Final Report

Urban Poor Data Acquisition and Technical Evaluation: UPDATE Project
United States Asia Environmental Partnership (USAEP), FORKAMI, and Research Triangle Institute
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Contents

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1. Introduction

This Final Report for the USAID/USAEP Urban Poor Data Acquisition and Technical Evaluation (UPDATE) Project serves several purposes.

The report provides an overview of the UPDATE Project from its inception to the national seminar (January, 2002 to September 24, 2002, respectively). It presents a complete chronological summary of the project's activities and evaluates what has been accomplished to-date.

The Final Report presents analysis of the data obtained from the UPDATE surveys conducted in Kotamadya Semarang, Kabupaten Tangerang, and Kabupaten Indramayu. From these data and their analysis, we are able to observe several important characteristics and tendencies of the water sector environment currently faced by the urban poor. From these observations about the current status of the urban poor, we draw several conclusions related to the prospects of the urban poor and the water utilities that serve—and *could* serve—them.

In the Final Report, we also discuss the next round of UPDATE activities focusing on developing supply-side data and analysis to accompany the fundamentally demand-side work of UPDATE's first phase.

The Final Report consists of the following sections:

- **Section 2** describes the overall goals, background, and key results of the UPDATE Project.
- In **section 3**, we describe the activities that were carried out to achieve these goals.
- A detailed presentation and discussion of the survey results from UPDATE's three sites make up the majority of **section 4**. Section 4 makes up the bulk of the Final Report.
- **Section 5** describes tools that the UPDATE Project has developed for use by PDAMs in Indonesia.
- The main text of the Final Report concludes in **Section 6**, with a discussion of suggested next steps and the UPDATE-2 project.
- **Appendix 1** contains the survey instrument developed and used by the UPDATE team within the three survey sites. [Note that only the English language version of the survey instrument is contained in the English language version of the *Final Report*. Those interested in the Bahasa Indonesia version can contact Stephen Dunn of Research Triangle Institute at smdunn@rti.org or Job Supangkat of FORKAMI at forkami@cbn.net.id .]
- A simplified version of this instrument—designed for use by PDAMs—is contained in **Appendix 2**.

2. Project Background, Goals, and Key Results

background

A reliable supply of safe, potable water is an important aspect of household survival—it is essential for consumption, cooking, and personal hygiene. Lack of access to safe water can prevent adult family members from being healthy enough for productive work and can create health problems which prevent children from regularly attending school. Obtaining safe water is, therefore, not only one of the most important tasks of a well-functioning household, but also a critical aspect of development.

Many families throughout the world are fortunate enough to be connected to piped water supply systems that reliably deliver safe, potable water via a tap in the home. For many of these households, their supply of water is an unnoticed element in the background of their lives. An important element, to be sure, but one that they are hardly aware of. Water is there when the tap is turned on and their monthly water bill is not a major component of household expenditure.

Many more households, however, are not so fortunate. They lack a direct supply of water to the home and often must devote a large share of monetary and other resources to obtaining water. For these households, water is not a "background" issue. It is an important aspect of their daily lives and a major component of household expenditure.

In Indonesia, large numbers of poor households fall into this latter group. They live in housing that is not directly connected to PDAM water systems or to the few private providers that have emerged in some larger metropolitan areas. In some areas, these households are able to obtain water from wells, springs, or other sources that, when treated in a simple manner within the home (primarily via filtering and/or boiling), can be made potable.

This process is understandably more difficult—and is often impossible—in urban settings. Water obtained from shallow wells in many cities is now polluted due to high population densities, a nearly universal lack of adequate sewerage systems, and nonexistent or un-enforced environmental controls. In many coastal cities, even deeper wells now draw only excessively saline water due to intrusion of salt water from the nearby sea.

Indonesia also has instituted a system of social tariffs which explicitly limit the price per-volume that can be charged to customers from low income groups.[1] These social tariffs (set well below a level that would allow PDAMs to operate on a full-cost recovery basis) act to discourage PDAMs from extending piped water service to the urban poor. When faced with the choice between selling water to the poor at a loss or not providing service at all, many PDAMs—most of which are already facing a tenuous financial situation—elect not to serve the poor.

For this combination of reasons, many urban poor households must rely on purchases of water from private water vendors (*penjual air*). These water vendors typically deliver water to non-PDAM-connected households in small containers called *jerigens*, which normally contain 20-

[1] The Department of Home Affairs has issued regulations (Kepmendagri No. 2 of 1998 and the supporting Ministerial Instruction No. 8 of 1998) that local government owned water enterprises should limit tariffs in low income areas. These "social" tariffs should be set so as to allow enterprises to recover only their costs of operations and maintenance, but not depreciation or interest due on loan repayment.

40 liters. Penjual air typically purchase water from middlemen (*broker air*) who have, in turn, purchased water from the local PDAM. Each participant in this process (reasonably) expects some reward for his efforts and outright costs. The result is that the a large majority of the urban poor pay a per-volume price for water far above that paid by (typically better-off) households with PDAM connections.

project goals

The overall goal of the UPDATE Project has been to develop statistically-sound, survey-derived analysis that could quantify the situation described above. While there has long been anecdotal evidence that the urban poor—who typically lack direct connections to local government owned water enterprises (*Perusahaan Daerah Air Minum*, or PDAM)—must often pay far more for water than those with PDAM connections, existing data on the subject is scarce. Data on the preferences of the urban poor, moreover, are almost completely lacking.

The UPDATE project sought to address these gaps by investigating the following questions:

- What share of urban poor households rely on penjual air for water?
- What prices do the urban poor pay for water from penjual air?
- How much do the urban poor spend per month on vendor-supplied water?
- What other source of water are available to the urban poor?
- Do the urban poor wish to be connected to PDAM water systems?
- What factors impact their willingness to be connected?
- How much are the urban poor willing to pay for connections and tariffs?

Because the status of the urban poor and water sector issues are both critical development topics for Indonesia and other developing countries in Asia, the time is ripe for further analysis of these areas. In the longer term, such information should help lead to better service and network-expansion decisions by PDAMs, pricing that more accurately reflects the value of water service to poor households, and better policies to guide the water sector. Also, as decentralization proceeds in Indonesia and as opportunity for local government flexibility in delivery, pricing, and management of services expands, local governments need information and tools that can help them better serve more of their constituents.

To address these goals, the UPDATE Project carried out detailed household surveys in three locations—Kotamadya Semarang, Kabupaten Tangerang, and Kabupaten Indramayu. The results of these three surveys are highlighted immediately below and discussed in detailed in section 4.

While results from a sample of three locations cannot, of course, be generalized to *all* of Indonesia's cities, the results *do* provide information that should be a useful aid in updating and improving national policy guidance and specific relevant regulations, such as *Kepmendagri* No. 2 of 1998 cited above.

The tools that were developed under the UPDATE Project have now been thoroughly tested and can be applied in other locations throughout Indonesia.

key results

Analysis of data from the three survey sites reveals several main results:

- Within many areas of the kotamadya and kabupaten surveyed by the UPDATE Project, non-PDAM-connected urban poor households are largely dependent on water from private water vendors (*penjual air*).
- Non-PDAM-connected urban poor households pay substantially more for water on a per-volume basis than PDAM-connected households.
- Total monthly water expenditure by non-PDAM-connected urban poor households is greater than typical monthly expenditure for PDAM-connected households.
- For non-PDAM-connected urban poor households, total monthly water consumption per household member is well below the level established as necessary to meet national and international health norms.
- For non-PDAM-connected urban poor households, expenditure on water consumes a sizable portion of total household income and makes up a large share of total household expenditure.
- The share of income devoted to water expenditure is substantially higher for the poorest households surveyed under the UPDATE Project—the poorest of the poor are the most severely impacted by being denied access to PDAM connections.
- Non-PDAM-connected urban poor households surveyed are willing to pay prices for PDAM-supplied water far in excess of current PDAM tariffs.
- The desire of non-PDAM-connected urban poor households to connect to their local PDAM system varies across the three areas survey and appears to be influenced by respondent perceptions of the quality, convenience, and cost of PDAM service.

3. Project Strategy and Activities

Broadly speaking, the UPDATE Project consisted of four phases:

- an Inception Period of approximately one month,
- a three-month period during which selection of participating PDAMs was finalized,
- a six-month period of survey implementation and analysis, and
- a one-month period of concluding activities consisting of local- and national-level workshops.

In the following subsections, we briefly describe the main activities that took place during each of these periods.

3.1 Inception Period

The Inception Period for the UPDATE project took place in January 2002. During this time the project's Team Leader traveled to Indonesia and work with the local team commenced.

Following refinement of the project Terms of Reference, initial activities during the Inception Period focused primarily on consultations with project stakeholders, visits to potential survey sites, and development of a draft survey instrument.

consultations with project stakeholders

During the course of the Team Leader's three week mission to Jakarta, meetings were carried out with USAEP/USAID, FORKAMI, PERPAMSI, GTZ (*Gesellschaft für Technische Zusammenarbeit*, the German Agency for Technical Cooperation), USAID's PERFORM Project (Performance Oriented Regional Management).

Discussions covered the goals of the UPDATE project, the specific workplan developed to address those goals, site selection goals and selection criteria, the role that stakeholders could play in the UPDATE project and in expanding water service to the urban poor, the needs and constraints of the urban poor, PDAM attitudes toward serving the urban poor, the attitudes of other local government service providers and officials toward the urban poor, and many other topics. All of these discussions illustrated that there is a high level of interest in water issues facing the urban poor.

visits to potential survey sites

During the Inception Period, the UPDATE Team devoted significant attention to developing selection criteria for survey sites. Because the goal of the project was to learn about the situation faced by the urban poor who lack PDAM connections and who are dependent on *penjual air*, it was decided that locations where the poor had access to high-quality well (or other traditional sources of) water would be excluded. In addition—because later project efforts will focus on financial analysis of actually extending piped water service to the urban poor—it was decided that PDAMs in all survey locations should have excess water capacity (or potential excess capacity).

Members of the UPDATE team traveled to potential survey sites that met these criteria, including Kabupaten Serang, Kota Cirebon, and Kota Semarang. The team also visited Kelurahan Kamal Muara (North Jakarta) which did not meet the established criteria, but was deemed to be a useful location for pre-survey research. During visits to these locations, the UPDATE Team met with PDAM officials and staff, other local government representatives, local residents, and staff and officials from local NGOs that represent/serve the urban poor (and that serve other local residents). Discussions covered a range of topics similar to the discussions with project stakeholders. In addition, the team discussed the willingness of the PDAM and local government to support the UPDATE team's work during the survey process.

Following the Team Leader's January mission to Indonesia, the local UPDATE Team also visited Kabupaten Tangerang and Kabupaten Indramayu.

development of draft survey instrument

Based discussions with stakeholders, visits to potential survey sites, past survey efforts conducted by members of the UPDATE Team (in Indonesia and abroad), and a review of the existing water sector- and poverty-focused survey literature, the UPDATE team developed a draft survey instrument. The survey instrument was tested in several locations in and around

Jakarta during and immediately following the Inception Period. The final version of the survey instrument in attached in Appendix 1. A simplified version designed for use by PDAMs without project assistance is contained in Appendix 2.

3.2 Sampling Strategy

Before proceeding to discussion of the survey process for each UPDATE site, it is important to discuss the overall sampling strategy used.

As with any sample survey, the first task facing the researcher is identification of the population of interest. The **population** is the group about which the researcher wishes to draw inferences from the sample. A **sample** is a subset of the population which the interviewer will examine in order to learn about the population. Proper sample selection is therefore critical if the researcher wishes to have confidence that the generalizations drawn from the sample can, in fact, be generalized to the population as a whole. The **unit of observation** is the type of entity that will be examined (interviewed). For the UPDATE surveys, the unit of observation is the household and interviews were conducted with household heads and spouses of household heads.

As described in section 2, above, the focus of the UPDATE Project is urban poor households that rely on *penjual air* for water for use within the household. These households represent the population about which the UPDATE surveys are designed to learn. The unit of observation for the UDPATE surveys is individual urban poor households.

What does the nature of the population under study mean for sample selection? Several things:

Sample Selection Criterion 1. First, the focus of the UPDATE Project was not *all* households within the legal boundaries of the three cities, but rather only households that are largely reliant on *penjual air* for water. This restriction meant that the surveys were carried out in areas that met two criteria. The survey was carried out in areas of the three cities that (i) do not have PDAM service and (ii) do not have access to alternative (non-PDAM) sources of a sufficient quantity of quality water.

Sample Selection Criterion 2. Further, we were not interested in *all* households that are largely reliant on *penjual air* for water within three UPDATE cities. We were interested, rather, in *poor* households. We therefore eliminated non-poor households from our sample.

Operationally, these two criteria were met in the following way.

Sample Selection Criterion 1. During pre-survey visits to the three locations, the UPDATE team conducted assessment visits to locations throughout the city, met with PDAM and local government officials and staff, reviewed PDAM service area data and other data, met with district and sub-district governmental and non-governmental organizations, and met with households. These meetings and assessment visits allowed the UPDATE Team to identify those areas within each city where PDAM service was not available and where *penjual air* were an important source of water supply. (While this process was carried out in a thorough and organized way, it is frankly not difficult to identify these areas. Often, when one looks down a street in such an area, several *gerobak* (carts which *penjual air* use to transport *jerigens*) can be seen on each block.) Within each city, kelurahan (and sometimes entire kecamatan) were eliminated from consideration because either PDAM connections were available to the poor or adequate source of water from traditional sources were available.

Sample Selection Criterion 2. As the meetings described above were carried out, the UPDATE Team collected a wide range of data on the relative income levels and socioeconomic status of households in each city. A source that was particularly useful in identifying the number of poor households in each are was the SEAB program (*Subsidi Energi Air Bersih*, or Energy Subsidy for Clean Water). Data from the local office of the Central Statistics Bureau (BPS, or *Buro Pusat Statistik*) was also helpful. Within each kelurahan sampled, individual street level assignments were made to enumerators.

Sample Selection Criterion 3. Households from illegal (squatter) areas on the fringes of the three cities were not sampled. These areas were excluded because they are not legally part of the cities being surveyed.[2] The water constraints and issues facing residents of these areas are important. As verified by the results reported in section 4.4, the vast majority of households sampled (over 95%) are the legal, registered residents of their dwelling and have the required residence documents [KK (*kartu keluarga*) and KTP (*kartu tanda penduduk*)].

Sample Size. Using standard statistical tables, sample sizes for each city were chosen to ensure a 95% level of confidence and 5% confidence intervals (95%/5%). In terms of interpretation of results, this means that for individual figures reported, we can be 95% certain that the estimated figure is within ±5% of the true figure for the population. (Final sample sizes were actually calculated using the total number of households in the target population rather than the number of poor households. Using this larger number of households ensures that reported results are, in fact, slightly more accurate than 95%/5%. Because of the non-linear nature of the formula for sample size determination, the number of extra households and the resulting gain in accuracy are not large.)

3.3 Enumerator Training

Prior to survey fieldwork, a one-day training workshop was held for enumerators.[3] The enumerator training workshop for each of the three sites survey site was designed and managed by members of the UPDATE Team.

Enumerator training covered:

- the overall purposes of the UPDATE study
- the importance of enumerators within the study
- a thorough review of the questionnaire
- discussions of interview data
- discussions of the opening statement
- discussion of bias (definition, deleterious effects, the ways in which bias can be introduced into interviews, and strategies for minimizing opportunities for introduction of bias)
- numerous simulated interviews and role playing involving trainers and *all* enumerators
- sampling (the nature of the sampling plan, the importance of the plan, location assignments, and household selection)

[2] Because fringe squatter areas are not part of the formally recognized portion of the cities, PDAMs are not legally allowed to extend service to residents of these areas.

[3] Enumerators were typically drawn from the pool of local tertiary students in each of the three UPDATE locations. In order to present an acceptable (non-threatening) image to the many married female respondents and to help ensure access to more conservative households, a large proportion of enumerators were female.

- questionnaire handling and return
- problem interviews (aggressive and confused respondents)

See Appendix 3 for the enumerator training program used in each of the three UPDATE locations.

3.4 UPDATE Survey: Semarang

The following table (3.3.1) represents implementation of the sampling strategy described above for the survey location of Kotamadya Semarang, located in Central Java on the Java Sea. As a large urban area, Semarang is subdivided into wilayah, kecamatan, and kelurahan. Kelurahan are further broken down into RT and RW. Households in one of Semarang's wilayah—Banyumaik, in the northern portion of the city—have access to high quality well water and other sources of ground water. *Penjual air* do not operate in Banyumanik and Banyumanik was therefore not sampled.

As described above, this sampling pattern, shown in table 3.3.1, yields results that allow analysis of UPDATE's target population—urban poor households in Semarang that are reliant on *penjual air*.

table 3.3.1
sampling for Semarang

wilayah	kecamatan	households	poor households	kelurahan with *penjual air*	households sampled
Genuk		**123,289**	**29,368**	**26**	**368**
	Gayamsari	13,570	3,602	4	58
	Genuk	13,316	5,319	8	113
	Pedurungan	30,817	6,763	2	35
	Semarang Tengah	18,497	3,857	4	27
	Semarang Timur	19,446	4,157	4	59
	Semarang Utara	27,643	5,670	4	76
Banyumanik		**70,367**	**14,640**	**0**	**0**
none sampled					
Ngaliyan		**104,586**	**25,081**	**4**	**31**
	Tembalang	24,358	6,392	0	0
	Gunungpati	13,401	2,933	0	0
	Mijen	11,783	3,430	0	0
	Ngaliyan	19,189	4,173	0	0
	Semarang Barat	31,000	7,004	2	18
	Tugu	4,855	1,149	2	13
TOTAL		**227,975**	**54,449**	**30**	**399**

3.5 UPDATE Survey: Tangerang

Tangerang is an urbanized kabupaten located in West Java, very near Jakarta. Tangerang is divided into three kecamatan, each of which is further subdivided into kelurahan. Each of Tangerang's three kecamatan has kelurahan where poor households must rely on *penjual air* for their water supply. Each kecamatan also has kelurahan where *penjual air* are not active. These kelurahan were excluded from sampling.

The sampling pattern for kabupaten Tangerang is shown in table 3.3.1, below.

table 3.4.1
sampling for Tangerang

kecamatan	kelurahan	households	poor households	households sampled
Kosambi		**18,887**	**7,514**	**170**
	Cengklong	2,199	903	37
	Dadap	2,658	649	27
	Jatimulya	1,341	473	20
	Kosambi Barat	918	363	15
	Kosambi Timur	2,344	880	36
	Salembaran Jaya	2,393	863	35
Kosambi: four (4) kelurahan excluded due to lack of penjual air.				
Teluknaga		**23,945**	**7,315**	**136**
	Melayu Barat	2,037	574	24
	Melayu Timur	3,319	750	31
	Pangkalan	2,107	542	22
	Muara	949	409	17
	Tanjung Pasir	1,854	505	21
	Tanjung Burung	1,249	500	21
Teluknaga: seven (7) kelurahan excluded due to lack of penjual air.				
Pakuhaji		**20,963**	**7,300**	**83**
	Suryabahari	1,458	485	20
	Sukawali	1,411	504	21
	Kramat	1,510	476	20
	Kalibaru	1,453	525	22
TOTAL		**63,759**	**22,129**	**389**

3.6 UPDATE Survey: Indramayu

Indramayu is an urbanized kabupaten located in West Java, near Cirebon. Indramayu is broken down into eight kecamatan, each of which is further subdivided into kelurahan. Six of Indramayu's kecamatan have kelurahan where poor households are reliant on *penjual air* for their water supply. Each kecamatan also has kelurahan where *penjual air* are not active. These kelurahan were excluded from sampling.

The sampling pattern for kabupaten Tangerang is shown in table 3.3.1, below.

kecamatan	households	kelurahan with *penjual air*	poor households	households sampled
Kandanghaur	22,209	1	1,155	55
Karangampel	26,316	3	974	47
Jatibarang	18,499	3	1,495	72
Sliyeg	20,067	0	0	0
Cantigi	5,939	1	426	21
Arahan	9,590	3	2,183	104
Indramayu	25,631	0	0	0
Sukra	24,254	4	1,772	86
TOTAL	**152,505**	**15**	**8,005**	**385**

3.7 Local Workshops

Following completion of the survey and survey analysis for each site, the UPDATE Team returned to the survey site to present and discuss survey results with local stakeholders. These presentations and discussions took place within a large workshop hosted by the respective PDAM.

Workshop participants included:

- members of the UPDATE Team,
- representatives from the kecamatan and kelurahan included in the survey,
- local PDAM officials and staff,
- local government officials,
- members of local NGOs focusing on water, poverty, and environmental issues, and
- members of local and regional media.

Workshops focused on sampling strategies; selection, training, and use of enumerators; survey results; and any problems encountered during survey fieldwork. Each individual local workshop was also a valuable opportunity for participants to ask questions about the overall goals of the UPDATE Project, the role of their location, and the next round of UPDATE activities.[4] The following sections briefly describe each local workshop.

3.7.1 Semarang

Following presentations by the UPDATE Team, PDAM Kota Semarang, and the office of the Bappeda, workshop participants discussed the Semarang survey and the UPDATE Project. Overall, discussions were open and flowing with lively exchanges on several (contentious) points.

[4] See section 6 for a description of UPDATE-2.

Among the many topics covered in these post-presentation discussions were (here briefly summarized):

- excess water production capacity in Kota Semarang
- the (expressed) potential need for donor assistance in developing new raw water capacity/sources
- perceptions of the main demand-side problems in extending water service to the urban poor
- local political barriers to raising tariffs
- the role of community organizations in serving the urban poor (both in terms of water service and other infrastructure services)
- the level and nature of the income of the urban poor
- water-related health issues/challenges facing the urban poor
- methods for financing connection charges for the urban poor (potential use of *arisan*-like community finance mechanisms)
- the potential for selling water via kelurahan-based systems

3.7.2 Tangerang

As in Semarang, following presentations by the UPDATE Team, PDAM Kabupaten Tangerang, and the office of the Bupati, workshop participants discussed the Tangerang survey and the UPDATE Project. In Tangerang, there was also a representative from PERPAMSI) present. Again, discussants seemed engaged and there were lively exchanges on controversial points/positions.

Among the topics covered were (summarized):

- whether non-connected urban poor households really do, in fact, wish to be connected to the PDAM system
- the difference between provision of *air minum* (potable water) and *air bersih* (clean water)
- the possibility of using desalinized sea water to boost raw water capacity
- expanding water supply via the use of *terminal air* (water terminals for use by local residents)
- whether urban poor households could save over the course of, say, a month and be able to pay a monthly bill
- potential roles for community organizations in construction, operation, and maintenance of new piped water networks

3.7.3 Indramayu

As in the earlier locations, workshop participants in Indramayu discussed at length the UPDATE survey and the UPDATE Project overall. Discussions were active, with all participants contributing. There were again numerous lively exchanges on several points/positions.

Among the topics discussed were (summarized):

- the proper level of service for the urban poor
- the methodology of the UPDATE survey

- the role of the dry season in the water sector overall and, in particular, in terms of expanding service
- the tendency of the urban poor to purchase water in small quantities (relative to connected customers)
- the fluctuating number of penjual air during the dry and rainy seasons
- the conflicts between household and agricultural uses of water
- barriers to raising tariffs
- excess water production capacity in Kabupaten Indramayu

3.8 National Workshop

Following completion of the three local workshops, the UPDATE Team hosted a one-day national-level seminar in Jakarta. The purpose of the seminar was to provide an opportunity to discuss the results of the UPDATE Project *as a whole* with a broader range of stakeholders than were present at the local workshops.

National-level seminar participants included:

- members of the UPDATE Team,
- representatives from the three UPDATE locations (including PDAM officials and staff, local government officials, and some local-level representatives),
- representatives from relevant national ministries (Ministry of Home Affairs, Bappenas, and Kimpraswil)
- representatives from donor agencies (USAID, USAEP, GTZ, ADB),
- representatives from other donor-funded water sector and local government projects, and
- members of national and regional media.

Topics discussed in the national seminar largely mirrored those of the local workshops, though the presence of ministerial and donor representatives led to a larger focus on the policy/regulatory/legal side of extending water service to the urban poor.

Among the specific topics discussed were:

- the primary demand-side problems (largely the income of the urban poor) faced by PDAMs in extending water service to the urban poor
- local and national political and legal barriers to raising tariffs
- the role of community organizations in serving the urban poor
- water-related health issues faced by the urban poor
- methods for financing connection charges for the urban poor
- the potential for selling water via kelurahan-based systems
- the difference between provision of *air minum* (potable water) and *air bersih* (clean water)
- the proper level of service for the urban poor
- the methodology of the UPDATE survey
- the conflicts between household and agricultural uses of water
- barriers to raising tariffs

4. Survey Results

As described above, surveys of urban poor households were conducted in three separate locations during the period January through August, 2002. This section contains detailed analysis of the resulting survey data.

4.1 Key Results

Several important tendencies and conclusions become clear when one considers the results from the three UPDATE survey sites. These key results—presented and discussed in more detail in the subsections that follow—are:

- **Within many areas of the kotamadya and kabupaten surveyed by the UPDATE Project, non-PDAM-connected urban poor households are largely dependent on water from private water vendors (*penjual air*).** The precise figures and charts—presented in section 4.1.1—show that the overwhelming majority of sampled households purchase water from *penjual air*. For many of these households, water from *penjual air* is the main source of water for drinking and cooking.

- **Non-PDAM-connected urban poor households pay substantially more for water on a per-volume basis than PDAM-connected households.** Earlier survey work, described in section 2 above, found that non-PDAM-connected households paid from 10-20 times the price per-volume faced by PDAM-connected households. The results of the UPDATE project are even more dramatic, with surveyed households paying from 33 to 122 times the price per-volume.

- **Total monthly water expenditure by non-PDAM-connected urban poor households is greater than typical monthly expenditure for PDAM-connected households.** Non-PDAM-connected urban poor households sampled spend roughly twice as much per month for water than PDAM-connected households. This finding supports the position that the non-connected urban poor can indeed afford typical monthly PDAM tariffs.

- **For non-PDAM-connected urban poor households, total monthly water consumption per household member is well below the level established as necessary to meet national and international health norms.** Because of the high price per-volume charged by *penjual air*, non-connected urban poor households are severely constrained in their consumption of water. Within the three sites surveyed, non-connected urban poor households would be able to expand their per household member consumption to established norms even if they faced the highest existing tariff (or a hypothetical full-cost-recovery tariff).

- **For non-PDAM-connected urban poor households, expenditure on water consumes a sizable portion of total household income and makes up a large share of total household expenditure.** Total monthly water expenditure for sampled households ranges from 7% to 14% of total household income and expenditure.[5] These shares are far

[5] Not surprisingly, here is essentially no reported savings by sampled households. The resulting equality of income and expenditure implies nearly identical shares for water expenditure in both household income and expenditure.

above the values typically found for utility-connected households in the developing and developed world.

- **The share of income devoted to water expenditure is substantially higher for the poorest households surveyed under the UPDATE Project—the poorest of the poor are the most severely impacted by being denied access to PDAM connections.** The figures reported immediately above, however, mask the important finding that the poorest sampled households (those with income below Rp200,000 per month) spend from 16% (Semarang) to 33% (Tangerang) of household income on water.

- **Non-PDAM-connected urban poor households surveyed are willing to pay prices for PDAM-supplied water far in excess of current PDAM tariffs.** When responding to bidding game questions related to hypothetical tariffs, sampled households indicate that they are willing to pay a price per-volume that is significantly above that currently charged by their local PDAM.

- **The desire of non-PDAM-connected urban poor households to connect to their local PDAM system varies across the three areas survey and appears to be influenced by respondent perceptions of the quality, convenience, and cost of PDAM service.** In Indramayu, respondent desire to connect to the PDAM was relatively high, with 76% of sampled households responding that they wished to be connected. In Semarang and Indramayu, however, expressed desire to connect was surprisingly low, at 36% and 35%, respectively. More detailed analysis of the data seems to indicate that this variation is linked to respondent perceptions of the relative quality and convenience of PDAM-supplied water.

Sections 4.1.1 through 4.1.3 present (in tabular and graphical format) the most important details behind these key results and expand on key results in more detail. Following the conclusion of section 4.1, we present other results—informative and interesting results in their own right, but less likely to be of policy significance than those contained in section 4.1.

4.1.1 Current Water Purchases and Expenditure

purchases of water from *penjual air*

Households in the three UDPATE survey sites obtain water from a variety of sources: from wells, from natural bodies of water, from collection of rainwater, from neighbors' PDAM connections, and from other sources. The most frequently reported water source, however, is purchases of water from *penjual air*. Table 4.1.1 shows the percentage of sampled households that do (and do not) purchase water from *penjual air*.

table 4.1.1.1
households purchasing water from *penjual air* (%)

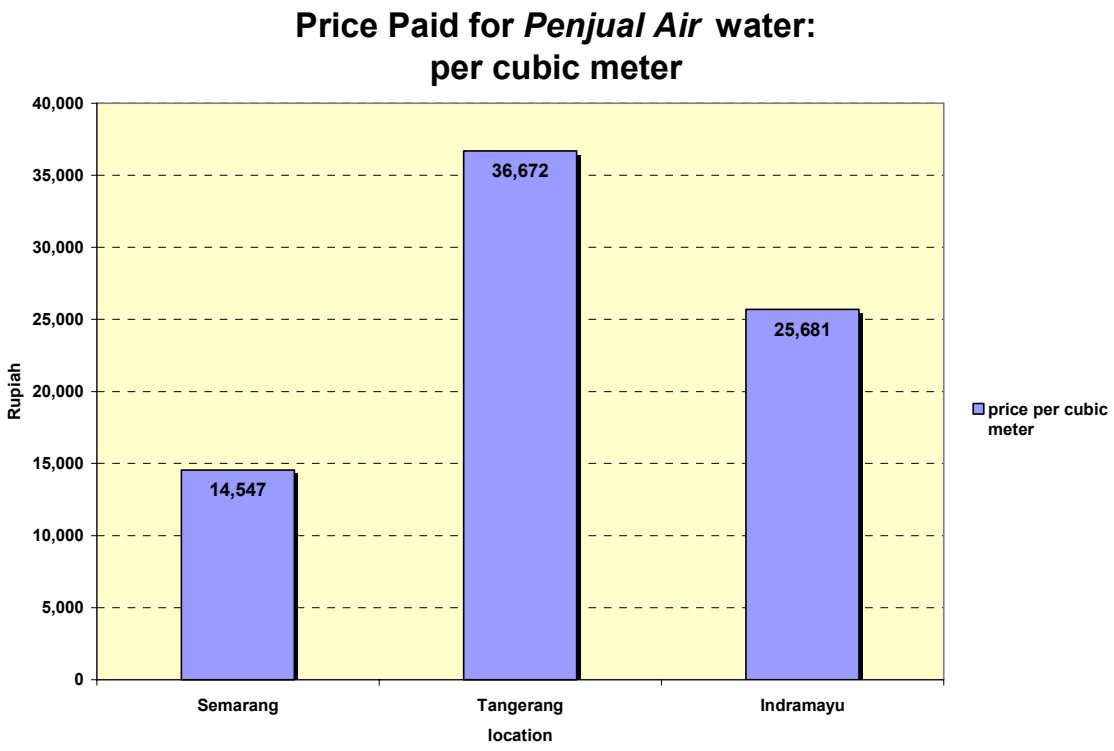
	yes	no	don't know
Semarang	73.1	26.9	0.0
Tangerang	97.1	2.9	0.0
Indramayu	99.5	0.5	0.0

Only in Semarang is there a substantial portion (26%) of households that do not utilize *penjual air*. Though still a minority, this is by far the largest among the three survey sites.[6]

price per cubic meter of *penjual air* water

Chart 4.1.1.1 below shows the price per cubic meter paid for water from *penjual air* for the three UDPATE survey sites. These results are derived from a series of detailed questions related to the number of *jerigen* purchased per day, the price paid per *jerigen*, and the volume of *jerigen* purchased (see section 5 of the household survey instrument in Appendix 1).

chart 4.1.1.1



In each of the three survey sites respondents pay significantly more per cubic meter for water from *penjual air* than do PDAM-connected households. Using the specific social tariff charged by each PDAM,[7] the ratio of the *penjual air* price pre cubic meter to the PDAM social tariff per cubic meter ranges from 33 (Indramayu, social tariff of Rp780 per cubic meter) to 122 (Tangerang, social tariff of Rp300 per cubic meter).

Reported prices per cubic meter are significantly greater than tariffs charged to customers from higher income (socioeconomic) groups and estimates of full-cost-recovery tariffs.[8]

[6] For households in Semarang that do not purchase water from *penjual air*, the primary reported water source is wells (42.5%) and "other" (32.3%). See section 4.3 for more results related to primary water sources.

[7] The social tariff (*tarif sosial*) is the tariff charged to poor customers. Both the level of the social tariff and the assignment of the social tariff to customers varies across PDAMs.

[8] The highest base tariffs charged to household customers are Rp1,045, Rp700, and Rp1,560 per cubic meter in Semarang, Tangerang, and Indramayu, respectively.

volume of water purchased from *penjual air*

Measures of household water purchases from *penjual air* were also obtained from the survey. Tables 4.1.1.2 and 4.1.1.3 report the average total volume of water and volume of water per household member purchased by the household per day in liters and per month in cubic meters (m^3).

As economic theory would lead us to expect, total household purchases of water vary with the price of *penjual air* water. Households in Tangerang—the survey location where sampled households face the highest price per cubic meter—purchase the lowest volume of water per household member (16.92 liters per day) of the three UPDATE survey sites. In Semarang—where sampled households face the lowest price per cubic meter—Households purchase the highest volume of water per household member of the three sites (16.92 liters per day).

table 4.1.1.2
household water purchases from *penjual air*

total liters purchased:			
	mean	**min**	**max**
Semarang	85.78	6.67	4,000
Tangerang	42.38	1.33	360
Indramayu	50.81	2.86	300
liters purchased per household member:			
	mean	**min**	**max**
Semarang	16.92	1.32	788.95
Tangerang	8.07	0.25	68.57
Indramayu	10.16	0.57	60.00

For sampled households in each of the three survey sites, *penjual air* are the primary source of water for drinking and cooking (see table 4.3.2 in section 4.3). It is therefore informative to compare the volume of water obtained from penjual air to established consumption standards. However, households do also obtain water for drinking and cooking from other sources—wells, rivers, lakes, and collection of rainwater, for example (see table 4.3.5). Because of the water obtained from these sources, we cannot make definitive statements about the quantity of water available to sampled households for consumption versus standards. Because of the (nearly certain, though not measured) low quality of the water available from these sources, however, we can be more confident in statements about the quantity of potable water versus standards.

table 4.1.1.3
household water purchases from *penjual air*
(m^3 purchased per month)

	mean
Semarang	2.66
Tangerang	1.26
Indramayu	1.52

water expenditure shares

The questions contained in the UPDATE survey instrument allow calculation of water expenditure as a percentage of household income and household expenditure. While overly rigid application of water expenditure share standards ignores real-world variation in household needs, preferences, and circumstances and is, therefore, unwise, it is nevertheless informative to calculate and examine these shares.

Table 4.1.1.4 shows household monthly water expenditure as a share of total household monthly income. Households in Tangerang—which, as we have seen, has the highest per-volume prices for *penjual air* water of the three survey sites—spend the largest share of their income on water (14.13%). Households in Semarang, facing the lowest *penjual air* prices of the three UPDATE sites, spend the lowest share of their income on water (7.25%).

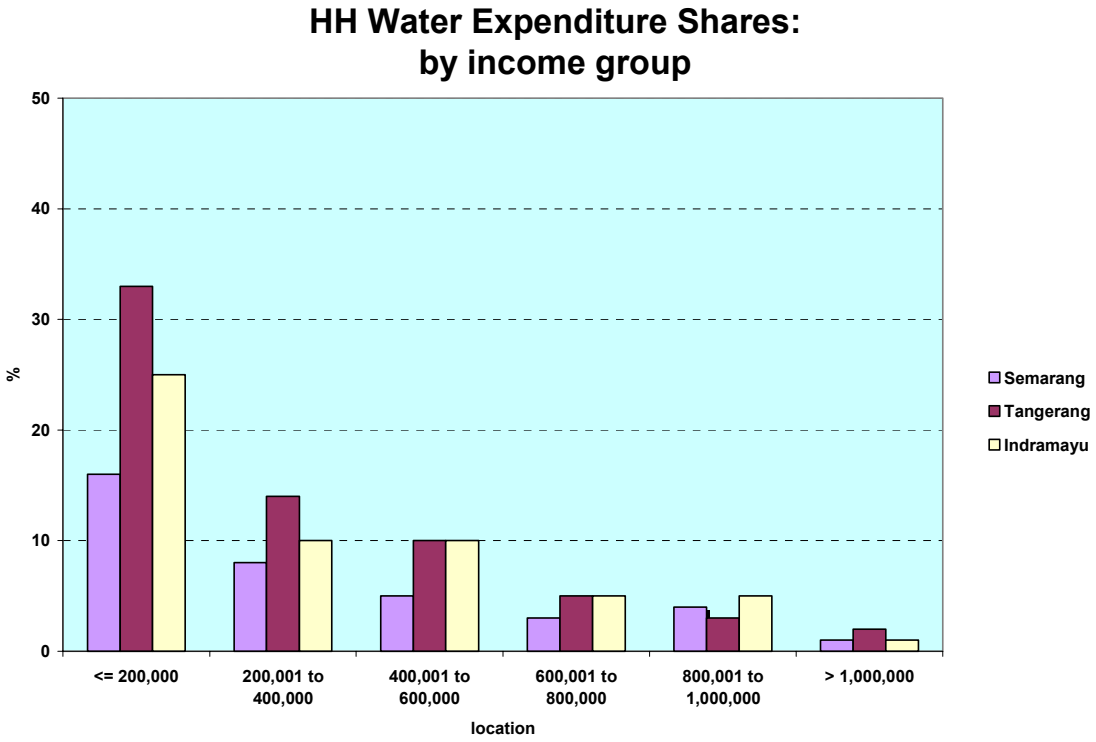
table 4.1.1.4
household water expenditure shares

	water expenditure as a percentage of income: mean (%)
Semarang	7.25
Tangerang	14.13
Indramayu	10.83

These overall figures, however, hide important variation in water expenditure shares. As shown in chart 4.1.1.2, below, households in lower income groups spend a far larger share of their monthly income on water. As income increases, household spending on water as a share of income (and as a share of total expenditure) falls precipitously. In Semarang, households in the lowest income group spend over 16% of their income on *penjual air* water—more than twice the water expenditure share of sampled households overall in Semarang (7%). The same tendency holds in Indramayu and Tangerang as well, with the poorest households in Tangerang spending exactly one-third of their monthly income on vendor-supplied water.

As we have pointed out above, expenditure share standards should not be applied in an overly rigid manner. It is clear, however, that devoting such a large share of household income to water must require households to make difficult sacrifices. Expenditure on water is expenditure that cannot be directed toward other health, housing, and education needs. While necessary for household survival, such high levels of expenditure by the urban poor are detrimental to personal, family, and national development.

chart 4.1.1.2



4.1.2 Willingness-to-Pay PDAM Connection Fees

overall desire to be connected to PDAM system

Given that many urban poor households are paying such high amounts for water both in terms of price per volume and total monthly expenditure, it seems likely that many households would wish to be connected to existing PDAM networks. Certainly the most surprising result of the survey is that in two UPDATE survey locations only a minority of sampled households wish to be connected to the PDAM system. In Kotamadya Semarang, 36.2% of households expressed a desire to be connected and in Kabupaten Tangerang the corresponding figure was 34.9% (see table 4.1.2.1). In Kabupaten Indramayu, 75.6% of households wish to be connected to the PDAM system.

table 4.1.2.1
desire for PDAM connection

respondent household wants to be connected to PDAM system	yes (%)
Semarang	36.2
Tangerang	34.9
Indramayu	75.6

Why would such a result occur? Why would economically rational households with finite incomes not wish to be connected to a system of piped water that is less expensive, of higher

quality, and more convenient than episodic purchases of water from vendors? To begin to answer these questions, it is useful to look at household perceptions of water quality and convenience.

desire to be connected versus perceptions of PDAM water/service

For Semarang and Tangerang, chart 4.1.2.1 below shows household desire to be connected to the PDAM system for two groups of households—households that believe (perceive) PDAM water to be of lower quality than water from alternative sources and those that believe PDAM water to be of the same or higher quality. For both Semarang and Tangerang, households that believe PDAM water to be of equal or higher quality are more likely to wish to be connected to the PDAM system. In Semarang, however, the difference is small (24% versus 39%).

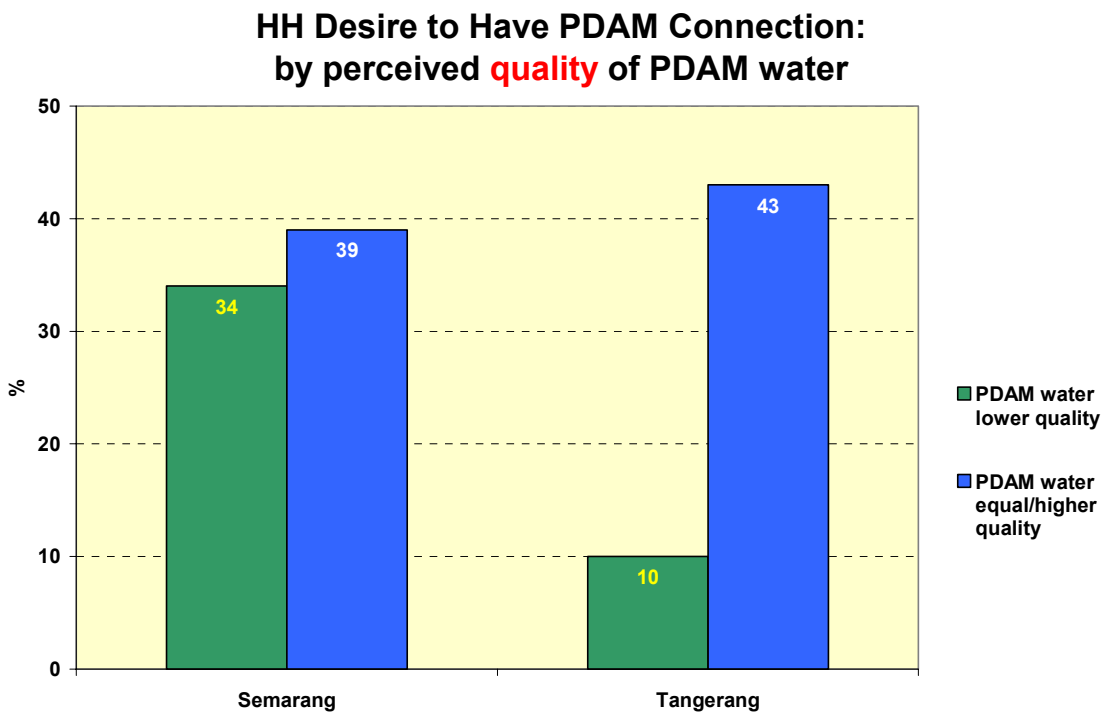
Is *penjual air* -supplied water equal in quality to PDAM tap –supplied water? Is one supply of water better than the other for reasons that are easily identifiable and, perhaps, measurable? Are consumers who feel that *penjual air* –supplied water is superior to PDAM tap –supplied correct?

These are difficult questions, and there is insufficient data to answer them. *Penjual air* typically purchase the water that they sell from the PDAM, so we can safely assume that both types of water start from the same quality level. Each type of water travels a different path to the consumer, however, and there are opportunities for contamination and quality degradation along both paths.

From the PDAM treatment plant, *penjual air* –supplied water is frequently transported in a PDAM tanker truck, transferred into large PDAM or *broker air* storage tanks, possibly into smaller storage tanks, into jerigen used by penjual air, and finally into storage tanks or other containers used by households. Some *penjual air* also obtain water from local (PDAM-supplied) taps.

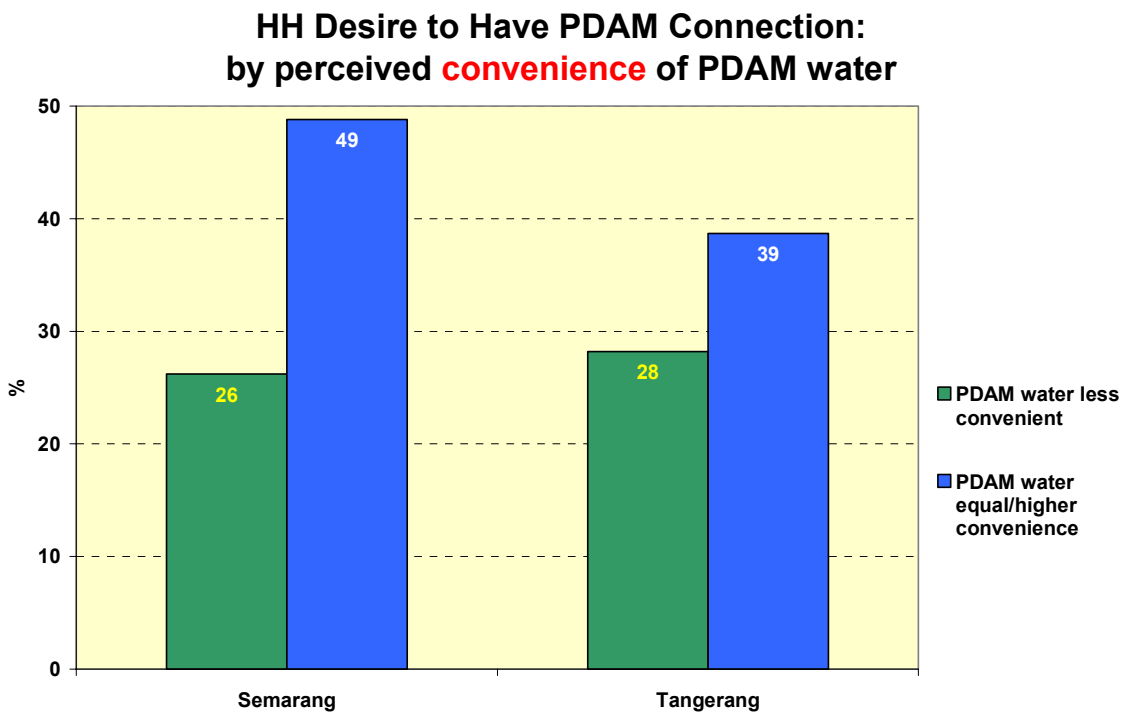
Water from PDAM taps within households travels through a frequently lengthy system of distribution pipes and pumps. There are numerous opportunities for contamination resulting from leaky pipes. The high Unaccounted for Water (UFW) statistics reported by most Indonesian PDAMs are well-known evidence of leaking pipes.

chart 4.1.2.1



When we examine the percentage of sampled households stating a desire to be connected broken down by perceptions of the convenience of PDAM-supplied water, a similar picture emerges. As shown in chart 4.1.2.2, in both Semarang and Tangerang households that perceive PDAM water to be more convenient than water from alternative source are more likely to express a desire to be connected.

chart 4.1.2.1



willingness to pay connection fees

While it is of course easy to express a hypothetical desire to be connected to the PDAM system, an expressed willingness to pay connection fees is a somewhat stronger vote for PDAM service. Sampled households were asked a series of questions related to PDAM connection fees—their overall willingness to pay connection fees, the manner in which they would prefer to pay connection fees, and the level of fees that they would be willing to pay.

As shown in table 4.1.2.2, overall willingness to pay one-time (or "up-front") connection fees is low and varies across the three survey sites. Indramayu, where overall desire to be connected is highest, not surprisingly shows the highest willingness to pay one-time fees, at 40.5%. Overall willingness in Semarang and Tangerang is below 30%.

table 4.1.2.2
willingness to pay one-time connection fee

	yes (%)
Semarang	29.6
Tangerang	28.8
Indramayu	40.5

Households that expressed willingness to pay a one-time fee also completed a series of bidding game structured questions designed to elicit the level of the one-time connection fee that they are willing to pay. The result of these questions, contained in table 4.1.2.3, show

that the one-time connection fees that households are willing to pay varies significantly across the three locations. Willingness to pay is highest in Semarang and lowest in Tangerang. A variety of regression and other analysis (not reported here) does not point out a clear cause for this variation which must, therefore, be due to household or local factors not captured by the UPDATE survey instrument.

An important comparison to make is that between the level of one-time connection fees that households are willing to pay and the level of actual connection fees charged within each area. While actual connection fees naturally vary according to household distance from existing distribution networks and other factors, staff from each PDAM were able to provide the UDPATE team with an estimate of a "typical" connection fee. This value is reported for each site in tables 4.1.2.3 and 4.1.2.5. For each of the three locations, the connection fees that households are willingness to pay is below the typical connection fee charged for their respective area.

table 4.1.2.3
level of willingness to pay for one-time connection fee

	average (Rp)	"typical" actual connection fee (Rp)
Semarang	282,053	700,000
Tangerang	416,500	500,000
Indramayu	271,467	570,000

The survey also included questions related to household willingness to pay connection fees under an installment plan. The installment plan used in the questionnaire was structured as equal monthly payments for one year. This payment structure is similar to installment plan payment schemes (*angsuran kredit*) currently in use by many PDAMs in Indonesia.

As expected, a far larger percentage of respondents replied that they would be willing to pay connection fees on an installment basis than on a one-time payment basis. Table 4.1.2.4 shows the percentages for each location. As with the one-time payment, respondents in Tangerang were the least willing of the three sites to pay installment plan connection fees, though willingness was still high in an absolute sense (80.4%).

table 4.1.2.4
willingness to pay installment connection fees

	yes (%)
Semarang	94.2
Tangerang	80.4
Indramayu	94.7

Table 4.1.2.5 below shows household willingness to pay installment plan connection fees. When consumers are allowed to make large payments on an installment plan basis, it is not unusual for expressed willingness to pay to be higher than when payments must be made up in one lump sum, up front. Given that typical connection fees for the three UPDATE survey locations are equal to or greater than one month's income for the average household sampled (see table 4.1.2.3 and 4.1.2.5 for typical connection fees and chart 4.2.2 for average monthly income levels), we can consider these payments to be large.

When the information contained in tables 4.1.2.3 and 4.1.2.5 are compared, Semarang and Indramayu displays the expected pattern, with willingness to pay connection fees on an installment plan basis greater than willingness to pay connection fees on a one-time basis. In Tangerang, however, willingness to pay installment plan based connection fees (Rp180,208) is significantly below willingness to pay one-time connection fees (Rp416,500).

table 4.1.2.5
level of installment connection fee respondent household is willing to pay (Rp)

	average	"typical" actual connection fee
Semarang	413,542	700,000
Tangerang	180,208	500,000
Indramayu	276,724	570,000

4.1.3 Willingness-to-Pay PDAM Tariffs

Surveyed households were also asked a series of questions designed to measure the tariffs that they would be willing to pay if they had a direct PDAM connection to their dwelling (see section 7 of both the UDPATE survey instrument in Appendix 1 and the "PDAM toolkit" survey instrument in Appendix 2). These questions, using a standard bidding game structure, asked respondents if they were willing to pay progressively lower prices for a certain quantity of water from a PDAM tap within their dwelling. For each individual respondent, the quantity used was equivalent to the *jerigen* size typically purchased by the household.

The results of the responses to these questions are shown in table 4.1.3.1, below.

table 4.1.3.1
willingness to pay PDAM tariffs (Rp/m^3)

	Average
Semarang	9,908
Tangerang	19,859
Indramayu	15,401

For each of the three locations, the per-cubic-meter tariff that sampled households are willing to pay far exceeds both the social tariff and the highest tariff charged by the respective PDAM. (The highest base tariffs charged to household customers are Rp1,045, Rp700, and Rp1,560 per cubic meter in Semarang, Tangerang, and Indramayu, respectively. The social tariff charged by Semarang is Rp300 per cubic meter, Tangerang is Rp300 per cubic meter, and Indramayu is Rp780 per cubic meter.)

While we would not expect that PDAMs would—or argue that they should—charge households tariffs similar to the willingness-to-pay figures reported in table 4.1.3.1, these figures are additional evidence that urban poor households can afford to pay PDAM tariffs that would support extension of service to their area.

4.2 Overview of Households Sampled

In addition to the numerous questions focused specifically on facets of the water environment faced by the urban poor, a number of questions designed to give a profile of the sample were included in the UPDATE survey. The current subsection briefly reviews information derived from these questions.

respondent characteristics

To ensure that responses related to household expenditure, willingness to pay, and other household characteristics were accurate, only household heads and spouses of household heads were interviewed. Table 4.2.1 shows the breakdown of respondents by their position within the household and table 4.2.2 shows the gender of respondents. In Indramayu the majority of survey respondents were male household heads, whereas in Semarang and Tangerang, the majority of respondents were female spouses of the household head.

table 4.2.1
respondent characteristics: household head or spouse (%)

	household head	spouse of household head
Semarang	35.6	64.4
Tangerang	49.6	50.4
Indramayu	61.7	38.3

table 4.2.2
respondent characteristics: gender (%)

	male	female
Semarang	32.5	67.5
Tangerang	49.6	50.4
Indramayu	60.5	39.5

dwelling characteristics

As shown in table 4.2.3, the majority of sampled households in each of the three survey sites inhabit a single-family house. In Semarang and Indramayu, a small number of multi-family dwellings were sampled.

table 4.2.3
dwelling type (%)

	single-family house (*rumah*)	multi-family house (*rumah petak*)	temporary housing (*bedeng*)	other
Semarang	81.8	17.7	0.3	0.3
Tangerang	95.8	3.4	0.8	0.0
Indramayu	86.8	13.0	0.0	0.3

Chart 4.2.1 shows the length of time (tenure) that households have resided in their current dwelling. For all of the sites, the vast majority (over 80%) of households have occupied their current dwelling for more than 5 years. Table 4.2.4 provides the data that support the chart.

chart 4.2.1

Household Tenure in Current Dwelling

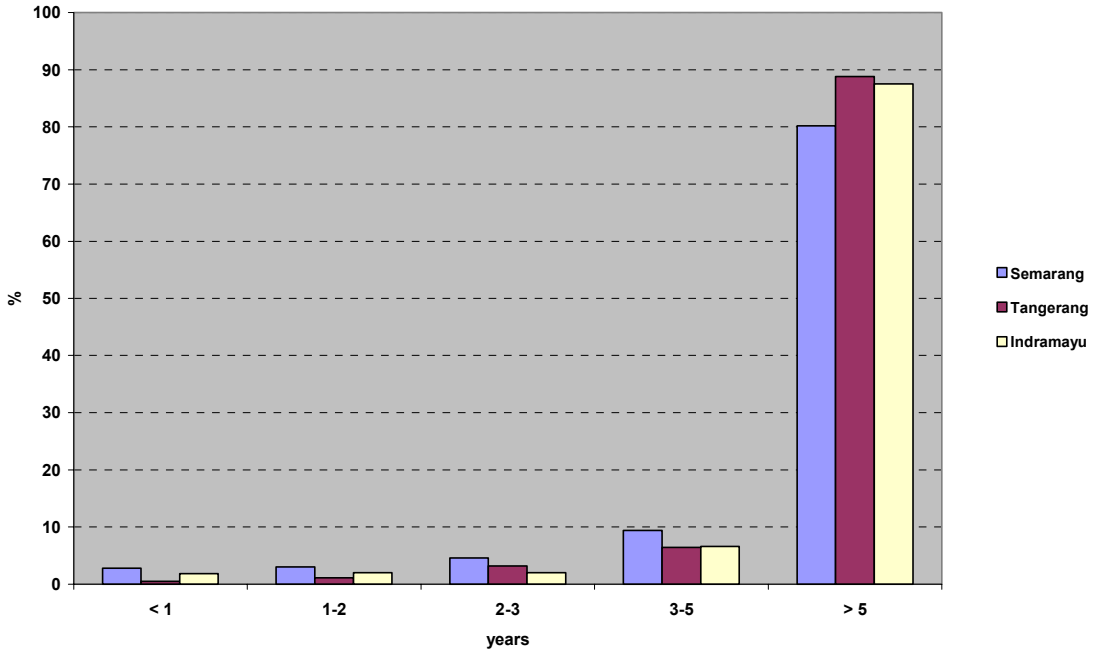


table 4.2.4
household occupation of dwelling: years (%)

	< 1	1-2	2-3	3-5	> 5
Semarang	2.8	3.0	4.6	9.4	80.2
Tangerang	0.5	1.1	3.2	6.4	88.8
Indramayu	1.8	2.0	2.0	6.6	87.5

Table 4.2.5 shows various measures of household size for the three UDPATE survey locations. The typical household surveyed consists of five persons, a figure broadly consistent with averages for Java and Indonesia as a whole.

table 4.2.5
household size indicators (persons)

persons, during past month (%)	mean	median	min	max
Semarang	5.07	5	1	15
Tangerang	5.25	5	1	13
Indramayu	5.00	5	1	14

Table 4.2.6 shows that, in each of the three survey sites, the majority of households rent their dwelling. Only in Semarang is there a meaningful share of households that own their dwelling (11.6%).

table 4.2.6
ownership/rental/other status of household in dwelling (%)

	own	rent	share (*menumpang*)	don't know	other
Semarang	11.6	83.1	3.3	0.3	1.8
Tangerang	2.4	96.0	1.6	0.0	0.0
Indramayu	2.3	95.5	2.0	0.0	0.3

Table 4.2.6 shows the highest level of education attained by household head. Overall, household heads in Tangerang have the lowest level of education attainment, with roughly one quarter never having attended school, versus 6.8% and 15.1% for Semarang and Indramayu, respectively. In Tangerang only (roughly) 50% of household heads surveyed reported having completed elementary or higher education, versus over 70% for both Semarang and Indramayu.

table 4.2.6
highest level of education attained by household head (%)

	never attended	incomplete elementary	complete elementary	incomplete junior high/sec	complete junior high/sec	incomplete senior high/sec	complete senior high/sec	incomplete university	complete university
Semarang	6.8	15.6	40.1	2.5	19.4	0.8	12.8	0.8	1.3
Tangerang	24.5	27.1	30.8	2.9	6.3	1.8	6.1	6.1	0.5
Indramayu	15.1	25.6	39.2	2.5	9.0	1.0	5.3	0.8	1.5

Table 4.2.7 shows the primary occupation of household heads for sampled households in the three UPDATE locations. The predominant occupations of household heads are "vendor", "informal worker", "fisherman", and "worker: private enterprise".

table 4.2.7
primary occupation of household head (%)

	farmer: own land	farmer: sharecrop	farmer: wage	government worker	army	retired government worker	retired army	vendor/ "seller"	informal worker	fisherman	worker: private enterprise	other	unemployed
Semarang	0.5	1.0	4.1	1.0	0.0	1.8	1.0	9.2	29.5	1.5	19.8	30.0	—[9]
Tangerang	3.4	8.2	10.0	0.3	0.0	0.5	0.3	15.8	21.3	21.6	7.1	5.3	6.3
Indramayu	6.0	5.8	16.1	1.5	0.3	0.3	0.0	26.1	10.3	11.3	5.5	12.3	4.5

Chart 4.2.2 shows the average monthly reported income for sampled households. Reported monthly income levels are quite similar across the three survey sites, from the low of Rp431,353 for Indramayu, to Rp457,789 for Semarang, to Rp460,714 for Tangerang.

chart 4.2.2

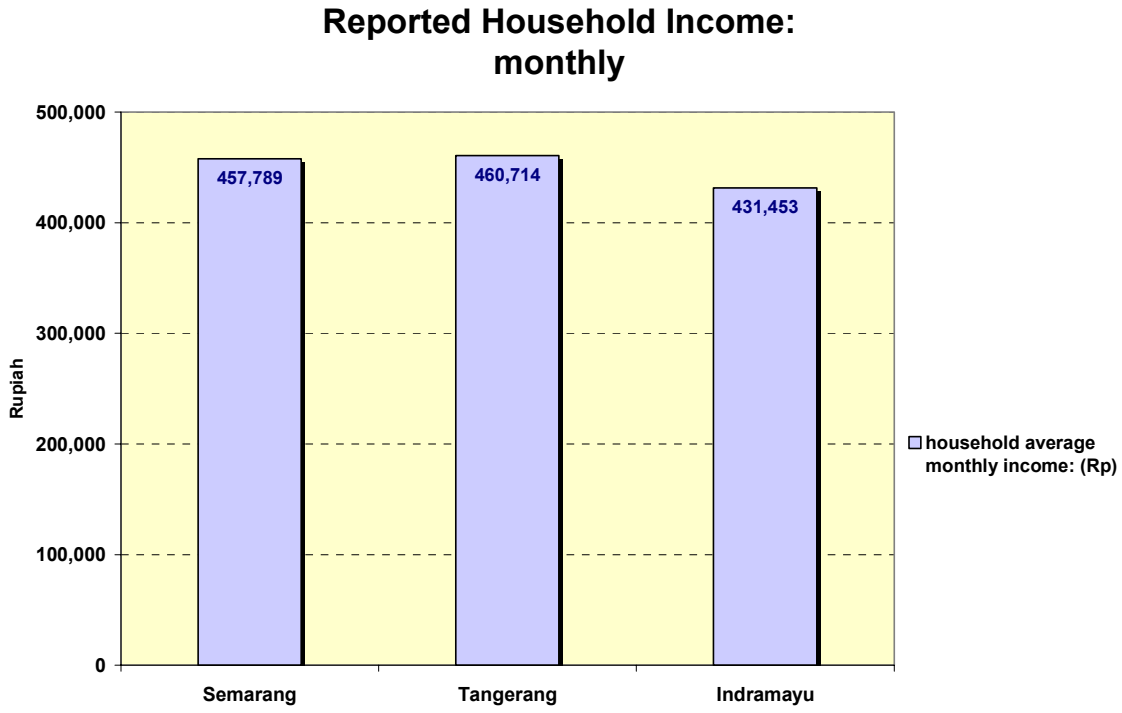


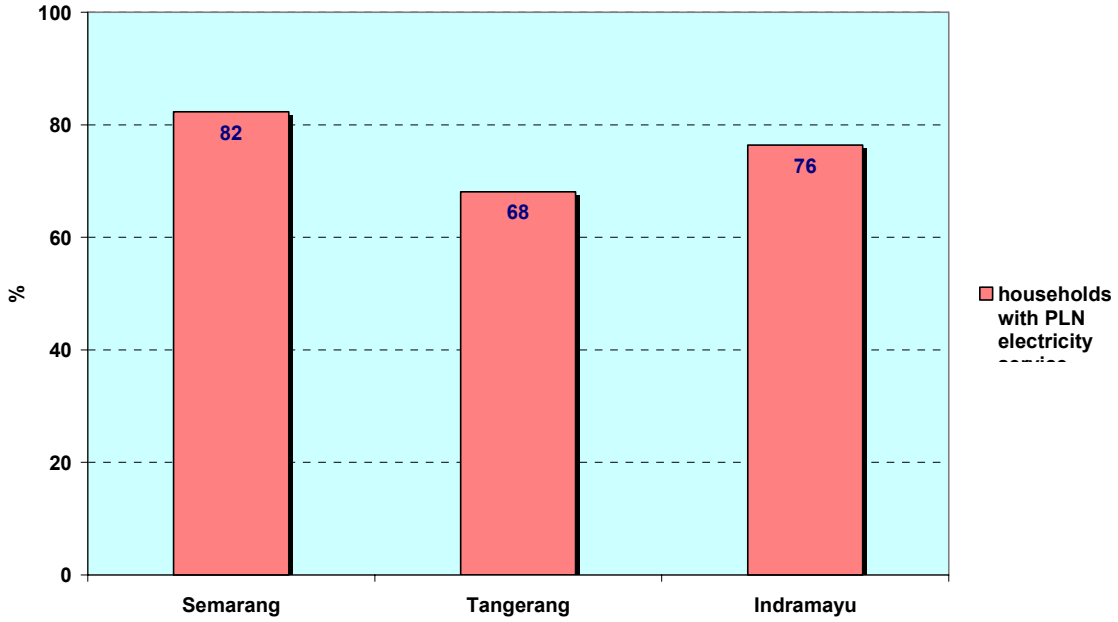
Chart 4.2.3 shows the number of households with direct service from PLN, the national electric utility. In each of the three survey sites, a majority of households have PLN service. This is not a trivial statistic. PLN customers are connected to a metered service and pay a regular monthly bill. Prior to the beginning of the UPDATE project (and during numerous

[9] "Unemployed" was unfortunately not included for Semarang, the first of the three UPDATE survey locations. For Semarang, the category "Other" therefore includes unemployed household heads and those with jobs not contained within the other categories.

meetings with stakeholders during the early stages of the project), numerous individuals commented that the urban poor would not be suitable candidates for PDAM connections because they are not familiar with utility service, are not able to save money (time expenditures) over the course of a month, and would not be able or comfortable paying a monthly PDAM water bill. As shown by the figures in chart 4.2.3, most surveyed urban poor households already engage in these behaviors and these doubts are, therefore, unlikely to apply.

chart 4.2.3

Households with PLN Electricity Service



4.3 Sources and Uses of Water

To obtain an overall view of the water environment faced by urban poor households, the UDPATE survey also included a series of questions on household sources and uses of water. Reponses to these questions are interesting in-and-of themselves, but, more importantly, also provide key context and background to the discussion of desire to be connected to the local PDAM system and willingness to pay PDAM connection fees and tariffs.

Table 4.3.1 shows water sources that are "ever" (even infrequently) used by households. The figures in this table demonstrate that, while households have access to a wide variety of water sources, more households have obtained water from *penjual air* and wells than from other sources. In Semarang in particular, households only infrequently report using other sources of water.

table 4.3.1
water sources used: "ever" (%)

	TA/HU/HC/public tap/MCK	well	neighbors (free)	neighbors (purchased)	private water vendor	purchase from PDAM	lake, river, stream, natural body of water	collection of rainwater	other
Semarang	9.0	71.7	9.0	9.0	61.7	5.0	0.5	0.3	22.1
Tangerang	2.5	77.7	8.2	8.2	80.1	20.6	14.0	15.8	3.2
Indramayu	2.1	63.2	19.9	8.5	94.4	3.6	13.6	14.4	6.6

Table 4.3.2 shows the overall primary water source for households. The predominant primary overall water source reported for each of the three survey locations is water from wells. the second most frequently reported primary overall water source is water from *penjual air*. (See table 4.3.5, below, for the primary source of water for drinking and cooking.)

table 4.3.2
primary water source overall (%)

	TA/HU/HC/public tap/MCK	well	neighbors (free)	neighbors (purchased)	private water vendor	purchase from PDAM	lake, river, stream, natural body of water	collection of rainwater	other
Semarang	4.8	61.2	1.0	2.3	17.0	0.3	0.5	0.0	12.3
Tangerang	1.6	55.4	4.5	3.2	21.2	10.3	2.4	0.3	1.1
Indramayu	0.8	62.8	14.4	3.7	10.7	0.3	2.1	0.8	4.3

Overall, households are satisfied with water from the reported primary source, as reported in table 4.3.3. immediately below.

table 4.3.3
respondent satisfaction with water from primary source (%)

	yes	no	don't know
Semarang	78.0	18.2	3.8
Tangerang	65.5	31.2	3.2
Indramayu	69.8	28.1	2.0

Table 4.3.4 reports respondent perception of the quality of water from their primary source relative to PDAM water. Most respondents report that water from their primary source is of lower quality than PDAM water. In Tangerang, a surprisingly large percentage (41.0%) replied that they don not know.

table 4.3.4
perceived quality of water from primary source relative to PDAM

	better	same	worse	don't know
Semarang	21.2	30.4	40.4	7.9
Tangerang	12.5	14.1	32.4	41.0
Indramayu	13.3	25.6	55.5	5.5

Table 4.3.5 reports the primary source of water for drinking and cooking for the three UPDATE survey sites. The majority of households sampled report that water from *penjual air* is their primary source of water for these consumption-related uses. At nearly 92%, households in Semarang show the most reliance on *penjual air* for water for drinking and cooking.

table 4.3.5
primary source of water: drinking and cooking (%)

	TA/HU/HC/public tap/MCK	well	neighbors (free)	neighbors (purchased)	private water vendor	purchase from PDAM	lake, river, stream, natural body of water	collection of rainwater	other
Semarang	5.8	3.3	0.8	7.3	62.6	3.0	0.0	0.0	17.2
Tangerang	0.3	4.5	0.3	0.5	76.2	16.9	0.5	0.0	0.0
Indramayu	0.0	0.8	1.9	3.3	91.8	1.6	0.0	0.3	0.3

There are many possible reasons why a household might not have a PDAM connection. These reasons range from the outright impossibility of having a connection ("PDAM connections not available in this area"), to those related to the cost of PDAM service ("PDAM connections charges are too high"), to reasons that are more a matter of personal preference and choice ("higher quality of water from alternative source(s)").

Table 4.3.6 reports the reasons that households do not have PDAM connections for each of the three survey locations. The survey instrument allowed households to report more than one reason for not having a connection. And for most households, there was not, in fact, one dominant reason.[10] In Semarang, Tangerang, and Indramayu, some reasons, however, were dominant in the sense of being reported as a reason by many households. In particular, many households reported that PDAM connections were not available, that PDAM connection fees are "too high", and that water from alternative sources is of lower cost.

[10] This can be clearly seen in the table by column totals that sum to far more than 100%.

table 4.3.6
reason for no PDAM connection (%)

	Semarang	Tangerang	Indramayu
lower cost of water from alternative source(s)	50.3	14.1	48.5
higher quality of water from alternative source(s)	26.3	13.0	30.1
water from alternative source(s) is more convenient	51.5	21.3	57.3
low pressure of water from PDAM connection	13.9	4.1	2.8
PDAM connections not available in this area	49.0	51.9	45.6
PDAM connections charges are too high	50.9	22.5	27.7
can't afford to pay any water tariff	32.9	25.3	25.6
procedures for PDAM connections are difficult	22.5	8.3	11.7
do not have KTP	4.0	3.5	23.0
other reason(s)	21.2	2.2	1.9

Table 4.3.7 reports the primary source of water from "other" household uses (non- drinking and cooking uses). For these other uses, the dominant reported source within all survey locations was well water.

table 4.3.7
primary source of water: other household uses (%)

	TA/HU/HC/public tap/MCK	well	neighbors (free)	neighbors (purchased)	private water vendor	purchase from PDAM	lake, river, stream, natural body of water	collection of rainwater	other
Semarang	4.0	72.3	1.8	1.8	7.3	0.0	0.0	0.0	12.8
Tangerang	2.4	69.4	5.8	2.4	9.2	1.3	7.9	0.3	1.3
Indramayu	0.5	62.3	16.5	3.8	8.9	0.3	2.7	0.8	4.1

4.4 Disposal of Wastewater

While the water environment confronted by the urban poor is the main focus of the UPDATE Project, the (broader) water *and* sanitation picture is also of interest. The key aspect of the sanitation situation of the urban poor covered by the UPDATE survey is disposal of waste and wastewater.

Table 4.4.1 show the means of waste/wastewater disposal ever used by respondent households. (Note that households can report using more than one method of waste/wastewater disposal.) There is significant variation across the three locations. In Semarang and Indramayu, the majority of respondents (*roughly* 65% in both locations) report using their own toilet, while in Tangerang, the share is significantly lower (23.4%). The use

of a "helicopter"—raised platform over a lake, river, the sea, or other natural body of water—is the most frequently reported method in Tangerang (43.7%), whereas in Indramayu (32.6%) and Semarang (11.9%), the corresponding figure is much lower. In Semarang (20.0%), a significant portion of sampled households report using public sanitation facilities ("MCK"), while in Tangerang and Indramayu the practice is essentially unused (below 2% for both sites).

table 4.4.1
means of waste/wastewater disposal: "ever use" (%)

	Semarang	Tangerang	Indramayu
MCK (public sanitation facility)	20.0	1.1	1.8
own toilet	65.4	23.4	64.2
neighbors toilet	4.2	2.4	3.8
use of "helicopter" (raised platform)	11.9	43.7	32.6
use of "piss-pot"	0.3	4.8	0.5
use "open spaces"	4.5	34.6	17.2
other	1.2	3.3	0.6

The *primary* means of waste/wastewater disposal reported by sampled households (table 4.4.2) is, of course, more concentrated in individual methods but broadly mirrors overall use. In Semarang (64.3%) and Indramayu (63.0%), the primary means of waste/wastewater disposal is the households own toilet. In Tangerang (41.5%), the primary reported means is use of "helicopter". In Tangerang there is more variation in the primary means, with use of "open space" (31.0%) and use of own toilet (23.5%) also being reported by a substantial share of respondents.

table 4.4.2
primary means of waste/wastewater disposal (%)

	Semarang	Tangerang	Indramayu
MCK (public sanitation facility)	19.0	1.1	0.3
own toilet	64.3	23.5	63.0
neighbors toilet	3.0	1.1	2.0
use of "helicopter" (raised platform)	9.4	41.5	23.2
use of "piss-pot"	0.0	0.0	0.0
use "open space"	3.5	31.0	11.5
other	0.8	1.9	0.0

4.5 Local Government Services

As a direct outcome of the sampling strategy/design used within the UPDATE Project, the urban poor households sampled in Semarang, Tangerang, and Indramayu do not have direct contact with their respective PDAMs as connected customers. Their perceptions of PDAM service—if they have such perceptions—must come from past experiences as customers, from the experiences of relatives, from the current experiences of friends, from the media, or from other second-hand sources.

Respondents do, however, have regular contact with other local government –provided services as customers/consumers. They routinely use local roads, their children attend local schools, they benefit from drainage/flood control, and their families utilize local health clinics.

Table 4.5.1 shows with which local government service (and some "locally available" services) respondents are most satisfied. Unfortunately, a large percentage of respondents do not have a strong idea and responded "don't know". Among those respondents that did express a clear choice, responses varied somewhat across the three UPDATE survey locations, but were largely concentrated in education, health care, and roads.

table 4.5.1
local government service "<u>most</u> satisfied with" (%)

	education	health care	water supply	sanitation/ sewerage	roads	solid waste	low-income/public housing	drainage/ flood control	public transportation	electricity	other	don't know
Semarang	11.2	17.3	0.3	0.0	13.2	1.5	0.3	1.0	3.3	6.3	2.8	42.9
Tangerang	21.6	14.6	4.9	0.5	3.5	0.0	0.3	0.0	1.3	11.6	1.6	40.2
Indramayu	15.1	13.0	1.0	1.3	12.8	0.0	0.3	0.3	11.5	16.1	0.8	28.1

As with the results shown in table 4.5.1, the local government service which respondents expressed being least satisfied with varied somewhat across the three survey sites. In both Tangerang and Indramayu (see table 4.5.2, immediately below), the clear loser among local government services was "water supply"—not a surprising result given that respondents typically do not have connections. In Semarang respondents expressed being least satisfied with solid waste and drainage/flood control at roughly equal levels.

table 4.5.2
local government service "<u>least</u> satisfied with" (%)

	education	health care	water supply	sanitation/ sewerage	roads	solid waste	low-income/public housing	drainage/ flood control	public transportation	electricity	other	don't know
Semarang	2.0	1.8	9.4	5.6	4.8	11.9	2.3	10.2	2.0	4.8	2.8	42.4
Tangerang	3.2	11.8	14.2	6.7	13.7	5.1	0.5	6.4	5.6	1.6	2.1	29.0
Indramayu	2.3	4.6	38.5	7.4	7.9	7.9	0.3	5.9	1.8	3.8	0.8	18.9

When asked which local government service was their first improvement priority, respondents in Tangerang and Indramayu were most likely to select water supply (20.6% and 46.1%, respectively). In Semarang, respondents were most likely to select either solid waste (10.4%) or drainage/flood control (12.9%). Not surprisingly, sectoral first improvement priorities generally are identical to the sector with which respondents are least satisfied.

table 4.5.3
local government service "first improvement priority" (%)

	education	health care	water supply	sanitation/ sewerage	roads	solid waste	low-income/public housing	drainage/ flood control	public transportation	electricity	other	don't know
Semarang	2.5	3.0	9.1	6.3	7.6	10.4	3.0	12.9	2.0	4.3	3.3	35.4
Tangerang	4.0	9.4	20.6	6.7	15.5	4.5	0.3	5.6	6.1	1.3	2.1	23.8
Indramayu	5.6	3.5	46.1	6.8	8.1	3.5	1.0	4.8	1.0	2.8	1.3	15.4

4.6 Community Organizations

In many countries—and in other locations within Indonesia—organizations other than local water utilities play roles in supplying and supporting the supply of water to the urban and rural poor. NGOs, community organizations, religious organizations, and other groups that work with the poor have all emerged as partners in urban water supply.[11] To learn which organizations might be possible candidates for such schemes in Indonesia, households were also asked a series of questions about the activities of various organizations. Questions proceeded from the broad and not-water-sector-focused ("What organizations are active in your area?") to the specific and water-delivery-focused ("What organizations do you think could best help provide water service for the urban poor in your area?").[12]

Table 4.6.1 shows respondent perceptions of organizations that are active in their area. For each of the three UPDATE locations, respondents report that numerous organizations are active in their area, though there political parties are not often reported as active. Religious organizations are reported as active in each of the three locations, as are local (neighborhood) government organizations (RT/RW) are reported as active. Social safety net organizations (PKK, *pemberdayaan kesejahteraan keluarga*, or family welfare movement) are reported as active in Semarang. Also in Semarang, *arisan*—a traditional form of ROSCA (rotating savings and credit associations)—were reported as active.

[11] See the bibliography for numerous articles that discuss the roles of such organizations and partnerships.
[12] "Area" within this section refers to the kelurahan within which the respondent lives.

table 4.6.1
organizations "active" in respondents' area (%)

	Semarang	Tangerang	Indramayu
RT/RW	95.7	71.7	66.8
LKMD	38.6	19.11	28.1
"Dewan Kelurahan" (kelurahan-level assembly)	54.1	15.3	56.5
political party	10.5	3.7	8.3
PKK	89.9	29.8	34.6
Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization	91.7	72.1	74.2
Takesra	26.7	4.3	14.6
Arisan	88.9	21.4	45.1
other organizations, associations, or groups	10.0	5.9	6.1

Responses to questions about organizations active specifically helping the poor are reported in table 4.6.2. As with overall organizational activity reported in table 4.6.1, RT/RW are reported as active in Tangerang and Indramayu, though, surprisingly, not in Semarang. Religious organizations are again reported as active in each of the three locations and *arisan* are again reported as active in Semarang.

table 4.6.2
organizations "active helping poor" (%)

	Semarang	Tangerang	Indramayu
RT/RW	10.0	57.6	58.3
LKMD	22.2	9.5	21.4
"Dewan Kelurahan" (kelurahan-level assembly)	43.5	12.4	50.3
political party	3.7	3.4	2.5
PKK	59.6	19.8	18.0
Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization	56.6	42.0	42.2
Takesra	14.5	5.5	9.1
Arisan	42.3	10.6	20.4
other organizations, associations, or groups	5.0	3.7	5.1

Focusing more narrowly on water, table 4.6.3 shows respondent perceptions of organizations that are active "related to water". In none of the three locations are organizations frequently reported as active, though, once again, RT/RW are most frequently cited as active. In Indramayu, kelurahan-level assemblies are also reported as active. Interestingly, religious organizations are not reported as active related to water supply.

table 4.6.3
organizations "active related to water" (%)

	Semarang	Tangerang	Indramayu
RT/RW	16.0	14.5	20.6
LKMD	1.3	2.6	9.8
"Dewan Kelurahan" (kelurahan-level assembly)	11.2	1.8	20.9
political party	0.0	0.0	0.8
PKK	3.1	2.6	1.0
Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization	1.1	6.6	1.3
Takesra	0.0	0.0	1.3
Arisan	0.5	1.8	1.3
other organizations, associations, or groups	1.9	1.3	2.3

Tables 4.6.4 and 4.6.5 show responses to questions related to which organizations would be "able" and "best able" to help provide water for the urban poor, respectively. There is little variation from the patterns established above, with RT/RW (relatively) frequently cited in each of the three and *Dewan Kelurahan* cited in Semarang and Indramayu.

table 4.6.4
organizations "able to help provide water for urban poor" (%)

	Semarang	Tangerang	Indramayu
RT/RW	25.4	19.0	31.5
LKMD	5.6	2.1	8.6
"Dewan Kelurahan" (kelurahan-level assembly)	25.9	1.6	34.8
political party	0.8	0.5	0.5
PKK	3.1	7.3	0.0
Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization	1.1	18.6	0.3
Takesra	0.0	0.8	0.8
Arisan	0.3	4.2	0.0
other organizations, associations, or groups	3.7	1.3	4.1

table 4.6.5
organizations "best able to help provide water for urban poor" (%)

	Semarang	Tangerang	Indramayu
RT/RW	12.5	19.2	10.9
LKMD	0.8	1.2	1.6
"Dewan Kelurahan" (kelurahan-level assembly)	19.3	0.5	32.3
political party	0.0	0.0	0.0
PKK	3.3	2.4	0.0
Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization	1.5	16.5	2.1
Takesra	0.0	0.0	0.0
Arisan	0.8	0.8	0.3
other organizations, associations, or groups	1.8	1.3	2.4

5. UPDATE Tools for PDAMs

The survey results described above are the result of a donor-funded project implemented by a team of international and Indonesian water sector and survey specialists. The survey instrument used was designed not only to produce information that would allow the UPDATE team to learn about the water expenditure and willingness-to-pay of the urban poor, but also to allow for diagnosis of the sample and of the information obtained. This more specialized information—while necessary for a research effort like the UDPATE Project—is not necessary for a PDAM that wishes to carry out a survey to learn if it can afford to extend water service to the urban poor.

Meeting this need, providing tools that are useful to and usable by PDAMs, was an important focus of the UPDATE Project. To address these more narrowly-focused needs of PDAMs, the UPDATE Team developed a somewhat-simplified survey instrument that can be used by PDAMs. This "toolkit" survey instrument, contained in Appendix 2, contains a smaller number of sections and questions than the instrument used within the UPDATE Project.

6. Suggested Next Steps: UPDATE 2

Building on the accomplishments of the UDPATE Project, a second round of activities will be conducted in the three project locations.

From about October 2002 through August 2003, an UPDATE-2 team will review the UPDATE-1 results and will further explain their implications to the water enterprises and local governments in Semarang, Tangerang, and Indramayu. In consultation with water enterprises and local governments, they will select smaller specific areas that would benefit from cost/benefit studies. If further surveys must be done in those smaller areas, they will perform them. These surveys would likely focus primarily on collecting more detailed data related to the likely volume of water consumed by households as well as the proximity of non-collected households to the existing PDAM distribution network.

The team will conduct cost-benefit studies in highly targeted areas showing the benefits to consumers and the water enterprises if the piped water network is extended to those targeted areas and the full household tariff is charged to the poor households. The results of the cost/benefit study will be presented to PERPAMSI and to local governments as a basis for changing the "social tariff" policy.

The UPDATE-2 Team will perform the following tasks:

- Review of UPDATE-1 results and characteristics of people living in the survey areas.
- Consult with water enterprises and local governments to discuss the results of the surveys.
- Identify key areas where piped water could be extended to the urban poor.
- Assess the need for additional surveys in the key areas.
- Conduct rigorous cost benefit studies aimed at showing the benefit of piped water to both local governments and the unconnected urban poor.
- Simplify the cost/benefit analysis process for enterprises to follow.
- Pilot-test fieldwork procedures.
- Analyze all project data.
- Assess the suitability of UPDATE tools for other urban environmental services.

At the end of the period, the team will arrange a one-day seminar in Jakarta for stakeholders and decision-makers detailing the UPDATE-2 cost/benefit study findings and their implications for other water enterprises with urban poor. Local government officers, PERPAMSI, participants from the UPDATE-1 national seminar, and stakeholders brought in during UPDATE-2 will participate in this seminar.

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Appendix 1: Survey Instrument (English)

HOUSEHOLD ID:														

UPDATE Survey:
Non-Connected Household Questionnaire

Interview Data

Kecamatan: A_____
Kelurahan: B_____
RW: C_____
Interviewer ID number: D_____
Date of interview: E_____ F_____
month day

Interview number: G_____

HOUSEHOLD IDENTIFICATION NUMBER:

A	B	C	D1	D2	E1	E2	F1	F2	G1	G2

UPDATE Survey: Household Questionnaire

Opening Statement

Dear Respondent! My name is _____. I represent a United States-Asia Environmental Partnership (USAEP) and FORKAMI (*Forum Komunikasi Pengelolaan Kualitas Air Minum Indonesia*) water sector study team. We are conducting a survey related to water use by urban households like yours. The information that we collect from this survey will help us design a program for expanding and improving water service to urban households for this area's PDAM and for PDAMs throughout Indonesia. From among Indonesia's 300 PDAMs, this area's PDAM has been chosen as a test case for this important work. From within this PDAM, your household has been selected at random to be interviewed. Information from households such as yours is vital in designing this program.

We assure you that your individual responses will not be disclosed to anyone. After questionnaires are completed, they will be processed by computer and no information on any single household will be disclosed to anyone. You can of course choose not to participate. The survey will take approximately 15-20 minutes and we will be asking you questions primarily related to your household's:

- basic characteristics
- priorities for local government services
- sources and uses of water

  and
- expenditure on water

Are you willing to participate? *If "no", THANK RESPONDENT and END INTERVIEW.*

Thank you for participating. The usefulness of the results from this survey will depend on your sincerity and exactness in answering these questions. There are no "right" or "wrong" answers to *any* of these questions and you will not be judged in any way based on your responses. Please answer all questions as accurately and truthfully as possible. Again, thank you for taking the time to participate in this survey.

Sections

1. Dwelling, Connection, and Respondent Characteristics

1.1 What is your status within this household?
[*READ ITEMS*]
head of household 1
spouse of head of household 2
other 3

[*If 1.1 is "other", THANK RESPONDENT and END INTERVIEW.*]

1.2 Is your household directly connected to the PDAM water system?
(*including direct dwelling connection, yard connection*)
yes 1
no 2
don't know 3

[*If 1.2 is "yes" or "don't know", THANK RESPONDENT and END INTERVIEW.*]

1.3 Gender of respondent:
male 1
female 2

1.4 What type of dwelling is this?
[*READ ITEMS*]
single-family house (rumah) 1
multi-family house (rumah petak) 2
temporary housing (bedeng) 3
other 4

[**ENUMERATOR:** *Using questions 1.5 through 1.7,ENTER the material from which the dwelling is constructed.*]

1.5 the **floor (lantai)** of this dwelling is constructed from:
dirt 1
wood 2
cement 3
tile 4
other 5

1.6 The **walls (dinding)** of this dwelling is constructed from:
wood (*papan*/*kayu*) 1
cement (*bata*/*semen*) 2
plastic (*plastik*) 3
other (*lain-lain*) 4

1.7 The **roof (atap)** of this dwelling is constructed from:
clay tiles (genteng) 1
metal (seng) 2
plastic (plastik) 3
other (lain-lain) 4

1.8 How long has your household occupied this dwelling?
less than one year 1
one to two years 2
two to three years 3
three to five years 4
more than five years 5

1.9 On average over the course of the past month how many people have lived in this household?
....._____

1.10 What is the ownership or rental status of this household in this dwelling:
rent 1
own 2
share (*menumpang*) 3
don't know 4
other 5

1.11 What is the highest level of education obtained by the household head?
never attended school (*tidak pernah sekolah*) 1
incomplete elementary school (*tidak tamat SD/ibtidaiyah*) 2
complete elementary school (*tamat SD/ibtidaiyah*) 3
incomplete junior high/sec school (*tidak tamat SMP/sanawiyah*) 4
complete junior high/sec school (*tamat SMP/Tsanawiyah*) 5
incomplete senior high/sec school (*tidak tamat SMA/aliyah*) 6
complete senior high/sec school (*tamat SMA/aliyah*) 7
incomplete university (*tidak tamat perguruan tinggi/akademi*) 8
complete university (tamat perguruan tinggi/akademi) 9

1.12 What is the primary occupation of the household head?
farmer of own land (*petani pemilik*) 1
farmer, sharecropping (*petani penggarap*) 2
farmer, wage (*buruh tani*) 3
government worker (*pegawai negeri*) 4
army (*ABRI*) 5
retire government worker (*pensiunan pegawai negeri*) 6
retired army (*pensiunan ABRI*) 7
vendor/"seller" (*pedagang*) 8
informal worker/laborer (*buruh/kuli*) 9
fisherman (*nelayan*) 10
worker in (relatively large) private enterprise (*karyawan swasta*) 11
other (*lainnya*) 12
unemployed (*tidak bekerja*) 13

2. Water Sources

2.1 Does this household ever obtain water from the following sources?
[*READ ITEMS*]

		yes	no	DK
2.1.1	TA/HU/HC/public tap/MCK	1	2	3
2.1.2	well	1	2	3
2.1.3	neighbors (free)	1	2	3
2.1.4	neighbors (purchased)	1	2	3
2.1.5	private water vendor	1	2	3
2.1.6	purchase from PDAM	1	2	3
2.1.7	lake, river, stream, or other natural body of water	1	2	3
2.1.8	collection of rainwater	1	2	3
2.1.9	other	1	2	3

2.3 Please estimate the average total amount (volume) of water obtained by this household per day? (in liters) [*READ ITEMS*]
2.5.1 TA/HU/HC/public tap/MCK _____
2.5.2 well _____
2.5.3 neighbors (free) _____
2.5.4 neighbors (purchased) _____
2.5.5 private water vendor _____
2.5.6 purchase from PDAM _____
2.5.7 lake, river, stream, or other natural body of water _____
2.5.8 collection of rainwater _____
2.5.9 other _____

2.3 What is the primary source of water for this household?
TA/HU/HC/public tap/MCK 1
well 2
neighbors (free) 3
neighbors (purchased) 4
private water vendor 5
purchase from PDAM 6
lake, river, stream, or other natural body of water 7
collection of rainwater 8
other 9

2.4 Overall, are you satisfied with the quality of water from this (primary) source?
yes 1
no 2
don't know 3

2.5 Do you think that the quality of water from this (primary) source is:
[*READ ITEMS*]
better than water from PDAM household connections 1
same as water from PDAM household connections 2
worse than water from PDAM household connections 3
don't know 4

2.6 Is the following a reason why your household does not have a PDAM connection?
[*READ ITEMS*]

		yes	no
2.6.1	lower cost of water from alternative source(s)	1	2
2.6.2	higher quality of water from alternative source(s)	1	2
2.6.3	water from alternative source(s) is more convenient	1	2
2.6.4	low pressure of water from PDAM connection	1	2
2.6.5	PDAM connections not available in this area	1	2
2.6.6	PDAM connections charges are too high	1	2
2.6.7	can't afford to pay *any* water tariff	1	2
2.6.8	procedures for PDAM connections are difficult	1	2
2.6.9	do not have KTP	1	2
2.6.10	other reason(s)	1	2

3. Water Uses

3.1 For **drinking and cooking**, what is the primary source of water for this household?
TA/HU/HC/public tap/MCK 1
well 2
neighbors (free) 3
neighbors (purchased) 4
purchased from water vendor 5
purchase from PDAM 6
lake, river, stream, or other natural body of water 7
collection of rainwater 8
other 9

3.2 Does your household ever purchase "Aqua" (or other brand of bottled water)?
yes 1
no 2
don't know 3

3.3 For **washing dishes, washing clothes, personal washing, and other household uses**, what is the primary source of water for this household?
TA/HU/HC/public tap/MCK 1
well 2
neighbors (free) 3
neighbors (purchased) 4
purchased from water vendor 5
purchase from PDAM 6
lake, river, stream, or other natural body of water 7
collection of rainwater 8
other 9

4. Wastewater Disposal

4.1 Does your household ever dispose of waste/wastewater in the following ways?
[*READ ITEMS*]

		yes	no
4.1.1	MCK (public sanitation facility)	1	2
4.1.2	own toilet	1	2
4.1.3	neighbors toilet	1	2
4.1.4	use of "helicopter" (raised platform)	1	2
4.1.5	use of "piss-pot"	1	2
4.1.6	use "open spaces"	1	2
4.1.7	other	1	2

[*If 4.1.1 is "no", SKIP to 4.3*]

4.2 In an average day, how much does your household (all members combined) spend for using the MCK? (in Rupiah)
..... _____

4.3 What is the primary means of disposal of waste/wastewater for your household?
MCK (public sanitation facility) 1
own toilet 2
neighbors toilet 3
use of "helicopter" (raised platform) 4
use of "piss-pot" 5
use "open spaces" 6
other 7

4.4 Is waste/wastewater disposal a problem for your household?
yes 1
no 2
don't know 3

4.5 Is waste/wastewater disposal a problem for your community?
yes 1
no 2
don't know 3

5. Water Expenditure

water vendors:

5.1 Does your household purchase water from water vendors?
yes 1
no 2
don't know 3

[*If 5.1 is "no", SKIP to 5.16*]

5.2 On average, how many jerigens/barrels/containers does your household purchase per day?
..... _____

5.3 How much water do these jerigens/barrels/containers contain? (liters)
..... _____

5.4 What is the average price of one of these jerigens/barrels/containers? (Rupiah)
..... _____

5.5 Does the water vendor deliver these jerigens/barrels/containers to your house?
yes 1
no 2
don't know 3

[*If 5.5 is "yes", SKIP to* 5.13]

5.6 How far must someone from your household travel to purchase these jerigens/barrels/containers?
0-50 m 1
50-100 m 2
100-200 m 3
200-500 m 4
500-1000 m 5
more than 1000 m 6

5.7 How does this household member travel to this point?
walk 1
by own bicycle 2
by own motorcycle 3
by ojek or bejak (small moto- or pedal-taxi) 4
by taxi 5
by own car 6
by sampan 7
by other means of transportation 8

5.8 On average, how much time does it take to travel to this point? (in minutes)
..... _____

5.9 What is the average total per-trip cost of these trips (taxi, fuel, other)? (in Rupiah)
..... _____

5.10 Who typically travels to this point to purchase water?
mother 1
father 2
son 3
daughter 4
other relative 5
servant ("pembantu") 6
other person 7

5.11 Does this person ever use time that should be devoted to other activities to obtain water?
yes 1
no 2
don't know 3

[*If 5.11 is "no" or "don't know", SKIP to 5.13.*]

5.12 Does this person ever use time that should be devoted to the following activities?
[*READ ITEMS*]

	yes	no	DK
5.12.1 school	1	2	3
5.12.2 employment (work for earnings)	1	2	3
5.12.3 work in/for the household	1	2	3
5.12.4 social/community activities	1	2	3
5.12.5 other	1	2	3

5.13 Do you know from what source water vendors *typically* obtain the water that they sell to you?
yes 1
no 2
don't know 3

[*If 5.13 is "no" or "don't know", SKIP to 5.15.*]

5.14 What is this source from which water vendors obtain the water that they sell?
TA/HU/HC/public tap 1
well 2
purchased (from PDAM customer) 3
purchased (from PDAM) 4
lake, river, stream, or other natural body of water 5
collection of rainwater 6
other 7

5.15 Overall, are you satisfied with the quality of the water from water vendors?
yes 1
no 2
don't know 3

water purchases from other sources:

5.16 Does your household purchase water from sources other than water vendors?
yes 1
no 2
don't know 3

[*If 5.16 is "no", SKIP to 5.18.*]

5.17 What is your household's average expenditure per day on water from all of these other sources combined? (in Rupiah)
..... _____

5.18 Has your household spent money on water storage equipment (tanks, barrels, etc.) within the last year?
yes 1
no 2
don't know 3

[*If 5.18 is "no", SKIP to section 6.*]

5.19 Please estimate the amount of money your household has spent on water storage equipment within the last year. (in Rupiah)

..... _____

6. Willingness to Pay for PDAM Connection

[**ENUMERATOR READS:** *Imagine now that your household* **could have** *a direct connection to the PDAM water system. Your household will be billed on a monthly basis for the water that you use from this connection. The monthly charge will be determined using the quantity of water that you use and the price per quantity. The quantity of water that your household uses would be determined by a meter connected to your dwelling only. This meter would be checked every month. From this connection, your household could use as much water as it wishes and will be charged based on this amount.*]

6.1 Would you like to be connected to the PDAM water system?

yes.....1
no.....2
don't know.....3
[If 6.1 is "no" or "don't know", SKIP to section 8.]

6.2 Would you be willing to pay a one-time ("up front") connection fee to have your household directly connected to the PDAM water system?

yes.....1
no.....2
don't know.....3
[*If 6.2 is "no" or "don't know", SKIP to*6.4.]

[**ENUMERATOR READS:** *Now I will ask you some questions about your household's willingness to pay connection fees. It is important that you answer these questions honestly and accurately. If your responses are lower than your true willingness to pay, your PDAM might not be able to afford to expand service to reach your household. If your responses are higher than true willingness to pay, you may not be able to afford the service.*]

6.3 Would you be willing to pay the following one-time ("up front") connection fees to have your household directly connected to the PDAM water system?
[*READ ITEMS*]
[*SKIP to 6.6 when respondent answers "yes"*]

		yes	**no**	**DK**
6.3.1	more than 500 000 Rp	1	2	3
6.3.2	500 000 Rp	1	2	3
6.3.3	400 000 Rp	1	2	3
6.3.4	300 000 Rp	1	2	3
6.3.5	200 000 Rp	1	2	3
6.3.6	100 000 Rp	1	2	3
6.3.7	less than 100 000 Rp	1	2	3

6.4 Would you prefer to be able to pay the connection fee over a period of, say, one year, included in your regular bill ("installment plan" "angsuran atau kredit")?

yes.....1
no.....2
don't know.....3

[*If 6.4 is "no" or "don't know", SKIP to 6.6.*]

6.5 Would you be willing to pay the following ("installment plan" "angsuran atau kredit") connection fees to have your household directly connected to the PDAM water system?

[*READ ITEMS*]

		yes	no	DK
6.5.1	more than 42 000 Rp /month for one year	1	2	3
6.5.2	approx. 42 000 Rp /month for one year	1	2	3
6.5.3	approx. 33 000 Rp /month for one year	1	2	3
6.5.4	approx. 25 000 Rp /month for one year	1	2	3
6.5.5	approx. 17 000 Rp /month for one year	1	2	3
6.5.6	approx. 8 000 Rp /month for one year	1	2	3
6.5.7	less than 8 000 Rp /month for one year	1	2	3

6.6 Do you know the current/actual connection fees for this PDAM?

yes 1
no 2
don't know 3

[*If 6.6 is "no" or "don't know", SKIP to 6.8.*]

6.7 What household connection fee does the PDAM for this area currently charge? (in Rupiah)

..... _____

6.8 Do you think that PDAM meters for household connections are accurate?

yes 1
no 2
don't know 3

7. Willingness to Pay PDAM Water Tariffs

[**ENUMERATOR READS:** *Imagine now that your household* **has** *a direct connection to the PDAM water system. As I described above, your household will be billed on a monthly basis for the water that you use from this connection. The monthly charge will be determined using the quantity of water that you use and the price per quantity. The quantity of water that your household uses would be determined by a meter connected to your dwelling only. This meter would be checked every month. From this connection, your household could use as much water as it wishes and will be charged based on this amount. In the following questions, I will ask you about some prices water from this connection. These questions are based on an amount of 20L of water, which is the same amount as one jerigen.*]

7.0 You have said that you normally purchase water in jerigen containing _____ liters. For the following question, please consider that sized jerigen only:

"Jika harga untuk tiap _____liter adalah Rp _____ (lihat tabel di bawah), apakah Bapak/Ibu mau untuk membayar?"

[Tandai dengan "X" pada kolom yang sesuai]	□																			
	20 liter				**25 liter**				**30 liter**				**50 liter**				**100 liter**			
Harga	Rp	**Y (1)**	**T (2)**	**TT (3)**	**Rp**	**Y (1)**	**T (2)**	**TT (3)**	**Rp**	**Y (1)**	**T (2)**	**TT (3)**	**Rp**	**Y (1)**	**T (2)**	TT (3)	**Rp**	**Y (1)**	**T (2)**	**TT (3)**
7.1	**500**				**625**				**750**				**1250**				**2500**			
7.2	**250**				**300**				**375**				**625**				**1250**			
7.3	**100**				**125**				**150**				**250**				**500**			
7.4	**80**				**100**				**120**				**200**				**400**			
7.5	**60**				**75**				**90**				**150**				**300**			
7.6	**40**				**50**				**60**				**100**				**200**			
7.7	**20**				**25**				**30**				**50**				**100**			
7.8	**10**				**12**				**15**				**25**				**50**			

Keterangan: Y = Ya; T = Tidak; TT = Tidak Tahu

7.7 What is the highest tariff that your household would be willing to pay for each 20L of water? (in Rupiah)

..... _____

[**ENUMERATOR:** *WRITE the amount from 7.7 in 7.8 through 7.11.*]

7.9 You have said that you would pay _____ Rupiah for each 20L of water from a PDAM connection. If your household was connected to the PDAM water system and the tariff for each 20L was _____ Rupiah, do you think you would use:
[*READ ITEMS*]

much less water 1
less water 2
the same amount of water 3
more water 4
much more water 5

7.10 If your household was connected to the PDAM water system and tariff was _____ Rupiah for each 20L of water, would your household use water from the PDAM connection for the following tasks?
[*READ ITEMS*]

		yes	**no**
7.10.1	drinking/cooking	1	2
7.10.2	washing dishes	1	2
7.10.3	washing clothes	1	2
7.10.4	personal washing	1	2
7.10.5	household cleaning	1	2
7.10.6	other uses	1	2

7.11 Can you estimate how much water your household would use per day if the tariff was _____ Rupiah for each 20L of water?

yes 1
no 2
don't know 3

[If 7.11 is "no", SKIP to section 8.]

7.12 How much water would your household use per day if the tariff was _____ Rupiah for each 20L of water?

..... _____

8. Local Government Service: Satisfaction & Priorities

8.1 With what local government service are you most satisfied?

education 1
health care 2
water supply 3
sanitation/sewerage 4
roads 5
solid waste 6
low-income/public housing 7
drainage/flood control 8
public transportation 9
electricity 10
other 11
don't know 12

8.2 With what local government service are you least satisfied?

education 1
health care 2
water supply 3
sanitation/sewerage 4
roads 5
solid waste 6
low-income/public housing 7
drainage/flood control 8
public transportation 9
electricity 10
other 11
don't know 12

8.3 What is your first priority for improvements in local government services, infrastructure, or facilities?

education 1
health care 2
water supply 3
sanitation/sewerage 4
roads 5
solid waste 6
low-income/public housing 7
drainage/flood control 8
public transportation 9
electricity 10
other 11
don't know 12

9. Community Organizations

9.1 Are the following organizations, associations, or other groups active in this area?

[*READ ITEMS*]

		yes	no	DK
9.1.1	RT/RW	1	2	3
9.1.2	LKMD	1	2	3
9.1.3	"Dewan Kelurahan" (kelurahan-level assembly)	1	2	3
9.1.4	political party	1	2	3
9.1.5	PKK	1	2	3
9.1.6	Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization	1	2	3
9.1.7	Takesra	1	2	3
9.1.8	Arisan	1	2	3
9.1.9	other organizations, associations, or groups	1	2	3

9.2 Are the following organizations, associations, or other groups involved in activities to help and/or support the poor?

[*READ ITEMS*]

		yes	no	DK
9.2.1	RT/RW	1	2	3
9.2.2	LKMD	1	2	3
9.2.3	"Dewan Kelurahan" (kelurahan-level assembly)	1	2	3
9.2.4	political party	1	2	3
9.2.5	PKK	1	2	3
9.2.6	Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization	1	2	3
9.2.7	Takesra	1	2	3
9.2.8	Arisan	1	2	3
9.2.9	other organizations, associations, or groups	1	2	3

9.3 Are the following organizations, associations, or other groups involved in activities related to water service?

[*READ ITEMS*]

		yes	no	DK
9.3.1	RT/RW	1	2	3
9.3.2	LKMD	1	2	3
9.3.3	"Dewan Kelurahan" (kelurahan-level assembly)	1	2	3
9.3.4	political party	1	2	3
9.3.5	PKK	1	2	3
9.3.6	Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization	1	2	3
9.3.7	Takesra	1	2	3
9.3.8	Arisan	1	2	3
9.3.9	other organizations, associations, or groups	1	2	3

9.4 Which of the following organizations, associations, or other groups do you think would be able to help provide water in this area?
[*READ ITEMS*]

		yes	no	DK
9.4.1	RT/RW	1	2	3
9.4.2	LKMD	1	2	3
9.4.3	"Dewan Kelurahan" (kelurahan-level assembly)	1	2	3
9.4.4	political party	1	2	3
9.4.5	PKK	1	2	3
9.4.6	Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization	1	2	3
9.4.7	Takesra	1	2	3
9.4.8	Arisan	1	2	3
9.4.9	other organizations, associations, or groups	1	2	3

9.5 Which organizations, associations, or other groups do you think would be **best able** to help provide water in this area?

RT/RW 1
LKMD 2
Dewan Kelurahan (kelurahan-level assembly) 3
Political party 4
PKK 5
Pengajian, Majelis Taklim, Sekolah Minggu, or other community religious organization 6
Takesra 7
Arisan 8
other organizations, associations, or groups 9

10. Household Economic Profile

10.1 Does this household have the following utilities?

		yes	no	DK
10.1.1	electricity from PLN	1	2	3
10.1.2	electricity from other source	1	2	3
10.1.3	telephone	1	2	3

10.2 Do members of your household own the following items:
[*READ ITEMS.*]

		yes	no
10.2.1	bicycle	1	2
10.2.2	motorcycle	1	2
10.2.3	radio	1	2
10.2.4	fan	1	2
10.2.5	refrigerator	1	2
10.2.6	television	1	2
10.2.7	VCD (video cassette player only)	1	2
10.2.8	car/truck	1	2

10.3 Does your household have a KK (kartu keluarga) for living in this kelurahan?

yes 1
no 2
don't know 3

10.4 Do adult members of this household have valid (up-to-date) KTP (kartu tanda penduduk) for living in this kelurahan?

yes 1
no 2
don't know 3

10.5 What is the average total combined monthly **expenditure** of the household?

<= Rp 200,000 1
Rp 200,001 – Rp 400,000 2
Rp 400,001 – Rp 600,000 3
Rp 600,001 – Rp 800,000 4
Rp 800,001 – Rp 1,000,000 5
> Rp 1,000,000 6

10.6 What is the average total combined monthly **income** of the household head and the spouse of the household head?

<= Rp 200,000 1
Rp 200,001 – Rp 400,000 2
Rp 400,001 – Rp 600,000 3
Rp 600,001 – Rp 800,000 4
Rp 800,001 – Rp 1,000,000 5
> Rp 1,000,000 6

[*If 10.5 is "no", END.*]

Appendix 2: PDAM “Toolkit” Instrument (English)

HOUSEHOLD ID:														

PDAM UPDATE Survey:
Non-Connected Household Questionnaire

Interview Data

Kecamatan: A_____
Kelurahan: B_____
RW: C_____
Interviewer ID number: D_____
Date of interview: E_____ F_____
month day

Interview number: G_____

HOUSEHOLD IDENTIFICATION NUMBER:

A	B	C	D1	D2	E1	E2	F1	F2	G1	G2

UPDATE Survey: Household Questionnaire

Opening Statement

Dear Respondent! My name is _____. I represent a study team from your PDAM. We are conducting a survey related to water use by urban households like yours. The information that we collect from this survey will help us design a program for expanding and improving water service to urban households for this area's PDAM. Your household has been selected at random to be interviewed. Information from households such as yours is vital in designing this program.

We assure you that your individual responses will not be disclosed to anyone. After questionnaires are completed, they will be processed by computer and no information on any single household will be disclosed to anyone. You can of course choose not to participate. The survey will take approximately 15-20 minutes and we will be asking you questions primarily related to your household's:

- basic characteristics
- priorities for local government services
- sources and uses of water

  and
- expenditure on water

Are you willing to participate? *If "no", THANK RESPONDENT and END INTERVIEW.*

Thank you for participating. The usefulness of the results from this survey will depend on your sincerity and exactness in answering these questions. There are no "right" or "wrong" answers to *any* of these questions and you will not be judged in any way based on your responses. Please answer all questions as accurately and truthfully as possible. Again, thank you for taking the time to participate in this survey.

Sections

1. Dwelling, Connection, and Respondent Characteristics

1.1 What is your status within this household? [*READ ITEMS*]
head of household 1
spouse of head of household 2
other 3

[*If 1.1 is "other", THANK RESPONDENT and END INTERVIEW.*]

1.2 Is your household directly connected to the PDAM water system? (*including direct dwelling connection, yard connection*)
yes 1
no 2
don't know 3

[*If 1.2 is "yes" or "don't know", THANK RESPONDENT and END INTERVIEW.*]

1.3 What type of dwelling is this? [*READ ITEMS*]
single-family house (rumah) 1
multi-family house (rumah petak) 2
temporary housing (bedeng) 3
other 4

1.4 On average over the course of the past month how many people have lived in this household?
..... _____

1.5 What is the ownership or rental status of this household in this dwelling:
rent 1
own 2
share (*menumpang*) 3
don't know 4
other 5

2. Water Sources

2.1 Please estimate the average total amount (volume) of water obtained by this household per day? (in liters) [*READ ITEMS*]
2.1.1 TA/HU/HC/public tap/MCK ..... _____
2.1.2 well ..... _____
2.1.3 neighbors (free) ..... _____
2.1.4 neighbors (purchased) ..... _____
2.1.5 private water vendor ..... _____
2.1.6 purchase from PDAM ..... _____
2.1.7 lake, river, stream, or other natural body of water ..... _____
2.1.8 collection of rainwater ..... _____
2.1.9 other ..... _____

2.2 What is the primary source of water for this household?
TA/HU/HC/public tap/MCK 1
well 2
neighbors (free) 3
neighbors (purchased) 4
private water vendor 5
purchase from PDAM 6
lake, river, stream, or other natural body of water 7
collection of rainwater 8
other 9

2.3 Overall, are you satisfied with the quality of water from this (primary) source?
yes 1
no 2
don't know 3

2.4 Do you think that the quality of water from this (primary) source is: [*READ ITEMS*]
better than water from PDAM household connections 1
same as water from PDAM household connections 2
worse than water from PDAM household connections 3
don't know 4

2.5 Is the following a reason why your household does not have a PDAM connection? [*READ ITEMS*]

		yes	no
2.5.1	lower cost of water from alternative source(s)	1	2
2.5.2	higher quality of water from alternative source(s)	1	2
2.5.3	water from alternative source(s) is more convenient	1	2
2.5.4	low pressure of water from PDAM connection	1	2
2.5.5	PDAM connections not available in this area	1	2
2.5.6	PDAM connections charges are too high	1	2
2.5.7	can't afford to pay *any* water tariff	1	2
2.5.8	procedures for PDAM connections are difficult	1	2
2.5.9	do not have KTP	1	2
2.5.10	other reason(s)	1	2

3. Water Uses

3.1 For **drinking and cooking**, what is the primary source of water for this household?

TA/HU/HC/public tap/MCK 1
well 2
neighbors (free) 3
neighbors (purchased) 4
purchased from water vendor 5
purchase from PDAM 6
lake, river, stream, or other natural body of water 7
collection of rainwater 8
other 9

3.3 For **washing dishes, washing clothes, personal washing, and other household uses**, what is the primary source of water for this household?

TA/HU/HC/public tap/MCK 1
well 2
neighbors (free) 3
neighbors (purchased) 4
purchased from water vendor 5
purchase from PDAM 6
lake, river, stream, or other natural body of water 7
collection of rainwater 8
other 9

4. Water Expenditure

water vendors:

4.1 Does your household purchase water from water vendors?

yes 1
no 2
don't know 3

[*If 4.1 is "no", SKIP to 4.9*]

4.2 On average, how many jerigens/barrels/containers does your household purchase per day?

....._____

4.3 How much water do these jerigens/barrels/containers contain? (liters)

....._____

4.4 What is the average price of one of these jerigens/barrels/containers? (Rupiah)

....._____

4.9 What is your household's average expenditure per day on water from all other sources (non-*penjual air*) combined? (in Rupiah)

....._____

5. Willingness to Pay for PDAM Connection

[**ENUMERATOR READS:** *Imagine now that your household* **could have** *a direct connection to the PDAM water system. Your household will be billed on a monthly basis for the water that you use from this connection. The monthly charge will be determined using the quantity of water that you use and the price per quantity. The quantity of water that your household uses would be determined by a meter connected to your dwelling only. This meter would be checked every month. From*

this connection, your household could use as much water as it wishes and will be charged based on this amount.]

5.1 Would you like to be connected to the PDAM water system?
yes 1
no 2
don't know 3
[If 5.1 is "no" or "don't know", SKIP to section 8.]

5.2 Would you be willing to pay a one-time ("up front") connection fee to have your household directly connected to the PDAM water system?
yes 1
no 2
don't know 3

[*If 5.2 is "no" or "don't know", SKIP to5.4.*]

[**ENUMERATOR READS:** *Now I will ask you some questions about your household's willingness to pay connection fees. It is important that you answer these questions honestly and accurately. If your responses are lower than your true willingness to pay, your PDAM might not be able to afford to expand service to reach your household. If your responses are higher than true willingness to pay, you may not be able to afford the service.*]

5.3 Would you be willing to pay the following one-time ("up front") connection fees to have your household directly connected to the PDAM water system?
[*READ ITEMS*]
[*SKIP to 5.6 when respondent answers "yes"*]

		yes	no	DK
5.3.1	more than 500 000 Rp	1	2	3
5.3.2	500 000 Rp	1	2	3
5.3.3	400 000 Rp	1	2	3
5.3.4	300 000 Rp	1	2	3
5.3.5	200 000 Rp	1	2	3
5.3.6	100 000 Rp	1	2	3
5.3.7	less than 100 000 Rp	1	2	3

5.4 Would you prefer to be able to pay the connection fee over a period of, say, one year, included in your regular bill ("installment plan" "angsuran atau kredit")?
yes 1
no 2
don't know 3

[*If 5.4 is "no" or "don't know", SKIP to 5.5.*]

5.5 Would you be willing to pay the following ("installment plan" "angsuran atau kredit") connection fees to have your household directly connected to the PDAM water system? [*READ ITEMS*]

		yes	no	DK
5.5.1	more than 42 000 Rp /month for one year	1	2	3
5.5.2	approx. 42 000 Rp /month for one year	1	2	3
5.5.3	approx. 33 000 Rp /month for one year	1	2	3
5.5.4	approx. 25 000 Rp /month for one year	1	2	3
5.5.5	approx. 17 000 Rp /month for one year	1	2	3
5.5.6	approx. 8 000 Rp /month for one year	1	2	3
5.5.7	less than 8 000 Rp /month for one year	1	2	3

5.6 Do you know the current/actual connection fees for this PDAM?
yes 1
no 2
don't know 3

[*If 5.6 is "no" or "don't know", SKIP to 5.8.*]

5.7 What household connection fee does the PDAM for this area currently charge? (in Rupiah)
..... _____

5.8 Do you think that PDAM meters for household connections are accurate?
yes 1
no 2
don't know 3

6. Willingness to Pay PDAM Water Tariffs

[**ENUMERATOR READS:** *Imagine now that your household* **has** *a direct connection to the PDAM water system. As I described above, your household will be billed on a monthly basis for the water that you use from this connection. The monthly charge will be determined using the quantity of water that you use and the price per quantity. The quantity of water that your household uses would be determined by a meter connected to your dwelling only. This meter would be checked every month. From this connection, your household could use as much water as it wishes and will be charged based on this amount. In the following questions, I will ask you about some prices water from this connection. These questions are based on an amount of 20L of water, which is the same amount as one jerigen.*]

6.0 You have said that you normally purchase water in jerigen containing _____ liters. For the following question, please consider that sized jerigen only:

"If each _____liters of water from a PDAM connection cost Rp _____ would you be willing to pay the following tariffs"

[Mark responses with an "X"]	□																			
	20 liter				**25 liter**				**30 liter**				**50 liter**				**100 liter**			
Harga	Rp	**Y (1)**	**N (2)**	**DK (3)**	**Rp**	**Y (1)**	**N (2)**	**DK (3)**	**Rp**	**Y (1)**	**N (2)**	**DK (3)**	**Rp**	**Y (1)**	**N (2)**	**DK (3)**	**Rp**	**Y (1)**	**N (2)**	**DK (3)**
6.1	**500**				**625**				**750**				**1250**				**2500**			
6.2	**250**				**300**				**375**				**625**				**1250**			
6.3	**100**				**125**				**150**				**250**				**500**			
6.4	**80**				**100**				**120**				**200**				**400**			
6.5	**60**				**75**				**90**				**150**				**300**			
6.6	**40**				**50**				**60**				**100**				**200**			
6.7	**20**				**25**				**30**				**50**				**100**			
6.8	**10**				**12**				**15**				**25**				**50**			

Key: Y = Yes; N = No; DK = Don't Know

6.9 What is the highest tariff that your household would be willing to pay for each _____ L of water? (in Rupiah)
..... _____

[**ENUMERATOR:** *WRITE the amount from 6.7 in 6.8 through 6.11.*]

7. Household Economic Profile

7.1 Does this household have the following utilities?

	yes	no	DK
7.1.1 electricity from PLN	1	2	3
7.1.2 electricity from other source	1	2	3
7.1.3 telephone	1	2	3

7.2 Does your household have a KK (*kartu keluarga*) for living in this kelurahan?

yes 1
no 2
don't know 3

7.3 Do adult members of this household have valid (up-to-date) KTP (*kartu tanda penduduk*) for living in this kelurahan?

yes 1
no 2
don't know 3

7.4 What is the average total combined monthly **expenditure** of the household?

<= Rp 200,000 1
Rp 200,001 – Rp 400,000 2
Rp 400,001 – Rp 600,000 3
Rp 600,001 – Rp 800,000 4
Rp 800,001 – Rp 1,000,000 5
> Rp 1,000,000 6

7.5 What is the average total combined monthly **income** of the household head and the spouse of the household head?

<= Rp 200,000 1
Rp 200,001 – Rp 400,000 2
Rp 400,001 – Rp 600,000 3
Rp 600,001 – Rp 800,000 4
Rp 800,001 – Rp 1,000,000 5
> Rp 1,000,000 6

Appendix 3: Enumerator Training Outline and Notes

UPDATE Enumerator Training Outline

Cover the following topics with the team of enumerators. Cover this material with the full group of enumerators at the first meeting and with any additional enumerators which are hired during the course of the study.

1. UPDATE Study and Training Objectives

1.1 Purpose of UPDATE study

- Several purposes:
- Main purposes: (1) Learn about the current spending of the non-connected urban poor on water; and (2) the willingness of the urban poor to pay connection fees and tariffs for PDAM service
- Other purposes: (1) Learn about the water sources and uses of the poor; (2) learn about the perceptions of the urban poor regarding the ability of community organizations to participate in water service; and (3) learn about the satisfaction and service priorities the urban poor have for local government services.

1.2 Purpose of enumerator training

- The purpose of enumerator training is to help ensure that enumerators understand the study's questionnaire and can implement it effectively/faithfully.

1.3 Importance of enumerators

- Enumerators are the most important members of this study team.
- Enumerators are the link between respondents and analysis.
- All information from the study team to respondents and from respondents to the study team flows through enumerators—"enumerators are the voice of respondents."

1.4 Importance of respondents

- Without respondents there would be no study.
- Treat respondents with respect.

1.5 Question and answer session

2. Review of Questionnaires

2.1 General points:

- It is important that we get high-quality responses to **all of the questions** in the questionnaire.

2.1.1 Interview data

- These data are key to building the data set.
- These data must be provided for each questionnaire, or the questionnaire cannot be used.

- Interviewers *will not be paid* for questionnaires that do not have complete interview data.

2.1.2 Opening statement

- This statement will let respondents understand the purpose of the study. READ THE ENTIRE STATEMENT AS WRITTEN.
- Answer any questions that enumerators have about the opening statement.

2.1.3 Bias

- Bias results when real ("true") information from respondents is not captured by the questionnaire.
- Bias distorts the voice of respondents.
- If enumerators lead respondents or, worse, suggest answers: the resulting data will be flawed, our analysis will have less, incorrect, or even **no** meaning.
- If a respondent is having trouble answering a question, do not suggest an answer. Repeat questions as necessary. Answer respondent questions. No response is better than a biased response.
- The role of the enumerator is **not** to convince respondents that, for example, they should be willing to pay for PDAM connections or water tariffs. The role of the enumerator is to help us learn if respondents are willing.

2.2 Simulated interviews

2.3 Question and answer session

3. Review of Sampling Strategy

3.1 Location assignments

- We are working with a sampling plan that is designed to ensure that respondents from many different relevant areas within the city are interviewed.
- It is vitally important that location assignments are followed.
- If location assignments are not followed, our results will not be an accurate reflection of the population that we are studying.
- It is important that all interview data are interviewed correctly.

3.2 Household selection

- Do not focus on only one area or type of house within the RW/kelurahan where you are assigned.
- If no one is home at selected house, try the house to the left or right.

3.3 Question and answer session

4. Questionnaire Handling

4.1 General issues

- Complete interview data immediately following interview. *Remember, we will not pay for questionnaires that do not have interview data.*

4.2 Frequency of return to study director

- Completed questionnaires must be returned to the study director at completion of the specific study area [or the end of each day if enumerators are not accompanied to study areas].

4.3 Question and answer session

5. Problem Interviews

5.1 Interrupted interviews

- Try to complete all interviews.
- If the interview *must* be interrupted, try to come back after interviewing a nearby household or commercial/social.
- Return partially completed questionnaires.

5.2 Aggressive respondents

- If you (enumerator) feel uncomfortable at any time during an interview, thank the respondent and leave.
- Return partially completed questionnaires.

5.3 Question and answer session

Appendix 4: Images from the Three UPDATE Survey Locations

image 1: Tangerang, enumerator training

image 2: Semarang, *broker air* with small *gerobak*

image 3: Indramayu , household interview

image 4: Semarang, *penjual air* filling *jerigen*

image 5: Semarang, UPDATE Team talks with *penjual air*

image 6: Tangerang, street scene with *gerobak*

image 7: Indramayu, woman drawing water from well

image 8: Semarang, typical neighborhood