other. "The water in the farmland should flow away. 'Khet ka paani khet mein aur gaon ka paani gaon mein rahna chahiye (Every drop of the farmland water should remain in the fields; every drop of village water should be retained there)," says Prasad as some storks fly over the reservoir.

The contrast is unthinkable. Barely three kilometres from here, one can see a mad rush for water in Guraula village, with men and animals assembled at the village well to quench their thirst. There the water was dirty black but without caring about its state, women were frantically filing their buckets before the water level went deeper.

The reservoir has been built under the watershed project. To fill it, rain water is held with the help of check dams and bunds at different places.

"This simple principle has two positive effects —



ABSSS director Bhagwat Prasad and the reservoir at Mangawan village

one, this reservoir, which still has water despite it being June, and two, many wells around this reservoir are full of drinking water. This area has no scarcity of water. We have enough water even to grow vegetables," Prasad points out.

Growing vegetables is not easy in this rugged region. The farmers grow wheat and oilseeds but have never grown vegetables because of lack of irrigation facilities. And as vegetables are not grown

there, they are brought from nearby districts of Allahabad or Satna in Madhya Pradesh and sold at exorbitant prices.

Bhai Lal grew vegetables — lady fingers, pumpkins, onions and even bitter gourd — around the reservoir for the first time this year.

"I had a bumper crop of onion and lady fingers," he says. The sparkle in Bhai Lal's eyes reflects the dream Bhagwat Prasad was talking about and how the reservoir was helping in the village.