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METERED STANDPOSTS, USE AND FUNCTION

Part 1: Puthenchira panchayat of Mala scheme

Socio-Economic Units, Kerala
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1. Quite a bit is known about the design and construction of water systems. However less is known about the behaviour and needs of the users, particularly the poorer families who use public taps. This is also true in Kerala, where families often draw water from multiple sources. .the tap, the canal, open well, river, irrigation system. The mix of traditional and modern sources seems complex and, therefore, it has been difficult to make generalizations about the use, the need and the payment for piped drinking water from public taps.

2. The general idea behind these functionality/utilization studies is that the very large investments made in piped water schemes should result in a sustainable, high level of service that is used by the consumers. These studies should hopefully be undertaken and then followed up in a way that leads to retaining very good service standards. To make a start, this study looks at just 5 standposts in one panchayat(Puthenchira) of the Mala scheme. As is described in the following paragraphs, this study is small and yet it yields rich information. It probably deserves to be followed up in the future on a larger-scale, but using a simpler format.

3 The purpose of the study was to examine the utilization and level of service from selected standposts. It was decided to investigate use and functioning in areas with **differing** water situations. The SEU field staff and voluntary standpost attendants, identified five standposts in Puthenchira panchayat:

I. One standpost in an area without scarcity of drinking water. In other words, this was an area where open dug wells are perennial sources for drinking, domestic and agricultural uses. The number of households and family members using this standpost varied from 2 households (8 members) to 10 households with 45 members.

II. Two standposts in areas where there is a seasonal shortage of drinking water in traditional sources. In the first area, at tap number III-132, the number of users varied between 48 and 65 family members. The second, tap number IV-155 was used by 10 households having 50 family members.

III. Two standposts in areas where there is a lack of potable water for most of the year in traditional sources. Tap VI-72 is used by 21 households comprising 105 people. Tap IX-111 is used by 20 households with 98 to 103 members.

Observations show that the pattern of water use in the three areas are:

Area	Drinking water	Bathing & washing	Agriculture	Cattle
1) no potable trad. sources	tap	canal	tap	tap
2) seasonal deficit	tap & well	tap & well	tap & well	tap & well
3) perennial tradit.sources	tap & well	well	well	well

4. The voluntary standpost attendants recorded data about the supply of water each day at their standpost. The field organizer took readings from the water meters every two weeks. Data collection went from 1 September to 31 December and then started again at the height of the dry season, for the month of March. The idea behind this was to compare use of standposts at periods when traditional sources were better and worse. The data and readings are given in the attachment at the end of this paper.

Findings

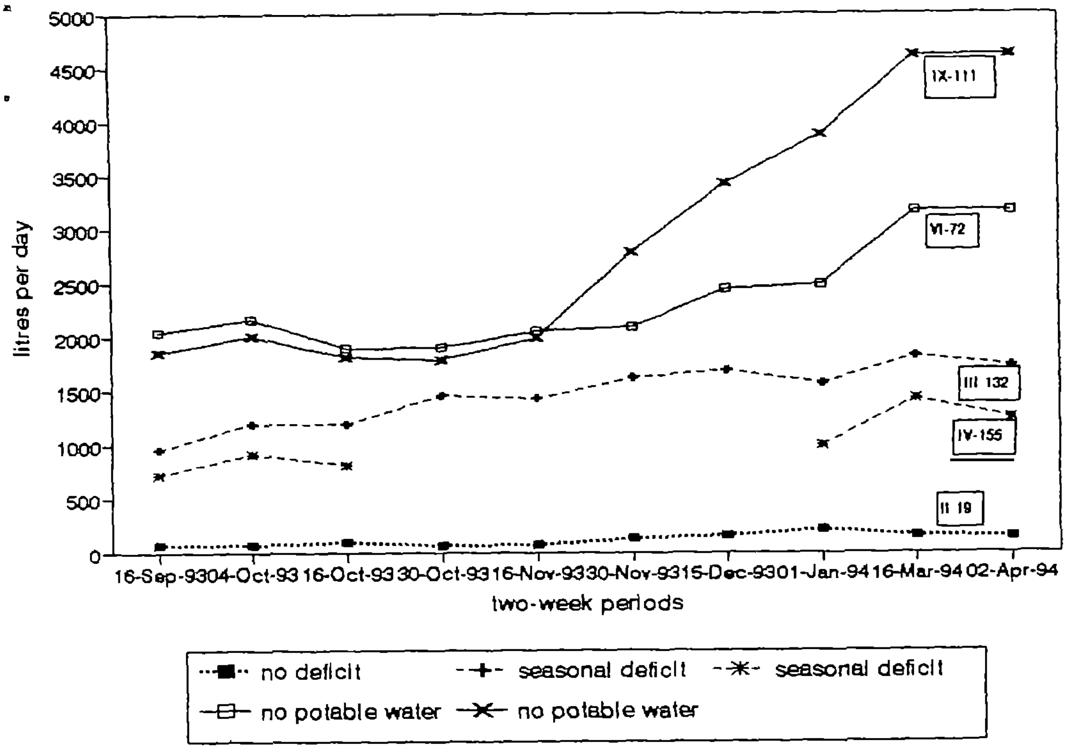
5. Water quality was measured by asking the standpost attendants to report on perceived turbidity, salinity and chlorine content. There were no reports of turbid or saline water. There are, however, occasional reports of high chlorine, particularly at the beginning of the reporting, in September and October.

6. As might be expected, the amount of water used at each standpost differed according to the quality of traditional sources of the area. For example, where the open wells give a good perennial water supply, never more than 225 litres per day has been used at the standpost.

7. As might also be expected, the amount of water used at each standpost increased as the dry season gradually developed this year, after an unusually robust rainy season. At the two standposts without potable water nearby, the daily use of water went from about 2000 litres per day up to 3200 and 4600 litres per day...an increase of more than 50% to 100% in daily use.

8. The following table shows the average number of litres supplied at each standpost over two-week intervals from September to January and then in the month of March. For one standpost (number IV-155 in an area of 'seasonal deficit'), some data is missing for October, November and December as the meter was broken during these months. Note that the number of families (20 to 21) using the standposts was highest in the areas lacking potable water. The lack of potable water and greater number of families accounts for the greater daily volume of water used at these two standposts.

Liters supplied per day at five public standposts

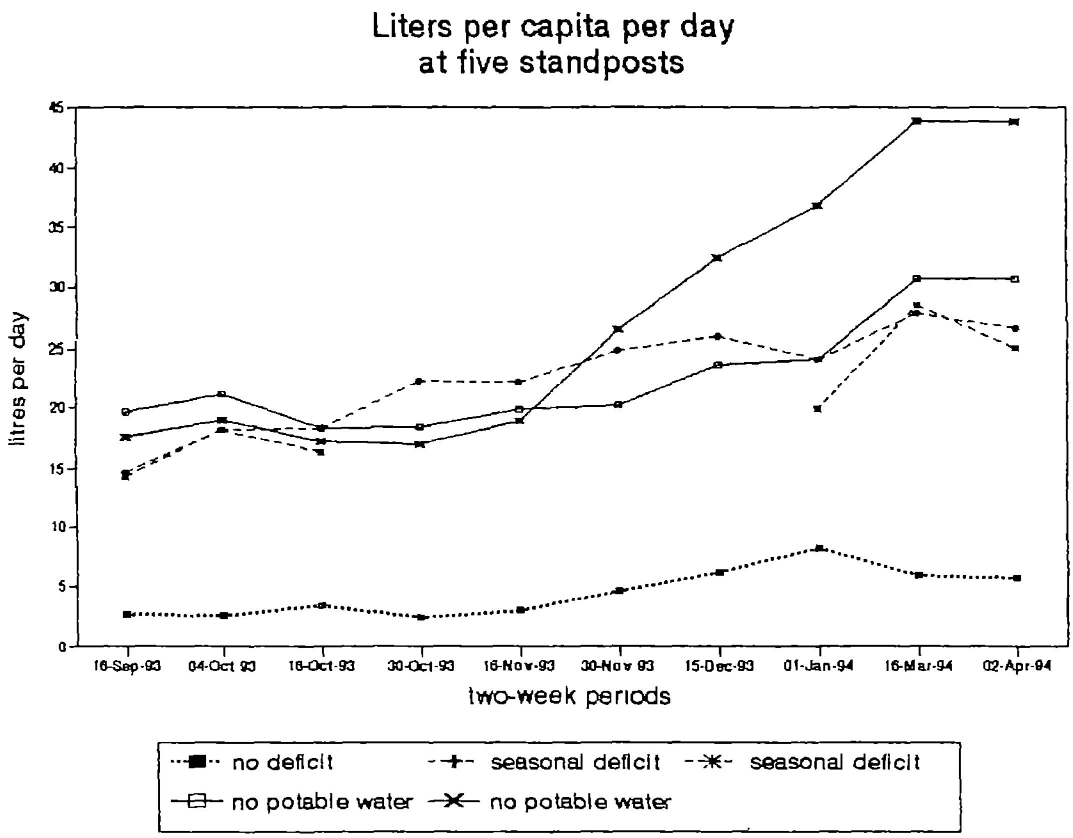


9. In estimating the litres per day and litres per capita per day, it was important to determine when service was irregular or non-existent.

TAF NUMBER	MONTH	# DAYS WITHOUT WATER	# DAYS IRREGULAR SERVICE OR LOW PRESSURE
II-19	Sept	3	
	Oct		
	Nov		
	Dec	7	
	March	1	
III-132	Sept		
	Oct	5	2
	Nov	4	4
	Dec	2	2
	March	2	
IV-155	Sept	1	
	Oct		5
	Nov meter fault		
	Dec meter fault		
	March	3	8
VI-72	Sept		
	Oct	3	2
	Nov	2	
	Dec		
	March	3	2
IX-111	Sept		irregular often
	Oct	3	3
	Nov	2	more than 5 days low pressure
	Dec	1	
	March	3	2 days

10. Interestingly, the standpost which had the greatest number of service problems also had the highest use and highest per capita use. In 4 months (October, November, December and March there were more than 23 days without water or with irregular supply or low pressure. This amounts to almost one-fourth of the time. It is, interestingly, reported that a type of queuing behaviour was adopted such that people stored excess quantities of water anticipating some delivery problems. This implies that less than optimum service results in greater amounts of water being taken from the standpost. Further study is needed on this point.

11. The average amount of water used by each person at the standpost is shown below. Note that the range is very big: from as little as 2 litres per day to more than 40 litres per capita per day. Much of this variation is due to the fact that the water used **at the standpost** is only part of the water used for personal and domestic uses each day. In other words, the Keralite is using in excess of 40 litres per capita per day. Bathing and washing needs seem to be met by wells, canals in addition to public standposts in this sample.



Conclusions and follow-up

12. More water is used at the standposts located in areas that lack perennial sources of drinking water <u>and</u> located within walking distance of more families in need. This means that the siting of public standposts deserves continuing attention. The correct siting of the standpost will ensure that better service is provided and will more than justify the charges made to the panchayat (currently Rs 875 per year) for public standposts

13. The families using these standposts draw water from differing sources. In view of this, the 50 litres per capita per day used for the design of this Mala water scheme, seems sufficient, as long as the overall supply from the source remains stable and the total number household connections do not interfere with the supply.

14. There seems to be some complex relations between level of service and use of the standpost that could deserve further investigation. See paragraph 10 above.

15. The days without service or with irregular service and low pressure during peak hours could be compared with the fault reporting as a check of the quality of the latter. It is also interesting to note that the days of 'no service', for example, three days in March, effect many of the standposts simultaneously. One reason could be that a general repair was made. Another reason could be that the valves can not be readily turned off in some sections of the scheme and therefore service must be stopped for large areas (several wards at a time) in order to make localized repairs. This may deserve further examination by the proposed O&M mission.

16. This study could perhaps be followed-up, through something like the following:

-Select 15 to 20 standposts per scheme (Nattika-Firka, Pavaratty, Vakkom-Anjengo) and attach meters to each. Identify these standposts, preferably at the ends of pipelines in different zones, with perennial and seasonal water deficit and one or two without deficit.

-Collect information for one month near the end of the rainy season and one month during the dry season (eg., in October and April). Information needed on perceived quality (turbidity, chlorine smell, pressure), supply during three peak periods each day (6-10, mid-day and 4-7 PM).

-This information could be provided in written form to scheme engineers and KWA senior staff using analysis similar to that done here.

-This study could be a useful complement to the fault reporting from the standpost, which should also be a topic systematically brought up for discussion at the scheme level site meetings.

The purpose of these activities is to support a continuing level of good service The very large investments made on these schemes probably requires some special attention at this stage to the level of service which can be sustained.

17. This small study has shown that the voluntary standpost attendant can provide good quality data over long periods Special acknowledgement is due for the Field Organizer and the standpost attendants who put great effort into the data collection and consolidation

STP	water situati	DATE	# HH	# FAM MEM	# DAYS SERVICE	CONSUMPTION LITRES(L)	LPD(per day	CONSUMPTION LPD per HH	LPCD	COMMENTS
II-19	ok	16-Sep-93	6	26	13	900	69	12	3	
II 19	ok	04 Oct-93	6	26	18	1200	67	11	3	
II-19	ok	16 Oct 93	6	26	9	800	89	15	3	3 days no water
II 19	ok	30-Oct-93	6	26	14	900	64	11	2	
II-19	ok	16-Nov-93	6	26	17	1300	76	13	3	
II-19	ok	30-Nov-93	6	26	14	1700	121	20	5	
II-19	ok	15-Dec-93	6	26	8	1300	163	27	6	7 days no water pipe break
II-19	ok	01-Jan-94	6	26	8	1700	213	35	8	
II-19	ok	16-Mar-94	6	26	13	2000	154	26	6	1 day no water
II-19	ok	02-Apr-94	6	26	16	2400	150	25	6	
III-132	seasonal	16-Sep-93	15	65	13	12400	954	64	15	
III-132	seasonal	04-Oct-93	15	65	18	21400	1189	79	18	
III-132	seasonal	16-Oct 93	15	65	11	13100	1191	79	18	3 days no water
III-132	seasonal	30-Oct-93	15	65	9	13100	1456	97	22	2 days no water
III-132	seasonal	16-Nov 93	15	65	13	18700	1439	96	22	3 days + peak hours 4 days no water
III-132	seasonal	30-Nov-93	15	65	14	22700	1621	108	25	1 day no water
III-132	seasonal	15-Dec-93	15	65	13	22000	1692	113	26	2 days & part of 2 more days no water
III-132	seasonal	01 Jan-94	15	65	17	26700	1571	105	24	
III 132	seasonal	16-Mar-94	15	65	11	20000	1818	121	28	3 days irregular
III-132	seasonal	02-Apr-94	15	65	13	22500	1731	115	27	2 days no water
IV-155	seasonal	16-Sep-93	10	50	13	9300	715	72	14	
IV 155	seasonal	04-Oct-93	10	50	16	14600	913	91	18	1 day no water
IV-155	seasonal	16-Oct-93	10	50	10	8200	820	82	16	2 days irregular
IV-155	seasonal	30-Oct-93	10	50	13	13000	1000	100	20	3 days irregular peak hours
IV-155	seasonal	16-Mar-94	10	50	13	18600	1431	143	29	1 peak period irregular
IV-155	seasonal	02-Apr-94	10	50	16	20100	1256	126	25	3 days no water & 2 days peak periods ir
VI-72	no potable	16 Sep 93	21	103	13	26500	2038	97	20	
VI-72	no potable	04-Oct-93	21	103	17	37000	2176	104	21	
VI-72	no potable	16-Oct-93	21	103	10	19000	1900	90	18	3 days no water
VI-72	no potable	30-Oct-93	21	103	14	26800	1914	91	19	2 days irregular supply
VI-72	no potable	16-Nov-93	21	103	15	30900	2060	98	20	1 day no water
VI-72	no potable	30-Nov-93	21	103	14	29300	2093	100	20	1 day no water
VI-72	no potable	15-Dec-93	21	103	13	31800	2446	116	24	
VI-72	no potable	01-Jan-94	21	103	16	39800	2488	118	24	
VI-72	no potable	16-Mar-94	21	103	13	41200	3169	151	31	
VI-72	no potable	02-Apr-94	21	103	14	44400	3171	151	31	3 days no water
IX-111	no potable	16-Sep-93	20	105	12	22200	1850	93	18	
IX 111	no potable	04-Oct-93	20	105	18	36200	2011	101	19	Irregular supply
IX-111	no potable	16-Oct-93	20	105	9	16300	1811	91	17	3 days no supply & 3 days irregular suppl
IX-111	no potable	30-Oct-93	20	105	14	25100	1793	90	17	5 days low pressure
IX-111	no potable	16-Nov-93	20	105	14	27900	1993	100	19	2 dyas no water other days low pressure
IX-111	no potable	30-Nov-93	20	105	14	39000	2786	139	27	
IX-111	no potable	15-Dec-93	20	105	14	47800	3414	171	33	1 day no water
IX 111	no potable	01-Jan-94	20	105	17	66000	3882	194	37	
IX-111	no potable	16-Mar-94	20	105	13	60000	4615	231	44	6 days no water after 4 PM
IX-111	no potable	02-Apr-94	20	105	14	64700	4621	231	44	3 days no water 7 & 2 days irregular