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## HOUSEHOLDS' WILLINGNESS TO PAY FOR IMPROVED SANITATION IN KUMASI, GHANA: RESULTS OF A CONTINGENT VALUATION STUDY

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*Experience in Kumasi, Ghana, shows that contingent valuation surveys can be successfully conducted in cities in developing countries to obtain useful information on household demand for public services like improved sanitation.*

In the fall of 1989 a survey of over 1200 households was conducted in Kumasi, Ghana, to determine how much people were willing to pay for two types of improved sanitation systems: the Kumasi Ventilated Improved Pit Latrines (KVIPs) and water closets (WC) connected to a piped sewerage system. The contingent valuation method (CVM) had previously been used to estimate household demand for improved water supply in several countries (see, for instance, Infrastructure Note: Urban No. OU-1); but this research project was the first time the method (CVM) was used to estimate household demand for improved sanitation. The results provide additional evidence that the method can be used to estimate household demand for improved urban sanitation services.

### METHODOLOGY

The contingent valuation survey was conducted in collaboration with the UNDP-funded Kumasi Sanitation Project as an input for their on-going Strategic Sanitation Planning process. A stratified random sample of households was selected from all parts of the city. Enumerators described the different sanitation options to respondents by reading from a prepared text and by showing them pictures and diagrams. The respondent was then asked whether he or she would choose to pay a stated monthly fee for one of the specified technologies. Depending on the respondent's answer, the enumerator would then raise or lower the fee and ask whether the

respondent would be willing to pay the new monthly fee. Finally each respondent was asked his or her maximum willingness to pay (WTP) for the service described. Both tenants and landlords were interviewed.

### RESULTS

Table 1 presents the results of the survey for groups of households with different water and sanitation situations. Most households were willing to pay about as much for a KVIP latrine as for a WC connected to a conventional sewerage system (US\$1.43 vs. US\$1.47). This was counter intuitive, and further underscores the need for such studies. On average, households without water connections said that they were willing to pay US\$1.56 per month for a water connection and US\$2.54 per month for both a water connection and a WC connected to a sewer. There were substantial differences in the mean WTP bids for KVIPs between households currently using public latrines and households using other sanitation system. For example, for households with similar socio-economic background, those using public latrines were willing to pay about 34 percent more for a KVIP than those with bucket latrines.

Multivariate analyses indicated that the principal determinants of households' willingness to pay for improved sanitation services are household income, whether the respondent's household is a home owner (possibly a landlord) or tenant, the household's current

expenditure on sanitation, and the respondent's level of satisfaction with the household's existing sanitation system. Surprisingly, neither the education level of household members nor social and cultural variables had much additional effect on individuals' WTP for improved sanitation or water services.

An important issue is whether the responses to the contingent valuation questions are reliable and accurate reflections of households' true preferences for improved sanitation services. It is impossible to know with certainty whether households' answers would be accurate predictors of behavior if respondents were actually confronted with the choices posed in the questionnaire, but several tests were carried out to check the reliability of the WTP bids. None of these tests or checks provides a basis for believing that respondents gave implausible or hypothetical answers to the WTP questions, or that they acted strategically in an attempt to influence the results of the survey.

For example, very few people refused to be interviewed and almost no one indicated an unwillingness to pay at least something for improved sanitation services. If substantial numbers of respondents gave "much higher" bids than the mean, this too would have raised questions about whether their bids accurately reflected real budget constraints or whether they might be answering strategically. This did not happen either: very few respondents gave WTP bids more than twice as much as the mean bid. Also, a simple consistency check of the data was made to compare each household's WTP bid with its current expenditure on sanitation. The vast majority of respondents bid more for improved sanitation than they paid for their existing sanitation service.

It is interesting to note that in a follow-up IDA-financed project which involves loans to households for the construction of their latrines, beneficiaries complained whenever the monthly repayment rates exceeded the average value of the willingness to pay bids found in the survey.

## POLICY IMPLICATIONS

The results of the survey indicate that conventional sewerage is not affordable to the vast majority of households in Kumasi unless very large subsidies are provided. There was, however, a widespread acceptance of KVIPs, and with a relatively modest aggregate subsidy of a few million US\$ (for a city of 600,000 population), most of the population of Kumasi could be provided with KVIPs in their housing compounds. Figure 1 shows the

percent of households in Kumasi presently without WCs that could be served with KVIPs if different levels of subsidies were available to reduce the cost to the household of a KVIP.

The study also highlighted an additional issue: a narrow focus on technological options for improved sanitation and financing of government subsidies is likely to overlook important relationships between the demand for improved sanitation and the demand for housing and capital. The information on household demand for improved sanitation services which was collected as part of this research assumes that households' expenditures on other housing services remain essentially unchanged. Sanitation facilities should, however, be conceived as just one part of a package of services provided by an individual's housing. Currently the housing market in Kumasi is highly distorted by rent control regulations. If policy reforms were introduced to eliminate some of the distortions in the housing market, it is likely that this would have an impact on the demand for improved sanitation. Sanitation planning should therefore be closely coordinated with housing policy changes.

Similarly, the subsidies required for KVIPs are greatly affected by the assumptions about financial market conditions. Policy reforms in the financial sector which permit the operation of more efficient capital markets could have a direct and important impact. A focus on "demand-side" issues in sanitation planning thus means much more than simply determining households' WTP for a limited range of technological options. Planners, engineers, and policy analysts working in the "sanitation sector" must take a broader perspective on the kinds of policy interventions that are necessary to improve sanitation conditions in developing countries.

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### TO LEARN MORE

Whittington, Dale and others. "Household Demand for Improved Sanitation Services: A Case Study of Kumasi, Ghana." (forthcoming).

Brown, F.A. and others. "Strategic Sanitation Plan for Kumasi." (forthcoming).

Whittington, D., J. Briscoe, X. Mu, and W. Barron, 1990. "Estimating the Willingness to Pay for Water Services in Developing Countries: A Case Study of the Use of Contingent Valuation Surveys in Developing countries." *Economic Development and Cultural Change*. Vol. 38, No. 2. pp. 293-312.

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Table 1

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**AVERAGE HOUSEHOLD WTP BASED ON EXISTING SANITATION**

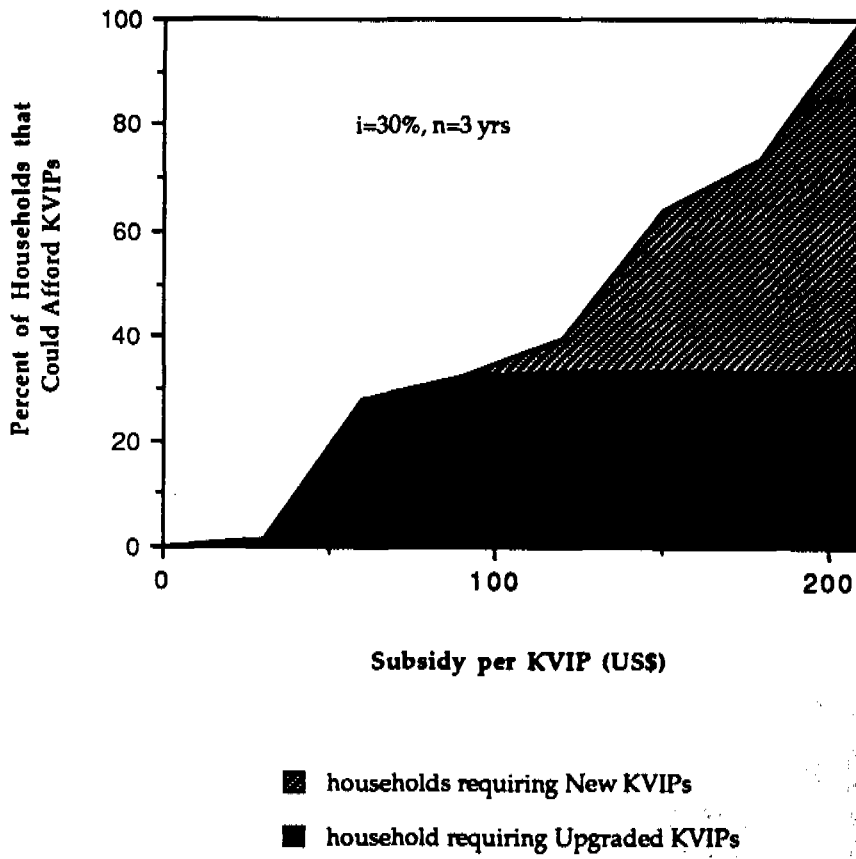
Existing Sanitation	Willingness to Pay (US \$/month) For				
	KVIP	WC & Sewer	Sewer Connection	Water	WC & Water
<b>Households with water</b>					
Bucket Latrine	1.17	1.25	--	--	--
Public Latrine	1.57	1.67	--	--	--
Pit Latrine	1.26	1.33	--	--	--
WC	--	--	1.32	--	--
Other	1.25	1.27	--	--	--
<b>Households without Water</b>					
Bucket Latrine	1.07	--	--	1.71	2.60
Public Latrine	1.51	--	--	1.12	1.90
Pit Latrine	1.72	--	--	1.61	2.72
Other	1.35	--	--	1.33	2.08
Men	1.47	1.43	1.32	1.56	2.54

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in 9065  
 302.7 9240

FIGURE 1

### Effect of Subsidy per KVIP Module on Sanitation Coverage in Kumasi



see also isn 9953