

Can Decentralisation Improve Rural Water Supply Services?

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A survey of households in six villages in Birbhum district of West Bengal provides evidence that decentralisation in delivery of water supply leads to better quality of services. The participation of the local government in distribution of water supply, and household contribution to operation and maintenance appear to have a positive impact on quality.

Decentralisation in delivery of basic services to rural households has gained prominence in recent times especially after the 73rd Amendment of the Constitution. This has made provision for devolving powers and responsibilities upon the local governments, the panchayats or panchayati raj institutions (PRIs), for implementation of schemes to deliver essential services such as drinking water supply, sanitation, street lighting and roads.

1 Introduction

Decentralisation as against centralisation is expected to take care of the needs and preferences of communities as powers and responsibilities are devolved to lower levels. It is also expected to increase accountability of the government in the delivery of services. Therefore, delivery of services is expected to be better through decentralised institutions than through centralised institutions. Among these services, the provision of drinking water draws importance as it has a serious impact on public health and it is part of the global programme of poverty alleviation. This article compares the delivery of water supply services through decentralised and centralised institutions and attempts to find out whether decentralisation leads to better delivery of water supply services. The study is based on a household level survey in six villages of Birbhum district of West Bengal.

The participation of the local government in provision of basic services is expected to increase the efficiency of service delivery (Tiebout 1956; Oates 1972, 1977). This is because local governments operate more closely with the people than any other level of government. Therefore, local governments would be able to identify the needs and preferences of communities. If, instead of local

governments, line agencies are entrusted with the work of implementing programmes of provision of basic services like water supply and sanitation, it would then end up primarily in engineering solutions (Slaymaker and Newborne 2004; WSP 2004). However, the provision of these services by local governments in developing countries may be hampered by the low capacity of local governments, corruption, elite capture and political influence (Bardhan 2002; Bardhan and Mookherjee 2000; Asthana 2003; Slaymaker and Newborne 2004; Mtisi and Nicol 2003). Experiences of decentralisation in delivery of basic services like rural water supply and sanitation in developing countries reveal that the lack of political accountability, people's participation, transparency, policy coherence, capacity at the lower level, and monitoring and evaluation have held back the success of these programmes (WSP 2004).

This study illustrates the response of rural households with respect to water supply services. To capture the difference between water supply services of the state and local governments, the study has been conducted in both areas – where the service is provided by the state line department and also the local government. The line department for water supply in West Bengal is the Public Health Engineering Department (PHED). It is responsible for installation of sources and also operation and maintenance (O&M). The local governments are primarily responsible for O&M of water supply services. Therefore, only the quality of service has been investigated in the study to examine the impact of decentralisation on water supply. It is expected that the quality of water supply service is better in areas where the responsibility of O&M has been devolved to the local governments.

Section 2 of the article describes the survey methodology and data sources. Section 3 provides an account of the various water supply sources available in the survey villages. In Section 4, the study probes into the quality of water supply in the survey villages. In Section 5, the study looks into the expenditure of survey

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households for water supply. Section 6 concludes the study.

2 Survey Methodology

The study was conducted on Birbhum district of West Bengal state during October-November 2006. West Bengal has a long history of decentralisation. It is among a handful of Indian states, which initiated decentralisation even before the 73rd and 74th Constitutional Amendments. Birbhum district has been selected as in this district many rural piped water supply schemes are maintained by the second-tier of PRIS, i.e., panchayat samiti (PS). In other

Table 1: Socio-economic Characteristics of Rural Areas in Birbhum and West Bengal (2001, in %)

Indicators	Birbhum	West Bengal
Literacy rate	60.55	64.06
SC and ST population	38.96	36.16
BPL families	44.02	36.68
Households having no latrine	88.36	73.07
Households using tap	6.58	7.02
Households using handpump and tubewell	80.91	79.97
Households using well	11.7	11.41

Source: Census of India, 2001.

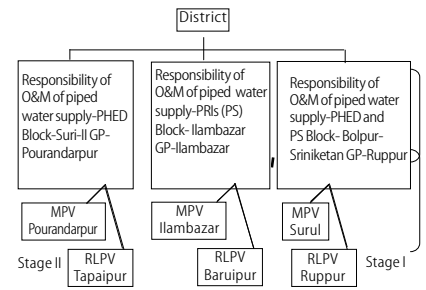
districts of West Bengal there are only a few or no piped water supply schemes maintained by PRIS. Moreover, Birbhum district is among the socio-economically backward districts of the state. According to the 2001 Census the rural literacy rate of the district is 60.5%, which is below the average literacy rate of West Bengal. The percentage of below poverty line (BPL) households and households having no latrine is also higher in Birbhum district as compared to the state average (Table 1).

The villages were chosen by a two-stage stratified sampling method. In the first stage three gram panchayats (GPs) were selected from three different blocks according to the characteristics of water supply systems. One GP has been selected from each block since institutional structure of delivery of water supply service is almost same within a block. In Birbhum district, water supply systems like handpumps, tube wells, wells and others are maintained by either the local government or the community. Only in the case of piped water supply, PHED takes the responsibility of O&M in most of the water supply schemes. In case of a few other water supply schemes the local government takes the responsibility. Therefore,

the comparison of quality of water supply operated and maintained by the centralised institution (PHED) and the decentralised institution (local government) can be done only in case of piped water supply. Accordingly, the following three different GPs have been selected – first where O&M of piped water supply is done by PHED, second where O&M is done by PRIS, and the third where the O&M is done by both PHED and PS. In the last GP, PHED lifts the water and purifies it, probably because it has a higher capacity than the PS to discharge these responsibilities. On the other hand, PS is involved in distributing the water to the households. This is probably because PS can better understand the local need than the PHED. Therefore in the third GP responsibility of O&M seems to be divided according to the comparative advantages of the two institutions. This is also in conformity with the earlier discussion that the capacity of local governments is less but the local government understands the local need better than the central institution.

At the second stage, the most prosperous village (MPV) and the relatively less prosperous village (RLPV) have been chosen to get a representative sample of households for the GP. The villages selected in these two stages have been illustrated in Chart 1. Literacy rate has been considered as a proxy for general prosperity of the villages. The most prosperous village has the highest literacy rate in the GP. The relatively less prosperous

Chart 1: Two-Stage Selection of Villages for Survey



village has a lower literacy rate than the most prosperous village. In each village, around 30 households have been selected by a combination of cluster and systematic sampling to make the sample representative of all the clusters (para in local language) and all the households within a cluster. In each household, the main earning member of the households or the person nearest in relation to the main earning member has been interviewed. We have not selected any respondent who is below 18 years of age.

3 Sources of Water Supply

There are both public and private sources of water supply in the survey villages. The public water supply sources are in general located outside the premises. Only when public tap water supply provides household connection then it is located inside the premises. Outside the premises public sources are standposts, deep tube wells, handpumps, masonry wells and other sources such as tanks, ponds, etc. The in-house water sources are in-house taps,

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NOTES

handpumps, and wells. It has been observed that 78% of the sample households collect water from public water supply

regarding taste, smell and colour of water. Additionally, information on incidence of waterborne disease on households and the availability of water has also been looked into. These quality indicators are expected to be better wherever the local government participates in O&M.

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Table 2: Distribution of Households by Sources of Water Supply (in%)

	Illambazar			Ruppur			Pourandarpur			All Gram Panchayat
	Illambazar (MPV)	Baruipur (RLPV)	Total	Surul (MPV)	Ruppur (RLPV)	Total	Pourandarpur (MPV)	Tapaipur (RLPV)	Total	
A Total	11.4	0	6.3	36.7	0	18	3	4	3.4	9.3
B Total	22.9	3.4	14.1	10	3.2	6.6	24.2	8	17.2	12.6
C Standpost	78.3	42.9	58.8	52.9	0	19.1	29.2	0	15.2	31.9
Deep tube well	17.4	35.7	27.5	35.3	93.3	72.3	29.2	9.1	19.6	39.6
Handpump	0	17.9	9.8	5.9	6.7	6.4	41.7	90.9	65.2	26.4
Masonry well	0	0	0	5.9	0	2.1	0	0	0	0.7
Other	4.3	3.6	3.9	0	0	0	0	0	0	1.4
Total	65.7	96.6	79.7	53.3	96.8	75.4	72.7	88	79.3	78.1

Source: Field Survey, 2006.

A = In-house Tap Connection, B = In-house Handpump/ Deep Tubewell/Masonry Well, C = Out of the Premises Public Water Supply Sources.

sources outside the premises (Table 2). Percentage of households collecting water from in-house tap is 9% and in-house other sources (handpump/tube well/well) is 13%.

Within the category of public water supply sources outside the premises, 40% of the sample households collect water from deep tube well, 32% from standpost, and 26% from handpump. The rest of the households collect water from masonry well and other systems like the government reservoir. Due to non-availability of

do not collect water from the standpost. The percentage of households taking water from standposts is more than 50% in Illambazar, Baruipur and Surul village. Household tap connection (in-house public tap water source) is only provided in Surul village. In all other GPs in-house tap connections are private.

4 Quality of Water Supply

Quality of water from public water supply sources outside the premises has been assessed by analysing the responses

Taste, Smell and Colour: Households reporting bad taste are 11%, bad smell are 15% and bad colour are 21% considering all the sample households. Within the GPs, in Ruppur none of the households reported bad taste, smell and colour of water, while the same is quite high in Illambazar and Pourandarpur (Table 3, p 71). It is important to note that the percentage of households reporting bad colour is staggeringly high at 57% in Pourandarpur GP. It has also been observed that the percentage of respondents reporting taste, smell and colour of water to be bad is higher in MPV than in RLPV. This may be due to reporting bias in favour of quality of water in RLPV as the households are likely to be less quality conscious due to their illiteracy and poverty.

Waterborne Disease: The percentage of households getting affected by waterborne

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Table 3: Household Response on Quality (%)

Quality Indicators	Illambazar			Ruppur			Pourandarpur			All Gram Panchayat
	Illambazar (MPV)	Baruiipur (RLPV)	Total	Surul (MPV)	Ruppur (RLPV)	Total	Pourandarpur (MPV)	Tapaipur (RLPV)	Total	
Bad Taste	16.7	0	10	0		0	28.6		28.6	10.87
Bad Smell	33.3	0	20	0		0	14.3		14.3	15.22
Bad Colour	27.8	8.3	20	0		0	57.1		57.1	21.73
Incidence of Water-borne disease	27.8	8.3	20	0		0	42.9		42.9	19.57
Availability of sufficient water throughout the Year	22.2	41.7	30	88.9		88.9	14.3		14.3	39.13

Source: Field Survey, 2006.

Table 4: Household Contribution for O&M of 'Outside the Premises Public Water Supply Source' (%)

Quality Indicators	Illambazar			Ruppur			Pourandarpur			All GP
	Illambazar	Baruiipur	Total	Surul	Ruppur	Total	Pourandarpur	Tapaipur	Total	
Contribute	11.1	83.3	40	77.8		77.8	42.9		42.9	47.84
Monthly	0	0	0	100		100	0		0	19.57
Irregular	100	100	100	0		0	100		100	80.43

Source: Field Survey, 2006.

disease during the course of the last one year is around 20%. Incidence of waterborne disease as a quality indicator is also low in Ruppur GP as none of the households got affected by waterborne disease during the last one-year period (Table 3).

Availability of Water: Almost 60% of the sample households reported that they do not get sufficient water throughout the year. The percentage of household getting sufficient water throughout the year is reported to be the highest in Ruppur GP at around 89%. It is the lowest at around 14% in Pourandarpur GP (Table 3).

The survey results reveal that the percentage of respondents reporting taste, smell and colour of water to be bad is lower in Illambazar and Ruppur GP than in Pourandarpur. Moreover, the percentage of households affected by disease is also much higher in Pourandarpur GP than in Illambazar and Ruppur GP. It implies that quality of water is better in Illambazar and Ruppur GP compared to Pourandarpur GP. In Illambazar and Ruppur GP, the PS has a considerable role in the maintenance of piped water supply. On the other hand, in Pourandarpur GP, PHED alone maintains the piped water supply. Therefore it appears that if the PS is involved in maintenance of piped water supply, then the quality of water turns out to be better.

The quality indicators demonstrate that quality of piped water is the best in Ruppur GP. In this GP, the PHED lifts the water to the tank and purifies it. After that it is the responsibility of the PS to distribute the

water. Any problem in distribution (leak in the pipeline, contamination, etc) is taken care of by the PS. On the other hand, in the other two GPs either the PHED or PS takes the responsibility for maintenance. It appears that the division of O&M activity between two different institutions has made the system more efficient.

5 Expenditure in Water Supply

Household contribution to water supply is expected to promote a sense of community ownership, which in turn may lead to better O&M. It has been observed that most of the public water supply sources are funded by government in the survey villages. Individual households generally do not contribute to setting up of sources. Only in the case of a few schemes, households spent on O&M. Household contribution for maintenance is either monthly or irregular. The local government or the community decides the amount to be contributed and the frequency of the contribution.

Within the sample households who use piped water supply, around 48% have made contribution for maintenance. Percentage of households who contributed for maintenance is much higher in Ruppur GP as compared to the other two GPs (Table 4). In Surul village, all the households using piped water supply have made contributions on a monthly basis. The monthly contributions for standpost is Rs 8.50 in Surul village. Households of other GPs do not contribute on a monthly (or regular) basis to any of the public water supply systems.

Household contribution in water supply has been found to have a strong impact on quality indicators. Due to the high percentage of households' contributions in Surul village of Ruppur GP and Baruiipur village of Illambazar GP, the quality indicators are better in these villages. In addition, monthly contribution probably produces some extra benefit as compared to irregular contribution. Quality indicators appear to be better in Surul village where contributions are all monthly, as compared to Baruiipur where contributions are all irregular.

6 Conclusions

Quality of piped water has been observed to be better in villages where the local government participates in O&M. Quality indicators are found to be better in Illambazar and Ruppur GP where the local government participates in O&M. These indicators are worse in Pourandarpur GP where the PHED alone participates in O&M. Moreover, quality has been found to be best in Ruppur GP, where the PHED shares some of the maintenance activity along with PS. Division of responsibility according to the comparative advantage of local government and PHED has yielded the best result. Household contribution for maintenance also has been found to have a positive impact on quality of water supply services. Overall, the results of the study suggest that decentralisation has a positive impact on quality of water supply.

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