Evaluation of ASA project on

‘Livelihood improvement of Tribal Communities of Ratlam Dt. (Western M.P) through creation of Dug well assets, Agriculture development and Water management’

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Evaluation of ASA project on
‘Livelihood improvement of Tribal Communities of Ratlam Dt. (Western M.P) through creation of Dug well assets, Agriculture development and Water management’

Executive Summary

- The above project under evaluation was sponsored by Arghyam with funding support of Rs. 66 Lakhs and was implemented by ASA-Bhopal during Jan.2009 to Feb. 2012, in 9 villages under 4 Gram Panchayats belonging to 2 blocks (Bajna and Sailana) of Ratlam Dt. in western Madya Pradesh. The focus of the project was livelihood improvement of the Tribal Communities through creation of Dug well assets, Agriculture development and water management. The project evaluation was carried out during February 2012 and major evaluation findings are as follows:

  - **The Dug well intervention** can be said to be the most effective one, in terms of its success (99%), in providing water for 9-12 months in a year for irrigation and domestic requirements for household consumption and for livestock needs. However, there are serious equity concerns regarding its reach (26.5% of the Households and only 206 Households-WUG members are the direct Beneficiaries). Besides, only 51% of the(80 Nos.) existing Dug wells (Post project) are providing water for irrigation and domestic needs and the remaining 76 old Dug wells are more or less defunct in the project villages. However, the potential of these defunct old Dug wells for further deepening needs to be checked in order to address the equity concerns. Besides, there are large inequities among the project villages with regard to access to Dug well benefits under the project.

  - **Agriculture**: Due to the increased availability of water for irrigation, the above 206 households are able to provide protective irrigation for Kharif crops, assured irrigation fully to the Rabi crops and limited area irrigation to the summer crops. There is almost 73% increase in Rabi and summer cropping area. One can notice considerable degree of stability of the main Kharif crops. There is considerable degree of diversification of crops and cropping patterns and practices in the project villages.
    - Thus, one can observe improved agricultural production- both food crops as well as cash crops and also crop diversity (Maize, Wheat, Vegetables, Pulses, Cotton, Soya Bean) which has promoted Household Food security and Nutritional security, and also cash incomes from the Farm surpluses.
• **Domestic water availability** from the Dug wells has also increased significantly, which has improved access to drinking and cooking needs, personal hygiene and health of the most of the Households and reduced the drudgery for the women, in the project villages. There is an increasing trend of livestock rearing, due to improved access to domestic water and cash in the hands of the farming households.

• **Migration:** There is also an increased trend of changes in the migration patterns-from long duration entire family migration to far off urban areas towards short duration and limited member migration to nearby urban areas. The dependence on income from agriculture is increasing gradually over income from migration.

• The project has demonstrated a **High Benefit-Cost Ratio.** The Rabi Wheat production is roughly estimated to be valued at about Rs. 20-30 Lakhs / season (Direct project support to Dug wells is Rs. 28 Lakhs) and the economic value of Wheat Grain and Fodder, Cotton, Maize, Vegetables, etc are estimated roughly to reach about Rs. 100 Lakhs/ annum in the project villages in the next few years.

• All the above trends in turn have improved the local economy and livelihoods in the project villages. There is significant improvement in the quality of life, such as the Children’s education, Bathing practices, clothing, food habits, Household Hygiene, reduction in consumption of local liquor, etc.

• **Issue of Sustainability:** However, the crucial question is the sustainability of the positive project outcomes and impacts. The issues affecting the sustainability of the above gains are- the lack of community social mobilisation/ social organisation, collective action, and absence of community institutions, and organised institutional credit linkages and marketing linkages for their farm produce. Besides, one can notice the absence of any efforts on involving the communities in ground water monitoring to promote sustainable water management practices in the project villages (one of the major project objectives). It appears that there is a clear need to strengthen the capacities of the field personnel of the NGO on these aspects.
1. INTRODUCTION

1.1 Background
Since 2005, Action for Social Advancement (ASA) has undertaken comprehensive watershed and water resources development, micro-finance and agricultural improvement activities, which are organisation’s core interventions to promote livelihood security. ASA has been pursuing its development work for over a decade and is said to be presently working in more than 1000 villages of 11 districts of MP and 3 of Bihar and covering about 400,000 people. ASA has played a major role in policy changes in the MP Participatory Irrigation management (PIM) Act in providing voting rights to women in Water User’s Associations (WUAs) level. Now the women’s participation in the management of irrigation systems has been well recognised.

ASA has been carrying out watershed and water resources development through funding support from ITC Ltd., and Savitri Waney Charitable Trust- UK, and created additional irrigation potential in the Mahi river basins tributaries in Ratlam district. Along with this, ASA has also initiated work on agriculture productivity enhancement and extension programme through Government of Madhya Pradesh (GoMP) funded project on Agriculture Technology Management Agency (ATMA) and the incorporation of a Farmer’s Producer’s Company that also includes the farmers from other blocks of Bajna nd Sailana (adjacent to Ratlam).

1.2 Development Context
Ratlam district of western MP is predominantly rural with a large population directly dependent on natural resources based livelihoods. The region has fairly good annual average rainfall of 895 mm and a varying climate. There is high propensity to drought (3-4 yrs in a cycle of 10) due to part failure of monsoon. Also high wind speeds and high intensity of rainfall triggers rapid erosion and substantial run off. Resultant decreased soil and water interaction leads to sub-optimal storage and utilization of water, especially for agriculture. Hence a number of watershed interventions have taken place in the district for soil water conservation. However the benefit of these watersheds hasn’t translated into well being for the upland poor. Livelihoods traditionally dependant on rain fed agriculture, bolstered by distress migration by family members to cities, typically for low paid manual work.

The Project Area: Ratlam is predominantly non tribal district with only two blocks (i.e. Bajna & Sailana) of high tribal population out of a total of six. These two blocks are covered in the present project under evaluation and have more than 85% of the total population belongs to the scheduled tribes (Sailana with 85.7% & Bajna with
91.02%). The main tribes are Bhil and Bhilala. These blocks witness mostly subsistence livelihoods heavily dependent on rain-fed agriculture.

The net sown area and per capita net sown area are very low as compared to the other parts of the district. Most importantly, the percentage of net irrigated area to net sown area is very low (17% in Sailana and 13% in Bajna, and 45% for Ratlam Dt.). In addition, these two blocks grow only one crop and is surrounded by degraded forest lands. High levels of borrowings from moneylenders is witnessed which is coupled with low literacy rates. This data suggests spatially disproportionate development, where most of the fruits of state sponsored programmes were acquired by downstream non-tribals rather than the upland poor tribals.

The potential for ground water irrigation is limited due to dominant non-porous basalt nature of geological formation. However, opportunities for sub-surface water conservation and its use for irrigation and drinking purposes is high. It is believed that households in these two blocks have adequate land resources, yet they are unable to generate a stable livelihood out of it. The key problem is that of inadequate water resources development. This impedes agricultural productivity and subsequently generates low household income. Provision of such private assets was expected to enable communities to improve their life and livelihoods. Thus the Arghyam supported project looked at dug well asset creation as a solution to drinking water scarcity & livelihoods insecurity in the above mentioned blocks, thus enabling marginalised communities to improve their life and livelihoods.

1.4 About the Project

1.3.1 Objectives

- To empirically establish the impact of watershed interventions on sub-surface water availability, assess utilization potential and set up dug wells on the basis of sound geo-hydrological evidence in Bajna & Sailana blocks of Ratlam district, western Madhya Pradesh
- To improve agricultural productivity of poor tribal households through sustainable groundwater management and transfer of knowledge on appropriate agricultural practices in the abovementioned areas
- To improve capacity of beneficiaries on sustainable groundwater management and improved agricultural practices
- To link sustainable groundwater management based agricultural livelihoods to reliable markets for assured returns on investment and increased household income
- To link existing State/Central investments in the project area to the programme for leveraging and multiplier effects
• Generate datasets on groundwater in the project area through monitoring of constructed and renovated dug wells

The basic project components include:
• Construction of new dug wells
• Renovation of existing dug wells
• Establishment of Farmers Field Schools - FFS for agriculture technology demonstration & extension
• Capacity building of farmers in improved agronomic practices through trainings – exposure visits & conducting trials on Good Agronomic Package of Practices
• Creation of linkages to Farmer Producer Companies

Project Duration: The Project was to be implemented for duration of three years starting from 16th January, 2009 till 15th January 2012, which was subsequently extended up to end of February, 2012.

Approach/Methodology:
• Action research
• All physical activities to be based on geo hydrological evidence
• Beneficiary selection is participatory and evidence based
• Promoting participatory learning and adoption of new agricultural techniques via appropriate institutional mechanisms
• All processes related to beneficiary selection, capacity building and economic empowerment to be gendered and equity prone
• Develop innovative communicative tools for bridging the gap between community knowledge and resource management systems and groundwater science
• Facilitate development of norms, guidelines and rules on groundwater use at village level.

Beneficiaries: ASA has proposed to cover 80 households (40 new dug wells and 40 renovated dug wells) over 3 years. It is anticipated that water from each well would be shared among 2-3 households (as the practice goes in the area) therefore, the coverage of total household would be approximately 200-250.

Nature of Partnership: ASA is the sole implementing partner. Arghyam is supporting the project by way of providing financial grants.

Funding: Arghyam will be providing the entire project cost of Rs 6085120/- (Rs Sixty Lakhs, Eighty Five Thousand One Hundred and Twenty) in the form of grant, which was increased later to Rs. 66 lakhs.

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2. The Present Review

2.1 The Terms of Reference for the Review

2.2.1 Objectives of the Review
- The primary objective of the evaluation exercise is to make an independent assessment of the relevance, efficiency, effectiveness, process, impact and sustainability of the project. The secondary objective of the evaluation is to generate lessons learnt, develop best practices, document case studies on what worked well & what didn’t for wider dissemination and ways forward.

2.2.2 Tasks of the Consultant

- **Preparation for Review:** The consultant needs to go through the background materials on the project, stakeholders, and the region. This would include review of the concept note, proposal, MOU, progress reports, process documentation, Financial Audit report, IEC materials, existing case studies, training modules and other documentation.

- **Field visit:** Based on the dates mutually agreeable with ASA field staff and the consultant, the field visit will have to be planned. The visit and the interactions should be focused and should lead to the agreed deliverables. The following may be covered during the visit:
  - Interactions with Arghyam personnel who are involved in the project
  - Interactions with ASA staff (field & head office) to understand the progress, process, achievements, and challenges
  - Interactions with sample number of women & men beneficiaries (separately), community institutions, opinion leaders etc
  - Interactions with other players that influence the outcome of the projects – such as GP members, Farmer Cooperatives, Block officials etc.
  - Visit the intervention locations to understand and come up with answers to the objectives.
  - Assess the planning and implementation process, strategies which worked well and which didn’t, impact seen so far, lessons learnt, challenges by the staff and community and interveners in a multi-stakeholder project
  - Understand the fund disbursal mechanisms, reporting mechanisms and other institutional systems in place for project’s effectiveness / efficiency and suggest improvements

- **Debriefing meeting:** The consultant will share major findings and learning in the field, either immediately after the field visit or after consolidating & analysing. The meeting will be attended by the partner NGO and Arghyam representative.
• Incorporate the comments from Arghyam and ASA on the report(s) submitted by the consultant.
• Submit the final report with summary and annexure, data/reports compiled, photos & videos taken during the visit, short case notes of interviews / FGDs and the final invoice with supporting original bills within 15 days of completion of field visit.

2.2.3 Expected Outputs of the Review

Based on the literature review and the field visit interactions and observations, the consultant will have to produce the following documents for use by Arghyam. The documents should be of publishable quality.

• **Project Review**: Assessment of the agreed objectives, outputs/ outcomes, best practices, challenges, lessons learnt, areas of improvement and ways forward will be captured. The data collected, analysed tables, case studies, other relevant information, photos will be annexed with the main report.

• **Impact Document**: Documentation of signs of change, impact of the project interventions on capacities and behaviour of staff, livelihoods, health and on the Local community groups created to sustain and manage dugwell initiatives, conflicts resolution, policy advocacy with Govt, etc.

• **Advocacy Note**: Understand and analyse the dug wells programme, process of engagement, the uniqueness and missing elements in the light of existing schemes by Government and donor driven programs and Arghyam’s focus of safe & sustainable drinking water.

2.2. Methodology and Itinerary of the Review:

**Field Visit Itinerary:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Particulars</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-2-12 MON</td>
<td>9AM-2 PM</td>
<td>Briefing by ASA Project staff and discussions, Field Visit Planning for the Evaluation</td>
</tr>
<tr>
<td></td>
<td>3PM –8 PM</td>
<td><strong>Lakhiya Village (1st stage)</strong>: Transect walk to few individual Dug wells and discussions with the concerned farmers, and Focussed discussions with the village community, and with women groups.</td>
</tr>
<tr>
<td>14-2-12 TUE</td>
<td>9AM- 2PM</td>
<td><strong>Kunwarpada Village (2nd Stage)</strong>: Transect walk to few individual Dug wells and discussions with the concerned farmers, and Focussed discussions with the village community, and with women groups.</td>
</tr>
<tr>
<td></td>
<td>3PM- 8PM</td>
<td><strong>Badapura Khurd Village (1st Stage)</strong>: Transect walk to few individual Dug wells and discussions with the concerned farmers,</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Bardia Village (1st stage)</strong>: Transect walk to few individual Dug wells and discussions with the concerned farmers, and Focussed discussions with of the families in the field.</td>
</tr>
<tr>
<td>15-2-12 WED</td>
<td>9AM-2 PM</td>
<td><strong>Moria Village- Biladi GP (1st stage)</strong>: Transect walk to few individual Dug wells and discussions with the concerned farmers, and Focussed discussions with the village community, and with</td>
</tr>
<tr>
<td></td>
<td>3PM –8 PM</td>
<td></td>
</tr>
</tbody>
</table>
women groups.

- **Biladi Village-Biladi GP (1st stage):** Transect walk to few individual Dug wells and discussions with the concerned farmers, Visit to the Village School, and Focussed discussions with the village community, including the GP Sarpanch.

| 16-2-12 THU | 9AM-1PM | **Amlipada Village (Control Village):** Transect walk in the area and and discussions with the concerned farmers, and Focussed discussions with few of the village elders and women. |
| 1PM-3PM | | **Damania Village (Control village):** Meeting with few village members. |
| 4PM-10PM | | **Ratlam:** Discussions with the Amlipada GI Sarpanch, Secretary and member. Explanation of formats of data Tables with the team Leader and winding up discussions with the project Team. |
| | **Travel to Bhopal** by Taxi along with Mr. Nelson of Arghyam and 3 of the Project Team members. |

| 17-2-12 FRI | 10AM-2PM | **ASA Head Office-Bhopal:** Participatory Self Evaluation with the Theme managers, Project Team members. |
| 3PM-6PM | | **Debriefing by the Evaluator:** With above members and the CEO of ASA. |

* Amlipada was considered as the Control village for the evaluation study, which was earlier was selected as the project village, but was taken out of the list based on the findings of the hydro-geological study carried out by ACT-Bhuj. In this village, only FFS interventions were taken up only during 2011.

- Basically, the evaluation study included:
  - Briefing by the ASA’s Project staff at Ratlam project office,
  - 6 of the 9 project villages, and one Control Village, that was earlier selected as project village, but it was later excluded from project interventions.
  - Case studies of individual dug well owners, in each of the villages visited
  - In the villages visited, Focussed discussions with the village communities, and separately with the women. Focussed Discussions were also carried out with members of the Amlipada Gram Panchayat at Project office in Ratlam, and
  - Participatory evaluation was carried out at Bhopal, involving the key project staff and officers from the Head Office.
  - De-briefing presentation was made at ASA-Head Office-Bhopal, during the conclusion of the field study, and separately at Arghyam-Bangalore, after proper analysis of the field study notes and data.

- Discussion with the concerned Local Government officers could not be organised due to certain logistically difficulties and transfer of the officers familiar with the project.

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3. Assessment of the Project Outputs, Outcomes and Impacts

3.1 Development Context of the Area before the Project:

- The project area is located in Sailana and Bajna blocks of Ratlam District of Western Madhya Pradesh, and includes 9 project villages under 4 Gram Panchayats.

<table>
<thead>
<tr>
<th>Period Of implementation</th>
<th>Gram panchyat</th>
<th>Project Village</th>
<th>Evaluation Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Village</td>
<td>Date</td>
</tr>
<tr>
<td>2009-10</td>
<td>Amlipada</td>
<td>Lakhya</td>
<td>13-2-2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Badiya</td>
<td>14-2-2012</td>
</tr>
<tr>
<td></td>
<td>Amlipada*</td>
<td>Amlipada*</td>
<td>16-2-2012</td>
</tr>
<tr>
<td></td>
<td>Biladi</td>
<td>Biladi</td>
<td>15-2-2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moriya</td>
<td>15-2-2012</td>
</tr>
<tr>
<td>2010-11</td>
<td>Badapura</td>
<td>Khurd</td>
<td>14-2-2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kala</td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>Kangsi</td>
<td>Kalakhet</td>
<td>Discussions with GP members at Ratlam 16-2-2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.Kalakhet</td>
<td>Discussions with GP members at Ratlam 16-2-2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.Dholka</td>
<td></td>
</tr>
</tbody>
</table>

- The project area has undulating topography and comprises of tribal villages, dominated by poor families having small and marginal rain fed lands. The area suffered basically from lack of adequate infrastructure and access to irrigation and domestic water sources. Most of the private dug wells did not have enough water for irrigating agriculture crops, as they were not deep enough to tap the sub-surface water flow adequately. Besides, the farmers did not have access to adequate financial resources to undertake deepening of the dug wells through blasting of the hard rock soil strata. There are also few public dug wells, and hand pumps to meet domestic water needs of the village communities. Women used to spend more time in walking and collecting few pots of domestic water and were able to use only limited quantities of water to meet their domestic needs (towards drinking and cooking, cleaning of utensils, bathing and washing, and water for livestock). This in turn resulted in poor health of the households (dysentery, Stomach upset, skin diseases, etc).

- **Distress Migration:** The community livelihoods were dependant mainly on distress migration of the entire families (including children and animals) in search of wage labour to distant urban areas of Rajasthan (Kota), Gujarat, and M.P. (Bhopal and Indore), for about 6 months (Oct-Nov. to May-June) in a year and were able to remain in their villages only for about 50% in an year. This also affected the children’s education and also towards building long term productive assets in their own villages. There was increasing trend of school dropout cases in these villages.
• **Risky Rain-fed Agriculture:** Agriculture was mainly focussed on Kharif crops, such as Cotton, Maize and Soya bean, and to limited extent on short duration Rabi Bengal gram (grown under residual soil moisture), which were highly risk prone due to untimely/ low rainfall and the farmer’s inability to provide protective irrigation. They had no access to improved varieties or good quality/certified seed, crop inputs, and improved cropping practices and knowledge.

• **Lack of Household Food security and Nutritional security:** The livelihood security for these people was dependant mainly on migration, rather than on agriculture. This in turn affected the household food security and nutritional security. Their food needs were met through more market purchases from the local markets than from own home grown sources. Main staple food was Maize and Jowar, consumed along with onion and chillies. Pulses and vegetables were mostly purchased from the markets, and their consumption was restricted to about 4-5 few times/month, depending on the cash availability in their hands. This affected the nutritional security of the families.

### 3.2 Project Activities and Outputs

#### 3.2.1 Construction of New dug wells and renovation of old dug wells:

<table>
<thead>
<tr>
<th>Year of Implementation</th>
<th>Gram Panchayat</th>
<th>Village</th>
<th>No. of Dug wells</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>New</td>
</tr>
<tr>
<td>2009-10</td>
<td>Amlipada</td>
<td>Lakhia</td>
<td>3</td>
</tr>
<tr>
<td>2009-10</td>
<td></td>
<td>Bediya</td>
<td>6</td>
</tr>
<tr>
<td>2009-10</td>
<td>Biladi</td>
<td>Biladi</td>
<td>8</td>
</tr>
<tr>
<td>2009-10</td>
<td></td>
<td>Moriya</td>
<td>0</td>
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<tr>
<td>2010-11</td>
<td>Badapura</td>
<td>Khurd</td>
<td>8</td>
</tr>
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<td>Kala</td>
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<tr>
<td>2010-11</td>
<td>Kangsi</td>
<td>Kalakhet</td>
<td>5</td>
</tr>
<tr>
<td>2010-11</td>
<td></td>
<td>Dholka</td>
<td>1</td>
</tr>
<tr>
<td>2010-11</td>
<td></td>
<td>Kunwarapada</td>
<td>9</td>
</tr>
<tr>
<td>2011-12</td>
<td></td>
<td>Kunwarapada</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>40</td>
</tr>
</tbody>
</table>

- As planned, 40 new dug wells were constructed, and 40 old dug wells were renovated, along with 70 recharge pits, based on the appropriate geo-hydrological evidence. It is to be noted that Dug wells tap only the sub surface water and not the deep ground water aquifers.
3.2.2 Appropriate modifications to Dug wells, to enable easier access to domestic water needs:

- Some interventions, such as Installation of Pulley system and the platform to take out the water manually from the dug wells, water troughs for animals, growing of vegetables, flowers, and fruits, for home consumption adjacent to the dug wells, are generally seen in several places in the project villages. (Add Photos)

3.2.3 Farmers Field Schools (FFS) in the project villages:

- It is claimed that capacity building interventions in agriculture were carried out by organising 19 FFS in 10 villages, involving 414 farmers, as against the 14 FFS and 300-350 farmers, targeted under the project.
- It is quite interesting to note that majority of the participants under the FFS interventions were the women and very few men were said to have participated.
- Several crucial Improved cropping practices have been promoted among the farmers such as:
  - Deep ploughing and land levelling,
  - Border cropping and Inter cropping,
  - Crop diversification practices,
  - Seed treatment with Trichoderma,
  - Chemical fertiliser application,
  - Cotton picking from the bottom and wearing cap on the head and to avoid mixing of hair into Cotton harvest,
  - Proper spacing of Cotton (3 x 3 ft),
  - New crop varieties of Cotton, Wheat, Maize, Bengal Gram,
  - Procuring and the use of certified seed and to build own seed stocks within the villages,
  - Use of Neem Leaf extract, and Butter milk + Copper solution as pesticide sprays,
  - Use of tender coconut water as growth promoters, and
  - Use of Safety Hand gloves, Mask, Eye Goggles, Head caps, to protect from harmful effects of insecticidal sprays, etc.

- It was also interesting to observe that a large number of farmers are increasingly practicing these improved practices in the project villages.
3.3 Project Outcomes and Impacts

3.3.1 Water Availability in New dug wells and renovated old dug wells:

<table>
<thead>
<tr>
<th>Gram panchayat</th>
<th>Village</th>
<th>No. of Dug wells</th>
<th>Water Availability (Months)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>Deepened</td>
</tr>
<tr>
<td>Amlipada</td>
<td>Lakhiya</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Bediya</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Biladi</td>
<td>Biladi</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Moriya</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Badapura</td>
<td>Khurd</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Kala</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Kangsi</td>
<td>Kalakhet</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Dholka</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Kunwarpara</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

- As per the data made available by the project team and also observed during the evaluation visits that water is available throughout the year in 44 wells out of the total of 80 dug wells (55%) under the project, and water is available for 9-10 months of the year in 35 of the wells (44%). Only in 1 of the wells (1.25%) water gets filled up during the rainy season and does not remain for long after the rainy season.

- It was noticed that only protective irrigation was being provided for the Kharif crops, and also optimum irrigation for the Rabi crops. However, due to limited availability of water irrigation for the summer crops is provided only for a limited area.

- During the rainy season, the dug wells are said to be filled with water up to the parapet wall, and in some cases, the water tends to over flow, and after the rainy season, the water level gets lowered gradually, due to reduced flow of sub surface water and with increased consumption of water for irrigation, reaching the minimal levels during summer.

- The availability of water was also clearly observed in all the dug wells visited during February by the evaluation team. The above inferences were also clearly endorsed by the farmers.

- **Domestic Water Availability (refer Focussed Discussions with the project communities):**
  - Earlier due to lack of easy access to adequate domestic water, maintaining personal hygiene was not possible. This lack of hygiene led to stomach upsets and many skin related health issues for the village communities.
  - However, now the situation has improved considerably, as more domestic water is made available through the Dug Wells. Now the family members are able to take bath and wash their clothes much more frequently than earlier, and ensure better hygiene in the household and among the family members. There is also said to be reduction in skin diseases and better health among the project communities.
  - In addition to above, drudgery and the time taken for women to collect water for domestic needs have also reduced considerably.
o It was clearly pointed by the village communities that now the access to and consumption of domestic water among the village households has improved considerably, and the time taken to fetch domestic water has also reduced.
o Sufficient water is also available for the domestic animals now towards their drinking and cleaning needs.
o In some of the villages, during summer months, the water from the dug wells is given preference towards domestic needs and summer cropping is not taken up due to shortage of water (Refer Case study on Dhanna Lal- from Badiya Village).

3.3.2 Increase in cropping area and cropping intensity:

<table>
<thead>
<tr>
<th>Gram Panchayat</th>
<th>Village</th>
<th>New + Deepened Dug wells</th>
<th>Total Crop Area with WUG members (Bighas)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nos.</td>
<td>No. of WUG members</td>
<td>Kharif Crops</td>
</tr>
<tr>
<td>Kangsi</td>
<td>Kunwarpara</td>
<td>21</td>
<td>61</td>
</tr>
<tr>
<td>Badapura</td>
<td>B. Khurd</td>
<td>13</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>B. Kala</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Kangsi</td>
<td>Kalakhet</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Dholka</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Amlipada</td>
<td>Lakhia</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Bediya</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Bildi</td>
<td>Bildi</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Maurya</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9</td>
<td>206</td>
<td>620 Bighas (100%)</td>
</tr>
</tbody>
</table>

* 2 Bighas = 1 Acre

- The above data suggests that about 480 Bighas (240 acres) of crop area has increased additionally during Rabi and summer crops among the WUG members, directly due to availability of water from the dug wells under the project. The area under Kharif crops is also said to have increased. Besides, crop stability has been strengthened considerably for the crucial Kharif crops in about 620 Bighas (310 acres), due to availability of protective irrigation.
- The above data also suggests that each of the 80 dug wells irrigates an average of 2.5 acres (5 Bighas), as against the expected 1.5 acres. It is seen that double cropped area has increased by about 65%, and triple cropped area has increased by 13%. Thus, the Rabi and summer cropping area increased by 78.2% over the Kharif area, directly due to efforts under the project.
- Thus, the project has been able to increase the cropping area, and improved agriculture production, and considerably reduced the risk and vulnerability of the tribal project communities to crop failures, and strengthened their livelihoods.
Case Study of Dhanna Lal - Badiya Village (Amlipada GP)
(Owner of a New Dug Well)

New Dug Well was taken up during 2009 and was completed in April 2010. There are 3 WUG members, who are cousins, and have shared the Beneficiary contribution of Rs. 15,000 and also the own labour towards the construction of the new Dug well.

- Dhanna Lal: is the owner and has 3.5 Bighas of Crop Land (Rs. 6,000)
- Lallu Ditya: is the Cousin of the well owner and has 4 Bighas of crop Land (Rs. 4,500).
- Malji: is the Cousin of the well owner and has 3 Bighas of crop Land (Rs. 4,500).
- They take the Diesel Engine for pumping the water from the well @ Rs. 100/ Hr, and provide 3 times irrigation to Cotton crop and 5 times Irrigation to the Wheat crop.

The costs on Irrigation for each member of the WUG are as Follows:

A. Cotton Crop (for 2.5 Bighas):
   - Rent on Diesel Pump: Rs. 100/ Hr x 4 Hrs (for 2.5 Bighas) x 3 times = Rs. 1,200/
   - Cost of Diesel: Rs. 50/Lt/ Hr x 4 Hrs x 3 times = Rs. 600/
   - Total Cost (A): Rs. 1,800/

B. Wheat Crop (for 1 Bigha):
   - Rent on Diesel Pump: Rs. 100/ Hr x 2 Hrs (for 1 Bighas) x 5 times = Rs. 1,000/
   - Cost of Diesel: Rs. 50/Lt/ Hr x 2 Hrs x 5 times = Rs. 500/
   - Total Cost (B): Rs. 1,500/

Status of Agriculture of Dhanna Lal - Badiya Village

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kharif Crops:</strong></td>
<td><strong>Kharif Crops:</strong></td>
</tr>
<tr>
<td>Cotton + Maize in 3.5 Bighas, with</td>
<td>Cotton + Maize in 2 Bighas with</td>
</tr>
<tr>
<td>Yield of Maize at 1.3Q x Rs.600 =</td>
<td>Yield of Maize at 1Q x Rs.800 =</td>
</tr>
<tr>
<td>Rs.780 (Own Consumption), and</td>
<td>Rs.800, and Cotton yield at 1Q x</td>
</tr>
<tr>
<td>Cotton yield at 0.9Q x Rs. 2,500 =</td>
<td>Rs. 5,000 = Rs.5,000 (Poor</td>
</tr>
<tr>
<td>Rs. 2,250.</td>
<td>yields due to heavy rains).</td>
</tr>
<tr>
<td>Black Gram and Red Gram as inter</td>
<td>Soya Bean (Certified Seed of</td>
</tr>
<tr>
<td>crops for own consumption.</td>
<td>7105 Var.) in 1.5 Bighas with</td>
</tr>
<tr>
<td></td>
<td>yield of 0.5Q x Rs. 2,000 =</td>
</tr>
<tr>
<td></td>
<td>Rs. 1,000 (Poor yields due to</td>
</tr>
<tr>
<td></td>
<td>heavy rains).</td>
</tr>
<tr>
<td><strong>Total Crop Income = Rs. 3,030/.</strong></td>
<td><strong>Rabi Crops:</strong></td>
</tr>
<tr>
<td><strong>Gross Income from Family Migration</strong></td>
<td>Wheat in 1 Bigha with expected</td>
</tr>
<tr>
<td>= Rs.45,000/ (Less: Migration costs</td>
<td>yield of 2Q x Rs. 1,000 = Rs. 2,000.</td>
</tr>
<tr>
<td>and other costs during migration)</td>
<td>o Vegetables- Chillies, Tomato,</td>
</tr>
<tr>
<td></td>
<td>etc: Own consumption</td>
</tr>
<tr>
<td></td>
<td><strong>Summer Crops:</strong></td>
</tr>
<tr>
<td></td>
<td>No water for irrigation and</td>
</tr>
<tr>
<td></td>
<td>only for domestic use for the</td>
</tr>
<tr>
<td></td>
<td>village community.</td>
</tr>
<tr>
<td></td>
<td>**Total Crop Income = More than</td>
</tr>
<tr>
<td></td>
<td>Rs. 6,800/.</td>
</tr>
<tr>
<td></td>
<td><strong>Only 2 sons and 2 Daughter-In-Laws go on</strong></td>
</tr>
<tr>
<td></td>
<td>Migration for 2 months (Rs.150 x 20 Days x 4 persons x 2 months = Rs.24,000/).</td>
</tr>
</tbody>
</table>
### 3.3.3 Diversification of Crops and Cropping Patterns and practices:

<table>
<thead>
<tr>
<th>GP/ Village</th>
<th>Cropping Pattern of the WUG members Before the Project</th>
<th>During the project</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kangsi/Kunwarpara</td>
<td>Cotton + Soya bean</td>
<td>Cotton + Maize + Soya bean</td>
<td>Wheat, Vegetables &amp; Pulses</td>
</tr>
<tr>
<td>Badapura-Khurd</td>
<td>Cotton + Soya bean</td>
<td>Cotton + Maize + Soya bean</td>
<td>Wheat, Vegetables &amp; Pulses</td>
</tr>
<tr>
<td>Badapura-Kala</td>
<td>Cotton + Soya bean</td>
<td>Cotton + Maize + Soya bean</td>
<td>Wheat &amp; Vegetables</td>
</tr>
<tr>
<td>Kangsi/Kalakhet</td>
<td>Cotton + Soya bean</td>
<td>Cotton + Maize + Soya bean</td>
<td>Wheat &amp; Vegetables</td>
</tr>
<tr>
<td>Kangsi/Dholka</td>
<td>Cotton + Soya bean</td>
<td>Cotton + Maize + Soya bean</td>
<td>Wheat &amp; Vegetables</td>
</tr>
<tr>
<td>Amlipada/Lakhiya</td>
<td>Cotton + Maize + Soya bean</td>
<td>Cotton + Maize</td>
<td>Wheat &amp; Grams</td>
</tr>
<tr>
<td>Amlipada/Bediya</td>
<td>Cotton + Maize + Soya bean</td>
<td>Cotton + Maize</td>
<td>Wheat &amp; Grams</td>
</tr>
<tr>
<td>Biladi/Biladi</td>
<td>Cotton + Maize + Soya bean</td>
<td>Cotton + Maize + Soya bean</td>
<td>Wheat &amp; Grams</td>
</tr>
<tr>
<td>Biladi/Moriya</td>
<td>Cotton + Maize + Soya bean</td>
<td>Cotton + Maize + Soya bean</td>
<td>Wheat &amp; Grams</td>
</tr>
</tbody>
</table>

- Once irrigation water was made available to the communities, crop diversification was promoted very effectively through the FFS interventions. The Rabi crop area has increased significantly (65%) with wheat, Pulse and vegetable crops (Eg. Bengal Gram, Cow Pea, Green Peas, Chillies, Tomato).
- Now in the project villages, the vulnerability of the farmers to risks on kharif crops due to monsoon failure/ delayed rains/ wider gaps in the rainy days, are reduced considerably due to provision of protective irrigation from the project dug wells.
- The risks involved in Kharif Cotton crop (due to high cost inputs and due to failure of timely rain fall) have also reduced considerably.
The Quality of cotton is said to have improved because of improved water feeding cycle, due to availability of protective irrigation from the dug wells, and also due to improved cotton harvesting practices (Bottom to top harvesting) introduced.

The Cotton crop farmers are said to be getting better prices (Rs. 200-300/Q) due to quality improvements alone.

The area under new Variety of Cotton (DCH-32) is said to have increased considerably.

- The area under food crops such as Maize, Soya bean, Wheat, Pulses, chillies and Tomato have increased considerably during Kharif and Rabi seasons.
- The project also contributed towards ensuring the success of Rabi crops (Wheat and Pulses) and summer crops (High value crops - Vegetables, flowers and fruits), due to availability of assured irrigation.
  - Diverse vegetable crops such as Chillies, Tomato, Lady’s Finger, Ridge Guard, Bottle Guard, Spinach, Methi, Cluster Beans, Green Peas, Pumpkin, Cucumber, etc are being grown by many farmers during Rabi and summer seasons.
- Wheat area has expanded considerably and has become the main Rabi crop.
  - Rough back of the envelop calculations suggests that if we consider that 200 acres of Rabi crop area, with an average yield of 10-15 Q/ acre of Wheat, is estimated to produce about 200-300 Tonnes of grain. This alone is calculated to generate an economic value of Rs. 20-30 Lakhs/ Year (at an estimated market value of Rs. 1,000/ Q), in the project areas (almost equivalent to the direct project support provided towards the 80 dug wells to the farmers).
  - In addition, another 200-300 tonnes of fodder from Wheat is also generated to provide feed for large ruminants. Besides, Vegetable production during rabi and summer cropping seasons provide not only valuable nutrition to the malnourished tribal communities, but also provide cash income from the sale of marketable surplus to the households ( and to the women) to meet their day to day expenses.
- New cropping patterns, such as Inter cropping of Cotton and Maize, and cropping systems such as border crops ( Bengal Gram, Red gram, Cow Pea, Lady’s Finger, Mari Gold, etc.) are also being increasingly practiced in the project villages now.
- There is a better balance between cash crops (Cotton and Soya bean) and food crops (Maize, Wheat, Pulses and vegetables) in the project villages.
- The dug well farmers are able to advance their cropping cycle as they are able to take up early sowing & nursery interventions to prepare saplings (Eg: Chillies, Tomato).
- The surplus produce is also being marketed locally by the farmers, which provide cash incomes in the hands of the household and particularly in the hands of the women.
- New varieties of Cotton-DCH-32, Wheat- GW-272, Maize- Laxmi (Gujarat seed), and Cow Pea- Patel Variety, have been introduced in the project villages.
## Discussions with Male members of the Kunwarpada Village Community

<table>
<thead>
<tr>
<th>Before the project</th>
<th>Outcomes due to project Interventions</th>
</tr>
</thead>
</table>
| • Kharif Crops: Maize + Cotton were the main crops, and Soya Bean, Jowar were also grown under rain fed conditions and were risky, due to unreliable rain fall. | • **Kharif Crops:** New Variety of Cotton (Requiring 4-5 irrigations), Soya Bean, Ground nut, Green gram. Kharif crop risk is almost eliminated, as the farmers are able to provide protective irrigation from the dug wells.  
  o In the Cotton fields, Maize is being grown as intercrop, and Red Gram, and Lady’s Finger are grown as Border crops.  
  o Planning to take up Floriculture crops such as Rose, Jasmine and Mari gold in the rainy season. |
| • Short term Bengal Gram crop was taken up with residual soil moisture in the Rabi season. | • **Rabi Crops:** Wheat is the major second crop (Require 3-4 irrigations), and Bengal Gram ( 2 irrigations), Garlic and Onion (4-5 irrigations) are grown as border crops.  
  o Now certified seed of C-366 variety of Wheat is being used by the farmers. Now the farmers have saved the above seed for the next crop from the crop grown by them.  
  o Vegetable crops such as Radish, Chillies, Spinach, and Coriander are also grown as border crops in the Wheat fields.  
  o Now line sowing of Onion, garlic, Chillies is carried out now, as against broad casting of seed earlier. |
| • No summer crops | • **Summer Crops:** Depending on water availability, Vegetable crops in smaller scale are grown, such as Lady’s finger, Ridge Guard, Cluster Bean, Thurai, etc.  
  • Fruit crops such as Mango, Guava, banana, have been taken up by some farmers under the NABARD support, which are attracting the attention of more farmers. |
| • **Food Practices:** 250gms/ Month of edible oil consumption.  
  o Low consumption of vegetables and pulses, as they had be purchased from the market. Mostly used Onion and Chillies with Maize Chapatis.  
  • Villagers had to go long distances to fetch domestic water needs and hence could take bath once in 10-15 days only. | • **Food Practices:** 1-2 Lts. of edible oil consumption / Month now.  
  • More consumption of diverse Vegetables and pulses on alternate days, along with Wheat Chapatis, as they are growing them in their own lands.  
  • Bathing is taken once in 2-3 days, as they have dug wells nearby.  
  o Domestic water consumption has increased considerably due to availability of water from |
o Poor quality drinking water and also suffered health problems and skin diseases.
o Women had to wait for long time near the hand pumps, due to long ques near the Hand pumps.
- More Thatched roof houses.
- More Alcohol consumption.

the dug wells and Hand pumps.
o Cloth filtering of drinking water is popular now.
o Cleaning and washing of the House with water more often is seen in the village now.
o There is better health and less skin diseases among the people in the village.
- Now the Houses are being improved with sheet/concrete roofing.
- Consumption of local Liquor is claimed to have reduced by about 75%. Now people drink more Tea and less Alcohol.
- Project has created better communication and improved awareness in the villages. When someone starts a good practice, others are getting influenced by each other.

3.3.4 Household Food Security and Nutritional Security:
- Maize is said to be the main staple food and is still being relished by the tribal households even now. However, there is also an increasing trend of Wheat consumption among the project households now.
-Varieties of Pulses, such as Red Gram, Black Gram, Green Gram, Cow Pea, etc. are being consumed on alternate days by a large number of project beneficiaries.
- Varieties of vegetables, such as Tomato, Radish, Spinach, Lady’s Finger, Methi, Spinach, Brinjal, Ridge Guard, Bottle Guard, etc are consumed by the village communities, almost every day, as they are being produced locally.
- Landed farmers have no need for market purchases for the main food grains. Very few other food items are purchased from the markets (Mar-Aug) now.
- The farmers are also able to generate more cash in their hands now, as they also grow some cash crops (Cotton, Soya Bean) and also sell in local markets their surplus produce, so as to meet any of the additional food requirements and other household needs from the markets easily now than earlier.
- Thus the project interventions have contributed strongly not only towards household food security (Maize and Wheat), but also the nutritional security (Pulses, and Vegetables), which in turn also strengthened family health among the project communities.

3.3.5 Status of Migration:
- The pattern of migration in the project villages has been changing dramatically. There is considerable reduction in long term migration of the project communities for wage labour. The trend of entire families going on migration has been reducing drastically now. Now, one finds a large number of people staying in their villages and taking care of their agriculture and livestock. This is mainly due to the fact that they are now able to
ensure household food security and cash incomes from more stable and assured agriculture.

- Earlier the income from migration used to exceed the income from agriculture (>70%). Now, in most of the project villages, the agriculture income has increased significantly, and the income trends from migration and agriculture are seen to be reversing and in some case the income from agriculture and migration is getting balanced. It is expected that gradually, the income from agriculture would override the income from migration.
- Only few enterprising people still venture to distance places for relatively shorter duration (than in desperation for livelihoods), basically to earn more money (to build productive and other economic assets), and to improve their economic status, after completing their farm activities (after Holi festival from March – June), and leaving their families in the villages. Now more women, children and old people stay back in the villages, and children education has improved considerably.
- The local economic context is also changing due to various developmental interventions in the area from Government and other agencies, resulting in easy availability of wage labour in nearby towns.
- On the other hand, in the Control village (Amlipada, was planned to be included in the list of project villages earlier, but was taken out of the list, based on the hydro-geological study), we could find only few elderly people in the village, and most of the people were said to have gone for wage labour in the nearby urban areas (Ratlam or on Railway work). There is only one public dug well constructed by the Government agency and one private bore well (Refer Annexure- for Case study on the dug well in Amlipada village). No crops were seen growing during February in the village (except poorly grown Wheat and pulse crops by 2-3 farmers, which were provided some water from the leaked pipes of the urban drinking water supply structure nearby).

### 3.3.6 Other impacts:

- The living standards have improved considerably, particularly in terms of children’s education, personal hygiene, clothes they wear, housing, kitchen utensils, their capacities and self confidence, communication, and awareness, community interaction, habits, etc. The consumption of local liquor is said to have reduced considerably and there is an increasing trend of consumption of tea and offering the same to guests (Refer Case studies of Focussed Discussions with project communities).
### Focused Discussions with the women from Lakhiya Village

<table>
<thead>
<tr>
<th>Situation Before the Project</th>
<th>Changes due to Project Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forced Migration for Livelihood:</strong> Almost the entire village used to go on forced migration to distant areas such as Malwa, Kota (Rajasthan), Bhopal, Indore, Dewas etc. for 3-4 months/year for wage labour to ensure family food security, except old people and children, who used to stay back in the village.</td>
<td><strong>Migration for Income:</strong> Now only few members in a family and only few families in the village go on migration for wage labour for a shorter duration (1-2 months) to nearby towns, more for earning more income, than for livelihood. There is no more distress migration in the village.</td>
</tr>
<tr>
<td><strong>Agriculture:</strong> Short duration and risky Single rain-fed crops, such as Local variety Cotton, Maize, Bajra, Jowar. Only Black gram during Rabi with residual soil moisture, if any. No improved cropping practices and crop varieties.</td>
<td><strong>Agriculture:</strong> 3 crops in a year. Risk of Kharif crop from failure of rains is reduced considerably, due to availability of protective irrigation from the dug wells.</td>
</tr>
<tr>
<td><strong>Household Food security:</strong> Poor Household food security. Mainly Maize / Bajra with Onion and chillies as main Vegetables, and one crop of pulse.</td>
<td><strong>Household Food security:</strong> Good Household Food security from family agriculture. Now more Wheat (Rabi) and Maize (Kharif) is produced from own lands. No Jowar consumption now. More green vegetables and diverse types of vegetables and Pulses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Forcing Migration for Livelihood:</th>
<th>Almost the entire village used to go on forced migration to distant areas such as Malwa, Kota (Rajasthan), Bhopal, Indore, Dewas etc. for 3-4 months/year for wage labour to ensure family food security, except old people and children, who used to stay back in the village.</th>
<th><strong>Situation Before the Project</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agriculture:</strong> Short duration and risky Single rain-fed crops, such as Local variety Cotton, Maize, Bajra, Jowar. Only Black gram during Rabi with residual soil moisture, if any. No improved cropping practices and crop varieties.</td>
<td><strong>Forced Migration for Livelihood:</strong> Almost the entire village used to go on forced migration to distant areas such as Malwa, Kota (Rajasthan), Bhopal, Indore, Dewas etc. for 3-4 months/year for wage labour to ensure family food security, except old people and children, who used to stay back in the village.</td>
<td><strong>Changes due to Project Interventions</strong></td>
</tr>
<tr>
<td><strong>Household Food security:</strong> Poor Household food security. Mainly Maize / Bajra with Onion and chillies as main Vegetables, and one crop of pulse.</td>
<td><strong>Agriculture:</strong> Short duration and risky Single rain-fed crops, such as Local variety Cotton, Maize, Bajra, Jowar. Only Black gram during Rabi with residual soil moisture, if any. No improved cropping practices and crop varieties.</td>
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</tr>
<tr>
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<td><strong>Changes due to Project Interventions</strong></td>
</tr>
<tr>
<td><strong>Household Food security:</strong> Poor Household food security. Mainly Maize / Bajra with Onion and chillies as main Vegetables, and one crop of pulse.</td>
<td><strong>Agriculture:</strong> Short duration and risky Single rain-fed crops, such as Local variety Cotton, Maize, Bajra, Jowar. Only Black gram during Rabi with residual soil moisture, if any. No improved cropping practices and crop varieties.</td>
<td><strong>Situation Before the Project</strong></td>
</tr>
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<td><strong>Situation Before the Project</strong></td>
</tr>
<tr>
<td>Changes in Amlipada</td>
<td>Changes in Control Village</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------</td>
<td></td>
</tr>
<tr>
<td>Livelihood was dependent more on migration and less on agriculture.</td>
<td>Livelihood is dependent more on agriculture and less on migration.</td>
<td></td>
</tr>
<tr>
<td>Quality of Life: Thatched Roof houses, Mud vessels for cooking and 1-2 days of bathing with Mud and one pair of clothes.</td>
<td>Quality of Life: More number of improved houses with tiles-sheet roofs are seen now. More steel utensils /vessels, Pressure Cookers are seen in the houses. In some houses TVs are seen. 3-4 pairs of clothes now. Bathing once in 1-2 days and use of soap for bathing and washing powder for washing clothes are the norm. Drinking water is filtered with clean cloth. Domestic water consumption has increased considerably.</td>
<td></td>
</tr>
<tr>
<td>Only few children used to go school irregularly, due to long duration forced migration. More skin diseases and frequent sickness, due to poor hygiene, sanitation and bad quality drinking water.</td>
<td>Improved awareness, Better health, reduction in skin diseases, More children and also girl children go to school regularly,</td>
<td></td>
</tr>
<tr>
<td>Rampant use of Local Liquor and the same was offered even to the guests.</td>
<td>Better Access to Govt. Schemes due to improved awareness and capacities, more community sharing and interaction,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Widening Perspective: More progressive thinking, Wish to improve the quality of life, Wants to improve agriculture and crop production, Marriages have become more expensive.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>There is 50% reduction in local liquor consumption. Now mostly old people drink local liquor.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Now Tea is served to the guests.</td>
<td></td>
</tr>
</tbody>
</table>

### 3.3.7 Status of Amlipada- the Control Village:

- Earlier, Amlipada village (Amlipada-GP) was considered to be included in the list of 10 project villages. However, ACT study on Hydro-geology of the project areas, indicated that Amlipada has poor sub-surface water potential, as the village boundaries are situated within ridges and recommend only recharge measures for the village. Thus, Amlipada was left out of the list of project villages for dug well interventions.

- As per the census, the village has 53 Households, but the villagers claim that there are about 100 households. Almost all the families in the village have livestock- at least 2-3 Goats, and 2-3 Milch Cows/ family. In many cases, the households of the Brothers share a pair of Bullocks together.
Main source of income for the households used to be distress migration, in which, entire families migrate in search of wage labour for about 4-6 months in a year to distant urban areas. Rain fed agriculture and livestock are the supplementary sources of income for majority of the families in the village.

**Status of Migration:**
- The villagers have been migrating to distance urban areas of Kota (Rajasthan), Gujarat, and Bhopal and Indore (MP), and earn wages of Rs. 200-300/ day and the wages are said to be equal for both men and women.
- Soon after Diwali, entire families migrate, except the old people who stay back in the village to look after lands and animals. It was pointed out that almost 90% of the village migrate usually.
- Recently, there is an increasing trend of people going for work in the nearby towns, where the wage labour is increasingly available now and also Railway work is also available. The daily wages in Ratlam area are said to be Rs. 150/ men and Rs. 125/ Women.

**Status of Income:**
- **Dry land farmer Households Going to Distance Places:**
  - Migration Income: 70%
  - Agriculture Income: 30%
- **Dry land farmer Households Going for Local Wage work:**
  - Migration Income: 60%
  - Agriculture Income: 40%
- **Farmer Households with Protective Irrigation and Migration:**
  - Migration Income: 50%
  - Agriculture Income: 50%

**Status of Agriculture:**
- **Kharif Crops:** Cotton + Maize as inter crops, and also as pure crops. As intercrops, the crop yield/ Bigha is said to be only about 40 Kgs for Cotton and 2Q for Maize.
  - With protective irrigation, there is a good potential to increase the productivity levels of these crops considerably.
  - Black gram and Red Gram are also grown during Kharif as border crops, for home consumption.
  - Bengal Gram is also grown during Rabi season using the residual soil moisture from the rainy season.

**Project Interventions:**
- **FFS:** During the Year 2011-12, 3 FFS trainings were organised on some cropping practices on Cotton, and to grow Pulses such as Red Gram, Cow Pea, etc. as border
crops were promoted. Gloves, Caps, Goggles, Masks were provided to the farmers to protect against harmful effects of spraying chemical pesticides. Awareness on the concept of Farmers Producer Company was also provided.

- **SHGs:** 3 SHGs are said to have been organised.

**Living Standards:**
- **Status of Domestic water:** Presently, the villagers have to cross the railway line for about 200 Mts. to fetch 2-3 pots of water for domestic needs, and have to wait for about 2-3 Hours in the queue.
- While on migration, they take bath once in 3-4 days depending on water availability. In the village, they take bath once in 8 Days, depending on the water availability. Water availability is the limiting factor.
- Washing of clothes is carried out once in 4-5 days depending on the water availability. Washing of hands after defecation is not practiced and hand washing with soap is also not practiced.
- **Children’s Education:** They also take the children along with them during migration and during such time, children’s education also suffers to some extent.
- **Health:** Skin Diseases and stomach upsets are more prevalent, and are mainly attributed to lack of access to clean drinking water and limitations in the availability of adequate domestic water, and lack of Hygiene and sanitation practices.
4. Analysis of the Project Interventions

4.1 Physical Interventions:

4.1.1 Impact of Hydro-geological studies by ACT-Bhuj:

- The selection actual sites for new Dug wells and old dug wells for renovation under the project were carried out, based on the results of the geo-hydrological evaluation of the project areas. This single factor seems to have contributed immensely in the success of almost all the dug wells, where water is available for 9-12 months in a year in almost 99% of the project wells (79 out of 80). Thus the value of undertaking geo-hydrological evaluation of the project areas in improving the project impact was fully realised under the project.

- ASA is said to have taken up the Dug well intervention as their largest strategic intervention. It was also pointed out by the field staff that ‘earlier, they used to select the location for the new dug wells and identify the old wells for renovation based on the thumb rules evolved from their experience and gut feeling in the project areas’. In new unfamiliar project areas, the project staff used to be scared of dug well failures. However, the hydro-geological study of the project area by ACT-Bhuj is said to have improved ASA’s own understanding of the geo-hydrological concepts much better now.

4.1.2 New Dug Wells and Renovated Old Dug wells:

- Efficient Dug Wells Designs: One could notice considerable degree of experience and innovations have been put into practice in the Dug well construction and renovations.
  - Almost 70 recharge pits for 80 of the Dug wells under the project have been constructed to improve the sub surface water flow into the wells. The value of the recharge pits is being increasingly appreciated not only by the project field staff, but also by the project communities.
  - In some cases, the recharge pits/percolation ponds were filled with boulders, gravel and sand, and are connected to the dug wells through underground pipes, to ensure flow of clean water into the dug wells.
  - During the rainy season, the Dug wells used to get filled up to the brim and sometimes used to overflow, due to excessive seepage of sub-surface flow. The Dug wells are also provided with outlets to allow the excess flow from the wells during the rainy season into the surrounding area. The parapet walls of the dug wells are also provided with inlet pipes to tap the sub surface water flow from the surrounding areas into the dug wells, after the rainy season.
• **Building Irrigation facilities:** Many of the Dug wells have own electric motors or Diesel pumps to draw water for irrigation.
  o Those who could not install their own, usually take the Diesel pumps on rent for much shorter periods (Rent for Diesel Pumps is around Rs. 100/ Hr), and bear the cost of Diesel consumed.
  o Some of the Farmers were also able to leverage Government schemes to install Diesel Pumps/ Electric motors, and also pipelines to irrigate their crop lands.
  o Some others, share the pipe lines or borrow from the neighbouring farmers.

• **Facilities to draw Domestic Water:** Most of the Dug wells have also incorporated the Pulley system and a plat form to draw water manually for domestic needs of the nearby households.
  o However, the quality of the pulley system and the platforms appear to be of poor quality and risky, and may be prone to accidents.
  o No efforts were visible towards promoting innovative designs on these aspects.
  o The above facilities appear to have been taken up more from the beneficiary households than being proactively promoted by the implementing agency.
  o One gets a feeling that there is a need for further increasing the sensitivity among the project partners (and its staff) towards the importance of domestic water needs and in improving the living standards of the poor.

<table>
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<th>Mr. Kedar Laxman- An Experimental and Visionary Tribal Farmer</th>
</tr>
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<tbody>
<tr>
<td>Mr. Kodar Laxman has 5 Bighas of land (1 Hectare) in Lakhiya Village. Under the project, about 2 years back, he could get his old dug well further deepened by 14 ft. with the project support.</td>
</tr>
</tbody>
</table>
• **Renovated Dug Well:** He also has a farm pond near the dug well which is connected to the dug well through pipes to impound the surface water flow, and also acts as percolation pond/ recharge pit. This pond is filled with large boulders, small stones and sand to allow clean water into the dug well.
  o The dug well has a parapet wall and an outlet to allow the overflow from the dug well during the rainy season. This overflow from the dug well is further harvested and retained within his land through a bund and is allowed to percolate down within his own lands. The walls of the dug well are also provided with inlet pipes to let in the sub surface flow into the dug well. With the result, water is available throughout the year in the dug well.
  o Local fish is also reared in the dug well.
  o An electric motor is installed and the lands are irrigated through pipes and drip irrigation is carried out to some parts of the land.
  o He shares water from the dug well with his own brother- Babu for 0.5 hectares, in addition to his own land of 1 Hectare.
After getting water under the project, Mr. Kedar has been able to take 3 crops/year. The crops and cropping patterns practiced by him as of now are as follows:

- **Kharif Crops**: Inter cropping of Cotton + Soya Bean, and Cotton + Maize, and Thuran and cow Pea as border crops, and also grows Chillies, Tomato, Marigold, etc.
- **Rabi Crops**: Wheat + Mustard as inter crops, and Maize as border crop with Wheat, and also grows Green Peas, Bengal Gram, Ridge Guard. He grows GW-272 variety of Wheat. With 20 Kg of Wheat seed, he has grown 6 Q of Wheat in 2 Bighas (0.4 Ha) during 2010 rabi season and has used 5 Q for his own household consumption and 1 Q has used as seed for the 2011 rabi crop.
- **Summer Crops**: Cucumber, Lady’s Finger, Brinjal, **Govar Phali**, he has also planted some Mango saplings under the Horticulture Mission in part of his land, and is also growing Bengal gram, Green Peas, Garlic, radish, Bitter Guard, Onion, and Brinjal as inter crops. In a small part of his land near the farm house, he is also growing Papaya, Banana, Beans, Brinjal, Ridge Guard, Mary Gold, etc.

Thus, Mr. Kedar has been able to provide leadership and a vision to other farmers in the area and other farmers look up to him for guidance.

**4.1.3 Establishment of Community based Ground water management system:**

- In Kunwarpada Village, a large percolation pond was developed with better soil and water conservation measures in the upper reaches of the village, leveraging the Government schemes (Rs.2 Crore of investment) effectively, which strengthened the sub-surface water flow into the 21 Dug wells constructed/renovated in the lower reaches under the project.

**Convergence between the government schemes and the Donor project**

- In the upper reaches of the Kunwarpada village, there is big Percolation tank, which was developed through the GP under the Government scheme, with active community participation, and with ASA-NGO’s technical guidance and support.
- Interventions such as Guly Plugs, contour Trenches, loose boulder structures, Dug out ponds, and other soil and moisture conservation measures were carried out. The percolation Tank bund was further strengthened. A Waste weir and vegetative cover are yet to be provided.
- Under the present project, digging of new wells was supported, and the old wells were further deepened.
- During the year 2011, due to heavy rains, the huge percolation tank was filled up, but during February, 2012, no water is seen in the percolation tank, as all the impounded water has percolated into the ground water, which has increased the ground water level in the village.
- Due to the above interventions in the upper reaches of the village, the water flows in the
Nala and the sub surface flows have increased considerably, which have greatly impacted the water availability in the dug wells.

- This is a good example of impact of convergence between the government schemes and the Donor project.

- In addition, building recharge pits near the dug wells and other measures, such as pipe connections from the percolation ponds into the dug wells, inlet pipes to tap the sub surface flow, outlets to allow excess flow, etc have also strengthened the water sources for the dug wells (Refer case study of Kedar from Lakhiya village).

- ACT’s study also contributed a lot towards better understanding on the water harvesting among the NGO field staff and also among the project villages.

- In general, a greater awareness on the importance of soil and water conservations measures, in sustaining the water availability to meet the irrigation and domestic water requirements of the communities, was clearly visible among the project communities. It needs to be mentioned that there is general concern among the project village communities regarding the need for further interventions on soil and water conservation measures to sustain the water in the dug wells (Refer focussed discussions with the women of Kunwarpada village).

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### Discussions with Women members of the Kunwarpada Village Community

**The status before the project was that there used to be no** community meetings. There was no Voice or Forum for women in the village. There was lot of dormant potential.

**Outcomes due to project Interventions are as follows:**

- More Community meetings. Now more Voice and a Forum exist in the village for women to share their issues and concerns and bring out their dormant potential.

- Self Confidence of the women has improved considerably due to project’s capacity building efforts and they are able to speak more boldly now.

- More awareness and knowledge on ground water, dug wells, irrigation, agriculture, crops and cropping systems, seeds, varieties, Vegetable crops, Government schemes, etc.

- More vegetables and food grains are being grown and eaten by the people in the village No more buying of Vegetables from the market.

- Overall Peace, improved nutritional value of the food eaten, and over all good health is prevailing in the village.

- If man does not take adequate responsibility, then woman takes more responsibility and takes lead in agriculture and grows more food crops and vegetables and tries out new crops.

- As access to water/ irrigation has improved, more initiatives are seen in crop diversification into vegetables and cash crops.

- Now the women are able to look into the future with hope and confidence. This was
dormant earlier.
- If sustainability of the water assets developed is ensured, children will not go for migration (as they have suffered earlier). This Fear still haunts them - Smt. Geetha Mangu.
- Recharge measures need to be increased further and the check dams and Recharge pits need to be protected by the community.

- However, systematic efforts towards evolving appropriate social processes and principles for social controls, building technical knowledge and skills among the project communities and evolving suitable protocols for community monitoring of the ground water levels so as to promote sustainable ground water management were not visible in the project villages. However, it is rather ambitious on the part of the NGO to evolve such a status in such a complex project within the given project period of just 3 years.

4.2 Social and Institutional structures

4.2.1 Selection of the Beneficiaries:

- Initially, PRAs were said to have been carried out involving the community members in each of the villages, and the results of the ACT study was shared with the Communities, so as to evolve consensus on the selection of beneficiaries, location of the new dug wells and for selection of old wells for further deepening and renovation. This process proved to be very effective in the success of the dug well interventions.

- **Issue of Equity:** The above approach however, raises serious issues concerning equity. This process seems to have selected only those who were able to raise high levels of beneficiary contribution designed under the project. Thus the process seems to have effectively prevented those poorer households in getting the Dug well benefits, who could not afford to raise the required beneficiary contribution for the dug wells.

### Project Beneficiary Households at the Village Level

<table>
<thead>
<tr>
<th>Gram Panchayath</th>
<th>Project Village</th>
<th>Total No. of Households</th>
<th>Total Population</th>
<th>No. of Dug well Beneficiaries</th>
<th>No. of WUG members</th>
<th>% of Beneficiary Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amlipada</td>
<td>Lakhia*</td>
<td>117</td>
<td>640</td>
<td>7</td>
<td>15</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td>Badiya*</td>
<td>92</td>
<td>552</td>
<td>10</td>
<td>25</td>
<td>27%</td>
</tr>
<tr>
<td>Biladi</td>
<td>Moriya*</td>
<td>87</td>
<td>532</td>
<td>4</td>
<td>9</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Biladi*</td>
<td>234</td>
<td>1289</td>
<td>13</td>
<td>26</td>
<td>11%</td>
</tr>
<tr>
<td>Kangsi</td>
<td>Kunwarpada</td>
<td>72</td>
<td>510</td>
<td>21</td>
<td>61</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Kalakhet</td>
<td>42</td>
<td>338</td>
<td>8</td>
<td>20</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>Dholka</td>
<td>45</td>
<td>273</td>
<td>1</td>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td>Badapur</td>
<td>Khurd</td>
<td>50</td>
<td>331</td>
<td>13</td>
<td>39</td>
<td>78%</td>
</tr>
<tr>
<td></td>
<td>Kala</td>
<td>38</td>
<td>175</td>
<td>3</td>
<td>9</td>
<td>24%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>777</td>
<td>4640</td>
<td>80</td>
<td>206</td>
<td>26.5%</td>
</tr>
</tbody>
</table>
The above table also shows that in the project villages an average of 26.5% of the Households (WUG members) have got the benefit of irrigation for their crops from the Dug well project support and thus have been able to improve their livelihoods.

However, a large number of the poorer households in the project villages could not get the Dug well project benefit. However, the access to irrigation water from the dug wells varied from 4% (Dholka) to 78%-85% (Badapur-Khurd and Kunwarpad) in different project villages.

There appears to be inequity and selective preference for some of the project villages in providing the Dug well benefits under the project. Perhaps, hydro-geological potential must have played a role in the selection of the Dug well Benefits in each of these villages. This needs to be checked.

### Status of Dug Wells before and after the Project

<table>
<thead>
<tr>
<th>Gram Panchayath</th>
<th>Project Village</th>
<th>No. of old Dug wells (Before Project)</th>
<th>Hand Pumps</th>
<th>Tube Wells</th>
<th>No. of new Project Dug wells</th>
<th>No. of Old Dug wells Renovated</th>
<th>% of Dug wells with water for irrigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amlipada</td>
<td>Lakhiya*</td>
<td>15</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>39%</td>
</tr>
<tr>
<td></td>
<td>Badiya*</td>
<td>15</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>48%</td>
</tr>
<tr>
<td>Biladi</td>
<td>Moriya*</td>
<td>9</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>Biladi*</td>
<td>35</td>
<td>11</td>
<td>17</td>
<td>8</td>
<td>5</td>
<td>30%</td>
</tr>
<tr>
<td>Kangsi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kunwarpad*</td>
<td>13</td>
<td>2</td>
<td>9</td>
<td>9</td>
<td>12</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>Kalakhet</td>
<td>7</td>
<td>4</td>
<td>11</td>
<td>5</td>
<td>3</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td>Dholka</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>14%</td>
</tr>
<tr>
<td>Badapur</td>
<td>Khurd</td>
<td>9</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>5</td>
<td>76%</td>
</tr>
<tr>
<td></td>
<td>Kala</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>42%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>116</strong></td>
<td><strong>42</strong></td>
<td><strong>59</strong></td>
<td><strong>40</strong></td>
<td><strong>40</strong></td>
<td><strong>51%</strong></td>
</tr>
</tbody>
</table>

The above Table shows that after the project, an average of 51% of the Dug Wells now (Post project) provide for irrigation and domestic water needs of the project villages. This also varies drastically from village to village. For Example in Kunwarpad and Badapur Khurd, almost all the dug wells (95% and 76% respectively) have been providing water for irrigation, while in Dholka only 14%, of the dug wells are providing irrigation water.

The potential to deepen and renovate 76 of the existing old wells in most of the project villages may have to be properly evaluated, so as to enable remaining poorer households to improve their livelihoods. NGO needs to evolve innovative strategies to address this challenge.

### 4.2.2 Water User Groups and Beneficiary Contribution:

#### a. Water User Groups:

- 80 WUGs were organised involving 206 WUG members, with 2-3 members for each of the 80 Project wells. Thus, an average of only 2.58 members are utilising the water from each of the project Dug wells.
It was observed that most of the WUG members happened to be own brothers or close cousins, and in very rare cases unrelated neighbouring farmers.

- **Lack of Gender Equity:** It was also noticed that WUG members happened to be only male members. Despite the fact that most of the women from the Dug wells depend on the dug wells to meet their household domestic water requirements, women have not been included as members of any of the WUGs. ASA is said to have played a major role in promoting policy changes in the MP Participatory Irrigation management (PIM) Act and in providing voting rights to women in Water User’s Associations (WUAs) level. However, it was surprising to note the absence of women members in the WUGs in this project.

<table>
<thead>
<tr>
<th>Years</th>
<th>Gram panchayat</th>
<th>Village</th>
<th>New + Deepened Dug wells</th>
<th>Total Investments on Dug wells</th>
<th>Additional Investment on Pumps/ Motors / Pipelines, etc from diff. sources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Nos.</td>
<td>No. of WUG members</td>
<td>Cash spent by the Beneficiaries</td>
<td>contributi on from the project</td>
</tr>
<tr>
<td>2011-12</td>
<td>Kangsi</td>
<td>5</td>
<td>14</td>
<td>0.77 Laks</td>
<td>1.25Laks</td>
</tr>
<tr>
<td>2010-11</td>
<td>Kunwarpada</td>
<td>16</td>
<td>47</td>
<td>4.60 Laks</td>
<td>5.80lakhs</td>
</tr>
<tr>
<td>2010-11</td>
<td>Badapura</td>
<td>13</td>
<td>39</td>
<td>3.80 Laks</td>
<td>4.85 lakh</td>
</tr>
<tr>
<td>2010-11</td>
<td>Kala</td>
<td>3</td>
<td>9</td>
<td>0.40 Laks</td>
<td>0.75 lakh</td>
</tr>
<tr>
<td>2010-11</td>
<td>Kangsi</td>
<td>8</td>
<td>20</td>
<td>2.20 lakh</td>
<td>3.00 lakh</td>
</tr>
<tr>
<td>2010-11</td>
<td>Kalakhet</td>
<td>1</td>
<td>2</td>
<td>0.40 Laks</td>
<td>0.45 Laks</td>
</tr>
<tr>
<td>2009-10</td>
<td>Amlipada</td>
<td>7</td>
<td>15</td>
<td>1.40 lakhs</td>
<td>2.35 Lakh</td>
</tr>
<tr>
<td>2009-10</td>
<td>Bediya</td>
<td>10</td>
<td>25</td>
<td>2.60lakhs</td>
<td>3.70 Lakh</td>
</tr>
<tr>
<td>2009-10</td>
<td>Biladi</td>
<td>13</td>
<td>26</td>
<td>3.58 lakh</td>
<td>4.85 lakh</td>
</tr>
<tr>
<td>2009-10</td>
<td>Moriya</td>
<td>4</td>
<td>9</td>
<td>0.50 Laks</td>
<td>1.00lakh</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>80</td>
<td>206</td>
<td><strong>20.25 Laks</strong></td>
<td><strong>28.0 Laks</strong></td>
</tr>
</tbody>
</table>

- The number of users of dug well appear to be rather small (26.5% of the Households), compared to the high project costs (Rs. 66 Laks) involved towards benefitting only 206 WUG members (Rs. 32,000/ WUG member).
  - Efforts could have been made to include more number of Water Users for each of the Dug wells and to use the water available more equitably.
- It was also observed that the WUGs consist of small groups of 2-3 members each.
  - The WUGs do not seem to function as a group. No efforts were made to facilitate proper space or forum to enable them to meet and share their experiences and
knowledge, improve effectiveness of water use, or to discuss issues, problems, or to resolve conflicts.

- No efforts have been made to utilise the potential of WUGs, even towards building marketing linkages or marketing channels with the Farmers Producer Company for their farm produce.

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### Case study of a New Well - Ramachandra Kalu- Lakhiya Village

- The land owner for the new Dug Well is Ramachandra Kalu.
- He shares water from the new dug well among his 5 brothers and another family for 1.25 bighas each totaling 7.5 Bighas (1.5 Ha).
- The Water Users Group comprises of 6 members. The agreement is said to be between the dug well land owner, an outside family member and the NGO (ASA), which has approval from the respective Amlipada Gram Panchayat.
- They have also obtained 80% subsidy support for the pipelines from the agriculture department under the ST category.
- Three crops are grown in a year with the water from the new Dug Well. The crops are:
  - **Kharif Crops**: Soya bean + Maize, Red Gram
  - **Rabi Crops**: Wheat, Bengal Gram
  - **Summer Crops**: Vegetables such as Brinjal, Beans, Govar phalli, etc. in a small area with limited irrigation.

### Case study of a Renovated Dug well: Bagji Rupa- Lakhiya Village

- Bagji Rupa shares water from the renovated dug well with his elder brother Amba Ram and irrigate about 3 Bighas of land each (total 1.2 ha). Now they grow 3 crops in a year.
  - **Kharif Crops**: Soya bean, maize and Red gram, Vegetables such as Tomato, Chillies, Lady’s Finger, Brinjal,
  - **Rabi Crops**: Wheat, Onion, Govar phalli, Brinjal
  - **Summer crops**: Onion and other vegetables depending on the availability of water.
- Before the project, Mr. Bagji Rupa used to cultivate only one crop in 2 Bighas of land under rain-fed conditions and used to undertake distress migration in search of wage labour to distant places such as Kota (Rajasthan), Bhopal and other Gujarat cities, with his family and animals, for 4 months in a year.
- Now with the water available from the dug well he has extended the cultivation to 3 Bighas and takes up 3 crops in a year, and takes only 15-30 days of migration into the neighbouring towns, depending on the availability of water in the well, leaving other family members in the village.
- Now the family is able to take bath every 1-2 days and is able to drink good quality drinking water, as against 1-2 times bathing/week.
**Case Study of Naru Humla- Badapura-Kurd Village- WUG member**

**Renovated Dug Well:** It is said that earlier there was no water in the old Dug well. Under the project support, the well was further deepened for > 25 ft (Total Depth 35 Ft.), with project support of Rs. 25,000 and beneficiary contribution of Rs. 35,000 (More blasting). The Beneficiary is said to have taken loan from the money lender at 2% interest/ month, for a period of 2 years. Now the well water is shared by 3 farmers, consisting of 2 brothers and a cousin.

- **Varsing Humla:** Owner of the renovated Dug well. He has 5.5 Bighas (1.1 Ha) of land.
- **Naru Humla:** Brother of the well owner and also has 5.5 Bighas of crop land.
- **Govardhan Hukma:** Cousin and has 4 Bighas (0.8 Ha) of crop land.

**Status of Agriculture:**

<table>
<thead>
<tr>
<th>Before Well Renovation (&lt;March 2011)</th>
<th>After Well Renovation (&gt;March 2011)</th>
</tr>
</thead>
</table>
| • **Kharif Crops:** Cotton + Maize in 2.5 Bighas with Yield of Maize at 2.5Q x Rs.700 = Rs.1,750, and Cotton yield at 1.5Q x Rs. 3,000 = Rs. 4,500.  
  o Soya Bean in 2.5 Bighas with yield of 2.5Q x Rs. 800 = Rs. 2,000. |
|  • **Total Crop Income** = Rs. 8,250/  + supplemented with income from Family Migration. |
| • **Kharif Crops:** Cotton + Maize in 2.5 Bighas with Yield of Maize at 4Q x Rs.1,200 = Rs.4,800, and Cotton yield at 3Q x Rs. 4,500 = Rs.13,500.  
  o Soya Bean in 3 Bighas with yield of 3Q x Rs. 1,000 = Rs. 3,000. |
| • **Rabi Crops:** Wheat in 2 Bighas with expected yield of 3Q x Rs. 1,000 = Rs. 3,000.  
  o Vegetables in 0.5 Bighas: Own consumption |
| • **Summer Crops:** Planning to grow -Chillies, Onion, Garlic, Brinjal, Lady’s Finger, Spinach. |
| • **Total Crop Income** = More than Rs.21,300/.  No Migration at all. |

**b. Beneficiary contribution:**

- Under the project support, an amount of Rs. 45,000/ has been provided for each of the new dug well, and Rs. 25,000/ for further deepening and renovation of each of the old dug wells uniformly. Project has provided a total of about Rs. 28 Lakhs towards the construction of 80 dug wells (*Refer Table- for details*).
  
  o Any additional requirement of funds and labour required for each of the dug wells was to be organised by the respective WUGs from their own sources. The beneficiaries are estimated to have contributed a total of more than Rs. 25 Lakhs additionally from their own sources. Most of the WUGs have contributed the same through Loans from the local money lenders at high interest rates of 4-10%/ month (*Refer Annexure - on Case studies for details*) and also in kind through own labour.
  
  o In addition to above, the dug well beneficiaries have also organised irrigation facilities, such as installation of Diesel pumps/ Electric motors, pipe lines, electricity
connections, etc from various sources, including loans, and Government subsidies and schemes.

- This strongly indicates high levels of confidence the beneficiaries have towards the intervention of the dug wells, in improving their livelihoods and quality of life.

- It was interesting to note that within each of the WUGs, the Beneficiary contribution varied from member to member, depending on various factors. Thus the individual stakes of WUG members also varied and accordingly their share of rights of water from the dug wells also varied.

- Sharing of the operational costs of irrigation (towards the cost of diesel/ electricity, repairs and maintenance, etc) in the WUGs varied from each other. In some cases, the members paid for number of irrigations/ unit area of crop, and in some others, the costs were shared equally. However, the dug well owner seems to have an upper hand in the matter.

- Nevertheless, whatever norms being operational as of now (within the limited time that has been operation so far), appear to be working without much problems (as most of the WUG members happened to be own brothers or close cousins). It was pointed out that if any conflicts/ disputes do arise, GP is expected to get them resolved, and if not, Gram Sabha will be involved in resolving the same (Refer Annexure-1 on Focussed Discussions with GP Members).

4.2.3 Formation of SHGs and credit linkages:

- In many of the project villages, a number of Joint Liability Groups (JLBs) were said to have been promoted. It was informed that efforts to convert JLBs into SHGs have just been initiated in few villages. However, effective functioning of either the JLBs or SHGs, or existence of any of the credit linkages is not visible in any of the project villages.

- No institutional linkages to access institutional credit for the project villages seem to exist in the project villages. The people still depend on local money lenders for their credit requirements.

- It was interesting to observe that credit worthiness of the Dug well owners among the local money lenders have improved considerably. The Dug well owners were able to access higher credit needs easily from the local money lenders, due to their ownership of the productive dug wells and consequent improved agriculture production potential.

- It is also observed that in the project villagers there has been a gradual shift in the type of loans (from consumption loans towards building more productive assets) provided by the money lenders to the farmers.

- Most of the credit raised by the Farmers for the dug wells from the money lenders are said to be of about 2 years duration. It was also interesting to note that many of the farmers have claimed to have repaid 50% or more of the loans along with high interest (Refer individual case studies of Dug well owners).

- It needs to be pointed out clearly that as of now, dependency on money lenders has not reduced in the project villages. On the other hand, the dug well owners are able to raise
higher credit needs rather easily from the money lenders now, and also negotiate better favourable terms than earlier.

4.2.4 Community Institutional structures and functioning:

- Under the project, 2-3 member WUGs are formed, but they are not further organised even at the village level. Besides, due efforts to promote and strengthen the JLBs or SHGs are not noticeable in any of the project villages.
- Due social processes and strong social mobilisation efforts towards promoting and strengthening any of the community institutions/ people’s forums have not been taken up under the project.
- It was also pointed out that in underdeveloped villages, where entire families usually undertake long duration (6 months) distress migration for wage labour, people are not easily available for promoting any functional community institution and social mobilisation.
- Nevertheless, it is felt that necessary actions towards this agenda could have been initiated, soon after completion of the dug well interventions and once the severity of distress migration has reduced and more people started staying in the villages for longer periods, at least in few of the project villages. Such initiatives were also not noticeable.
- One tends to get an impression that ASA as an organisation is yet to crystallize a community organisational strategy, and adequately strengthen the required skills, and also evolve appropriate structures and systems of functioning (Refer Annexure 2 on Participatory Evaluation at ASA-Bhopal).

4.2.5 Linking of the Project Farmers with the Farmer’s Producer Company:

- Farmer’s Producer Company is known to be an ongoing activity of ASA, and linking the farmers from the Project villages for marketing their farm produce was one of the envisaged objectives under the project. However, linking of the project farmers with the same is not distinctly visible. However, the project communities seem to be familiar with Farmer’s Producer Company and are looking forward to seeking support from the company. In one of the project villages, there was a mention of getting one time help in the sale of their Cotton produce through the Farmer’s Producer Company.
- In the project villages, production of crops such as Cotton, Maize, Wheat, Soya Bean, Red Chillies, Tomato, and other vegetables, is increasing significantly and is generating considerable quantities of market surpluses (after meeting their household needs), which are presently being marketed by the farmers individually in the local markets.
- The value of Rabi Wheat crop alone in 9 of the project villages is estimated to be around Rs. 20-30 Lakhs/ Rabi season, and that of Cotton may be much more. If the value of Soya Bean, wheat fodder, and other vegetable crops is also taken into consideration, the economic value of total farm produce / annum may grow to about Rs. 100 lakhs gradually in the next few years, in the project villages.
• Presently, the farmers are able to generate some cash income at regular intervals to meet their daily expenses, through marketing their surplus farm produce in the local markets. However, they are yet to fully realise the potential of organised marketing of their farm produce and organised procurement of crop inputs, and the potential critical role to be played by the Farmers Producer Company in the above scheme of things.

• Due efforts to organise the farmers at the grass root level so as to link them effectively to the farmers Producer Company have not been initiated so far in the project villages.

4.2.6 Capacity Building of the Villagers:

• The NGO’s efforts in building the capacity of the Dug well beneficiaries and GP members is clearly seen, particularly with regard to water harvesting, recharge pits and to tap the sub-surface moisture in to the dug wells and in the various innovations incorporated in the construction of the dug wells (Refer on case studies of individual dug well owners).

• Similarly, their improved capacities in various improved cropping systems, crop practices and introduction of improved crop varieties and quality seeds is quite visible, This becomes more obvious in the way they have diversified their crops and cropping practices, within such a short time (Refer individual case studies on agriculture).

• Besides, many of the Dug well owners have been able to leverage various Government schemes and subsidies from the Government through support from the GP, for Diesel pumps, pipelines, Horticulture, etc.

• However, required efforts towards building the capacities of the project communities in social mobilisation, social processes and skills, group functioning and managing the functioning of the community institutions, have not been initiated.  
  o Though monitoring the ground water levels by the communities towards promoting sustainable ground water management was one of the major stated project objectives, concerted efforts towards building required capacities of the project communities have not been taken up.
  o Ground water monitoring protocols are yet to be evolved.
  o Social mobilisation of the project communities towards taking up the above agendas has not taken place so far.

4.3 New Lessons learnt:

• The geo-hydrological studies carried out by ACT have enabled ASA and its field staff towards better understanding about different sources of ground water and its management, possible sources and areas of recharging, quality of water and harmful components of water, the importance of constructing Recharge Pits, Water Harvesting structures and farm ponds around the Dug well areas to improve water availability for a longer period. Besides, they are able to appreciate the strategic importance of the Geo-
hydrological information in locating the dug well interventions much more confidently and with minimum risk of failures now (Refer Annexure-2 on Participatory evaluation at ASA-Bhopal). This association between ACT and ASA is said to have added value and brought out organisational synergy between ACT and ASA, and perhaps, also bring in some strategic shift in ASA’s organisations field operations related to ground water interventions.

- ASA has been focussed for a long time mainly on providing water from the Dug wells for crop irrigation to improve livelihoods. However, in this project, the importance of domestic water use towards improving the quality of life of the project communities (improved household hygiene, health, and reduced drudgery of the women, et.) was realised to a great extent. Besides, it was also realised that the water from the dug wells is also required for meeting the livestock needs and towards further diversification of the livelihoods of the vulnerable communities.
  - It is strongly realised that it is very crucial to provide a stable platform and pulley system for drawing water from the dug wells to meet the domestic water needs of the households, and should be made compulsory in all the dug wells hence forth.
  - Accordingly the need for integrating additional design features such as installing low cost, sturdy and durable Pulley (For meeting domestic water and for reducing risk and drudgery for users) is being appreciated better now.
  - Similarly, construction of Animal Water tank is being realised, as livestock are part of the farmer’s household and play crucial role in the success of agriculture and in turn livelihoods of the rural households. Thus, the need for further expanding the concept of dug wells is being increasingly realised at the organisational level.

- The need for providing due focus towards women as project beneficiaries of Dug wells (For domestic water needs and family food security, nutritional security, and Family health), and also providing joint ownership of wells to women along with men, is getting increasingly strengthened.

- Need for promoting and strengthening community institutions (Water User Groups and SHGs) is being felt to sustain the project gains and the developed water resources, and to mobilise and organise the project communities to build self help, to leverage various Government schemes and services, and to build institutional credit linkages, and market linkages for their farm produce.

### 4.4 Challenges Faced

- The biggest challenge faced by the project staff was in ensuring high beneficiary contribution (50-60%) from the WUGs as per the fixed time intervals, and to manage the progress of work on dug wells as per the planned schedules.
- This intervention needs to be done only during non rainy seasons and that was the time when most of the beneficiaries used to go on long term distress migration with entire
families in search of wage labour. Long periods of migration of the beneficiary families tend to affect the timely progress of the project/dug well interventions.

- Besides, the beneficiaries did not have proper access to financial resource and could not contribute the required instalments of beneficiary contribution in time. In addition, when hard rock layers creep in while digging/deepening the dug wells, necessitating blasting of the hard rock, or the well depth needs to be increased considerably, the challenge used to be much greater.
- All these constraints used to consume most of the time of the project field staff, leaving little time for any other project interventions.

- There are many risks involved in blasting and also in removing the soil/stones from the Well, such as personal injuries to the workers, or due to accidents. The responsibility for such risks is taken by the field staff at personal level. There is need to evolve institutional mechanisms and systems to handle such risks under the project. Provision of accident insurance and Health insurance support will be very useful.
- Fear of failure of the high investment dug wells, as the project areas are new and unexplored. The Hydro-geological study carried out by ACT-Bhuj has mitigated such risks to a great extent.
- Limited project financial support limited the choice of selection of the beneficiaries only to those who could raise the additional financial resources required for completing the dug wells. This has effectively prevented the poor and more deserving beneficiary households from getting selected as the project beneficiaries, raising the issue of equity.
- Uniform Project support of Rs. 25,000 and Rs. 45,000/beneficiary poses certain challenges in the case poorer farmers, where additional investment is required towards blasting of the hard rock and towards further increase in the depth of the dug wells. Perhaps, little more flexible project support norms for special individual cases may be helpful, in addressing the equity issues more effectively.
- Limited financial resources and complex governmental procedures is another bottle neck to explore various convergence opportunities under the project.
- Lack of adequate and flexible financial support for various agriculture interventions from the line departments of the Government.
- Lack of due efforts to initiate the practice of the revolving fund concept and to promote and strengthen SHGs in saving and credit activities in the project community and also in building effective credit linkages with financial institutions.
5. Major Inferences and Suggestions

5.1 Major Outputs, Outcomes and Impacts

5.1.1 New Dug Wells and Renovated Old Dug wells

- As targeted under the project, a total of 40 new dug wells were constructed, and 40 old dug wells were renovated. This is the major and the most crucial intervention under the project, which has been successfully achieved by the project staff, despite facing the twin challenges of non-availability of the Beneficiary households in the project villages for about 4-6 months in a year (due to distress migration), and the large beneficiary contributions to be organised from the poorer tribal Households.

- Now, water is available throughout the year in 44 wells out of the total of 80 dug wells (55%), and for 9-10 months of the year in 35 of the wells (44%). From these 80 Dug wells, more than 206 of the Water User Group (WUGs) members are able to provide protective irrigation for the Kharif crops, optimum irrigation for the Rabi crops, and only limited area irrigation for the summer crops.

- **Impact of Hydro-geological studies by ACT-Bhuj:** The above success of the Dug wells was made possible mainly due to location of the proper sites for new Dug wells and the selection of old dug wells for renovation, based on the geo-hydrological evaluation of the project areas carried out by ACT-Bhuj. Thus the value of undertaking geo-hydrological evaluation of the project areas in improving the project impact was fully realised under the project. This is said to have improved ASA’s own understanding of the geo-hydrological concepts much better and thus the field staff are able to undertake the above interventions even in newer locations with much more confidence now.

- **Efficient Dug Wells Designs:** One could notice considerable degree of experience and innovations in the Dug well construction and renovations. The value of the recharge pits is being increasingly appreciated not only by the project field staff, but also by the project communities.

- **Building Irrigation facilities:** Some of the farmers were able to organise own electric motors or Diesel pumps to draw water from the Dug wells for irrigation, by leveraging Government schemes to install Diesel Pumps/ Electric motors, and also pipelines to irrigate their crop lands. Few others take the Diesel pumps on rent for much shorter periods. Some others share the pipe lines or borrow from the neighbouring farmers.

- **Domestic Water Availability:** Some interventions, such as Installation of Pulley system and the platform to take out the water manually from the dug wells, water troughs for animals, growing of vegetables, flowers, and fruits, for home consumption adjacent to the dug wells, are generally seen in several places in the project villages.
However, the quality of the pulley system and the platforms appear to be of poor quality and risky, and may be prone to accidents. No efforts were visible towards promoting innovative designs on these aspects.

More domestic water is now made available through the Dug Wells and the family members are able to take bath and wash their clothes much more frequently than earlier, and ensure better hygiene in the household and among the family members. There is also said to be reduction in skin diseases and better health among the project communities.

In addition to above, sufficient water is also available for the domestic animals now towards their drinking and cleaning needs.

It was clearly pointed by the village communities that now the access to and consumption of domestic water among the village households has improved considerably. Drudgery and the time taken for women to collect water for domestic needs have also reduced considerably.

The above facilities appear to have been taken up more from the beneficiary households than being proactively promoted by the implementing agency. However, one gets a feeling that there is a need for further increasing the sensitivity among the project partners (and its staff) towards the importance of domestic water needs and in improving the living standards of the poor.

5.1.2 Status of Agriculture

- **Farmers Field Schools (FFS):** The capacity building interventions in agriculture were carried out by organising 19 FFS in 10 project villages, involving 414 farmers, involving mostly women and few men. Several crucial and improved cropping practices have been promoted among the farmers, which are increasingly being practiced by a large number of farmers in the project villages.

- **Increase in Cropping area and Cropping Intensity:** About 480 Bighas (240 acres) of crop area has increased additionally during Rabi and summer crops among the WUG members, directly due to availability of water from the dug wells under the project.
  - The area under Kharif crops with the WUG members is about 620 Bighas (310 acres) and is also said to have increased to some extent. Besides, Kharif crop stability has been strengthened and risk of Kharif crop failure has reduced considerably due to availability of protective irrigation.
  - Double cropped area has increased by about 65%, and triple cropped area increased by 13%. Thus, the Rabi and summer cropping area increased by 78.2% over the Kharif area, directly due to efforts under the project.
  - Each of the 80 dug wells is shown to irrigate an average of 5 Bighas (2.5 acres), as against the expected 1.5 acres.
• **Promotion of Crop Diversification:** Once irrigation water was made available through Dug wells, crop diversification was promoted very effectively through the FFS interventions.
  o The Quality of Kharif Cotton (and in turn a better price of + Rs. 200-300/Q) is said to have improved due to improved water feeding cycle, introduction of improved cotton harvesting practices (Bottom to top) and new Variety of Cotton (DCH-32).
  o The area under food crops such as Maize, Soya bean, Wheat, Pulses, chillies and Tomato have increased considerably during Kharif and Rabi seasons.
  o The Rabi crop area has increased significantly (65%) with wheat, Pulse and vegetable crops, and summer crops (High value crops - Vegetables, flowers and fruits), due to availability of assured irrigation. Wheat area has expanded considerably and has become the main Rabi crop.
  o New cropping patterns, such as Inter cropping of Cotton and Maize, and Border cropping systems and improved crop varieties are also being increasingly practiced.
  o There is a better balance between cash crops (Cotton and Soya bean) and food crops (Maize, Wheat, Pulses and vegetables) in the project villages.
  o Thus, the project has been able to increase the cropping area, and improved agriculture production, and considerably reduced the risk and vulnerability of the tribal project communities to crop failures, and strengthened their livelihoods.
  o However, it needs to be pointed out that significant crop productivity (per unit area) improvements are noticed in any of the major crops in the project villages. There seems to be a large gap between the realised potential (so far) and the realisable potential to be achieved in the crop productivity improvements.

• **High Project Benefit-Cost Ratio:**
  o Rough back of the envelop calculations suggests that about 200 acres of Rabi crop area in 9 of the project villages, with an average yield of 10-15 Q/ acre of Wheat, is estimated to produce about 200-300 Tonnes of grain. This alone is calculated to generate an economic value of Rs. 20-30 Lakhs/ Year (@ a market value of Rs. 1,000/Q). This amount is almost equivalent to the one time direct project support provided towards the 80 dug wells to the farmers. In addition, another 200-300 tonnes of fodder from Wheat is also generated to provide feed for large ruminants.
  o The economic value of the Kharif Cotton may be much more. If the value of Soya Bean, wheat fodder, and other vegetable crops is also taken into consideration, the economic value of total farm produce / annum may grow to about Rs. 100 lakhs gradually in the next 2-3 years. This is a recurring income to the farmers.
  o Besides, Vegetable production during rabi and summer cropping seasons provide not only valuable nutrition to the malnourished tribal communities, but also provide cash income from the sale of marketable surplus to the households (and to the women) to meet their day to day expenses.
  o Thus, the project has demonstrated very high Benefit- Cost Ratio.
5.1.3 Household Food Security and Nutritional Security

- Maize is said to be the main staple food and is still being relished by the tribal households. However, there is also an increasing trend of Wheat consumption among the project households now.
  - The project interventions have contributed strongly not only towards household food security (Maize and Wheat), but also the nutritional security (Pulses, and Vegetables), which in turn also strengthened family health among the project communities.
  - The farmers are also able to generate more cash in their hands now, as they also grow some cash crops (Cotton, Soya Bean) and also sell in local markets their surplus produce, so as to meet any of the additional food requirements and other household needs from the markets easily now than earlier.

5.1.4 Status of Migration

- The pattern of migration in the project villages has been changing dramatically. There is considerable reduction in the trend of migration of entire families for long duration.
  - Now, one finds a large number of people staying back in their villages and taking care of their own agriculture and livestock. This is mainly due to the fact that they are now able to ensure household food security (also fodder security) and cash incomes from more stable and assured agriculture.
  - Now more women, children and old people tend to stay back in the villages, and children’s education has been improving considerably.
  - However, few enterprising people still venture out to distance places for relatively shorter duration (than in desperation for livelihoods), basically to earn more money (to build productive and economic assets), and to improve their economic status.
  - Earlier the income from migration used to exceed the income from agriculture (>70%). Now, in most of the project villages, the agriculture income has increased significantly, and the income trends from migration and agriculture are seen to be reversing. It is expected that gradually, the income from agriculture would override the income from migration.
  - The local economic context is also changing due to various developmental interventions in the area from Government and other agencies, resulting in easy availability of wage labour in nearby towns.

5.1.5 Other impacts:

- The living standards have improved considerably, particularly in terms of children’s education, personal hygiene, clothes they wear, housing, kitchen utensils, their capacities and self confidence, communication, and awareness, community interaction, habits, etc. The consumption of local liquor is said to have reduced considerably and there is an increasing trend of consumption of tea and offering the same to guests.
5.1.6 Establishment of Community Ground water management system:

- In general, a greater awareness on the importance of soil and water conservations measures, in sustaining the water availability to meet the irrigation and domestic water requirements of the communities, was clearly visible among the project communities. ACT’s study also contributed a lot towards better understanding on the water management among the NGO field staff and also among the project villages.
- On the other hand, regular monitoring and data collection for sustainable management of the ground water regime/ sub-surface water was not visible in the project villages.
  - Systematic efforts were not visible towards evolving appropriate social processes and principles, building technical knowledge and skills among the project communities and evolving suitable protocols for community monitoring of the ground water levels so as to promote sustainable ground water management.
- It is also rather ambitious on the part of the NGO to evolve such a status in such a complex project within the given project period of just 3 years.

5.2 Social and Institutional Interventions

5.2.1 Selection of the Beneficiaries

- Initially, PRAs were said to have been carried out involving the project communities, and the results of the ACT study was shared with the Communities, and consensus were evolved on the selection of beneficiaries, location of the new dug wells and for selection of old wells for further deepening and renovation. This process proved to be very effective in the success of the dug well interventions.

- **Issue of Equity:** The above approach however, raises serious issue concerning equity, as the process seems to have selected only those who were able to raise high levels of beneficiary contribution designed under the project, but selectively prevented the poor households, who could not afford to raise the required beneficiary contribution.
  - Only 26.5% of the total Households (206 WUG members) have got the benefit of irrigation water from the Dug well support under the project, compared to the high project costs (Rs.66 Lakhs. However, it is interesting to note that the Benefit of Dug well irrigation varied from 4% to 85% of the Households in different project villages. There appears to be inequity and selective preference for some villages in providing the Dug well benefits under the project. A large number of the poorer households in the project villages could not get the Dug well benefit towards improving their livelihoods. It needs to be checked whether the hydro-geological potential alone has played any role in this preferential treatment for some of the villages.
  - It is also interesting to note that 51% of the Dug Wells now are seen to provide irrigation and domestic water needs of the project villages. It is necessary to look at further potential to deepen and renovate 76 of the existing old wells in the project.
villages, so as to enable remaining poorer households to improve their livelihoods. NGO needs to evolve innovative strategies to address this challenge.

5.2.2 Water User Groups:
- 80 WUGs were organised involving 206 WUG members (as targeted), with 2-3 members for each of the 80 Project wells. Most of the WUG members were found to be own brothers or close cousins.
  - Lack of Gender Equity: WUGs are comprised of only male members. Women have not been involved as members of any of the WUGs.
  - It was also observed that the WUGs are formed merely as individual small groups of 2-3 members. The WUGs have no space or forum to meet and share their experiences and knowledge, or to discuss issues, problems, or to resolve conflicts, and to build market linkages for their farm produce.
  - No efforts have been made to utilise the potential of WUGs, even towards building linkages/ marketing channels with the Farmers Producer Company.

5.2.3 Beneficiary contribution:
- Under the project support, uniformly, an amount of Rs. 45,000/ has been provided for each of the new dug well, and Rs. 25,000/ for further deepening and renovation of each of the old dug wells. Project has provided a total of about Rs. 28 Lakhs towards the construction of 80 dug wells.
- The beneficiaries are estimated to have contributed a total of more than Rs. 25 Lakhs additionally through Loans from the local money lenders at high interest rates of 4-10%/ month. In addition to above, the dug well beneficiaries have also organised irrigation facilities, (Diesel pumps/ Electric motors, pipe lines, electricity connections, etc.) from various sources, including loans, and Government subsidies and schemes.
- This strongly indicates high levels of confidence the beneficiaries have towards the intervention of the dug wells, in improving their livelihoods and quality of life.

5.2.4 Formation of SHGs and credit linkages:
- In many of the project villages, the effective functioning of either the JLBs or SHGs, or existence of any of the institutional credit linkages is not visible.
  - Most of the credit raised by the Farmers for the dug wells from the money lenders are said to be of about 2 years duration, and many of the farmers have claimed to have repaid 50% or more of the loans along with high interest.
  - As of now, dependency on money lenders has not reduced in the project villages. On the other hand, the dug well owners are able to raise higher credit needs rather easily from the money lenders and also negotiate better favourable terms than earlier.
5.2.5 Community Institutional structures and functioning:

- Under this project, only 2-3 member WUGs are formed, but they are not further organised even at the village level, GP Level or at the project level.
  - Due social processes and strong social mobilisation efforts have been taken up under the project. One tends to get an impression that ASA as an organisation is yet to crystallize a community organisational strategy, and structures and systems of functioning.
  - However, it also needs to be kept in mind that in under developed villages, where entire families usually undertake long duration (6 months) distress migration, in search of wage labour for their livelihoods, people are not available for promoting and building any functional community institution and social mobilisation.
  - Nevertheless, it appears that necessary steps/actions could have been taken up, towards promoting and strengthening the groups and institutions, after the completion of the dug well interventions and once the severity of distress migration reduced and more people started staying in the villages for longer periods, in some of the project villages. This was not visible.

5.2.6 Linking of the Project Farmers with the Farmer’s Producer Company:

- In the project villages, production of crops such as Cotton, Maize, Wheat, Soya Bean, Red Chillies, Tomato, and other vegetables, is increasingly significantly and is generating considerable quantities of market surpluses (after meeting their household needs), which are presently being marketed by the farmers individually in the local markets.
  - However, they are yet to fully realise the potential of organised marketing of their farm produce and organised procurement of crop inputs, and the potential critical role to be played by the Farmers Producer Company in the above scheme of things.
  - Farmer’s Producer Company is known to be an ongoing activity of ASA. Due efforts to organise the farmers at the grass root level so as to link them effectively to the farmers Producer Company have not been initiated so far in the project villages.

5.2.7 Capacity Building of the Villagers

- The NGO’s efforts in building the capacity of the Dug well beneficiaries and GP members is clearly seen, particularly with regard to water harvesting, recharge pits and to tap the sub-surface moisture in to the dug wells and in the various innovations incorporated in the construction of the dug wells.
  - Similarly, their improved capacities in various improved agricultural practices and introduction of new improved crop varieties and quality seeds also quite visible. This becomes more obvious in the way they have diversified their crops and cropping practices, within such a short time.
Besides, the Dug well owners have also leveraged various Government schemes and subsidies from the Government through support from the GP, for Diesel pumps, pipelines, Horticulture, etc.

- However, required efforts towards building the capacities of the project communities in social mobilisation, social processes and skills, group functioning and managing the functioning of the community institutions, have not been initiated.
  - Though monitoring the ground water levels by the communities towards promoting sustainable ground water management was one of the stated project objectives, concerted efforts towards building required capacities of the project communities have not been taken up.
  - Ground water monitoring protocols are yet to be evolved.
  - Social mobilisation of the project communities towards taking up the above agendas has not taken place so far.

5.3 Suggestions

5.3.1 Addressing Equity Issues:

**Provision of protective irrigation to Kharif Crops to increased number of farmers:** Efforts may be made to facilitate the increase in the number of farmers in each of the WUGs up to 4-5 members, so as to enable other poorer households to share the benefit of protective irrigation to Kharif crops. This way, it is possible to increase the number of direct project beneficiaries for the Kharif crops from the present 206 households to about 320-400 households. However, the existing 206 WUG members can continue to get irrigation for their Rabi and summer crops.

**Building Village level Revolving Fund:** Normally the direct project support to individual Beneficiaries are given as grants. In this project, about Rs. 28 Lakhs were provided as grants to individual beneficiaries towards the construction of new Dug wells and renovation of old dug wells.
  - Such a project fund support, when is given to the Community institution as grants (instead to the individuals) at the village level, which in turn provides the same to individual project beneficiaries as loans (instead of grants) at low interest rates (say @ 1% /month) and at favourable repayment options. Thus, a Revolving Fund could be gradually built from the repayments made, which could be revolved/rotated to provide continued funding support to other poorer households in the village. Thus, it is possible to cover a large number of poorer Households over a period of time and address the equity issues effectively. This also enables building a Community Capital for the continued development of the village.

**Gender Equity-Joint membership of WUGs:** The women from the WUG households may be given joint membership along with men in the WUGs. This offers a collaborative forum for women along with men, in tackling issues and responsibilities on domestic water for the households and for the Livestock, and irrigation for agriculture, community
ground water monitoring and sustainable ground water management. This will address the issue of gender equity to some extent. In fact, ASA is said to have played a pivotal role in promoting a policy involving the women in irrigation water management in Madhya Pradesh.

- **Effective leveraging of Government schemes and subsidies:** Efforts need to be further enhanced towards taking up the deepening of the Old Dug wells, recharge pits and other soil and water conservation measures, by effectively leveraging NREGA schemes, and the provision of pipelines, irrigation equipment through agriculture schemes, micro-irrigation schemes under the National Horticulture schemes, for the poorer households.

- However, it needs to be stressed that all the above can be successfully facilitated, only when the NGO has adequate social skills, long term commitment, and has built high levels of credibility with the communities.

### 5.3.2 Building sustainable Community institutions:

- It needs to be stressed that sustainability of the project benefits and impacts could be promoted and the benefits are shared equitably, only when effective social mobilisation, social processes, and strong community institutions are nurtured and adequate social capital is promoted among the communities.

- **Promoting SHGs and building effective institutional credit linkages:** All the poor households in the project villages may have to be organised into SHGs and gradually strengthened towards their effective functioning. They are to be supported to build their own group capital and build effective institutional credit linkages, so as to enable them to access financial resources sufficiently, towards building productive assets such as new Dug wells and renovating old dug wells, farm development, etc. This will considerably reduce dependence of the poor on Money lenders and their exploitation. It is generally seen that Women SHGs have proved to be more successful, which offer a separate space for their empowerment. The SHGs in the village can be further organised at the village level to build synergies *(Village SHG Committee)*.

- **Organising the WUGs at the Village Level:** It is necessary to evolve specific social controls and commonly agreed principles (Like Paani Panchayat Principles of Late Shri Vilas rao Salunke of Maharshtra) in order to promote efficient water use and sustainable management of the water resources in the village. In this context, it becomes imperative to organise all the WUGs in a village under the village forum *(Village WUG Committee)*. This Committee can take up common issues and responsibilities of evolving consensus on evolving social control parameters on sustainable water management and take up responsibilities on community ground water monitoring as per the protocols developed, and also tackle issues of common interest and to resolve conflicts, if any.

- **Organising Crop Based Groups at the Village Level:** In the project villages, the major crops being grown are- Cotton, Maize, Wheat, Soya Bean, Chillies, Tomato, Vegetables, Fruit Crops. The farmers growing the above crops can be organised into crop based
groups (Eg. Cotton User Group, Wheat User Group) at the village level, which are able to build organised market linkages for their farm produce and inputs and other operational requirements. This enables these groups to negotiate favourable terms in their transactions. Such groups from these villages can be linked to Farmers Producer Company to ensure marketing channels.

- **Promoting a Formal Village level Institution (Village Development Society-Regd.):** The SHGs, WUGs, CBGs are organised as informal groups, which are represented in the General Body of the formal Village Institution, which will have an Executive Committee. All the informal Groups in the village can have their respective committees in the Village institution (Village SHG committee, Village WUG Committee, Village CBG Committee, etc). Each of them can build their own capital to support their respective agendas. The above referred Revolving fund can be managed by the Formal village institution and can be channelled through the respective Committees and groups.

### 5.2.3 Improving the Productivity of Major Crops:

- Based on the several individual case studies of the Dug well farmers and community focussed discussions during the present evaluation, it was generally inferred that though there has been positive improvements in several aspects of agriculture, no significant improvements were noticed with regard to productivity/ unit area of the major crops. There appears to be a gap between what has actually been realised so far and the realisable potential in the crop productivity. This is also quite understandable given the limited project time frame of 3 years.

- However, increasing individual crop productivity in a given village/ area is easier said than done. This calls for identification of the limiting factors and root causes of the problems and involving all the crop farmers and also calls for collective action on several fronts.

- **Participatory Technology Development (PTD):** In this context, PTD approach has been shown to be quite effective. I myself was actively involved as the Backstop Support for operationalising the PTD approaches for Paddy, Maize, and Finger Millet, involving 5 NGOs (Eg.CCD, SWSS in Parlakhamundi) in 10-15 villages in Gajapati and Ganjam districts of Orissa under the SDC supported NRM Project during 2002-04. This approach proved to be very successful in improving the village average productivity of Paddy from 6 Q/ acre to 20 Q, of Maize from 8 Q/ Acre to >20 Q and of Finger Millet from 3-4 Q/ Acre to 8 Q. This success has now spread to many villages and the productivity of these crops has been sustained or further improved now, In these villages. This PTD approach has caught the attention of the district authorities. In view of ASA’s work in a large number of villages in water and agriculture development, it may be worthwhile for ASA to examine the possibility of building competencies in the PTD approaches.
5.2.4 Strengthening the Field Level Competencies:

- The present evaluation has demonstrated the organisational strengths of ASA particularly with regard to the development of water resources, agriculture and livelihoods. However, the need for further strengthening the competencies of the field personnel is felt, particularly with regard to aspects such as, social mobilisation, social processes, nurturing various interest groups and community institutions and building their operational skills and capacities, and also community ground water monitoring and sustainable ground water management. These aspects need due attention and the competencies need to be further strengthened, in order to promote the sustainability of the gains achieved under the project and to trigger multiplier effects.

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6. Way Forward

6.1 Background for the next project phase:

- The project has made considerable impact, particularly in terms of improving the local economy and livelihoods in the project villages. There is also visible improvement in the quality of life, such as the Children’s education, clothing, food habits, Household Hygiene, reduction in consumption of local liquor, etc. However, the crucial question is the sustainability of the positive project outcomes and impacts, and triggering further multiplier effects.
- The issues affecting the sustainability of the project gains are - the lack of social mobilisation, collective action, and absence of community institutions, organised institutional credit linkages and marketing linkages for their farm produce, and efforts to promote sustainable ground water management practices. Besides, there appears to be a clear need for further strengthening the capacities of the field personnel of the NGO on the above aspects.
- Therefore, it is necessary to continue further development efforts in the above project villages in order to sustain the positive project impacts, and also fully realise the project objectives enunciated in the earlier project document.

6.1.2 Thrust Areas for the Next Phase of the project:

- Water happens to be the common agenda for both the project partners-ASA and Arghyam. However, ‘Water resource development for improved livelihoods of the rural poor’ has been the focus area for ASA, while ‘Water management for improved quality of life’ has been the focus area for Arghyam. In development paradigm, it is generally seen that once a particular stage of development is attained, newer development agendas emerge. It is in this context, that there is a need for convergence of specific agendas and expanding the development paradigms for both ASA and Arghyam. Thus, both the partners need to negotiate the specific agendas for the next phase of the project in the same project villages, rather than entering newer villages.
- Based on the present evaluation, 3 specific areas, namely strengthening access to Domestic water, sustainable Ground water Management, and Community Institutions, are emerging clearly and the following aspects need to be given due focus in the next phase of the project in the same project villages in Ratlam District.
  1. Promoting and strengthening the functioning of Women Self Help Groups (SHGs), Water User Groups (WUGs), Crop Based Groups (CBGs) and the Village Development Institution (VDC).
     o Capacity building of the NGO staff in the promotion and strengthening the operationalisation of the above referred community groups and institutions. In this aspect, seeking the support of experienced organisations such as MYRADA, WOTR may be quite effective.
2. Promoting and strengthening the marketing linkages with the Farmers Producer Company and operational practices of the Farmers groups for the same.

3. Operationalisation of the concept of Revolving fund support for renovating some of the old Dug wells to promote the issue of equity (including Gender equity) and to provide the development agenda in the hands of the communities.

4. Specific emphasis on further improving the access to Domestic water to all the households in the project villages and promoting design innovations in the Dug wells for drawing domestic water for households and for livestock needs.

5. Operationalisation of Community Ground water monitoring for sustainable ground water management in the project villages.
   o There is a need for collaborating with an experienced and development oriented Hydro-Geology resource agency, such as ACWADAM - Pune. Such an agency will actively get involved in aspects such as developing Ground water monitoring protocols, and capacity building of the NGO Field staff and Community groups (WUGs) and ensure the operationalisation of the agenda effectively.

- The detailed suggestions from the present evaluation may be given due consideration while implementing the next phase of the project.
- Thus the next phase of the project will also further strengthen the organisational competencies for widening the scope and potential of ASA’s development strategy.

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Annexure-I:

**Focused Discussions with the Amlipada Gram Panchyath Members**

- Devilal Muniya: Sarpanch
- Man Singh Bhuria: Secretary
- Badrilal: GP member

- Amlipada GP has 4 villages, namely Lakhia, Badiya (Project Villages) and Dhamniya, Amlipada (Non Project Villages).
- More water is available in the dug wells now and drinking water availability improved considerably. The production of Wheat, Vegetables, Chillies, etc has improved considerably now and prosperity improved in the project villages.
- **Status of Cotton + Maize:** During the year 2010-11, the yield of Cotton and Maize (grown as Intercrops) increased. Before the project (< 2010-11), the cotton yield was restricted to 1.5 Q/ Bigha and the quality of cotton was poor due to water stress during later stages of the crop. However, the quality of cotton has improved yield has increased to 3 Q/ Bigha during 2010-11, as the farmers are able to provide crucial protective irrigation from the dug wells under the project. Now the cotton is fetching Rs. 2-3/ kg due to improved quality alone. The risk of failure of Kharif crops (Cotton, Maize, Soya Bean) from low/ delayed rains, has reduced drastically. However, during 2011-12, the yield of cotton and Maize decreased due to heavy rainfall.
- **Rabi Crops:** Earlier, during rabi season, only Bengal Gram was grown from the residual soil moisture and was yielding about 1- 1.5 Q/ Bigha. Now wheat and Gram (as Border crop) are being grown and wheat yields are around 7-8Q/ Bigha. In Lakhia and Badiya-Project villages, the rabi crop area has increased additionally by about 16 Bighas and 25 Bighas respectively.
- **Status of Livestock:** Earlier, there used to be shortage of fodder for the animals in the villages and people used to migrate along with the animals. Now as the cropping area under Wheat and Maize has increased, the availability of fodder has also increased, people do not take animals while migrating. Now the trend of same people increasing the number of animals is being increasingly noticed.
- **Status of Vegetable crops:** Vegetable growing has picked up noticeably in the project villages, during Rabi and summer seasons, due to increased availability of water from the dug wells. Major vegetable crops include, Chillies, Tomato, Lady’s Finger, Cluster Beans, Radish, Spinach, Methi. After meeting the domestic requirements of vegetables, the marketable surplus is being sold in the local markets. Production of Red Chillies, in particular, has increased significantly due to project interventions. The chillies are ripened and the dried chillies are used for home consumption and the surplus is sold in the local markets. Thus, considerable amounts of cash is made available in the hands of
households (Women in particular), and is also playing a role in improving the local economy.

- **Role of Gram Panchayat:** GP plays a role in resolving conflicts among Water User Groups in sharing of the dug well water (Ban-Gada = Arbitration). If the conflict is not resolved through GP, Gram sabha is organised to resolve the issues. Thus, GP is said to play a constructive role in the tribal villages. Soil and Water conservation interventions through GP and Forest departments and Pipeline and Diesel Pump subsidies from the Horticulture and Agriculture departments are converged to add further to the project interventions.

- **Used Domestic water:** Dug wells water is also used for domestic requirements and the used water from washing vessels, washing of clothes, and Bathing water is let into the soak pits in some of the houses, and thus the used water is also being used to grow Papaya, banana, flowers and vegetable in some cases. Soak pits also could be constructed near the Hand pumps to use the excess flow to grow the above.

- **Lessons learnt by the GP members:**
  - Technical aspects/ Knowledge from the ASA staff could be used while implementing Government schemes,
  - Improved quality of works,
  - The value of people’s contribution in improving the quality and effectiveness of the government schemes,
  - GP acts as a mediator between the Government and the NGOs.
  - The contribution of ACT’s hydrological studies in locating ground water sources and in fixing points for new dug wells and in identifying old wells for renovation was very valuable. Knowledge on recharge and discharge areas. Criteria for selection of points, etc provided valuable insights.
  - Similarly, the suggestion of ACT for not selecting Amlipada village for dug well interventions, proved to be very valid.
  - The value of percolation ponds and recharge pits near the dug wells is well recognised.
  - Importance of testing of ground water quality
  - They feel that ACT’s role under the project was worth the cost. It is felt that ACT’s role becomes very relevant in difficult water zones. Without ACT’s support, this project would have suffered more dug well failures.

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Annexure-II:

**Participatory evaluation with ASA personnel at Bhopal**

- Dr. Y.K. Dwivedi: Agriculture
- Mr. Akhilesh Parekh:
- Mr. Anil:
- Mr. Surendra:
- Mr. Rajath:
- Mr. Nelson: Observer
- Moderated by Dr. C. Ravikumar- Consultant to Arghyam.

- Out of the 40 + 40 dug wells under the Project support, only 70 could include recharge pits, while in the remaining 10 dug wells, recharge pits (3 x 3 x 3 Mts) could not be taken up due to the presence of hard rock and other technical issues.
- ACT study and the report was very crucial in identifying the project villages and in the selection of sites for new dug wells and old dug wells for further deepening and in resolving other technical issues. For ASA, the project area was new and was highly undulating with ridges and valleys. Without ACT study, the project would not have been very successful.
- Under the project, the farmers have installed about 50 electrical motors and few Diesel pumps through their own sources and also through utilising the Government subsidies.
- **Next two years, the local economy of the project villages will improve considerably.** The increase in Rabi and summer cropping area is going to improve agricultural production (Wheat, Maize, and Vegetable crops) and household income will increase substantially. This is expected to bring in visible socio-economic changes in the project villages and also in adjacent villages, and will usher in visible changes in the quality of life of these tribal communities.
- Sharing of water from the dug wells is said to be taking place and they have no complaints so far, and even if there are any complaints, they are being resolved through GP and Gram sabha’s interventions.
- **Money lenders:** Investments in agriculture has been increasing considerably. The size of loans of individual farmers from the money lenders is said to be increasing and the interest rate is also coming down. Thus, the credit worthiness of the dug well owners with the local money lenders has increased considerably.
- It is also claimed that augmentation of agriculture income has taken place by at least 50% from the baseline among 90% of the project farmer beneficiaries.
- **Seed Replacement:** Cotton- BT Cotton- DCH-32 variety is replacing the old varieties. Hybrid Maize is being taken up by more farmers. GW-366 variety of Wheat is replacing the local varieties.
- **Farmers Field School (FFS):** So far, 14 FFS groups are said to have been formed with about 25 farmers per each FFS (14 x 25 = 350 farmers). A large number of women is said
to have got trained under the FFS interventions. Number of new crops (Food crops, and vegetables, fruits and flower crops), and new cropping systems (Intercropping of Wheat + Maize), Border crops (Pulses and Mary gold crops as border crops) with wheat, are being practiced in the project villages. However, whether rigorous protocol as proposed for FFS has been followed or not is not very clear. It is seen that in the old project villages, these schools are said to be no more functioning now. This raises serious questions on the quality and effectiveness of these FFS. Nevertheless, the trainings under FFS has promoted crop diversification, introduced some new varieties of seeds, and cropping practices in the project villages.

- **Convergence of schemes:** It was also pointed out that about Rs. 2 crore value of soil and water conservation interventions have been leveraged from Government NREGA schemes in the project villages. Better Cotton Initiative, System of Wheat Intensification.

- **Community Organisation:** It is said that as the people were not staying in the villages for long due to distress migration for wage labour, the work on promoting community institutions could not be taken up. However, this does not appear to be fully true. Now, one could find more people staying in the project villages after the project interventions (In Amlipada- control village, we could see very few people staying in the villages during our visit during Feb. 2012). One gets an impression that there is also lack of required sensitivity, skills and effective organisational strategy towards social mobilisation and clarity on institutional structures among the field personnel. Some attempts towards promoting Joint Liability Groups (JLGs) were said to have been made. No SHGs have been promoted under the project so far. organisationally, ASA is planning to take up the promotion of SHGs seriously soon.

- **Water User Groups:** For each of the project dug wells, 2-3 farmers are linked to use the water from the dug well. Most of the members of the WUGs are brothers or close cousins, and in few cases, one could be a neighbouring farmer who is not related. In many cases, the WUG members are also said to have contributed in cash and kind towards the Dug well and for irrigation. In few of the cases, they pay towards meeting the cost for irrigating their crops (Fixed amount per irrigation). In such cases, it is not the water right for the WUG members, it is rather the benevolence of the well owner that matters and the relationship the other members maintain with the well owner that matters. Thus one gets a feeling that the social processes and the institutional arrangements need to be streamlined and strengthened among the WUGs. How long these WUGs and the arrangements are sustained cannot be answered. The fact that the 2-3 member WUGs do not have a forum to meet and discuss among themselves, nor even the WUGs in a given village are also not organised to meet and discuss in any forum, is alarming. If there are any issues or conflicts, they are said to be taken up by the GP and if GP cannot resolve, then it is said to be taken up by the Gram sabha.

- **Farmers Producer Company:** Conceptually, this looks very attractive. However, under the project, no farmers groups, institutional structures and operational systems have been
created so far, towards linking the farmers to the farmer’s producer company. As of now, the marketable surplus is being sold by individual farmers in the local markets and farm inputs are being procured on their own. No serious efforts or initiatives towards promoting collective efforts and community institutions are seen.

- **Gender Issues:** Women were involved along with men only under the FFS, while providing agriculture training under the project interventions. It was shared during evaluation that more women participated in FFS interventions than men. Other than this women’s involvement in project interventions were not distinctly noticed. However, the project had considerable impact the women. The ownership of Dug well is solely lies with the men as of now. Women have not been considered for providing ownership of the dug wells under the project.

- **Organisational Learning for ASA from the Project:**
  - Earlier, ASA as an organisation was said to be giving more preference towards renovation of old dug wells than towards new dug wells. The decisions on the selection of wells were more based on certain thumb rules evolved from its field experiences. However, during this project, the ACT’s study and its report helped ASA’s field personnel in building stronger technical base for its decision making for its interventions in dug wells. The field staff could understand the concepts of group water management, water balance and recharge and discharge areas much better now.
  - The project also helped to strengthen the organisational perspective of the Dug wells much better now. The importance of providing domestic water for the communities in improving hygiene, sanitation and their health, and in improving living standards of the project communities, and also in meeting the water needs of the for the animals is being better appreciated. The value of meeting the domestic water needs of the households for drinking, cooking, cloth washing, cleaning of vessels, bathing, water for their animals and cleaning of the animals is being properly realised. Consequently, in some places, pulley system was also installed to draw water for domestic use, and water troughs were also constructed to provide water for the animals. Recharge pits (3 x 3 x 3 Mts) were also constructed for almost 70 of the 80 wells developed under the project. It is being considered to install Pulley with ball bearing to reduce friction and drudgery for the women users. Now these learnings are gradually evolving into an integrated Dug Well system and this has enabled the organisation to further improve the manual on the guidelines for the Dug Wells.
Annexure-III:

Discussions with the Badiya Village Community (Amlipada GP):

- During the discussion, the women sat in proper lines in the front and men sat at the back. One could observe good discipline and decorum in the meeting. Women also sang an invocation song. 28 Women and 20 Men Participated in the meeting. This village seems to have good potential for starting social interventions.
- New Wells and 5 old dug wells were renovated under the project. There are 11 WUGs and 26 WUG Members. 3 FFS were organized, with 52 women and 8 men members. There are also 35 JLG members and 2 SHGs in the village.

<table>
<thead>
<tr>
<th>Status Before the project (&lt; 2009)</th>
<th>Present Status (2012)</th>
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<tr>
<td><strong>Migration:</strong> Full families used to go on distress migration soon after Diwali and up to June to distant urban area for wage labour.</td>
<td><strong>Migration:</strong> Only few members of the family go on migration for 1-3 months, after the Holi festival (March – May). Children stay back in the village for attending the school.</td>
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| **Agriculture:** Only one Rain dependant intercropping of cotton and Maize during the Kharif season, which was risk prone due to unreliable rains. | **Agriculture:**
  - Wheat area in the rabi season has expanded considerably.
  - New varieties of Maize- Laxmi (Gujarat seed), and Cow Pea- Patel Variety, have been introduced.
  - Cow Pea, Red Gram, Lady’s Finger, Mary Gold, etc are grown as border crops.
  - Vegetable crops, such as Chillies, Tomato, Lady’s Finger, Ridge Guard, Methi, Pumpkin, Cucumber, etc are being grown by many farmers.
| **Food Security:** Maize was the main staple foods. | **Food Security:** Now Maize and Wheat are the main staple food for the communities.
  - Maize was partly grown from own land and the balance was bought from the markets for 4-5 months in the year.
  - Pulses + Onion and Chillies were consumed along with the Rotis, and Black gram use was once or twice/ week, and use of vegetables was 4-5 times/month.
  - Cooking was done in mud vessels and eaten in mud plates.
  - Drinking water had to be accessed from 0.5 km distance and also from the nala at a distance of 1-
1.5 km. There was no practice of filtering of the drinking water.  
- Bathing was taken once in 8-15 days.

| due to better awareness and capacity building interventions.  
- Less Health problems due to better hygienic practices, and cleanliness of the cooking vessels, houses and surroundings. Cloth filtering of the Drinking water is being practiced by more people. Bathing once in 1-2 days.  
- **FFS:** Improved cropping practices, such as Deep ploughing and land levelling, seed treatment with Trichoderma, Chemical fertiliser application, Cotton picking from the bottom and wearing cap on the head to avoid mixing of hair into Cotton harvest,  3 x 3 ft spacing of Cotton, new crop varieties, use of Neem Leaf extract, and Butter milk + Copper solution as pesticide sprays, Use of tender coconut water as growth promoters, and use of Safety Hand gloves, Mask, Eye Goggles, Head caps, etc have been promoted among the farmers.
- Cropping area has increased by about 50% and cropping intensity for irrigated farmers has increased by > 200% and for other farmers to about 125%.
- The community feels that there is still a need for more soil and moisture conservation measures to improve sub soil moisture to improve agriculture in the village.

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Annexure-IV:

**Status and Potential of the Public Dug Well at Amlipada Village**

- There is a big dug well in the drainage nala which flows along the lower reaches at about 80 feet below the ridge. The Dug well was constructed under the Government’s NREGA’s ‘Kapil Dhara’ scheme, with an investment of Rs. 1.45 Lakhs through the GP. When we visited the dug well during Feb. 2012, the water was up to the brim in the well and the water depth was said to be about 30 ft.

- The well is used by the village community mainly towards washing of clothes, bathing and for meeting the water requirements of the livestock. At present, only 2 farmers are said to be using the well water for providing only 2 irrigations for their 2 acres of cotton crop, considering the costs involved. They hire the diesel pump on rent (@ Rs. 50/ Hr for 4 hours/ acre irrigation ) and One Litre of Diesel is consumed/ Hour (Rs. 50/Lt). Thus, each irrigation/ acre cost about Rs. 400 and Rs. 800 for providing just 2 protective irrigations/ acre of Cotton crop. They borrow the pipelines from neighboring villages.

- **Potential:** This Dug well has good potential to meet the domestic water requirements of the village and also reduce the risks involved in Kharif crops considerably, by enabling protective irrigation to the Kharif crops.
  - If the nearby village community is organized and are able to organize the community support to provide labour, local materials, and required minimal finance from community contribution and leverage some of the Government schemes, it is possible to build the required infrastructure setup (like water pump, Water storage tanks and pipelines) to provide domestic water and for protective irrigation for the Kharif crops.
  - The storage water tank could be used to meet the domestic water requirements and also for providing protective irrigation for only the Kharif crops.
  - As the electric supply is erratic in the rural areas, it may be better to construct a surface water tank on an elevated spot, which is easily accessible to the village households to collect domestic water easily and is also amenable to provide protective irrigation to their crops through gravity flow (Micro-irrigation).
  - This will improve the village community’s quality of life, Health, Peace, reduce the risks for the Kharif crops and improve food security, and reduce distress migration to some extent.
  - However, this needs strong social capital, community cooperation, constructive and able community leadership, facilitative support and commitment of a local NGO, and constructive linkages with Government agencies.
  - When this idea was suggested to some of the villagers gathered near the dug well, they sounded optimistic to take up this initiative.

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Annexure-V: Case Study of a large Village-Kunwarpada (KansiGP): Convergence of Government Schemes and Donor supported Project

Kunwarpada has about 100 Households, of which 30-35 are said to be direct project beneficiaries. There are 10-15 old dug wells, which are not renovated. There are about 50 Non Beneficiary Households. Here, the project interventions were initiated from the year 2010 onwards. Under the project, 9 new wells and 6 old dug wells were deepened.

Through FFS interventions, new variety of Cotton, Wheat, Bengal gram and Green Pea were introduced and the practice of plastic mulching for vegetable cultivation, were promoted.

Only One SHG has been promoted and there are no JLBs in the village.

Earlier, entire families were said to be migrating after Rabi sowing, to distance places such as, Kota (Rajasthan) or Gujarath towns and Cities, in search of wage labour in desperation, for about 4-5 months in a year.

Convergence between the government schemes and the Donor project:

- In the upper reaches of the Kunwarpada village, there is big Percolation tank, which was developed through the GP under the Government scheme, with active community participation, and with ASA-NGO’s technical guidance and support.
- Interventions such as Guly Plugs, contour Trenches, loose boulder structures, Dug out ponds, and other soil and moisture conservation measures were carried out. The percolation Tank bund was further strengthened. A Waste weir and vegetative cover are yet to be provided.
- Under the present project, digging of new wells was supported, and the old wells were further deepened.
- During the year 2011, due to heavy rains, the huge percolation tank was filled up, but during February, 2012, no water is seen in the percolation tank, as all the impounded water has percolated into the ground water, which has increased the ground water level in the village.
- Due to the above interventions in the upper reaches of the village, the water flows in the Nala and the sub surface flows have increased considerably, which have greatly impacted the water availability in the dug wells.
- This is a good example of impact of convergence between the government schemes and the Donor project.

Thus the project interventions are said to have resulted in reduction of distress migration from the village by about 50%. It was also pointed out that the project beneficiaries are not migrating now, and only non-Beneficiaries are still migrating.
It is also claimed that the cotton production has almost doubled with access to protective irrigation. Under the project, the earlier variety MCH (Bhuria Variety) of Cotton was replaced with new variety of Cotton, namely DCH-32 was introduced. The plant spacing was increased from 3 x 3 ft to 4 x 4 ft.

There are also a large number of livestock- Large Ruminants, Small Ruminants and Backyard Poultry, and now sufficient fodder is available for the livestock rearing due to improved agriculture in the village.

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