WAYS FORWARD TO USE GROUNDWATER BY SMALL AND MARGINAL FARMERS'
(EXPERIENCE, LESSONS AND OPPORTUNITIES)

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ABSTRACT

Surface irrigation systems in terms of major and medium canals are spread allover. However, it has been debated that the unreliability of these systems in terms of adequacy and timings, affects severely to small and marginal farmers. On the other hand irrigation water from ground water is one of the most assured source on which one can rely. Considering the constraints such as small and fragmented land holdings, poor socio-economic conditions etc. restricts the groundwater use to enhance land productivity and ultimately any improvement in their livelihood. It has been always observed that whenever small/marginal farmers have got opportunities to invest quality inputs timely it directly results into enhanced productivity in comparison to medium and large farmers. Countries like India comprises of a large number of small and marginal farmers who are suffering by these constraints. One of the best solutions in this case has been experienced in India by encouraging small and marginal farmers to go for community tube wells. This has paid rich dividends in those areas which need to be widened in a sustainable manner to other areas also after understanding the experiences and lessons of existing arrangements.

This paper tries to discuss some of the case studies where the concept of community tube well has been introduced and based on their experiences and lessons what could be the better opportunities that exists.

INTRODUCTION

Rapid growth of population and industrialization are becoming major threat to agriculture sector as share of land and water decreasing day by day. On the other hand with decreasing investments and declining performance of many large and medium scale surface irrigation systems, interest has been developing in recent years for seeking new ways to improve land productivity and livelihoods of small and marginal farmers at global level. Considering the majority of the small and marginal farmers in developing countries, it is now very well realized that they can be key players in increasing global

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agricultural production and achieving food security. Water being one of the key input in crop production system, it has been observed that access of irrigation water is negligible if we talk about large and medium surface irrigation systems and faces financial constraints in case of groundwater exploration. This requires a major shuffle in existing irrigation strategies in a way that access of irrigation in crop production to small and marginal farmers may be made easy by keeping this commodity at the outset rather than trying to figure out how they can be incorporated in scheme of things.

Besides achievement of green revolution and plenty of successful innovations in agriculture production system, smallholders live at or below the poverty level and are highly averse to risk; their very livelihoods are focused on keeping the margin for error as small as possible. (Pant N., 2004) At the same time they are considered to be capable of managing technologies efficiently provided they have access to affordable technologies that are easy to operate, maintain and repair. Small-scale systems and technologies are attractive since they put the operation, maintenance and management of systems directly in the hands of the individual farmers, thus eliminating any need for centralized control or management. Hence, small marginal holders can be more productive with their yields and efficient utilization of resources in comparison to their counterparts' i.e. medium and large farmers.

Considering the case of efficient application methods of irrigation water unfortunately, most existing modern irrigation techniques do not fit the plots of smallholders, and are far too expensive (in terms of capital or operational costs) to be affordable which hampers their agricultural yield substantially. These constraints forces most of the farming community to stick with the surface methods of irrigation though a range of efficient water application technologies, techniques and practices have been developed over the years on behalf of smallholders. However, many, if not most, technologies have been unsuccessful in their performance, application, dissemination or adoption. Attempts have been undertake to encourage farmers to adopt bush pumps, rope-and-washer pumps, rower pumps, treadle pumps, pitcher pot systems, drag-hose sprinklers, hydraulic ram pumps, microirrigation systems, windmills, water harvesting techniques and a host of other technologies with mixed success. While it may be that some of the technologies simply did not perform to expectations, there is a natural tendency to over-emphasize the technology itself rather than pay attention to the process by which it is identified, modified, and disseminated. All too frequently the end customer -- the farmer – has been left out of the process altogether. As a result uptake of most appropriate irrigation technologies by small-scale farmers has been relatively poor.

The post independence era after 1947 in India, saw greater importance to irrigation and the efforts undertaken resulted in achieving self sufficiency to feed the country's population i.e. most famed "Green Revolution" in late sixties and seventies. After independence the total planned expenditure of nearly 10 per cent of the country was for development of water resources. This comprises of erection of large dams which were considered as "modern temples" of developing India, various major, medium and small surface irrigation systems and development of groundwater resources with the help of deep and shallow tube wells. As per records the irrigated area expanded from 22.6 million hectares in fifties to 59 million hectares in nineties, an increase of 161 percent in four decades. This increase was about 33 percent of the estimated potential. Roughly 42 percent of the net irrigated area in 1990 was from surface water sources whilst 51% was contributed from tanks, step wells, tube and other sources. Considering the trend of

source wise irrigated area it can be observed that in recent past decades there is a decline in case of canals from 38.49 % (1970-71) to 30.21 % (1998-99) whereas ground water exploration from tube wells as source of irrigation has increased significantly from 14.34% (1970-71) to 35.63% (1998-99) (Anonymous. 2004). This trend is indicative of diversion of farming community towards reliable source of irrigation water reason being low project efficiencies, which is of the tune of only 40% or less which reflects poor management of surface irrigation systems. Though the use of groundwater has increased significantly (Ballabh et.al., 2003) but still small and marginal farmers are struggling to take advantage of this. Some of the major reasons: poor socio-economic status, small and fragmented land holding sizes, lacking technical know-how, little or no awareness of promotional schemes for installation of tube wells by GOs, poor state of electrification etc.

Considering these aspects this paper, discusses the Vaishali district of Bihar state in India where a participatory approach has been adopted in form of Community Tubewell to provide opportunity even to small and marginal farmers in the area to have easy access of groundwater for irrigation uses. The views and elaboration further by authors are based on personal visit and interactions with concerned agencies and farming community involve and some basic information from secondary sources.

CASE STUDY: COMMUNITY TUBE WELLS IN VAISHALI

FORMATION OF VASFA AND ITS INSTITUTIONAL ARRANGEMENT

Vaishali falls in the northern part of Bihar having rich historical background. Agriculture is the mainstay of the economy a very high percentage 86.4 per cent of the working population is engaged in the agricultural sector (1971 Census) as compared to 82.7 per cent in Bihar, and 69.7 per cent all India. The average size holding is small and fragmented. With respect to the availability of the Vaishali have rich reserve of ground water. According to the Geo-hydrological map of India, Vaishali falls in the high-yield region of unconsolidated alluvium. These formations are richest in ground water and are very congenial to tubewell technology, which can exploit water held in sandy aquifers only, and not in water bearing strata found in rock formations or consolidated formations.

The late J C Mathur of the Indian Civil Service (ICS) was the brain behind the community tubewell. He started his career as the Sub-Divisional Officer, Vaishali, in the 30's and was very much struck by the rich cultural heritage and poor economic conditions of the people of Vaishali region. During the late sixties, he was working as Additional Secretary in the Ministry of Agriculture and was closely associated with India Committee under the Freedom from Hunger Campaign. This provided the platform to do something for the poor farmers of Vaishali. He, therefore, prepared a detailed project report for the development of small farmers of the region and contacted Dewan for the execution of his scheme. Mathur offered Mr. K. D. Dewan the opportunity to settle at Vaishali and serve the cause of small farmers. Mr. Dewan a graduate in Agriculture had come to India after partition and settled down as a farmer in Nelokhedi near Karnal in Haryana. He had tremendous interest in social works and had done some commendable work in organizing farmers' co-operatives in that area. Mr. Dewan was impressed by Mathur's ideas and came to live in Vaishali in 1969 (Prassad

K., 2000). He mobilized the farmers in the area and was successful in forming Vaishali Area Small Farmers' Association (VASFA), which got registered as a voluntary organization in 1971. VASFA was recognized as the first pilot project of its kind in the country by the committee under Freedom from Hunger Campaign. It received a grant of Rs.4,00,000 from the government of Norway. Out of it, Rs.2,00,000 were kept in fixed deposit in the loaning bank (Central Bank of India) as security, and other half is used as a revolving fund for the developmental works of VASFA, particularly for construction of tubewells. The main objective of VASFA was to organize small farmers for multifarious agricultural activities, and to manage loans for group tubewells, agricultural machines, godowns, and plant protection apparatus etc. It worked in collaboration with People's Action for Development India (PADI), Ministry of Agriculture, Government of India and Central Bank of India. The association was divided into three zones – viz, Vaishali, Madarna and Bibipur. The executive committee of VASFA consisted of a President and three Vice-Presidents (representing three zones) elected by all members for one year and three years, respectively, a Treasurer, who is a representative of PADI, and a General Secretary who is nominated for six years jointly by PADI and 'Vaishali Sangh' (Vaishali Sangh was a voluntary organization, aiming at cultural and economic development of Vaishali region formed in the early forties with the effort of late Mr. J C Mathur when he was serving as commissioner at Muzaffarpur). Mr. Deewan worked with VASFA as a PADI employee for seven years, but resigned in 1978 as a PADI official and was associated with VASFA as its General Secretary since then. Upto 1983 VASFA managed to organize 36 community tubewell groups (16 in Vaishali, 7 in Madarana and 13 groups in Bibipur) in 16 villages of Vaishali and Muzaffarpur district of Bihar, covering a membership of 650.

INSTALLATION OF COMMUNITY TUBEWELL

In the area surrounded for the community tubewell work, the officials of INADP (Indo-Norwegian Agricultural Development Project) and VASFA approach the small and marginal farmers and persuade them to obtain the benefits of a joint tubewell. The first step in this direction is the formation of groups of small and marginal farmers. Generally farmers having land over 5 acres are not included. However, sometimes their inclusion is unavoidable, on account of the location of their land. The members of the group should have contiguous land so that it could be commanded by a joint tubewell. One of the member-farmers in each group has to donate 0.02 acres of the land for installation of the tubewell. The group members elect one of them as group leader. Each farmer furnishes a copy of the official record of the total land owned by him and enters in an agreement to abide by the terms and conditions set by VASFA and INADP (Indo-Norwegian Agricultural Development Project). The papers are then submitted to the loaning bank (Central Bank of India), and the necessary amount is withdrawn from the revolving fund for the construction of the tubewell cabin, installation of pump set, energisation, and construction of field channels. After the completion of these works, the total cost is distributed among the group members in proportion to the area of their land under the tubewell command. The members at this stage enter into a direct agreement with the bank, according to which the amount is treated as a term loan borrowed by the individual farmer from the bank. Each farmer is required to pay his loan with interest in five years in six-monthly installments. There is also a provision to recover the loan from one-tenth of the crop of the farmers.

MANAGEMENT OF COMMUNITY TUBEWELLS

The management of each tube well was the joint responsibility of group farmers and the group leader. The water charges for members and non-members were fixed different. Initially most of the community tubewell had electricity motor but with non-availability and irregular supply of electricity nearly all the tubewell changed to diesel operated engines. Presently, the charges for members are Rs. 9/hr plus diesel and for non-members it is Rs. 18/hr plus diesel. The members who want to irrigate their lands which are outside the demarcated command area initially are charged as non-member. In regard with the water distribution of water, members are preferred first then non-members. For giving water, the time duration is allocated to members in proportion to their land. Sometimes the time duration is fixed on a weekly basis, at other times it is decided by mutual agreement and convenience of the group members.

The method for collecting the water charges, in majority of the cases it has been observed that, members pay after the crop selling/crop maturation, and the non-members pay either on a monthly basis or at the time of taking the water. Sometimes the members also pay on a monthly basis.

Conflicts did arise in some cases, either over the distribution of water, caused generally because of electric failures and rostering of electricity/scarcity of diesel, or over the operation and maintenance of the tubewell and upkeep of field channels etc but it was reported that conflicts are resolved in the groups somehow. The most common method used for resolution of conflicts is to call a group meeting and thrash out the problem to a workable solution. The second most common method is to involve the VASFA and INADP officials in the meetings and thirdly a particular member can be warned for cancellation of his membership by the rest of the members.

PROBLEMS AND PROSPECTS

Some of the major problems associated in smooth working of community tubewells have been short supply of electricity, either due to electric failure or because of rostering of electric supply, acute shortage of diesel during the peak season, timely maintenance of mechanical defects in the tubewells, non-payment dues in time by the farmers in some cases, lack in maintenance of proper records and accounts on irrigation, initially when groups were formed some influential farmers also came in groups they managed to get the tubewells installed in their land and also became group leaders and create problems committing all kinds of irregularities and trying to deprive the other group members of the association, in few places caste barriers came into picture where high caste and low caste people had reservation in working together.

Timely recovery of bank loan does became a common problem as recovery of loan was not stressed in the initial stages this was to give farmers ample time to maximize their agricultural production and to repay the loan when they become prosperous. However, this initial complacency has made the farmer indulgent, non-appreciative of the role of the bank. In this way the loan were treated as a free gift in some cases, and does not care to repay it.

IMPACT OF COMMUNITY TUBEWELLS

Besides these problems as stated above community tube wells have done good job to bring wider group of farming community to work together. Specially incase of resource poor farmers who are not able to enjoy the benefit of owning a tube well. In this way the movement started by VASFA and INADP have not only helped small and marginal farmers to get access to irrigation water but have also helped these farmers get individual bank loans for meeting their various other agricultural requirements or provide them a subsidiary source of income – i.e., diary development etc. The poor farmers are thus helped to get rid of the clutches of money-lenders. Considering one of the major concerns of the policy makers in recent years which have been to percolate the benefits of the various schemes to the rural poor judging from this angle, the experiment of community tube wells in Vaishali has been extremely successful.

CONCLUSION

On the basis of out study it can be recommended that community tube wells are bound to be successful subject to proper kind of leadership/awareness campaign & technical know-how is facilitated amongst wider group of farming community besides taking care of formation of tube well groups. This attempt also facilitate conjunctive use of rain, ground and surface water besides bringing improvement in the local environment which directly or indirectly helps the livelihood of the people in the area through increased yield, better health, employment opportunity etc. At other hand on social front this attempt brings different set (based on holding sizes and caste) of rural community together.

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