# WORKING PAPER 91

# COMMUNITY PARTICIPATION IN RURAL DRINKING WATER SUPPLY AND SANITATION: A CASE STUDY OF KARNATAKA

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# COMMUNITY PARTICIPATION IN RURAL DRINKING WATER SUPPLY AND SANITATION: A CASE STUDY OF KARNATAKA*

Veerashekharappa**

## *Abstract*

*Providing safe drinking water and sanitation to the rural community is the sole responsibility of state. However, with the introduction of reforms an attempt is made to enhance private investment in this sector by involving community in all stages of development including operation and maintenance. Thus, government is changing its role from service provider to facilitator. This study finds that community participation has enhanced private investment and identifies the constraints in operation and maintenance.*

## Introduction

### Community Participation

The notion of people's / community participation is not new and in fact was very much in vogue prior to independence. Indian villages are known for community participation. Increased intervention by the Government in development activities, in the guise of welfare measures has led to the erosion of these traditional practices. Recognising the importance of community participation, several developmental projects have introduced community participation.

The definition of community participation is a matter on which there is considerable disagreement among development scholars and practitioners. However, development economists tend

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to define community participation by all sections of people in terms of equitable sharing of the benefits of projects. Yet others view participation as an instrument to enhance the efficiency of project or as the co-production of services to the advantage of the participants. In fact, the expected benefits and costs influence individual decisions on participation in group activities. While benefits are usually apparent, costs are less obvious because they usually comprise time and effect devoted to interaction among individuals (Brower,et al, 1999). These diverse perspectives truly reflect the differences in the objectives for which different groups might advocate community participation. In brief, the objectives of community participation as an active process are empowerment, building beneficiary capacity, increasing project effectiveness, improving project efficiency and project cost sharing (Samuel Paul 1986). Thus, community participation is intended to contribute towards both beneficiaries' empowerment and project efficiency.

Providing safe drinking water and sanitation to the rural community is the sole responsibility of the state and it has been incorporated in the Fifth Five Year Plan as part of the Minimum Needs Programme (MNP)[1] . However, since the Seventh Five Year Plan there was a shift in the policy of the Government to involve beneficiaries in the decision making process and making them to share a part of the capital cost and 100 per cent operation and maintenance cost. The Eighth Five Year Plan, while supporting the policy followed during the Seventh Five Year Plan, stressed the devolution of responsibility to the grassroots[2] (GOI, Eighth Five Year Plan 1992-97, 1995).

Forty-eight per cent of the recent World Bank projects have included community participation in their design as a means to increase project efficiency (Churchill 1994) and reduce costs. It is argued that community participation will provide a place for voice and choice for the beneficiaries in implementation (Rao and Veerashekharappa 1989; Harmeyer and Mody, 1997; Pushpangadan and Murgan 1998; Veerashekharappa 1999). Community participation will bring decision-making to the village level where users can decide, among other things, the better technology, location of the facility, level and hours of service and related matters. This strategy is called 'bottom-up demand based approach'. The World Bank assisted 'the Karnataka Integrated Rural Water Supply and Sanitation project (KIRWS)' in Karnataka with the same approach is being implemented.

The objectives of the KIRWS project are to increase the project efficiency and reduce the cost by strengthening community participation at all stages, viz., planning, implementation and operation and maintenance. Further, the project also aims at making the community share a part of the capital cost of the environmental sanitation services and cover the cost of Operation and Maintenance by charging for the services. By this process, the community would develop a sense of ownership for the resources and hence be responsible for keeping it operational.

### Objective of the Study

The objective of the present study is to examine:

1. the increase in public and private investment in environmental sanitation;
2. the promotion of equitable distribution of safe water; and
3. the sustainability of water supply systems and environmental sanitation services.

## Approach and Methodology

As community participation is the major component in this project, the study needs both qualitative and quantitative data. To collect the same, multiple methods have been adopted, viz., participant observation method, discussion method and canvassing a structured schedule[3]. At the household level, a structured schedule was canvassed to capture household -level information. For the sample selection of households, at first stage villages have been considered from the pilot phase where the water supply system is being operated and managed by the village community for the last six months. Accordingly, 10 villages and one hamlet are selected. The selected villages are spread evenly across all the regions covering the entire state (See Map for details). For selection of the household, the selected villages are grouped into two: the first group consisted of less than three hundred households and the second group consisted of three hundred and more. From these groups, 30 and 15 per cent of households were selected respectively and while selecting the households the random sampling method was used and the same was furnished in Table 1.

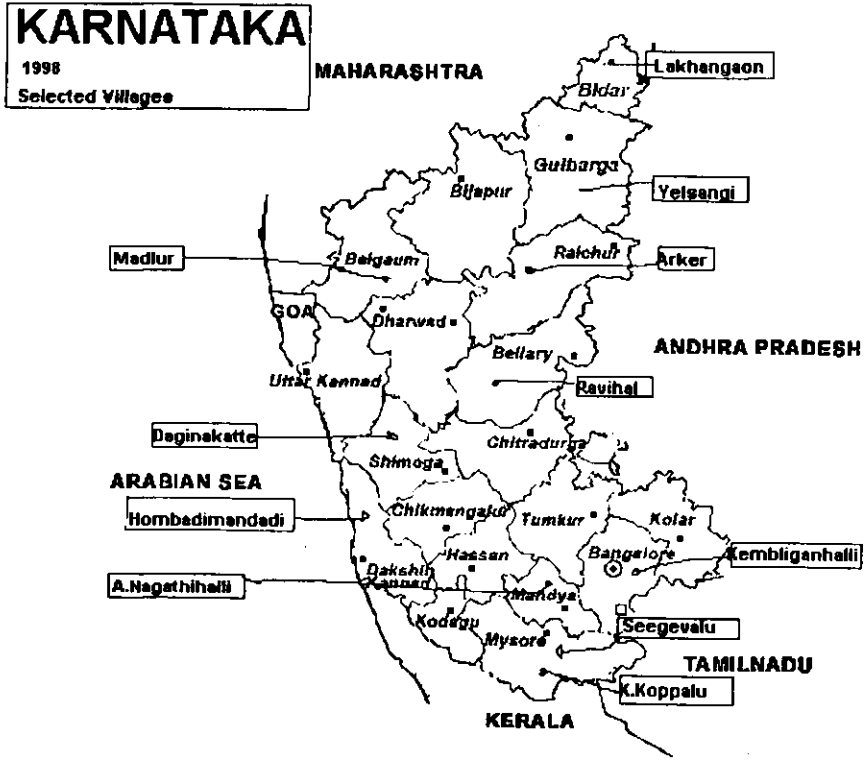
KARNATAKA
1998
Selected Villages
MAHARASHTRA
Lakhangaon
Bidar
Gulbarga
Bijapur
Yelsangi
Madlur
Belgaum
Raichur
Arker
GOA
Dharwad
ANDHRA PRADESH
Bellary
Uttar Kannad
Ravihal
Daginakatte
Chitradurga
Shimoga
ARABIAN SEA
Hombadimandadi
Chikmangalu
Tumkur
Kolar
Hassan
Bangalore
Kembliganhalli
Dakshin Kannad
A.Nagathihalli
Mandya
Kodagu
Seegevalu
Mysore
TAMILNADU
K.Koppalu
KERALA

**Table 1: No of Villages and HHs Selected across the State**

| SL. No | District | Name of the Village | Households | | |
|---|---|---|---|---|---|
| | | | Total | Selected | Per cent to total |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Mysore | Seegevalu | 250 | 75 | 30 |
| 1a | Mysore | K.Koppalu | 480 | 72 | 15 |
| 2 | Mandya | A.Nagathihalli | 238 | 71 | 30 |
| 3 | D.Kannada | Hombadimandadi | 257 | 76 | 30 |
| 4 | Shimoga | Daginakatte | 695 | 105 | 15 |
| 5 | Bangalore Rural | Kembliganhalli | 171 | 51 | 30 |
| 6 | Bidar | Lakhangaon | 750 | 113 | 15 |
| 7 | Gulbarga | Yelasangi | 629 | 94 | 15 |
| 8 | Raichur | Arkera | 702 | 105 | 15 |
| 9 | Belgaum | Madlur | 444 | 67 | 15 |
| 10 | Bellary | Ravihal | 670 | 100 | 15 |
| | Total | | 5,286 | 929 | 18 |

The study has been presented in four sections. The second section documents Village Water Supply Committee formation and resource mobilisation. The third section examines community participation in supervision and monitoring processes and the output in terms of equity in distribution and use of water and environmental services. The fourth section examines community participation in operation and maintenance, and the fifth section presents the findings and the policy recommendations.

## Village Water Supply Committee and Resource Mobilisation

### Community Awareness

In order to enable community participation in the project, there is a need to create greater awareness about the nature and significance of the project among the people / users. For this purpose an external agent, a Non Government Organisation (NGO), has been designated. The designated NGO[4] has developed its

strategy to create awareness about the project. Accordingly, the NGO made frequent visits initially for meeting leading persons of the communities for the purpose, followed by conducting meetings of the village community, where all panchayat members and representatives of local level institutions attended. In these meetings the importance and significance of the project were explained by using various teaching aids[5] and visual demonstration[6] was held for the purpose. This has contributed to increased awareness and participation in the Participatory Rural Appraisal (PRA) activities. Through PRA-activities, the problems of water and sanitation were identified and ranked in order of their felt priority. At the same time, the issue of village committee formation was discussed and dates for preliminary meetings were fixed. These exercises helped create a demand for sanitation services and formation of Village Water Supply Committee (VWSC). The VWSC will be representative of the village community and function as a local institution at the village level, involving itself in all the activities from planning to operation and maintenance.

## Village Water Supply Committee

The VWSC consists of both elected and selected members from the local governance (with ratio of 50:50) and the community respectively of which, 33 per cent are women. Due weightage has been given to the backward and minorities in the formation of the committee, in terms of their representation in the village. The sex wise and caste - wise representation in VWSC are furnished in Table 2. Accordingly on an aggregate, women members constitute 20 per cent. However, across the villages it varies, for instance, in Daginakatte, women's representation is 33 per cent, whereas in Ravihal, it is only one per cent. Thus taking the overall situation only in Daginkatte women's representation is found to the required level. But this did not affect their participation. Women could voice and choose the designation and location of environmental sanitation services. Caste - wise distribution shows that, on an average, fifty five per cent belong to backward castes of which 27 per cent are scheduled castes. It varies from village to village like for instance, their representation in Daginakatte is highest and lowest in A. Nagathihalli.

**Table 2: Sex-wise and Caste-wise Representation in VWSC**

| Sl. No. | Name of the village | Total members | % of Female to total members | Castes | | |
|---|---|---|---|---|---|---|
| | | | | % of other Caste | % of OBC Caste | % of Sc/STs & Muslims |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Seegavalu | 11 | 18 | 64 | 9 | 27 |
| 1a | K.koppalu | 9 | 22 | 22 | 67 | 11 |
| 2 | A.Naghathihalli | 14 | 21 | 93 | Nil | 7 |
| 3 | Hombadimandadi | 12 | 17 | 25 | 33 | 42 |
| 4 | Daginakatte | 18 | 33 | 22 | 6 | 72 |
| 5 | Kembliganhalli | 12 | 25 | 67 | 25 | 8 |
| 6 | Lakhangaon | 10 | 30 | 40 | 50 | 10 |
| 7 | Yelasangi | 14 | 21 | 79 | 7 | 14 |
| 8 | Arkera | 16 | 31 | 38 | Nil | 62 |
| 9 | Madlur | 24 | 13 | 17 | 71 | 12 |
| 10 | Ravihal | 13 | 1 | 54 | 38 | 8 |
| | Total | 153 | 20 | 45 | 28 | 27 |

*Source:* VWSC documents
*Note :* Other castes, excluding OBC, SCs/STs and Muslims

## Resource Mobilisation

At the planning stage, the VWSC has to estimate the demand for the services of water supply and environmental sanitation, based on Participatory Rural Appraisal (PRA) and the Engineer Survey Reports (ESR). The investment in sanitation has to be met both by the villagers and the State, in the ratio of 30:70 respectively. Only after the village community mobilizes 25 per cent of an agreed amount, the tender taken up for water supply work. All the villages mobilized the agreed amount in the stipulated time to gain the maximum benefit from it. The agreed amount has been mobilised from different sources. However they can be grouped into household and other sources.

## Household Sources

On an average, an aggregate 59 per cent of the households have contributed. The village wise contribution is presented in Table 3.

The per cent of household made contribution varies from village to village. For instance, in Seegavalu only 35 per cent, of households have contributed. To compensate for it, the VWS Committee has requested the economically better off people in the respective villages to contribute more as cross subsidy, to the unpaid households. As a result, on an average 35 per cent of households among the contributors contributed more than Rs300. Thus, despite all efforts only 59 per cent of the households have contributed. The reasons for not contributing are several, the prominent being poverty, expecting adequate representation in the committee and inclination toward free ride.

**Table 3: Amount Contributed by Different Households**

| Sl. No. | Villages | Percent of HH to total | Amount contributed | | | | Households contributed (No) |
|---|---|---|---|---|---|---|---|
| | | | <200 | 201-300 | 3001 >500 | 501> | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | Seegevalu | 35 | 31 | 0 | 34 | 35 | 100(232) |
| 1a | K.Koppalu | 86 | 45 | 25 | 10 | 20 | 100(161) |
| 2 | A.Nagathihalli | 53 | 38 | 0 | 62 | 0 | 100(107) |
| 3 | Hombadi Mandadi | 93 | 60 | 0 | 35 | 5 | 100(146) |
| 4 | Daginakatte | 57 | 27 | 0 | 69 | 4 | 100(312) |
| 5 | Kembliganahalli | 45 | 70 | 0 | 7 | 23 | 100(91) |
| 6 | Lakhangaon | 64 | 96 | 2 | 0 | 2 | 100(697) |
| 7 | Yelasangi | 100 | 54 | 27 | 0 | 19 | 100(540) |
| 8 | Arkera | 93 | 75 | 0 | 14 | 11 | 100(231) |
| 9 | Madlur | 43 | 39 | 10 | 18 | 33 | 100(404) |
| 10 | Ravihal | 24 | 10 | 75 | 15 | 0 | 100(265) |
| | Total | 59 | 57 | 8 | 19 | 16 | 100(3,501) |

*Source:* VWSC documents

## Other Sources

To complement household contributions, the community mobilised contribution from other sources, such as organising lottery, musical night and Gramadevata fair in village. The amount mobilised from different sources across villages is presented in Table 4. On an average, 57 per cent of the total contribution was from households (across the villages it varies from 41 to 88 per cent) and the remaining amount (43 per cent) was from other sources. Thus, 59 per cent of households have contributed 57 per cent of agreed amount. This indicates that around 60 per cent of the agreed amount can be mobilised from household sources and remaining amount has to be mobilised from other sources. However, with scarcity of water and effective efforts made by VWSC in a couple of villages (Daginakatte, Arkera and Hombadi mandadi), the share of household in total contribution has increased (Table 4).

**Table 4: Community Contribution by Villagers (in Rs)**

| Sl. No. | Name of the Village | Agreed amount | Amount contributed through different sources | | | |
|---|---|---|---|---|---|---|
| | | | Household | | Community Group Action | Others* |
| | | | Amount | Per cent | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Seegevalu | 90,000 | 50,000 | 55 | 40,000 | 0 |
| 1a | K.Koppalu | 52,000 | 40,000 | 77 | 7,000 | 5,000 |
| 2 | A.Nagathihalli | 1,14,000 | 83,000 | 73 | 21,000 | 25,000 |
| 3 | HombadiMandadi | 24,800 | 20,000 | 80 | 5,000 | 0 |
| 4 | Daginakatte | 1,13,420 | 1,00,420 | 88 | 0 | 13,420 |
| 5 | Kembliganhalli | 1,34,000 | 54,000 | 41 | 80,000 | 0 |
| 6 | Lakhangaon | 2,19,000 | 1,40,000 | 53 | 60,000 | 2,00,000 |
| 7 | Yelasangi | 2,15,000 | 1,13,000 | 53 | 1,00,000 | 2,000 |
| 8 | Arkera | 1,50,000 | 1,00,000 | 66 | 50,000 | 0 |
| 9 | Madlur | 1,10,000 | 75,000 | 68 | 35,000 | 0 |
| 10 | Ravihal | 1,91,000 | 93,000 | 49 | 88,000 | 0 |
| | Total | 14,12,220 | 8,00,920 | 57 | 4,86,000 | 2,45,420 |

*Note* : Others: contractors, donors and derived through lottery, musical nights and village fairs.

*Source* : VWSC documents

# Supervision and Monitoring

## Introduction

With the commencement of the construction of work VWSC will supervise works of water supply and the environmental sanitation, and play a major role in location of services, such as Public Stand Posts (PSPs) and the habitat components. The responsibility of VWSC is to ensure that the services reach impartially to all sections of the people, avoid confrontation within the community and between agencies. For this, in all villages the VWSC has constituted an executive committee to monitor day to day work. This section examines the effectiveness of community participation to supervise the construction and installation of water and environmental sanitation services.

## Installation of Water Sources

In order to increase the per capita consumption and maintain adequate supply of drinking water, provisions have been made to provide the required components specific to each village[7] with specified designs. The executive committee (EC) has to supervise whether the required components are provided with the specified quality, such as, the required number of new sources, condition of sources, construction of storage tanks, distribution system, private household connection, Public stand post and related components.

It is found in several cases that the EC has shown great interest to supervising the construction works, in general and particularly in quality of work. For example, in Lakhangaon village, the EC agitated and stopped the pipe (water supply) laying as they felt that the depth of the trench was not adequate. The work restarted only after there was physical verification and the right depth (3ft) was ascertained. Similarly, in Ravihal the old source of water was changed since water contained high fluoride. In Daginakatte bad quality pipes were replaced with a good one between Over Head Tank (OHT) and the source. Thus, the community participation has contributed for qualitative changes in the construction of water supply work and equal distribution of water. Left to the officials, the positive changes may not have taken place. The effective participation of VWSC and providing additional systems have contributed in increase of LPCD in the village (See Table 5).

**Table 5: PHC & PSP Installed in Each Village**

| Sl. No. | Name of the Village | PHC connection (in Per cent) | | PSPs Installed (in No) | | Water availability In LPCD | |
|---|---|---|---|---|---|---|---|
| | | Estima-ted | Connec-ted | Estima-ted | Connec-ted | Before | After |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | Seegevalu | 58 | 46 | 5 | 16 | 7.7 | 46.3 |
| 1a. | K.Koppalu | 40 | 8 | 9 | 17 | 10.5 | 51.2 |
| 2 | A. Nagathihalli | 63 | 21 | 8 | 14 | 26.3 | 44.5 |
| 3 | Hombadimandadi | 57 | 23 | 8 | 19 | 27.5 | 48.5 |
| 4 | Daginakatte | 55 | 15 | 14 | 38 | 14.1 | 50.0 |
| 5 | Kembliganhalli | 75 | 31 | 5 | 16 | 10.1 | 46.0 |
| 6 | Lakhangaon | 59 | 29 | 18 | 17 | 26.9 | 44.2 |
| 7 | Yelasangi | 64 | 33 | 19 | 17 | 25.9 | 50.2 |
| 8 | Arkera | 71 | 19 | 20 | 16 | 38.2 | 41.5 |
| 9 | Madlur | 30 | 7 | 0 | 24 | 3.0 | 48.5 |
| 10 | Ravihal | 33 | 19 | 14 | 20 | 14.3 | 55.0 |
| | Total | 60 | 22 | 148 | 197 | - | - |

*Source:* VWSC documents

## Accessibility of Water

The objective of the programme is to provide a minimum of 40 LPCD water equally to all sections of the people. Table 5 shows that in all the villages, 40 LPCD water is made available. Water distribution is made to households through two different source viz., Private Household Connection (PHC) and Public Stand Post (PSP). The PHC is provided on the payment of connection fee, whereas the PSP is provided on community recommendation. The number of PHC and PSP for the village is decided during the planning stage itself. Based on this, other inputs are considered[5]. However, there is variation between the demand for PHC at planning and installation stages.

For instance, according to estimates[9], 60 per cent of the households opted for PHCs, but only an average 22 per cent got connections. For instance, in Kalamman Koppalu, 40 per cent households opted, but only 8 per cent of households got connected. A similar variation is observed in other villages (Table 5). Contrary to it, the number of PSPs installed has been more than what was proposed.

The reasons for not opting for PHCs are presented in Table 6. The main reasons are lack of money (43 per cent), followed by lack of space and accessibility of PSP in descending order. It

has been observed in many villages that the lanes are congested and laying the water and drainage line are difficult. Thus, apart from the income levels of the household, the space availability is a major constraint, particularly in SC/STs areas. Hence, most of them are left with the choice of PSPs, and hence the increase in PSPs than originally planned.

**Table 6: Reasons for Not Opting for PHC**

| Reasons | in Per cent |
|---|---|
| 1 | 2 |
| 1. Lack of space | 28 |
| 2. Lack of money | 43 |
| 3. Poor distribution system, | 13 |
| 4. Accessibility of PSPs | 14 |
| 5. Own sources | 2 |
| Total | 100 |

The current distribution of water was assessed against the earlier system whether it was timely, equally distributed in all the HHs across the villages. 94 per cent of the households strongly expressed that the system was functioning reasonably well under the VWSC rather than under the department (See Table 7).

**Table 7: Respondents Opinion on System Functioning**

| Sl. No. | Villages | Under Department | | | Under VWSC | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | Effici-ent | Aver-age | Bad | Effici-ent | Aver-age | Bad | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | Seegevalu | 45 | 32 | 23 | 94 | 6 | 0 | 100 |
| 1a. | K.Koppalu | 35 | 47 | 18 | 100 | 0 | 0 | 100 |
| 2 | A. Nagathihalli | 20 | 64 | 16 | 19 | 78 | 3 | 100 |
| 3 | Hombadimandadi | 44 | 46 | 10 | 31 | 25 | 44 | 100 |
| 4 | Daginakatte | 27 | 71 | 3 | 55 | 40 | 5 | 100 |
| 5 | Kembliganhalli | 45 | 45 | 10 | 92 | 5 | 3 | 100 |
| 6 | Lakhangaon | 40 | 30 | 30 | 96 | 4 | 0 | 100 |
| 7 | Yelasangi | 96 | 2 | 2 | 17 | 80 | 3 | 100 |
| 8 | Arkera | 0 | 29 | 71 | 100 | 0 | 0 | 100 |
| 9 | Madlur | 34 | 65 | 0 | 25 | 36 | 44 | 100 |
| 10 | Ravihal | 33 | 11 | 55 | 33 | 4 | 63 | 100 |
| | Total | 42 | 40 | 18 | 63 | 31 | 6 | 100 |

*Note :* Respondents expressed that minor and small repairs were carried out by the VWSC with the help of local available electricians and plumbers. For sample size (see table 1).

It was noticed that in a couple of villages a small proportion of households including the households having PHCs, have been depending on old sources regularly or occasionally. The reasons for using old sources are power failure, inadequate supply and mal-functioning. According to sample households 72 per cent of them draw water from the old sources due to power failure, while 14 per cent do so due to inadequate supply (Table 8). The reasons for inadequate supply of water are specific to each village. For instance, in Daginakatte and Lakhangaon the topographical constraints have not been considered while laying the distribution channel. Hence the households in the tail end are unable to get adequate water. In Seegavalu, the distribution channel was damaged due to its improper laying, causing inadequate supply of water. In Lakhangaon, due to leakage along the three kms of raising pipeline, water is inadequately supplied and contaminated. As these problems were noticed during the O&M. The VWSC brought these issues to the community and efforts were made to sort them out. Apart from this, VWSC stated that in their villages the water systems go completely out of service three to four times in a year, due to various reasons. However, efforts are made to commence immediately without much delay, as the maintenance is under community control. Experience shows that the quality level and degree of success of services offered are directly dependent on the relative soundness of the VWSCs.

**Table 8: The Reasons for Depending on Old Sources**

| Sl No. | Name of the Village | Reason for Using the Old source | | | Total |
|---|---|---|---|---|---|
| | | Inadequate Supply | Power failure | Not Functioning | |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Seegevalu | 21 | 60 | 19 | 100(75) |
| 1a | K.Koppalu | 35 | 55 | 15 | 100(72) |
| 2 | A.Nagathihalli | 10 | 90 | 0 | 100(71) |
| 3 | Hombadimandadi | 46 | 36 | 18 | 100(76) |
| 4 | Daginakatte | 3 | 91 | 6 | 100(105) |
| 5 | Kembliganahalli | 0 | 100 | 0 | 100(52) |
| 6 | Lakhangaon | 22 | 48 | 29 | 100(112) |
| 7 | Yelasangi | 11 | 79 | 10 | 100(94) |
| 8 | Arkera | 14 | 57 | 29 | 100(104) |
| 9 | Madlur | 0 | 100 | 0 | 100(66) |
| 10 | Ravihal | 20 | 60 | 20 | 100(100) |
| | Total | 14 | 72 | 14 | 100(927) |

## Environmental Sanitation Services

The other component of the project is environmental sanitation services, which includes, washing platforms, bathing cubicles, dustbins, cattle troughs, household latrines (HHLs), drainage and soak pits.

In fact, the periodical meetings of VWSC with the community are very effective in bringing out desirable changes in design and location of environmental services. For example, in Madlur, Arkera and Yelasangi, group washing platforms were introduced and installed with water storage facilities by bringing a change in original design. Similarly, in Lakhangaon, Seegevalu and Kembliganahalli, specified changes in the design of washing platform and cattle troughs were carried out. This gives a confidence that the local institution (VWSC) can succeed in implementation of the plan drawn by them. The demand for these components and installations largely depends on the awareness and perception of the community towards health and hygienic conditions.

17 per cent of the total selected households have HHLs across the villages, which is high compared to the national average of 2 per cent. Three factors have contributed to this: 1) the awareness campaign, 2) adequate water supply and 3) subsidy component[10]. Across the villages, the highest percentage of HHLs was noticed in Hombadimandadi, followed by Lakhangaon and Daginakatte. In Hombadimandadi and Daginakatte due to awareness among the people and availability of water, whereas in Lakhangaon, due to introduction of integrated scheme providing HHLs along with bio-gas. In all the villages with the construction of the drainage and soak pits, the stagnation of used water is avoided to a great extent.

Most of the villagers do not use street bins because people are still in the habit of dumping the waste in their backyards for its conversion into manure. Bathing cubicles are found to be in use at the pilgrim centre, (in Madlur and Yelsangi Villagers). Still villagers find it convenient to take bath either at home or at the natural water sources in the villages rather than going to bathing cubicles. Among the habitant components, there is a demand for properly designed washing platforms and cattle troughs. Provision for these components should be made in future projects too.

# Operation and Maintenance

## Introduction

The sustainability of the system depends on effective operation and maintenance, for which a training and orientation programme is conducted for VWSC and other staff members (waterman, etc).

## Financial Resources

To meet the operation and maintenance cost, each household should pay the tariff, which is fixed. Studies on cost estimation of piped rural water supply scheme in relation to replacement and operation and maintenance per household is Rs 7 and Rs 3.60 respectively without subsidy, and with cross subsidy it will become Rs 21 (Pushpangadan and Murgan 1997). This would mean that if Rs 11 was collected as user charges, the amount is enough for system sustainability. If the cross-subsidised method is adopted the rate becomes Rs 21 per household. If a metered house connection is permitted the affordable class can be cross-subsidised using multiple tariff. In this programme, taking these figures as guidance, the tariff rates are worked out with anticipated revenue and expenditure involving the village officials, NGO and VWSC members. Each village varies in operation cost as well as connection fee and tariff. The tariff for PHC varies from Rs12 - Rs35 and the PSPs varies from Rs 6 - Rs15. Thus, on an average, the households contribute around 50 paise to Rs. 1 per day. The tariff fixed in each village for PHC and PSPs are presented in Table 9.

**Table 9: Income from Connection Fee and Tariff across Villages during 1998 (in Rs).**

| Sl. No. | Name of the Village | Total Income (Rs) | | Monthly Tariff Fixed/charged | |
|---|---|---|---|---|---|
| | | Connection Fee | Tariff | PHC | PSP |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Seegevalu | 48,000 | 1,800 | 20 | 10 |
| 1a | K.Koppalu | 13,252 | 2,546 | 35 | 15 |
| 2 | A.Nagathihalli | 12,500 | 2,480 | 12 | 6 |
| 3 | Hombadimandadi | 8,850 | 1,885 | 25 | 11 |
| 4 | Daginakatte | 43,600 | 8,040 | 35 | 12 |
| 5 | Kembliganahalli | 15,000 | 1,566 | 15 | 6 |
| 6 | Lakhangaon | 17,252 | 4,562 | 20 | 15 |
| 7 | Yelasangi | 63,000 | 2,100 | 25 | 12 |
| 8 | Arkera | 15,252 | 3,558 | 35 | 12 |
| 9 | Madlur | 4,800 | 2,856 | 25 | 15 |
| 10 | Ravihal | 17,252 | 2,548 | 25 | 15 |

*Note:* Connection fee varies from village to village and is arbitrarily fixed.

## Water Tariff Paid

The field level discussion and calculation carried out shows that the revenue collected by way of tariff is not sufficient to meet the electricity charges, repairs and payment to the staff[11]. This is due to a less number of households opting for PHC, followed by the default by households, which is approximately 16.8 per cent, and this default rate varies from village to villages. For instance, in Kalamman Kopplalu 71 per cent of households are defaulted, followed by 61 per cent in Hombadi mandadi (See Table 10). Defaulters among the PHC users are less, as the default makes them loose water connection. Defaults are high among the PSP users and most of them are not paying, in anticipation that the local governance will pay on behalf of them and some households are not sure that their counter parts are paying tariff, hence they abstained from contribution. However, it is observed that in couple of villages the tariff paid toward O & M has lead to strong demands for increased community participation in a range of decisions affecting the increased supply of water. Hence, the alternative is developing a suitable mechanism to village specific to minimise the defaults and raise the required revenue.

**Table 10: Water Tariff Paid by Household (in per cent)**

| Sl. No. | Villages | People paid water tariff | | | | | |
|---|---|---|---|---|---|---|---|
| | | Water tariff paid | | Tariff paid (in Rs) | | | Total |
| | | Yes | No | <10 | 12>25 | 25> | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | Seegevalu | 77.3 | 22.7 | 20.0 | 64.0 | 16.0 | 100 |
| 1a | K.Koppalu | 28.2 | 71.8 | 25 | 25 | 50 | 100 |
| 2 | A.Nagathihalli | 93.0 | 7.0 | 76.1 | 23.9 | 0.0 | 100 |
| 3 | Hombadi Mandadi | 38.9 | 61.1 | 8.3 | 31.9 | 59.7 | 100 |
| 4 | Daginakatte | 96.2 | 3.8 | 65.7 | 32.4 | 1.9 | 100 |
| 5 | Kembliganahalli | 96.4 | 3.6 | 69.1 | 30.9 | 0.0 | 100 |
| 6 | Lakhangaon | 86.6 | 13.4 | 87.5 | 0.0 | 12.5 | 100 |
| 7 | Yelasangi | 84.0 | 16.0 | 77.7 | 0.0 | 22.3 | 100 |
| 8 | Arkera | 79.8 | 20.2 | 32.7 | 51.0 | 16.3 | 100 |
| 9 | Madlur | 100 | 0.0 | 80.4 | 19.6 | 0.0 | 100 |
| 10 | Ravihal | 25.0 | 75.0 | 65.0 | 35.0 | 0 | 100 |
| | Total | 83.2 | 16.8 | 57.8 | 27.3 | 14.9 | 100 |

*Note:* Total= the tariff paid in different range.

## Institutional

The effective functioning of the VWSC depends on various factors of which the primary one is sharing information. To share the information, there is need to have regular meetings by the VWSC committee members. According to Table 11, in five villages, the VWSC meetings were held regularly, but in other villages the scheduled meetings were not held regularly and most often they met during the visits of officials and consultants. The reasons attributed are that since the Gram Panchayat President and Secretary are non-resident, it has become a major constraint to hold regular meetings[12]. as Grampanchayats have been constituted on the basis of population combining two to three villages. For instance, in Kembliganahalli and Seegevalu, regular meetings are not held as the president belongs to the neighboring village. Thus, absence of the president and secretary[13] in the village has hampered the working and co-ordination of VWSC.

**Table 11: Meeting organised by Village Water Supply Committee**

| Sl. No. | Village Water Supply Committee Meetings held | | | | Total Meetings |
|---|---|---|---|---|---|
| | Villages | Regular | BI-Monthly | During Officials visit | |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Seegevalu | 0 | 17 | 83 | 100(66) |
| 1a | K.Koppalu | 42 | 0 | 58 | 100(48) |
| 2 | A.Nagathihalli | 100 | 0 | 0 | 100(48) |
| 3 | Hombadi Mandadi | 47 | 3 | 50 | 100(81) |
| 4 | Daginakatte | 100 | 0 | 0 | 100(110) |
| 5 | Kembliganahalli | 0 | 0 | 100 | 100(64) |
| 6 | Lakhangaon | 13 | 0 | 87 | 100(88) |
| 7 | Yelasangi | 100 | 0 | 0 | 100(71) |
| 8 | Arkera | 35 | 0 | 65 | 100(69) |
| 9 | Madlur | 100 | 0 | 0 | 100(76) |
| 10 | Ravihal | 56 | 0 | 44 | 100(80) |

*Note:* Regular means according to schedule

Nevertheless, it is observed that each village has some political party based factions. The factional differences have contributed to the slackening its attendance at the VWSC meetings. However, despite differences, the factional groups[14] have come together during a crisis. For example, in Nagathihalli, the community came together and mobilised the amount to replace a burnt motor. Similar incidents have been noticed in other villages. This assumes significance in an environment where people over the years have been used to waiting for the Primary Health Engineering (PHED) Department replace or repair minor parts. Thus, though the people do not attend meetings regularly, in crisis they come together and take on the responsibility to sustain the assets.

## Conclusion and Suggestions

The aim of the project has been to improve the efficiency of the delivery system and reduce the cost through effective participation of the community in three crucial dimensions: "**Creation, Utilisation and Management**". The project shows a clear line of progression from a supply-driven, top-down development strategy to a more demand-driven, community-based approach.

The efforts made by the NGO have contributed in creating awareness on health and sanitation and a reasonable positive change in the attitude of the communities towards the programme. This fact can be noted from the change in their perception and taking on the responsibility to map out resources and services needed for PRA and village meetings. Further, the villagers sinking their difference have come forward to form the VWSC and mobilised the agreed amount to share part of the capital amount for environmental sanitation services. In fact, the rural community had all along been depending on the Government for almost every developmental work of the village, ever since popular schemes have been implemented. The change now is an encouraging aspect as far as formation of social capital for the future project is concerned. There is tremendous response from the users to finance capital cost not only for Environmental Services but also for drinking water supply. Hence private investment in this sector may not be a constraint in future projects. And there is need to provide statutory status to VWS Committee to function them independently.

However, the constraints were noticed in mobilising the revenue to meet the current expenditure. This was due to less number of private household connections and large number of PSP defaults. Considering the fact, the programme needs to be modified on the lines of Build Own and Transfer (BOT) method and with the cluster approach. This suggestion is based on field experience and taking Community's voice into account. A cluster of villages should be identified and given to the contractor to build the assets and operate for at least one year, and then transfer them to the community. During this period the community will participate at every stage and mobilise resources not only for environmental sanitation but also for water supply. The government participation has to be restricted to the role of facilitator, helping in land acquisition and overcoming other legal hurdles. The NGO should be continuously involved in reorienting and organising the community on the lines of Self Help Groups (SHG) and facilitate the programme, till the community gains confidence and acquaints itself with the nature of work.

## Notes

1. In support of this, the National Drinking Water Mission (NDWM), popularly known as the 'Technology Mission' was launched by the Government of India in 1986 and recently renamed as Rajiv Gandhi Drinking Water Mission, to provide potable water in a timebound period. In continuation of this, Centrally Sponsored Rural Sanitation Programme (CRPS) was launched in November, 1986. Further, the Information Education and Communication (IEC) system was integrated into the programme.
2. In the Eighth Plan, the Rural Sanitation Programme has been restructured with following elements: 1. All activities under the programme will be undertaken through local body/village panchayat and with beneficiary participation. 2. Wherever feasible, NGOs will be involved in the implementation of the programme. 3. Women will be actively associated with the implementation of the programme. 4. Some contribution should be solicited from the beneficiaries, at least in the form of physical labour, in order to imbibe in them the realisaton that the assets created belong to the local community.
3. For discussion and observation method a check list is prepared. (Please see main study)
4. NGO appointed was looking after all the villages.
5. Audio Visual aids, Video recording of existing water supply facilities, Still Photographs about personal hygiene, home sanitation safe water disposal by soak pits, safe human excreta disposal by sanitary latrines.
6. Demonstrations were held at Anganwadi centres, schools through charts depicting the causes of water- related problems, street plays and dramas.

7. Based on Engineering survey report and PRA exercises.
8. Drilling the sources, water storage tank and distribution system.
9. Baseline Report and Engineering Survey Report.
10. The subsidy provided for SC/ST is 50 per cent of the cost and for others 33 per cent.
11. Water man, sweeper, etc.
12. This has been observed not only in pilot villages but also in 1st and 2nd phase villages, when I was involved with JSS Consultants as community development expert.
13. The village secretary has to take care of three to five villages, hence he is unable to attend all the meetings.
14. In the Villages of A .Nagathihalli, Kembaliganahalli Daginakatte and Arkera.

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