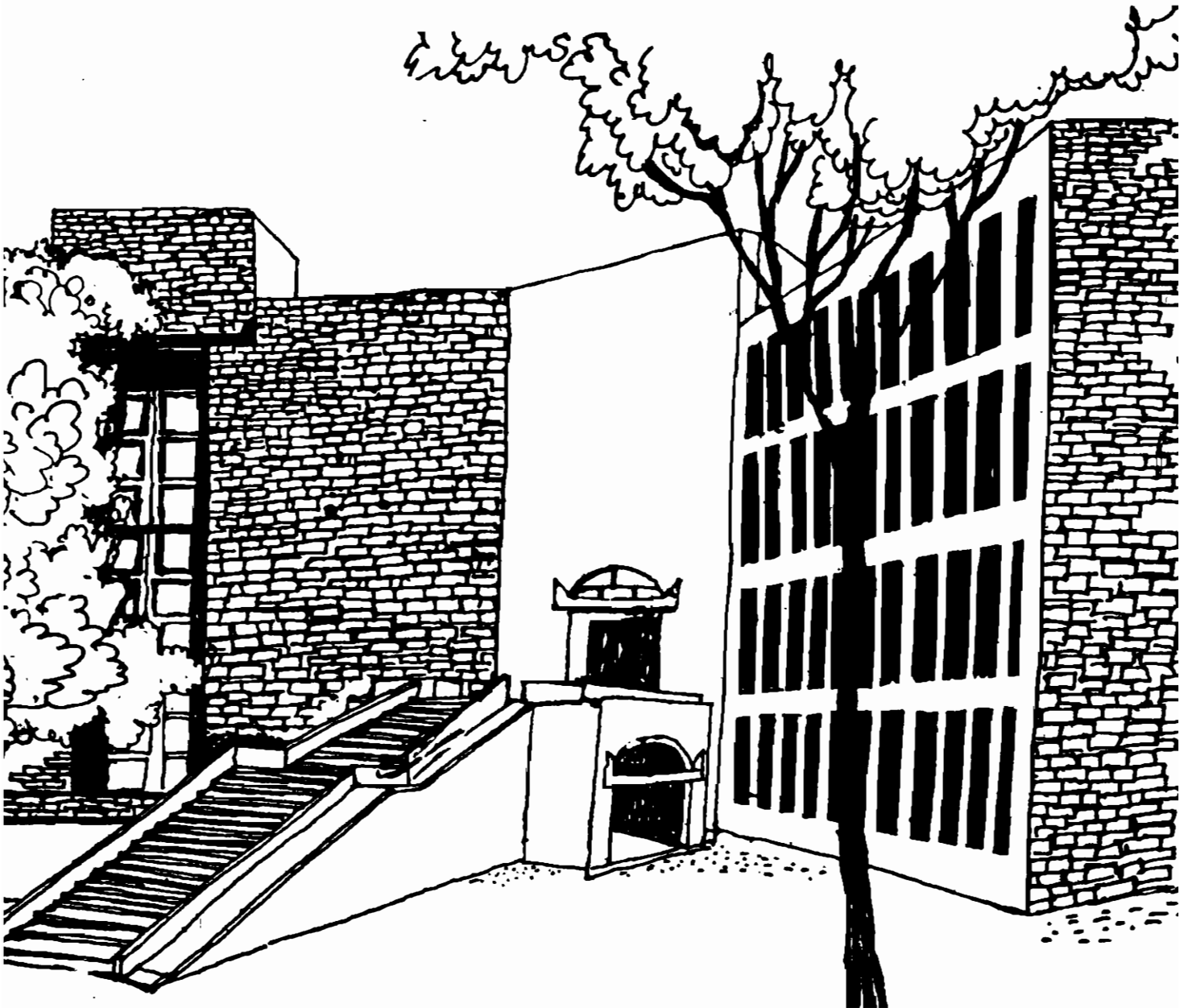




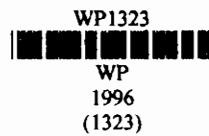
Working Paper



**Impact of Beneficiary Participation in
Rural Water Supply and Sanitation Projects:
Evidence from a Comparative Study in India**

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Impact of Beneficiary Participation in Rural Water Supply and Sanitation Projects: Evidence from a Comparative Study in India

I

INTRODUCTION

Beneficiary participation has become a major component in many development projects, and to express doubts as to whether such participation does in fact lead to better outcomes is now almost heresy. The rationale for beneficiary participation as seen from literature and various project documents has been varied. It is seen as a vehicle to increasing the effectiveness and efficiency of projects (Paul, 1987; Cernea, 1992, pp.2-3); as a means of increasing the coverage of a project with a given budget through cost sharing (Paul, 1987)¹; (Finsterbusch and Van Wicklin, 1987, pp.4) and as a means of increasing the sustainability of the project through enhanced commitment of beneficiaries, especially if they share the costs (Dichter, 1992). Proponents of the "alternative development" school (Gamer, 1976; Botkin et al., 1979) see beneficiary participation as a vehicle to choose their own path to development and preserve their indigenous skills; and in an extended version of their argument, as a part of widening of choice by beneficiaries and of capacity building and empowerment (Paul, 1987; Finsterbusch and Van Wicklin, 1987, pp.3; Cohen and Uphoff, 1980, pp.224). To the advocates of "building from below", participation is a means of building the capacities of grassroots and local institutions (Bhatt et al., 1987)². The underlying assumption of most of the above arguments seems to be that the beneficiary participation is the antidote for the drawbacks of the centralized service delivery approach, namely, (i) their limited reach; (ii) their inability to sustain the necessary local action; (iii) their limited adaptability to local circumstances; and (iv) their creation of dependency on government institutions (Korten, 1981).

However, the question of what in fact has been the impact of beneficiary participation on development projects seems to have received less attention than the often value laden rhetoric and strident advocacy. Even though, as discussed later, some studies have in fact attempted to determine the impact of beneficiary participation on the outcome of projects, the empirical evidence still seems to be somewhat inconclusive.

This study takes a step towards building of such empirical evidence, although our findings are also by no means conclusive. Unlike other studies done so far, this study compares two drinking water supply projects which were otherwise very similar, but differed in the way beneficiary participation was incorporated in them. Both the projects studied are in the State of Kerala in India; both were piped water schemes delivered by the same public authority, but while one project had planned for and achieved considerable participation by the beneficiary community, the other had no component of community

participation in it. Through this study, we show that there is clear evidence that beneficiary participation does indeed lead to better project outcomes, but in specific areas and in specific ways.

Since in the first project the participation sought and elicited was from the community as a whole and not from the beneficiaries alone, we shall henceforth use the term "community participation" (CP) rather than the term "beneficiary participation" in this paper.

The remainder of the paper is organized into three sections. Section II reviews literature, both theoretical and empirical, on the link between community/beneficiary participation and project outcomes. Section III presents the evidence from our case study; Section IV discusses the implications of the findings.

II

LITERATURE ON COMMUNITY PARTICIPATION AND PROJECT OUTCOMES

Theoretical Perspectives

The question of community participation as a vehicle for improved outcomes seems to arise, at least in the case of water supply projects, only in developing countries. This is because in developed countries, water, like electricity, is treated as a utility supplied and purchased under some (albeit not perfect) market rules. Under these conditions, CP is not seen as an important input into these schemes for their satisfactory functioning.

As per the general equilibrium theory, when perfect market transactions are possible, it should lead to the best (Pareto) outcomes. In this system, consumers "participate" through expression of their willingness to avail of the service at the given price. The decision to participate is taken at the level of the individual and is governed by principles of self interest. Under these conditions, an efficient equilibrium can prevail (see for example, Arrow and Debreu, 1954).

But in the case of developing countries, water becomes much more of a public good. Due to the sheer level of poverty in these countries, lack of resources and political compulsions, it is impracticable to implement market transaction based projects to large sections of their population³ (in practice, this means giving household water connections to each family and charge for the water). Further, due to the low density of population in some areas, it may not be feasible to do so at economical rates. Lastly, the supply of water available may be limited so that giving household connections (which had to enhance levels of consumption) may not be possible.

For the above reasons, the water facilities usually given in rural areas tend to be common facilities such as public stand posts with one or more taps. Now the decision making process in the sphere of participation becomes much more difficult and complex, and the choice is a social rather than individual choice. The preferences of individuals on different aspects (such as source levels) as well as their willingness to pay a certain price may vary, and these individual preferences need to be aggregated into a

single social preference. This is the core problem in social choice theory. In his remarkable book Social Choice and Individual Values, Arrow (1951) demonstrated that if there are at least three alternatives, it is impossible to derive a social welfare function which satisfies four seemingly easy and reasonable conditions, namely, (i) independence of irrelevant alternatives (if an individual's preference between alternatives C and D change, this should have no impact on the social preference between choices A and B); (ii) Pareto optimality (if all members of the society prefer alternative A to B, then the social welfare function should choose A over B); (iii) unrestricted domain (no matter what the preferences of the individual members of society are, and however much divided they may be, the social welfare function must be able to produce a social choice); and (iv) non dictatorship (there is no individual in society whose will prevails absolutely, i.e. his/her choice will be the social choice⁴).

The implication of this conclusion is that even if planners meet every single individual in the community, and these individuals express their preferences honestly, it is impossible to have a social choice which would not violate one of Arrow's four conditions. The social choice, made through a process of participation by the community members, may be no more indicative of people's preferences than an elected government necessarily reflects "people's aspirations". Thus there is no reason why outcomes in such a project need be necessarily better than projects without any CP.

Added to this theoretical problem are more practical ones. The most serious is how to be sure that the individuals are revealing their true preferences. This can be a great problem with regard to such questions as the price they would be willing to pay for the service or for alternative technologies or levels of service. People may overstate their true willingness to pay before the project is sanctioned and exhibit a marked unwillingness to pay once the project is commissioned. This especially so if the political environment is such that it is not possible to ensure that the supply to difficulties is cut-off, and the people are aware of this fact.

The next problem in such share facilities is non-excludability and hence, the problem of how to deal with free riders. Different development projects have different degrees of non-excludability and the impact of participation on performance may be expected to depend on the degree of excludability⁵. Education, for example, can have a high degree of excludability: students who do not pay their fees can be debarred from the school. Irrigation projects may have less, but still fairly high excludability. Household sanitation can have nearly full excludability, as against community sanitation which has nearly none (unless they are of pay and use type). Public water supply (stand posts) have inherently a low degree of excludability, and community participation in the form of cost sharing is inherently difficult.

To solve the problem of free riding, suitable local institutions to regulate and oversee the activities of the community members are needed. Such institutions, however, bring up fresh problems, mainly rent seeking and elite domination. Instead of controlling free riders, the elite who control and regulate become

free riders themselves, and as a consequence distort the benefits even more than would have been the case if such institutions were absent. This conclusion is essentially similar to the one arrived at by the believers of the so called elite domination hypothesis (Echeverri-Gent, 1992).

Use of local knowledge which could lead to better designs and systems of operation and maintenance, another presumed benefit of community participation (see for example, Paul, 1987; Finsterbusch and Van Wicklyn, 1987, pp.9) may also be difficult to operationalise in practice. Firstly, there are limits to which community can effectively influence the design of a project. In a regional piped water scheme, the design of pumping capacities and layout of pipes may well be beyond the capacity of the communities to decide. Hence it may well be possible that a set of good engineers and administrators, without any participation from the community, produce a satisfactory and sustainable scheme (the evidence in favour of such a possibility is cited later in this paper). Secondly, the planners and implementors, usually part of large bureaucracies, find it difficult to imbibe this local knowledge and build them into the design, being governed by their standard operating procedures. More important, they may have no incentive to learn or use this local knowledge in the designs (Ostrom, Schneider and Wynne, 1993). In large bureaucracies, the system of incentives are often not geared to respond to the needs of the community. The rewards of the personnel tend to depend more on pleasing their superiors rather than serving the interests of the community. The techno-bureaucrats also tend to favour technically sophisticated designs which give them better professional satisfaction and peer recognition (thus rarely do we find public works engineers favouring development of local water sources such as ponds over piped water schemes). Thirdly, not all the so called local knowledge has any scientific basis, and few of the implementing agency personnel have the will, energy or resources to test them.

Two solutions have been propounded to get over the above difficulties: one, the use of existing local democratic institutions (or building them if do not exist), and second, using NGOs and other grassroots organization for more effective implementation. However, elected representative see their political position as depending on how well they cater to a vector of needs of their constituents (discerning a system of free and fair elections is by no means a common occurrence) rather than improving a specific project through contributing their or the community's local knowledge (Ostrom *et.al.*, 1993). The same problem is encountered in using them to control free riding; when the elected leaders are not busy free riding themselves, they engage in rent seeking activities such as dispersal of favours (by allowing people to take undue advantages) and designing of the project so as to benefit them; sometime only them⁶. As for NGOs, while capable and committed NGOs may indeed bring about much better design, implementation and operation and maintenance practices, most of the NGOs suffer from problems of scaling up, appeal to a limited section of population and have limited competence (Halloway, 1989). Consequently they face great problems in effectively capitalizing on local knowledge over large areas or in technologically sophisticated projects.

Thus use of intermediary agencies such as local institutions or NGOs need not necessarily lead to better community participation or enhanced project effectiveness. Indeed, the proponents of political patronage hypothesis (see Echeverri-Gent, 1992) may even argue that such institutions reflect their own interests and while presenting themselves as the voice of the community may in fact be greatly interested in suppressing their voice. They may become another vehicle for elite domination (Siedentopf, 1987, pp.25-27).

The above arguments caution us that there is no reason to believe that community participation will necessarily lead to improved project performance. They, of course, do not show that they will not, or will be unlikely to do so. Despite all the limitations, it is possible that having some CP may still be better than having none at all. It has been argued that preferences are more likely to be revealed honestly if the planners genuinely build from below (Korten, 1980). New alternatives may emerge as a result of the learning which takes place as a result of the interactions between planners and beneficiaries, which may lead to better social choices and outcomes. In development projects, the "needs" are not always clear and the "demand" needs to be generated (Paul, 1982); and this demand generation may be facilitated through a participatory approach where community members are involved in demand generation rather than through a top down process of handing down knowledge. Participation, through making the processes more democratic and transparent could make it more difficult for the elite to dominate, and become more responsive to the needs of the poor (the so called greater responsiveness hypothesis: see Echeverri-Gent, 1992). It has been argued that participation may lead to increased commitment to the project on the part of beneficiaries. This commitment can be an intermediate variable which contributes to the overall project effectiveness (Finsterbusch and Van Wicklyn, 1987). Cost recovery, full or even partial, is often seen as a device to increase this commitment. Lastly, participation may also lead to reduction of free riding through community pressure. The community may devise its own ways to exclude free riders through framing local rules. Small organizations based on the community may be more effective than large, distantly controlled ones in controlling free riding because everyone will know who contributes and who does not (Ostrom, Schneider and Wynne, 1993) and when the small organizations are homogenous (Cernea, 1985).

Thus it would appear from the above discussion that while community participation does not guarantee improved project performance, it makes it more likely under certain conditions. These conditions are: the community is organized in small groups; the planners, local leaders and beneficiaries are involved in a learning process; the planners and implementors are able to gain the confidence of beneficiaries so that a better map of the needs and preferences of the latter is available, the local knowledge is brought to bear on the project design and implementation, the commitment of the beneficiaries to the project is high, and the processes are democratic and transparent.

Now we turn to the empirical evidence available on the issue of effect of CP on project outcomes.

Empirical Evidence. The studies so far made linking community participation to project outcomes fall into two categories. The first are case studies which show how, in the projects studied, CP resulted in improvements in some aspects of the project design, implementation and outcomes, or, the absence of CP led to difficulties or in the projects, or even in their failure. The second group of studies have adopted the systematic case study method to establish statistically the relationship between participation and project performance (for example, Esman and Uphoff, 1984; and Finsterbusch and Van Wicklin III, 1987).

Among the case studies, the study of development projects in Africa by Uma Lele (1975) is among the earliest. In her study, Lele found that popular participation played an important role in need assessment, project design and implementation. Participation was found to have led to improved design and cost sharing (usually through labour contribution) in some cases, but more usually the finding was that the neglect of local inputs had an unfavourable outcome on the project performance. The assumption, of course, is that had the local communities been involved, the outcomes would have been quite different. In another study in West Java, Indonesia, a participative farmers' group programme was found to have resulted in improvement of rice productivity and in the acquisition of capability for managing production and marketing activities locally (Husein, Handayani and Wiarta (1987); a community based health care programme in Sri Lanka was found to have resulted in provision of a low cost and effective health care to the community (Gunawardena, 1987); and a farmer controlled community irrigation system was found to have led to better design of the irrigation system and increased the problem solving capabilities of local farmers (Alfonso, 1981). In the field of drinking water and sanitation, case studies by Briscoe and Ferranti (1988) sought to establish the link between participation and performance. A potable water project in Tunisia was found to have suffered due to lack of participation leading to serious problems in the design and implementation of the project; poor quality and participation led to serious undermining of the achievements of a potable water project in Peru (Finsterbusch and Van Wicklin, 1987). Isham, Narayan and Pritchett (1994) document two case studies, one of Agathi Rural Water Supply Project in Kenya and the other of Waniata, Air dan Sanitasi (WAS) in Indonesia where first the projects were implemented without CP and ran into difficulties; after CP was introduced (the first project was redesigned), the performance of the projects improved. In a comparative study of five water and sanitation projects in India, it was found that varying modes and intensities of participation affected the project outcomes in specific ways, especially in the design of the project for levels of service, awareness of health issues, changes in sanitation related habits and conflict resolution (Manikutty *et.al.*, 1996).

The findings of these case studies are difficult to generalize due to the small number of cases studied and the informal methods used in some of them (Isham, Narayan and Prachett, 1994). A greater concern for

a researcher is the existence of other case studies which do not show any link between participation and outcomes, or of projects which were successful but had no element of CP in them. Thus Paul (1987), in his study of 50 development projects of different types found that ten of them did not incorporate CP at all but were considered successful. They seem to have performed well mainly due to the efficiency with which the implementing (government) agency assessed the needs and implemented the project. Thus efficient implementation, rather than CP itself, could be the critical factor in project effectiveness. A similar conclusion emerges from a study by Chauhan *et.al.* (1983) which demonstrates that in eight projects studied by them, even though, on the surface, CP appeared to have played a major part, the key persons who "put the water in the taps" were dedicated professionals rather than community members. In a study of five water and sanitation projects in India by Manikutty *et.al.*, the correlation between the level of participation and technological outcomes (such as availability of water, reliability of supply and percentage of facilities working) or the level of satisfaction of beneficiaries was found to be weak. Cernea, after a study of 25 development projects, found that participation did have an impact, but only if coupled with institutional development to sustain the same. Thus institutionalisation of participation may be more critical than participation itself (Cernea, 1987).

Due to the difficulties in generalizations and seemingly contradictory evidence from case studies, some researches have attempted to apply the systematic case review method. These studies rely on a large number of case studies prepared by others, based on which scores are designed by independent researchers to participation and outcomes besides other variables which, in their judgement, could affect the outcomes. Correlation coefficients are then derived between the variables studied.

The correlation coefficients so derived in these studies seem to be quite at variance with one another. Thus Finsterbusch and Van Wicklin (1987) find adequacy of communication and beneficiary commitment to the project as the major significant variables rather than CP. The average correlation coefficient was only 0.26, and the authors state that "this finding appears to contradict the literature which strongly advocates participation as crucial for project success" (pp.16). The study, however, showed the importance of participation as increasing at successive stages of the project, the O&M stage showing the highest (0.37). Though small, the values of some stages were significant at 0.05 level and thus another interpretation of the findings (as the authors point out) is that while participation may not be crucial to success, participatory projects are more likely to be successful than non participatory projects.

Deepa Narayan, in her study of 122 projects across different countries found a fairly strong correlation - a zero order correlation of (about 0.6 to 0.76) - between participation and overall project effectiveness⁷ (Narayan, 1992). In another study of 121 projects, Isham, Narayan and Pritchett (1994) found correlation coefficients of about 0.62 in bivariate analysis and 0.24 in the multivariate analysis. In both the above studies, a number of other variables also emerged as important determinants of project effectiveness.

These studies, impressive though they are, still suffer from major problems which leave one with a sense of unease. One difficulty has been the veracity of the rating for the variables given by the experts for the study. Care has been taken to establish the agreement among them, but they would still depend upon the way the case studies were first written and the purpose for which they were written. A much more serious problem is that case studies from projects from different countries and executed under very different conditions are clubbed together. It is also well known that the project outcomes depend upon many other variables besides CP. Hence the contribution of participation to project effectiveness in a multiple regression analysis is bound to be relatively small. Thus valuable though these large sample statistical studies are, the conclusions still have a thick smog of tentativeness around them.

Thus neither isolated and scattered case studies nor large sample statistical studies seem to have built up a strong enough evidence about the role of participation in project effectiveness. It would be useful to have more direct comparative studies of similar projects with and without CP. This is what we have attempted to do in this study which we now describe below.

III

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SETTING AND METHODOLOGY OF THE STUDY

The Setting

The study was conducted in the State of Kerala, India. Kerala is situated in the southern most part of the peninsula and is a narrow strip of land between the Arabian Sea and the western mountain range, the average width of the State being only about 70 kms. Though it has a high average rainfall of 3085 mm, there are few dams (more difficult to construct now due to ecological considerations) and hence the rain water flows into the sea very quickly. The rainfall season is for about four months in a year, and five months (January till May) are dry. In the latter months, rivers, ponds and wells run dry and in many areas drought conditions prevail. There are also problems of salinity in the coastal regions.

Kerala has a good traditional water source system with wells and ponds. Many houses have their own wells and villages have community wells. There is a strong tradition of using well water for drinking and cooking, and a belief that this water is generally safe, (although a study revealed that most of them are contaminated to varying degrees)⁸. Many of the wells are not protected at the top, and many do not even have a parapet wall to prevent ground water from seeping into the wells. One of the important requirements of a water supply project which aims to deliver safe drinking water is to educate the people about the hazard of using the well water, especially for drinking without boiling.

The density of population in Kerala is very high, being in no case less than 900 persons per sq.km. (except in some hilly areas) and in many cases as high as 2600. People do not live in clustered villages as in many parts of India but live along roads and paths throughout the State. Boundaries between adjacent

villages or between the village subunits called "wards" are artificial in most cases⁹. Houses are built very close together with very few open spaces for defecation (as is the case in many other parts of India). This makes household latrines a necessity but their potential for contamination of nearby wells is also very high¹⁰.

Kerala is considered an exceptional Indian State, with a literacy of over 90 percent and a health system that is well developed. The infant mortality rate and life expectancy in Kerala in the year 1992 were 24 per thousand and --- respectively, these figures being not only the best in India but comparable to many relatively developed countries of the Third World. The degree of political awareness is very high, with functioning of village level democratic institutions called Panchayats. These are bodies of elected representatives with an executive wing of bureaucrats. There are also many active local grass root local organizations such as youth clubs, ladies clubs and sports clubs.

Despite the high literacy, surprisingly, the health awareness of the people in Kerala is not particularly high. Many traditional beliefs exist, and are difficult to change.

Due to the scarcity of safe drinking water (in fact of water in general) in many areas of the State, many water schemes are in operation, some assisted by bilateral and multilateral agencies and some financed by the Government through loans from Indian institutions. Practically all these schemes are piped water schemes. One of the projects we studied was assisted by the Government of Netherlands and Danish International Assistance (DANIDA); the other did not have any assistance from bilaterals or multilateral. Both were implemented by the Kerala Water Authority (KWA), a government corporation charged with the task of implementing all water projects in the State.

The Dutch assisted schemes were initiated in 1980s, inspired by the launching of the International Drinking Water Supply and Sanitation Decade (1981-1990) and gradually more and more areas were brought into the scope of assistance. The project was seen as a drinking water-cum-sanitation project, and this linkage was thought vital in view of the effect one has on the other. The overall objective was improvement in the health of the beneficiaries; not merely supply of water. The Danish government also agreed to extend its support, but due to certain reasons, the Danish supported schemes were started only after 1987. The Danish schemes were all in northern Kerala while the Dutch schemes covered the central and southern Kerala. However, the Dutch and Danish governments agreed to work together with an overall coordination office whose costs were shared by the governments.

Community Participation in the Two Projects

Community participation was envisaged in the Dutch/Danish project right from the beginning. Even though the community was not involved in need assessment, selection of areas to be served or the technologies to be used, they were to be involved actively in the design and implementation stages. They were involved in facility location, building of health awareness, construction, maintenance (mainly fault reporting) and cost recovery (which was done through the panchayats). The participation was to be

mobilized by three Socio-Economic Units (SEUs), one each for the northern, central and southern areas, and an overall coordinating office at Trivandrum, the capital of Kerala. These SEUs had social scientists as their heads, with support field staff. They had units at the panchayat level, with one field officer for one or two panchayats. They were funded by the assisting governments but were to operate as units of KWA. The idea of making SEUs a part of KWA was that they would serve as the link between the community and KWA; coordinate between the training and community mobilization activities on the one hand and the actual implementation of facilities by KWA on the other; and bring about an institutionalization of the community participation process in KWA which was an engineering organization with no experience in work related to community participation.

In the Dutch/Danish project, Ward Water Committees (WWCs) were set up in each "ward" of the panchayats. These committees would decide on the location of facilities, withdrawal of facilities (if not needed), determination of persons eligible for household latrines (latrines under this project, carrying a 75 percent subsidy, were given only to those below poverty level), organize and monitor the construction of latrines, select the caretakers for water standposts (who were voluntary workers and received no payment), organize maintenance (mainly fault reporting to the KWA; a little bit of elementary repairs was also done by the caretakers), and serve as the link between the Panchayat level committees (called Panchayat Water Committees) and the community. There were seven members in WWCs, all nominated by the community; there were to be at least two women members. The WWCs were the decision makers; SEU representatives assisted them in the beginning and whenever needed later. The idea was to enable WWCs to function on their own, so that after the completion of the project when SEUs would be wound up, the WWCs would continue to function. It should, however, be noted that KWA was the authority responsible for the technical design, construction and O&M of both the projects, all the repairs (except for minor ones) being done by KWA personnel only. WWCs could facilitate the process of repairs through quicker information transmission about defective taps and follow-up, but could not undertake any repairs on their own or entrust them to any agency other than KWA.

Thus CP was an integral part of the Dutch/Danish assisted project. In contrast, the project directly implemented by KWA did not envisage CP in any form. It was seen simply as a water supply project, and the engineers of KWA designed the project and located and constructed the facilities in their own way. There was no sanitation element in the project; it was seen simply as a water supply project. There were also no programmes to build health awareness.

In both the schemes, KWA was to recover from the panchayats an amount of Rs.475/- per standpost per year (about \$1.30). This was met from the panchayat's overall tax revenues (which included many items of taxation).

Thus the two projects selected for the study were essentially similar except regarding the element of community participation. The Dutch/DANIDA project covered many areas all over the State; so did KWA's own schemes. Hence for our study it was possible to select villages that were geographically near each other but served by different projects to enable a comparison. We selected four pairs of villages in the two projects. The villages selected were those in which the facilities had been completed and the supply was going on for at least two years.

Variables Studied

The dependent variable studied was the outcomes of the two projects. The outcome in each project was measured along the following dimensions.

- (i) Technological outcomes. Under this head, we measured the quality of water supplied, daily availability of water in the taps, availability at predetermined hours if the supply is not round the clock (i.e. regularity of supply), number of disruptions per week (reliability of the supply) and the percentage of taps in working condition.
- (ii) Usage of project source. This refers to the extent to which the project was able to induce the beneficiaries to use the water supplied under the project which is treated and safe rather than the traditional sources. This indicator is particularly useful in a State like Kerala where there is abundant water during the rainy season and people may prefer to use traditional sources (especially wells). The questions posed to the respondents were whether they had switched over to the water supplied by the project for drinking and/or for cooking, whether this switch was total or partial, and whether they used the project water in all seasons or in particular seasons only.
- (iii) Changes in habits. The extent to which each project led to change in the habits (mainly health related habits) of their beneficiaries was determined.
- (iv) Continued community involvement. The degree to which the community is involved on a sustained basis gives an indication of the sustainability of the project itself. We measured this through ascertaining the perceptions of the beneficiaries as to (a) whose responsibility it was to keep the area near the standposts clean and (b) to keep the facilities working; and (c) the initiatives taken by them to get the defects rectified. We also looked at the continued functioning of the Ward Water Committees and the extent cost recovery was done in the two schemes.
- (v) Satisfaction of beneficiaries. This was measured through a direct question as to what extent the respondents were satisfied with the facilities given by the project and its functioning.

The study was based mainly on interviews. Two village leaders or influential members of the village (such as school teachers and social workers) were interviewed in each of the selected villages to assess their involvement in, and their perception of the project. We thought it was possible that even in the villages in the projects in which there was no CP component, such influential members would be involved or consulted

in some way (indeed if there is elite domination, they could be deeply involved); in the projects with a CP component in it, they might be involved in varying degrees. In each of the selected villages, 20 community members were also interviewed, chosen at random. Of these, ten were women. The data on all the outcomes except the number of taps working (which could be ascertained through observation) were based on the above interviews.

IV RESULTS OF THE STUDY

In this section, we compare the outcomes in the villages served by the Dutch/Danish project (Project I) with those in the villages served by the KWA's project (Project II).

(i) *Technological outcomes.* The technological outcomes in the two projects were as given in Table 1 below, which shows the percentage of respondents answering in the affirmative:

Table 1
Technological Outcomes in the Villages Studied
(Percentage of respondents)

	Project I n=80	Project II n=80
Quality of water	"Satisfactory": 40% "Good": 60%	"Brackish": 25% "Muddy": 25% "Unclean": 50%
Water is supplied daily	19	14
Water is supplied regularly	50	75
Average number of disruptions per week	2.34	1.90
Percentage of taps working (Determined by actual count)	92	74

The quality of water in Project I was stated by respondent as "satisfactory" or "good" although many complained about the smell and taste due to the chlorination treatment water is subjected to. However, in Project II, in no case was water considered "good" or "satisfactory"; it was described as "muddy", "brackish" and "unclean". We also found that there was indeed a substantial difference in the quality of water in the two projects. This was partially explained as due to the water purification facility not being set up in one of the two project areas in Project II. Also, it is possible that the condition of the pipelines

in Project II had deteriorated. But the important point was that whenever the quality of water in Project I showed deterioration at any time, the WWCs, the panchayats and the SEUs brought it to the attention of KWA and brought pressure on them to improve matters.

In the dimensions of regularity and reliability of supply, Project II showed more favourable results. Project I was better with regard to the daily availability of water. We were informed by KWA personnel (who maintain both the projects) that these parameters essentially depended upon the pumping at the pumping station and the availability of power. These being regional water schemes, pumping was done at the water source (usually at a fairly long distance away) and stored in water reservoirs at different stages. These reservoirs served a number of villages. It appeared that the community had little role to play in influencing these outcomes; it was rather the technological imperatives that decided these outcomes.

In many rural piped water supply projects, villages at the tail end of the pipelines and those at a higher level tend to receive less water with more disruptions. Community participation could result in better pipe layouts. But since in both the projects, the community had no role in the design of pipe layout and the design was done entirely by KWA, CP had little influence on this aspect.

The percentage of taps working in Project I villages studied was strikingly different from those in Project II (92 Vs. 74 percent). Project I villages had an efficient mechanism for quick reporting of faults and their follow up, while Project II had none. In fact, Project II villages had no records that could show how many taps were not working on a given day and from what date they were not working, while in Project I villages, each defective tap was recorded by the caretaker in the ward in a register and the date of reporting entered. The panchayat office kept a record of all defective taps, and followed up the repairs with KWA maintenance personnel. Thus the difference in the percentage of taps working in the two sets of villages seems to be largely due to the participatory maintenance and follow-up systems in Project I.

(ii) Use of Project Source. As may be seen from Table 2 below, the percentage of people who have switched over to the "safe" water supplied by the project is much higher in the Project I villages than in Project II villages (though, it must be noted, the number of people continuing to use "unsafe" water is quite high even in Project I villages, despite all the efforts that have gone into building health awareness.

It may seem surprising that when given the choice of obtaining water at the turn of a tap, people still resort to the laborious process of drawing water from wells. We therefore asked those who continue to use water from wells solely or along with the piped water the reasons for their use of different sources. The answers obtained in Project I and Project II areas were strikingly different. In Project I areas, the safety of piped water

was the reason mentioned by most of the respondents (73 percent) for using piped water, and proximity of the source by the rest (mainly those who did not have their own wells). The main reasons for using well water were non availability of piped water due to various reasons (such as breakdowns and inadequate pumping of water at source) and better taste of well water. In Project II areas, the reasons for using piped water were proximity of the source (31 percent) and more quantity of water (27 percent); the greater safety of piped water was not even mentioned once. On the other hand, wells were used whenever they were near,

Table 2
Sources of Water Used by Respondents
(Percentages)

	Project I n=80	Project II n=80
A. For Drinking		
Traditional Sources (mainly wells) alone	14	19
Piped water supply alone	39	25
Traditional Sources as well as piped water supply	47	56
B. For Cooking		
Open wells alone	46	50
Piped water alone	40	27
Open wells and piped water	14	23

due to their better taste and surprisingly, their "greater safety". The poor quality of water supplied in the pipe was also a reason for not switching over to it.

The reasons given by the respondents in the two project areas for using different sources may be seen from Table 3.

Table 3
Reasons for Usage of Different Sources
(Percentage of Respondents)

Reasons	Project I		Project II	
	Wells	Piped water	Wells	Piped water
Source is closer	23	21	37	31
Better taste of water	5	0	27	5
Safety of water	27	56	30	0
More quantity of water	0	0	6	27
Other reasons	45	0	0	12
Using well only	-	23	-	25
	100	100	100	100

* Only those who use traditional sources, solely or along with piped water

Thus it would seem that Project I succeeded in building up a much higher level of awareness regarding the risks of contamination from traditional sources. When the beneficiaries did use well water, a major reason was non availability of piped water. On the other hand, in Project II areas, the respondents saw the piped water mainly as a supplement to well water (when wells dry up) or convenience.

Interestingly, the Dutch/Danish project personnel seemed to have realized the difficulties in inducing the beneficiaries to change over fully to piped water. Hence they started a scheme of chlorinating the existing wells to eliminate contamination. This programme, again, was a community based programme undertaken by village women who did the chlorination of wells for a small charge, keeping the profits generated to themselves¹¹.

(iii) Changes in health habits. There were some differences noticed between the health habits of the beneficiaries in the two projects. No great difference was noticed in the habit of covering the vessels containing drinking water (most did), storing drinking water at a height (only a few did) and taking out the water from the vessel with a help of a tumbler with a handle so as to avoid contact with fingers (hardly anyone did). But while 37 percent of the respondents in Project I filtered the water before drinking, only three percent in Project II did so. Usage of the household latrines was also very different in the two projects (among those who had their own latrines). While 94 percent in the Project I villages used their latrines, 34 percent in Project II continued to use open space despite having their own latrines, simply out of habit¹². Similarly while 85 percent of the children used their household latrines in the Project I villages, only 44

percent in the Project II villages did. The respondents in Project II areas had no idea of the hazards to health to other members of the community due to their habit of defecation in open spaces. Ninety nine percent of the latrines in Project I villages had water kept ready near the latrines while only 67 percent in Project II did, and in most of the latter cases, did not flush the latrines after use. The villages being contiguous in pairs, there is no reason to believe that they differed in the habit of the people initially. The different habits observed are almost certainly due to the impact of the Project I in their villages.

Sanitation was not part of the Project II's objectives and it may thus seem to be unfair to compare sanitation in the two projects. Also, it could be a valid criticism that in Project I, it was the awareness programme per se, rather than the CP element which led to changes in habits. Since we did not have a training programme without CP for comparison, we are unable to refute this point. But it is to be noted that in Kerala similar messages are given through many devices and in many programmes where lectures are given on health. For instance, radio and television regularly beam out health messages; health habits are taught in literacy and adult education programmes and pamphlets are issued from time to time with such messages. What perhaps set apart the Dutch/Danish programme was the involvement of the village people themselves in these programmes in organizing, becoming trainers themselves and reinforcing the messages. When the messages come from their own people, perhaps their credibility is higher. The SEU staff also regularly discuss such matters with beneficiaries on a continuing basis and try to convince those who have relapsed in their habits of the importance of good health habits.

(iv) Continued Involvement by the Community. To assess the extent to which the community continued to be involved after the completion of the project, first three questions were asked in the survey to beneficiary respondents: (a) whose responsibility was it (according to them) to keep the standpost area clean; (b) what action would they take if the designated person or agencies (the caretakers and/or KWA personnel) fail to take the needed corrective steps; and (c) whether they had taken any initiative in the past to report defects or get them rectified. The responses received were dramatically different in the Project I and II areas, as may be seen from Table 4 below.

Table 4

*Continued Involvement by Community Members
(Percentage of responses)*

	Project I n=80	Project II n=80
Question: Whose responsibility is it to keep the area near the standpost clean?		
Caretaker only	11	0.
All in the village	20	24
Those who use it	33	48
Government	11	26
.There were no caretakers in Project II.		
2. Question: If you find a tap not working and the caretaker[@] is ill or he/she is away, what will you do?		
Wait till he/she gets well or returns	6	0
Do the job yourself	28	0
Do the job with the assistance of other community members	28	8
Get some other village members to do it	10	10
Nothing	0	63
[@]In Project II areas, we asked if the KWA mechanic ill, he/she is away etc., what they would do.		
Question: Have you taken initiative to report defects on your initiative?		
Yes	95	0
No	0	100

In Project II areas, the "Government" is seen as responsible for keeping the area near the standpost clean by 26 percent of respondents while in Project I areas, only 11 percent thought so. While in the Project II areas, as many as 63 percent of respondents would do nothing in the absence of the caretaker or the KWA's mechanic, in Project I areas, 94 percent said they would take some initiative or other to get it done. Similarly if the KWA was not taking interest to set right the defective taps, in Project II areas, nearly 40

percent of respondents would do nothing, while in Project I areas, there was no respondent who said he/she would do nothing.

It is possible that the respondents' actions were quite different from their responses. Hence these data were supplemented by our own observations. In Project I villages, the caretaker and WWC members knew which pumps were not working and when they went out of order and followed up the repairs. There were also fairly good records kept. The appearance of the standpost areas in the two projects were strikingly different. In Project I areas, the standpost areas were generally clean, and instances were recounted when the community members took initiative to clear up the drainage when it got clogged. The members of the community we spoke to said that they were "their taps" and if the taps were not functioning properly, it is not in their interest. There was also a feeling of empowerment expressed by a number of respondents in statements such as

"The KWA has to repair it (the tap). We will get them to do it."

As we noted, over 90 percent of taps in Project I areas were working.

In contrast, in Project II areas, there was no such feeling of possession. It was "their (i.e. Government's) tap" since the facility was "theirs". This is the usual attitude towards Government in India, where it is seen as the provider of all benefits, and even when it fails to deliver them, no local initiatives are taken for self-help. The standposts in many cases were dirty and no one seemed to be responsible. The percentage of taps working was only about 75 percent.

We also noted that in Project I areas, Ward Water Committees continued to function, calling periodic meetings with the community members to discuss on different issues. An interesting outcome in some villages in Project I (not the two villages we studied in this survey) was that the Panchayat and WWCs felt that some standposts provided earlier were not really required and actually closed them down. This saved them their payment for these standposts (see below).

In both the Project I villages studied, this project led to demand for other facilities, notably revamping of traditional sources, more health classes and more latrines even at full cost (for those not eligible for the subsidies). In Project II, on the other hand, we found no evidence of any other demands from the community.

(v) Satisfaction of beneficiaries. In Project I areas, 75 percent of the respondents stated that overall, they were satisfied with the project. Another 15 percent said they were moderately satisfied, while ten percent said they were not satisfied, largely due to the non-supply of water on a daily and regular basis.

On the other hand, in Project II areas, only 30 percent said they were satisfied with the project. 30 percent said they were moderately satisfied, while 40 percent said they were not satisfied.

Dissatisfaction in both the projects was due to many reasons, the foremost being lack of timely and regular supply. The quality of water supplied came in for criticism in Project II. Many respondents in the

scheme that had no purification facilities were aware of this, and in fact asked how supply of such water could possibly lead to improvement in their health. The location of facilities was also a point of criticism. In Project II areas, the location of the standposts generally followed the standard KWA pattern of locating them near the main roads rather than where people lived (this was especially noticeable in one village which was in a hilly region and people lived in clusters away from the main road). This led to the beneficiaries having to travel long distances (some times half a kilometre) along a hilly terrain and they found this very hard. Maintenance by KWA also came in for criticism, with a "careless attitude" on the part of KWA being the main theme.

An interesting source of dissatisfaction came from KWA giving household connections in Project II areas. It appears that three years ago KWA offered household connections at a charge of Rs.32/-¹³ per month, and many people availed of it. KWA was unable to ensure adequate and regular water supply, however, and all the owners of household connections we met were dissatisfied at the very poor supply actually made. On the other hand, the persons who did not avail of this facility felt that due to giving household connections, their supply at the standposts had deteriorated. There was dissatisfaction on both sides.

In Kerala, all Panchayats which receive water from KWA under any of its schemes are to pay a certain monthly charge (at the time of the study it was Rs.875¹⁴ per standpost per annum). The actual recovery from the panchayats falling under the Dutch/Danish project was strikingly different from the areas covered under other schemes areas (none had CP in them; none had institutions such as WWCs): 25 percent in the Dutch/Danish project areas as against less than ten percent in the others¹⁵. Though the actual recoveries depend upon many factors, one factor is the extent to which the beneficiaries are satisfied with the water supply. Panchayats in which the beneficiaries were unhappy with the service were much more reluctant to pay (though they were legally required to do so) than those which were satisfied¹⁶. Cost recovery, in turn, enhances the involvement of WWC members and beneficiaries in the project as revealed by such statements made to us as : "we have paid money for the supply. We want therefore a good supply".

V

IMPLICATIONS OF THE STUDY

The comparative study of two projects that were quite similar in most dimensions but differing in the way CP was built into them, gives a strong evidence that CP does in fact had to better outcomes. We found considerable, in some cases major, differences in the technological outcomes (mainly in the percentage of taps working), degree to which the beneficiaries changed over to the water provided by the project, the reasons for changing over and for not changing over; changes in the health habits, continued involvement by the community, initiative taken by the community to ensure the satisfactory working of the facilities and

the ability to exert pressure, and the degree of satisfaction of the beneficiaries. The better outcomes in Project I also seems to have led to better cost recoveries, thus improving the sustainability of the project.

An important difference in the outcomes was in the way in which Project I linked sanitation and drinking water. Due to the negative externalities that partial provision of sanitation facilities could generate, Project I made it a point to provide subsidized latrines to all below the poverty line, and unsubsidized latrines to those above. To the poorest of the poor, to get the panchayats to give additional sums of money to enable latrines being constructed for them also. The health campaigns, training of local people to work as trainers and regular monitoring seem to have had an impact on the health habits, and hopefully, on the health of the beneficiaries. CP was an essential component in this linked programme. Project II, by viewing the project as a mere water supply project lost a valuable opportunity to derive the linked health benefits.

How does CP affect the outcomes? From the limited evidence available in this study (even in Project I. CP was only in some areas), it would seem that the following are the linkages:

(i) **Better aggregation of preferences.** Though not a perfect solution to the preference aggregation problem, CP enables the community members to discuss their preferences and arrive at some solution that takes into account the concerns of a majority rather than merely the elite. It does this through the mechanisms of open and transparent meetings, invitations for objections from aggrieved parties to the collective decisions, and involvement of members of existing local institutions. Such a process in Project I in fact led to better locations of facilities with easy access to all as compared to Project II. Involvement of elected members by itself does not necessarily lead to better decisions as seen from the location decisions in Project II; the local leaders may not be interested in the decisions, or may be interested for their own ends.

(ii) **Better designs through use of local knowledge.** Project I was able to adapt the designs of the standpost locations and the drainage surrounding the standposts to suit local conditions based on inputs from the local community members. It also tried out different designs of latrines to suit the local conditions (such as making use of locally available materials and the drainage problems in each area: this was especially a problem in the coastal areas). It also generated new alternatives when the established customs were seen as hard to change, as for example, the programme for chlorination of wells, and care was taken to include the community in this effort. The experience in this project shows that even in a relatively centrally designed project, the scope for local adaptation seems considerable.

It is remarkable that KWA did not appear to have made use of the knowledge it gained about community participation in Project I in its other projects¹⁷. Thus merely a "participatory learning approach" does not ensure that the organization in fact learns; it also needs the incentive structure to do so. In large government bureaucracies, it seems doubtful whether such incentives can in fact be built; institutionalization of the learning process seems essential.

(iii) Pressure by Community on bureaucracies to perform. The responses of KWA to the defective standposts in the two projects seems to indicate that community pressure, if exerted continuously and through transparent processes (rather than through rent seeking leaders) can lead to improved performance. In the absence of a mechanism (such as Ward Water Committees and Panchayat Water Committees) to exert such pressure, the community feels helpless. A catalyst to form such institutions and sustain them seems needed, and this function was performed by SEUs.

(iv) Sustainability through feeling of ownership. Participation by community, especially if cost recovery (direct or indirect) is involved, is likely to lead to better feeling of ownership and a sense of "having the right to demand" good service. If the service is seen as being provided free by the Government, this feeling is unlikely to develop. Cost recovery, even though it may not be full, could lead to the community exerting more pressure for better performance.

On the whole, the study supports the greater responsiveness hypothesis. It also supports Cernea's finding that participation, to be effective, needs to be coupled with institutional development. The institutional factors which emerge as facilitating greater effectiveness of CP seem to be.

1. Formation of small community based groups which can represent different sections of the community (especially women and disadvantaged sections).
2. Linkage of these groups to existing local institutions (provided such institutions exist, are strong and are functioning).
3. Assignment of clear tasks and responsibilities to these institutions.
4. Ability and willingness of planners to understand local conditions, to learn from them and incorporate them into project development, and an enabling incentive structure. The community based groups formed are likely to be of great help. Actually seeing their suggestions being implemented may provide greater motivation for community members to come out with still more suggestions.
5. Transparency and democratic functioning of such institutions. This alone will prevent elite domination.

Limitations of the Study

A major limitation of this study is that it was done in the State of Kerala where literacy and political awareness are high, the general state of health is much better than most other Indian States and is in fact comparable to developing countries, and where strong local institutions exist. It is far from the feudalistic set up prevalent in many parts of the developing world, and hence the ability of local committees and institutions to prevent elite domination in Kerala may not be replicable in the other areas. Thus many of the techniques adopted in Kerala by SEUs to generate CP and make it an effective instrument may not work elsewhere.

END NOTES

1. For example, the Appraisal Mission of Netherlands Government in India sent to Kerala, in its report KI-4 produced in 1982, sees cost sharing as a means to increase the number of beneficiaries (pp.5-6).
2. A number of papers in this edited volume build on this theme. See, for example, the papers by Ledivina Carino and Wilfredo Carada; Asoka Gunawardhana; and Govind Agarwal and Prakash Pant in Anil Bhatt *et.al.*, Vol 2)
3. In fact the compulsions may be more political than economic. In many parts of India, it is the poor who have to purchase water from local suppliers at prices that are high not only relative to their income level, but also in absolute terms, while the well-to-do get abundant water at very low prices. Still, charging for water in public projects continues to be a very difficult problem.
4. For a concise and lucid discussion of this topic, see Philip R. Gerson (1993).
5. This is true not only for projects involving cost recovery, but even in others. Participation involves expenditure of time and effort, and if other "free riders" who have not expended such time and effort get equal benefits from the projects, the incentive for participation is likely to be less.
6. For example, local elite are known to have ensured that public stand posts are in fact located within their house compounds in collusion with bureaucrats, thus denying their access to others.
7. The cut off value for t for a level of significance above 0.001 was 0.65.
8. See the study by Kerala State Pollution Board; and Socio Economic Units, Kerala Water Authority (1991).
9. A typical village in Kerala is large, with about 25,000 inhabitants. Each village is subdivided into "wards", each with a population of about 2,500.
10. A distance of at least ten metres is considered essential between a well and a latrine to prevent contamination.
11. For details, see Manikutty's detailed study of Kerala Project (1995).
12. This cannot have been due to differences in availability of open spaces. The villages selected were essentially similar with regard to density of housing.
13. Nearly \$0.80.
14. About \$24.
15. The figures refer to the overall recoveries in the State; not of the particular villages studied. Source: KWA records.
16. Interviews with the elected members of the Panchayats.
17. KWA has not adopted the SEUs or any equivalent organizational units in any of its projects.

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