

Irrigated agriculture has been at the heart of changing tribal lifestyle in South Gujarat from one of seasonal migrant to that of a full time farmer.

The tribals have not only adopted irrigated agriculture but are able to get yields comparable to *patidars* known for their excellence in farming. Learning from AKRSP (I)'s work in neighbouring villages, they have also taken up management of canal systems on their own. This shows that far from being indolent and unenterprising, the tribals are as good farmers as any other farming community. The role played by AKRSP (I) as facilitators has been crucial in transforming the tribal livelihood in the region from one of migrant labour to settled farmer.

## Water Policy Research

# Highlight

## Agrarian Transformation among Tribals: From Migrants to Farmer Irrigators

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# Agrarian Transformation among Tribals: From Migrants to Farmer Irrigators<sup>1</sup>

RESEARCH HIGHLIGHT BASED ON A PAPER TITLED:

“IMPACT OF PARTICIPATORY IRRIGATION MANAGEMENT ON TRIBALS IN SOUTH GUJARAT ”

## INTRODUCTION

Assured irrigation has been one of the crucial elements of the green revolution technology which in turn has led to rapid growth in the agricultural sector over the past three decades. However, this growth has not been uniform across crops and regions. The green revolution technology has more or less bypassed the tribal population in the country. For one, the irrigation infrastructure is inadequate in the tribal regions; moreover, even when the infrastructure is available, the tribals seem to make inadequate use of them. Creating demand for irrigation among tribal farmers seems to be the most important challenge facing most NGOs working with them. There is very little doubt that adoption of appropriate irrigation technology will bring about positive welfare changes among the tribals. But the pertinent question is: what set of interventions are likely to create the desired result?

**There is little doubt that adoption of appropriate irrigation technology will bring about positive welfare changes among the tribals. But the pertinent question is: “What set of interventions are likely to create the desired results?”**

It is in this backdrop that we took up this study in a tribal area of Gujarat. This is one of several

case studies undertaken under the action based research programme called Central India Initiative<sup>2</sup>. Our study is unique in that we have studied the impact of canal irrigation on tribal livelihoods and that these systems are self-managed by tribal farmers' organizations. Not many tribal areas have a canal network, primarily because the geo-hydrology of most tribal inhabited areas does not favour canal construction. These canal systems are managed by tribal farmer groups organized by the Aga Khan Rural Support Programme, India [AKRSP (I)].

## KEY QUESTIONS

Based on our underlying assumption that assured irrigation is key to enhanced crop productivity and that more such irrigation interventions are needed in tribal regions, we framed the following research questions:

1. How significant is the demand for irrigation among the tribals in South Gujarat region?
2. What are the avenues through which irrigation affects tribal livelihoods?
3. How do tribal farmers benefit from irrigated agriculture vis-à-vis non-tribals and what are the intervening variables that could explain tribal-non tribal disparity, if any?

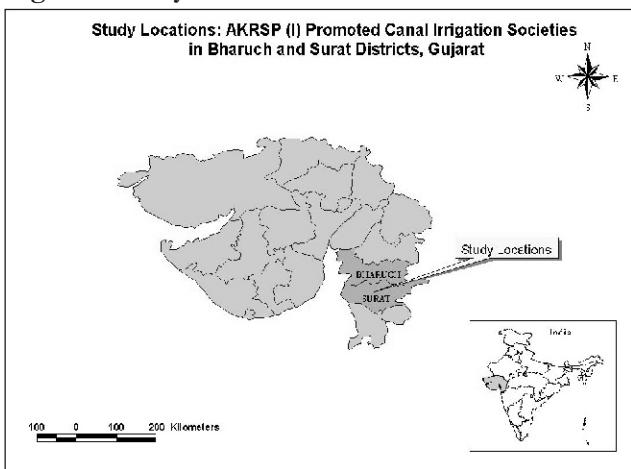
<sup>1</sup>The research covered by this IWMI-Tata Research Highlight was carried out with generous support from Sir Ratan Tata Trust, Mumbai under IWMI-Tata Water Policy Programme. The research paper can be downloaded from the IWMI-Tata Website <http://www.iwmi.org/iwmi-tata>.

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<sup>2</sup>Central India Initiative, a study launched jointly by IWMI-Tata Program, NM Sadguru Foundation, and PRADAN, plans to document experiences where tribal communities have adopted irrigation-based livelihoods. The purpose is to learn what works and what does not and formulate an approach for developing this livelihood in a large tract of central India inhabited by nearly 70 percent of the tribal population of India.

## COVERAGE, DATA AND METHODOLOGY

Figure 1: Study Locations



The study was conducted in Bharuch and Surat districts of Gujarat where AKRSP (I) has taken up Participatory Irrigation Management (PIM) projects in collaboration with the Government of Gujarat (Figure 1). We took up four irrigation cooperatives for our study: The Pingot Right Bank Canal Command (RBMC) cooperative society, the Pingot Left Bank Canal Command (LBMC) cooperative society, the Baldeva LBMC cooperative society, all in Valiya taluka of Bharuch district and the Issar Minor Irrigation cooperative society in Mandvi taluka of Surat district. We collected primary data through questionnaire surveys and field visits; secondary data from AKRSP (I) offices and each of the irrigation cooperative societies. We carried out *before-after* analysis of cropping pattern data including crop yields, differentiating between tribal and non-tribal farmers on the one hand and farmers located at the head, middle, and tail reaches of the canal system on the other.

### IRRIGATED AGRICULTURE AND TRIBALS: IS THERE A LACK OF DEMAND?

**There is a great heterogeneity among the tribals and it would be grave error to put them all in the same basket, as we very often do.**

Evidence and experience from the tribal belt across India (especially Jharkhand and Chattisgarh) suggest that tribals prefer “risk-

averse migration” to “entrepreneurial irrigated farming”. Our study does not confirm this general hypothesis. Unlike the Santhals and Gonds of South Bihar, the Bhils of South Gujarat are more progressive in terms of agriculture. In our study area, the predominant tribes are the Vasavas and the Chowdhuries. They are all third generation farmers. They live cheek by jowl with non-tribal Patel farmers and have had some access to irrigation even before the canals became operational. In fact all the irrigation schemes we studied had more than 75 dugwells or dug-cum-bores and more than 50 diesel engines each. Predictably villages with higher non-tribal population have a higher number of such irrigation equipments than a completely tribal village. Majority of the tribal farmers did not seem to face prohibitively high cognitive barriers while adopting irrigated farming. For one, they have had direct experience of irrigated farming because the Patels of these villages grew irrigated crops even before canal systems became operational and secondly, a few better off tribals themselves had access to irrigation. Therefore, unlike in other tribal regions, demand creation for irrigated agriculture did not seem to be a major issue in the systems we studied. Actually, most farmers reported excess of demand over supply and rued the fact that reservoir capacity was not enough to take both winter and summer crops.

### IMPACT OF IRRIGATION ON TRIBALS

The tribals are one of the poorest communities in India. In our study villages as well, the tribals are poorer than non-tribals. On an average, a tribal farmer never owns more than 5 acres of land, while a non-tribal invariably owns more than 10 acres, if not more. Quite predictably, the lion's share of benefits from irrigated agriculture has accrued to the rich Patels, because they have shifted to lucrative sugarcane cultivation.

Nevertheless, the tribals have benefited in that they can grow two crops (at times even three) compared to only one rainfed crop before

irrigation. At the same time, the cost of cultivation has gone up, because they now use more market based inputs than before. In sum, benefits are greater than costs. The tribals have benefited through:

1. Cropping pattern changes, yield increases and higher cropping intensity
2. Increase in wage rates in the village and longer duration of work available
3. Reduction in migration during lean season
4. Other incidental benefits such as increased fodder availability, rise in land prices etc.

### CROPPING PATTERN AND CROP YIELD CHANGES

Quite contrary to the general notion that tribals are not skilled farmers, we found that tribals are indeed as good farmers as any other. This was reflected in the fact that yield of major crops did not vary much between a tribal and a Patel farmer.

The most obvious benefit has been the change in the cropping pattern and cropping intensity. Our findings are based on the cropping pattern of 87 farmers across four irrigation systems. Before irrigation, almost all the tribal farmers took only one kharif crop. Typical cropping pattern of a tribal farmer practicing rainfed agriculture was local varieties of paddy, pigeon pea, and sorghum,

all grown in the same field or separately. Yields were predictably low. The cropping pattern and crop combination changed drastically after canal irrigation. Majority of the farmers took to summer crops of groundnut and green gram in addition to kharif paddy. The gross cropped area increased, as did cropping intensity. Now a typical tribal farmer would grow paddy (HYV), pigeon pea and sorghum in kharif and either groundnut or pigeon pea in summer. Most prefer groundnut to pigeon pea, as it is a more profitable crop. They have also shifted to HYV paddy, reaping higher yields than before. However, the non-tribal farmers report marginally higher yields than the tribal farmers. For example, the average yield of groundnut for a tribal farmer is 4.5 quintal/acre and 5.22 quintal/acre for a non-tribal farmer. Even then, given that tribals are new to irrigated agriculture, their yields are comparable to those of Patel farmers.

### WAGE RATES AND MIGRATION

In the post-irrigation period, market wage rates have gone up, as has the number of days of employment. Consequently, out-migration from the villages has reduced. Distress out-migration by farmers has reduced by 70-90 percent and that by agricultural labour has reduced by 30-50 percent. The last few years have also seen an influx of farm labour from Maharashtra. Wage rates have gone up from Rs. 5-12 per day in pre irrigation days to Rs. 25-30 in the last few years. Similarly, land rates have gone up from Rs. 25,000 per acre of unirrigated land to Rs. 100,000 per acre of irrigated land. The land lease rates have doubled after irrigation was introduced. This is, however,

Figure 2: Season-wise Change in Cropping Pattern

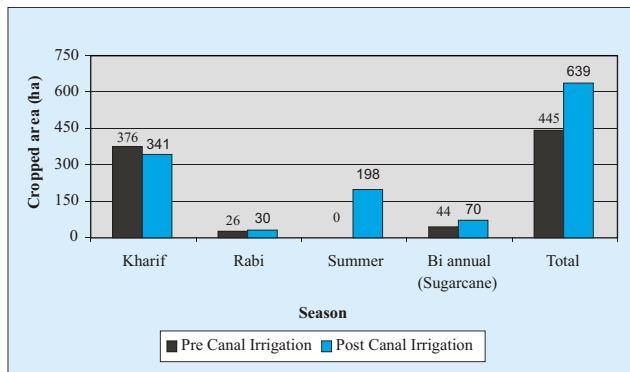
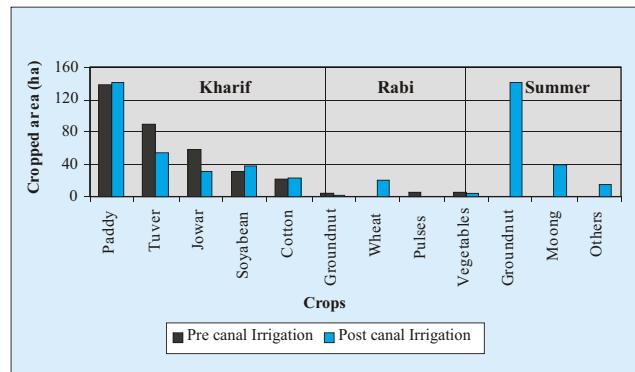


Figure 3: Cropping Pattern before and after Irrigation



seen as a mixed blessing. For one, there is an increasing influx of Patels from Saurashtra who take land on lease from tribal farmers. Many fear that in another 20-30 years, the tribals will be completely alienated from their land.

### **OTHER INCIDENTAL BENEFITS**

There have been many incidental benefits in addition to ones mentioned above. Firstly, the tribals can grow a summer crop, either green gram or groundnut, which gives them cash to grow a kharif crop for which earlier they had to borrow from money-lenders. More green fodder is available for livestock. However, the tribals acknowledged that input costs have gone up and they have to treat their soil carefully with manure every alternate year to prevent deterioration of land quality.

### **SUMMARY OF FINDINGS**

**Irrigated agriculture has been at the heart of changing tribal lifestyle, from one of seasonal migration to cities to that of a farmer irrigator.**

The main findings of this study are as follows:

1. Irrigated agriculture has been at the heart of changing tribal lifestyle, from one of seasonal migrant to cities to that of a full time farmer, growing summer crops of groundnut and green gram.
2. Gain from irrigation has been tremendous and is reflected in the changed cropping pattern, higher yields, lower migration rates, higher wage rates, and higher land prices.
3. The tribals have adopted irrigated agriculture without much difficulty. This is because quite contrary to the general notion that tribals are not skilled farmers, here we found that tribals are indeed as good farmers as any other. This is reflected in yields of major crops which did not vary much between a tribal and a Patel farmer. That their overall income from irrigated farming was low could be attributed to their smaller land holding rather than productivity differences. The tribal farmers we interacted with are third or fourth generation farmers. There is great heterogeneity among

the tribals and it would be grave error to put them all in the same basket, as we very often do.

4. The presence of non-tribal farmers has acted as a “demonstration effect” in irrigated agriculture. Most of the Patels in our study villages were already growing sugarcane and a few other irrigated crops. The tribal farmers were aware of dynamics of irrigated agriculture, which made it easier for them to adopt irrigated farming once canal water was available.

### **LEARNINGS FOR THE CENTRAL INDIA INITIATIVE**

This case study brings out both the potential salience as well as feasibility of participatory irrigation management in a tribal area. It looks at 'next level' issues of management of public irrigation systems in an area where the tribals are experienced farmers and have responded very well to an irrigation intervention. The key feature of the intervention is building up local governance structures capable of both responding to peoples' needs and of tackling the technical requirements of the system.

It is interesting that after one group was formed with AKRSP (I)'s support in the Pingot LBMC area, tribal farmers in the command of the neighbouring Pingot RBMC area initiated PIM on their own. In fact, they felt very proud of the fact that they managed the system without any support. We believe, herein lies the success of AKRSP (I)'s intervention that it created “demonstration effect” for tribal farmers to emulate.

**The case study illustrates a flying geese pattern of development: more advanced Patel farmers take to irrigation the fastest and they serve as models for the tribals nearby. The latter learn from and try to emulate the Patels. Rich farmers, who are often considered as potential threats to poverty alleviation interventions, can in fact play a very important role in the success of such interventions by providing the “demonstration effect” for the tribal poor in the village.**

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**IWMI-Tata Water Policy Program**

The IWMI-Tata Water Policy Program was launched in 2000 with the support of Sir Ratan Tata Trust, Mumbai. The program presents new perspectives and practical solutions derived from the wealth of research done in India on water resource management. Its objective is to help policy makers at the central, state and local levels address their water challenges – in areas such as sustainable groundwater management, water scarcity, and rural poverty – by translating research findings into practical policy recommendations.

Through this program, IWMI collaborates with a range of partners across India to identify, analyse and document relevant water-management approaches and current practices. These practices are assessed and synthesised for maximum policy impact in the series on Water Policy Research Highlights and IWMI-Tata Comments.

The policy program's website promotes the exchange of knowledge on water-resources management, within the research community and between researchers and policy makers in India.

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