

Water Use in Agriculture in Vidarbha : An Overview

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The papers in this volume are based on an year long research conducted by Amol Management Consultants. When we started, we had a reasonable familiarity with Vidarbha but did not know in depth the situation about irrigation or water. We did read through the popular press frequent references to the issues of backlog, the tardiness in its clearance, the withering of orange trees in the last few years owing to drought and the lack of irrigation facilities, the recurring problems pertaining to supply of drinking water in the orange belt and similar relevant issues. But we did not have first hand nor detailed exposure to these issues nor had we studied the matters till February 2002.

Hence we began by exploring all important aspects about the situation regarding water use in agriculture in Vidarbha. We used secondary as well as primary data and prepared a Status Report on Water Use in Agriculture. This was submitted to IWMI in August 2002. This report helped us both sharpen our understanding about the situation regarding water use as well as helped us identify key issues of interest for the next phase of research. Two papers, namely "Understanding Underdevelopment: Characterizing Regional Development in Vidarbha with special focus on water use" by SJ Phansalkar and "Income and Equity Effects of Water Use in Vidarbha" by SJ Phansalkar and Sachin Mardikar were prepared based on this report. Vivek Kher had done a focused study researching the unique problems of the salinity tract in Poorna basin for the Status Report. We felt that it did deserve detailed attention of scholars particularly outside Vidarbha. We have translated it and have included it in this volume.

In "Understanding Under-development," we observed that the Vidarbha region is underdeveloped in absolute and relative sense. This has often led to a strongly held perception of deliberate state neglect by the GoM in the minds of people in Vidarbha. An attempt is made here to look at relative development of talukas within Vidarbha. We find that there is significant variation in per capita incomes across talukas in Vidarbha. This variation is associated with the differences in the nature and composition of the talukas, the crop mix obtaining in the taluka and most importantly on the extent of ground water use. Surface water use seems to have less influence on the income variations. While abundant unused ground water potential is reported to exist in some of the most backward talukas, their exploitation seems to be discouraged by a combination of both supply and demand factors. On the supply side, it is possible to argue that ground water exploitation is both uncertain and expensive. On the demand side, the associated factors are a weak demand for irrigation caused by a dominance of cotton cultivation that has been sustained all these years by artificial props of the monopoly cotton scheme, absence of understanding or skills for cultivation of alternate crops and possibly also a weak drive among the people.

In "Income and Equity Effects" we observed that spatial and social inequities are strong in access to irrigation in Vidarbha. Access to irrigation is loaded against low castes, and particularly the SC/ST. We also discover that as expected, irrigation has salutary effect on income. The main effect is in the form of income stabilisation rather than income growth. The effect of increase in income is varied across districts in Vidarbha. Certainty

of water delivery seems to be a major factor that governs the extent of income increase in irrigated farms. Other factors influencing increase in income deal with choice of crops, particularly crops that substitute cotton. Cotton somehow seems to act as a negative intervening variable. Exploring the relationship between cotton and irrigation, exploring the reasons for weak demand for irrigation and exploring why surface water correlates poorly with income are three possible research areas that need to be followed up.

These two papers and the status report led to much discussion amongst us and also in a workshop held in Nagpur on October 3 attended by many concerned and interested individuals. There we identified many interesting research issues and followed up on some. The fact of serious underdevelopment of the region and persistent newspaper reports regarding backlog really led us to look at the basic pattern of political decision making regarding creation of irrigation infrastructure in Vidarbha. That is why we studied the administrative and political history pertaining to decisions on development of irrigation in Vidarbha (actually mainly the absence of such decisions!). The paper "Political Economy of Irrigation Development in Vidarbha" by SJ Phansalkar was the result of this study.

That paper observes that Vidarbha combines Varhad, the districts in Nizam's territory till 1897 and Nagvidarbha, the districts under the Bhonsalas till the First War of Independence in 1857. Though there has been little cultural basis for the people of Vidarbha to have their own identity, a series of quixotic events culminated in the State Reorganisation Commission recommending a separate State for Vidarbha. To strengthen their hands in forming a single State for the Marathi speaking people, the leaders of the Samyukta Maharashtra Movement entered into an agreement called the Nagpur Pact. This attempted to placate the people of Vidarbha and assure them equitable share of development. Subsequently, this assurance was embodied in the Article 371 (2) of the Constitution of India.

Vidarbha region in general has always had a series of stable and predictable monsoons. A fairly reliable and adequate (850-900 mm) rainfall ensured that the cotton, pigeon-pea and sorghum crops of the Varhad region would not wither away in monsoon. As a consequence of these agro-climatic features, Central Provinces Irrigation Commission that in the 1920's looked into the aspects of irrigation development for the limited purpose of avoidance of famine like conditions, categorically stated that there was no need to create irrigation infrastructure for Varhad. This meant that investigation work had been undertaken for few of the possible irrigation projects at the time of formation of Maharashtra State. There was no project for Vidarbha on the shelf for inclusion in the Second or the Third Five Year Plans. The seventies and the eighties saw creation of a few major dams in Vidarbha e.g. the multi-purpose Pench project, the Itiadoh project and the Kali Sarad dam in Bhandara district. Virtually no irrigation infrastructure was created in Varhad still, the Upper Wardha project came later. The investigation work that began in the mid-sixties resulted in a portfolio of a reasonable size. This was ready only by the end of seventies.

The political power in the State of Maharashtra is concentrated in the hands of the Maratha lobby from the sugar belt. An active demand, a history of significant work on analysis and investigation of irrigation sites and control on State resources made a handy combination for progress of creation of irrigation potential in Western Maharashtra. In thirty years of Maharashtra State, irrigation potential in Western Maharashtra crossed

50% of the net sown area (on SRE basis) while Vidarbha saw progress from 10.6 to only about 23%. Interestingly, Marathwada, considered to be the most backward regions at the time of formation of Maharashtra and which started with negligible irrigation potential, overtook Vidarbha in creation of irrigation potential during this time. The Fact Finding Committee brought the regional inequity out in the open and suggested ways of addressing the problem. Nothing much had been done for over fifteen years to correct the situation. This was obvious when a re-look at the regional development issues by the Committee on Indicators and Backlog confirmed in 1997 that the Vidarbha region had been given a short shrift in irrigation development, resulting in huge backlog, most of it in Amravati Division. Even now the ground situation has not changed at all. The powerful Western Maharashtra lobby adopts a series of skilful and insensitive machinations to ensure that development resources are used for their region. While socio-cultural proximity, alert leadership and consistent and insistent follow up has seen that Marathwada region caught up in the race, problems of Vidarbha persist and show no sign of nearing any satisfactory conclusion.

Confabulations, tantrums and vituperations accompany frequently rising bubbles of the Vidarbha activism. These are more often than not neutered merely by politically accommodating the vocal leaders. What is clearly evident is the inability or unwillingness of the political leadership from Vidarbha to consistently follow up and navigate irrigation projects of the region through the crafty machinations of the wily bureaucratic machinery ably supported by their political bosses from Western Maharashtra. This has meant that while a lot of steam rises every once in a while on Backlog of Development, no progress occurs on the ground. Clearly the weak and the guileless must satisfy themselves with such crumbs as the powerful and the wily allow to fall from their table. The conclusion is decidedly despondent for the people of Vidarbha. Now the state is officially bankrupt. It is possible that the parched lands in Vidarbha and its impoverished people will have an extremely long wait for getting their officially acknowledged dues of irrigation benefits. It is perhaps better that people and the Civil Society organisations focus their energies on rain water harvesting, using ground water, working towards more user friendly power supply and power charging regimes and water saving technology. This is far better than hoping against hope that surface water irrigation sources will be created in the region.

A specific manifestation of the efforts to give a boost to irrigation development and how that boost petered out in ruins is that of the market financing of irrigation. While the story of other irrigation development corporations is no different, we focused on the financing innovation for the Vidarbha Irrigation Development Corporation. The paper "Running an Innovation Aground" by SJ Phansalkar and Mahesh Jagdeo resulted from this study. That paper observes that financial constraints to speedier irrigation developments; regional imbalances due to politics of allocation; absence of accountability and incentives for performance for the irrigation bureaucracy and the vicious cycle of poor performance-unwillingness to pay irrigation charges- no funds for O&M and hence poorer performance were identified as the ills of publicly funded irrigation projects. Private financing of irrigation can set off a chain of behaviours that could address some of these issues. Market borrowings for creation of irrigation infrastructure was considered to be a brilliant move from this point of view. In Maharashtra the motivation for borrowing from the market was different. GoM was Unable to continue ignoring irrigation development demands from hitherto neglected regions. It did not have adequate funds for continuing to fund irrigation through State budgets. It had noticed the heartened by the positive response from capital markets to Narmada and KBJNL bonds issues. In these

circumstances, recognised the possibility of raising easy finance from the market, GoM opportunistically adopted the policy of market borrowings for irrigation development. GoM set up five Irrigation Corporations including Vidarbha Irrigation Development Corporation (VIDC). The State Acts which set these Corporations up embodied commitments of the GoM for part State financing of the projects, balance coming from the market. These corporations could source money from the market directly and were not constrained by norms governing Government paper. The positive response in the first year emboldened the State to increase the scope of the private borrowings and it expanded the projects under the VIDC. It did not wish to or could never meet its obligations under the VIDC Act and State contributions fell short of the target by 80%. As the State's profligacy eroded its credibility in the market, it became more and more difficult to attract adequate subscription to the bonds. As of now, with two DRT attachment notices against the State, the GoM has decided to stop furnishing further guarantees to any debt of any State agency or Co-operatives. Without State guarantee, the whole programme has come to a grinding halt. Irrigation development has of course stopped altogether in Vidarbha. However, this experiment by itself is not enough for passing judgment on general advisability of market borrowings for irrigation infrastructure. The experiment was vitiated by opportunistic behaviour of the State and spoilt by interference of regional dynamics.

We had always wondered at the simultaneous existence of underdeveloped ground water resources, high poverty and prevalence of cotton crop in much of Vidarbha. This sense of disquiet was reinforced by the "Understanding Underdevelopment" paper. The irrigation development in cotton tract has suffered for a long time due to deliberate State neglect. The State is now bankrupt and has no possibility of raising money from the market for creating irrigation infrastructure. Hence there is very little hope of significant investments coming in the creation of surface water sources. Thus the burden of reducing poverty falls on ground water exploitation. This is largely in private sector. If this itself is strongly and negatively influenced by cotton cultivation, we believe there would be a major problem here. We therefore focused on the relationship between cotton cultivation and ground water development in Vidarbha. The paper titled "Cotton Cultivation and Ground water Development in Vidarbha" by SJ Phansalkar and Mansoor Khorasi argues that the whole cotton growing region in Vidarbha has plenty of rainfall (above 800 mm) and a large number of streams. Our research shows that the relationship between cotton cultivation and ground water exploitation is indirect and negative. We also find that the pace of ground water exploitation in cotton tract is quite slow. We believe that the easy liquidity and similar other features of cotton crop tend to perpetuate cotton. An important reason for poor adoption of alternate crops is the fact that people lack adequate information and access to technologies that can save water and yield more crop per drop. We conjecture that since they have always been growing cotton, they are well aware and familiar with the travails of cotton cultivation and marketing. Risks of other crops are perhaps wholly new for them. Preferring a known devil to unknown angels, the people seem to be content in their low level equilibrium. Yet from a wider poverty perspective, it is important to assist the people by demonstrating new and more paying crop combinations as well as new and better water delivery mechanisms so that the economics of wells improves and the unused ground water is put to productive use.

We learnt in our field work that in addition to the uncertainty regarding accessing ground water in hard rock region, the electricity tariff was also hindering speedier spread of irrigation. In fact a strong opinion that power tariff is punishing to people of the region has been voiced time and again. Irrigation in Vidarbha is done using shallow dug wells. The water availability in these wells is limited and often time bound, In many places, no irrigation is possible beyond February. We therefore felt that the subject of how people respond to a combination of the fixed tariff for power and limited water availability in dug wells would be worth looking at. This was done in a focused study, resulting in a paper "Patterns of Farmer Irrigation Behaviour under conditions of water insufficiency and fixed electricity tariff: Evidence from Vidarbha" by SJ Phansalkar and Pradyumna Deshpande. Maharashtra State Electricity Board shifted from a metered tariff to Horse Power linked fixed tariff in the eighties. From 2000, it has shifted all the new connections to metered tariffs. A large majority of the electric pump users in Vidarbha are on fixed tariff system. Barring a small minority in the foothills of Satpura in Nagpur and Amarawati districts (the orange belt), most farmers rely on open dug wells that retain water only up to March. Quantum of water that can be pumped is also quite uncertain. Phansalkar and Deshpande observe that behavioral patterns in this region under fixed tariff are complex. Most farmers adopt 'Wait & Watch' attitude is remarkable due to various reasons. Area under cotton cultivation has been reduced to half and substituted by Soybean. Gram is taken after soyabean. No consumer desires disconnection of his line. Therefore, even though he deliberately postpones payment he behaves and pays the bill when circumstances become decisive. Affordability of Horse Power linked Tariff (HPT) system is a function of land holding and water availability. These two accordingly govern the behavior of the farmers. Evidently there is a gap between the policies & actual implementation of the same regarding levying electricity bills. The enforcement is weak and allows farmers plenty of room to maneuver. Implications of our understanding are subtle. Undoubtedly fixed tariff is more convenient to administer. It is possible to argue that the level at which the tariff is fixed is determined by taking averages of pumping hours and these regions represent "outliers". Yet it is desirable that hard rock regions that are otherwise poor, do not have any surface water sources and have uncertain shallow water aquifers not be hit with a double whammy by a very hostile tariff regime. At the least the tariff regime needs to differentiate between those who have tube wells that access deep water aquifers and others who access shallow water aquifers through open dug wells. This would mean a graded fixed tariff system one that charges less amount for single phase and small HP motors and those that have say 10 HP and more. Secondly there is an urgent need to improve enforcement. Farmers betting on slackness in enforcement is an evidence of ineptitude in collection and enforcement. Finally, clearly it is desirable that farmers shift to better water distribution methods such as micro-irrigation techniques. In general, micro-irrigation organizations need to focus on hard rock regions that dominantly rely on dug wells since farmers here depend on the little water they can access to provide security of their livelihoods.

Finally, we turned to the vexed question of the sharp conflict between irrigation needs and the need for supplying water for drinking water purposes. This issue has reached crisis proportion in the orange belt in Vidarbha. In towns like Narkhed, drinking water shortages are endemic as orange planters pump out every drop of water from deep tube

wells now reaching down to 300 mt. A similar situation exists in many horticultural tracts in Western Maharashtra too. In fact the GoM had been sensitive and alert to this situation. It is among the few, perhaps the only State to enact and actually implement a ground water legislation. Admittedly, its limited purpose is to conserve water resources for protection of ground water sources. Still, there has been significant movement in the direction of attempting to control the excessive drawls from aquifers in some of the worst affected areas. We conducted a study of the implementation of the Maharashtra Ground water (Regulation for Drinking Water Purposes) Act 1993. This study reported in the paper "A Decade Of The Maharashtra Ground Water Legislation: Analysis of the Implementation Process in Vidarbha" by Vivek Kher and SJ Phansalkar states that Maharashtra is among the few states that have enacted a legislation to regulate the use of ground water. It is a rare state that has actually tried to implement the Act since 1995. The Act known as Maharashtra Ground water (Regulation for Drinking water purposes) Act 1993 stipulates inter alia, a minimum distance of 500 metres between a public drinking water source (PWS) and a well or a bore well of any farmer not used for that purpose, provides for restriction of using even pre-existing wells for non-drinking water purpose during certain times and empowers Collectors to take over, remove the WEMs, cut power or permanently close offending wells or bore wells. The Rules formed under the Act require a strict procedure to be followed for notifying scarcity affected areas where these restrictions can come into force. The Rules also require that Gram Panchayats must make a formal written complaint about a violation of the Act before any action about it can be taken by the Collector.

We find that in the most acutely water scarce area of Vidarbha, there is a fairly wide though imprecise awareness about the provisions of the Act. There is also a near complete absence of social support for the legislation. In fact farmers "using their own water" are not considered as offenders by their neighbours even if their actions clash with the Act. The rural lay public as well as the office bearers of the Gram Panchayat appear inhibited and reluctant to seem to be "revengeful" towards those who are doing no worse than trying to earn incomes by using water for raising oranges. Instead of doing this, people prefer to approach higher elected leaders and exercise pressure for creation of "upgraded" drinking water facilities. Since drinking water is a subject delegated to the Zilla Parishads and since the rulers at ZP level are from the masses, the tendency is to try and gloss over violations or to try to settle them at local level. The ZPs are unwilling to allow any "emergency" situation to develop and always take necessary action such as supply of water in tankers even if the GP does not make a formal complaint against violations of the Act. We believe that a partial modification of rules requiring the GP to certify that no violation exists in the area of its jurisdiction may go a long way in correcting this tendency for finding a soft solution. Simultaneously, we strongly suggest that steps at ground water recharge as well as popularization of water saving irrigation technologies be undertaken to assist the people meet their legitimate aspirations without seriously impairing drinking water supply.

We are aware that we have neither addressed all or even the most of the important issues of relevance to the subject of water use in agriculture in Vidarbha. We hope to have started a process that will hopefully continue through the efforts of a wider interested

research community. We believe that several important issues need to be studied in this field and for Vidarbha. We indicate them below. For instance, we need to understand the current state of management of the thousands of tanks known as Malguzari tanks in Bhandara district and surrounding areas. We have been told repeatedly that the “zudapi jungle” issue has held back the development of irrigation quite significantly. We think it is important to look at this issue by specific studies of relevant cases. We think it is important to understand the process drivers for the current and officially sponsored movement for artificial rainwater harvesting technology that is sought to be implemented with people’s participation. We think it worthwhile to look at some innovative developments such as the much talked about “ce-po” check dams of the NGO Vanrai. In a related field, we would like to look at the scope for on-farm water harvesting for subsequent use in growing vegetables on small holders’ plots as well as the process drivers for spread of water saving irrigation technology. The watershed development programmes and their impact on ground water resources also offer a rich and interesting field of investigation. Finally, a whole fascinating area of the impact of coal and other mining on ground water resources and their use in agriculture needs to be studied properly. We hope that other scholars will come forward and take up some of these topics.