

DEMAND AND WILLINGNESS TO PAY FOR URBAN WATER AND  
SANITATION SERVICES IN BARODA

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**Abstract**

Understanding Willingness to Pay (WTP) is one of the areas of concern for appropriate pricing and cost recovery in water and sanitation services. Baroda Municipal Corporation is implementing a water supply project and has suggested revisions in tariff rates of water. This study has been carried out in this background. It has used both indirect (revealed preferences) and direct (contingent valuation) methods to study the households' behaviour. It has also made recommendations to improve cost recovery in water and sanitation sector.

**Introduction**

The issue of appropriate pricing and cost recovery from water supply and sanitation service has become very important. A major concern within this area of study relates to an understanding willingness to pay (WTP) for these services. The past policies for pricing of water and investment planning often do not capture willingness to pay for water services. Recent methodological developments use contingent valuation methods and measure compensating investments to assess WTP for such services. This paper has presented summary of a WTP study for water and sanitation in Baroda.

Baroda had a population of one million in 1991. Baroda Municipal Corporation (BMC) is implementing a Rs.66 crores water supply improvement scheme. HUDCO has sanctioned a loan worth Rs 47 crores for this scheme. BMC has suggested revisions in tariff rates of water. However, it is necessary to ascertain effectiveness of these rates. In this background this study of demand and willingness to pay for water and sanitation has been carried out.

**Need for WTP Studies**

Inadequate availability of water for domestic purpose is a major problem in developing countries. Recognising this problem, international funding agencies and governments have undertaken a number of programmes for improving water supply. Most of these initiatives are based on an approach that government should subsidise the water supply as the households are too poor to pay. The World Bank and other agencies suggest that people can and will pay 3 to 5 per cent of their monthly income for water supply.

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Both the approaches concentrate on supply to the neglect of demand and neither have successfully solved the problem (World Bank WDR Team, 1993). In this context a research programme grounded on recognition that policy and planning should be built on a better understanding of what improvements in their water supply services people want and are willing to pay. The research team set out to investigate determinants of water demand for improved water services such as socio-economic background, characteristics of existing and proposed system, price, distance and reliability. Many of the studies sponsored by the World Bank to investigate these issues. They were carried out in Brazil, Nigeria, Zimbabwe, Indonesia, Morocco, Pakistan, India, etc. Major findings of these studies have been presented in this section.

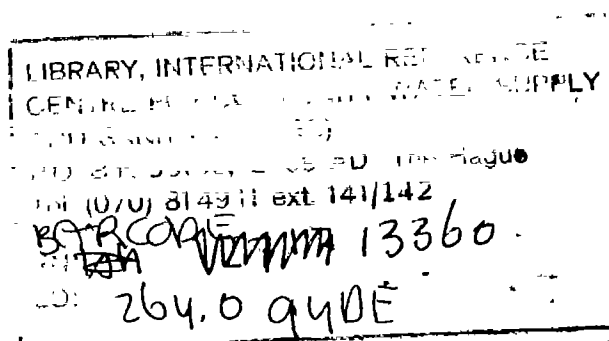
Donors and government officials are beginning to focus on financial issues, especially the generation of revenues through domestic connections, as a way to escape from the problems created by this traditional approach. This emerging consensus brings consumer behaviour as an important part of the design of water systems.

A study examines willingness to pay for yard taps, or house connections, in several towns in the state of Kerala (Singh and Ramasubba<sup>(a)</sup>, 1993). Rural systems, including those in Kerala are partially or fully funded from central government sources. All such projects must conform to inflexible design criteria including a capacity of 40 L per capita per day and (for the most part) no house connections.

This situation can be described as a low level equilibrium trap, and it characterizes piped water supply systems in much of the developing world. Systems provide a low level of service with few yard taps. The study used contingent valuation methods to analyse the potential for a yard tap-based strategy to work in Kerala by testing the sensitivity of households to the monthly tariff for water from a yard tap, the cost of connecting the house to the water main, and paying more for improved quality of service.

The analysis suggests that there is indeed potential for the system to rise out of its current trap. The real constraint in preventing hook-ups by respondents who are deterred by the high cost of a connection is probably credit market conditions rather than the connection cost itself.

Most people in Onitsha, Nigeria obtain their water from an elaborate and well-organised water vending system which is run by the private sector (Wittington and Laurie 1991). It should be relatively easy for the water authority (ASWC) to capture a large share of the water vendors' market - even if the prices charged for water from the piped system are high enough to cover the full costs of supply. The results of the household survey, however, indicate that people perceive the water available from tanker trucks and small retail water vendors to be better in quality than the water available from the old public system. Therefore, in order to increase its market share, the ASWC must not only offer a lower priced product than the vendors, but also provide a better product in terms of both water quality and reliable service. This study has demonstrated that the willingness of households to pay for improved water services in Onitsha is surprisingly high.





A contingent valuation survey was conducted in Kumasi, Ghana, to estimate households' willingness to pay for two types of improved sanitation services; improved ventilated pit latrines and water closets connected to a sewer system (Whittington and Lauria, 1993). Most households were willing to pay more for improved sanitation service than they were currently paying for their existing sanitation system (mostly public and bucket latrines), but in absolute terms the potential revenues from households are not large (about 1-2% of household income). The results of the study confirm the conventional wisdom that conventional sewerage is not affordable to the vast majority of households without massive government subsidies. On the other hand, it appears that only modest subsidies are required to achieve relatively high levels of coverage with on-site sanitation (improved ventilated pit latrines).

In 1991, micro-level research on household responses to deficient water supply by public utilities was undertaken in Faisalabad (Pakistan), Istanbul (Turkey), and Jamshedpur (India) (Bell and Joh, 1994). These surveys revealed that nearly all households in the three cities are dependent on multiple sources of water, including house taps, wells, tubewells, public taps, rivers and street vendors. Not all alternatives are available to all households. Because access to a source increases with income, poorer households bear a disproportionate share of the burden of deficient infrastructure. The private expenditures incurred for water supply indicate consumers' willingness to pay for reliable water.

In Jamshedpur, the connection charges for piped water vary between Rs.50 and Rs.500. The residents of the periurban areas, served by the local municipal authorities, incur capital costs of Rs.1500 to Rs.2000 for digging wells and Rs.4500 to Rs.9000 in installing tubewells to avoid dependence on the (unreliable) public water supply. Despite the existence of a piped water system, at least 17 per cent of the population meets 90 per cent of its water needs from wells and handpumps. Over and above the monetary costs that consumers bear, households in Jamshedpur spend, on average, two hours a day fetching and storing water. The burden of these activities falls in nearly all cases of women.

### **Methodology**

The research team used both indirect (revealed preference) and direct (contingent valuation) methods to analyse how households make their choices about water and sanitation services. The indirect method used the revealed preferences of households through the actual choices and investments made by households in situations where no piped water is available and in others where it is not adequate. It will cover aspects related to nature of capital investments made and the operation and maintenance costs incurred by the households and/or communities.

Contingent Valuation method was used to estimate for Willingness to Pay based on the current levels and preferences identified, hypothetical choices and related price ranges were worked out for each major user category. Using the approach of contingent valuation, the household responded to these hypothetic choices. Households, with house connection, may be willing to pay additional charge for improved pressure, quantity or quantity of water. Households without house connection may pay for improved public standpost or new house connection. In addition, the payments can be made in terms of one time house connection



and monthly water charge. Information regarding WTP was collected in step by step manner. Following information was collected:

WTP for	Households with house connection		Households without house connection	
	Fixed charge	Monthly charge	Fixed charge	Monthly charge
1. Improved standpost				/
2. House connection (1 to 6 hrs supply level)	/	/	/	/
3. Improved				
(a) Pressure		/		
(b) Quality		/		
(c) Quantity		/		

As far as sanitation is concerned information was collected in terms of:

WTP for	Households with sewerage connection		Households without sewerage connection	
	Fixed charge	Monthly charge	Fixed charge	Monthly charge
1. Improved public toilet				/
2. Sewerage House connection		/	/	/
3. Low cost sanitation			/	/

A survey of 550 households from different zones and type of housing was carried out. Detailed survey of 200 households among the sampled households was carried out for estimating WTP. In addition, case studies of different user groups was conducted. For estimating demand from Industrial sector survey of 40 units was carried out.

### Water Supply Project

Baroda city derives water from four sources which is equal to 173 MLD (Table 1). Per capita supply has decreased from 158 litres per day in 1981 to 170 lpd in 1991. The water is supplied for domestic, commercial and Industrial purposes. Non-domestic supply accounts for nearly 25 per cent of the total supply. Subsidy in water supply is estimated to be about 47% in 1992-93 (Table 2).





**Table 1 : Capacity of water supply system in Baroda (1971-91)**

BMC (Million Water Per day)	1971	1981	1991
Ajwa	45	45	45
Tubewells	27	27	27
Vasad well	45	45	45
Poiche well			56
Total	117	117	173
Per capita (litres per day)	252	158	170

Source: Rodell (1991)

**Table 2 : Subsidies in water supply - Baroda**

Rs./1000 litres	89-90	90-91	91-92	92-93
Cost	1.40	1.52	1.77	2.32
Revenue	0.63	0.69	0.90	1.24
% of subsidies	55	55	49	47

Source: Mehta and Satnarayan (1993)

Baroda Municipal Corporation is presently engaged in water augmentation scheme. The original estimates of the scheme is Rs 66 crores. BMC is planning to take up a water network imp.ovement scheme of Rs 10 crores and sewerage improvement system scheme. With augmentation of the water supply system, total quantity of water produced will increase from 173 to 285 MLD by the year 1996-97. Total current expenditure is estimated to increase by Rs 20 crores (Table 3). This includes increase in loan charges by about Rs.8 crores per year. Therefore, during the process of sanctioning the loan, HUDCO has insisted upon revision in water tariff.

**Table 3 : Water supply project cost - Baroda**

Year	(Rs. in lacs)			
	Loan charges	O&M	Total current expenditure	Water produced (MLD)
1992-93	523	940	1463	173
1996-97	1296	2200	3497	285

Source: Mehta and Satyanarayan (1993)

The percentage revisions of water charges vary from 10 to 90 per cent for domestic sector and for non-domestic sector. They range from 10 to 70 per cent. Assessment of revision of charges reveals that even with the revision the level of cost recovery for water sector ranges between 36 to 53 per cent. If the Corporation wants to achieve self-sufficiency in water sector, then charges will have to be revised nearly 165 per cent addition to already proposed charges (Mehta and Satyanarayan, 1993)



As there is need for increasing water charges, it is necessary to assess the willingness to pay for different groups particularly industrial and domestic users. The domestic demand has to be assessed for new connections and monthly water charges. Implications of the study findings are given here.

### Industrial Sector

Water demand for industrial sector has been separately analysed for large and small/medium sized units. The survey of large scale industries show that most industries cannot afford to rely solely on BMC water supply (Klink, 1992). The results of the survey reveals the following things. Operation and maintenance cost are a substantial part of total average cost of non-municipal water supply. Industries using tubewell water as standby have average costs higher than BMC, considering quality of tubewell water. Minimum cost rules are not the only factor in these investment decisions. Benefits of having an own supply system given unreliable municipal supply play an important role.

Many of the small and medium industries have also made investment in private sources (70%). They need additional municipal water, however, are not WTP to pay more than present charge of water. Therefore, BMC may not be able to cross-subsidise domestic users beyond a certain limit.

### Domestic Water Situation

- (a) Source: Conventional method of analysing sources of water as individual house connection, public taps, tubewell/bore does not indicate the true situation. Households are using a combination of methods to obtain water. Existing sources of water supply reflects water supply situation. Therefore, special code was developed for source of water supply. Distribution of households by source of water is given in Table 4. It reveals that though 176 thousand households have access to house connection only 40 thousand use it exclusively.

**Table 4 : Distribution of household by source of water - Baroda**

Source	% of HH	No. of households
1. Municipal house connection		
(a) Individual	18.9	39700
(b) Shared	7.0	14700
(c) Individual/shared with handpump/pump/ underground storage	29.4	61700
Sub-total (1)	55.3	116100
2. Bore/tubewell		
(a) Individual/shared municipal and bore	16.0	33600
(b) Private/shared bore	3.0	6300
Sub-total (2)	19.0	39900
3. Public source		
(a) Individual/shared municipal with public sources	12.9	27000
(b) Public handpump/standpost	12.9	27000
Sub-total (3)	25.8	54200
Total	100.0	210000
House connection (1+2a+3b)	84.2	176700



About 15 thousand have to share it with other households. Other 62 thousand have to use handpump, pump and underground storage to use water from house connection. As many as 60 thousand households with house connection have supplement this supply with bore or public sources.

- (b) Water supply from all sources is estimated to be 95 lpcd and 71% it is from house connection. Only 18% of the total households are satisfied with existing level of municipal supply.
- (c) Every third household in the city has to spend time for collection of water. As many as 70 thousand households in the city, on an average, spend one hour per day for water collection. Most of this time is spend by women and children. Opportunity cost of this time at Rs.one per hour is estimated to be Rs.2.6 crores per year (Table 5).

**Table 5 : Opportunity cost of time spent for collection of water - Baroda**

Households spending time for water collection	Indicator
(a) % of total households	33.3
(b) Number of households	70000
(c) Average time/HH/day	1.0
(d) Total time/day (hrs)	70000
(f) Opportunity cost/year of time* (Rs. in crores)	2.6

\* @ Rs. one per hour

#### Expenditure

- (a) Expenditure on water has been assessed in terms of municipal and non-municipal payment. About 70% of households are paying water charges. Annual payment to the corporation is Rs.102 per household.
- (b) About 49% of households have made capital expenditure on bore, filter, pump, underground storage, etc. Average non-municipal expenditure is Rs.1345 per household. Total non-municipal expenditure in the city is calculated to be Rs.28 crores. It is about 40% of original cost of the water supply augmentation scheme.

**Table 6 : Annual expenditure on water supply Baroda**

Type	Per household* (Rs.)	All households (Rs in crores)	% expenditure to HH income
a) Municipal	102	2.14	0.26
b) Non-municipal	437	9.18	1.10
Total	539	11.32	1.36

\* Capital cost annualised at 15% interest with 10 years repayment. Per household cost among all households.



- (c) Annual expenditure has been estimated under certain assumptions (Table 6). Total annual expenditure for all households of the city is Rs.11.3 crores and out of it only 19% made to the municipal corporation. Implicit rate for municipal and non-municipal water supply works out to be Rs.3.0 per 1000 litres which is two times the municipal rate (Rs.1.5 per 1000 litres).
- (d) Annual expenditure as percentage of household income is calculated to be 1.36. It is only 0.26% for municipal expenditure. It is not surprising that 65% of households have expressed that municipal corporation should charge for water supply. Monthly electric charge is Rs.160 per month per HH which is 4.5% of the income.

#### WTP for water

- (a) Households without house connection account for 16% of total households. About 85% of them have expressed willingness to pay (WTP) for improved standpost and average monthly payment works out to be Rs.7.5 per household.
- (b) Among households with house connection, 63% are WTP for better pressure and corresponding figure for improved quality is 11%. Average monthly WTP for improved pressure is Rs 25 per household which is about 3 times the present rate. Improved pressure along could bring an additional income of Rs.2.26 per year (Table 7).

**Table 7 : Additional income from improved pressure - Water supply project, Baroda**

Households desiring improved pressure	Indicator
i) % of households with house connection	63
ii) No. of households (lacs)	1.11
iii) Additional amount (Rs./month)*	17
iv) Annual additional charge (Rs. in crores)	2.26

\* excluding present charge

- (c) Households with house connection were asked how they will respond if monthly water charge is increased without any increase in the supply level. As many as 79% of the households have expressed that they would continue to use house connection if monthly charge is increased from present Rs.8 to 25 per household. Perhaps it reveals that the households have the affordability to pay much higher water charge than present level
- (d) About 58% of households are WTP one time connection charge. Average connection charge is Rs.726 per HH (among households who are willing to pay). Total capital revenue from these connections will be Rs.8.8 crores. Little over 95% households have expressed WTP monthly charge of Rs.23.9 per HH. Annual water charges are estimated to be Rs.5.8 crores.





- (e) Annual WTP per household has been estimated as 15% interest on capital charge plus annual maintenance charge. It is calculated as Rs.339 per household (among all household). Households are willing to pay 3.4 times of present municipal expenditure. However, expressed WTP is only 60% of present expenditure on water. Total revenue from water supply will be Rs.7.11 crores per year.
- (f) Annual WTP is 0.85% of household income (Table 8). It decreases with rise in ~~100%~~ income. It is for the lowest income group (below Rs.1500) and the corresponding figure for the highest income group (above Rs 6000) is 0.49%. WTP for the highest income group is Rs.439 and it is only 1.6 times WTP for the lowest income group (Rs.275). There is limited scope for cross-subsidy among different income groups.

**Table 8 : WTP for water as percentage of income - Baroda**

HH income group (Rs.)	No. of households	Annual WTP (Rs /HH)	% WTP to HH income	WTP to average WTP (In each class)
Upto 1500	35700	275	1.90	0.81
1501-3000	81900	340	1.26	1.00
3001-4500	39900	326	0.72	0.96
4501-6000	33600	363	0.58	1.07
6000+	18900	439	0.49	1.30
	210000	339	0.85	1.00

- (g) In spite of the fact that expressed WTP is more than three times the present municipal payment, domestic sector alone will not be able to meet the current expenditure due to increase in loan and O&M changes (Table 9).

**Table 9 : Current expenditure and revenue for water supply sector in Baroda - 1996-97**

Annual current	Amount (Rs. in crores)
a) Expenditure**	33.49
b) Revenue from domestic sector*	8.45
c) Net Gap	24.94

\* Assuming increase in number of households by 2.4% per year and WTP to increase by 20%.

- (h) **Procedure for New Connection**

Procedure for obtaining new connection is very time consuming and cumbersome. Households have to take help of licenced plumbers for obtaining this permission. There is reasons to believe that some households have paid speed money for this purpose. It is estimated that about 10% of the house connection in the city are unauthorised. House



connections are extended to only authorised residents whereas GEB has the policy of extending electricity even in unauthorised residential areas.

(i) **Role of neighbourhood groups**

A large number of community based systems are operating in the city. These include community managed distribution of municipal water among different flat owners in GHB colony, management of common bore in unauthorised low income colony, and payment for public standposts in slum areas. A community based low cost infrastructure financing association is also working in the low income area.

Many community based system have been observed in low income areas. However, in some high income areas, neighbourhood groups have not been able to help themselves. These high income groups continue to have low level of municipal services. It is felt that neighbour groups play an important role in obtaining municipal services in different areas.

**Sanitation**

- (a) A very <sup>large</sup> proportion of households have access to sewerage connection (63%). About 14% use toilets with septic tanks/soak pits. Another 6% have no facility. As many as 73% of the household are satisfied with existing system. Thus unlike water supply, sewerage service is not perceived as a major problem. Annual expenditure on sanitation is Rs.136 per household and only 26% of it on non-municipal aspects such as septic tank/soak pits.
- (b) As a large proportion of households are satisfied with existing sewerage system, only 27% want to pay connection charges. Average charge per household is Rs.161 (among all households).
- (c) Annual WTP for sanitation is Rs.144 per household. Total annual payment is estimated to be Rs.3.0 crores. It reveals that major sewerage improvement schemes cannot be taken up with huge subsidies. Therefore, it will be necessary to combine water and sanitation charges. Monthly WTP for the two sectors is Rs.40 per HH. The WTP as percentage of income is 1.21%. It ranges between 0.72 to 2.7% and decreases with rise in household income.

**RECOMMENDATIONS**

The principle of full cost recovery is in consonance with the new economic policy. Households are also willing to pay. For sustainability of the water supply system BMC should accept the principle of full cost recovery and achieve it gradually over the next few years. There are also recommendations of the recent Working Group on Financial Issues and Cost Recovery, set up by Ministry of Urban Development, Government of India.

Strategy to improve cost recovery in water supply and sanitation sector in Baroda is presented in Tables 9 and 10.



**Table 9 : Strategy for water supply - Baroda**

Category	No. of households	Strategy
(A) Households without house connections (HC)		
i) WTP for HC	23000	Encourage new connection. Group loan for connection charge. Improved standposts with payment
ii) Low WTP for HC	11000	
(B) Households with house connection		
i) Water problems and WTP	134000	Improved pressure and quantity of supply Awareness programmes for increased water charges
ii) Less water problems and low WTP	42000	

**Table 10 : Strategy for Sanitation - Baroda**

Category	No. of households	Strategy
(A) Households without sewerage system		
i) Low WTP for improvement	21000	Low cost sanitation with loan facility Encourage new connections Group loans if necessary.
ii) WTP for improvement	57000	
(B) Households with sewerage connection and Low WTP	142000	Awareness programme for increased charges. Linkages with water charges

Specific recommendations are:

**(a) Increase local knowledge about cost of the services**

There is need to carry out an awareness programme to increase local knowledge about cost of municipal and non-municipal water and sanitation. Information should be provided regarding efforts made by women in collection of water, benefits of the two basic services and indirect environmental cost of using ground water resources.

**(b) Launch campaign on improved water supply at appropriate prices**

A campaign should be launched for consciousness - raising and mobilisation on the theme of "improved water supply at appropriate price". Linking of service improvement with increase in the prices will help in raising public support.

**(c) Raise water charges**



Minimum water tax/charges should be gradually raised from existing Rs.7.50 per month to Rs.25 per month. Concept of minimum charge should also be introduced for sewerage tax. Connection charge for domestic water and sewerage is to be raised from existing Rs.250 to Rs.750 and Rs.1000 respectively. However, life line supply should be provided to the urban poor.

**(d) Integrate water and sanitation charge**

Water supply and sanitation charges should be integrated to increase cost recovery.

**(e) Shift distribution to local groups**

Responsibility of distributing water and sanitation services should be shifted to local groups. The aim should be to encourage these groups to take the responsibility with view to enhance management. The groups could be made responsible for collection of charges.

**(f) Involve ward committees**

As per the new 74th Constitutional Amendment bill (Nagarpalika bill), committees will be formed in different wards. Members of these committees should be involved in this programme.

**(g) Regularise unauthorised connections**

Many development authorities and urban local bodies have launched the programme for regularising unauthorised residential colonies. Similar programme should be introduced for regularising unauthorised water and sanitation connections.

**(h) Simplify procedures**

Existing time consuming and cumbersome procedure for new service connection should be simplified. Present system of providing individual house connections to authorised residents should be changed. GEB provides electric connections households in unauthorised low income areas and similar approach could be adopted for water and sewerage system.

**(i) Need to Market water and sanitation**

There is need to involve marketing experts to convince policy makers and communities of the advances of improved sanitation and water supply. Political support will be required to achieve these objectives. Marketing of the services could also create a demand for these services at the community group level. Once there is a demand, private enterprise will seize the opportunity. Licenced plumbers should be involved in the market programme.

**(j) Support community based infrastructure finance system**

A community based infrastructure finance system is operating in selected low income areas of the city. This system should be replicated in other areas and supported by the financing agencies.





### **(k) Delink service taxes from ARV**

At present, service taxes are based on Annual Rateable Value (ARV) of the properties. This ARV often does not reflect market rent due to associated problems of Rent Control Act. It is necessary to delink service taxes from ARV. The service charge should be based on floor area, use and zone. General tax may continue to be based on ARV.

### **Conclusion**

Total investment in public issues of companies in Baroda during 1993-94 was about Rs.300 crores. It was 2.3% of total investment in the country. They have the affordability, and WTP to pay for improved water supply. Issue is how to capture this WTP in terms of the cost recovery. A campaign should be launched in the city with the theme of "Improved Water Supply at Appropriate Price". This should be followed up with improvement in supply, increase in water charges, simplification of procedures, etc.

### **Reference**

- Altaf, M.A., Jamal, H. and Whittington, D. (1993), "Rethinking Rural Water Supply Policy in Punjab, Pakistan" Water Resources Research, Vol.29 No.7, pp 1943-1954.
- Bell, M., Joh, B. and Others (forthcoming), "Reliability of Urban Water Supply in Developing Countries - The Emperor has no clothes" World Bank Research Observer (World Development Report, 1994).
- Joshi, R (1990), "Augmenting Capital Resources for Urban Development - Case Study of Baroda Municipal Corporation", Ph D Thesis, M.S.U., Baroda.
- Klink, J. and Sharma, S. (1992), "Appraisal of Water Supply Project - Case Study of Baroda", HSMI, HUDCO, New Delhi.
- Rodell, M.J. (1992), "Appraisal of Local Govt. Financial Capability and Cost Recovery of Water Supply Projects - Baroda" HSMI, HUDCO, New Delhi.
- Singh, B., Ramasubramanian, R. (1990), "Rural Water Supply In Kerala, India - How to Emerge from a Low Level Equilibrium Trap", Water Resources Research, Vol.29 No.7 pp 1931-1942.
- Whittington, D. and Laurai, D.L. (1993), "Household demand for improved sanitation services in Kumasi, Ghana - A Contingent Valuation Study" Water Resources Research 29(6), pp1539-1560.
- World Bank Water Demand Research Team (1993), "Demand for Water in Rural Areas - Determinants and Policy Implication", World Bank Research Observer, Vol.8, No.1, pp47-70.
- Whittington, D. and Laurai, X. (1991), "A Study of Water Vending and Willingness to Pay for Water in Onitsha, Nigeria", World Development, Volume 19, No.2, pp 179-198.

