RAJIV GANDHI NATIONAL DRINKING WATER MISSION

REPORT

ON

MONITORING AND EVALUATION IN RESPECT OF RURAL WATER SUPPLY SCHEMES IN MAHARASHTRA AND KARNATAKA

KARNATAKA STATE

WATER AND POWER CONSULTANCY SERVICES (INDIA) LIMITED
(A Government of India Undertaking)

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August, 1998

HUMAN BODY CONTAINS SIXTY PERCENT WATER

FIVE PERCENT REQUIRES REPLACMENT DAILY

FIFTEEN PERCENT DEFICIENCY IS FATAL

ENSURE THE HUMAN BODY WITH SAFE WATER

CONTENTS

MONITORING AND EVALUATION
IN RESPECT OF
RURAL WATER SUPPLY SCHEMES IN KARNATAKA

CONTENTS

ABBREVIATIONS

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ARWSP	Accelerated Rural Water Supply Programme
BCM	Billion cubic metres
CE	Chief Engineer
DWCRA	Development of Women and Children in Rural Areas
ESR	Elevated Storage Reservoir
FC	Fully Covered (More than 40 lpcd)
GOI	Government of India
GSR	Ground Storage Reservoir
HP	Horse Power
JRY	Jawahar Rozgar Yojana
LPCD	Litres per capita per day
MLA	Member of Legislature Assembly
MNP	Minimum Needs Programme
MP	Member of Parliament
MWS	Mini Water Supply
NC	Not Covered
NGO	Non Governmental Organisation
NICNET	National Informatic Centre Network
O & M	Operation & Maintenance
PC	Partially Covered
PWS	Piped Water Supply
RGNDWM	Rajiv Gandhi National Drinking Water Mission
RWS	Rural Water Supply
SC	Scheduled Caste
ST	Scheduled Tribe
UNDP	United Nations Development Programme
UNICEF	United Nations Childrens Fund
UTs	Union Territories

CHAPTER - 1

INTRODUCTION

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INTRODUCTION

1.1 IMPORTANCE

1.1.1 Water is life. This colourless, odourless and tasteless liquid is a pre-requisite for all forms of growth and development - human, animal, plant life. It is a civic need for sustaining all human economic activities. All human economic activities are spread over different sectors of economic and social development. No other natural resource has had such an overwhelming influence on human history in the world and the demand for this resource has been increasing and will continue to grow in future throughout the world.

1.1.2 While water is a renewable resource, its availability in space (at a specific location) and time (at different periods of the year) is limited due to climatic, topographical, geographical, hydro-geological and technological conditions for development Much of the fresh water either in India or in other countries is consumed by the agricultural, industrial and domestic sectors (humans and animals). Increasing and competing demands and the inadequacy of these sectors to effectively manage this resource has been creating crises throughout India and in other parts of the world The net result is that the amount of water being consumed has exceeded the annual level of renewal, creating a non-sustainable water scarcity situation This creates crisis to future generation of population and natural environment This is not as a result of natural factors like droughts but is caused by humans with increased population, improper water resource management, shortcomings in the designs and weak implementation of legislations and regulations. The need to develop better management of the limited exploitable resources is felt by all developing countries like India for ensuring atleast safe drinking water requirements to human population residing in rural areas. Several governments including India have initiated steps to provide safe drinking water for rural and urban populations

1.2 REVIEW

1.2.1 Government of India, after independence, constituted Environmental Hygiene Committee (1948-49) and to ensure proper implementation of rural water supply and sanitation programmes in the country

1.2.2 The estimated utilisable potential from surface and ground water resources are estimated at 1122 81 Billion Cubic Metres (B C M) per year and their utilisation up to 1991 is estimated at 540 B C M per year This includes 35 72 B C M for human and animal requirements. The requirements for 2000 AD are estimated at 670 82 B.C M per year This includes 44 28 B C M per year for domestic requirements The actual per capita quantity made available per day in India according UNICEF is far short of the norms To put the reasons succinctly

- Demand for water exceeding the supplies due to increase in population and improved levels of living
- Lack of sustainability of surface and ground water resources
- Fast depletion of ground water resources due to poor replenishment on account of erratic and uneven distribution of rainfall, poor percolation due to different hydrogeological formations
- Large scale deforestation and over exploitation of ground water for irrigation needs
- Limited and uneven distribution of surface water storage supplies due to technical and financial constraints
- Chemical and biological pollution of limited water supplies
- Lack of preventive maintenance of existing schemes and delays in attending repairs due to financial, technical and infrastructure constraints

1.3 DEVELOPMENT IN DIFFERENT PLAN PERIODS

1.3.1 The responsibility for providing safe drinking water in the rural areas rests with the state governments and union territories (UTs) through budget allocations made every year. The rural population in India according to 1991 census constitutes 74.29 percent of total population of 846.3 millions in the country as against 82.71 percent of total population of 361.1 million of 1951. The gravity of the situation is being understood by the planners in focussing critical areas before proposing the next five-year plan proposals Important abstracts are reproduced as under:

1.3.2 First Five Year Plan

The provision of a safe and adequate water supply is a basic requirement and should receive the highest priority (paragraph 16) . Contribution by the people by way of voluntary labour or money will enable the provision to go a long way in the improvement of water supplies (paragraph 19, Page 496-497).

1.3.3 Second Five Year Plan

The schemes included in the first plan did not make satisfactory progress on account of shortage of material, inadequate transport facilities and the absence of adequate public health engineering staff in the states to plan and execute the schemes. The rural portion of the water is not making satisfactory progress primarily due to lack of trained personnel and organisation (Paragraph 48, Page 551)

1.3.4 Third Five Year Plan

The programme gives priority to areas of greater water scarcity and salinity and those in which water borne diseases are endemic (paragraph 7). To ensure that at every stage there is effective coordination between all agencies concerned in carrying out of the programme of rural water supply at the district and block levels and to mobilise local initiative and contribution to the utmost (Paragraph 8, Page 654)

1.3.5 Fourth Five Year Plan

Rural water supply schemes were taken up under the programme for Community Development, local development works and welfare of backward classes. These were supplemented by the national water supply and sanitation programme of the Ministry of Health. In executing this programme, emphasis was laid on providing water to areas which suffered from water scarcity and salinity and where water borne diseases were endemic (Paragraph 19.22)

In rural areas also water supply schemes should be looked after upon as service which has to be paid for. Wherever possible capital contribution and levies should be collected from the beneficiaries. (Paragraph 19.31, Page 405-406,)

1.3.6 Fifth Five Year Plan

The main objective is to provide safe water supply in difficult and problem villages. At the end of Fourth Plan, it has been estimated that there were 1.13 lakh such villages. It is proposed to cover these villages during the plan period. (Paragraph 5.167, Page 82).

1.3.7 Sixth Five Year Plan

The approach will be to provide atleast one source of drinking water in every village identified as a scarcity or health problem villages ..... In particular, the needs of the scheduled caste habitations in the rural areas will have to be given priority. (Paragraph 23.46, Page 399)

Lack of involvement of the local community in the maintenance arrangements, shortage of staff and inadequate funds for maintenance are the main reasons why the existing water supply schemes have failed to yield the expected benefits. It should be possible for the block and village level functionaries to take care of the relatively simple operation and maintenance requirements of rural water supply scheme. It has been noticed that wherever the maintenance arrangements are adequate, the beneficiaries are not unwilling to pay a nominal charge for the water

supplied to them. The effort should in all cases be to recover at least the operating expenses. (Paragraph 23.48, Page 399)

1.3.8 Seventh Five Year Plan

In view of the resources constraint, the coverage of villages with water supply schemes during the seventh plan will have to follow a certain order of priority. The spillover of identified problem villages (39000) based on the existing criteria will in any case have to be covered before other villages can be taken up. The next priority will have to be given to those villages which have been identified as problem villages subsequent to 1st April 1980 on the basis of existing criteria. (Paragraph 12.54, Page 292)

1.3.9 Eighth Five Year Plan

Highest priority to be given to ensure that the remaining about 3000 'No. source' hardcore problem villages in some states are provided with sustainable and stipulated supply of drinking water by March, 1993.

Equally important would be to ensure that all the partially covered villages having a supply level of less than 40 lpcd number about 1.5 lakh including hamlets, are fully covered with safe drinking water facilities by the end of the Eight Plan on sustainable basis.

Ensure that SC/ST population and other poor/weaker sections are covered fully on a priority basis.

The stipulated norms of supply would be 40 lpcd of safe drinking water with in a walking distance of 1.6 km or elevation difference of 100 metres in hilly areas;

Whenever house service connections are given it is suggested that appropriate water tariff is levied and realised whereby operation and maintenance becomes self sustaining to the extent possible. Local bodies, whether rural or urban areas,

should be made responsible for the operation and maintenance of the system installed, with technical guidance from government agencies.

In order to ensure effective operation and maintenance of assets created as in the Seventh Plan, a maximum of 10 percent of funds under MNP and ARWSP each could be utilised for operation and maintenance. Most states face resource problems and, therefore, tend to neglect maintenance. It is necessary to evolve an effective mechanism for ensuring proper operation and maintenance of existing assets. Village water committees should be actively involved in the maintenance of drinking water supply schemes and a system of beneficiary participation introduced. Participation of village women and NGOs/Voluntary organisations should also be encouraged. (Page 379 to 381)

1.3.10 Ninth Five Year Plan

Despite impressive coverage during the Eighth Plan, it was observed :

- There is fall in water level due to competing sector demands.
- Poor operational and maintenance of the system
- Lack of infrastructure support for effective implementation

The conference of Chief Ministers (July 4-5/1996) urged that the entire population should be provided with safe drinking water by 2000 AD The strategy during the Eighth Plan shifted from villages to habitations for concentrating efforts at micro level.

1.3.11 Strategy mentioned in Ninth Plan draft document is

- Full coverage of all habitations.
- Improving the status from 40 lpcd to 55 lpcd on sustainable basis
- Socially acceptable O&M strategies
- Tackling the quality problems through cost effective technological problems

Inspite of best efforts, it was found during mid-sixties that rural water supply schemes were implemented in the easily accessible villages neglecting hardcore and problem villages.

1.3.12 The Government of India (GOI), therefore, requested the states/UTs to identify the problem villages to be tackled. As a result of survey undertaken in 1971-72, it was found out that 90 thousand villages were problem villages to be tackled and 62 thousand villages were suffering from quality problems in the country. Since the magnitude of the problem is large, the GOI introduced a scheme called Accelerated Rural Water Supply Programme (ARWSP) in 1972-73 with 100 percent central grant to states/UTs to tackle the problem villages. This scheme was withdrawn with the introduction of Minimum Needs Programme (MNP) which includes rural water supplies as one of the schemes. The rationale is that outlays earmarked in states/UTs plans under MNP every year are expected to be incurred fully by the states/UTs. Looking at the slow impact in the performance, Government of India had to reintroduce the scheme to supplement the efforts of the states/UTs. The National Water Policy (September, 1987) stipulated that in the planning priorities and operational system a minimum of 15 percent from irrigation projects should be earmarked for drinking water purposes. Guide lines were issued accordingly by the Central Water Commission to the states/UTs

1.3.13 The UNDP and GOI organised a global conference on "Safe Water 2000" at Delhi in September, 1990. The New Delhi Declaration was later adopted by the U.N. General Assembly in November, 1990. A four pronged strategy of integrated management of water resources, institutional reforms including women participation, community management of services and sound financial practices was initiated.

1.3.14 A more elaborate survey done in 1985 brought out a figure of 2 27 lakh villages comprising 1.54 lakh as problem villages and 0 73 lakh quality problem villages. Realising the gigantic task, Government of India constituted 'National Drinking

Water Mission' in 1986 to assist the states/UTs in technical and financial assistance. The mission later christened as 'Rajiv Gandhi National Drinking Water Mission'. RGNDWM is (i) to ensure sustainable safe drinking water of 40 lpcd in all the rural areas for human beings and with 30 lpcd extra for cattle in the desert areas within 1.6 kms range or 100 metres of vertical distance (ii) to create awareness among rural population on health hazards of using unsafe water for drinking. The rural water supply schemes (RWS) are tackled mostly through construction of handpumps, public stand posts through piped water supplies connected to overhead tanks fitted to bores or percolation wells. As a result of combined efforts by the states/UTs and GOI, the outlays provided for the Eighth Plan formed 2.32 percent of the plan outlay as against a mere 0 18 percent of the total plan outlay during First Plan. In addition funds were mobilised through bilateral and UN Agencies to supplement the efforts

1.4 PHYSICAL PROGRESS – ALL INDIA

1.4.1 The physical progress of villages/habitations covered.

• Total villages as per 1991 census	5,87,179 Nos.
• Total number of habitations as on 1.4.1994	13.18 lakh Nos
• Problem villages as on 1.4.1980	2,30,784 Nos.
• Problem villages as on 1 4 1985	1,61,722 Nos
• Problem villages as on 1.4.1990	8365 Nos
• No. of habitations not covered as on 1.4 1994	1.41 lakhs
• No. of habitations as partially covered as on 1.4.1994	4.30 lakhs
• No. of habitations as fully covered as on 1.4.1994	7.47 lakhs
• No. habitations as not covered as on 1.4.1997	0.26 lakhs
• No. of habitations partially covered as on 1.4.1997	3.01 lakhs
• No. of habitations as fully covered as on 1.4.1997	9.91 lakhs

1.4.2 COVERAGE OF POPULATION WITH RWS

As on 1970	Percentage coverage of rural population to total rural population.	5.7
As on 1.4.81	Percentage of rural population covered with reference to 1981 census rural population	31.0
As on 1.4.85	Percentage of rural population covered with reference to 1981 census rural population	56.3
As on 1.4.94	Percentage of rural population covered with reference to 1991 census rural population	73.1
As on 1.4.96	Percentage of rural population covered with reference to 1991 census rural population	81 7
As on 1.4.97	Percentage of rural population covered with reference to 1991 census rural population	85 2

Table 1.1

Expenditure incurred on RWS

Rs Crores

1st Plan	2nd Plan	3rd Plan	Annual Plan	Fourth Plan	Fifth Plan	Annual Plan 1979-80	Sixth Plan	Sevent h Plan	1990-92	Annual	1997-1998 Outlay
3 00*	30 00*	18.83*	29.17*	208.00*	552.09	240 39	2369.22	4402.16	2184.86	9088.39	2612.97

* Includes sanitation

1.4.3 The total public sector outlay incurred during 46 year period (1951-52 to 1997-98) was Rs.21739 08 crores. From a mere Rs 0 50 lakhs per annum during First Plan, the figure rose to Rs 2612.97 crores during 1997-98 This indicated the priority accorded by Centre and the state governments to tackle the rural water supply with right earnestness. The coverage of 85.2 percent population, includes partially covered villages with inadequate or uncertain or unsatisfactory quality of water supply besides fully covered villages.

1.4.4 Even after an investment of amount as mentioned in paragraph 1.4.3, the percentage of recovery from the beneficiaries in terms of water rates is very low At all India level, the percentage of recoveries to working expenses was 1.8 during 1991-92. In absolute terms, though the expenditure was Rs. 801 crores, the recovery was only a pittance of Rs 14.41 crores. The corresponding percentage during 1974-75 was 2.0 and 0.9 during 1987-88 respectively In other words water users are reluctant to pay water tax

1.5 PAST STUDIES

1.5.1 A comprehensive study of rural water supply at the all India level was made in September 1996 by Programme Evaluation Organisation (PEO), Planning Commission, covering 1305 households spread over in 87 villages situated in 15 districts In addition several state governments and research organisations conducted evaluation studies on rural water supplies at different periods of time.

1.5.2 The highlights of the PEO study are :

- 73.6 percent villages were found to be fully covered (FC) and 24.1 percent villages were partially covered and the rest 2.3 percent villages have no source/defunct.
- More than 81.1 percent of rural household have access to safe drinking water within a distance of 1 km range
- About 21.3 percent of the households in 34.5 percent sample villages did not receive adequate water as per the norms on account of erratic power supply, damages in pipe lines, depletion of ground water, mechanical defects.
- About 59.8 percent of sample villages reported that water supply through ARWSP/MNP was not dependable due to erratic supply, un-sustainability of source, frequent mechanical failures
- Handpumps and Mini water schemes are more dependable than piped water schemes.
- More than 92 percent SC/ST families had easy access to safe drinking water

- There were reduction in the incidence of water borne diseases before and after the project.
- About 82.4 percent of rural women spent less than one hour per day for fetching drinking water as against 62 percent before the project.
- Local people in 72 percent sample villages were not involved in the implementation of the schemes.
- About 93.3 percent of the households were aware of the benefits of using safe drinking water.
- While majority of the households reported to be using clean utensils for storing water the waste water disposal arrangements were poor.

1.5.3 The other field studies under taken by other organisations held a similar view that the demand for drinking water has been exceeding supplies. The report of the Expert Committee on rural water supply programme (with special reference to the Mini–mission and sub-mission) constituted by Rajiv Gandhi National Drinking Water Mission observed in 1994 as

- Sustainability was lacking due to lack of coordination.
- Operational maintenance of rural water supply continued to be weak
- Water quality problems were nor tackled in a systematic manner except in the case of guineaworm eradication.
- Training, awareness building, community participation, micro-level ecological planning were not accorded priority.

1.5.4 The PEO study and Expert Committee made several recommendations to improve the sustainability.

1.6 PROPOSED STUDY

1.6.1 The RGNDWM sponsored a 'Monitoring and Evaluation Study of Rural Water Supply Schemes" to be undertaken in several states in March, 1998. The main objectives of the study are .

- Assessment of the present coverage and status of rural water supply schemes and people responses and perceptions about the coverage in different periods during a year
- Evaluation of the water quality problem areas
- Investigation of the operation and maintenance status of water supply schemes and willingness to pay more by the beneficiaries
- Monitoring the current attitudes and practices on water supplies through community participation

1.6.2 RGNDWM has proposed WAPCOS to conduct a study in eight districts in Maharashtra state and six districts in Karnataka state vide their letter D O No Q-14019/42/97-TM(Stat) dt31 3 1998 The proposal included selection of 15 villages from each district and a minimum of 15 households from each villages to be interviewed WAPCOS accepted the offer vide Letter No WAP/COMM/98 dated 3 4 1998 RGNDWM addressed letters to the Government of Maharashtra and Karnataka states for extending cooperation to WAPCOS for conducting the study The participating state governments were also requested by WAPCOS vide letter Nos WAP/COMM/98 dated 3-4-1998 to facilitate in conducting the study WAPCOS team visited Karnataka from 8 6 98 to 29 6 98

1.7 APPROACH

1.7.1 The team members held discussions at Bangalore for Karnataka study on 8 6 98 and 9 6 98 with Director (RWS), Rural Development and Panchavat Raj Department, Government of Karnataka, Superintending Engineer (PHE), Technical Assistant (MC), Technical Assistant(ARWSP) of the office of the Chief Engineer, Public Health Engineering Department, Government of Karnataka As a result of detailed discussions, six districts covering different agroclimatic, hydrogeological zones and also where sizeable SC and ST population exists were selected Based on these criteria, the selected districts in Karnataka are Mysore, Kolar, Chitradurga, Dharwad, Bellary and Raichur Discussions were held with concerned Superintending Engineers and Executive Engineers in the selected

districts for selection of villages In Karnataka all aspects of RWS schemes including installations are looked after by Engineering division of Zilla Panchayat Groundwater schemes are cleared by the Department of Geology and Mining from technical aspect. In each selected district, three talukas were selected and 5 villages were selected in each taluk covering FC, PC and NC criteria irrespective of financing from ARWSP or MNP or others. From each village, 15 households were interviewed randomly and care has been taken to cover SC/ST population. It was in line with the guidelines issued by the Ministry of Rural Development in 1994 for implementing centrally sponsored R.W.S. Selection of NC villages was only to ascertain the existing drinking water arrangements and difficulties encountered. **Thus 1350 households spread in 90 villages in 6 districts were interviewed.**

1.7.2 After the selection of the villages, discussions were held with Chairman, members and officials of gram panchayat to obtain information at village level in respect of population, number and functional status of stand posts, house connections and hand pumps, duration of supply of water in the morning and evening, operation and maintenance arrangements, community participation, collection of water rates, and sanitary conditions around the stand posts and handpumps. The household questionnaire was drawn up according to the broad questionnaire provided by RGNDWM and the questionnaire was canvassed by the team members with the assistance of enumerators. The households furnished the information to the best of their ability

1.7.3 The household survey covers size of the household, occupation status, average monthly income of the total household, dependence status of rural water supplies for drinking and cooking, bathing, washing and eblutions and for animals, distance from the source, potability of water, frequency of water supplied in different periods of time, adequacy of the water from public source, time gained or saved after depending on public water source, sanitary condition of public water source', water tax paid, reasons for not paying water tax, improvement in

the health before and after the dependence on public source, willingness to pay more water tax or contribute to capital investment, sanitary facilities in and around the household etc.

1.7.4 During the survey, technical issues, operation and maintenance problems, testing of water quality, were discussed at various official levels.

1.7.5 The WAPCOS' team members received maximum cooperation from RGNDWM officials, at the Centre and state government officials, non government officials at the village level. Without their assistance the survey could not have been conducted in cordial atmosphere during the peak summer month of June, 1998. Special thanks to the officials in the office of Chief Engineer (PHE) for coordinating the programme

1.8 REPORT

1.8.1 The report comprises five chapters covering T.O R. Chapter 1 deals with introduction on rural water supplies in India and approach to the study. Chapter 2 gives an account of rural water supplies in Karnataka including organisational aspects. Chapter 3 discusses the existing position of rural water supplies in the sample villages based on the information collected at the panchayats offices, discussions with panchayat presidents, members of the panchayats, panchayat officials, state government officials individuals etc., Chapter 4 brings out the highlights of the household survey based on the questionnaire canvased in June 1998 over 1350 households as per the terms of reference. Chapter 5 sums up with summary and recommendations

CHAPTER - 2

RURAL WATER SUPPLY SCHEMES - KARNATAKA

CHAPTER – 2

RURAL WATER SUPPLY SCHEMES KARNATAKA

2.1 GENERAL

2.1.1 Karnataka state has a geographical area of 19 88 million ha and the rural population, according to 1991 census, was 31 07 million sharing 69 1 percent of total state population of 44.98 million This includes 5.65 million of SC and 1 63 million of ST populations

2.1.2 Due to peculiar agro-climatic and hydrogeological formations the state has been suffering from drinking water shortages for the last many decades even though the state has progressed well in other fields The percentage of rural population below the poverty line during 1987-88 was only 32 8 This percentage might have gone down during the subsequent years with rapid increase in industrialisation and agriculture development

2.1.3 As the entire state receives its precipitation during monsoon restricted to four months in a year, water retained in the form of dams, rivers and canals is required to be made use of during the remaining eight months Recharging of groundwater is limited due to scientific, technical and financial constraints The state's rural population increased from 14 95 million in 1951 to 31 07 million in 1991 Registrar General of Census projected a total, urban and rural, population figure of 50 8 million in 1998 and 53 3 million in 2001 There is, therefore, an increasing demand for drinking water due to natural increase in population and due to increase in incomes leading to new styles of living In certain rural hamlets, migration of population from under developed to developed villages due to employment opportunities is making further demands for drinking water The domestic water consumption in the state is estimated at 2 01 BCM per year in 1991 and projected requirements for 2000 A D are 2 25 BCM The utilisable water potential available from all sources is estimated at 63 24 BCM /year

There is thus, an urgent need for the management of scarce resources through proper planning, judicious allocations and implementation because the deficits are expected to bring untold miseries to the rural population particularly SC and ST population who constitute 23.4 percent of total rural population of the state.

2.2 Organisation

2.2.1 The Zilla Panchayats look after the drinking water supplies to the rural areas. The Zilla Panchayats execute the rural water supply works through their district Zilla Panchayat Engineering Divisions and sub-divisions. The Zilla Panchayats Engineering wings look after rural roads, drainages, construction of school buildings primary health centres and other rural development works besides rural water supplies.

The Zilla Panchayat will decide the action plan and Chief Executive Officer (CEO) of that district executes the scheme through the engineering wing of the Zilla Panchayat subject to financial and technical feasibility. Schemes like hand pumps, Mini Water Supply (MWS) costing less than Rs. 4 lakhs are approved by the Executive Engineer. If the schemes cost more than Rs 4 lakhs and upto Rs. 20 lakhs the Superintending Engineer sanctions the scheme. Schemes costing more than Rs. 20 lakhs and upto Rs. 100 lakhs are approved by the Chief Engineer, (PHE). Schemes costing more than Rs. 100 lakhs each are approved by the State government. Funds are released to the Chief Executive Officer of the district who is expected to coordinate the schemes in totality. Full funds are released within the year for handpump and Mini Water Supply installations as these are expected to be completed within a year. In the Piped Water Supply (PWS) installations, funds are released upto 40 percent in the first year and sixty percent in the second year.

2.2.2 The criterion adopted by the state government is that villages with a population of 1000 and above are provided with piped water supply installations connected to bores. Villages with a population of 500 to 999 are provided with Mini Water

Supply installations. For villages with less than 500 population hand pumps for every 150 souls.

2.2.3 Although the percapita availability norm is 40 lpcd, the state government raised it to 55 lpcd. The distance norm for carrying of water was reduced from 1.6 km to 0.5 km in plain areas and 50 metres in vertical distance in the hilly areas.

2.3 Progress

2.3.1 Since the main responsibility rests primarily with the state government in providing safe drinking water, it is really a challenging job for the administration to arrange water on sustainable basis throughout the year. An expenditure of Rs.827 crores was incurred in the state during 1985-86 to 1996-97 for these schemes with state and Central funds. The physical progress before the beginning of Ninth Plan was 14189 hand pumps in working condition. The incidence of guineworm disease was completely eradicated in the state and no fresh case was reported during 1996-97. However, Flouride cases still exist in several places. Only 2 Fill and Draw defluoridation plants and 7 attachments in Hand pumps are reported working in the state. There are no desalination plants working in the state.

2.3.2 Position of physical coverage interms of villages / hamlets in the state and the progress at all India level as on 1.4.94 is as under :

Table 2.1

Classification	State		All – India	
	Nos.	Percent	Nos.	Percent
F.C. Villages/hamlets covered	29092	51.3	747347	56.7
P.C. Villages/hamlets covered	21504	37.9	430377	32.6
WC Villages / hamlets	6086	10.8	140975	10.7
Total	56682	100.0	1318699	100.0

FC = Fully Covered, PC = Partially Covered,NC= Not Covered

2.3.2.1 The above table shows that the progress of coverage of the state is comparable to all India coverage as on 1.4 94 State figures for the latest year are not available

2.3.3 In terms of population coverage an estimated number of 33 61 million (97 3 percent) was covered as on 1 4 94 in the state either partially or fully out of total population of 34 54 millions

2.4 External assistance

2.4.1 For supplementing the efforts of Central and state governments in terms of financial and other assistance, external assistance either bilateral or UN assistance for rural water supply and sanitation schemes is sought and projects are under implementation These agencies finance integrated projects covering rural water supply sanitation and drainage on the basis of the ability of the beneficiaries to afford a part of capital investment and operation and maintenance of the schemes

2.4.2 There are three externally aided projects for rural water supply under implementation The World Bank assistance is to cover 1200 villages in Bangalore (Rural), Mandya, Mysore, Dakshina Kannada, Shimago, Belgaum, Raichur, Gulbarga, Bidar, Tumkur and Hassan at a total cost of Rs 447 20 crores over a seven year period The involvement of community in decision making is a major feature of the scheme DANIDA assistance is provided in 492 villages in the districts of Kolar, Chitradurga and Bijapur An integrated water supply project with Netherlands assistance at Dharwad and Bijapur at a total costs of Rs 67 70 cr in 121 villages over a 5 year period is under implementation For coordinating these externally aided projects, the state government has setup a Project Preparation and Monitoring (PPM) Directorate For externally aided

projects, the state government has revised the water rates (GO No RWS-PPMU/98 dated 27 4 1998) as under

	Rs. per month
• Public taps (stand posts)	10 – 15
• House connection	45 – 60
• Connections for other users like hotel, industry	60 – 100
• Initial deposit	500 - 1000

2.5 PERSPECTIVE PLAN

2.5.1 A perspective plan for Rs 900 crores was prepared to cover all the villages / hamlets for providing 55 lpcd instead of 40 lpcd within three years (upto 2000 AD) after taking into account of projected population also This perspective plan was forwarded to the RGNDWM for funding as stated by the state representatives on 9 6 98 The schemes primarily aim at tapping water from surface water sources because borewells are getting dried up and augmentation is very difficult

2.6 O&M ARRANGEMENTS

2.6.1 The operation and maintenance of rural water schemes is expected to be maintained by village panchayats i e lowest rung of the administration But these are maintained by the Engineering wing of Zilla Panchayat except minor repairs like fixation of bolts and nuts The result is that work load of Zilla Panchayat Engineering staff has increased for maintenance together with construction activities For piped water schemes the state government provides Rs 1 lakh per year to each village panchayats to meet the electricity charges of RWS and street lighting Despite the grant village panchayats find difficulties in maintaining the schemes Hence central assistance of 10 percent of the fund released is earmarked provided funds of equal amount is also allotted by the state government Stand post beneficiaries pay very nominal water charges along with

property tax. Only handpump beneficiaries do not pay water tax Information in respect of district wise percentage recoveries is not available nor the deficits in running the RWS at district level.

CHAPTER - 3

STATUS OF RURAL WATER SUPPLY SCHEMES – SAMPLE VILLAGES

CHAPTER-3

STATUS OF RURAL WATER SUPPLY SCHEMES

- SAMPLE VILLAGES

For evaluation of rural water supplies in Maharashtra, 120 villages were selected in eight districts. Profile of the sample villages is as under.

3.1 Composition of the population

3.1.1 The composition of population and sample villages, their district wise and state wise composition in the rural areas is as under

Table 3.1

Distribution of rural population -SC, ST, Others

(Percentage)

Categories	Sample Villages 1998	Sample Districts (1991 Census)	State (1991 Census)	All India (1991 Census)
SC	21.5	20	18	18
ST	11.5	8	5	10 0
Others	67.0	72	77	72
Total	100.0	100.0	100.0	100 0

3.1.2 While drawing the sample, it was decided to include villages with SC and ST population which was nearly 33 percent of the total rural population.

3.2 Functional status

3.2.1 The functional status of sample villages in terms of fully covered (FC), partially covered (PC) and not covered (NC) villages and their corresponding population are as under :

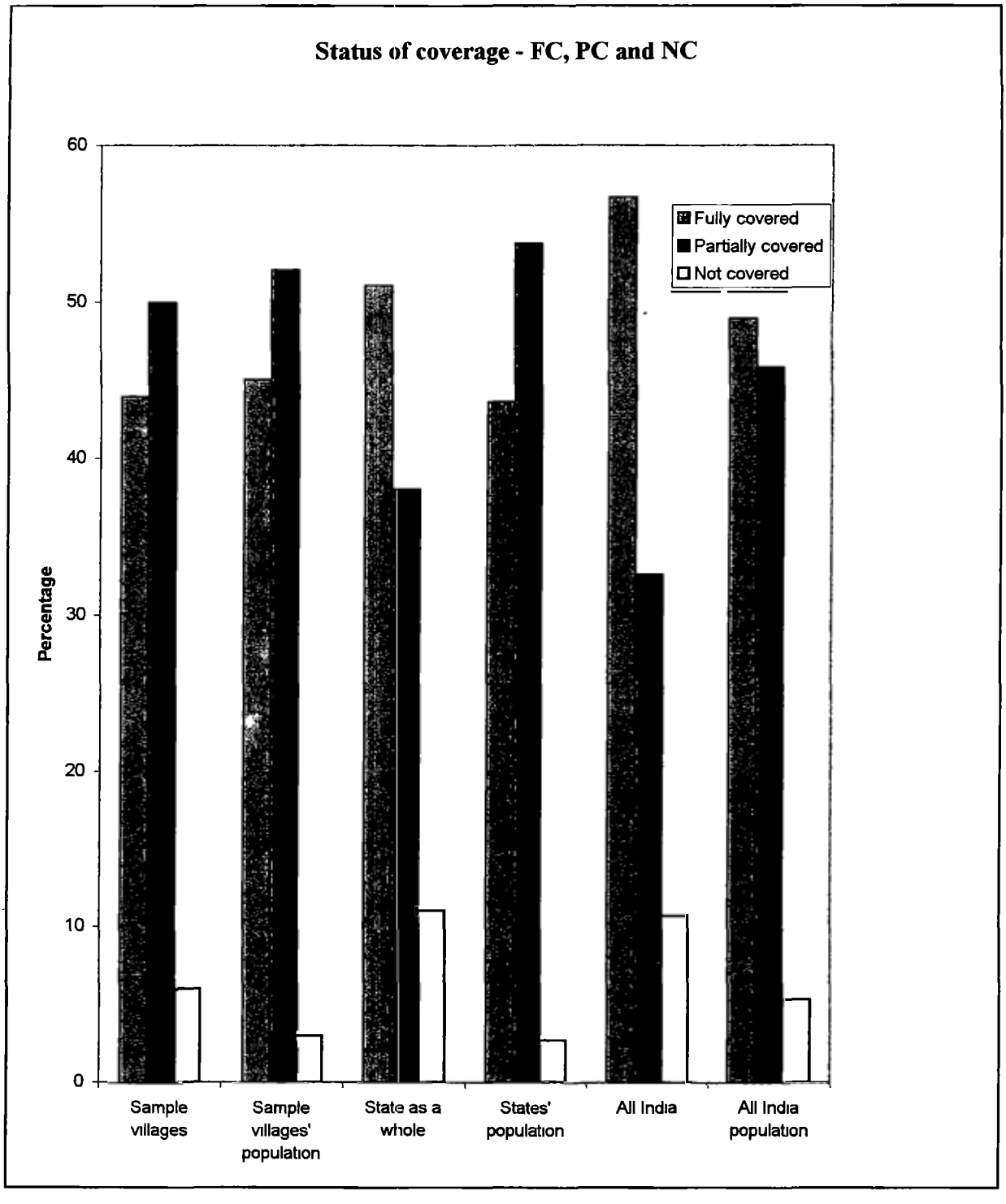

Status of coverage - FC, PC and NC
Percentage
60
50
40
30
20
10
0
Fully covered
Partially covered
Not covered
Sample villages
Sample villages' population
State as a whole
States' population
All India
All India population

Table 3.2

Status of coverage - FC, PC, NC

(Percentage)

	Sample Villages/ Hamlets June, 98 N = 90		State Status 1.4.1994		All India status as on 1.4.94	
Category	Village Status	Population Status	State Status	Population Status	Status	Population Status
Fully covered	44	45	51	43.6	56.7	48.9
Partially covered	50	52	38	53.7	32.6	45.8
Not Covered	6	3	11	2.7	10.7	5.3
Total	100	100	100	100.0	100.0	100 0

3.2.2 The above table shows that the percentage of fully covered villages are behind state and all India figures. But population coverage is of same magnitude.

3.2.3 The percentage distribution of population in the sample villages among SC, ST and others is as under :

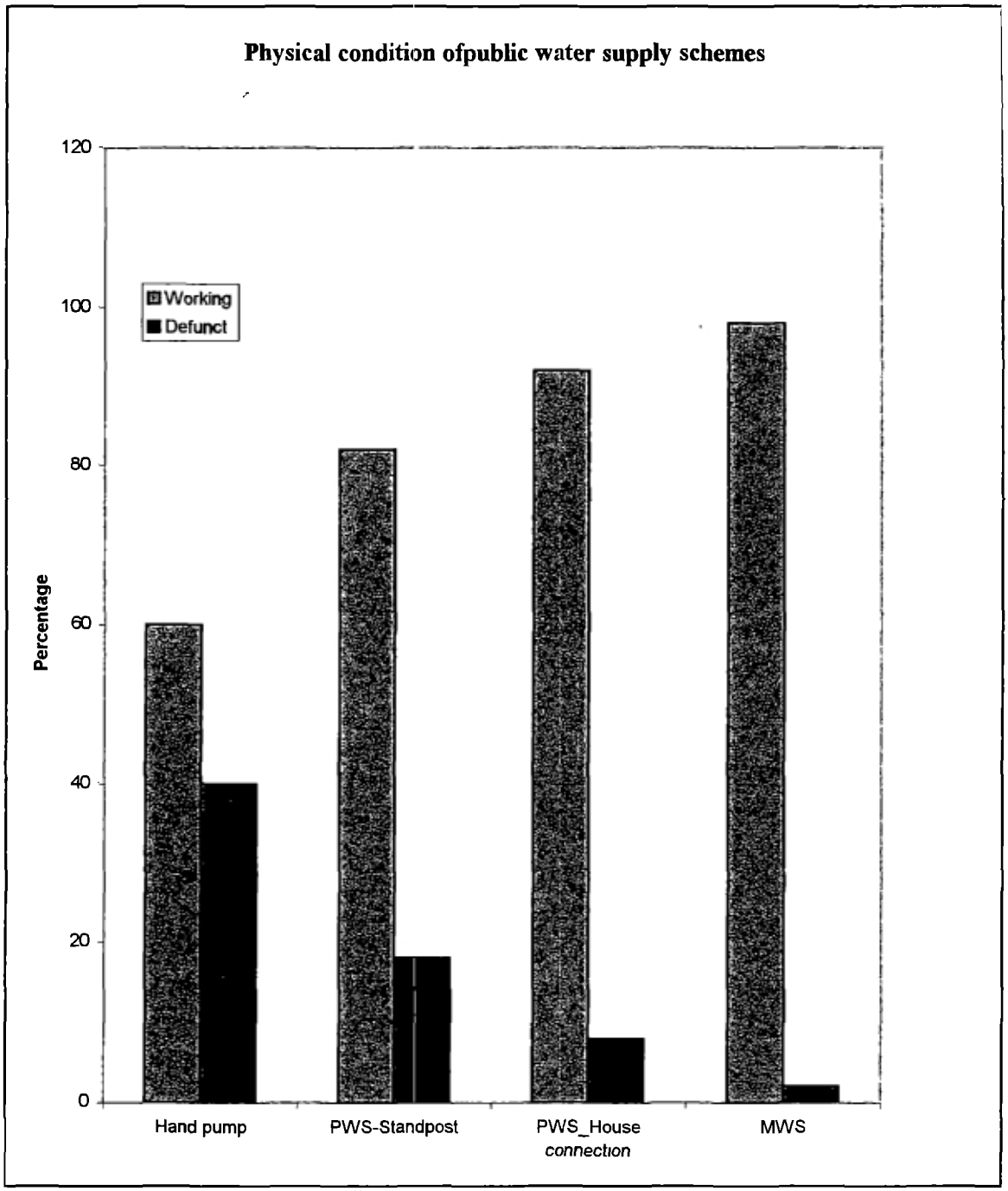
Table 3.3

Distribution of population status - SC , ST and others

N = 90

(Percentage)

Status	SC	ST	Others	Total
FC	11	6	28	45
PC	10	5	37	52
NC	0.5	0.5	2	3
Total	21.5	11.5	67	100


Physical condition ofpublic water supply schemes
120
100
80
60
40
20
0
Percentage
Working
Defunct
Hand pump
PWS-Standpost
PWS_House connection
MWS

From the above table it is seen that the state government accorded priority to cover SC and ST populations. The table indicates that 45 percent population in the sample villages was fully covered and 52 percent population was partially covered.

3.3 Physical status of public water supply schemes

3.3.1 The physical condition of public water supply schemes in existence in the sample village is as under :

Table 3.4

Physical condition of public water schemes

Percentage

Condition	Hand Pumps	Piped Water Schemes		MWS
		Stand posts	House connections	
Working	66	85	95	92
Defunct	34	15	5	8
Total	100	100	100	100

MWS : Mini Water Supply Schemes

3.3.2 The above table shows that more than 65 percent public rural water supply schemes are in working condition in the sample villages. The percentage of hand pumps in working condition was 66 against a state average of 98 7. The hand pumps were defunct due to the following reasons

- Lack of sufficient ground water
- Salinity/Fluoride problems
- Availability of piped water supply through PWS/MWS
- Lack of repairs due to fund constraints
- Competition from irrigation sector

3.3.3 By allowing defunct hand pumps of the order of 34 percent it means wastage of capital invested and pressure is built up on piped water supplies. Installation of each hand pump costs Rs. 30,000.00. Despite central assistance for organising training programmes among youth and women, there was no evidence in these villages about availability of trained youth. The population covered per working hand pump in the sample villages was 647 as against a norm of 200 souls per pump. Though ground water mined from shallow or deep acquires is the main source of drinking water not only in Karnataka but in the rest of India, it is not being made sustainable due to main competition from the irrigation sector. Since water available for irrigation is free and due to free or highly subsidised electric power and subsidy on the construction of wells/tubewells/pump sets, there is unrestricted use by farmers. They exploit the water indiscriminately for farming without calculating the crop water requirements. This has led to serious social, financial and institutional repercussions in those areas where the alternative water supply solution is more complex and expensive

3.3.4 Hand pump scheme is a simple technology at the village level and can be operated and managed by villagers provided the water is potable Monitoring of groundwater both in quantity and quality has not been attended regularly for sustainability. A change from simple technology like hand pump due to depletion of ground water brings a more complex technology alternatives like surface storage schemes or lift schemes from rivers both in capital investment and recurring cost irrespective of their sustainability.

3.3.5 In the case of piped water schemes, public stand posts were defunct because

- Inadequate water availability in the bores wells to meet the total needs
- Increased installation of house connections

- Maintenance problems like leakages in pipes, tapheads, pump repairs etc
- Inadequate supplies of water
- Location of stand posts at higher elevations
- Unsuitability and closure of stand posts by the surrounding residents due to unhygenic and poor drainage conditions.

3.3.6 In the case of defunct house connections it was mostly due to higher elevation of their house connections, inadequate availability of supplies, irregularity in the rotation of supplies. The respondents felt that prompt action should be taken by the state government to supply water with more pressure and regulate the water in different locations with different timings through rotation by controlling valves. The average number of persons served by piped water supply was 27. This was due to increase in number of house connections.

3.3.7 In the case of defunct MWS, the reasons are :

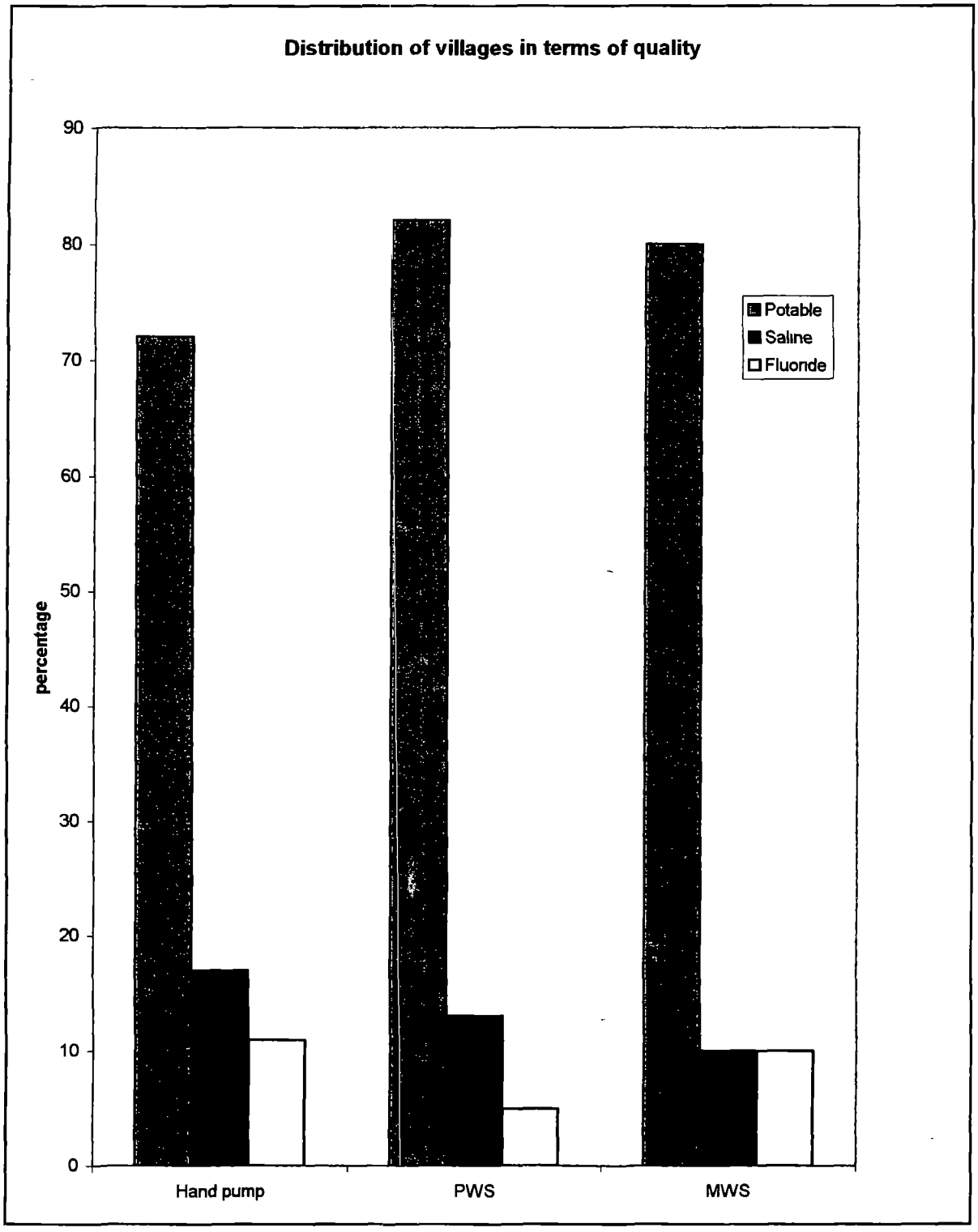
- Erratic electric supply
- No water in the bore
- Salinity/Fluoride problem
- Breakage in the cisterns

The average number of persons served by a Mini Water Supply cistern was 816

3.3.8 It may be relevant to highlight that the villages like Gudenkatti, Benkanhalli, Kundagol taluka, in Dharwad District, Sripuram Junction, Sindhanur taluka in Raichur district depend upon pond water for drinking and cooking also. Some villages use alum for dissolving particles.

3.4 Setting up coordination committees

3.4.1 In the guidelines issued by the Rajiv Gandhi National Drinking Water Mission in 1994 the state governments were required to set up a water coordination committee at panchayat level. In the 90 percent sample villages these committees


Distribution of villages in terms of quality
90
80
70
60
50
40
30
20
10
0
percentage
Potable
Saline
Fluoride
Hand pump
PWS
MWS

were not set up The argument was that while panchayats are looking after the supplies, the maintenance is being done by the Zilla Panchayats Hence it was found not necessary for setting up of coordination committee

3.5 Water quality

3.5.1 Rural water, in most of the villages, is supplied either through groundwater with the help of hand pumps or through piped water supply installations or MWS installations In addition there are open wells in some villages The quality of water in terms of potability or salinity or flouride was enquired into The information supplied is as under

Table 3.5

Distribution of villages in terms of quality

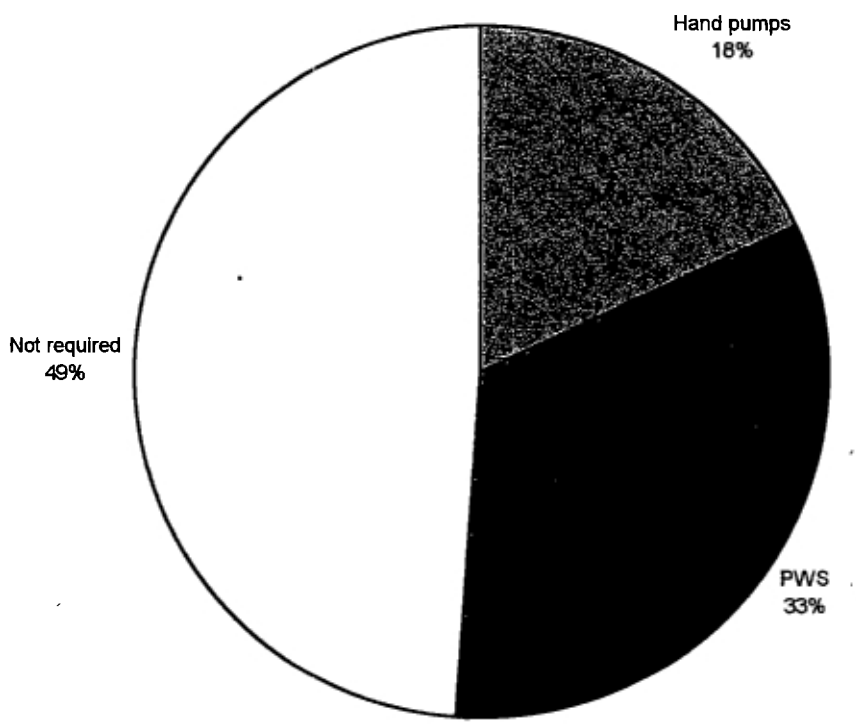
(Percentage)

N = 120

Quality	HP	PWS	MWS
Potable	72	82	80
Saline/brackish water	17	13	10
Flouride	11	5	10
Total	100	100	100

3.5.2 From the above table it is seen that water though piped water supply was potable in 82 per cent villages the percentage was only 72 in respect of water drawn from hand pumps and 80 percent in the case of MWS The quality of water supplied through piped water supply is being tested periodically by the District Health department and advice is given to the village panchayat for dissemination of the information among villagers The panchayat brings to the notice of the state government through sahayaks about the quality of water but the feed back is not received In respect of hand pumps, chemicals are sent in small pouches at the time of construction only The presumption is that ground water through hand pump is free from contamination Over exploitation of ground water with less

Distribution of villages for additional schemes



attention towards recharging, scanty rainfall and temperate climatic conditions pushes the concentrated underground minerals with upward thrust through ground water. The result is that villagers get non-potable saline or fluoride or bad smell water. In the case of village dug wells, most of them are dried and are neglected. In those wells where water is available, it is used only for washing of clothes or for animals. The survey identified some flouride villages but the villagers expressed their helpness since that was the only source of water. Village children with yellow teeth were found in villages like Janekunta, Janekunta Thanda, Kurekuppa in Bellary district.

3.6 Demand for more schemes

3.6.1 On a query whether additional schemes are needed to supplement the existing supplies, the response is as under :

Table 3.6

Distribution of villages for additional schemes

N=90

Nature of Schemes	Percentage
Hand pumps	18
PWS/MWS	33
Not required	49
Total	100

3.6.2 The reasons for additional handpumps are :

- To supplement the existing supplies in times of erratic power supplies
- To improve the existing supplies from ground water
- To cover the not covered areas

3.6.3 The reasons for additional piped water supplies/MWS are :

- To cover the population in sparsely spread areas
- To cover those areas where water available through ground water is saline.
- To increase the existing quantities supplied for higher levels of living.
- To relieve the physical exertion on manual use of hand pumps by women and children

3.7 Site selections

3.7.1 Location and construction of hand pumps is decided by the Department of Geology and Mining from the technical angle and the number of hand pumps to be installed is decided by the government based on the demand and financial resources.

3.7.2 In the case of piped water schemes, the Engineering wing of Zilla Panchayat prepares detailed schemes including the layout of the pipelines after identification of bores by the Department of Geology and Mining and the location of stand posts is based on the population coverage. Villagers' views in that locality are obtained before locating a public stand post. In the elevated places, drinking water through stand posts is not available due to inadequate supplies and increase in number of house connections in lower peripheries. Rotation in the supplies through controlling valves is not done in most of the villages despite loud protests by the villagers to the panchayat president and members. The answer given by the panchayat members is that with increased pressure from 5HP to 7.5 HP more water could be drawn from bore wells and could meet the requirements for those living in elevated areas provided enough water is available in the bore well. This is to pacify the agitated respondents.

3.7.3 MWS installations are done by the engineering wing of Zilla Panchayat and also these are maintained by them. Sites are cleared by the Department of Mining and Geology.

3.8 Community participation

3.8.1 Historically rural water supplies through tanks, ponds, village open wells are well maintained by the villagers themselves as these are the main sources of drinking water. With large scale installation of hand pumps, MWS and PWS by the government villagers look towards government for help. Though there is no visible community participation in the rural water supplies, consultations with locality people are held by the government regarding the location of public stand posts.

3.8.2 In the guide lines issued by the Ministry of Rural Areas and Employment in 1994 stress was laid for community participation in rural water supply at all stages right from planning stage upto O & M. With the implementation of the panchayat raj system and decentralisation of power to the gram panchayat the guaranteed community participation on the following grounds is presumed :

- Close identification of the needs
- A bridge between people's needs and Government
- Intimate knowledge of the geographical area and coverage needed
- Mobilisation of local manpower
- Taking care of the interest of SC and ST population
- Psychological satisfaction in the involvement
- Feed back to the authorities about progress and implementation
- Assisting proper layout of the pipelines
- Assisting the authorities in proper investigation and location of stand posts, MWS and hand pumps

3.8.3 Unfortunately community participation is passive in most of the sample villages The plea is that elected panchayats are capable of taking care of their needs But complaints and protests are made by others that panchayats do not ensure equal distribution of water for all inhabitants through PWS by regulating supplies. MWS are located at different places to meet the demand. Illegal connections from MWS were drawn in some villages in Bellary district. This brings higher level of consumption than is provided under the national norms and therefore raise complications and bring deterioration in normal supplies. In the maintenance of the assets, community does not respond. For instance in Siddammanhalli village of Bellary taluka, a World Bank assisted project is under implementation. The water is being brought to the village after laying a pipe line of 6-7 km length from a distant bore. But the villagers break the pipeline to meet their needs and it takes two or three days to repair etc. The result is women households are suffering.

3.8.4 Most of the villagers allege that the state government should maintain the schemes and use MPs' or and MLAs' local area development funds for maintaining RWS. In one village in Hadageli taluka, namely Dasarahalli tanda in Bellary district MLA's funds were released to draw water from surface source.

3.8.5 The drinking water programmes require proper management, coordination and cooperation by different agencies to make the scheme operational. It is not a feasible proposition either for the Central government or state government agencies to look after the maintenance of large net work of water supply schemes through out India and to make it sustainable without community involvement. The phobia is since the water is supplied by the government it may be as treated as a free commodity to be maintained by the government. A change of approach and methodology is called for to instill confidence among the community through panchayat members, politicians, government officials for better utilisation of the investments made for sustainability. Determined community action can only reduce costs and bring improved practices. Otherwise there would be larger deficits in the collection of water tax. Political will irrespective of the political

parties they belong has to be reinforced in support of reaching the unserved. Beneficiaries are to be more active to share the limited supplies by adopting 'Sink or Swim together policy'.

3.8.6 There is no awareness campaign by the panchayat to conserve water or share the limited supplies. In this context it is relevant to reproduce the speech of Shri Babagouda Patil, Union Minister of State for Rural Development delivered on 15.6.1998 at Belgaum (Karnataka)

> *" Government wanted to give more power to village panchayats. It was they who should select the beneficiaries of various schemes and not a few influential people in the villages. The list of beneficiaries should be prepared by the villagers themselves To ensure this, the Government will issue a directive to all the village panchayats to videotape the proceedings to prove that the decisions had the people's approval "*
>
> Source : The Hindu, 16.6 1998 (Bangalore)

3.9 Women participation

3.9.1 Women and children carry the bulk of the burden of carrying water either from hand pumps or MWS, or stand posts or wells located in the farmers' fields. In case there is a depletion of groundwater and there is no water in the water tanks to be supplied through pipelines due to failure of electric supply or motor being burnt, the ordeal for women in search of drinking water which may or may not be safe for the households is beyond description. With increasing employment opportunities available for women in agriculture farming or as agricultural labour the economic cost of carrying water is to be worked out in relation to wages foregone. The time taken to fetch water in rural areas by women is several times more than the time takes by urban women living even in slums. They can ill afford to expend the calories for this effort denying leisure and energy to bring up their families. Where the water is available in plenty through hand pump in a village called Bootaldimi, Sindhanur taluka Raichur district women either attend

to household chores or go as daily wage labour Before the handpumps are installed in the village, women used to fetch water from long distances

3.9.2 Regarding women's participation in decision making, the respondents argue that there are women members already in the panchayats. On rotation women get opportunities to become Sarpanchs While locating the stand posts, MWS or hand pumps majority views of the residents including women of that locality are considered. Hence they felt seperate involvement is not required

3.10 Change of status of FC, PC & NC habitations

3.10.1 In order to identify whether a shift upwards or downwards has taken place in respect of water supplies, a sub-sample of 45 village was studied in relation to self supporting and losses in O &M the results are as under

Table 3.7

Distribution of FC, PC and NC villages

N=45

Status	FC		PC		NC		Total		Grand Total	Percentage share to sample villages
	S	L	S	L	S	L	S	L		
FC	20 0	50 0	-	30 0	-	-	20 0	80	100 0	22 2
PC	6 6	23.4	3 4	63.3	-	3 3	10 0	90 0	100 0	66 7
NC	-	-	-	-	-	100	-	100	100.0	11 1
Total	8.8	26 7	2 2	48 9	-	13 4	11 0	89 0	100 0	100 0

FC : Fully covered, PC : Partially covered, NC : Not covered
S : Self supporting L : Losses.

3.10.2 From above table it is seen that 8 8 percent of FC villages are self supporting where as 26 7 percent of FC villages are in losses Similarly 48 9 percent of PC villages are running in losses Due to lack of ground water and erratic piped water supplies, some of the PC villages are found to be No-source at the time of

survey. In the case of No-source villages, some panchayats are incurring losses due to maintenance of ponds/village wells and no water tax is collected.

3.10.3 On examination of FC villages it is observed that only 20 percent villages are self-supporting while 50 percent of them are incurring losses even though they continue to be F.C. villages. Some FC villages are found during the survey as partially covered villages due to inadequate supplies and are running losses.

3.10.4 In the case of PC villages, there is a vertical migration from PC to FC on one hand but on the other hand some of them turned out to be 'No-source villages'. Nearly 30 percent villages have become F.C. villages during the survey even though 23 4 percent villages are running losses. Among PC villages, only 3.3 per cent villages are self supporting and the rest 63.3 percent villages are in losses. The reasons are attributed to :

- Water supply systems have become defunct either because of their life period is over or due to unattended mechanical defects/repairs
- Substantial draw down of ground water
- water not being used due to excessive brackishness.
- Non payment and no collection of water taxes
- Existing low water rates

3.10.5 There is thus slight deterioration from FC to PC villages and PC villages to NC villages at the time of survey, but in percentage terms it is not of higher magnitude to warrant any immediate action to cite an example. Harogindoni village in Bellary taluka was not getting water since the bore was dried up and villagers are procuring water from a distant farmer field for the last 10 days for cooking and drinking and the state government did not send a water tanker. This was observed during survey on 15.6.98. Further NC villages continue to become NC villages in the sub sample. The Ministry of Rural Areas envisaged a "Comprehensive recharging programme" through construction of check dams,

creation of watersheds, desilting of tanks, wells to augment ground water storage capacity. The state government, at some places, constructed check dams, constructed open pits by the side of roads for impounding rain water for percolation to improve the ground water storage.

3.11 Operation and maintenance

3.11.1 Operation and maintenance of rural water supply schemes and assets created over the years is very important for ensuring continued drinking water supplies on sustainable basis. To date the Central and state governments have been shouldering the full capital cost as part of national social policy. Consequently the responsibility to run the schemes fell on the Centre and state governments. Hence the respondents feel that the question of capital recovery does not arise. The greatest link absenting for efficient water supply is O & M (i.e oiling, servicing, checking, replacement of burnt out electric wires, maintenance of motors, replacement of parts, pipes, valves, electricity charges, salaries to the operator). Despite huge investments on rural water supply, these assets are not being maintained properly either from plan funds or from non plan funds of the state government.

3.11.2 After the completion of the schemes these are handed over to village panchayats for day to day operation & maintenance. In addition to the grants received from Central government and state governments, panchayats are authorised to levy and collect taxes after the 73rd and 74th amendments to the constitution. In the National Workshop on O & M organised by RGNDWM in September, 1996, one recommendation is 'framing policy guidelines for decentralization of O & M activities' upto the grass root level. Unfortunately it is observed that in the sample villages spread over six districts as many as 48 percent of villages water rates are not collected. Even in the sub sample F.C. villages are also incurring losses The existing grants given by the state government are not sufficient to make the system functional due to the following reasons :

(i) Some of the beneficiaries do not pay water tax on account of

- Irregularity or no water in the piped water supplied at stand posts/ house connections
- Indiscriminate sanction of house connections depriving others
- No money to pay due to crop failure and erratic rainfall.
- No demand raised by the panchayat
- Not getting potable water
- Wilful defaulters including members of panchayats

ii) Partial payments due to reduced supplies

iii) No organised drive or motivation by the panchayats

iv) Lack of cooperation among the community in sharing the limited supplies

v) Domination of powerful community members in the panchayat taking decisions in their favour

3.11.3 On further observation the following facts about pump operators under PWS/MWS emerged :

- Poorly paid and employed on part time basis ranging from Rs. 300 to 500 per month
- Lack of keeness to undergo training
- Experience gained by virtue of running the pump
- Keeps switch lock in on-position always resulting in buring of motor due to voltage fluctuations and erratic power supply
- Do not present physically when motor is on and consequently do not monitor voltage fluctuations.
- Do not know minor repairs like fixation of burnt wires, replacement of fuse etc.
- Do not maintain a register of operating hours daily
- Indulge in village politics and do not supply water on rotation basis wilfully.

- Busy in supplementing his income by doing odd jobs entrusted by the panchayats.
- Lack of supervision on the work of pump operator by the authorities.

3.11.4 Repair facilities to motors are done by Zilla Panchayat engineering wing who takes more than 15 days and do not offer a spare motor to the needy villages to tide over the crisis. There are instances where MWS/PWS are not working for more than fortnight. In the case of hand pumps, minor repairs are attended promptly. The Engineering Wing of the district Panchayat is expected to do works like construction of rural roads, school buildings, drainage works. Their attention is diluted in attending to R.W.S. installations/repairs.

3.11.5 Reasons for non-working of hand pumps the observations are :

- Rough handling of the handle by users resulting in early breakages
- Breakages of cylinder parts
- Lack of responsibility leading to misuse.

3.11.6 The percentage of rural population below the poverty line in Karnataka was 32.8 during 1987-88. In other words the rest 67.2 percent are above the poverty line and within the affordability zone. Even if those households who are above the poverty line had paid the water tax, the deficit would have reduced substantially. Recourse to cut off water supply for non-payment brings complications and is not acceptable on political and social considerations. The state government does not consider O & M. their primary activity when allocating funds as the benefits of proper maintenance are less visible and tangible compared to the politically attractive option of new schemes.

3.11.7 It is more pertinent to reproduce the relevant extracts on O & M from the annual plan documents for the years 1992-93, 1995-96, 1996-97 issued by the Planning Commission.

3.11.7.1 **1992-93**

"Operation and maintenance of rural water supply is an area of concern which needs special attention with involvement of community particularly women. The community participation should not mean merely collection of water charges but their full involvement in day to day up keeping and running of the schemes. It is also desirable to involve NGO's to the extent possible".

3.11.7.2 **1995-96**

The above paragraph was repeated again at para 22.34

3.11.7.3 **1996-97**

The paragraph at 3.11.8.1 was repeated at para 22.29

3.11.8 Despite inclusion in the annual plan documents, there are no visible efforts made in the management of O & M of rural water supplies. In the Annual Report for 1997-98, Ministry of Rural Areas and Employment, there was no mention about the efforts made by the Centre nor the steps taken by several state governments to improve the management system of piped water schemes and hand pumps.

3.11.9 Motivation, conviction, incentives or disincentives might bring a change of heart among the beneficiaries. Basic perception in the minds of villagers for free supply of water is to be erased. Continued losses bring serious financial implications in future both in terms of higher costs requiring major repairs versus preventive maintenance. Regular maintenance increases the operating life of the present asset. Politicians are unwilling to initiate a dialogue with voters for payment of water tax as they feel rural water supply is a social obligation They do not pay water tax but in time of crisis, they prefer to incur more for a drum of water brought through a bullock cart. The state government should convince the

local politicians the disastrous effect of continued losses and the need to pay for socio-economic benefits derived from safe water.

3.12 Sanitation

3.12.1 Provision of safe drinking water in the rural areas will not improve the health of the villagers especially women and children unless they are provided with clean surroundings and follow elementary hygiene. Prevention of water borne diseases and reduction in infant and child morality rates are vital in the rural areas. Proper sanitation and drainage facilities together with safe water supplies go a long way in ameliorating rural distress.

3.12.2 Inspection of sample villages has shown that most of the hand pumps or public stand posts do not have good platform nor proper drainage due to constant use and neglect by the panchayats and beneficiaries. Some of the open drains constructed with JRY funds in SC and ST areas in front of their houses do not have proper outlets. It was observed that these are choked with garbage and dirty water stagnates there. The basic objective is defeated These drains are breeding grounds for mosquitoes and insects. In respect of public latrines the physical condition is beyond description. The general latrines constructed for women by some panchayats are not used because of poor maintenance. Some well to do villagers have some septic latrines. Under the subsidy scheme for constructing 'pour flush latrines ' for the benefit of SC and ST population, some are constructed and some are in various stages of construction The utilisation of these facilities by SC/ST women is a big question mark. On inquiry it is learnt these are not being used and are kept for storing water in the containers. There are objections from neighbours for construction of such toilets because pucca or kuchha houses in villages are not constructed with a proper layout of roads Panchayats allege that they do not have funds for maintaining the sanitation and drainage.

CHAPTER - 4

HOUSE HOLD SURVEY - HIGHLIGHTS

CHAPTER-4

HOUSE HOLD SURVEY - HIGH LIGHTS

4.1 General

4.1.1 Size of the household

4.1.1.1 The average size of the household is 6 89 The details are as under

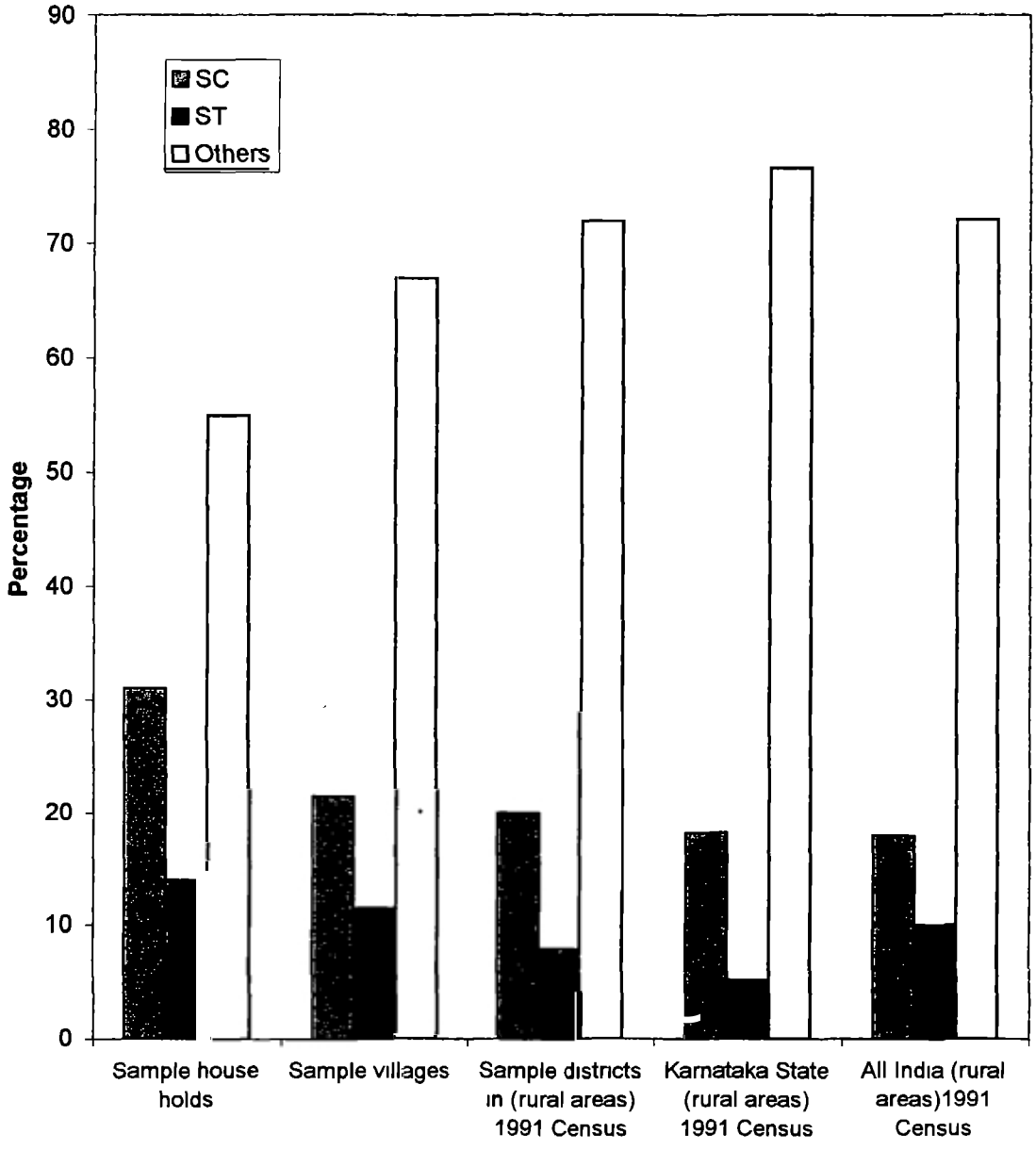
Table 4.1

District wise distribution of average size of the household

		Districts					
Average size	Total households N=1350	Chitradurga	Dharwad	Kolar	Mysore	Raichur	Bellary
Nos	6 89	7 68	8 14	7.35	5 99	5 79	6 42

4.1.1.2 The above table shows that the average size of the household is highest in Dharwad district (8 14) and lowest in Raichur district (5 79) Joint family system exists in all the households

Distribution of household population-SC, ST and Others



4.1.2 Composition of the household :

4.1.2.1 The composition of the households among SC, ST and others is as under

Table 4.2

Distribution of household population - SC, ST and others

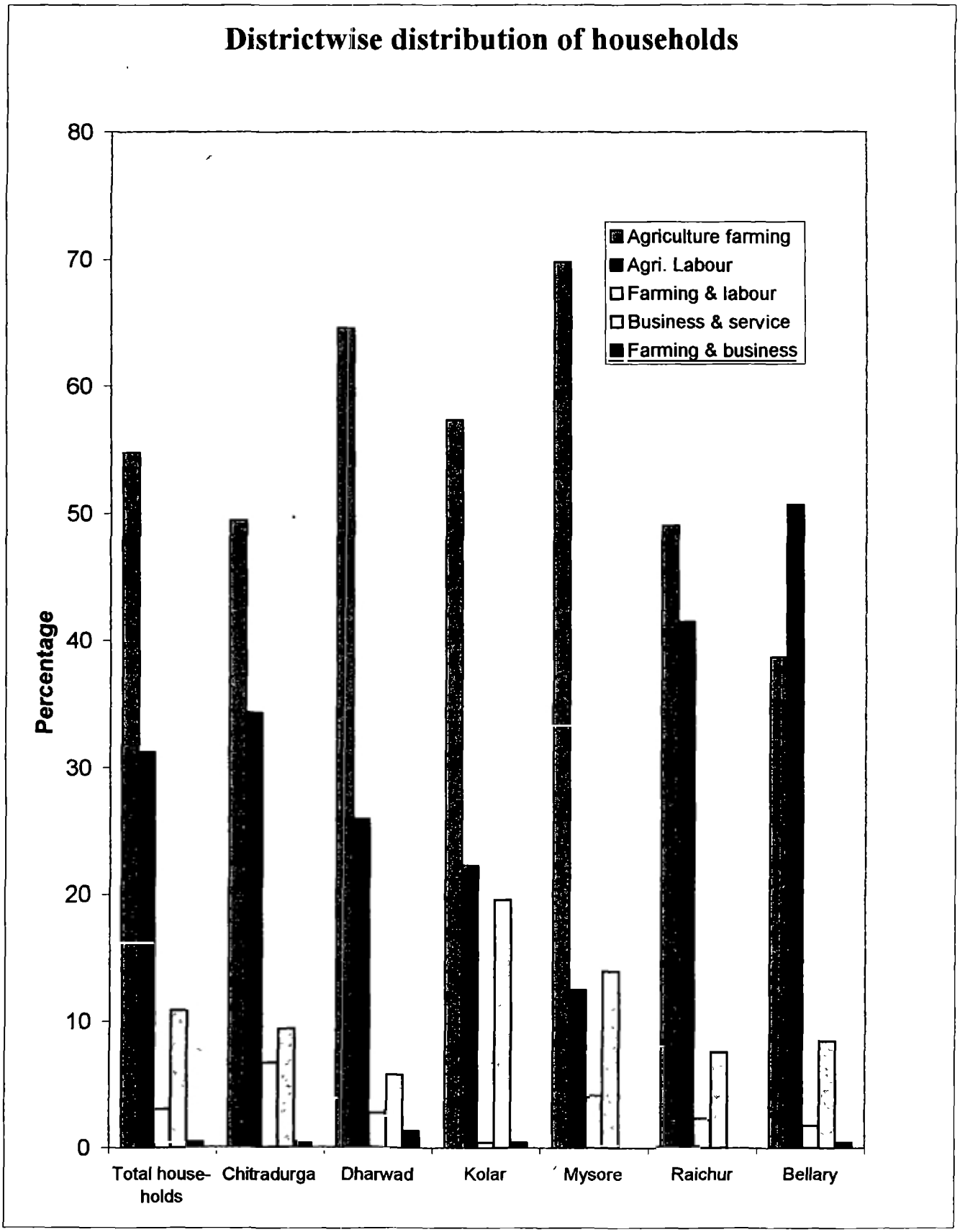
(Percentage)

Categories	Total house holds N = 1350	Sample villages	Sample districts in (rural areas) 1991 Census	Karnataka State (rural areas) 1991 Census	All India (rural areas) 1991 Census
SC	30.7	21 5	20 0	18 2	17 9
ST	14 3	11 5	8 0	5 2	10 0
Others	55 0	67 0	72 0	76 6	72 1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

4.1.2.2 The above table brings out the fact that the percentage share of SC population is highest among households than that of villages, rural districts and in rural Karnataka State Percentage share shows that more than 45 percent population comprises SC and ST categories As indicated earlier while drawing the sample households it was decided to cover more SC and ST population to evaluate whether benefits reached the targetted groups

4.1.3 Occupational pattern of the head of the household

4.1.3.1 In general the main occupation in rural areas is agriculture and the main occupation of the head of the household in the sample households spread in 6


Districtwise distribution of households
Percentage
80
70
60
50
40
30
20
10
0
Agriculture farming
Agri. Labour
Farming & labour
Business & service
Farming & business
Total house-holds
Chitradurga
Dharwad
Kolar
Mysore
Raichur
Bellary

districts is also agriculture farming The details are as under :

Table : 4.3

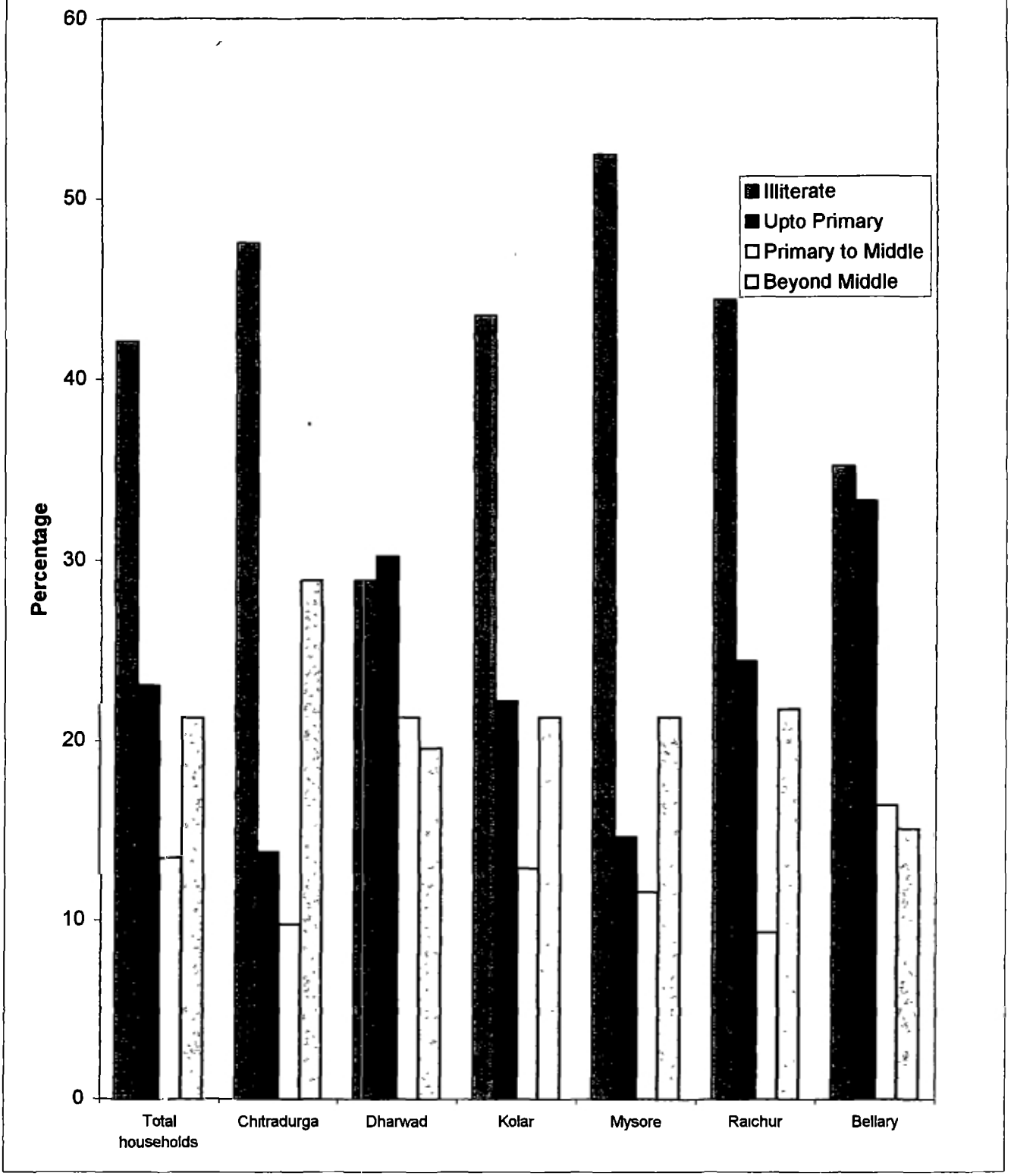
District wise distribution of households

(Percentage)

Main occupation	Total house-holds	Chitra durga	Dhar wad	Kolar	Mysore	Raichur	Bellary
Agriculture, farming	54 75	49 34	64 44	57 34	69 78	48 89	38 67
Agri. Labour	31 11	34 22	25 78	22 22	12 44	41.33	50 67
Farming & labour	2 96	6 67	2 67	0 44	4	2 22	1 78
Business & service	10 74	9 33	5 78	19 56	13 78	7 56	8 44
Farming & business	0 44	0 44	1 33	0 44	-	0	0 44
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

4.1.3.2 Agriculture farming continues to be the main occupation of the head of household and shares 54.75 percent This percentage varies from 38.67 percent in Bellary district to 69 78 per cent in Mysore district. Next comes agriculture labour with 31.11 percent of the households on the average This varies from 12.44 percent in Mysore district to 50.67 percent in Bellary district. Business and service also is an important occupation sharing 10.74 percent comprising bus conductors, factory employees, bank employees, business, retail shop owners, teachers, retired employees, panchayat and state government officials etc. Small farmers eke out a living both as farmers and agriculture labour belonging mostly to SC and ST families.

Districtwise literacy status among head of households



4.1.4 Literacy status

4.1.4.1 Illiteracy is more prevalent in the rural areas as compared to urban areas in India This is equally true among the sample households The details are as under

Table 4.4

Districtwise literacy status among head of households

(Percentage)

	Total house holds	Districtwise distribution					
Status	N-1350	Chitradurga	Dharwad	Kolar	Mysore	Raichur	Bellary
Illiterate	42 00	47 55	28 89	43 56	52 44	44 45	35 22
Upto Primary (I-V class)	23 1	13 78	30 22	22 22	14 67	24 44	33 33
Primary to Middle (VI-VIII class)	13 6	9 78	21 33	12 89	11 56	9 33	16 44
Beyond Middle (VIII class)	21 30	28 89	19 56	21 33	21 33	21 78	15 11
Total	100 0	100.0	100.0	100.0	100.0	100.0	100 0

4.1.4.2 It is interesting to know that the percentage of illiteracy among heads of the households is about 42 per cent while their percentage among middle class pass and beyond accounts for nearly 21 percent These households include service sector With more literate population, the understanding of village problems and measures to tackle them can be judged more comprehensively provided there is a proper leadership in the village

4.1.5 Average monthly income

4.1.5.1 Information about average monthly income is difficult to be assessed among sample households partly on account of households not maintaining any accounts nor willing to part any information for various reasons . However, monthly

income is estimated based on the information about farm sizes owned by them in the case of farming community and the average number of days the agriculture labour gets job in a month. The service sector is able to furnish information based on pay and allowances drawn by them. The table below gives average monthly income per household from all sources

Table : 4.5

Average monthly income per household

	Districtwise distribution						
	Total house holds	**Chitradurga**	**Dharwad**	**Kolar**	**Mysore**	**Raichur**	**Bellary**
Average monthly income (Rs)	1140	1529	1265	1262	961	955	866
Average size of the households	6 89	7.68	8 14	7 35	5 99	5 79	6 42
Per capita income (Rs)	166	199	155	172	160	165	135

4.1.5.2 The average monthly income per household is Rs. 1140 which includes net income from all sources and from all family members staying together with the head of the household. The above figures indicate that the monthly income is highest in Chitradurga district and is lowest in Bellary district The main reason is that farmers grow commercial crops in Chitradurga while in Bellary agriculture labour depend upon daily wage.

4.2 Water supplies

4.2.1. Dependence of water supplies

4.2.1.1 Main sources are hand pumps, public stand posts and house connections In addition there are village dug wells, ponds, tanks, rivers and streams In some

cases, dug wells or bores located in the farmers' fields are also being used The details are as under

Table 4.6

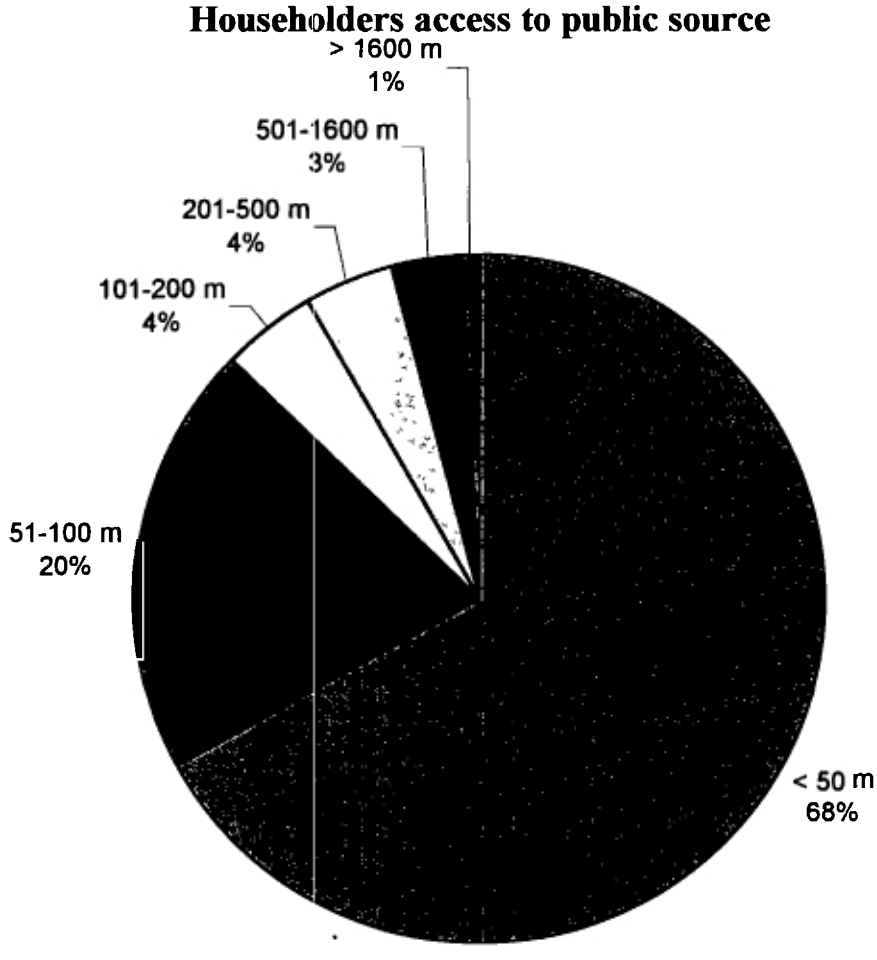
Dependence on different sources of supplies

(Percentage)

S.No	Sources	Drinking/ Cooking	Bathing/ Washing/ eblutions	Animals
I	Handpumps	12 9	13 1	20 1
II	Handpumps Public Stand post MWS	50 7	44 9	40 3
III	House Connections	4 5	3 1	3 1
IV	Handpumps, MWS stand Posts, House Connections	3 9	2 4	0 2
V	Handpumps, MWS standposts, House Connections, Rivers/ Streams	1 6	2 3	1 9
VI	Handpumps, Standposts, House Connections, MWS Village wells/farmers' well/bore wells	15 8	23 0	18 5
VII	Handpumps, MWS House connections, tanks, ponds	10 6	11 2	15 9
	Total	**100.0**	**100.0**	**100.0**

4.2.1.2 From the above table it is seen that 50 7 percent households depend upon hand pumps MWS and standposts to meet their water requirements for cooking/drinking Only 4 5 percent households depend exclusively on house connections Water from village wells or bores in the farmers' fields is also supplemented along with handpumps, MWS stand posts by 15 8 percent households

4.2.1.3 For bathing, washing and eblutions, 44 9 percent households depend upon hand pumps, MWS stand posts About 23 0 percent households exclusively depend upon hand pumps, MWS stand posts, house connections, village wells, farmers fields In the case of water requirements for animals 40 3 percent households use water from stand posts, handpumps, MWS . This is contrary to the guidelines issued by the RGNDWM in 1994


Householders access to public source
> 1600 m
1%
501-1600 m
3%
201-500 m
4%
101-200 m
4%
51-100 m
20%
< 50 m
68%

4.2.2 Distance of the household from the source

4.2.2.1 As per the guidelines issued by RGNDWM criterion is to cover those villages which do not have an assured source of water supply within a distance of 1.6 kms Subsequently this distance norm is reduced to 0 5 km. From the survey of 1350 sample households, it is seen that 66.9 percent households, have access to public source within 50 metres while 20.5 percent households go beyond 50 metres to 100 metres distance. Only 0 9 percent households have to trek beyond 1.6 kms The table below gives the details .

Table 4.7

Householders access to public source

instance from Residence (Metres)	Percentage Number of the households
< 50	66.9
51-100	20.5
101-200	4.5
201-500	4.0
501-1600	3.2
> 1600	0.9
Total	**100.0**

4.2.2.2 Most of the households have access to public source within their reach This demonstrates the RGNDWM and state Government's directive to locate the public sources within the reach of the household's residence is achieved

4.2.3 Accessibility of public source

4.2.3.1 Despite nearness to the public source the moot point is its accessibility. Since the main objective of the rural water scheme is to provide safe and dependable drinking water, the regularity of its dependence, collected through household surveys shows that 82 percent householders have regular access to safe drinking water while 15 percent householders have occasional supplies. Only 3 percent

householders do not have access on the day of the survey or permanently due to higher elevation of their residences or handpumps going dry In the case of householders having occasional supplies, it is mainly due to inadequate quantity released irregularly in the absence of rotation system On further questioning those respondents whether accessibility is denied on social considerations like untouchability the respondents said 'No' and told that in their villages there is no such ostracism among the village people and they share water with others

4.2.4 Reasons for dependence on natural source

4.2.4.1 Despite availability of water through piped water installations and hand pumps, MWS respondents depend also natural sources like village dug wells, borewells in farmers' fields, tanks, rivers/ streams either for drinking or cooking or bathing or washing or animals for the following reasons

Table 4.8

Reasons for dependence on natural source

N= 1350

Main Reasons	Percentage response
- Irregularity in supplies from public sources	1 5
- Erratic electric supplies	46 0
- Public sources becoming dry	0 7
- Irregularity in supplies, erratic power supplies lack of ground water and nearness of natural source	21 2
- Other reasons like inconvenient location, long waiting at public source, frequent breakdowns, poor quality of water	4 2
Sub total	**73.6**
- No problem	**26.4**
Grand total	**100.00**

4.2.4.2 From the above table it is seen that 46 0 percent out of 73 6 percent households attribute their problems to erratic power supplies The remaining households complain not only about erratic power but also about lack of ground water, poor quality no public source etc Rest 26 4 percent respondents have no problems

4.2.5 Adequacy of water

4.2.5.1 On a question whether water supplied is adequate or not 37.3 percent households confirmed about inadequate supply. One reason for a higher percentage is the household survey conducted in June, 1998. The demand for more water is increasing partly due to increase in size of the households and improved life styles of householders.

4.2.5.2 On a further query how the additional demand is met, 65 per cent respondents have reported to have resorted to other sources and only 35 percent respondents are contended by adjusting within the available supplies. Conservation of water comes automatically with reduced availability.

4.2.6 Quality of water

4.2.6.1 While discussing the potability some villages have reported availability of potable water and in other villages the water is reported to brackish. Respondents views about the potability and salinity / fluoride are as under :

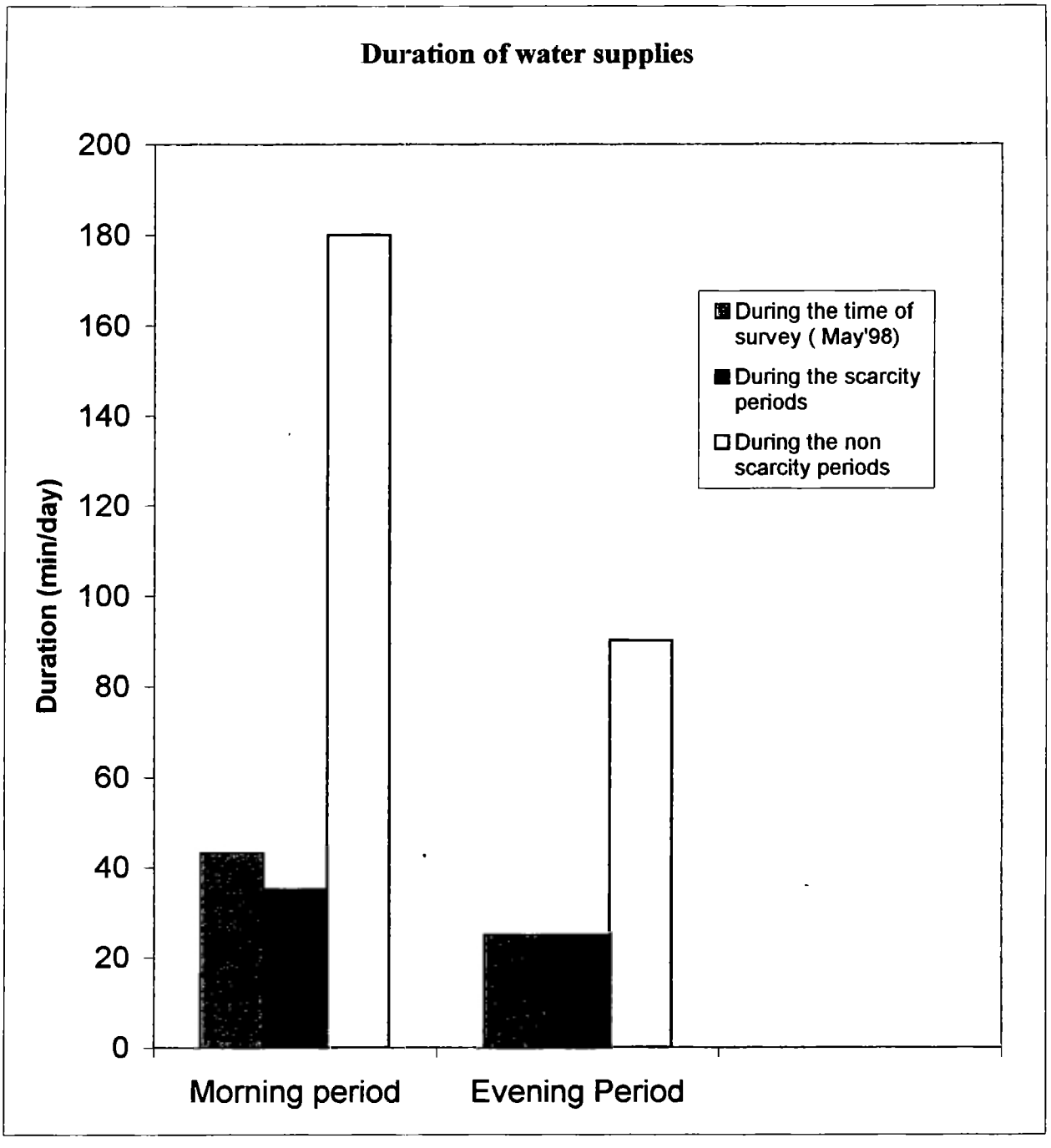
Table 4.9

Distribution of households response to quality

(Percentage)

Quality	Response of the householders
Potability	82
Saline/Fluoride	18
Total	100

4.2.6.2 The above table indicates that water supplied is reported potable by 82 percent households. Others complain salinity arising from handpumps Survey shows about flouride cases in many villages.


Duration of water supplies
200
180
160
140
120
100
80
60
40
20
0
Duration (min/day)
During the time of survey (May'98)
During the scarcity periods
During the non scarcity periods
Morning period
Evening Period

4.2.6.3 On further questioning 96 per cent respondents have reported the piped water supplies being tested regularly. Only 14 percent respondents denied about the tests being taken up regularly. Hand pump water is not tested because it is presumed to be free from contamination

4.2.7 Duration of water supplies

4.2.7.1 Piped water is available either in the morning or in the evening or both times in some villages. Information about the release of water in terms of duration of the period as reported by the respondents is under :

Table : 4.10

Duration of water supplies

	Period	Duration (Minutes per day)
	A. Morning period	
I	During the time of survey (June'98)	43
II	During the scarcity periods	35
III	During the non scarcity periods	180
	B. Evening Period	
IV	During the time of survey (June'98)	25
V	During the time of scarcity periods	25
VI	During the non scarcity periods	90

4.2.7.2 The above table indicates that water is released for more duration in the morning than in the evening. In some villages water is released mostly in the morning From the perusal of data it is observed that either during the period of survey or during the scarcity period water is available for each household on an average for 68 minutes, but the quantity available is less because of inadequate supply In many some households water was trickling only. Hence the per capita availability of 40 lpcd through piped water was not ensured in June 1998 in many households during the survey period The distribution of supplies among the different householders was not uniform due to elevated location of some households, closed standposts. In the non-scarcity season like rainy season and in winter

season there is a positive signal indicating more than 40 lpcd There is thus, need to take advance action by identifying critical villages in the month of March every year for sending tankers regularly The state government's perspective plan of formulating regional schemes to tap surface water sources by locating sustainable source of supplies deserves active consideration

4.2.7.3 Water availability through handpumps is a source of strength for all the households in the sample villages because of its availability through out the day Unfortunately some are defunct due to non-availability of ground water and due to lack of repairs In some hand pumps the water is saline There are instances where some householders depend upon the handpump water even though it is saline in the absence of piped water In some SC/ST areas where the hand pumps are located, the householders contend to take hand pump water some times instead of going to collect water from stand posts Fluoridisation plants are under construction But householders desire piped water because it is available at their door step and the water is tested periodically Householders want some more hand pumps in their villages as stand by in case of erratic supplies from piped water Hence the efforts of the state and Central governments to provide sustainable 40 lpcd are commended even though some householders are not getting as per norms during peak summer months

4.3 Operation & Maintenance (O & M)

4.3.1 The O & M of PWS, MWS or handpumps is expected to be maintained by the concerned panchayats Unfortunately these are not maintained properly for want of funds, lack of water in the bore or lack of proper knowledge about maintenance There are internecine bickerings and disputes among the householders due to irregular water supplies As explained in paragraph 2 7 1 the burden of maintaining the installation falls on the state government (Zilla Panchayat Engineering Department) In the Kusugal village, the panchayat president comes all the way to the sub-division located at 5 km distance for replacement of tapheads On a query seeking their opinion about the agency to

operate and maintain the water supplies, 73.3 percent householders want panchayats to take up the responsibility. The reason is that the panchayats know their needs and maintain better distribution of the supplies despite temporary bickerings. However, cost of maintenance, they desired, is to be borne by the state government or the central government. About 26 percent householders want the state government to maintain due to irregularity in supplies and incapacity of panchayat to regulate and control the supplies. In case water is not available the state government might send a water tanker to such villages. Regarding their views about other agencies to maintain such as women's organisation or special committees, no house holder has any opinion about their capacity to undertake O&M.

4.4 Payment of water rate

4.4.1 As mentioned already in Chapter 3, forty seven percent villages are not collecting water rate and some villages who are collecting are in losses. The important reason is that water rates are uneconomic, beneficiaries with house connections do not pay the water tax regularly. Some beneficiaries pay the tax partly and others do not pay. In all most all villages water tax is not collected for stand posts and even if it is collected it is between Rs. 2 to 10 per annum. Some village panchayats donot initiate to levy tax on house connection. For instance village. Noolvi in Hubli Taluka, Raichur district is a fully covered but no tax is levied. There is no tax on hand pump users. The average annual water tax paid by the householders is Rs. 25. Only in the village Deosugar in Raichur district water tax of Rs. 240 per year is collected. In other villages the rate varies from 0 to Rs. 180 per year. From the dependence of water supplies it is seen in earlier paragraph that most of the householders draw water from stand post or from hand pump. This is one reason for average water rate paid to be low.

4.4.2 If the rural income per household per month works out to Rs. 1140 and 67 percent rural population is above poverty line there is no reason why house connection owners cannot pay the tax, atleast some amount through persuation.

For house connection, a deposit of Rs. 500 is to be paid to panchayat. Rich farmers are able to pay There is a desire among SC/ST households to have a house connection but these householders are unable to afford the initial deposit.

4.4.3 Contribution to capital investment

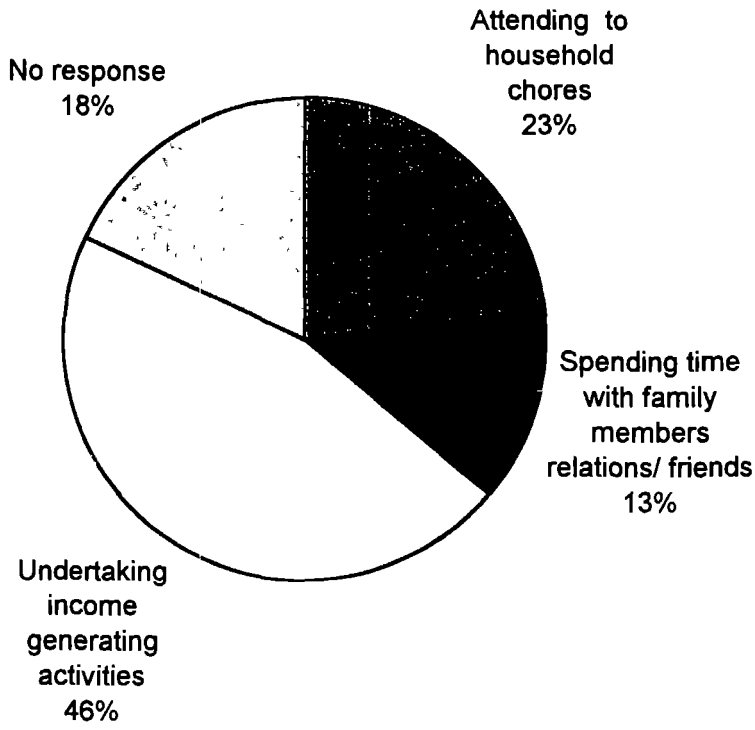
There is near unanimity among most of the householders not to contribute for any capital expenditure for new scheme or for strengthening the existing scheme. The answer is that water supply is a social service to be borne either by the Centre or by the state government. There are also suggestions for mobilising MPs' and MLAs' local area development funds for water supply schemes. But in World Bank and bilateral assisted projects people's willingness to contribute for integrated development including sanitation is obtained. Thus community participation to share additional capital expenditure or willing to pay higher water rate to meet O & M deficits is absent.

4.5 Project benefits

4.5.1 Time saved

4.5.1.1 Project whether conceived by the government or by a private enterprise is assessed in terms of profitability. In the case of infrastructure facilities like rural water supply scheme implemented by the government where measurement in terms of quantitative gain or monetary gain can not be assessed, the alternative is to assess in terms of coverage of population, time saved with and without project situation and utilisation of time saved in trekking long distances in search of safe drinking water

Utilisation of time saved



4.5.1.2 The response of the householders in the utilisation of extra time is as under:

Table 4.11

Utilisation of Time Saved

Options	Percentage Share
- Attending to household chores	23
- Spending time with family members relations/ friends	13
- Undertaking income generating schemes like agriculture, farming, cattle rearing, daily labour etc.	46
- No response	18
Total	100

4.5.1.3 The above table shows that 46 percent households spend time in income generating scheme like farming, cattle rearing, daily wage labour etc. In villages like Toranagalu, Vaddu in Sandur taluka of Bellary district a multi crore project is coming up near their villages and villagers are getting employed daily. During the discussions some householders say that they used to hire labour for agricultural operations before the project. Now with the time saved after the project, the same holders are not hiring labour but are themselves doing the farm operations. The service sector householders spend their extra time with their family members or attending social functions.

4.5.2 Incidence of water borne diseases

4.5.2.1 In the case of water supply projects, the objective is to provide safe drinking water for reducing endemic diseases and improve the quality of life. Based on the survey about the number of households affected before and after the project, the number affected by various diseases before the project was 463 and the figure has come down to 408 after the project situation. Malaria and viral fevers are still prevalent before and after the project. Flouride cases continue unabated in the villages. The table below gives the nature of diseases before and after the project situation.

Incidence of water borne diseases

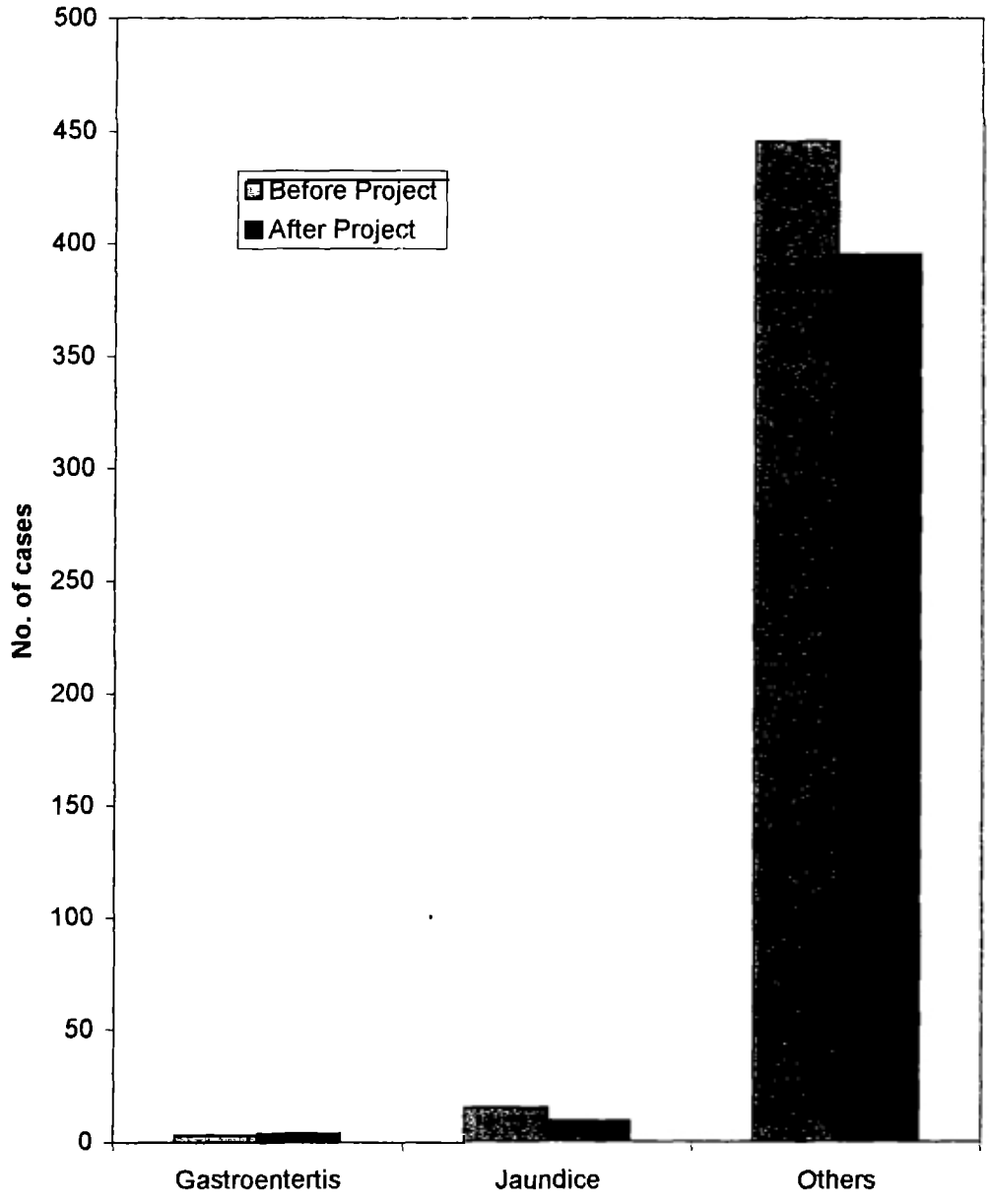


Table 4.12

Incidence of water borne diseases

	Disease	Before Project	After Project
i	Gastroentertis	3	4
ii	Jaundice	15	9
iii	Others	445	395
	Total	463	408

4.5.2.2 The above table indicates about reduction of incidence of diseases on the whole but gastroenteritis cases are more. On further query whether there are savings in the medical expenses as a result of the scheme, the householders are unable to quantify.

4.6 Sanitation

4.6.1 Sanitation status around public schemes

4.6.1.1 Public stand posts and handpumps are installed by the state government over a period of time with proper platforms and outlets initially Some householders installed piped water (PWS) connections either in front of their houses or in their kitchens. Present situation is as under :

Table 4.13
Quality status of sanitation of piped water schemes

(Percentage)

	Condition	Good	Satisfactory	Bad	Very Bad
i	Platform with drainage	12 6	11 1	0 6	-
ii	Platform without drainage	7.1	50.6	3.0	0.1
iii	Without Platform and without drainage	0 3	11.1	3 7	0 1
	Total	**19.7**	**72.8**	**7.25**	**0.2**

4.6.1.2 From the above table it is observed that sanitation around 72.8 percent of standposts, MWS and house connections is satisfactory and this includes 50.6 percent of them without proper outlets. Sanitation is bad in respect of 7.5 percent

PWS connection. Sanitation around handpumps is satisfactory in respect of 56 percent handpumps But most of the handpumps do not have proper outlet facilities, In fact in some of the hand pumps water is getting stagnated for want of repairs. Unless action is taken to repair the platforms, the dirty pools of water around the platform percolates and re-merges with contamination while pumping. There does not seem to have any awareness campaign for better sanitation.

4.6.2 Disposal of waste water

4.6.2.1 The disposal of household waste water is satisfactory in about 60.9 percent households and it is bad in respect of 6.6 percent households. Only 32.5 percent households have good drainage system. There is thus need to motivate the householders to improve sanitation.

4.6.3 Sanitary Lavatory

4.6.3.1 On sanitary lavatory facilities it is found that 92 percent householders do not have lavatory facilities at their houses. Only 8 percent householders have such facilities.

4.6.4. Water purification

4.6.4.1 Householders at time of scarcities depend upon village well or pond or tank for drinking water. It is usually not purified. Even the householders are not being advised by the state government to use chemicals like alum or chlorine tablets or boil water. Benkanhalli, Gundenkatti, villages in Dharwad district Sripuram Junction, Hoshalli villages in Raichur district raw water from ponds is used for drinking and cooking directly by filtering through a cloth on the day of survey. Rich families in Sripuram Junction use water percolaters or draw water for drinking / cooking purposes from a distant handpump.

CHAPTER - 5

SUMMARY AND RECOMMENDTIONS

CHAPTER- 5

SUMMARY AND RECOMMENDATIONS

5.1 GENERAL

5.1.1 As a result of efforts by the state governments\UTs and Central government 85.2 percent of rural population of India living in 13.18 lakh habitations is covered with safe drinking water as on 1.4.1997.

5.1.2 Priority to provide safe drinking water to rural areas has been accorded since independence and necessary financial allocations are being made every year in Central and state\UTs plans to improve the quality of life and the health of the rural people.

5.1.3 An amount of Rs 21739.00 crores was expected to have been incurred from 1951-52 to 1997-98 for undertaking schemes like hand pumps, piped water schemes linked to borewells, percolation wells by state governments\UTs and Central government

5.1.4 Though the responsibility for providing safe drinking water lies with the state governments\UTs, Central government constituted the Rajiv Gandhi National Drinking Water Mission (RGNDWM) to provide financial and technical assistance to states\UTs to ensure sustainable safe drinking water and to create awareness among rural population.

5.2 KARNATAKA STATE

5.2.1 In Karnataka state 97.3 percent of rural population living in 56682 villages\hamlets is provided either fully or partially with safe drinking water as on 1.4.1994.

5.2.2 Due to peculiar agro-climatic, hydrogeological formations in the state drinking water shortages continue to be very critical in the state.

5.2.3 The demand for drinking water in the rural areas of the state has been increasing due to increase in rural population, new styles of living, migration on account of employment opportunities etc

5.2.4 Rural public water schemes in the state are hand pumps piped water schemes (PWS) MWS schemes installed on borewells implemented by engineering wing of the Zilla Panchayat The completed (PWS) schemes are handed over to village panchayats for operation and maintenance and government provides technical and financial assistance However maintenance of handpumps and MWS is looked after by the engineering wing of Zilla Panchayats.

5.2.5 To supplement the efforts of state and Central governments, integrated schemes with external assistance are under implementation in the selected districts of the state

5.2.6 A perspective plan to cover all habitations by 2000 AD at a total cost of Rs 900 crores for improving the water supplies under active consideration

5.2.7 Guinea worm was completely eradicated in the state

5.2.8 The percentage of rural population in the state above the poverty line in 1987-88 is 67 percent

5.3 SAMPLE VILLAGES

5.3.1 The coverage of population with safe water supplies in 90 sample villages spread over six districts with full or partially covered in June 1998 is 97 percent of the total village population (including 32 percent SC\ST population) The rest 3 percent population (including 1 percent SC/ST population) is without any safe water supplies

5.3.2 Sixty Six percent of handpumps, 85 percent of public stand posts and 92 percent MWS and 95 percent of house connections are in working condition at the time of survey.

5.3.3 The main reasons for the hand pumps being defunct are lack of sufficient ground water, salinity/fluoride problems, availability of piped water, lack of repairs due

to fund constraints and excess pumping by irrigation sector leading to depletion of ground water

5.3.4 The important reasons for the public stand posts including MWS going out of use are inadequate water in the bore wells, increase in number of house connections, higher elevation of some houses, unsuitability and closure of some public stand posts because of their creation of unhygienic surroundings, saline/flouride problems, breakages in the cisterns, leakages in the pipes etc.

5.3.5 In 72 percent villages, the hand pump water is potable while it is saline/fluoride in the remaining villages

5.3.6 In 82 percent villages the water from piped water supplies is potable

5.3.7 In 80 percent villages the water from MWS is potable.

5.3.8 Quality of water from piped water schemes is regularly tested

5.3.9 Water co-ordination committees were not set up in 90 percent village panchayats

5.3.10 In thirty three percent villages, there is demand for more piped water/MWS schemes while in 18 percent villages more hand pumps are demanded

5.3.11 Locations of public water schemes are generally selected in general in consultation with the panchayat members and residents of that particular locality

5.3.12 Community participation is passive in most of the villages because of differing views Some contend that panchayats are capable of taking care of their needs of the villages whereas others want the Zilla Panchayats to maintain them in totality

5.3.13 As the net work of rural water supplies is vast it is difficult either for Central government or state government to make the scheme sustainable without community participation

5.3.14 Women participate in decision making including locating public water schemes as panchayat members

5.3.15 About 70 percent of FC villages continue to be FC villages in sub sample survey while the rest 30 percent villages turn out to be PC villages About 67 percent partially covered villages continue to be partially covered villages Only 3 percent partially covered villages became "No source villages" due to drying up of the sources

5.3.16 A ray of hope has heralded among 30 percent PC villages as they turned out to be FC villages in the sub sample

5.3.17 With the decentralisation of powers of panchayats, operation and maintenance of water supply installations rests with them Alas ! In 47 percent of villages water rates are not levied

5.3.18 Eleven percent of fully covered and partially covered villages are self supporting as per sub-sample survey

5.4 HOUSEHOLD HIGHLIGHTS

5.4.1 The average size of the household is 6 9 among 1350 households

5.4.2 Agriculture farming accounts for 55 percent of the total households followed by 31 percent as agriculture labour Business and service sector accounts for 11 percent

5.4.3 SC and ST population forms 45 percent of the total population in the household survey

5.4.4 Illiterates among the heads of the household account for 42 percent only.

5.4.5 The average monthly net-income per household from all sources is Rs 1140 and the per capita income per month works out to Rs 166.

5.4.6 Nearly 51 percent of the households draw water for drinking and cooking from hand pumps and public stand posts/MWS. Dependence of households on handpumps alone is 13 percent for cooking and drinking

5.4.7 More than 40 percent households depend upon hand pumps, Public stand posts, MWS for bathing, washing, eblutions and animals

5.4.8 Location of hand pumps and public stand posts is within the arm's length (<50metres) for 67 percent households

5.4.9 On an average 82 percent households have regular access to water supply either from hand pumps or from MWS or from public stand posts and house connections. Other have occasional or no access.

5.4.10 Accessibility to public sources is not denied to any householder from SC/ST population on grounds of untouchability and ostracism.

5.4.11 Potable water either through hand pumps or MWS or piped water scheme caters to 82 percent households.

5.4.12 Despite regular access, water received as "inadequate" is reported by 63 percent households on account of increase in size of the households, their improved lifestyles.

5.4.13 Water is available even in scarcity period for 68 minutes for each household per day under piped water installation. However the quantity available during that period is less. Distribution of this period varies among different households on account of higher elevation of their houses, leakages in pipelines. In non-scarcity period it is available for more than 270 minutes per day per household to meet the total requirements.

5.4.14 The efforts of the Central and state governments to provide 40 lpcd of water from all public sources are commended even though some households on the average are not getting water as per norms during scarcity period.

5.4.15 Despite financial losses incurred by the majority of village panchayats in running public water schemes 73 percent households still hold the view that the panchayats are appropriate agencies to take the responsibility of O&M of these schemes.

5.4.16 Poor recovery or no revenue from water tax is a major irritant for water supplies to be in the red. The average water rate paid by a household works out to Rs 25 per year

5.4.17 The time gained with the project situation by each household works out to 1-2 hours on an average per day and also saves extra calories in trekking.

5.4.18 The time gained is utilized by 46 percent households either in agriculture farming or as daily wage labour, while 13 percent households belonging to service and business sector spend extra time with family members.

5.4.19 There is a general reduction in the incidence of endemic diseases among households after receiving public water supplies but fluoride cases continue unabated.

5.4.20 Sanitation of piped water schemes, around public stand posts MWS and house connections is just satisfactory among 73 percent. This includes 51 percent schemes with platforms but without drainage.

5.4.21 Disposal of household waste water is good among 33 percent households while it is satisfactory among 61 percent households.

5.4.22 Sanitary lavatory facilities like septic latrines or pour-flush latrines are non-existing among 92 percent house holds.

5.4.23 There is near unanimity among all the households not to contribute for any capital expenditure in cash or voluntary labour. The suggestion is for pooling all MPs' and MLAs' local area development funds for construction of more public water schemes in the villages.

5.5 RECOMMENDATIONS

5.5.1 ***In view of fast depleting groundwater resources and non availability of water in the borewells, the perspective plan formulated by the state government needs implementation on war footing so that water is supplied on sustainable basis at least 40 lpcd in critical periods.***

5.5.2 ***In view of the constraint for financial resources by the state, the target to provide safe water for 2000AD is a stupendous task. There is need to seek external assistance to accelerate the programme or expedite the ongoing projects to derive the benefits early.***

5.5.3 ***Part of local area development funds of MPs' and MLAs' need to be mobilised in the critical and 'no. source' villages to expedite the schemes.***

5.5.4 ***Advance action or a contingency plan is needed in the month of March every year to identify problem and no source villages so that prior actions to send water tankers or alternatives are initiated***

5.5.5 More hand pumps need to be installed subject to hydrogeological feasibility before on set of summer. Drilling up to deeper depths in the months of March or April may be tried. Even water is brackish, households need such water for use other than drinking\cooking purposes. This is necessary to arrest FC villages slipping in to PC villages.

5.5.6 The existing hand pumps requiring repairs need immediate attention to make them functional.

5.5.7 There is a need for constant monitoring of water levels and depths of bore wells by the government agencies in the problem villages and by involving the panchayats or community so that water budget for each village every year is prepared to conserve and share the limited supplies equitably. The village water co-ordination committees which were not setup so far should be activated.

5.5.8 Due to indiscriminate exploitation of groundwater for irrigation because of existence of subsidies for construction of wells, tubewells, electricity charges the groundwater levels are going down. The groundwater legislation needs implementation scrupulously.

5.5.9 Recharge of groundwater in the critical areas through co-ordinated activities like water and soil conservation, environmental protection with line departments is needed immediately so that water through handpumps is available during summer months and improves the water level in the percolation wells.

5.5.10 As demand for water outstrips supplies on account of increase in size of the household, increase in rural population, improved life styles, equitable distribution is needed through rotation with active involvement of the community and panchayats. Initiative should come from Chief Executive officer of the concerned district along with local political leadership.

5.5.11 Erratic supply is the biggest culprit which puts piped water supplies in jeopardy. An assured time period in a day for a minimum duration of six hours is required to fill up the tanks (ESR or GSR). Action is to be initiated with state electricity board.

5.5.12 Electric motors get burnt due to high voltage fluctuations and negligence of pump operators. The responsibility on pump operator needs to be fixed by making reasonable payment instead of Rs 300 or 500 per month. The operator should be trained and made to maintain record of the daily operating hours. Part of the 10 percent central grant may be earmarked for salary of pump operator. The pump operator should be under administrative control of state government but day to day supervision by the panchayat.

5.5.13 In the inaccessible area or erratic power supplies, installation of diesel pumpsets with 5HP or 7.5 HP with the assistance of NGO's or private contractors may be sought. The O&M expenditure may be shared by the Centre and state government or the 10 percent grant given by the Centre for O&M should be earmarked for such villages to meet the entire O&M expenditure. Tax concession under section 35 AC of the income tax act 1961 may be availed by NGOs or others.

5.5.14 In view of the losses incurred in the maintenance of rural water supplies, a vigorous drive with incentives and disincentives are to be provided to panchayats to motivate them to preserve, protect the assets for making them functional.

5.5.15 Sarpanchs and members of the panchayats should initiate action by first paying their dues by setting an example to others. Panchayat institutions can meet the local aspirations and demands more efficiently than receiving suggestions from above.

5.5.16 Political leaders irrespective of party affliations and state officials should tell categorically that community should be actively associated along with panchayat for proper up keep and work as watch dog in the preservation of the assets. A proper social and political climate has to be created with constant interaction to instill among the villagers that they can administer themselves better than impositions from above. Community empowerment is the key to ensure project sustainability and reduction of costs.

5.5.17 If a sarpanch is elected for a full term but hails from SC or ST or a woman groups, powerful and vested interested community in that village tries to dominate decisions in their favour. Things become worst when these sarpanches are illiterate and are agriculture labour. In such a situation Chief Executive officer should monitor and solve their problems in the interest of village community.

5.5.18 In those villages where pond water is used for drinking and cooking, top priority for providing safe water is needed. Schemes which are under formulation by the state government need to be expedited.

5.5.19 SC, ST and other backward classes in the villages also prefer to have house connections to avoid daily routine of exertion by using hand pumps and consequently lose calories on this account by their women and children. As they cannot afford a one time deposit of Rs 500 for owning a house connection, the Ministry of Health and Family Welfare may offer to pay their deposits on their behalf who opt for sterilization. A pilot project in selected villages may be initiated by RGNDWM in association with Ministry of Health and Family Welfare. For such households a further concession in payment of water tax for 5 years may also be considered.

5.5.20 Where water supplied is turbid, state government officials should advise villagers to add chemicals like alum in turbid water for dissolving the particles or boil water for preventing water borne diseases.

5.5.21 Platforms around public stand posts and hand pumps need repairs and proper drains are to be constructed from maintenance funds before the onset of monsoon. This would avoid percolation of polluted water and prevent reemergence of such water through hand pumps.

5.5.22 Rural sanitation in the form of providing subsidy to SC/ST households for construction of rural 'pour flush' latrines and drains through JRY funds needs to be examined afresh in the context of objectives and their utilisation on sample basis. There is need for integrated approach as is being done in the case of World Bank assisted projects.

5.5.23 Wide hoarding boards and publicity in every village through Kannada language need to be displayed for conservation of water and also hazards of taking polluted water at prominent places near hand pumps, public stand posts, etc.

5.5.24 DWCRA should be involved in extension measures to make women aware of the need to observe proper hygiene and sanitation at home and around their houses.

5.5.25 Village panchayat should monitor the water supply position on a particular day in a month say 15th and the same to be transmitted to district authorities. RGNDWM may make use of NICNET for consolidating the data for all districts in the country so that the position of water supply for a particular day in a month throughout the country is known for taking remedial actions.

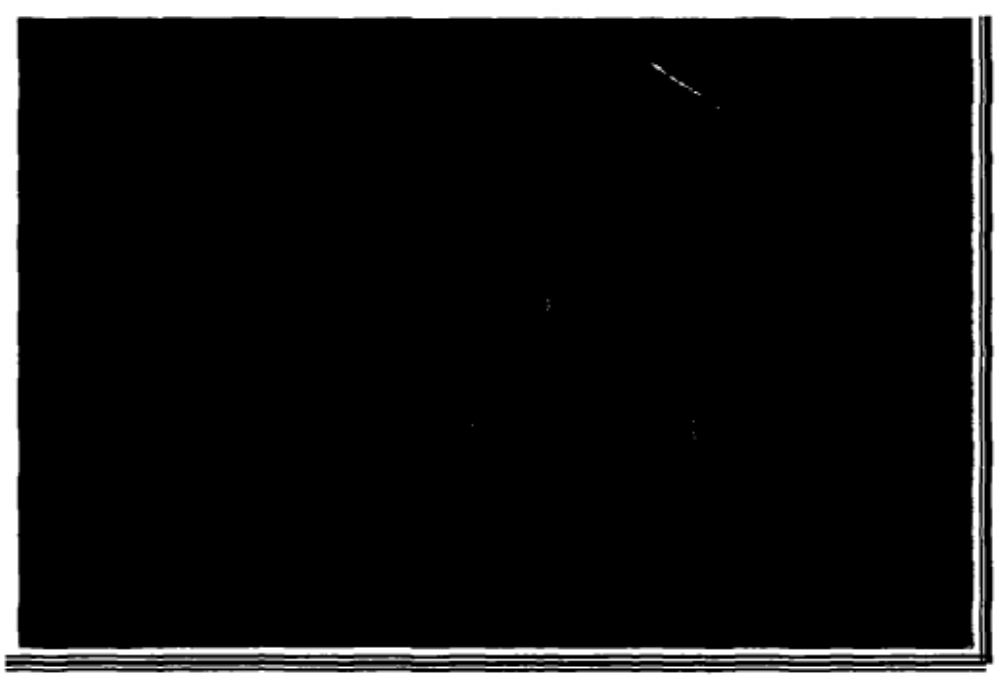
5.5.26 Despite huge investments, there is no systematic monitoring at the village level. There is need for system and management information system by covering the details of installation with dates, number of bores made, status of handpumps

and piped schemes quality of water, financial position of the panchayat, recoveries made, numbers of complaints, results of laboratory test etc.

5.5.27 *In order to ascertain the sustainability on regular basis, a concurrent evaluation of atleast ten households in each of the five villages in the state located in different agro climatic and hydro-geological zones for ascertaining the availability in terms of duration and quality of water per day for five days in a month to be conducted over 12 months is necessary to identify the bottlenecks and measures taken to remove the deficiencies. RGNDWM may identify a reputed organisation to undertake this job.*

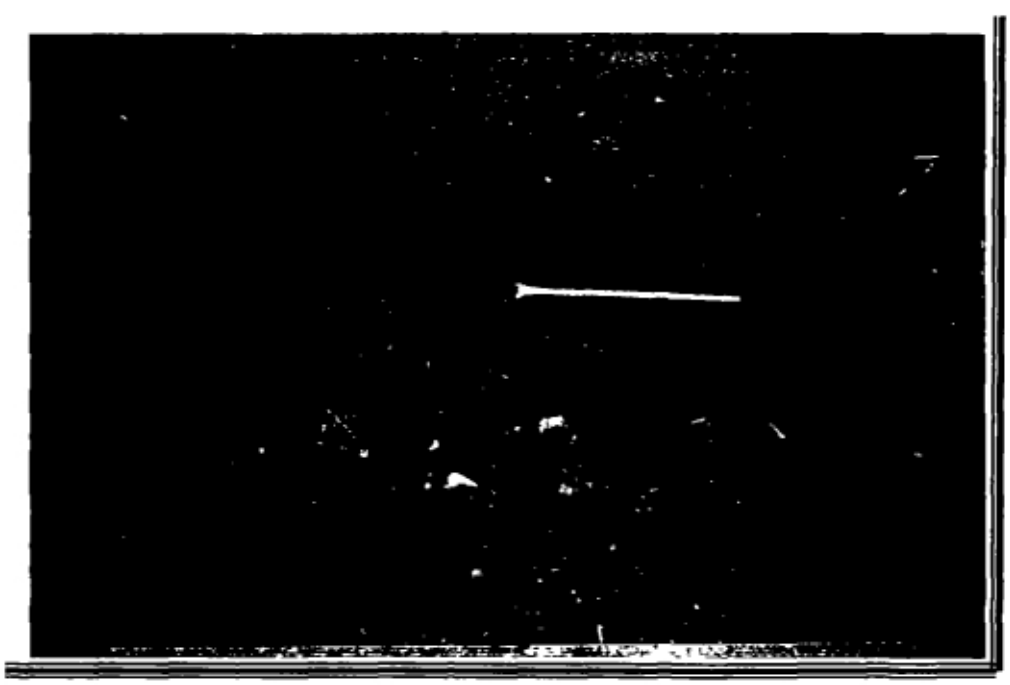
PHOTOGRAPHS

Hand pump with proper drainage and trap for cattle at Kodihally – lambanihatty village, Hiriyur taluk, Chitradurga district

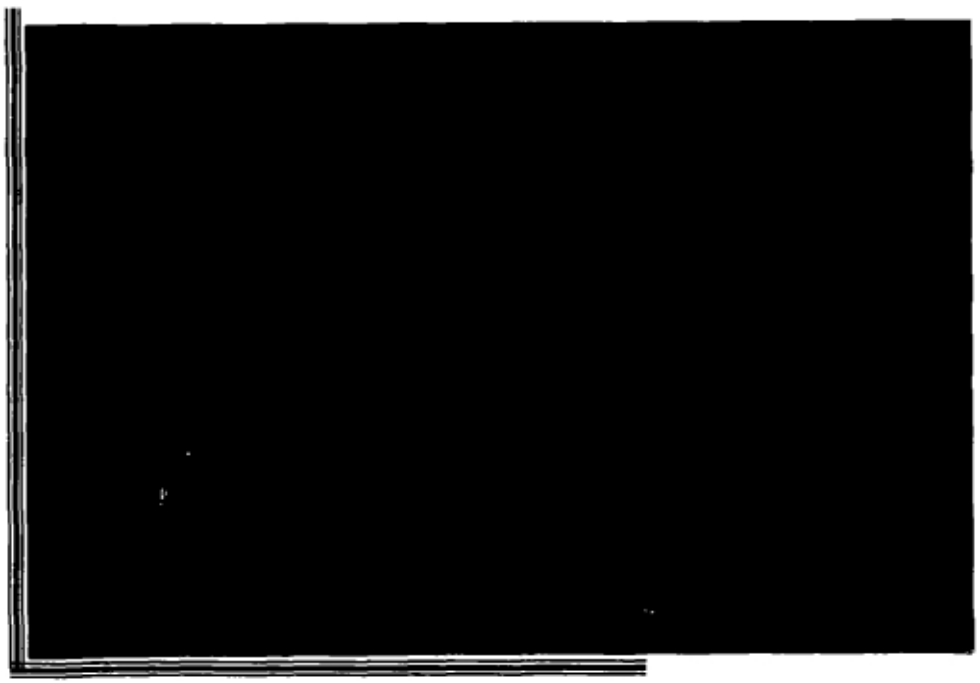


Existing status of a stand post, functional at Burujonarappa village, Hiriyur taluk, Chitradurga district

Tapping of drinking water in stream bed at Huvinahole village (fluoride problem), Hiriyur taluk, Chitradurga district

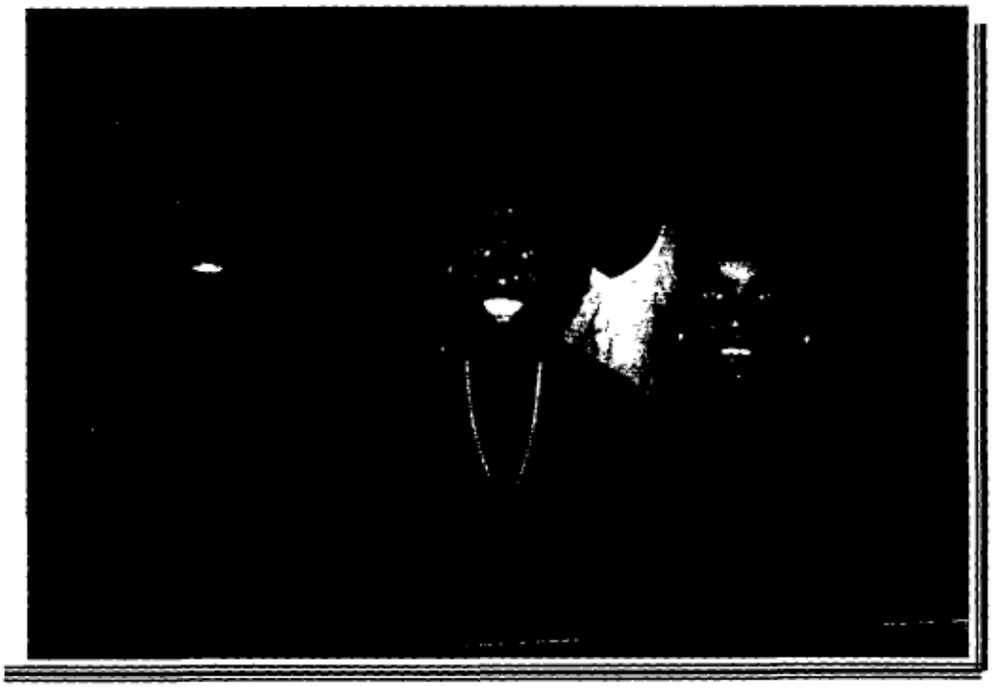


Illegal house connection by a panchayat member at Maradihally village, Hiriyur taluk, Chitradurga district



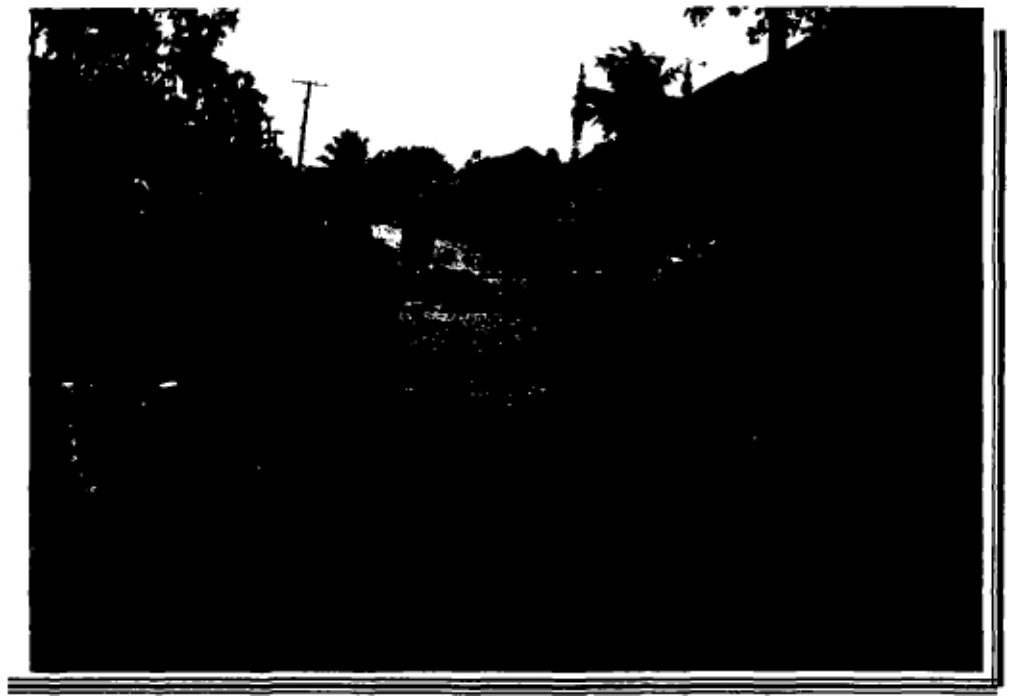
Rural sanitation at Gopanahally village,
Chellakere taluk, Chitradurga district

Waiting for water trickle at Hirehally village,
Chellakere taluk, Chitradurga district



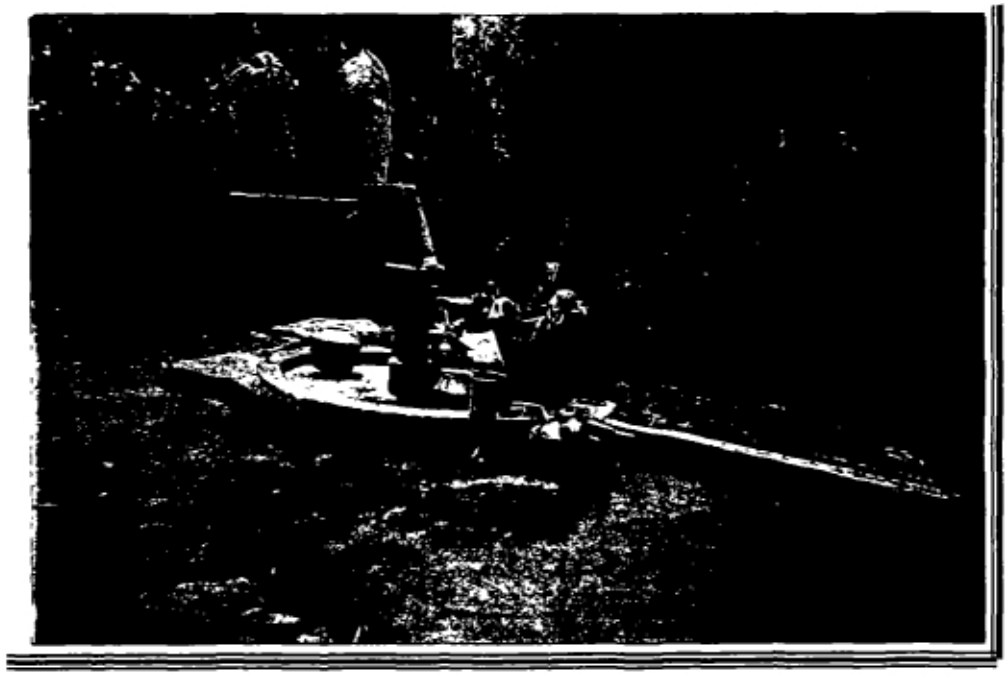
Brown tooth of children due to consumption of Fluoride contaminated water at Huvinahole village, Hiriyur taluk, Chitradurga district

Scramble for water after long wait at Doddakavalande village, Nanjangud taluk, Mysore district



Deployed children to carry water at Doddakavalande village, Nanjangud taluk, Mysore district

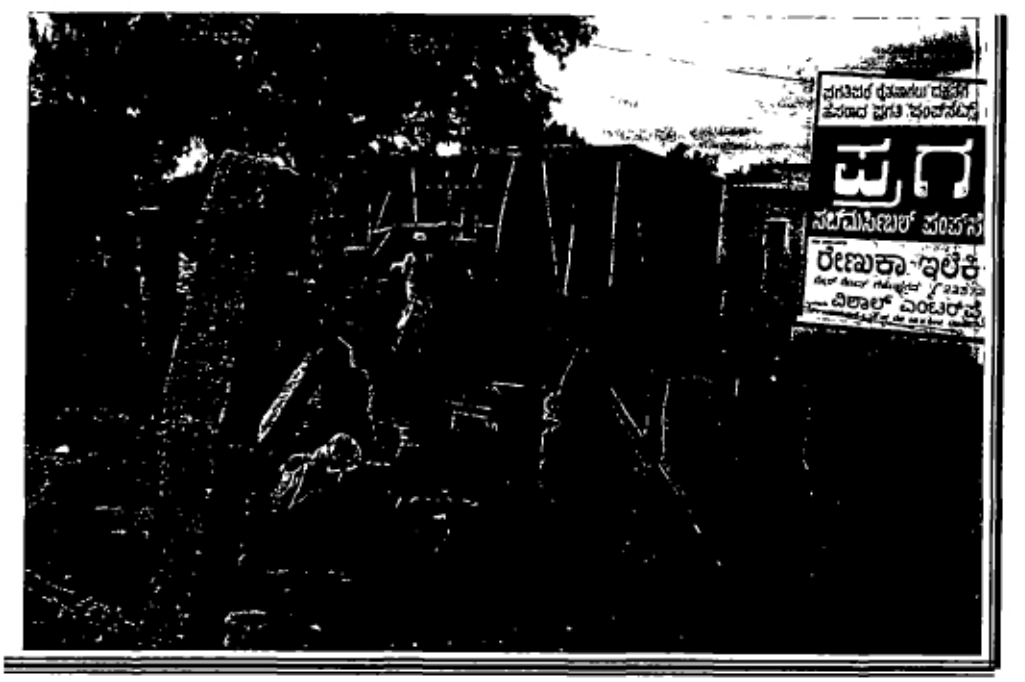
Misusing of functional stand post at Kannanur village, Nanjangud taluk, Mysore district



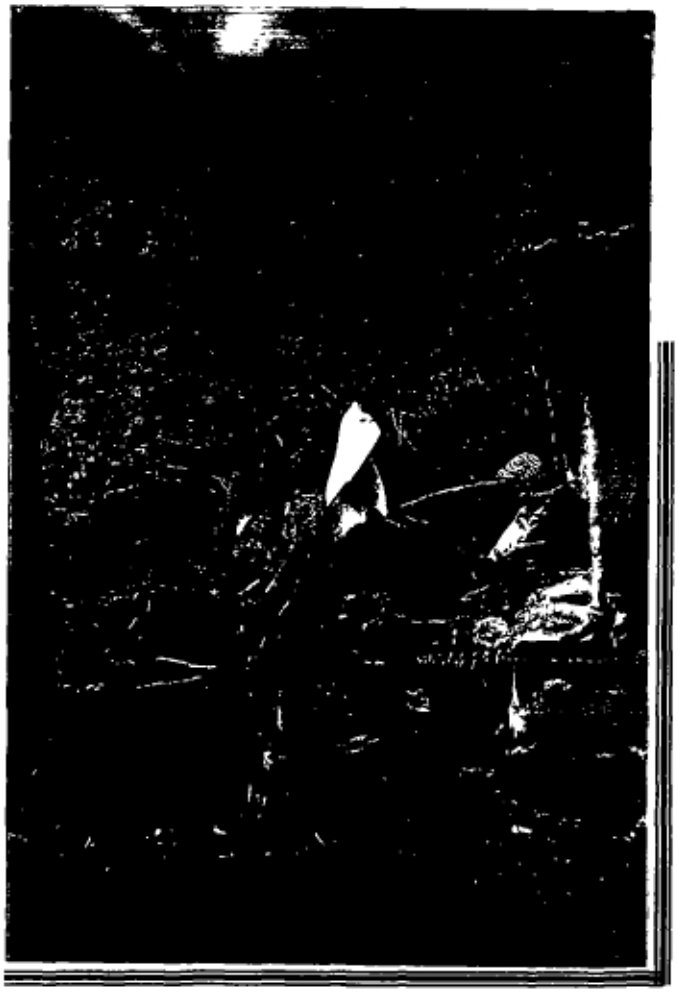
Washing of clothes and utensils on platform of a handpump at Honganur village, Chamaraja nagar taluk, Mysore district

Sanitation around a handpump at Horehale village, Gundlupet taluk, Mysore district

Sanitation around a stand post at Garag village, Dharwad taluk, Dharwad district



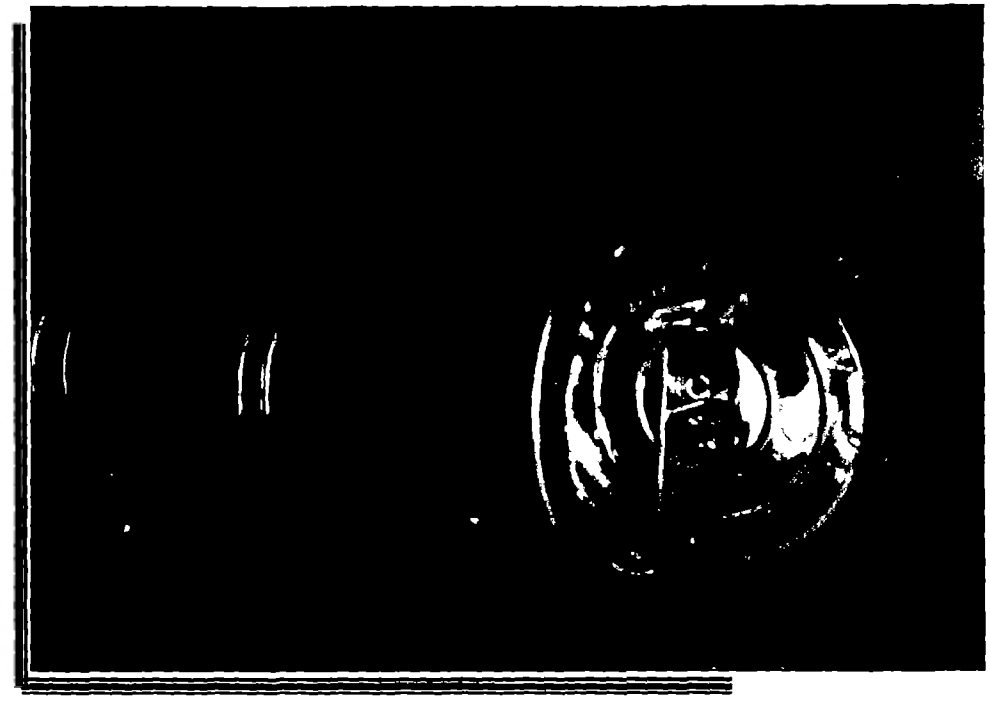
Sanitation around a handpump at Sudi village, Rone taluk, Dharwad district



No water supplies in a stand post due to location in the higher elevation at Noolvi village, Hubli taluk, Dharwad district

Pond water being usedfor drinking and other purposes at Gundenkatty village, Kundgul taluk, Dharwad district

Defluoridation tank is under implementation at
Devaragudupally village, Bagepally taluk, Kolar district



Household Defluoridation filter being used at
Kondamwar pally village, Bagepally taluk, Kolar disrict