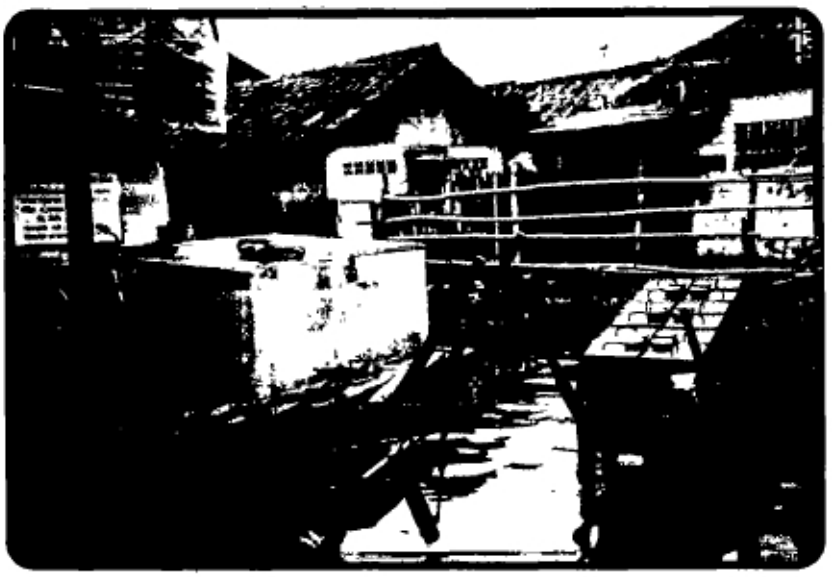
MONITORING AND EVALUATION OF PUBLIC HYDRANTS & WATER TERMINALS IN NORTH JAKARTA

Final Report



Joint cooperation of:

National Development Planning Board (BAPPENAS)
United Nations Children's Fund (UNICEF)
Yayasan Dian Desa

Yayasan Dian Desa
Yogyakarta
May, 1990

ACKNOWLEDGEMENT

The final report on monitoring and evaluation of Public hydrants and Water Terminals in North Jakarta is part of the agreement between Yayasan Dian Desa, Unicef and Bappenas. The objective of the monitoring and evaluation is to analyze the status of the government assisted public hydrants and water terminals, problems occur during the project implementation, their operation and management, the impact, and the community perception of the program. The result will serve as inputs to improve the program as well as for the basis to define future similar programs in North Jakarta or in other areas.

The Monitoring and evaluation was conducted for six months since October 1989 to March 1990. To get maximal data the Yayasan Dian Desa team integrated to the local people by living for 5 months in several kampungs of the monitoring area in North Jakarta. Besides direct interaction with the community, the team interviewed 650 families, 150 push cart water vendors and all the public hydrants and water terminal caretakers (104).

Yayasan Dian Desa would not be able to conduct the monitoring and evaluation well without the assistance of many people involved in the project. We therefore would like to thank Dr. Sukirman and Mr. Adam from Bappenas, Mr. Tambing from DAB Cipta Karya who have given their valuable inputs and ideas, to Mr. Suharto of Bappeda DKI Jakarta, and Mr. Pandepotan Sinaga from the office of the Walikota of North Jakarta as without their assistance the team may not be able to work efficiently, and also to Mr. Gebyar, Mr. Roeli, Mr. Godman Ambarita from PAM DKI and all the head of Rayons of PAM in North Jakarta for their cooperation and information. We would also like to thank Dr. Mathur and Mr. Z Karim from Unicef who have given a lot of inputs in the development of the survey methodology . Last but not least we would like to thank all others who have helped us in this monitoring and evaluation, especially to Ms. Susi Moro who helped to get the water quality analysis done, Mr. Haji Bani and Mr. Purwanto who assisted the team to get to know the different kampungs in North Jakarta.

We hope that this report can be useful to the different parties involved and can be valuable inputs in overcoming water supply problem in urban poor areas in Indonesia.

Yogyakarta, Juni 1990.

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EXECUTIVE SUMMARY

Clean Water Supply Problem

The community in North Jakarta has for a long time faced with clean water supply problem. Therefore buying clean water is also something which they have practiced for a long time. One of the reason is because the ground water in North Jakarta is brackish. To get a good quality water, at least one need to drill up to 200 m deep. Moreover, Ciliwung river which in the olden days became the main source of clean water especially for bathing and washing cannot not be used anymore because it is heavily polluted.

It is quite a heavy burden to the poor community in the slum area regarding the expenditures they spent on clean water. Because of the expensive price of water, whether they liked it or not, many of the poor community in the slum area had to be thrifty in consuming clean water. This surely has a series of impacts. The community's health and environment condition is poor. The limited time that can be used for productive purposes resulted on low income. As their income is so low, they cannot afford to fulfill their basic needs properly. etc.

On the other hand, the community of better economic condition can enjoy the facilities of getting clean water supply at cheaper prices that they can even use PAM water for washing car and watering their plants. Such a contrast can surely cause jealousy and can easily lead to social insurrection.

The government assisted HU and TA project was a 'social overhead investment project which was meant to release the poor community from their basic need problems , in this case clean water, and to enable them to be able to utilize other development program. In other words it was not merely a charity program to relief the community but it is more to release them from their problem that they will be able to participate in other development programs.

To bring water price down, in general the approach used in HU and TA project in North Jakarta were:

- Increase of supply
- Subsidizing the price
- Community participation in its operation
- Subsidy on initial investment

The water source used is the PAM water because for North Jakarta it is the most economical and feasible from technical point of view.

Areas in North Jakarta which because one or another reasons were not able to be served by PAM distribution pipe line, to serve the community the government constructed some water terminals (TAs). The water was sent by water truck and distributed to the surrounding community.

Condition of Public Hydrant (HU and Water Terminal (TA) in North Jakarta.

The monitoring and evaluation included 94 HUs and 10 TAs which were scateredly located in 27 kelurahans in 4 kecamatans in North Jakarta Kotamadya. Those were the HUs and TAs constructed in the phase I which was started in May 1989. Thus, the monitoring was conducted only six months after the HUs and TAs were in opera tion.

Looking at the construction of HU and TA, the team got the im pression that they were done hastily. The labors used by the contractor were not skillful either. The lack of skill and the limited time available have resulted on poor construction which looked as if it was only constructed 'asal jadi'. That was only the reservoir. Some of the other parts such as the apron and drainage were not made or some others such as the base of the pump , foot-valve, etc were not in accordance to the original design.

However, no big leak which could result on the unfunctioning of the HU or TA was not found. Generally there were only hair cracks found at HUs and also some leaks in the joint between the wall and the concrete slab cover.

Problems were found regarding the construction of water meter box and the equipments in it. Most water meter box were under water. At the beginning of the monitoring period two water boxes were even found to be used to grow cat fish while some others had just been harvested. Most of the water meter boxes were under water because of rain water or because of the water that came out from broken pipe or

broken pipe joint. Some of the water meter were broken and the number increased by time as by the fourth month of the monitoring period (February/March 1990) there were 18% of the total HUs which water meter were broken.

Combination of water meter box which was almost always under water and water meter that were broken made it difficult to record the amount of water spent by the respective HU. In such a case, very often the recording would be based on estimation. As a result, it would either be PAM or the caretaker who would be disadvantaged. HU with many customers which of course spent a lot of water as well preferred to have a broken water meter because it gave them the opportunity to bargain with the person in charge of recording the water meter position which usually ended satis factorily.

As a result, if there were HUs that sold water at cheaper price (which was actually the goal of the project), other HU caretakers always considered that the respective HUs could sell at cheaper price because there was unfair play between the respective HU caretakers and the person in charge of recording the meter posi tion. Thus, instead of looking at it positively, the other care takers had the tendency of having negative opinion about it.

Besides water meter, problems were also found with the gate valve, flange, double nipple, etc. Leakage of these equipments resulted on water loss and made the water meter box to be con stantly under water. Some caretakers tried to prevent the leak by bandaging the leak with a piece of cloth or rubber band (unused bike tire).

Additional facilities and equipments of HU and TA given by the caretakers.

In order to better serve the customers there were 44 HU caretak ers who fixed water pump to the HUs. The water pump was meant to suck water from the HU reservoir that water could be directly flowed into the customers cans. Thus the customers could get water faster and easier as they did not have to use pail anymore. However, there were a number of HUs which connected the pump directly to the inlet pipe permanently. In the latter case, the original HU reservoir changed its function to a pump house. The caretaker then made a new reservoir which was usually bigger than the original one.

Such practice of course was forbidden as it could harm the other customers but the HU caretakers ignored it.

There were some HUs which installed permanent distribution pipe to the surrounding houses. So, those families did not need to go and get water to the HU. Instead they could just turn on the tap (similar to PAM customers).

Altogether there were 6 HUs which had permanent distribution pipe to the surrounding houses.

Several caretakers, especially those with many customers, felt that the HU reservoir was too small. Therefore they made addi tional reservoir on their own expense. The volume of the addi tional reservoir ranged from 4.5m3 to 80 m3. There were 18 HUs that had additional reservoirs.

There were even 3 caretakers that built bathroom and toiler facilities near the HUs. Anyone who used the facilities paid between Rp. 50 to Rp. 100.

As many families did not have the equipments to carry water, there were 45 caretakers that rented push-carts including the cans to their customers.

All caretakers realized that water vendors were their main cus tomers that influenced the amount of water they could sell. Therefore, many ca etakers prepared additional facilities and services to make the water vendors keep buying water from their HUs. Some of the facilities were, boarding rooms or a place to take a rest, while the additional services were by providing snacks, drinks and cigarettes.

All the above mentioned additional facilities and also in fixing

water pump to the inlet pipe was against the rule. But, since there was no action nor sanction given by PAM, the caretakers regarded the rules to be on paper only.

Services

There were 3 factors that influenced the service of the govern ment assisted HUs and TAs to the community, namely,

1. Water supply reliability of the respective HU and TA. If the water discharge of the HU was small, the HU would only be able to serve a limited number of families (customers). Whereas TA water depended on the frequency of supply from water truck. Thus the services to the community depended on it too.
2. Service time: the time of opening the HU or TA in serving the community.
3. Whether the HU or TA were still in operation or not.

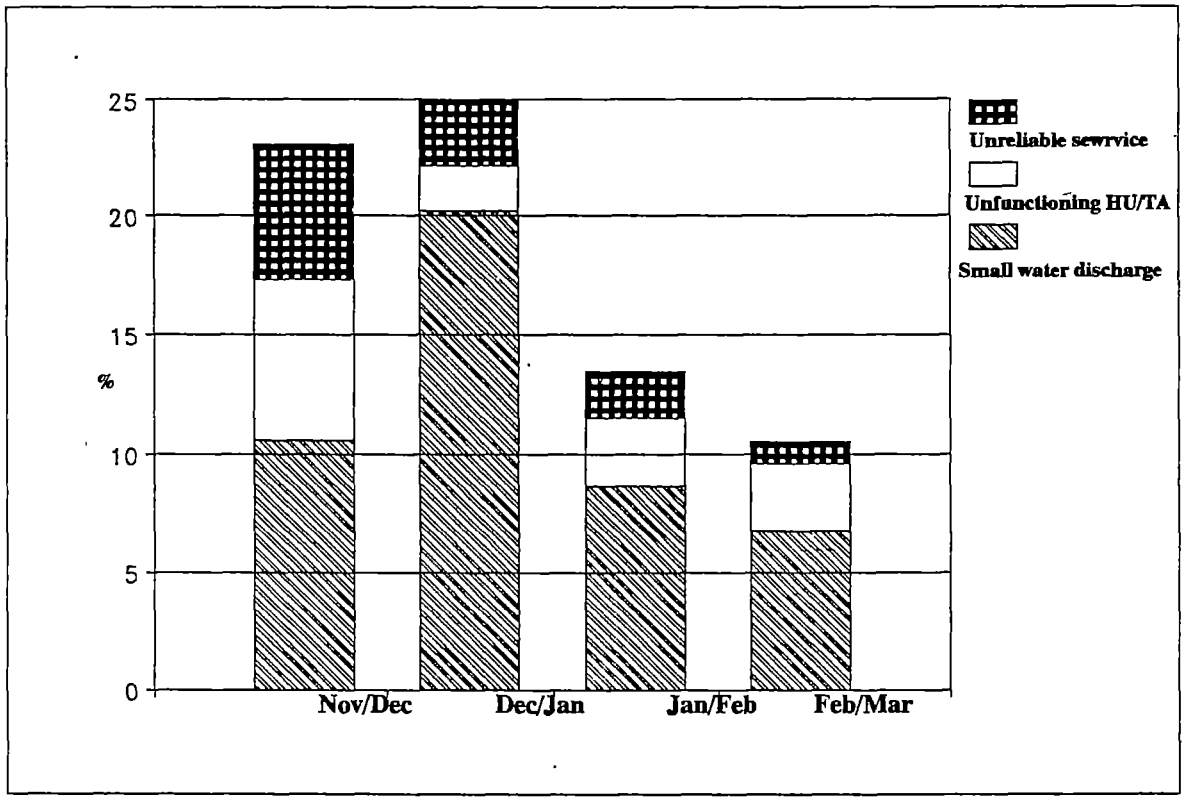
The water supply at TAs depended on the supply from water trucks that it also depended a lot on the condition of the road to the TA. During the rainy season, the road was often in flood or was very muddy that many truck drivers did not dare to take the risk to go into it. The water supply at HUs depended on the hydraulic gradient as well as the water capacity in the respective HU location.

The service time provided by the caretakers varied depended on the caretakers background. Some caretakers only opened the HU from 6.00 to 8.00 am and from 4.00 to 6.00 pm because they had permanent job themselves and did not have any assistant who could replace them to serve the community.

The third factor was mentioned because there were some HU and TA which had been closed down because they had no customers or because of other reasons.

At the beginning of the monitoring period, there were 25% of the total HUs and TAs which service was not reliable due to the above mentioned reasons. However, by PAM hard and serious efforts to do some repair and to provide better services after receiving re ports from the monitoring team, in the fourth month of the monitoring (February/March 1990), the number decreased down to 10%. Thus PAM had proved its seriousness in improving their service.

The following graph illustrates the kind of obstacles in providing good service to the community.



Water quality.

Analysis of water quality was carried out in pair. One water sample which was taken from one HU or TA was always paired to one sample which was taken from a household who used the HU or TA water where the first sample was taken. During the monitoring period, 60 samples were analyzed which consisted of 26 samples from HUs, 4 from TAs and 30 from the household samples.

In general both the community (the customers) and the caretakers percepted clean water as water which was clear and did not smell.

They did not know that water quality was also affected by chemical or biological aspects such as bacteria. Thus they only cared on the water quality visually.

The water analysis was done by P4L laboratory. Besides analyzing the water samples, they also assisted the team by providing sterilized bottles to be used to get water samples that the data would accurately reflect the real condition in the field.

From the 26 HU water samples which represented 27% of the total government assisted HUs, there were 16 which contained coli form and faecal coli above the permitted standard (0 coli form/ 100 cc and 0 E.coli/ 100 cc). There was even HUs which contained 11 million coliform per 100 cc. This was mainly because the caretaker did not maintain the HU well that it facilitated the growth of micro-organism.

In reality it was found that there was even one HU which was not possible to be cleaned because the concrete slab cover of the HU had became the floor of the caretaker's living room. The other reasons for not cleaning the HU was because the caretaker made the additional reservoir so big (80 m3) that he became lazy to clean it as it would need a lot of energy and time to clean it.

The result of the interview showed that all caretakers said that they cleaned the HUs periodically. This data was doubted due to the real condition of the HUs as described above.

The result of the analysis of TA water samples was better as none contained bacteria more than the permitted standard.

There were only 30 samples taken from the household. This of course was very small percentage compared to the total customers of HUs and TAs. From the 30 samples, 17 of them (almost 60%) contained coliform and faecal coli above the permitted standard. There was even one that contained 9 million coliform per 100 cc and 4 million E.coli per 100 cc.

The water quality at the household was influenced by the quality of water from the HU or TA and also by the condition of the water container in the house itself. This was proved by the fact that the samples which contained a high number of bacteria was taken from houses where the water storage tank were not cleaned regu larly as they did not want to throw away the left over water.

The high organic matters in the water samples taken from the households showed that there had been some growth of micro-organism either in the HU which was the water source or in the household water storage or even both.

There was no indication that those of better economical condition (who lived in better houses) should have better water quality than those of low economic strata, as they did not always pay attention to cleanliness either.

Based on such a fact, health education should actually be part of the program that the impact of the government assisted HU and TA could be more effective.

Background and process to become caretakers

In areas where clean water supply was a big problem for the community, especially in North Jakarta, selling water was a very good business. Thus, there were a number of people that invest to open water business. The investment was on constructing water reservoir, paid the PAM pipe distribution, formalities , etc. These were referred to as private hydrants.

The investment on the construction of government assisted HUs and TAs was subsidized by the Government that the caretaker did not have to spend anything.

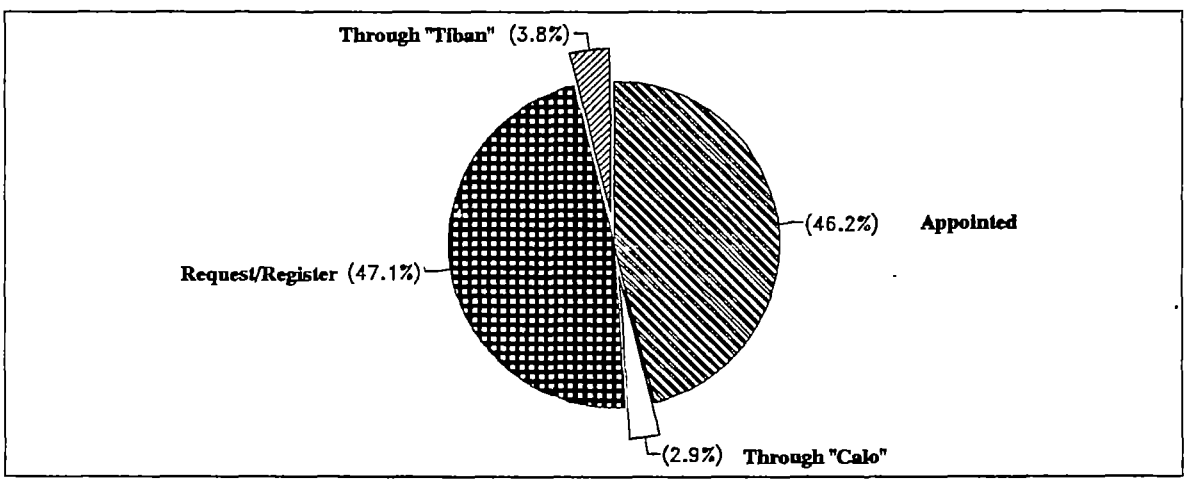
In order to enhance the benefit of the HUs and TAs for the community, the selection of location and caretakers were given to the community. In other words the community was regarded as better known the local situation and condition that they were expected to be able to choose better and therefore they could benefit it better too. In other words the community was given the responsibility to choose the location where water was mostly needed and to choose a caretaker that they could trust.

This was also a way to actively participate the community in the project which would be for their own benefit. This process was the responsibility of kelurahan.

In reality, there were several different processes in the selection of caretakers, namely,

- the caretakers were appointed as caretakers because they were either kelurahan, kecamatan, RT, RW, LKMD personnels, or those who were closely related to kelurahan or kecamatan personnels, or influential people in the area.
- Persons that registered themselves to be caretakers. Usually these persons heard about the government assisted HUs and TAs then they registered to the kelurahan to become caretakers. These people look forward to the profit they could earn being a care taker.
- Those who became caretaker through a liaison person (calo)
- Vague caretakers: people whose names were used as the ones formally registered to be caretakers and was given a certain amount of money for compensation.

The following graph show the percentage of the process of becoming caretakers.



To be a caretaker was a very good business as it gave a good profit. It was not surprising that there were a number of deviation in the selection process of the caretakers. There was kelurahan that conducting the selection through a bidding process, that the ones with the highest offer to make contribution would be the caretakers.. There were a number of liaison person (calo) who admitted that they had close connection to PAM personnel and could guarantee that one could become a caretaker if they paid certain amount of money, etc. Therefore, the team found out that 10% of the caretakers admitted that they paid a certain amount of money in order to become caretakers. The amount paid ranged from Rp. 400,000 to 1,500,000.

Because of such process, the following were the background of the caretakers selected for the government assisted HUs and TAs:

- ☐ 8.65% were PAM personnels or closely related to PAM personnels.
- ☐ 4.81 were those with position in the government offices or in political parties in the respective location.
- ☐ 38.46% were kelurahan, kecamatan, RT or RW personnels
- ☐ 24.04% were key persons in the respective area
- ☐ 24.04% were common people.

The operation of the HUs and TAs were either taken care of by the caretakers themselves or subcontracted to other parties. Altogether there were 35.6% of HUs which was sub contracted to other parties. There were even some HUs which had been subcontracted to the third parties. (the caretaker was the first party, the sub- contractor was the second party , thus when it was sub contracted again the sub contractor became the third party). Thus, in general, there were 65% of the HUs and TAs which were managed by the caretakers themselves, 25% managed by the second party and there were 10% managed by the third party.

Thus it was possible that in the years to come the operation of the HUs and TAs could have been subcontracted to several other parties. Thus it was regarded as a kind of selling licensing of HU operation.

There were also cases where one person owned several HUs. For example, the HUs and TAs code PB/PJ/22, PB/PJ/16 and PA/PG/05 were owned by one person and similarly were PB/PJ/23, PB/PJ/20 and PB/PJ/17. These persons were even tried to get more HUs or TAs in the phase II project.

Price of water and the amount distributed

HU caretaker paid Rp. 150 per m3 while TA caretaker paid Rp. 500 per m 3 to PAM.

The HU caretakers were allowed to sell at a ceiling price of Rp. 500 per m3 while TA caretakers were allowed to sell at ceiling price of Rp. 1,000 per m3.

Because of a conversion system used from m3 to cans, if the caretaker happened to sell the water at Rp. 600 per m3, it was still considered as normal as it was merely because of the dif ference in the conversion system practiced and was not intention ally made to increase the price.

There were 65.7% of HU caretakers that sold water at the ceiling price or even lower and there were 34.3% that sold above the ceiling price.

The HU water price ranged from Rp. 300 to Rp. 1,375 per m3 or averagely Rp. 1,100 per m3.

TA caretakers generally sold water at above the ceiling price. 50% of TAs sold at Rp. 1,500 per m3 while the other 50% sold at Rp. 3,000 per m3.

The price of water sold by the water vendors ranged from Rp. 1,250 to Rp. 6,100 per m3, or averagely Rp. 2,980 per m3.

During the four months monitoring period, the amount of water (in m3) spent by 94 HUs and 10 TAs was more or less 300,000 m3. Thus, about 75,000 m3 per month of clean water were sold. It means that the caretakers paid to PAM as much as Rp. 11,250,000 per month.

There were two kinds of customers, HU or TA direct customers (those who bought water directly at HU or TA) and the water vendors' customers (those who bought water from water vendors). There was only approximately 40% of HU and TA direct customers while the rest 60% was water vendor customers. Thus, approximately, the community spent Rp. 170,000,000 per month for clean water.

The difference between the amount spent by the community and the amount paid to PAM which was Rp. 158,000,000 was the amount enjoyed by the caretakers and water vendors of the HUs and TAs.

Water vendors

The job of a water vendor was to sell services of carrying water from the HU or Ta to the customers' houses. In areas where there was no clean water supply facilities the water vendors have been very important for them.

Most of the water vendors came from outside Jakarta such as Brebes, Malang, Tasikmalaya, Madura, etc. The reasons why they became water vendors varied, namely, 36% said because it was the only job available, 30% because their friends offered them the job, 18% seasonal (when the planting season was over), and the rest said because the profit was good.

The water vendors did not only bring the water to the houses but their services included carrying the water into the water stor age in the house of the customers. The amount of water that could be sold by a water vendors depended on several factors namely, the physical condition of the area, the economical condition of the customers, the water vendors age and physical condition, etc. The daily amount of water sold by the water vendors were 1% of water vendors interviewed sold less than 1,500 liters, 65% sold between 1,500 to 3,000 liters and 34% sold more than 3,00 liters.

Except the older water vendors, averagely a water vendor served 20 families daily. Assuming that there were 20% of the community in North Jakarta that depended on the supply of water from water vendors, there were approximately 2,000 to 3,000 water vendor in North Jakarta.

In every working area of the water vendors, there was an informal attachment based on area of origin. The informal attachment had made them help each other and to communicate regularly as they felt that they were in the same boat.

The water vendors also had an unwritten code ethic that one water vendor should not offer water to the customers of another water vendor. They could only sell water to the other water vendor's customers if the customers themselves asked for it. Thus, indi rectly it eliminate competition which would make the water ven dors to be in competition in charging the prices. The water price charged by the water vendors varied as it depended on the distance of the customers from the HU or TA, the economical condition of the customers, etc.

Some of the water vendors that came from the different area outside Jakarta had became permanent residence of North Jakarta. However, none of them was given the opportunity to become the caretakers of the government assisted HUs nor TAs. Whereas they were actually the heroes and the main soldiers in clean water distribution to water consumers.

At the time being, many of the water vendors realized that their source of income as water vendors was in the process of dying by the additional number of clean water supply facilities in the area. Thus, if only they could be given the chances to become HU or TA caretakers, it would at least showed the government appreciation of their work in serving the community who were in need of clean water for years.

Although the water vendors sold water at much higher price than the price at HU or TA, their actual monthly income was not much as illustrated below:

12% earned up to Rp. 40,000

56% earned between Rp. 40,000 to Rp. 140,000

22% earned between Rp. 140,000 to Rp. 240,000

10% earned > Rp. 240,000.

Water users/water customers

water customers were divided into two class namely the HU and TA direct customers and water vendor customers.

HU or TA direct customers usually those who lived around the HU or TA that a combination of saving their expenses and a close distance made them willing to go through the trouble of carrying water themselves. HU or TA direct customers usually came from low economic strata families.

Water vendor's customers usually lived far away from the HU or TA locations that they did not consider it worth to go to the trou ble of getting water by themselves. . Thus, the water vendors customers did not always come from better economic strata fami lies but also those of the low economic strata who lived far from the HU or TA location.

The price of water paid by the direct customers of course was cheaper compared to the price paid by the water vendor customers. The average price paid by HU/TA direct customers was Rp. 1,150 per m3, while the average price paid by water vendor customers was Rp. 2,990 per m3.

The following table present data on the daily amount of water consumption :

Consumption liters/capita/day	HU		TA	
	Direct customers HU Percentage	Water vendor's custtomers Percentage	Direct customers TA Percentage	Water vendor's customers Percentage
< = 5 l/capita/day	1%	2%	34%	0%
> 5 - 10 l/capita/day	0%	10%	37%	17%
> 10 - 25 l/capita/day	19%	35%	17%	38%
> 25 - 50 l/capita/day	39%	30%	6%	25%
> 50 - 88 l/capita/day	26%	15%	3%	17%
> > 88 l/capita/day	15%	8%	3%	3%

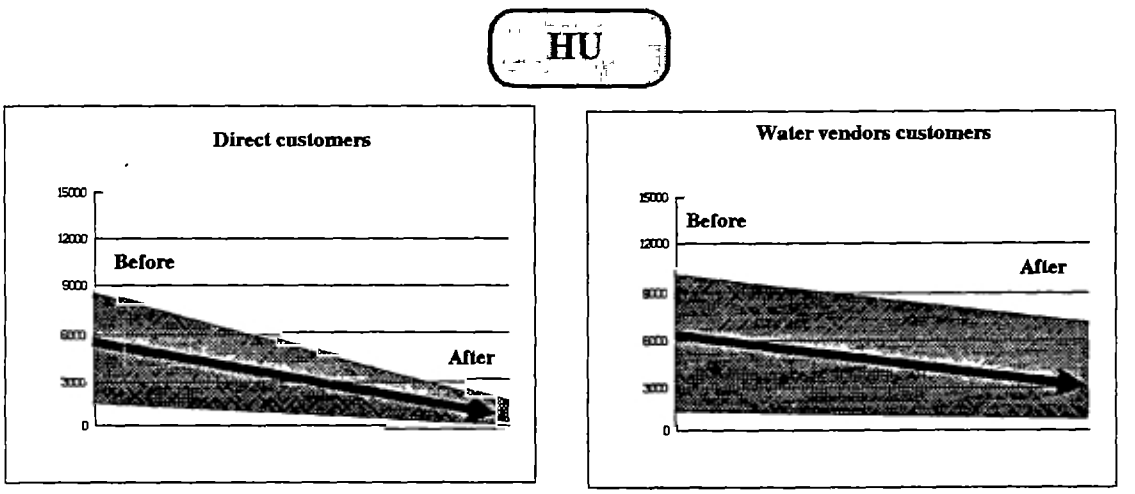
While the following were data on the community monthly expenditure on clean water:

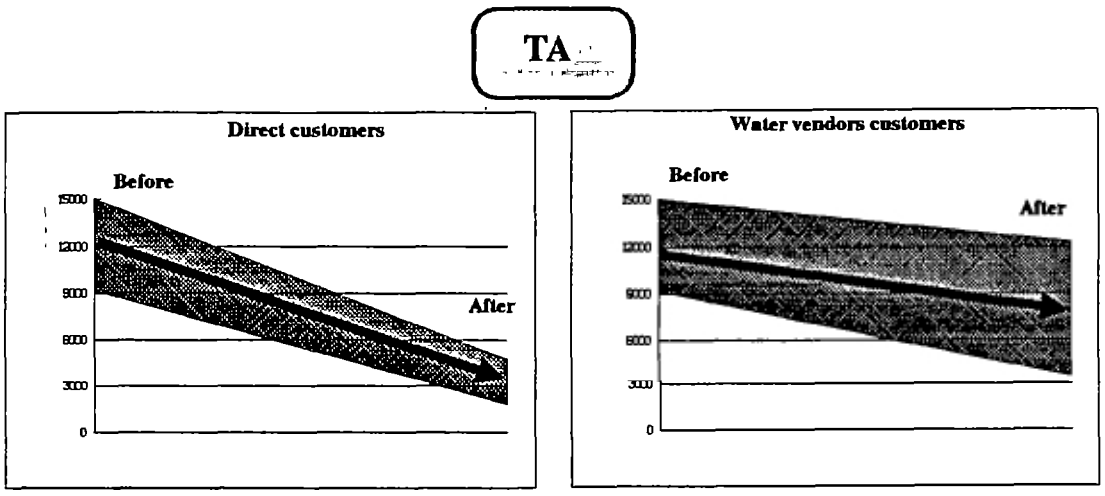
Expenditure Rp/Family/Month	HU		TA	
	Direct customers HU Percentage	Water vendor's custtomers Percentage	Direct customers TA Percentage	Water vendor's customers Percentage
< = Rp 1,000	3%	0%	46%	0%
> Rp 1,000 - Rp 5,000	42%	26%	34%	13%
> Rp5,000 - Rp10,000	47%	40%	11%	33%
> Rp10,000-Rp15,000	0%	18%	9%	29%
> Rp 15,000	0%	16%	0%	25%

From the above table it can be seen that to a certain group of community clean water was a real luxury that they had to be very thrifty with it.

Changes on prices paid by the customers

The existence of HUs and TAs had brought about changes to water price. In general the community spent less for clean water after the existence of HUs and TAs. The changes on prices was illustrated as follow:





Thus, the community had been able to save part of their expenditure on clean water although the price charged by the caretakers had not really followed the rule determined by the government (the ceiling price). For example some of HU direct customers had to pay Rp. 1,000 per m3 whereas actually he should only pay Rp. 500 per m3.

To the poor community in the slum area of North Jakarta the price of water now was cheaper than before. It was however, still much higher than the formal PAM tariff for clean water. Based on the PAM tariff, the poor people was actually paying the most expen sive tariff namely 'tariff pelabuhan' (the water vendor custom ers) or 'tariff Niaga Besar'(direct customers).

The HU and TA might have some economical impact, but from 'social justice' point of view there was still a gap.

Community appreciation towards government assisted HU and TA

In this monitoring, data were collected by two methods namely by interview and by direct interaction with the target community. To achieve it, the monitoring team lived in the monitoring area for 6 months. The community had felt the benefit of the HU and TA existence as the water price was cheaper. Yet, they did not know that the HU and TA were government assisted project. They only knew that there were hydrant that sold water at cheaper price.

Many caretakers, especially those who paid to become caretakers, regarded the project as 'licensing business'. The fact that there was one or two persons who owned several HUs or TAs was also public secret among the customers and the water vendors. Because of all of those. the community did not have any respect nor appreciation that the government had tried hard to release them from their problems of clean water by providing HUs and TAs.

Some did not even know that the HUs and TAs were government assisted.

It happened because the information about the project of government assisted HUs and TAs stopped at the kelurahan and was not conveyed further to the community. Therefore, in the future program it was important to ensure that the program was transparent to everyone, especially to the target community. This was to encourage the community appreciation and respect towards govern ment as well as to make them understand their rights and their responsibility. Being so, monitoring could be happened within the community themselves.

SUGGESTIONS

The following suggestions are meant to give inputs for similar program in the future in North Jakarta or in other areas.

1. It is very important to pay attention on the selection of location of the HU and TA that the project goal may be achieved. Suggestion from the kelurahan and LKMD should not be automatically accepted as very often it was influenced by individual interest that the location suggested is not really the location where the HU or TA is mostly needed.
2. There should be an efforts and methods to make the information regarding the program transparent to everyone especially the community who are the target group. This was to avoid that the information stopped at certain group of people that they can easily take advantage out of the situation and condition. This was also a way to encourage the community appreciation and respect towards the government efforts in assisting them to overcome their problems.
3. Assistance on some physical facilities will have more effec tive impact if followed by the software such as health education, knowledge on hygiene and sanitation, etch. Such education should be carried out immediately after the project started so that the best momentum would not be missed.
4. It is important to pay attention to develop a mechanism that will give opportunity to some water vendors to become caretakers. This is a way of eliminating one gap and may also be a way out of 'employment problem'.
5. Caretakers that sold water at above the ceiling price should be given sanction. If no sanction is given, they considered that the rule is on paper only (a permitted mistake). It will even be better if the control system of PAM can be improved especially regarding the recording of water meter position.
6. The approach and management of the HU and TA project in North Jakarta should not be used as a standard system to be used for all places in Indonesia in overcoming poverty problems. Other pattern and systems may need to be developed to enhance utilization of local resources. For example by involving NGOs, Pesantren or other local organizations in clean water supply program. In other words, a 'multi-channel' program should be taken into consideration as it may possibly bring the process in overcoming the poverty better and faster.

A Water vendor is sending water to his customer who live in muddy and flood kampung
This condition result in limited journey to sell water

1. INTRODUCTION

1.1. Background and objective of the monitoring and evaluation

In its efforts to speed up providing clean water supply to the poor families in the slum area in the cities (poverty alleviation), in REPELITA V, the Government implemented a water supply program in North Jakarta. 94 Public Hydrants (HUs) and 10 Water Terminals (TAs) were constructed.

PDAM, DKI Jakarta with technical guidance from the Directorate of Water Supply, Dit.Jen. Cipta Karya built these facilities at a cost of Rp. 2 billion funded subsidy by the Central Government to PDAM DKI Jakarta. The project was officially inaugurated by the Minister for National Development Planning on 10 April 1989.

The main purpose of the implementation of this project was to provide clean water to the poor families in North Jakarta at an affordable cost. Formerly, the communities of these areas obtained their daily water requirement from various sources at an exorbitant cost which prevented them from use of adequate quanti ty and quality of water.

The water scarcity cause untold hardship and sufferings. With the construction of HUs and TAs it is expected that the communities of these areas will be able to obtain adequate quantity and quality of water at a price they can afford.

UNICEF has been requested by the Government to assist in monitor ing and evaluating the facilities. This is especially to see how far the goal of the project has been achieved. In other words how far the facilities has been able to serve clean water to the poor families. The monitoring and evaluation is also meant to get feedback and findings which will be valuable inputs for the replication of similar programs either in the same area or in other areas.

The objective of this evaluation will be to compare the programs planned objectives with the implemented achievements. The monitoring and evaluation will include:

a. To conduct a six month monitoring on the function, operation and management of the facilities.

b. To submit monthly report to the involved parties regarding the above mentioned aspect monitored that they can make immediate remedy action whenever necessary.

c. Evaluation of the facilities (the HUs and TAs) and their impact on the communities health and on water price as well as on community participation in the project plan and implementation. Analysis on the capability of the community and the PDAM person nel in the operation and maintenance of the facilities will also be carried out.

1.2. Scope of Monitoring and Evaluation

The activities to be monitored and evaluated are as follows:

a. **Project development**

- Technical considerations including quality and quantity of water, reliability of water source, convenience of location of HUs and TAs and distribution of water by push carts, direct customers, etc.
- Involvement of water users in planning, constructing, opera tion, selection of location, and maintenance of the facilities.
- Project implementation schedule
- Comparing the original design planned and the design constructed as well as its quality.
- Supervision procedures
- Communications and information activities directed to the users group.

b. **Operational status of facilities and water quality**

- Current operational status of HUs, TAs, push-carts and water tank trucks.
- Non functioning facilities and causes
- Utilization of facilities compared to planned use.
- Reliability of facilities in providing long term service.
- Actual population covered by the facilities against planned coverage of low income families.
- Actual water discharge against planned criteria and water demand
- Water quality control
- Water price and the mechanism in determining it, the economical benefit of the users of the facilities.

c. **Community participation and health education**

- Appropriateness of type of water facilities
- Involvement of community
- Community contributions
- How facilities are operated and maintained
- Social acceptance
- Co-operation and links between water users group and government agencies
- Health service facilities

The data will be collected and reported on a monthly basis in clude the following aspects:

a. **Health**

- baseline data on the actual cases of illness linked with water supply such as diarrhoeal diseases in the study area since beginning of the monitoring
- Evaluate the data in the next month for six months by identify ing the impact of the illness
- Water quality control

b. **Technical**

- Number of customers per HU or TA compared to the number of expected target group.
- Frequency of push carts and their capacity for distributing water to the customers per HU or TA
- Frequency of water tank trunk for supplying water to TAs
- Physical condition and suitability of HU, TA, water tank trucks, and push carts.
- Cost borne by water customers
- Cost for operation and maintenance
- Operation and maintenance procedures
- Subsidy of PDAM DKI to operation and maintenance cost.

1.3. Monitoring and Evaluation Methodology

Primary and Secondary data are needed to get a complete and reliable information on the project achievement and the impact of the facilities to the target group.

Secondary data will be collected from project documents including technical drawing of the facilities, statistical data sources. Data on health aspects will be collected from the health centers in the area and also from the kelurahan.

Primary data will be collected by direct interviews either structured or unstructured by taking sample respondents who are involved in the project, the planning of the project, the implementation, the operation and maintenance and also the distribution of water using push carts as well as the community who are the water users.

Other data collection regarding the functioning or unfunctioning of HU/TA, water quality at HU/TA and water quality after distrib uted to the households, will be carried out by taking periodical samples and then analyzed in the laboratory.

The instruments used in data collection in this monitoring and evaluation are:

a. Unstructured interview

This interview is meant to collect data on the project plan, deign criteria, implementation method, operation and maintenance system, etc.

Unstructured interview is used due to the complexity of the aspects of the data to be collected and the relatively small number of respondents available. Interview will be done to planners such as the Department of Health, The Department of Public Works, PDAM DKI Jakarta and to Bappenas.

b. Structured interview

Data collected will be on the impact of the facilities to the community group, the improvement they felt, water price, number of water users, and other different social aspects. Structured interview is used due to the big number of respondents to be interviewed. The respondents will include water users, water vendors (push carts) and the HU/TA caretakers.

c. Observation and direct measuring/recording carried out periodi cally

periodical observation is meant to know the level of efficiency of the facilities from time to time during the six months moni toring and evaluation period. Measuring/recording will be carried out to get data on water discharge and water quality. To know the water quality the water samples taken will be laboratory analyzed especially to detect the number of coliform and E.coli either those of HU/TA water or water in the household water storage. By doing so, it is expected to know the source of contamination.

Time problem is usually faced if water samples are to be tested in a laboratory in Jakarta. A Laboratory usually had already had a routine work that the water sample test may not be ready in accordance to the schedule of the special working team of clean water supply monthly meeting. If it happens, the YDD team will bring water testing equipment form Yogyakarta that the result of the test are always available by the monthly meeting of the special working team.

Millipore system will be used to test the colli while chemical test will be done with Hach-Spectrophotometer.

d. Collection of data from health institution

Data of diseases, especially of diarrhoeal diseases will be collected from Puskesmas and the local health institution. Data will be collected at the beginning and at the end of the monitor ing that the impact of the facilities on health aspect can be analyzed.

e. Collection data from PDAM of North Jakarta

PDAM North Jakarta is the most important institution as they are actually the one that manage the day to day operation and manage ment of the facilities. Therefore besides collecting data avail able at PDAM, the YDD team will closely co-operate with the PDAM North Jakarta especially in analyzing the operational cost, any subsidized cost, etc. The YDD team has approached the PDAM North Jakarta and they responded it positively.

Reporting: in general the report is divided into two , namely

a. Monthly report (started by the second month). The monthly report will be presented at the monthly meeting of the KKK-AB & PLP. The report will cover the status of the existing HUs and TAs, water quality of the samples taken, water price paid by water users and other problems regarding the HUs and TAs and the causes in the respective periods. The report will be periodical inputs to the involved institutions in order to assist them in taking remedy action to improve the project performance if neces sary.

b. Final report.

Final report will be submitted at the end of the monitoring and evaluation. It will first be in the form of draft to be discussed with Bappenas and Unicef to get comments and inputs. By the comments and inputs it is expected that the final report can be submitted by the end of the sixth month of the monitoring and evaluation. The final report will include all the aspects such as the background and objective of the monitoring and evaluation, data analysis, and recommendations on some aspects which need better attention or improvement in order to improve the project performance and achievement and also for better replication of similar project in the future.

1.4. Sampling technique

1.4.1. Sampling technique for monthly report

1.4.1.1. Data on HU and TA

a. Public Hydrants (HU)

All the Bappenas assisted public hydrants at PAM North Jakarta rayon (94 HUs).

b. Water terminal (TA)

All water terminal at PAM North Jakarta Rayon (10 TAs)

1.4.1.2. Collection of data on health and on water quality

a. Prevalence diseases (diarrhoeal diseases)

Secondary data will be collected from every Puskesmas (health center) in the area (kelurahan) where there is any HU or TA and also from the office of the Dinas Kesehatan of North Jakarta.

b. Water quality.

Laboratory test will cover, the physical condition, chemical and bacteriological materials in the water samples . Testing will be conducted five times (once a month) each of which will analyze 6 pair of samples. A pair of sample consist of one sample from HU or TA and one from the household that use the HU or TA water where the first sample is taken. Selection of samples are done by proportional random sampling and cluster area namely the differ ent rayons at PAM North Jakarta.

1.4.2. Sampling technique for final report

1.4.2.1. Data on HU and TA caretakers

a. Public Hydrants (HUs)

all 94 Bappenas assisted HUs.

b. Water terminals (TAs)

All 10 Bappenas assisted TAs.

1.4.2.2. Data on push cart water vendors

a. HU push cart water vendors

respondent will be taken from 40% of the total push cart water vendors that take water from 40% of total 94 HUs. (selection of HUs will be done by proportional random sampling and by cluster area namely the PAM North Jakarta). Total respondents will be 42 push cart water vendors.

b. TA push cart water vendors

respondents will be taken from 10% of the total push cart water vendors that take water from TAs. Total respondents will be 10.

1.4.2.3 Water user families

472 respondents or 40% of the total water users that buy water from the sample push cart water vendors respondents (1.4.2.2), and 84 respondents or 10% of the total water users that buy water directly at HU (1.4.2.1.1) or TA (1.4.2.1.b)

1.5. Schedule

Preparation in conducting monitoring and evaluation was carried out in the fourth week of September 1989. The preparation includ ed field orientation, collection of basic information from the different institutions involved on related to the project and looking for place for the team to stay in the project area.

It was then decided that the monitoring team were to stay at Kampung Mangga/Kelurahan Tugu and at Kali Deres which was at border between North Jakarta and West Jakarta.Four team members stayed at the rented houses since the beginning of monitoring period, October 1989.

A monthly report was sent periodically during the four monitoring period, namely November/December 1989, December/January 1990, January/February 1990 and February/March 1990 report. Those report consist of condition of all HU & TA during that period. Field activities were stopped for two weeks during October/Novem ber 1989 due to the issue on "poisonous biscuits" which in North Jakarta had developed to many other issues of poisoning, includ ing the poisoning of water. This lead into situation which disa ble the monitoring team to do field work.

In December 1989, three additional personels were involved and interview to the water users could be started.

Data analysis were done on March 1990, and draft report were submitted on May 1990. Addtional inputs were gathered from var ious parties in June 1990. At the end of June 1990 final report could be finalised.

2 Profile of North Jakarta

2.1. Area and Location

North Jakarta Area is one of the five Kotamadyas of the Capital City Jakarta (Daerah Khusus Ibu Kota - DKI). North Jakarta covers 143.58 square kilometers or 21.9% of the total area of DKI Jakar ta. The area is bordered by :

- In the East :Bekasi District, West Java Province
- In the West : Tangerang District, West Java Province
- In the North : Java Sea
- In the South : Central Jakarta, East Jakarta and West Jakarta areas . (Please refer to the map of DKI Jakarta Raya Province)

The North Jakarta area is divided into five Kecamatans, namely,

- Kecamatan Pulau Seribu covers 8.47 km2 area
- Kecamatan Tanjung Priok covers 20.65 km2 area
- Kecamatan Cilincing covers 37 km2 area
- Kecamatan Koja covers 29.23 km area, and
- Kecamatan Penjaringan covers 47.87 km2 area.

2.2. Population and Housing

2.2.1. Population

The total population of North Jakarta in 1987 is 990.911 people with a density of 6.901 people per square kilometer while the total population of DKI Jakarta was 6.790.910 with a density of 10.325 people per square kilometer.

According to the data from the DKI Jakarta statistic office in 1988 , North Jakarta had the lowest population density compared to the other four areas. The highest population density was found in Central Jakarta that was 23.886 people per square kilometer.

Table 1 : Population of DKI Jakarta and North Jakarta

	Area (KM^2)		Population Person		Density (Person/KM^2)	
	1980	1987	1980	1987	1980	1987
JakartaPusat	45.46	49.31	1236876	1177805	22712	23886
JakartaUtara	139.58	143.58	976045	990991	6996	6901
JakartaBarat	131.45	128.89	1231188	1326920	9366	10295
JakartaSelatan	146.20	146.18	1579795	1690084	10759	11563
JakartaTimur	184.01	186.86	1456750	1575190	7917	8430
DKIJakarta	655.70	654.82	6480654	6760990	9884	10325

Sources: 1980, Jakarta Dalam Angka 1981; 1987, Jakarta Dalam Angka 1988

Table 2: The North Jakarta population density by kecamatan

	Area	Population	Density
PademanganBarat	11.73	115669	9861
TanjungPriok	20,65	252256	12216
K.oja	12.61	232358	18426
KelapaGading	16.62	58241	3504
Kep.Seribu	8.47	13824	1632
Cilincing	37.00	169581	4583

Actually the most populated area in North Jakarta were centralized at certain areas only such as in Kecamatan Koja, Tanjung Priok, and Kecamatan Penjaringan particularly around the area of West Pademangan. The population density at West Pademangan was 9861 per square km. It was certainly a very densely populated area compared to the average density of Kecamatan Penjaringan which was 6971 people per square km.

2.2.2. Housing

In the most densely populated area which was better known as the slum area, the housing condition was usually very poor. The houses were small and most often attached to each other (usually referred to as rumah gandeng) . Sanitation and environment condi tion in those area was also very poor. According to Aswatini and Mudjiani (1986) North Jakarta had the highest number of rumah gandeng (small houses attached to each other) . The average number of rumah gandeng in North Jakarta was 37,2%. It was quite a high percentage compared to the number of rumah gandeng in DKI Jakarta which averagely was 31%.

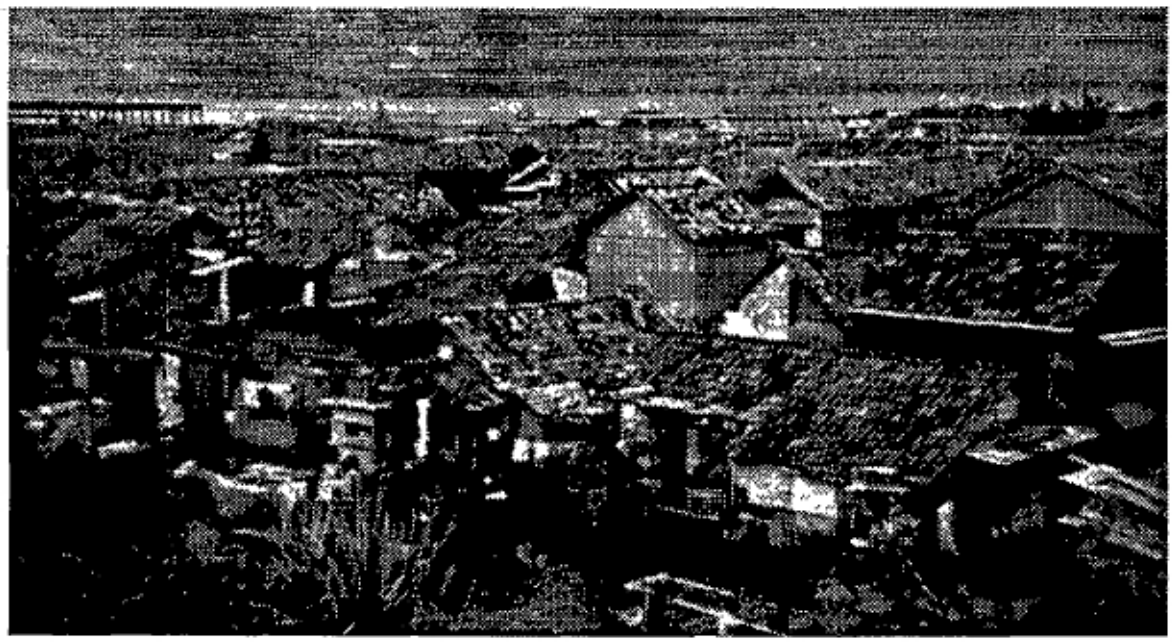
High cost of land, the low economic condition of many of the population, and the continuous increase of living cost had given them no other choice but to live in such condition, whether to buy a house or to rent one.

Condition was worse as very often in one house there lived more than one families, sometimes up to 5 families. They just put a board as divider or to add a new space attached to the house. Consequently, some families lived in only one or two small rooms even without a real wall divider. The division between the kitch en and the bedroom was only divided by a thin board or by a piece of cloth.

Sanitation facilities were very limited compared to the number of families lived there. For example in one rumah gandeng with 5 or more families there was only one bathroom and one toilet. This was surely not enough. So some of them usually went to public toilet while the children very often just went to the drainage around the area.

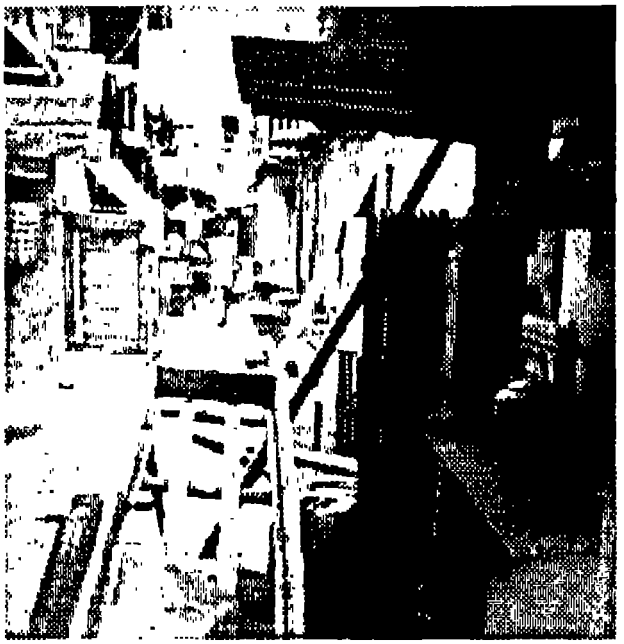
The environment condition of the area was worse because the drainage did not work, flood often came not only during the rainy season but also from the sea during the high tide.

According to the 1980 population census, North Jakarta had the highest percentage of the use of shared toilet that was as much as 56.7% compared to DKI Jakarta which was only 48.1%.



The area that requearly has flood

No rain but the areas in flood is a regular condition during high tide



Narrow alley at Pademangan the size of the push cart has to be adapted to the width of the alley so that the water vendor can serve his customers

2.2.3. Clean water supply consumption pattern

According to the data collected by Aswatini and Mudjiani in 1986, the following were some ways of how the population in the North Jakarta area got their clean water:

For bathing , washing and toilet purposes:

- 22% from tap water (PAM)
- 9.9% from tubewell with pump
- 42.3% from well
- 0.9% from river
- 24.7% from buying

For drinking and cooking:

- 47.1% from tap water (PAM)
- 3.3% from tube well with pump
- 6.2% from well water
- 0.9% from rain water
- 42.5% from buying the water

From the above data it can be seen that North Jakarta consumed quite high percentage of tap water. One of the reason was because the ground water in that area was brackish.

3. Clean water supply problem in North Jakarta

3.1. Historical background

There was no data when clean water supply became a problem faced by the population in that area. Even those who had lived there for more than 20 years could not tell when they started to face clean water problem so that they had to buy it to fulfill their domestic needs.

During the Dutch colonialism, Jayakarta city was built in 1631. Later the name was changed to Batavia by Jan Pertersoon Coen. The style f the city was very much like the Dutch style where the streets were straights and canals were made connected by bridges.

Batavia covered the area of Sunda Kelapa Port, Kali Besar, and the area around Jakarta Kota. The City Hall (stadhuis) was what was now known as the Fatahillah Museum. Thus, in the old days, Batavia was what was now referred to as Wilayah North Jakarta.

The area west of Kalibaru was now called 'Kota lama' while the east side of Kalibaru was referred to as 'Kota Baru' (Proyek Pene litian dan Pencatatan Kebudayaan Daerah, 1978). In the 17th century, the city began to grow to the south that was what was known as Jacatra weg (now Jl. P. Jayakarta), Molenvliet (now Jl. Gajah Mada - Jl. Hayam Wuruk), Weltevreden Mester (now Jatinega ra), And Tanah Abang up to Buitenzorg which was now known as Bogor (Abdul Hakim, 1989)

Based on Tio Tek Hong notes, up to the 19th century the Ciliwung river function as transportation line and source of water supply of the Batavia citizens. They used the Ciliwung river water, and rain water which was caught in big jars (intisari, June 1980). It was only some time later that they began to know water treat ment system, by sedimentation process. (Intisari, June 1980). The richer families used lime powder to clarify the river water (Abdul Hakim, 1989). Others bought water which was taken from the water catchment (aquada) near the Jacatra fort. The water catch ment was later on moved to Molenvliet. The water was sold either by boat or carried by someone to the houses of the buyers.

In 1773 the Dutch began to consume imported water which was called 'ayer belanda'. It was quite expensive by then as a small jar of the 'ayer belanda' cost one Ringgit . Others who couldn't afford to buy imported water but wanted good quality water bought water which was taken from Bogor. (Intisari, June 1980).

In 1882 people began to use well water, especially the Chinese as they used the well water to make tea. By that time, a well was rare. Besides the well in Lapangan Banteng there was another one in Kampung Lima, Tanah Abang. The owner of the well sold the well water by DFL 1.50 per drum. Actually, by that time there was also drilled well water. Those who wanted to become customers of the drilled well water could proposed to the government. But most of them preferred river or well water because the quality of the piped water which came form drilled well was poor. It had bad taste and the tea made drilled well water turned blackish. (Abdul Hakim, 1989)

In 1918 A company was established to provide clean water to the Batavia population. The installation of the water treatment plant at Ciomas , Bogor ,was constructed in 1920. In 1922 the population of Batavia began to consume treated piped water. Such company was later on referred to as PAM (Perusahaan Air Minum - the Treated piped Water Company).

However, only a small number of people could enjoy the PAM water. According to the old generation who had lived at Tanjung Priok for a long time, in the olden days the people that lived at Warakas, Papanggo, and Sunter mostly used pond water for their domestic needs. They did not use well water because the well water taste bad (brackish). Pond water was still used by the community in those areas up to nineteen fifties. Those who lived around the Tanjung Priok Port had to buy water for their domestic needs (started some time in 1952). The water vendor needed Rp. 0.50 to buy 6 cans of water (one can contains approximately 20 liters), then they sold them for Rp. 2.

According to some water vendor, before the hydrants were in stalled they had to get water from the PAM center in Jl. Sindang. They bought 8 cans (per push-cart) for Rp. 50 then they sold them for Rp. 200 per two cans to those who lived about 3 kms away and Rp. 400 for farther distance. Besides buying water from

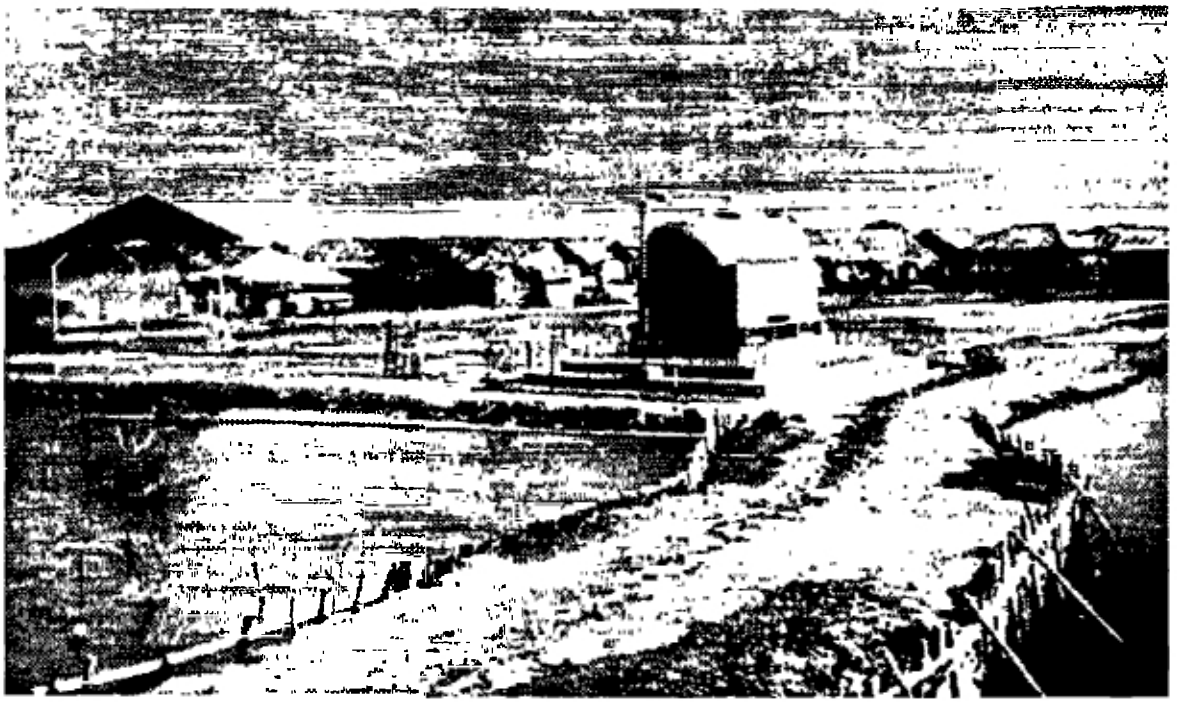
water vendor the local people could also buy water from water tank trucks which was known as 'air Bogor' (water from Bogor). The price however was higher.

By that time, a water vendor could only sell one or two carriage a day because of the distance. Though they sold water at quite high price their income was small. Nowadays they sold water only for Rp. 125 - Rp. 150 per two cans but they could earn more because there were many hydrants available so that they did not have to go to a long distance to get the water to be sold and therefore they could sell several push-carts a day.

Water used to be a big problem for the community at Kampung Bidara who most of them were fishermen. They had to ride their boat for two hours before they could get fresh water from the river. Well water was brackish that was why they did not use well water for drinking and cooking unless there was no other alter natives.

They were very happy by the construction of water terminals (TAs). Getting used to consume TA water they said that they would get stomach ache if they consumed well water.

Similar problem was also faced by the people that lived at Kampung Sarang Bangau who most of them were farmers. Before the construction of TAs they had to consume water taken from the irrigation canal.



One of the water terminal located at Marunda, afisherman kampung
The reservoir shape is cylindrical horizontal

The first drinking water supply installation of the PAM DKI to serve Jakarta population was constructed and operated in 1922. The water came from Ciomas, Bogor.

After Indonesia gained the independence, the Government of Indonesia (GOI) began to installed several water treatment centers namely Pejompongan I built in 1957, Pejompongan II, in 1970, and Cilandak ,in 1972. Another one at Pulo Gadung, which by then was the biggest in Indonesia was constructed in 1980.

To reach more customers especially those who lived far from the installation, in 1982 and 1983 some miniplants were constructed in several areas in Jakarta (Litbang PAM DKI, 1986).

At present, the North Jakarta area gets piped water supply from the PAM water installation of Pejompongan phase II, Pulo Gadung and from the Muara Karang and Sunter miniplants. The water dis charge from these three sources however were not enough to serve the customers in North Jakarta so that many of the customers complained and some of them even connected the pipe with a pump to suck more water to their house. In 1985 it was estimated that there were 17,300 piped water customers in North Jakarta area. The projected water customers for 1990 was 26,800. The number would get higher by the incoming year. It is estimated that the number of customers in 1995 will be 36,300 and will increase to 45,800 in the year 2000 and 55,300 customers in 2005. (Litbang PAM DKI, 1986).

The above estimation was made for house piped water customers. While actually there were a lot of population who did not have piped water in their houses. To serve these community with clean water, PAM DKI allowed those who had piped water in their house to sell water to the public. But of course they had to fulfill certain regulations.

In most cases the person who sold water was called as hydrant caretaker.

In 1988 in order to help the poor people to be able to get clean water supply, Bappenas (Badan Perencana Nasional - The National Planning Bureau) constructed some water terminals and some hy drants. To differentiate these hydrants from the existing public hydrants, the later were referred as **hydrants contoh.**

Up to Juli 1986 there were 1251 hydrants in Jakarta. However, there were only 1141 which were functioning. The total clean water produce was 444,927 cubic meters.

For North Jakarta area alone, there were 381 hydrants (30.46%). Among them, there were 320 that were functioning. The total clean water produced was 94,599 m3 (Litbang PAM DKI, 1986).

According to the data taken from the DKI Jakarta statistic office in 1988, in December 1987 there were 1036 public hydrants, 308 of which (29.73%) were located in the North Jakarta area.

The above data shows that there were higher number of public hydrants in the North Jakarta area .This was because the ground water in this area was brackish. Other reasons were because most of the area did not have piped water, and the economical condi tion of many of the population in this area was low that they could not even afford to be PAM customers to have piped water in their houses.

3.2. The concept of overcoming clean water supply problem in North Jakarta area.

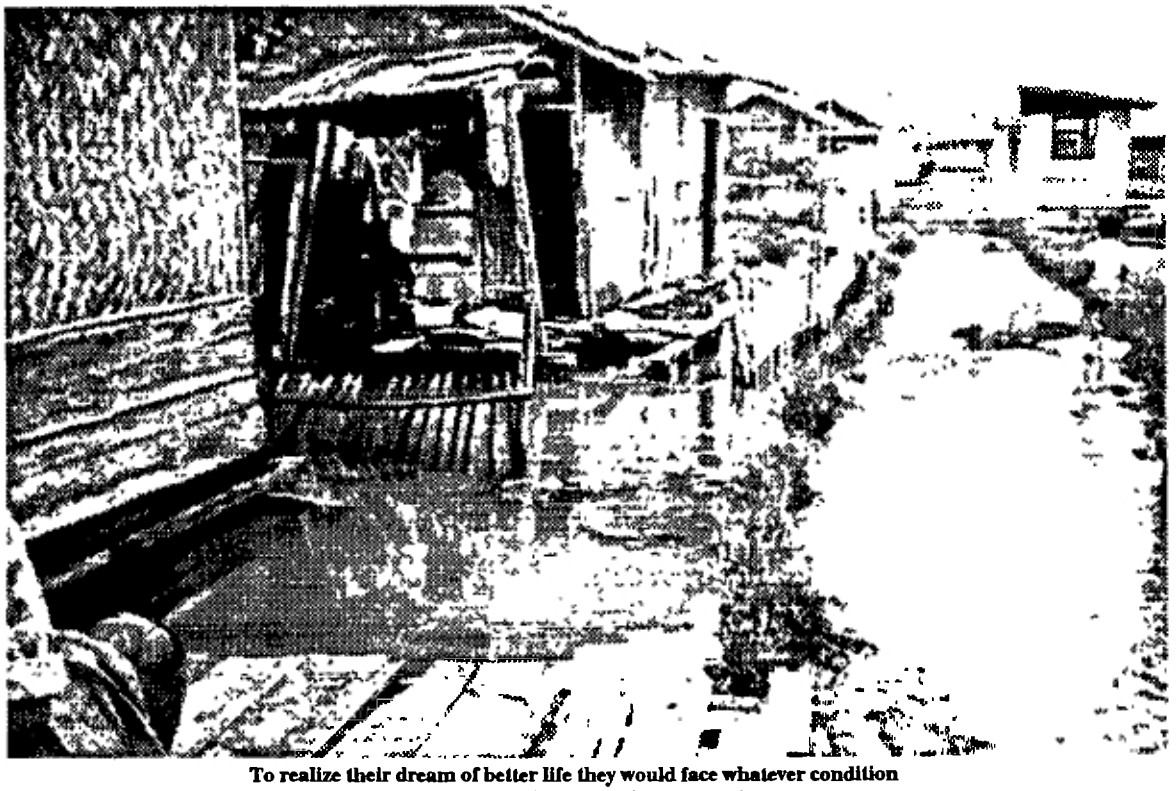
Scarcity of clean water supply had for a long time been the problem of the people live in the North Jakarta area, especially the poor community that lived in the slum areas. Problem with clean water had also made their condition worse. They really had to work hard to survive and yet they still had to overcome their basic need problem, the unavailability of clean water.

Most of them came to Jakarta with a dream to have better living condition. To them, Jakarta was a promising place where they expected to realize their dream.

They came to Jakarta and lived in the slum areas, one of them was the slum area in North Jakarta. Therefore the population of the slum area came from many different tribes and areas such as Java, Madura, Sumatera, Sulawesi, and some other places. The complexity was such that it resulted on loosing the socio-cultural values. Instead survival of the fittest became their main concern. Conse quently there was a high competition among them; they always did something based on profit and loss calculation. Apparently their characteristics also changed.

On the other hand, they would have to face some difficulties to adapat themselves back to their original society if because one or another reasons they failed in Jakarta and had to go back to their village.

Thus, the slum area in North Jakarta was like a big garbage can, a place where everything was thrown into it.



To realize their dream of better life they would face whatever condition they could have regarless the unhealthy enviroment

Bordered with this area was a very different kind of area where the population lived comfortable and enjoyed life. The difference was very contrast that jelousy could easily arose if the poor ones saw the other side of the area. It was such that it would also influence the political stbility. The degree of jelousy could result on that the people could be easily incited. On the other hand they reacted cooly to some development efforts

Those who lived in the slum area had a dream that they could leave the area one day. Therefore most of them regarded it as a non-permanent place to live. Such perception was also one of psychological barrier for implementing development activities in that area.

Therefore, the first and most needed assistance for such area was something of the social overhead investment types of program. Something which would not only release them from their basic need problem but it should also encourqge them to be able to utilize other development program. It should be noted that the program assistance was to release them from problems which may not be the same as the kind of relief programs.

In general the concept of overcoming clean water supply problem in North Jakarta was as follow:

a. **Increasing water supply**

   By increasing clean water supply in the slum area (by installation of more hydrants), the cost of clean water was expected to get lower so that the community could spend less for clean water or to be able to get more water with the same amount. Such expectation was quite realistic as it was based on the 'economic principal' where cost would get lower if supply increased.

b. **Water cost subsidy**

   The increasing supply was followed by providing subsidy over the cost of the water. A fix tariff was set, namely Rp. 150 per m3 for water from hydrant and Rp. 350 per m3 for water from water terminal.

c. **Initial investment subsidy**

The cost of all the construction of the water supply facilities provided were subsidized in order not to burden the already economically depressed community. The project should not be a kind of business in water supply but it should have some social impact as well.

d. community participation

In order to enhance sense of ownership and to ensure good maintenance of facilities the community was expected to be actively involved in the planning and management of the hydrants and water terminals. Their active involvement was also to enhance the community to be able to solve their own problem. Therefore the selection of location and caretakers was also given to the hands of the community as long as it was technically feasible.

e. Technical back-up

The community, particularly the caretakers, involvement was still limited to the management and maintenance of facilities and water distribution. If there were major problems with the facilities, and other problems regarding water quality etc, it was still the government responsibility.

In order to know whether the above concepts and objectives had been achieved as well as to identify problems that arose was one of the reason that this monitoring was conducted

In general the above concept had some implications, namely:

- Subsidy on cost and technical back up
  Water cost subsidy means continuous subsidy. This aspect should be considered carefully as there was no limit when the Government could stop subsidizing it. On the other hand there was also the question who should continuously subsidizing the cost ? The North Jakarta Pemda or the PAM. At present the subsidy was still pro vided by the PAM as there was a possibility of 'cross-subsidy' among the customers and they already had the facilities and experience for solving technical problem.

- The availability of water sources:
  In North Jakarta, the only possible water source was the PAM facilities because ground water was brackish and the salinity was pretty high. So, the best way was to add distribution pipe line to more HUs to the project package. If it was not possible, construction of more TAs would be a way out and the water was supplied by trucks.

The above description was only for North Jakarta area. Other areas maight need different approach and system depending on the available resources and the types of the target community.

Such subsidy as described earlier would be a permanent burden to PAM. In other words the PAM's HU and TA project would always be at a loss. Thus PAM had two functions, as a company as well as a social organizations.

However, the installation and pipe distribution to new hydrants could also benefit PAM as they could get new customers from area that was passed by the pipe line without additional capital cost.

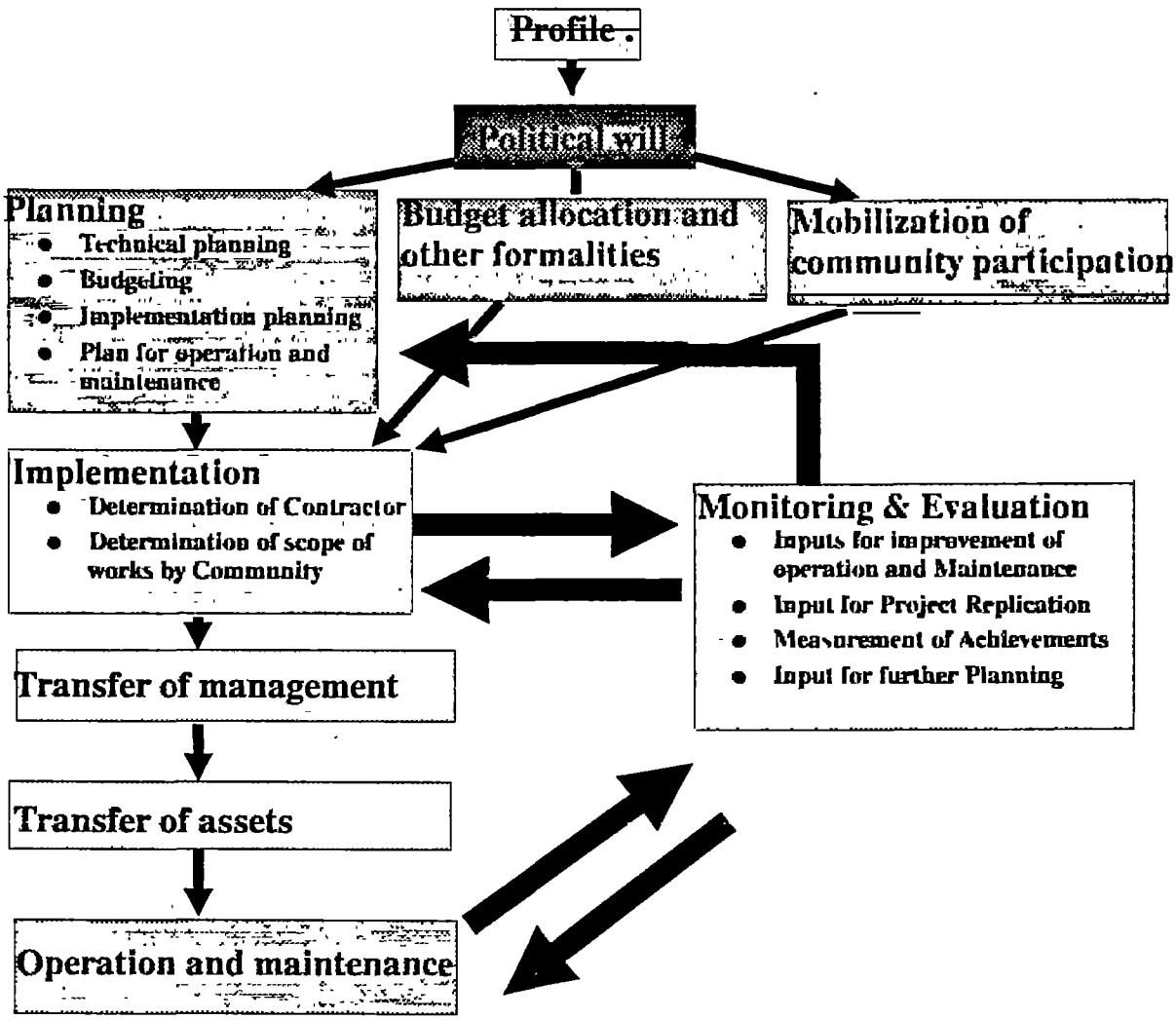
3.3. The management in overcoming clean water supply problem.

How successful a project was and how far the objectives were met depended on how the program was implemented. The following was the pattern of the process of the implementation of the clean water supply project at North Jakarta area:

In general the formalities for this project was at the Department of Public Works/ Directorate General of Cipta Karya-DAB. There fore, they were the Project holder. The general term used was that the DIP was with the Cipta Karya-DAB.

The next step was the appointment of contractor. Because of the specificity of the projects, the contractor was not chosen through a bidding process but by appointment, The appointed contractor was the PAM-DKI.

Therefore the PAM-DKI was the one responsible over the construc tion of HUs , including the installation of the pipes and acces sories such as the water meter box, water meter, etc. The supply of other materials such as pipes, water trucks , etc. however was DAB responsibility.



Simultaneously through the PEMDA TK II of North Jakarta, the community was informed about the water supply (HU and TA) project. The community were then expected to choose and appointed the HU and TA caretakers, to decide the locations for the HU and TA etc. This process was meant as community participation in the project plan.

In reality, the process of selection of locations and caretakers varied from one place to another which will be explained in detail in para 5.2.

The construction of the HUs and TAs were done by different sub-contractors under the control of PAM-DKI.

What was meant by 'transfer of management' was to hand over the authority of the management of the HUs and TAs income as well as all of the assests from the Directorate General of Cipta Karya- DAB to PAM-DKI. Thus, from then on the PAM-DKI had some additional assets in the form of clean water supply project facilities, namely, HUs and TAs.

4. Condition of HU and TA in North Jakarta

The number of HUs and TAs monitored in this monitoring period were 94 HUs and 10 TAs. They were HUs and TAs of Bappenas water supply project which were scatteredly located at North Jakarta area. The construction of the HUs and TAs were completed in April 1989. The monitoring began in November 1989 or 6 months after the operation of the HUs and TAs started. From the 5 kecamatans in North Jakarta, only Kecamatan Kepulauan Seribu which did not get any HU nor TAs.

Based on the administrative division of area of the PAM of North Jakarta, the four kecamanatans where the HUs and TAs were located were divided into 7 different areas called 'rayon'. In one kecamatan there could be more than one rayon because the division of rayon was based on the number of PAM customers. So, once the PAM reached certain number of customers in one area it would then be divided into two rayons in order to simplify its management. The kecamatans that had more than one rayons were Kecamatan Koja, Tanjung Priok and Penjaringan. All together the HUs and TAs were located scateredly at 27 kelurahans as listed at the following table.

Table 3. Distribution of HU & TA in North Jakarta

No.	Rayon	Jumlah	Kelurahan	H.U	T.A
1.	Koja I	4	Pegangsaan Dua	4	
2.	Koja II	16	Koja Utara	3	
			Koja Selatan	1	
			Lagoa	2	
			Tugu Utara	5	
			Tugu Selatan	3	
			Rawa Badak	3	
3.	Cilincing	19	Sukapura	1	1
			Semper Barat	4	
			Semper Timur	1	
			Kali Baru	7	
			Cilincing	1	2
			Marunda		2
4.	Tanjung Priok I	18	Sunter Agung	7	
			Sunter Jaya	11	
5.	Tanjung Priok II	15	Kebon Bawang	2	
			Sungai Bambu	1	
			Warakas	5	
			Papanggo	5	
			Tanjung Priok	2	
6.	Penjaringan I	9	Pejagalan	4	1
			Kapuk Muara		2
			Kamal Muara		2
7.	Penjaringan II		Pademangan Barat	10	
			Pademangan Timur	1	
			Ancol	2	
			Penjaringan	10	

Table 4. HU & TA.: CODE, LOCATION & CARETAKERS

NO	CODE No.	NOVAK	NOREK	CARETAKER	ADDRESS
a	**RAYON CILINCING**				
1	CL/SP/01	TA 01		H. IDRIS	RW03 Sukapura
2	CL/SP/02	ULH01	20356	H. GUBAR	Jl Raya Tipar. RT 04 RW 05
3	CL/SB/03	ULH01	20360	H.MANSUR	Jl. Kp Kandang RT 05 Rw 042
4	CL/SB/04	ULH01	20359	MARPAUNG	Jl. Kp kandang RT 02 RW 04
5	CL/SB/05	ULH01	20361	H. NAJIHUN	Jl. H. Suit RT 05 RW 06
6	CL/SB/06	UKH04	24345	MARTONDANG	Jl. Kebantenan Raya I No. 1
7	CL/ST/07	ULH01	20366	H. SAAMAM	Jl. Kebantenan V No. 14
8	CL/CG/08	TA 02			Kampung Pedongkelan
9	CL/CG/09	TA 03		RUSLAN	Jl. Bakti Sekolah
10	CL/KL/10	ULH02	20354	HUTAGAOL	Jl Pasar Pagi RT 02 RW 5
11	CL/MR/11	TA 04		MUSAMAK	Kp. Badara Marunda
12	CL/MR/12	TA 05		H UMAN	Kp. Sarang Bangau Marunda
13	CL/CG/13	ULH02	20351	EFENDY	Jl. Sungai Landak RW 08
14	CL/KL/14	ULH02	20357	SUPRIATNA	Jl. Z. Topekong
15	CL/KL/15	ULH01	20358	H. A. HAMID	Jl. Masjid Al Alam RT 05 RW 4
16	CL/KL/16	ULH01	20362	BASARUDIN	Jl. Pembakaran Mayat
17	CL/KL/17	ULH01	20363	RASMO	Jl. Kerang Hijau V
18	CL/KL/18	ULHO1	20364	SAID	Jl. Mencos RT 04 RW 12
19	CL/KL/19	ULH02	20355	MADAWI	Jl. Raya Cilincing RT 02 RW 03
b	**RAYON KOJA I**				
20	KA/PG/01	UKH01	20002	TIMAN B. TAMAN	Jl. Mandor Unang RT 05 RW 03
21	KA/PG/02	UKH01	20004	H. ACANG	Jl. H. Oyar RT 04 RW 03
22	KA/PG/03	UKH01	20003	MARDJUKI	Jl. Kepu RT 04 RW 01
23	KA/PG/04	UKH01	20005	LEHAN	Jl. Raya Bekasi RT 03 RW 04
c	**RAYON KOJA II**				
24	KB/TS/01	UKH06	22542	M. SOLEH	Jl. Arrasyidin RT 02 RW 01 no 6
25	KB/RB/02	UKH05	22541	RADISAN	Bendungan Melayu Gg Melati RW 18
26	KB/RB/03	UKH05	22545	D. NAINGGOLAN	Jl. K No 30 RT 3 RW 20 Plumpang B
27	KB/TU/04	UKH04	22540	SAHAD	Jl. Manggar 7 RT 09 RW 06
28	KB/LG/05	UKH03	22536	SAIMIN	Jl. Mawar Dalam Timur no 8 RT 02 RW 03
29	KB/KS/06	UKH02	22531	MIDUN	Jl. Cipucang III no 6 RT 08 RW 12
30	KB/KU/07	UKH01	22534	H. DJAMSARI	Jl. Dam Raya RT 05 RW 06
31	KB/KU/08	UKH01	22532	R. SUBAGYO	Jl. Dusun Lorong 41 Rt 03 RW 13
32	KB/KU/09	UKH01	22533	SADINA	Lorong 64 no 14 RT 24 RW 08
33	KB/LG/10	UKH03	22535	MISKA	Jl. Lagoa Terusan IV DI RT 03 RW)3
34	KB/TU/11	UKH04	22537	M. YASIN	Jl. Kp Bulak RT 13 RW 01
35	KB/TU/12	UKH04	22539	SUHARNO	Komplek YUKA Blok B H/4 RT RW 8
36	KB/KU/13	UKH04	22538	SYARIF	Komplek YUKA Blok A .T.II RT 13 RW 08
37	KB/TU/14	UKH04	22546	SUYOTO	Jl. Toar RT 10 RW 02
38	KB/TS/15	UKH06	22543	H. MURTIAH	Jl. H Tiung Kp. Mangga RT 04 RW 03
39	KB/TS/16	UKH06	22544	SITI HARTINI	Kp. Mangga Gg H Sain RT 01 RW 02
d	**RAYON T.PRIOK I**				
40	TA/SJ/01	UJH05	20019	H. SIMIN	Jl. Kedoodong RT 07 RW 06
41	TA/SJ/02	UJH05	20034	L. TOBING	Jl. Telaga Murni 3 RT 19 RW 01
42	TA/SJ/03	UJH05	20023	SITOMORANG	Jl. H Amsar RT 09 RW 03
43	TA/SJ/04	UJH05	20017	SUPARNO	Jl.. Bakti III RT 15 RW 02
44	TA/SJ/05	UJH05	20018	ISKANDAR	Jl. Tembus RT 14 RW 02
45	TA/SJ/06	UJH05	20021	TAMBAK	Jl. Sunter Jaya RT 10 RW 01
46	TA/SJ/07	UJH05	20022	SUPARMAN	Jl. Bentengan 2 RT 02 RW 05
47	TA/SJ/08	UJH05	20020	BUNTORO	Jl. Bentengan RT 12 RW 05
48	TA/SJ/09	UJH05	20025	H. M. MAWAR	Jl. Sunter Kemayoran RT 02
49	TA/SJ/10	UJH05	20024	H. SAPRI	Jl. Sunter Bend. Dempet RW 03
50	TA/SJ/11	UJH05	20026	H. AHMAD	Jl. Masjid RT 05 RW 11
51	TA/SA/12	UJH05	20029	SYACHRONI	Jl. Ancol Selatan RT 04 RW 07
52	TA/SA/13	UJH05	20030	NGAWILAH	Jl. Ancol Selatan RT 02 RW 07
53	TA/SA/14	UJH05	20027	SYAHRIL	Jl. Ancol Selatan RT RW 06
54	TA/SA/15	UJH05	20028	HUTAURUK	Jl. Ancol Selatan RT RW 06
55	TA/SA/16	UJH05	20033	RAKHMAD	Jl. Melur no 35
56	TA/SA/17	UJH05	20032	RATIJAH	Jl. Barata RW 02
57	TA/SA/18	UJH05	20031	SARKONI	Jl. Barata RW 02
e	**RAYON T.PRIOK II**				
58	TB/KW/01	UJH04	20472	RADI	Jl. Giri Gg 16 no 15 RT 06 RW 15
59	TB/KW/02	UJH04	20471	NY.RUMIASIH	Jl. Merapi Barat
60	TB/SU/03	UJH03	20473	ASERI BIN SALEH	Jl. Darussalam no 13 RT 04 RW 8
61	TB/WS/04	UJH02	20459	R. GUNAWAN	Jl. Al Jihad Gg Rambutan no 33 RT 04 RW
62	TB/PP/05	UJH02	20460	DRS. UNTUNG	Jl. Kp Baru Lanji RT 12 RW 03
63	TB/PP/06	UJH02	20463	M. YONATHAN	Jl. Lanji RT 07 RW 06
64	TB/PP/07	UJH02	20464	NY. RUMNI AMINUR	Jl. Lanji RT 06 RW 16
65	TB/PP/08	UJH02	20465	HENDRI HARYADI	Jl. Lanji RT 10 RW 06
66	TB/WS/09	UJH02	20467	AMIN	Jl. Warakas Gg 14
67	TB/PP/10	UJH02	20461	MAHROJI	Kp. Baru Lanji RT 07 RW 05
68	TB/WS/11	UJH02	20462	SITI MARYAM	Jl. Warakas VI Gg 21 no 30 RT 08 RW 05
69	TB/WS/12	UJH02	20466	RATNAWATI	Jl. Warakas Gg 22 15 RW 08
70	TB/WS/13	UJH02	20468	HASAN	Jl. Warakas Gg 17 RT 09 RW 14
71	TB/TP/14	UJH01	20470	MARULI MANURUNG	Kp. Bahari RT 05 RW 15
72	TB/TP/15	UJH01	30469	NY. MAENAH BAKIRUN	Kp. Bahari RT 01 RW 12
f	**RAYON PENJARINGAN II**				
74	PB/PD/02	UIH04	20461	DJOKO ARIFIN	Jl. Budi Mulya RT 15 RW 11
75	PB/PD/03	UIH04	20462	RODJALI	Jl. Budi Mulya RT 13 RW 10
76	PB/PD/04	UIH04	20467	NY SUKAWATI	Jl. Budi Mulya RT 02 RW 10
77	PB/PD/05	UIH04	20460	NY. AMINI JUHARA	Jl. Budi Mulya RT 10 RW 10
78	PB/PT/06	UIH07	20103	SUNARTO ALI	Jl. Pademangan Timur VI RT 10 RW 10
79	PB/PD/07	UIH04	20458	S. RADJAK	Jl. MKJ IX RT 18 RW 07
80	PB/PD/08	UIH04	20459	H. NURMAH	Jl. Budi Mulya RT 11 RW 12
81	PB/PD/09	UIH04	20465	M. SIPAYUNG	Jl. Budi Mulya RT 12 RW 12
82	PB/PD/10	UIH04	20463	NY. EUIS SUPIYATI	Jl. Budi Mulya RT 05 RW 12
83	PB/PD/11	UIH04	20466	DEDY SUNARTO	Jl. Budi Mulya RT 13 RW 12
84	PB/PD/12	UIH04	20464	SUKENDRA	Jl. Budi Mulya RT 08 RW 12
85	PB/AC/13	UIH03	20036	H. SUGINO	Jl. Mangga Dua Utara Rt 04 RW 05
86	PB/AC/14	UIH03	20435	M. AMIN	Kp. Bandan RT 07 RW 02
87	PB/PJ/15	UIH01	20456	M. ALIPANI	Jl. Pakin RT 02 RW 04
88	PB/PJ/16	UIH01	20457	AKIN SAGALA	Jl. Tanah Pasir RT 05 RW 08
89	PB/PJ/17	UIH01	20458	KUSMANA	Jl. Tanjung Wangi RT 06 RW 12
90	PB/PJ/18	UIH01	20459	RUDATIN	Jl. Tanjung Wangi RT 09 RW 08
91	PB/PJ/19	UIH01	20460	NY. S. HERMIATI	Jl Tanjung Wangi RT 15 RW 08
92	PB/PJ/20	UIH01	20461	RADJAT	Jl. Tanjung Wangi RT 06 RW 12
93	PB/PJ/21	UIH01	20462	DRS. M. INTAN	Jl Muara Baru no 4 RT 06 RW 17
94	PB/PJ/22	UIH01	20463	NY. ASTUTI	Jl. Muara Baru RT 07 RW 17
95	PB/PJ/23	UIH01	20465	TINGGAL	Jl. Muara Baru RT 16 RW 17
96	PB/PJ/24	UIH01	20466	NICHODOMAS	Gg. Mesjid RT 19 RW 17 Muara Baru
g	**RAYON PENJARINGAN I**				
97	PA/PG/01	UIH02	20111	JUPRI SARDAN	Jl. Kepanduan Kali Jodo RT 02 RW 05
98	PA/PG/02	UIH02	20108	H. KOSIM	Jl. Kebon Pala RT 01 RW 14
99	PA/PG/03	UIH02	20110	SUHERMAN TATANG	Jl. I RT 11 RW 06
100	PA/PG/04	UIH02	20109	HASAN WIDJAYA	Jl. B RT 18 RW 06
101	PA/PG/05	TA 06		MULYADI	Teluk Gong
102	PA/KP/06	TA 07		MAMAN	Kapuk Muara
103	PA/KP/07	TA 08		KSY. ALFATAH	Kel. Kapuk Muara
104	PA/KM/08	TA 09		SARPIN	Eks. Kel. Kamal Muara
105	PA/KM/09	TA 10		PRIO ASTORO	Pasar Ikan Kamal Muara

The location, codes of HUs and TAs and the list of the names of caretakers were presented at table 4.

This chapter will mainly discuss on the condition of HUs and TAs, their changes, their services, etc. The data were collected during the six months interaction in the field during the monitoring period. A monthly report on the collected data was also submitted. This chapter is to discuss the extraction of the data reported earlier.

4.1. Technical condition

4.1.1. Original design versus implementation.

First of all it should be admitted that the implementation of the construction of the Phase I of HUs and TAs were done hastily. Such information was confirmed by PAM, DAB Cipta Karya and the Pemda. There were several reasons mentioned but the main reason was because the budget of the project should be used up by a certain time.

Consequently it influenced several aspects e.g. the selection of location, construction design, etc. When the project implementation started the technical design of the HU and TA were not ready yet. The design were made in conjunction with the implementation of the construction of the HU and TA.

During the monitoring, the monitoring team was able to get the technical design of the HU and TA from PAM. The technical designed was made in August 1989, possibly prepared for the following project phase. However, the monitoring team used the technical design given by PAM as the basis for comparing the plan and the implementation of the construction of HU and TA in the field.

4.1.1.1. Water Terminal (TA)

The design of the TAs were all the same that was of the cylindrical types, but there were two types mainly horizontal type and vertical type. Of the 10 (ten) TAs monitored, 5 of them were of the horizontal types and 5 others were of the vertical types.

Every TA had 8 outlets and quick taps which was in accordance with the original design. From the 8 outlets, usually only two were operated. Of all TAs monitored there was only one TA care taker who did not take the quick tap handle off, namely the TA code CL/SP/01. The reasons of the caretakers for taking off the tap handles were because they did not want the children to play with it. So, they only fit the handle when there were customers who came to buy water.

In the design the TA was supposed to have an iron ladder. In the field, during the monitoring none of the TAs monitored had ladders. Possibly the ladder was later on considered unnecessary and in order to save the budget, it was not provided. The rest of the TAs condition were in accordance to the design.

Typical TA verticale type

4.1.1.2. Public Hydrant (HU)

Compared to the original design, there were a number of differences found at the 94 HUs monitored. The differences were :

The original sixe planned for the 6 m3 volume of HUs was of 3 m length by 2 m width by 1.2 m height for the inside part of the reservoir. The reservoir wall should be 12 cm thick using con crete construction system. The construction of the reservoir was planned to be 1 m underground and 0.2 m was upground. The man hole which also function as the hole for getting water was pro tected by an 80 cm high wall to protect contamination of dirt or other particles to come into the manhole. The HU reservoir was closed with a concrete slab while the manhole lid was made of metal.

The monitoring team however found that none of the HUs manholes were protected by the 80 cm wall so that the manhole was at the same height as the concrete lid of the HUs.

The construction of the HUs also varied. Some were constructed more than 1 m underground, some only less than 1 meter, etc. It seems that the construction was very much influenced by the condition of the HU location because in areas with regular flood, the HU were constructed above ground so as to protect the flood water to come into the HU reservoir. On the other hand in areas with low hydraulic gradient, the bottom of the HU was deep underground so as to allow water to flow to it. It was even found that there was 1 (one) HU which bottom was 3 m deep underground, namely HU code **T.A/SA/12.**

The above description show that it was not wise to have only one design to be used for all areas of the location of HUs , especially if there was no overall data regarding the hydraulic gradient of the area.

Variety of sizes were also found regarding the lid of the man hole. According to the original design, part of the HU reservoir, 2m x 2m was covered with concrete slab while the rest 2 x 1 m, the man hole, was covered with a metal plate. At the early phase of the monitoring period, two HUs had no metal plate cover so that the caretakers covered the man holes with pieces of wood. Two months later however, the PAM sent the metal plate covers to the two HUs. So, by the end of the monitoring period, all the HUs had had the metal plate covers.

Typical HU which used pail to take water

Other facilities such as the base/support for the pump, outlet and foot-valve which were in the design were not found in any of the HUs. According to the HU caretakers, none of the above mentioned facilities were provided ever since they started the operation of the HUs.

The concrete apron and drainage were not found either although according to the original design the HUs were supposed to have apron and drainage. A few HU caretakers made the apron on their own expense because without it the area around the HU would be very dirty and muddy.

A special case was also found, where one of the HU caretakers enlarged his house so that the HU was located under the living room. He then covered the manhole (2m x 1 m) with a concrete slab, leaving only 30 cm x 30 cm hole. Apparently, the HU was never cleaned up as no one could go inside it. (See also 4.3 on water quality).

4.1.2. Condition of HU and TA facilities.

What was meant by HU and TA facilities were the construction and the equipments provided by the project which was divided into several parts, namely,

- Reservoir: HU reservoir was made of concrete while TA reservoir was made of fibre-glass.
- Water meter box: in HU, the box was where several equipments namely, water meter, water filter, plug valve, and gate valve were placed. TAs had no water meter box because the TAs were supplied by water truck in certain volume.

4.1.2.1. Reservoir

a. Water terminal (TA)

The TA reservoir was made of fiber glass. The construction was only to make the base of the reservoir. Thus, practically the quality of all the reservoirs of TAs were the same.

During the four months monitoring period, November/December 1989 and February/March 1990, all TAs were generally in good condition and well taken care of. There was only one TA, **CL/CG/09**, that had ever had a leak which happened before November 1989 and was repaired by the caretaker himself.

b. Public hydrant

In term of quality, one HU was very different from the other. From observation it was found that most HUs were in poor condition with hair cracks in the walls of the reservoirs. Such poor condition of HU reflected the poor material used by the contractor and also poor construction work as admitted by a number of HUs caretakers. So far, none of the caretakers had ever made any protest because they did not want to be troublesome over some thing which had been given to them by the government.

Consequently, just in 6 months time, (the monitoring started 6 months after the HUs were formally operated) all HU caretakers said that they had done some repairs on the HU reservoirs. Some were small repairs but a number did quite a big repair. Majority, repair was done on the connection between the reservoir and the concrete cover as it leaked.

All HUs had problems with leakage but major leakage were experienced by the following HUs: **CL/SB/06, CL/KL/19, KA/PG/01, KB/TU/04, TA/S$/01, TB/WS/11.**

The other problem faced by HU caretakers were the absence of concrete apron and drainage. If there were HUs with apron and drainage, those were made by the caretakers themselves.

Problems with the water proof coating paint also happened in most HUs as many HUs coating was peeling off or were in the process to peel off the wall. The process of peeling off got faster as the pail used to get water kept on hitting the wall. It was suspected that it was caused by the weakness of the bond stress between the concrete wall and the coating as the coating was done before the concrete wall was completely dried up so shrikage during the curing process result in low bond stress between the fiber coating and concreete walls.

4.1.2.2 Water meter box.

a Water meter box.

Many of the water meter boxes of HUs were found to be under water so that practically all the equipments in it were also under water. This was caused by :

- Leakage of gate valve, plug valve, or the flanges and other joints such as the double nipples.
- The water meter boxes had no lids so that water spilled out of the pails flowed into the meter box.
- The surface of the water meter box was at the same level or even lower than the ground surface.

During the early period of the monitoring, there were even some water meter box which were filled with water intentionally and were used to grow cat fish. Such condition of course made it difficult or even impossible for one to check the water meter moreover those guarded by the cat fish which seemed unfriendly.

The absence of the water meter box lid were because:

- The PDAM had not provided one to the caretaker.
- The lid provided was of different size so that it could not be used.

Some caretakers who cared about the meter box used pieces of wood to cover the meter box. But many just ignored it and let the water filled the box.

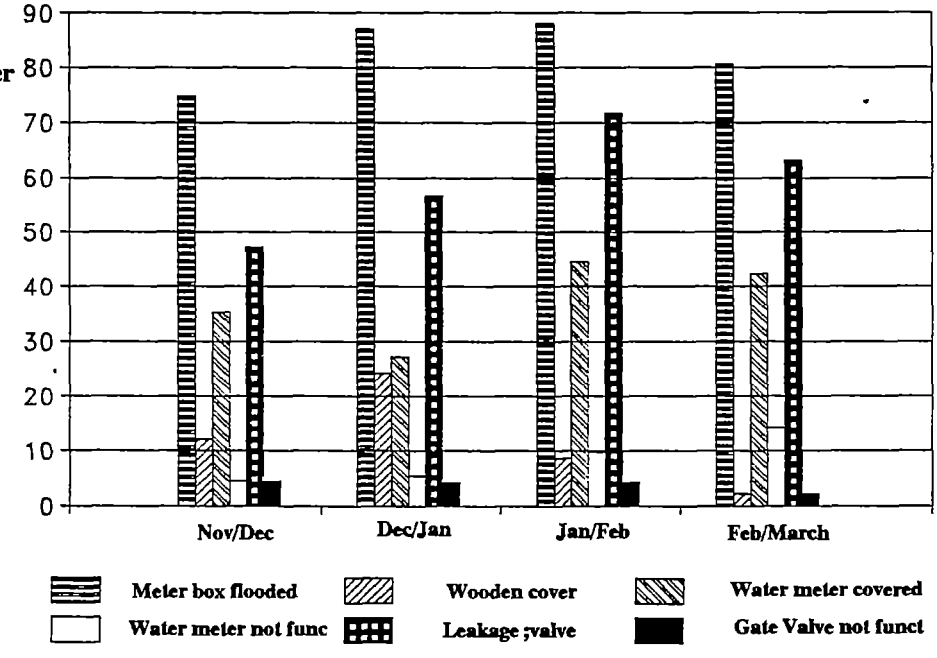
b. water meter

Considering the condition of the water meter box as mentioned earlier, the water meter of course were mostly under water as well. When the monitoring started, it was found that many of the water meters were not functioning and the numbers grew by the longer time of the monitoring period. There was even one meter which was not functioning ever since it was installed, namely the water meter of HU code **PB/PD/05.** (Detail data were presented at graph 4.1 and table 5).

Even if the water meters were functioning well, it was difficult to be checked and that the amount of water used could not be identified properly because they were under water. So, if one wanted to check the water meter he had to dry it up first before he could read the meter and noted the amount of water used. The amount of water used by HUs which water meters were not

Graph 4.1.

Condition of Water meter box, Water meter, Valve, etc



functioning was noted based on estimation only. Such estimation however caused problem. It happened that HU caretaker was not satisfied because he had to pay more than his estimation use of water. On the other hands some other HU caretakers were happy because they paid less than they estimated.

The following was an example, a comparison of the amount of water used noted from HU code **PB/PD/05** in RT 10 RW 10 at Pademangan Barat, Rayon Penjaringan II and HU code **CL/ST/07** in Kabantenan V no 14, Semper Timur, in rayon Cilincing, which described the above confusion problem. This was based on observation made during the period of February/March 1990. The water discharge of HU **PB/PD/05** was very small that the monitoring team could even go into the HU to measure the water discharge from the inlet. The water discharge was only 0.08 l/second. So, the HU needed the whole day to fill it up. Because of such condition, no water vendors bought water at this HU as they were not patient enough to wait so long to get water. This HU only had direct customers who usually came in the afternoon as in the morning the water was still too little to be taken. There was no indication that this HU used pump to suck water from the inlet because even if the monitoring team visited it at night time no pump was in used. For this period, the amount of water used noted was 300 m3 (based on estimation only). Thus the caretaker had to pay that much to PAM.

On the other hand, HU code **CL/ST/07** had much bigger water dis charge compared to the first one. This was also proved by the many number of regular water vendors that bought water at this HU and also that the HU had installed ten permanent pipes connected to the houses and the water was flowed by using a pump. This HU had 10 regular water vendors, a number of irregular water vendors and some direct customers who bought water in this HU. If only each water vendor averagely got 2.7 m3 of water a day, it could be estimated how much water the HU used. But, during this period, the amount of water used noted (based on estimation) was only 151 m3.

The above two cases were general problems of noting the use of water at HU based on estimation. The administrative carelessness did not only result on losses of PAM income (such as the second case), but it built up a certain dislike feeling of some HU caretakers towards PAM (as in the first case).

However, during the monitoring period, the team got the impression that many HU caretakers, especially HUs with big water discharge preferred to have the water meter to be not function ing. Such condition provided them the chance to bargain or to negotiate the amount to be noted (to be paid to PAM) with the person in charge. Uusually the negotiation ended by the satisfac tion of both parties. The person in charge did not need to dry up the meter box and the caretaker was happy because he did not have to pay so much that he could gain more profit. In such a case, of course it was PAM, as the company, who burdened the losses.

c. Gate valve, filter and plug valve

Most gate valve leaked because of a number of reasons. Those identified among others were because many caretakers or water vendors were too hard in opening or closing the gate valve and also because the quality of the gate valve itself was not good.

Most caretakers bounded the part that leaked with rubber band of unused tire. However it would only for temporary as not long after that the gate valve would even broken down completely and was not functioning at all.

In cases where the gate valve was not functioning, when the HU caretakers wanted to clean the reservoir, he usually closed the gate valve by using the plug valve available. He used monkey wrench to close it. As a result, during the monitoring it was found that many of the plug valves were in bad condition or were not functioning anymore as they also leaked.

Filter was fixed after the plug valve before the water meter so that the water passing the water meter was cleaned from any debris. This was meant to keep the meter from any dirt so that it would not break easily. In reality however, as the PAM water very often was dirty, the filter got easily clogged so that the flow of water to the HU became smaller. As the water meter could only be opened by PAM personnel so every time it clogged the HU caretakers reported to PAM office and then the PAM personnel would come to clean it. But, it happened so often that both the caretaker and the technician from PAM were tired of it. As a result, a number of caretakers

Tabel. 5. Kondisi Bak Meter Air, Meter Air dan Gate Valve pada Hidran Umum

No	Kode	Periode NOVAK	NOREK	Letak	Nopember BM	Nopember MK	Desember BM	Desember MK	Januari BM	Januari MK	Pebruari BM	Pebruari MK
	CILINCING (CL)											
1	CL/SP/02	ULH01	20358	1	2	4	2	5	3	7	3	7
2	CL/SB/03	ULH01	20360		1	4	2	5	1	5	3	7
3	CL/SB/04	ULH01	20359		1	7	1	7	1	7	1	7
4	CL/SB/05	ULH01	20361		1	7	1	7	1	7	3	5
5	CL/SB/06	UKH04	24345	1	3	7	2	7	1	7	1	7
6	CL/ST/07	ULH01	20366	1	1	@5	1	@5	1	@*5	1	*6
7	CL/KL/10	ULH02	20354		1	4	1	4	3	7	3	7
8	CL/CG/13	ULH02	20351	1	1	5	1	5	1	5	1	5
9	CL/KL/14	ULH02	20357		1	5	1	5	1	6	1	5
10	CL/KL/15	ULH01	20358		2	7	2	7	1	5	1	7
11	CL/KL/16	ULH01	20362		1	7	1	5	1	6	1	6
12	CL/KL/17	ULH01	20363		3	7	1	5	1	*6	3	7
13	CL/KL/18	ULH01	20364	1	1	6	1	5	1	6	3	6
14	CL/KL/19	ULH02	20355		2	6	1	5	1	5	1	5
	KOJA I (KA)											
1	KA/PG/01	UKH01	20002		1	6	1	6	1	6	3	5
2	KA/PG/02	UKH01	20004		#	#	#	#	#	#	#	#
3	KA/PG/03	UKH01	20003	1	1	6	1	7	1	4	1	*4
4	KA/PG/04	UKH01	20005		#	#	1	@6	1	@6	1	6
	KOJA II (KB)											
1	KB/TS/01	UKH06	22542	1	1	*6	1	*7	3	*6	1	*6
2	KB/RB/02	UKH05	22541		3	7	3	7	1	4	1	7
3	KB/RB/03	UKH05	22545	1	1	7	1	7	1	6	1	5
4	KB/TU/04	UKH04	22540		3	7	1	5	1	5	1	5
5	KB/LG/05	UKH03	22536		3	7	1	5	1	7	3	5
6	KB/KS/06	UKH02	22531	1	1	@5	1	@6	1	@5	1	@5
7	KB/KU/07	UKH01	22534	1	3	1	2	6	3	7	1	7
8	KB/KU/08	UKH01	22532	1	1	4	1	4	1	6	1	*6
9	KB/KU/09	UKH01	22533	1	1	4	1	4	1	7	1	5
10	KB/LG/10	UKH03	22535		1	7	3	7	1	7	1	7
11	KB/TU/11	UKH04	22537		3	7	1	5	1	4	1	4
12	KB/TU/12	UKH04	22539		3	7	3	7	1	7	3	5
13	KB/TU/13	UKH04	22538		3	7	3	7	1	5	1	5
14	KB/TU/14	UKH04	22548		3	7	2	7	2	7	1	7
15	KB/TS/15	UKH06	22542	1	3	7	1	7	3	5	1	7
16	KB/TS/16	UKH06	22544	1	3	7	1	7	1	7	1	7
	TANJUNGPRIOK I (TA)											
1	TA/SJ/01	UJH05	20019	1	1	5	2	5	3	5	1	5
2	TA/SJ/02	UJH05	20034		1	5	3	7	1	6	1	5
3	TA/SJ/03	UJH05	20023		1	7	1	6	1	7	1	7
4	TA/SJ/04	UJH05	20017	1	1	5	1	7	3	5	3	5
5	TA/SJ/05	UJH05	20018	1	1	5	1	6	1	5	3	5
6	TA/SJ/O6	UJH05	20021		1	5	1	5	3	5	1	*6
7	TA/SJ/07	UJH05	20022	1	3	7	1	5	1	5	1	7
8	TA/SJ/08	UJH05	20020		1	5	1	5	1	5	3	7
9	TA/SJ/09	UJH05	20025	1	1	5	3	7	1	5	1	5
10	TA/SJ/10	UJH05	20024	1	1	7	1	6	1	5	1	5
11	TA/SJ/11	UJH05	20026		3	7	1	6	1	6	1	6
12	TA/SA/12	UJH05	20029	1	1	5	1	4	1	6	1	6
13	TA/SA/13	UJH05	20030		1	7	1	5	1	6	1	5
14	TA/SA/14	UJH05	20027	1	1	7	1	7	1	5	1	7
15	TA/SA/15	UJH05	20028		3	7	3	7	1	6	1	4
16	TA/SA/16	UJH05	20033		3	7	3	7	1	*6	1	*6
17	TA/SA/17	UJH05	20032		1	5	1	5	1	5	1	6
18	TA/SA/18	UJH05	20031		3	7	1	5	1	6	1	6
	TANJUNG PRIOK II (KB)											
1	TB/KW/01	UJH04	20472		1	6	1	5	1	7	1	7
2	TB/KW/02	UJH04	20471	1	#	#	1	5	1	*6	1	5
3	TB/SU/03	UJH03	20473		1	5	1	6	1	6	3	7
4	TB/WS/04	UJH02	20459		1	5	1	5	1	6	1	6
5	TB/PP/05	UJH02	20460		1	5	1	7	1	6	1	6
6	TB/PP/06	UJH02	20463	1	1	4	1	6	1	6	1	6
7	TB/PP/07	UJH02	20464		1	7	1	*7	1	*6	1	*6
8	TB/PP/08	UJH02	20465		1	5	3	7	1	6	1	6
9	TB/WS/09	UJH02	20467		2	6	1	5	1	*6	1	4
10	TB/PP/10	UJH02	20461	1	1	*6	2	*6	1	*5	3	*4
11	TB/WS/11	UJH02	20462		1	5	1	7	1	6	1	6
12	TB/WS/12	UJH02	20466		3	7	1	7	1	6	1	6
13	TB/WS/13	UJH02	20468		3	7	1	5	3	5	3	7
14	TB/TP/14	UJH01	20470		1	6	1	5	1	6	1	*6
15	TB/TP/15	UJH01	20469	1	1	*6	2	*7	3	5	3	7
	PENJARINGAN II (PB)											
1	PB/PD/02	UIH04	20461		3	7	1	5	1	5	1	5
2	PB/PD/03	UIH04	20462	1	1	6	3	5	1	5	1	6
3	PB/PD/04	UIH04	20467		1	4	1	5	1	5	1	6
4	PB/PD/05	UIH04	20460	1	1	*6	2	*6	1	*6	1	*6
5	PB/PT/06	UIH04	20103		1	4	2	5	1	7	1	6
6	PB/PD/07	UIH04	20458	1	1	5	2	7	1	6	1	*6
7	PB/PD/08	UIH04	20459		1	6	1	5	1	6	1	4
8	PB/PD/09	UIH04	20465	1	1	5	1	5	1	6	1	*6
9	PB/PD/10	UIH04	20463	1	1	6	2	4	2	6	1	6
10	PB/PD/11	UIH04	20466		2	@6	2	@5	2	@6	1	@6
11	PB/PD/12	UIH04	20464		2	5	2	6	2	7	1	6
12	PB/AC/13	UIH03	20036		3	7	#	#	#	#	#	#
13	PB/AC/14	UIH03	20435		3	7	3	7	1	5	3	7
14	PB/PJ/15	UIH01	20456		2	6	2	5	2	6	2	*5
15	PB/PJ/16	UIH01	20457	1	1	6	2	5	1	5	1	5
16	PB/PJ/17	UIH01	20458	1	1	4	2	6	1	5	1	6
17	PB/PJ/18	UIH01	20459		2	5	1	5	1	5	1	5
18	PB/PJ/19	UIH01	20460		2	5	2	5	1	5	1	5
19	PB/PJ/20	UIH01	20461	1	2	6	2	6	1	6	1	6
20	PB/PJ/21	UIH01	20462	1	1	@5	2	@5	2	7	1	7
21	PB/PJ/22	UIH01	20463	1	2	7	2	7	1	5	1	7
22	PB/PJ/23	UIH01	20465		1	5	1	5	1	5	1	5
23	PB/PJ/24	UIH01	20466		1	5	1	7	1	7	1	5
	PENJARINGAN I (PA)											
1	PA/PG/01	UIH02	20111		3	7	3	7	3	7	3	7
2	PA/PG/02	UIH02	20108	1	1	6	2	6	2	6	1	7
3	PA/PG/03	UIH02	20110	1	1	6	2	6	2	6	2	6
4	PA/PG/04	UIH02	20109		1	6	1	6	1	6	1	6

BM: Bak Meter -> 1 = tergenang, 2 = tergenang dan tutup papan, 3 = tidak tergenang.
MK: Meter dan StopKran -> 4 = meteran air terlampaui air, 5 = stop kran bocor,
6 = kombinaasi 4 dan 5, 7 = baik, * = meteran air mati, @ = stopkran tidak berfungsi,
# = hidran tidak berfungsi

who already knew how to open it and cleaned the filter often clean it themselves. Some of them even took off the filter. So, the monitoring team sometimes only found the filter casing left. Some caretakers had even proudly explained about the filter and its part and they even showed the parts they took off to the team. As a result of course the water flowed well but because the water that passed the water meter was dirty, it broke only in a short time.

4.1.3. Additional construction

Additional construction were parts of HUs which were constructed by the caretakers on theirown expense. No additional construction was found at TA.

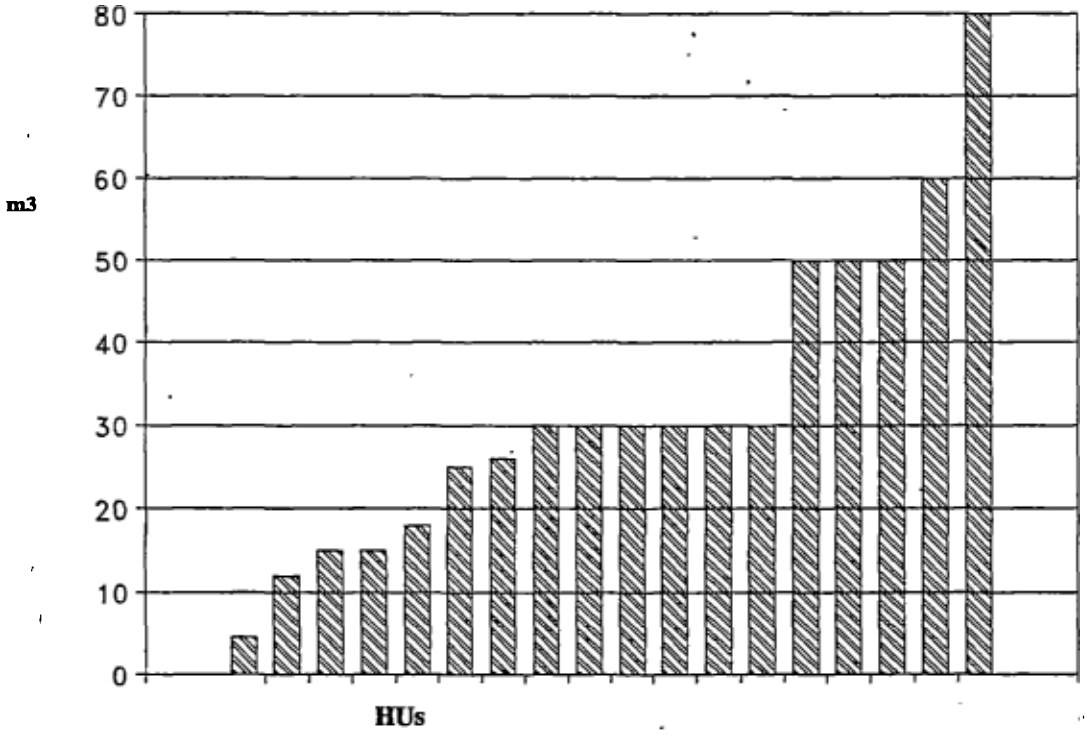
TA caretakers admitted that they did not make additional construction because they had no budget for it. According to them, their profit was not as much as HUs caretakers or they even had to sacrifice time and labor or even suffered loss of some money in taking care of the TA. For example, there were times when they had waited the whole day at the TA but the water truck did not come to drop water (see also 5.2.2. water terminal).

Thus, the following description on additional construction was only on HUs.

4.1.3.1. Additional reservoir.

Additional or enlargement of reservoir was meant to have bigger capacity of water supply so that if the water discharge becomes smaller or water stop flowing, they still had some supply of water that they could sell. (See 4.2.1.1. Problems of water supply). HU with many customers usually also had additional reservoirs which was meant to serve the customer faster. This was also a way to attract more customers. From the total public hydrant monitored, 18 of them had either adding or enlarging the reservoirs. The additional or the enlargement of the reservoirs range from 4.5 m3 to 80 m3.

Graph 4.2. Amount of HU and Additional Reservoir Volume



4.1.3.2. Additional equipments for better service.

Considering the amount of water sold by, majority was sold to water vendors. Therefore, HU caretakers always tried to provide additional equipments and facilities to ease the work of the water vendor in getting water. Some additional equipments made available were:

a. Electric water pump/gasoline power water pump.

The pump was used to pump water from the reservoir to the cans in the push-cart of the water vendors. As the customers did not have to use pail to get the water , the work became easier and faster. Besides, it was also easier for the caretaker in drying up the water in the reservoir whenever he wanted to clean it.

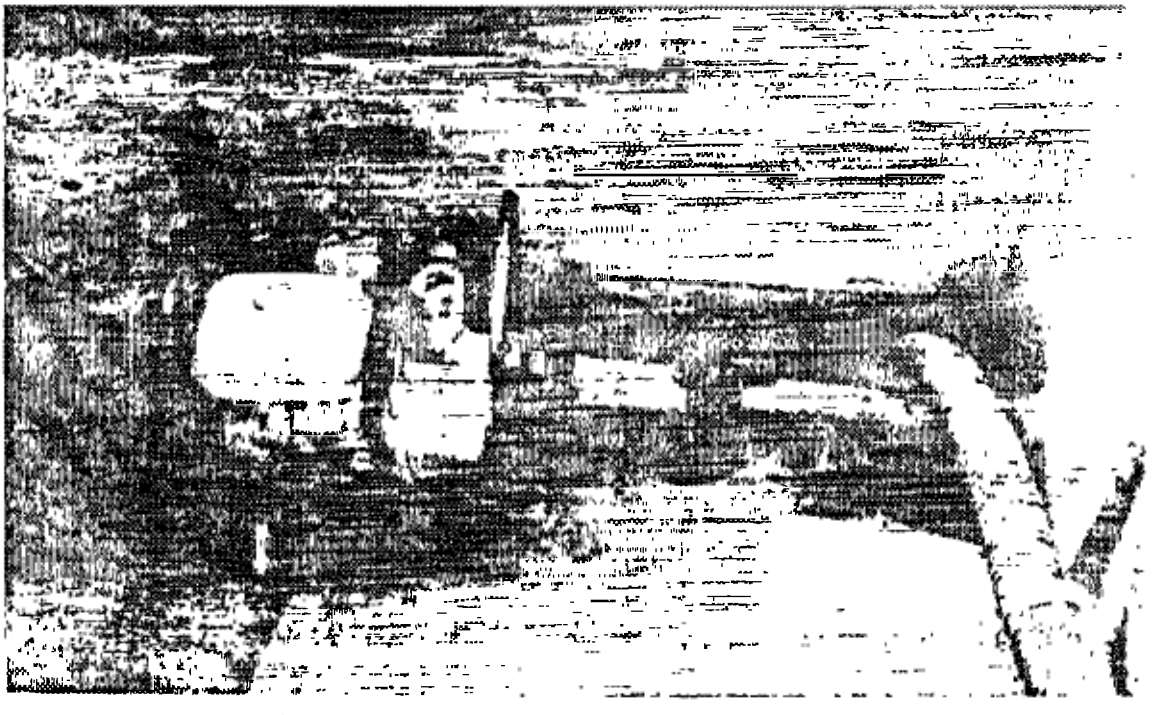
Most caretakers used electric water pump. As the pump was of small type, the caretaker could use the electric power from their household electricity line. It was only those who needed bigger power pump used the gasoline power pump.

From all HUs monitored, there were 44 HUs who installed water pump for better services. A more detail information on this was presented at 5.2.1.8.

If the pump was used to flow the water from the reservoir into the customers cans, this was really meant to ease the work of the customers as well as the caretakers. But, in reality some of the pumps were connected directly to the inlet that was meant to get more water to the respective HUs. Such practice was forbidden as it harmed other PAM customers.

Such practices were divided into two types, namely,

- caretakers who sucked water from inlet but still had a guilty feeling as he knew that such practice was forbidden. In general when one found out they would pretend to get angry to one of the water vendor telling him not to be wrong again in fixing the pump hose to the inlet pipe.
- secondly were caretakers who knew that it was forbidden but did not care and openly practiced the sucking of water from the inlet. Some even permanently fixed the pump



An Example of Pump which is connected permanently to the Inlet

The HU's reservoir is turned into Pump House

Table 6. Additional Construction By Caretakers

No	KODE	NOREK	NOVAK	Dist	TBK	VB
Cilincing (CL)						
1	CL/SP/02	ULH01	20358	2	R	
2	CL/SB/03	ULH01	20360	5	R	
3	CL/SB/04	ULH01	20359	2	R	
4	CL/SB/05	ULH01	20361	5		
5	CL/SB/06	UKH04	24345	1		
6	CL/ST/07	ULH01	20366	4		
7	CL/KL/10	ULH02	20354	2		
8	CL/CG/13	ULH02	20351	2	B	50
9	CL/KL/14	ULH02	20357	2		
10	CL/KL/15	ULH01	20358	5		
11	CL/KL/16	ULH01	20362	2		
12	CL/KL/17	ULH01	20363	2	B	30
13	CL/KL/18	ULH01	20364	2		
14	CL/KL/19	ULH02	20355	4		
KojaI(KA)						
1	KA/PG/01	UKH01	20002	3	R	
2	KA/PG/03	UKH01	20003	3		
3	KA/PG/04	UKH01	20005	3	MR	
KojaII(KB)						
1	KB/TS/01	UKH06	22542	5	B	18
2	KB/RB/02	UKH05	22541	5		
3	KB/RB/03	UKH05	22545	2	B	15
4	KB/TU/04	UKH04	22540	2		
5	KB/LG/05	UKH03	22536	2		
6	KB/KS/06	UKH02	22531	5		
7	KB/KU/07	UKH01	22534	3		
8	KB/KU/08	UKH01	22532	5		
9	KB/KU/09	UKH01	22533	3		
10	KB/LG/10	UKH03	22535	5		
11	KB/TU/11	UKH04	22537	2		
12	KB/TU/12	UKH04	22539	4	R	
13	KB/TU/13	UKH04	22538	2	R	
14	KB/TU/14	UKH04	22548	4		
15	KB/TS/15	UKH06	22542	2		
16	KB/TS/16	UKH06	22544	2		
TanjungPriokI(TA)						
1	TA/SJ/01	UJH05	20019	5		
2	TA/SJ/02	UJH05	20034	5		
3	TA/SJ/03	UJH05	20023	5		
4	TA/SJ/04	UJH05	20017	5		
5	TA/SJ/05	UJH05	20018	5		
6	TA/SJ/O6	UJH05	20021	5		
7	TA/SJ/07	UJH05	20022	5		
8	TA/SJ/08	UJH05	20020	5		
9	TA/SJ/09	UJH05	20025	3	R	
10	TA/SJ/10	UJH05	20024	5		
11	TA/SJ/11	UJH05	20026	5		
12	TA/SA/12	UJH05	20029	5		
13	TA/SA/13	UJH05	20030	2	BR	30
14	TA/SA/14	UJH05	20027	2		
15	TA/SA/15	UJH05	20028	2	B	15
16	TA/SA/16	UJH05	20033	1	B	30
17	TA/SA/17	UJH05	20032	1	BR	30
18	TA/SA/18	UJH05	20031	2	R	
TanjungPriokII(TB)						
1	TB/KW/01	UJH04	20472	5		
2	TB/KW/02	UJH04	20471	5	R	
3	TB/SU/03	UJH03	20473	3		
4	TB/WS/04	UJH02	20459	4	B	4.5
5	TB/PP/05	UJH02	20460	5	B	12
6	TB/PP/06	UJH02	20463	5		
7	TB/PP/07	UJH02	20464	5		
8	TB/PP/08	UJH02	20465	5		
9	TB/WS/09	UJH02	20467	5		
10	TB/PP/10	UJH02	20461	5		
11	TB/WS/11	UJH02	20462	5		
12	TB/WS/12	UJH02	20466	4		
13	TB/WS/13	UJH02	20468	5	B	30
14	TB/TP/14	UJH01	20470	2		
15	TB/TP/15	UJH01	20469	5	B	25
PenjaringanII(PB)						
1	PB/PD/02	UIH04	20461	5	R	
2	PB/PD/03	UIH04	20462	2		
3	PB/PD/04	UIH04	20467	2		
4	PB/PD/05	UIH04	20460	5		
5	PB/PT/06	UIH04	20103	2	B	26
6	PB/PD/07	UIH04	20458	2	M	
7	PB/PD/08	UIH04	20459	2	B	30
8	PB/PD/09	UIH04	20465	2		
9	PB/PD/10	UIH04	20463	2		
10	PB/PD/11	UIH04	20466	5		
11	PB/PD/12	UIH04	20464	5		
12	PB/AC/13	UIH03	20036	5		
13	PB/AC/14	UIH03	20435	5		
14	PB/PJ/15	UIH01	20456	1	R	
15	PB/PJ/16	UIH01	20457	2		
16	PB/PJ/17	UIH01	20458	5		
17	PB/PJ/18	UIH01	20459	2		
18	PB/PJ/19	UIH01	20460	2		
19	PB/PJ/20	UIH01	20461	1		
20	PB/PJ/21	UIH01	20462	1		
21	PB/PJ/22	UIH01	20463	1		
22	PB/PJ/23	UIH01	20665	1		
23	PB/PJ/24	UIH01	20455	1	R	
PenjaringanI(PA)						
1	PA/PG/01	UIH02	20111	1	BMR	80
2	PA/PG/02	UIH02	20108	2	BR	50
3	PA/PG/03	UIH02	20110	1	B	50
4	PA/PG/04	UIH02	20109	2	BR	60

KETERANGAN: DIST = distribusi -> 1 = pompa generator, 2 = pompa listrik, 3 = selang, 4 = pipa, 5 = timba. R= umah istirahat, VB = volume bak air (m3),)TBK = tambahan konstruksi, B = bak air. M= MCK Umum

which of course of bigger power (gasoline power pump) to the inlet. The pump was placed in the HU reservoir while the water was put in a new and bigger reservoir. Thus the HU reservoir had changed its function from reservoir to a pump house.

b. Hose

Hose was usually used in HU with big water discharge. By using several meters of plastic hose which was connected directly to the inlet, the water could be directly flowed into the cans of the customers. However, some HUs with small water discharge also used hose as those who used pump to suck water even used a T joint and three hoses connected to the pump. This means that they could serve three customers at one time.

c. Permanent distribution pipe line

Permanent distribution pipe line were PVC pipes directly connected to houses around the HU (with radius around 100 m) and was operated with a pump so that the water from HU reservoir could directly flow into the houses. Such a case was found at HU code **CL/ST/07, KB/TU/12, TB/WS/12. KB/TU/14, and TB/WS/04.**

There were also cases where no pump was used, instead they used gravity fed system . In this case, the hoses were connected to a header tank and then flowed to the customers houses which were located lower than the HU. This was found at HU code **CL/KL/19.**

Such customer usually paid between Rp. 7,500 to Rp. 10,000 per month. The installation was shared between the HU caretaker and the customer. The limitation on the use of water in these houses were done by :

- by hours: If there was no more water in the house, the owner would come to the HU caretaker and told him to open the water line to his house. Based on experience, after certain time when it was estimated that the water containers in the respective house was filled up, the caretaker put off the pump to stop the water flow.
- free system: a tap was fixed at the pipe in the house of the customers. Once the tap was opened the automatic switch of the pump would work so that the water flowed directly. This system was very similar to the services provided by PAM as water flowed at any time the customer wanted to get water. Such a case was found at HU code CL/ST/07 which water meter was broken and there fore was not functioning (See 4.1.2.2. b on water meter box). HU caretaker preferred this system because it gave them permanent monthly income. For example, HU code **CL/ST/07** had 10 customers. Thus, they had a permanent monthly income of Rp. 100,000.

4.1.3.3. Additional facilities

a. Push-cart

There were 45 HU caretakers that provide push-carts including the cans both to water vendors and to direct customers.

A water vendor could rent a push cart at Rp. 500 to Rp. 600 per day, while direct customers did not pay the rent but it was built in the price of the water they paid. Therefore, it was not sur prising if 97% of the direct customers paid higher price of water compared to the ceiling price which was only Rp. 500 per m3. (detail information on this aspect could be found at 5.3. push-cart).

b. Rooms

There were 18 HU caretakers that provided rooms beside or near the HU. The rooms were simple. However, the rooms were not only used to rest for the water vendors but they were also used as boarding rooms for water vendors that came from villages outside Jakarta such as from Tasikmalaya, Madura, Brebes, Malang, etc. Being so, indirectly the HU caretakers had a regular group of water vendors (which was the main customers of HU). By providing such facilities the caretaker had indirectly tied the water vendors to their HU.

c. Public bathroom and toilet

Providing public bathroom and toilet were a side business of HU caretakers. There were 3 HU caretakers that built a bathroom, a toilet and a place for washing near their HU. Those who used either of the facilities (that of course used some water too) paid between Rp. 50 to Rp. 100 at a time. These tariff depended on the kinds of usage of the facilities. To go to the toilet, to take a bath and to wash their clothes cost Rp. 100. But if one only go to the toilet and take a bath then he paid only Rp. 50.

4.2. HU and TA services

The function and the services of HUs and TAs.

The function and the services of HUs and TAs were analyzed from three different aspects, namely,

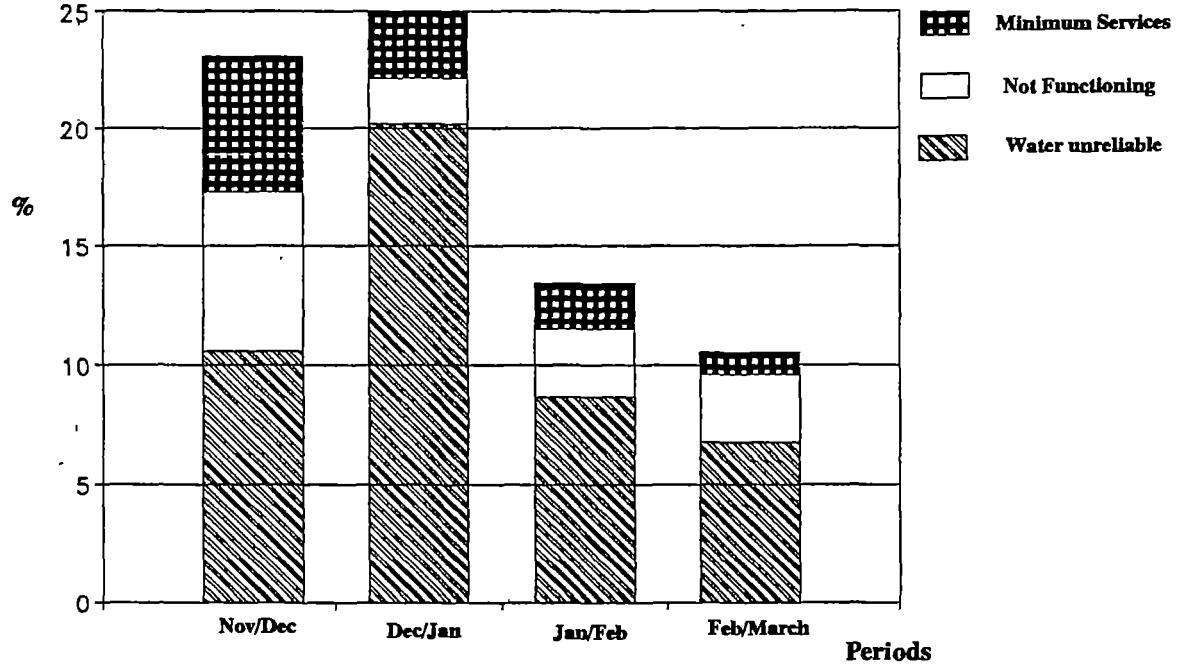
- water availability
- The service provided by the caretaker
- the function (functional or not functional) of the HUs and TAs.

The graph below shows the percentage of the factors that influ enced the function of the HUs and TAs. The detail data however are presented at table 7.

4.2.1. Water availability

The water availability was categorized into two kinds, reliable or unreliable. Unreliable means that the water discharge of the HU was too small that it was not enough to serve the customers. For example: there was one HU with very small water discharge so that to fill a quarter part of the HU reservoir (1.5 m3) 3 hours was needed . This amount of water would be taken by the customers only in half an hour. As a result, the customers who had not got any water would have to wait for another 3 hours. An HU or TA was considered reliable if the water discharge could provide enough supply so that the customers of the respective HU or TA could get water any time they wanted

Graph 4.3. Percentage of Problems Affecting the Service of HUs



It was different with Ta as the water supply at TA depended on the supply from the water truck. Therefore the analysis was also done separately.

4.2.1.1. Water availability at HU

The PAM North Jakarta piped water that went into the HUs came from different sources. Therefore the water discharge of the water that flowed into the different HUs was also different. There were HUs with big water discharge so that water was abundantly available, but there were also HUs which water discharge was so small that several hours were needed to fill them up with water.

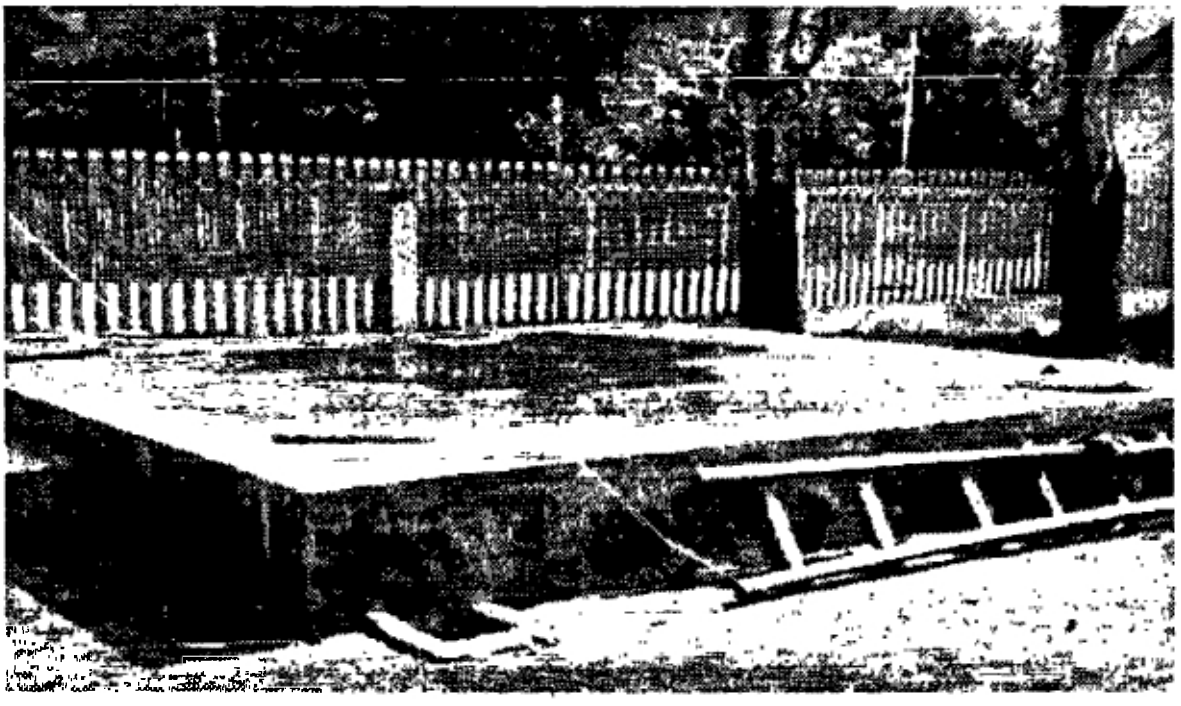
The water discharge of the HUs were also influenced by the hydraulic gradients of respective HU location and it influenced the different pressure of water in the pipes. There were some HU with a high water pressure that the water could be directly filled into the cans of the customers. But there were some HUs which hydraulic gradient was negative so that the HU reservoir had to be made deep under the ground.

Caretakers of HU with small water discharge mostly installed a water pump directly to the inlet so as to be able to get more water, although such thing was actually forbidden.

Thus, the water discharge of the respective HU influenced the number of customers that could be served by the respective HU. The water discharge depended on the following factors:

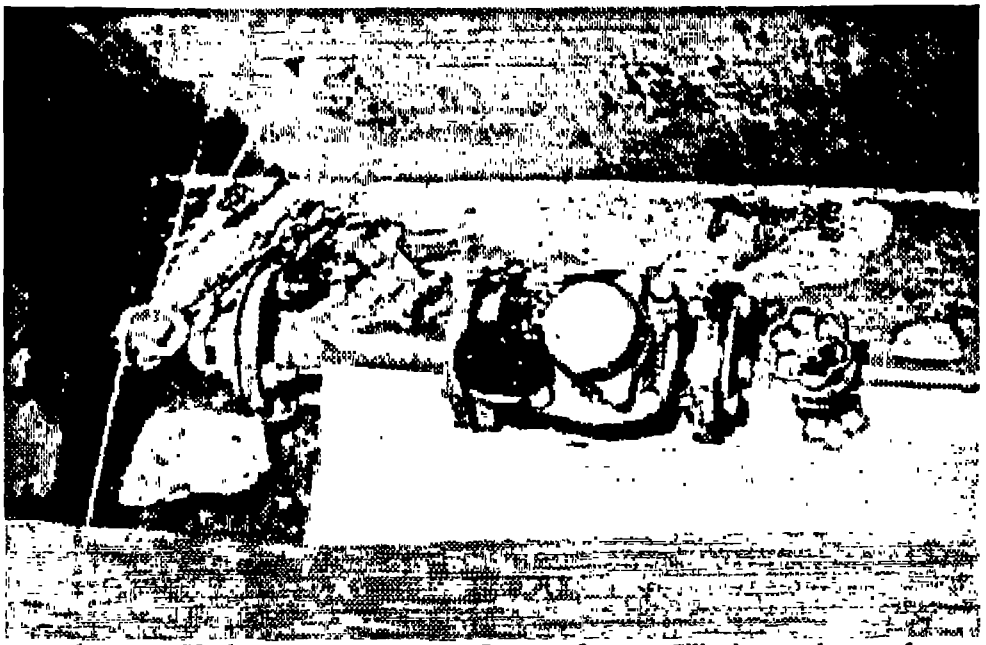
- Hydraulic gradient of the HU location; This was influenced by the distance of the HU from the water source, condition ofpipe line, age of pipe line, existence of supporting equipments/booster) and the pipe line system in the area as all of them would influence the total friction loss.
- The quantity of water in the water source which was influenced by the following factors:
  - The capacity of the water source.
  - Losses, both technically and administratively.
  - The number of customers in the distribution area because if there were more customers than the water capacity of the water source, the water that flowed to the HU would be very little that the target community could not get the benefit from the HU.
- The dirt which very often clogged the pipes or the filter . As a result the water discharge got smaller.

The first two factors were affected by the design and site selection of the HU while the last one was affected by the maintenance of the caretakers over the HU.



Typical Additional Reservoir (50 m3) done by rich Caretaker

Leakage at valve
Commonly found



Considering the water flow at HU, the HU at rayon Koja I, part of rayon Cilincing, and part of rayon Koja II had quite a big water discharge. While the water discharge of HU in rayon Penjaringan I was very small.

4.2.1.2. Water availability at Water terminal (TA)

There were two main factors that influenced the water supply at the TAs.

a. **Environmental condition and situation of TA**

The main objective of the construction of TA was to free the community in areas with no piped water from their problem in obtaining clean water.

Of the 10 (ten) TAs monitored however, two of them , namely , CL/CG/08 and CL/CG/09 were located at an area which belong to PAM additional network. In the two above mentioned TAs area there had been some public and private HUs.

These two TAs always had water. This was not because the good regular supply of the water truck but because the TA got less and less customers as they preferred to get water from the HU which was cheaper (water from TA cost Rp. 100 per pikulan , 30 l, yet they still had to take it themselves, while they could buy water from water vendors which cost only Rp. 125 - Rp. 150 but they could have it at home. As a result, many TA caretakers lost their enthusiasm in taking care of the TAs.

Looking at such condition it was anticipated that these TAs would close down in a short time, approximately 6 more months. These TAs could always be moved to other areas that were in need of clean water. Such efforts however would need funding and the commu nity would get the impression that the project was not well planned and that it was a patchy project.

On the other hand, the TAs which were built at the right locations had really benefited the community and they were really thankful for it as they had been released from their major prob lem. For example, the TA at Marunda, Teluk Gong, Kapuk Muara and Kamal Muara. The water supply at these TA finished just in a relatively short time. The water vendors of the TA at Kapuk Muara which only water was only distributed the water to water vendors admitted that they could get enough water to fulfill the communi ty requirement so that they still had to go and get water from some private hydrants which was quite a distance (about 5 kms).

Table 7. Services Provided by HU & TA to the Community.

No	Kode	NOVAK	NOREK	1	2	3	4
CILINCING (CL)							
1	CL/SP/01	TA 01		P	P	P	P
2	CL/SP/02	ULH01	20358	B	B	B	B
3	CL/SB/03	ULH01	20360	B	B	B	B
4	CL/SB/04	ULH01	20359	B	B	B	B
5	CL/SB/05	ULH01	20361	B	B	B	B
6	CL/SB/06	UKH04	24345	B	B	B	B
7	CL/ST/07	ULH01	20366	P	B	B	B
8	CL/CG/08	TA 02		P	P	P	B
9	CL/CG/09	TA 03		B	B	B	B
10	CL/KL/10	ULH02	20354	B	K	B	B
11	CL/MR/11	TA 04		B	B	B	B
12	CL/MR/12	TA 05		B	B	B	B
13	CL/CG/13	ULH02	20351	B	B	B	B
14	CL/KL/14	ULH02	20357	B	B	B	B
15	CL/KL/15	ULH01	20358	B	B	B	B
16	CL/KL/16	ULH01	20362	B	B	B	B
17	CL/KL/17	ULH01	20363	P	B	B	B
18	CL/KL/18	ULH01	20364	B	B	B	B
19	CL/KL/19	ULH02	20355	B	B	B	B
KOJA I (KA)							
20	KA/PG/01	UKH01	20002	B	B	B	B
21	KA/PG/02	UKH01	20001	M	M	M	M
22	KA/PG/03	UKH01	20003	B	B	B	B
23	KA/PG/04	UKH01	20004	M	B	B	B
KOJA II (KB)							
24	KB/TS/01	UKH06	22542	B	B	B	B
25	KB/RB/02	UKH05	22541	K	K	B	B
26	KB/RB/03	UKH05	22545	B	B	B	B
27	KB/TU/04	UKH04	22540	B	B	B	B
28	KB/LG/05	UKH03	22536	B	B	B	B
29	KB/KS/06	UKH02	22531	B	B	B	B
30	KB/KU/07	UKH01	22534	B	B	B	B
31	KB/KU/08	UKH01	22532	B	B	B	B
32	KB/KU/09	UKH01	22533	B	B	B	B
33	KB/LG/10	UKH03	22535	B	B	B	B
34	KB/TU/11	UKH04	22537	B	B	B	B
35	KB/TU/12	UKH04	22539	B	B	B	B
36	KB/TU/13	UKH04	22538	B	B	B	B
37	KB/TU/14	UKH04	22548	B	B	B	B
38	KB/TS/15	UKH06	22542	B	B	B	B
39	KB/TS/16	UKH06	22544	B	K	B	B
Tanjung Priok I (TA)							
40	TA/SJ/01	UJH05	20019	B	B	B	B
41	TA/SJ/02	UJH05	20034	B	B	B	B
42	TA/SJ/03	UJH05	20023	B	B	B	B
43	TA/SJ/04	UJH05	20017	B	B	B	B
44	TA/SJ/05	UJH05	20018	B	B	B	B
45	TA/SJ/O6	UJH05	20021	B	B	B	B
46	TA/SJ/07	UJH05	20022	B	B	B	B
47	TA/SJ/08	UJH05	20020	B	B	B	B
48	TA/SJ/09	UJH05	20025	B	B	B	B
49	TA/SJ/10	UJH05	20024	B	B	B	B
50	TA/SJ/11	UJH05	20026	B	B	B	B
51	TA/SA/12	UJH05	20029	B	B	B	B
52	TA/SA/13	UJH05	20030	B	B	B	B
53	TA/SA/14	UJH05	20027	B	B	B	B
54	TA/SA/15	UJH05	20028	P	P	B	B
55	TA/SA/16	UJH05	20033	M	K	B	B
56	TA/SA/17	UJH05	20032	M	K	B	B
57	TA/SA/18	UJH05	20031	M	K	B	B
Tanjung Priok II (TB)							
58	TB/KW/01	UJH 04	20472	B	B	B	B
59	TB/KW/02	UJH 04	20471	M	B	B	B
60	TB/SU/03	UJH 03	20473	B	B	B	B
61	TB/WS/04	UJH 02	20459	P	B	B	B
62	TB/PP/05	UJH 02	20460	B	B	B	B
63	TB/PP/06	UJH 02	20463	K	K	B	B
64	TB/PP/07	UJH 02	20464	K	K	B	B
65	TB/PP/08	UJH 02	20465	K	K	B	B
66	TB/WS/09	UJH 02	20467	B	B	B	B
67	TB/PP/10	UJH 02	20461	B	K	B	B
68	TB/WS/11	UJH 02	20462	B	K	B	B
69	TB/WS/12	UJH 02	20466	B	K	B	B
70	TB/WS/13	UJH 02	20468	B	B	B	B
71	TB/TP/14	UJH 01	20470	B	B	B	B
72	TB/TP/15	UJH 01	20469	K	K	B	B
PENJARINGAN II (PB)							
74	PB/PD/02	UIH04	20461	B	B	K	B
75	PB/PD/03	UIH04	20462	B	B	K	B
76	PB/PD/04	UIH04	20467	B	B	B	B
77	PB/PD/05	UIH04	20460	K	K	K	K
78	PB/PT/06	UIH07	20103	K	B	B	B
79	PB/PD/07	UIH04	20458	B	K	B	B
80	PB/PD/08	UIH04	20459	B	B	B	B
81	PB/PD/09	UIH04	20465	B	B	B	B
82	PB/PD/10	UIH04	20463	B	K	K	K
83	PB/PD/11	UIH04	20466	B	K	K	K
84	PB/PD/12	UIH04	20464	B	K	K	K
85	PB/AC/13	UIH03	20036	B	M	M	M
86	PB/AC/14	UIH03	20435	B	K	B	B
87	PB/PJ/15	UIH01	20456	B	B	B	B
88	PB/PJ/16	UIH01	20457	K	B	B	B
89	PB/PJ/17	UIH01	20458	B	B	B	B
90	PB/PJ/18	UIH01	20459	B	B	B	B
91	PB/PJ/19	UIH01	20460	B	B	B	B
92	PB/PJ/20	UIH01	20461	B	B	B	B
93	PB/PJ/21	UIH01	20462	B	B	B	B
94	PB/PJ/22	UIH01	20463	B	B	B	B
95	PB/PJ/23	UIH01	20465	B	B	B	B
96	PB/PJ/24	UIH01	20466	B	B	B	B
PENJARINGAN I (PA)							
97	PA/PG/01	UIH02	20111	B	B	B	B
98	PA/PG/02	UIH02	20108	B	B	B	B
99	PA/PG/03	UIH02	20110	B	B	B	B
100	PA/PG/04	UIH02	20109	B	B	B	B
101	PA/PG/05	TA 06		K	B	K	K
102	PA/KP/06	TA 07		K	B	K	K
103	PA/KP/07	TA 08		K	K	K	K
104	PA/KM/08	TA 09		M	K	M	M
105	PA/KM/09	TA 10		B	B	B	B

Note :

1 = Period Nov/Dec
2 = Period Dec/Jan
3 = Period Jan/Feb
4 = Period Feb/March

B = Good Services
K = Water availability unreliable
M = HU/TA not functioning
P = Caretaker provide limited service time

As mentioned earlier the TA water supply depended on the supply from the water truck. The supply was very much influenced by the condition of the environment of the TAS. For example, during the rainy season if the location was muddy or in flood, the water truck usually did not like to take the risk to go through the difficulty to the TA location. Consequently the supply of water to the TA was uncertain. In such condition, the respective commu nity in the area had to be thrifty in using their clean water, or they would have to consume water of low or bad quality.

b. Water truck

In normal condition, each TA at least was supplied once a day by the water truck (about 5 m3 daily). Consequently, the truck that supply TAs with a few customers very often had to bring the water back as the TA was still filled up with water. On the other hand, TAs with a lot of customers could even sell two trucks of water a day. Even so, many of the customers were often dissa pointed because the first supply of water which should come in the morning often came late sometimes even up to eleven o'clock or even later. Whereas actually water was mostly needed in the morning.

The main reason of the lateness of the water truck was the traffic jam. Information gathered from truck drivers were that the water was taken from a far distance so that the time spent espe cially during traffic jam was not worth compared to the output, the delivery of clean water, For example, The water supplied to the TA in Kapuk Muara was taken from The Muara Karang Station which in normal condition needed two hours to supply and to return back. During heavy traffic, longer time was needed. To most truck drivers it was very tiring to drive through heavy traffic. Consequently to supply water to TA which needed 20 m3 of water a day the water truck should go through four long and tiring journey during the day. Because of such problem, idea to supply water at night could be considered . At that time traffic was not so heavy that they could go faster. This of course was a very good initiative. However, it had some consequences as there should be more reservoirs for TAs with many customers.

4.2.2. Time Availability of Caretakers to Provide Services

In general HU and TA caretakers provided the services of selling water from 5.00 am to 6.00 pm. Some of them even provided services at any time. On the other hand, there were also some HU and TA caretakers who provided services only for a short time, from 6.00 - 7.30 am and from 4.00 - 6.00 pm because the caretakers had a permanent job which to them was more important than to take care of the HU or TA. Yet, they did not have assistant who could help them provide the services. Such short period made it difficult for the customers who needed for water out of those hours.

4.2.3. HU and TA which were not functioning

There were a number of HUs and TAs which were not functioning because there was no water or because of the absence of the caretakers. The HU code TA KA/PG/02 and PA/KM/08 had never been in operation ever since they were installed.

4.3. Water quality

The size, the design and the source of water for all HUs and all TAs were the same. However, because of different ways in maintaining the HUs and TAs by each of the caretaker, after sometimes it was found that water quality in the HUs and TAs was not the same.

The HU reservoir was such that if it was not covered up it could be easily contaminated. The water of HU came from PAM pipe line. TA reservoir was made of fiber glass and was always closed. The TA water was supplied by water truck.

Water users usually used a drum (after cleaned and painted again), plastic jar or clay jar.

4.3.1. HU water quality

The following illustration may give a description of various factors which affect the water quality.

- HU code **CL/KL/18** in Rayon Cilincing

On top of HU the Caretaker built his living room.

When the HU was constructed it was located at the house yard of the caretaker. As the caretaker economical condition got better, he enlarged his house such that the HU was located under the living room and the concrete slab cover function as the floor of the room. To get the water from the HU a pump was used. The pump was connected to a hose. The hose was channeled out of the house through a hole made on the wall. Consequently, the HU caretakers rarely clean the HU because the hole to get inside it was very small that it was difficult to get in and also because he did not like his living room to get messy every time he cleaned the HU.

- HU code **PA/PG/01** in Rayon Penjaringan I.

  Having many customers and thought that the HU business was pretty profitable, the caretaker constructed a bigger reservoir which was connected to the original one. (the reasons for additional construction of HU reservoirs could be found in 4.1.3.1.). The HU of course was also closed with concrete slab. It was on it too that the water vendors slept. About 0.8 m from it, several public bathrooms and toilets were constructed. All of those of course were under one roof. In front of them were several rooms.

  The profession of the owner or the caretaker was as whore monger. So, being a caretaker, a whore monger and bathroom rental at the same time was just like an integrated program where one supported the other.

- HU code **PB/PD/02, PB/PJ/23** and **KB/KS/06** in Rayon Penjaringan II and rayon Koja II were examples of HU which were roofed intentionally to be used as simple house where the water vendors could sleep. Condition was worse at HU code **KB/KS/06** because it was located at an area which was always in flood during high tide and during the rainy season. So, one who wanted to get water from this HU should go through the flood which water could be as high as the knee. Apparently the feet of the water vendors that slept on top of the HU were dirty and became the source of contamination of the water in the HU.

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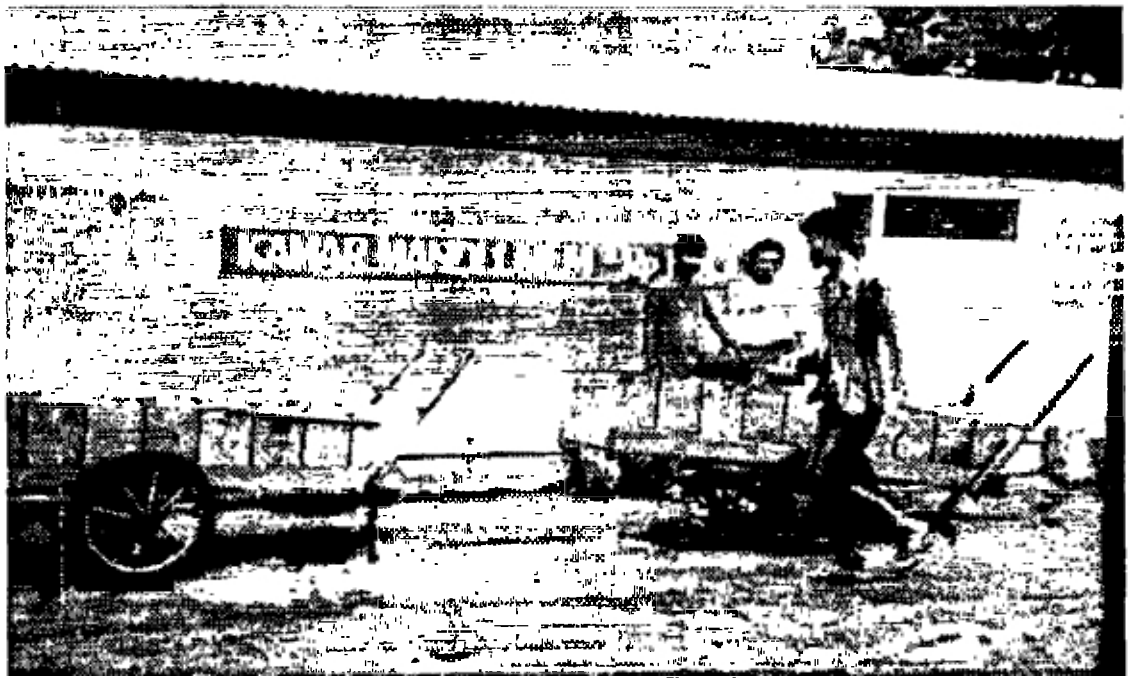


A smart Integrated Project, HU Caretakers, Whore Monger and Rental of bathroom.

HU code **PB/PJ/22** in Rayon Penjaringan II had different problems. When it was constructed, the HU was located in the middle of poor community houses. After sometime, the houses were abolished so that the HU was located at an empty area. As there was no houses there, the people around it began to throw their garbage there. The garbage had now become the main source of contamination for the HU water.

There were also a number of ways of storing water in the houses of the community. The most common one was by using a drum. Those of the better economic condition constructed a water container. However, either the drum or the water containers were usually put at the back of the house which was also the place where the family usually kept the garbage and where the pit latrines which very often was used by more than one families (in rumah gandeng) was located. Before going to the toilet, one would take a small pail of water and a water dipper to the toilet. The water dipper was actually used for many different purposes. Those of the low economic strata most often did not separate the water used for drinking and cooking from the water used for washing, toilets, bathing or others as they only had one water container (a drum). Thus, there was a great chance for the water in the drum to get contaminated. Moreover they did not clean the drum too often as they did not want to throw away the left over in the drum .

The community perception, the perception of the caretakers, as well as the water vendors' perception about clean water was that water was clean if it was clear and fresh water. So, if only the PAM water which came into the HU looked dirty as there was some dirt in it (local term: with coffee powder in it) that the care taker would clean the reservoir. Whereas they were ignorance on contamination of bacteria or other chemical material. So, as long as the water was clear the customers would not complain and the water would get sold which was the simple target of the caretaker.

The above illustration of course lead to a question on the real condition of the water quality both at the HU and TA and also in the customers' houses.

4.3.1.1. Water sampling and laboratory analysis.

Water samples were taken in pair meaning that every sample taken from a certain HU or TA (the water source) was always paired by water sample taken from the houses of the customer of the respective HU or TA. In every monitoring period 6 samples were taken from HUs and TAs and 6 from the customers' houses that bought water from the respective HUs and TAs which the first sample were taken.

From the monitoring period of October/November 1989 up to February/March 1990, altogether 60 water samples were taken ; 26 from HUs , 4 from TAs and 30 from the customers' houses. The 60 samples were analyzed in the laboratory.

No periodical data from a particular HU or TA was done as it was beyond the field of this monitoring.

The data were presented in the form of table in the following pages . It could be seen that beside a code number, for example No. 2, there would be data of sample of code no. 2 K. This means that the water sample was taken from the HU no. 2 and the 2 K was sample taken from the HU no 2 customer's house.

The additional code + and - were just indicators regarding the condition of the customer's house. + means the house was in moderately good condition while - means that the house was in poor condition (the small houses connected to one another/rumah gandeng) . This at least reflect the economic condition of the owner.

4.3.2. Discussion on Water quality

a. Microbiology

Microbiological data represented by the number of coliform and faecal coli in the water. From 26 water samples taken from HU, 16 of them contained a big number of total coliform and faecal coli which was over the permitted number. There was even one which contained 11 million of coliform per 100 ml and 0.93 million fecal coli per 100 ml.

By field observation regarding the condition of the location of the HU and its environment it was understandable that the water contained such high coliform and faecal coli. Moreover by the poor maintenance carried out by the caretaker.

No relation was seen between the water quality, especially in term of its number of coliform and faecal coli to the amount of water sold in the respective HU . In other words it should not be assumed that HU caretakers with less customers did not maintain the HU well. In reality it was the other way around as it was HU with a lot of customers which were usually poorly maintained.

Thus, the monitoring team tended to see that the most influencing factor was the caretaker knowledge on hygiene and sanitation. So, education speciically on hygiene and sanitation should be given to HU and TA caretakers.

Data of water samples from HU represented 27% of all HU monitored while the samples taken from the houses of water users (custom ers) only represented a very small percentage. However, the result more or less gave an idea of the condition of the water quality in most houses in the slum area in North Jakarta.

From 30 samples, there were 17 samples which contained coliform and faecal coli much higher than the permitted standard. There was even one which contained 9 million of coliform per 100ml and 4 million faecal coli per 100 ml of water. It was unbelievable but it was the fact.

Observation however found that there was no indication that families who lived in better houses had better quality water, because the water container very often was not maintained well. As a result the water quality was just as bad as the ones in the houses of the poorer families.

On the other hand, there was a close correlation between the water quality from the HU with the water quality in the customer's house. It was possible that the HU water quality was good enough but once the water was poured into the drum of the customers it got mixed with the rest of the water in the drum which was al ready contaminated or because of the growth of microorganism as the water had been kept for several days. Consequently all the water got contaminated. Moreover, if the HU water quality was bad, it got much worse once it came to the customer's house.

RAYON CILINCING

NO	PARAMETER	SATUAN	SARAN	BATAS	TA04 CL/MR/11 NOP P4L	TA04K- CL/MR/11 NOP P4L	19 CL/KL/19 JAN P4L	19K+ CL/KL/19 JAN P4L	2 CL/SP/02 PEB P4L	2K+ CL/SP/02 PEB P4L	TA01 CL/SP/01 NOP SUC	TA01K- CL/SP/01 NOP SUC	TA03 CL/CG/09 NOP SUC	TA03K+ CL/CG/09 NOP SUC	15 CL/KL/15 NOP SUC	15K- CL/KL/15 NOP SUC
I	FISIK															
1	DAYA HANTAR LISTRIK	Mhos/cm			375	350	360	285	250	265						
2	KEKERUHAN	NTU	5	25	3.8	4.5	4 2	4	5	3.2	4	8	6	10	6	4
3	WARNA	Scala Pt-Co	5	50	14	10	10	8	•	•						
II.	KIMIAWI															
1	ALKALINITY SBG HCO3-	mg/L			70 35	70.35	77.08	80.19	55.33	60 21						
2	CARBONDIOKSIDA	mg/L	0	0	6.49	5.41	4 49	2.24	2.33	2.33						
3	CHLORIDA	mg/L	0	200	28.5	26.5	30	25	10	20						
4	AMONIA	mg/L	.01	.5	.26	.05	07	.08	.06	.11						
5	NITRAT	mg/L	5	10	.62	6.02	.5	.51	.41	•						
6	NITRIT	mg/L	0	1	1.18	1.29	.747	316	.412	.223						
7	PH		5	9	7.24	7.43	6.4	6.47	7.01	7.29						
8	PHOSPAT	mg/L	200	400	.01	.005	.017	.029	.015	.014						
9	SULFAT	mg/L			33.5	33.65	32.6	34.5	26.9	31.3						
10	Ca HARDNESS (CaC03)	mg/L	75	200	121	70	70	70	80	80						
11	Mg HARDNESS (Mg)	mg/L	30	150	6	28	20	20	20	40						
12	TOTAL HARDNESS (CaCO3)	mg/L	100	500	127	98	90	90	100	0	63 63	66.23	81.15	87.65	75.95	81.15
13	FLOURIDA	mg/L	1	2	.15	.13	.07	.06	.03	.02						
14	ZAT PADAT TERSUSPENSI	mg/L	0	500	19	20	20	16	12	2	158	174	244	260	156	180
III	KHUSUS															
1	CYANIDA	mg/L	0	.05	•	•	•	•	•	•						
2	PHENOL	mg/L	.001	.002	•	.02	.03	•	•	•						
3	ORGANIK (KMnO4)	mg/L	0	10	16.71	17.21	10.84	11.46	12.41	15.9	10.28	10.28	15 05	14.04	10.78	10.54
IV.	MIKROBIOLOGI															
1	COLI FORM/100 cc	mg/L	0	0			43	4000	23	1100000						
2	FECAL COLI/100 cc	mg/L	0	0			7	24000	23	460000	•	•	•	•	•	•
V.	LOGAM															
1	BESI	mg/L	1	5	1	.18	.07	.16	1.3	•	.04	.04	.04	04	.04	.04
2	TEMBAGA	mg/L	0	1	•	.06	.05	•	•	•						
3	TIMAH HITAM	mg/L	0	.1	.06	.05	•	.06	•	.05						
4	CADMIUM	mg/L	0	.001	•	•	•	•	•	•						
5	CHROMIUM	mg/L	0	.05	•	•	.05	•	•	05						
6	NIKEL	mg/L	0	.5	•	.05	.06	.05	.05	.05						
7	SENG	mg/L	1	15	.49	.018	.05	.05	.2	•						
8	MANGGAN	mg/L	.05	.5	.16	48	.24	.05	.89	.15						
9	CALSIUM	mg/L	75	200	19.36	11.2	28.06	28.06	28.06	32.06						
10	MAGNESIUM	mg/L	30	150	1.46	6.83	4.88	4 88	4.88	9.76						
		mg/L														

Keterangan : *) tidak terdeteksi

There was a big chance that the water quality in the houses of the community got worse as the environmental condition was sup portive, such as the house itself which was too small, heaps of garbage at back of the house near the water storage, water in the gutter which was very dirty, plus the flood during high tide or rainy season that came regularly. All of these contributed to the poor quality of water consumed by the community in North Jakarta.

Apparently, health education was one important aspect which should be given to the community. It was a pity if the program to provide clean water was not followed by health education because the impact to the community would be much less than expected. Therefore health education should not be postponed any longer otherwise the momentum where the community was still keen in getting clean water would be missed.

The most appropriate methods in carrying out health education to such community group in the North Jakarta Slum area should be carefully planned in order to achieve an effective result. For example, from technical point of view the use of disinfectant (chlorine or iodine) might be the most practical way. However considering the community perception it might be difficult to be accepted by the community, specifically those in North Jakarta, because the monitoring team found out that the community percept ed that chlorinated water was not prestigious and was not accept able. Most community, if they could afford, was proud to say that they consumed 'bogor water'. They did not care where the water really came from but most important was that it was clean and did not smell any chemical substance (such as chlorine).

Other obstacle was that the monitoring team got the impression that the community did not like to be taught like small children on doing something. They did not like to be considered as stupid as they had been able to survive in Jakarta, the wild city, which was something to be proud of. Thus, an appropriate education method suitable for such community group as those in the slum area in North Jakarta should be developed. It would not be effec tive to use the classical educational method as mostly used at villages.

b. Organic matters

In general the HU water contained organic matters. The amount ranged from the maximum allowed rate to 2.5 times above the maximum allowed rate. As such condition was found in all HUs, it was assumed that the problem with organic matters was not only because of the condition of the HU butclosely related to the water source, the PAM pipe line. It was possible that there was a leak in the pipe line which caused the organic matters came into the water.

To most water users (the community) so far they did not care about the organic matters in the water. However, such a high rate of organic matters in the water facilitated the growing of var ious microorganism which influenced the water quality.

c. TA water quality

From microbiological point of view, in general the TA water quality was better than those at HUs because:

- supply from water truck was more controllable
- location of TAs were at a distance from the houses and the area around the TAs was not used for other purposes which at HUs had become the main source of contamination
- The bottom of TA was above ground so that it was easier to be cleaned
- Water supplied by the truck usually did not stay too long in the TA as it finished only several hours after being supplied.

Similar condition on the water quality was also found at TA cus tomers as in general the water quality was better than those of the HU customers. This was because most TA customers bought directly from TA and they usually bought water only for the day needs. The daily drying up of the container function as breaking the lines of the growth of the microorganism.

The above discussion however only for water taken from TA while actually most TA customers used other water sources (wells) for their other needs. The water quality from other sources was not analyzed.

RAYON KOJA I

NO	PARAMETER	SATUAN	SARAN	BATAS	20 KA/PG/01 NOP P4L	20K- KA/PG/01 NOP P4L
I.	FISIK					
1	DAYA HANTAR LISTRIK	Mhos/cm			350	410
2	KEKERUHAN	NTU	5	25	4 4	4 4
3	WARNA	Scala Pt-Co	5	50	12	8
II.	KIMIAWI					
1	ALKALINITY SBG HCO3-	mg/L			88.65	104.43
2	CARBONDIOKSIDA	mg/L	0	0	4.25	2.7
3	CHLORIDA	mg/L	0	200	25	26 5
4	AMONIA	mg/L	.01	.5	1.63	1 88
5	NITRAT	mg/L	5	10	.78	.07
6	NITRIT	mg/L	0	1	.123	.261
7	PH		5	9	7 46	7.37
8	PHOSPAT	mg/L	200	400	.01	.015
9	SULFAT	mg/L			37.9	37
10	Ca HARDNESS (CaC03)	mg/L	75	200	95	98
11	Mg HARDNESS (Mg)	mg/L	30	150	10	27
12	TOTAL HARDNESS (CaCO3)	mg/L	100	500	105	125
13	FLOURIDA	mg/L	1	2	.05	.13
14	ZAT PADAT TERSUSPENSI	mg/L	0	500	14	5
III	KHUSUS					
1	CYANIDA	mg/L	0	05	*	
2	PHENOL	mg/L	.001	.002	*	
3	ORGANIK (KMnO4)	mg/L	0	10	14.23	22.66
IV.	MIKROBIOLOGI					
1	COLI FORM/100 cc	mg/L	0	0		
2	FECAL COLI/100 cc	mg/L	0	0		
V	LOGAM					
1	BESI	mg/L	1	5	34	
2	TEMBAGA	mg/L	0	1	.05	
3	TIMAH HITAM	mg/L	0	.1	.05	
4	CADMIUM	mg/L	0	.001	*	
5	CHROMIUM	mg/L	0	.05	*	
6	NIKEL	mg/L	0	.5	*	
7	SENG	mg/L	1	15	.15	
8	MANGGAN	mg/L	.05	.5	55	
9	CALSIUM	mg/L	75	200	15.2	
10	MAGNESIUM	mg/L	30	150	2.44	
		mg/L				

Keterangan : *) tidak terdeteksi

RAYON KOJA II

NO	PARAMETER	SATUAN	SARAN	BATAS	24 KB/TS/01 NOP P4L	24K+ KB/TS/01 NOP P4L	27 KB/TU/04 JAN P4L	27K- KB/TU/04 JAN P4L	30 KB/KU/07 DES P4L	30K+ KB/KU/07 DES P4L	32 KB/KU/09 PEB P4L	32K- KB/KU/09 PEB P4L	35 KB/TU/12 JAN P4L	35K+ KB/TU/12 JAN P4L	38 KB/TS/15 NOP SUC	38K+ KB/TS/15 NOP SUC
I.	FISIS															
1	DAYA HANTAR LISTRIK	Ubos/cm			385	375	300	290	310	300	275	285	300	295		
2	KEKERUHAN	NTU	5	25	12	5	4	4	5.6	6.2	4.1	4	4.5	4.2	5	4
3	WARNA	Scala Pt-Co	5	50	33	5	5	10	*	10	5	5	6	5		
II.	KIMIAWI															
1	ALKALINITY SBG HCO3-	mg/L			93 43	82.4	63.64	66.75	79.03	84.14	69 97	72.41	88.25	72.13		
2	CARBONDIOKSIDA	mg/L	0	0	2.7	5.41	4.49	2.25	2.22	4.4	2.33	2.33	2.25	2.25		
3	CHLORIDA	mg/L	0	200	27	23	30	25	30	20	30	15	30	25		
4	AMONIA	mg/L	.01	5	.29	.1	.1	.08	.13	.12	.15	.15	08	.06		
5	NITRAT	mg/L	5	10	.51	1.35	.32	.53	.87	.86	*	.26	.38	1.13		
6	NITRIT	mg/L	0	1	1.078	.309	.683	.391	.421	.521	.01	.154	1.273	.378		
7	PH		5	9	7.5	7 6	6.4	6.56	6.79	6.98	7.03	7.36	6.88	7.07		
8	PHOSPAT	mg/L	200	400	.006	006	.015	.014	.004	.008	.014	.014	.016	.014		
9	SULFAT	mg/L			35.1	34 3	30	32.3	34.2	34 9	30.9	25	30.8	32		
10	Ca HARDNESS (CaC03)	mg/L	75	200	89	88	90	90	90	100	80	80	80	60	17 66	11.95
11	Mg HARDNESS (Mg)	mg/L	30	150	26	42	10	40	10	40	20	20	10	60		
12	TOTAL HARDNESS (CaCO3)	mg/L	100	500	115	130	0	0	100	0	0	0	0	0		
13	FLOURIDA	mg/L	1	2	.2	.16	.17	.11	.3	.23	.02	.02	.07	.02		
14	ZAT PADAT TERSUSPENSI	mg/L	0	500	10	10	40	20	16	18	2	5	20	30	178	166
III	KHUSUS															
1	CYANIDA	mg/L	0	.05			*	*	*	*	*	*	*	*		
2	PHENOL	mg/L	.001	.002			.04	*	.03	.04	*	*	.03	.04		
3	ORGANIK (KMnO4)	mg/L	0	10	18.03	11.41	11.46	9.6	15 1	15.1	23.8	24.11	13.91	12.08	12.78	9.69
IV.	MIKROBIOLOGI															
1	COLI FORM/100 cc	mg/L	0	0			930	2400	1100	39	240000	1100000	230	4600		
2	FECAL COLI/100 cc	mg/L	0	0			230	2400	9300	4300	93000	1100000	230	2400	*	*
V.	LOGAM															
1	BESI	mg/L	1	5			.05	*	.16	.07	1.55	.1	.19	.18	.04	.07
2	TEMBAGA	mg/L	0	1			*	*	*	*	*	*	*	*		
2	TIMAH HITAM	mg/L	0	.1			.07	*	.05	*	.05	*	*	.06		
4	CADMIUM	mg/L	0	001			*	*	*	*	*	*	*	*		
5	CHROMIUM	mg/L	0	.05			*	*	*	.05	*	*	*	*		
6	NIKEL	mg/L	0	5			.05	*	.05	*	*	.05	*	*		
7	SENG	mg/L	1	15			.05	.05	*	*	.17	*	.05	.06		
8	MANGGAN	mg/L	.05	.5			.19	*	.2	.34	7.7	.65	*	.07		
9	CALSIUM	mg/L	75	200			36.07	36.07	36.07	40.08	32.06	32.06	36.07	.07		
10	MAGNESIUM	mg/L	30	150			2.44	9 76	2.44	9 76	4.88	4.88	9 76	2.44		
		mg/L														

Keterangan : *) tidak terdeteksi

RAYON TANJUNG PRIOK I

NO	PARAMETER	SATUAN	SARAN	BATAS	40 TA/SJ/01 PEB P4L	40K- TA/SJ/01 PEB P4L	44 TA/SJ/05 NOP P4L	44K+ TA/SJ/05 NOP P4L	57 TA/SA/18 PEB P4L	57K- TA/SA/18 PEB P4L	50 TA/SJ/11 DES P4L	50K+ TA/SJ/11 DES P4L	53 TA/SA/14 NOP SUC	53K- TA/SA/14 NOP SUC
I	FISIK													
1	DAYA HANTAR LISTRIK	Uhos/cm			260	250	400	445	285	260	285	300		
2	KEKERUHAN	NTU	5	25	5	5	4.1	10	*	5	5	9 8	6	6
3	WARNA	Scala Pt-Co	5	50	8	5	22	35	*	5	6	5		
II.	KIMIAWI													
1	ALKALINITY SBG HCO3-	mg/L			62.65	57.77	104.72	85.19	69.97	55 33	73.55	73.24		
2	CARBONDIOKSIDA	mg/L	0	0	2.33	2.33	4.77	2.7	2.33	2.33	2.22	4.4		
3	CHLORIDA	mg/L	0	200	10	10	27.5	38.5	20	15	30	30		
4	AMONIA	mg/L	01	.5	.13	.11	.21	.2	09	.11	.17	.15		
5	NITRAT	mg/L	5	10	2.49	*	.22	.6	.81	*	.18	1.65		
6	NITRIT	mg/L	0	1	049	.027	1.044	574	.01	.01	.408	.418		
7	PH		5	9	7.25	7.43	7.42	7.6	7.32	7.43	7.46	7.42		
8	PHOSPAT	mg/L	200	400	.014	014	.01	.016	.014	.016	.005	.005		
9	SULFAT	mg/L			36	34.3	36.5	44.6	38.7	36.5	38.7	35 1		
10	Ca HARDNESS (CaC03)	mg/L	75	70	80	80	92	104	80	80	90	90		
11	Mg HARDNESS (Mg)	mg/L	30	70	20	10	40	6	20	30	10	30		
12	TOTAL HARDNESS (CaCO3)	mg/L	100	500	0	0	132	110	0	0	0	0	57 13	94.38
13	FLOURIDA	mg/L	1	2	*	04	.07	.1	.15	.07	.22	.25		
14	ZAT PADAT TERSUSPENSI	mg/L	0	500	2	2	5	5	2	2	12	2	176	254
III	KHUSUS													
1	CYANIDA	mg/L	0	.05	*	*	*	*	*	*	*	*		
2	PHENOL	mg/L	.001	.002	.03	.06	*	*	*	.04	.05	.05		
3	ORGANIK (KMnO4)	mg/L	0	10	18.57	15.8	21.01	17.7	14.28	13.06	16.03	14.79	13.79	10.53
IV.	MIKROBIOLOGI													
1	COLI FORM/100 cc	mg/L	0	0	10000	46000			46000	230000		2400000		
2	FECAL COLI/100 cc	mg/L	0	0	9300	15000			15000	9000		30000	*	*
V.	LOGAM													
1	BESI	mg/L	1	5	.29	.05	.15	.13	.67	*	.1	.1	.04	.04
2	TEMBAGA	mg/L	0	1	.05	.05	*	*	*	*	*	*		
3	TIMAH HITAM	mg/L	0	.1	.08	.09	*	*	*	.08	.05	05		
4	CADMIUM	mg/L	0	.001	*	*	*	*	*	*	*	*		
5	CHROMIUM	mg/L	0	.05	*	*	*	*	*	*	*	*		
6	NIKEL	mg/L	0	.5	.05	.05	*	*	*	.08	*	.05		
7	SENG	mg/L	1	15	1	.06	.07	.09	.07	.05	*	.05		
8	MANGGAN	mg/L	05	.5	.43	.28	.43	.13	.3	.18	.2	.1		
9	CALSIUM	mg/L	75	200	32.06	32.06	14 72	16 64	32.06	32.06	36.07			
10	MAGNESIUM	mg/L	30	150	4 88	2.44	9 76	1.46	4 88	4 88	2.44			
		mg/L												

Keterangan : *) tidak terdeteksi

RAYON TANJUNG PRIOK II

NO	PARAMETER	SATUAN	SARAN	BATAS	62 TB/PP/05 JAN P4L	62K+ TB/PP/05 JAN P4L	70 TB/WS/13 DES P4L	70K+ TB/WS/13 DES P4L	72 TB/TP/15 NOP P4L	72K- TB/TP/15 NOP P4L	58 TB/KW/01 NOP SUC	58K+ TB/KW/01 NOP SUC
I.	FISIK											
1	DAYA HANTAR LISTRIK	Uhos/cm			300	305	295	310	410	390		
2	KEKERUHAN	NTU	5	25	3.5	4	5.7	6.2	13	10	2	5
3	WARNA	Scala Pt-Co	5	50	10	5	•	•	25	25		
II	KIMIAWI											
1	ALKALINITY SBG HCO3-	mg/L			66.75	74.01	76.29	73 55	90 68	96.18		
2	CARBONDIOKSIDA	mg/L	0	0	2.24	2.24	2.22	2.22	5.41	2.7		
3	CHLORIDA	mg/L	0	200	30	25	40	20	27.5	26.5		
4	AMONIA	mg/L	.01	.5	.11	.08	.15	.12	.07	13		
5	NITRAT	mg/L	5	10	85	.32	1.01	1.52	.12	07		
6	NITRIT	mg/L	0	1	.425	.039	.026	.27	.461	.456		
7	PH		5	9	6.9	6.94	7 29	7.33	7.68	7.79		
8	PHOSPAT	mg/L	200	400	.014	.016	.005	.004	.007	.007		
9	SULFAT	mg/L			34	34 2	36.3	28.9	39.3	20		
10	Ca HARDNESS (CaC03)	mg/L	75	70	90	90	80	80	97	110		
11	Mg HARDNESS (Mg)	mg/L	30	70	10	10	20	10	83	20		
12	TOTAL HARDNESS (CaCO3)	mg/L	100	500	0	0	0	0	180	130	14.54	14 02
13	FLOURIDA	mg/L	1	2	.13	.09	.13	.2	.23	.18		
14	ZAT PADAT TERSUSPENSI	mg/L	0	500	10	16	10	5	16	5	184	182
III	KHUSUS											
1	CYANIDA	mg/L	0	.05	•	•	•	•	•	02		
2	PHENOL	mg/L	.001	.002	•	.03	04	•	•	•		
3	ORGANIK (KMnO4)	mg/L	0	10	12.7	10.84	14.16	9 81	13.4	21.34	13.04	12.68
IV.	MIKROBIOLOGI											
1	COLI FORM/100 cc	mg/L	0		11000000	1200000	11000	4600				
2	FECAL COLI/100 cc	mg/L	0		930000	93000	300	430				
V.	LOGAM											
1	BESI	mg/L	1	5	.05	.13	.65	.2	29	.2	.04	.04
2	TEMBAGA	mg/L	0	1	•	•	•	•	•	•		
3	TIMAH HITAM	mg/L	0	.1	.08	•	.05	•	•	.05		
4	CADMIUM	mg/L	0	.001	•	•	•	•	•	•		
5	CHROMIUM	mg/L	0	.05	•	•	•	.05	•	•		
6	NIKEL	mg/L	0	.5	•	.06	•	•	•	•		
7	SENG	mg/L	1	15	•	.06	.07	06	.11	25		
8	MANGGAN	mg/L	.05	.5	.09	.05	.88	.14	.22	.13		
9	CALSIUM	mg/L	75	200	36.07	36.07			.05	17.6		
10	MAGNESIUM	mg/L	30	150	2.44	2.44			20.25	2.44		
		mg/L										

Keterangan : *) tidak terdeteksi

RAYON PENJARINGAN I

NO	PARAMETER	SATUAN	SARAN	BATAS	97 PA/PG/01 DES P4L	97K+ PA/PG/01 DES P4L	TA07 PA/KP/06 DES P4L	TA07K- PA/KP/06 DES P4L
I.	FISIS							
1	DAYA HANTAR LISTRIK	Uhos/cm			225	300	265	265
2	KEKERUHAN	NTU	5	25	5	4 2	6.7	5 8
3	WARNA	Scala Pt-Co	5	50	8	*	5	6
II.	KIMIAWI							
1	ALKALINITY SBG HCO3-	mg/L			51.67	59.88	79.63	54 09
2	CARBONDIOKSIDA	mg/L	0	0	2.22	2.22	2.22	4.4
3	CHLORIDA	mg/L	0	200	10	10	15	30
4	AMONIA	mg/L	.01	.5	.32	.14	1.17	1 01
5	NITRAT	mg/L	5	10	2.84	2.4	1.36	2.02
6	NITRIT	mg/L	0	1	.007	.015	.064	.007
7	PH		5	9	7.39	7.35	7.97	7.42
8	PHOSPAT	mg/L	200	400	.008	.007	.074	.007
9	SULFAT	mg/L			29 5	31.4	33 6	29.2
10	Ca HARDNESS (CaC03)	mg/L	75	70	90	70	60	50
11	Mg HARDNESS (Mg)	mg/L	30	70	10	40	30	10
12	TOTAL HARDNESS (CaCO3)	mg/L	100	500	0	0	0	
13	FLOURIDA	mg/L	1	2	.11	.3	.13	.22
14	ZAT PADAT TERSUSPENSI	mg/L	0	500	10	5	10	5
III	KHUSUS							
1	CYANIDA	mg/L	0	.05	*	*	*	*
2	PHENOL	mg/L	.001	.002	.05	.06	.03	*
3	ORGANIK (KMnO4)	mg/L	0	10	9 49	7.32	11.99	10.12
IV.	MIKROBIOLOGI							
1	COLI FORM/100 cc	mg/L	0	0	39	750	23	93
2	FECAL COLI/100 cc	mg/L	0	0	9	40	3	3
V.	LOGAM							
1	BESI	mg/L	1	5	.23	.1	.1	.24
2	TEMBAGA	mg/L	0	1	*	*	*	*
3	TIMAH HITAM	mg/L	0	.1	.06	.05	*	*
4	CADMIUM	mg/L	0	.001	*	*	*	
5	CHROMIUM	mg/L	0	.05	*	.05	.06	05
6	NIKEL	mg/L	0	.5	.05	.05	*	.06
7	SENG	mg/L	1	15	.07	.23	.1	.17
8	MANGGAN	mg/L	.05	.5	.1	.12	.11	12
9	CALSIUM	mg/L	75	200	*	*	*	*
10	MAGNESIUM	mg/L	30	150	2.44	9.76	7 32	2.44
		mg/L						

Keterangan : *) tidak terdeteksi

RAYON PENJARINGAN II

NO	PARAMETER	SATUAN	SARAN	BATAS	73 PB/PD/01 DES P4L	73K- PB/PD/01 DES P4L	74 PB/PD/02 PEB P4L	74K- PB/PD/02 PEB P4L	78 PB/PT/06 PEB P4L	78K+ PB/PT/06 PEB P4L	86 PB/AC/14 JAN P4L	86K- PB/AC/14 JAN P4L	87 PB/PJ/15 JAN P4L	87K- PB/PJ/15 JAN P4L	90 PB/PJ/18 DES P4L	90K- PB/PJ/18 DES P4L
I.	FISIS															
1	DAYA HANTAR LISTRIK	Uhos/cm			385	345	250	245	250	275	255	250	235	265	200	210
2	KEKERUHAN	NTU	5	25	5.8	5.8	2.5	*	5	5	3	3 55	4	5.5	5	5 4
3	WARNA	Scala Pt-Co	5	50	25	25	*	*	*	5	5	*	10	5	5	2
II.	KIMIAWI															
1	ALKALINITY SBG HCO3-	mg/L			82.44	74.2	57.77	55.33	62.65	60.21	69.44	56.01	56.01	56.01	59 88	54 09
2	CARBONDIOKSIDA	mg/L	0	0	5.41	5.41	2.33	2.33	2.33	2.33	2.24	2.24	2.24	2.24	2.22	4.4
3	CHLORIDA	mg/L	0	200	25	20	15	20	20	15	20	25	15	25	10	25
4	AMONIA	mg/L	.01	.5	.56	.07	.16	.12	.12	.16	.1	.05	.06	.09	.27	.41
5	NITRAT	mg/L	5	10	3.82	1.1	.3	.15	.56	84	.32	1.31	3 11	1.63	2.29	2.38
6	NITRIT	mg/L	0	1	1 96	.164	.233	.007	.065	.01	.248	.017	005	.005	.019	.066
7	PH		5	9	7.59	7 69	7.12	7 27	7.45	7 12	6.96	6.87	7 27	7.23	7 27	7.22
8	PHOSPAT	mg/L	200	400	.007	006	.014	.015	.016	.016	.015	014	.014	.014	006	.005
9	SULFAT	mg/L			34.8	34.4	33.3	36.9	17.8	28.5	30	30.9	26.3	27.3	28.2	29 5
10	Ca HARDNESS (CaC03)	mg/L	75	70	97	77	80	80	70	80	60	80	80	80	70	60
11	Mg HARDNESS (Mg)	mg/L	30	70	38	58	20	40	10	20	40	30	20	30	40	20
12	TOTAL HARDNESS (CaCO3)	mg/L	100	500	135	135	0	0	0	100	0	0	0	110	0	0
13	FLOURIDA	mg/L	1	2	.25	.03	.05	.03	.03	.07	.07	.1	.25	.21	.19	.16
14	ZAT PADAT TERSUSPENSI	mg/L	0	500	10	5	2	2	2	2	16	20	15	10	10	10
III	KHUSUS															
1	CYANIDA	mg/L	0	.05	.02	.06	*	*	*	*	*	*	*	*	*	*
2	PHENOL	mg/L	.001	.002	*	*	.03	*	*	.04	.04	*	*	*	.03	.04
3	ORGANIK (KMnO4)	mg/L	0	10	21.67	10.09	15.19	19 14	18.23	23 7	13.63	7.75	7.13	13.22	7.32	12.94
IV.	MIKROBIOLOGI															
1	COLI FORM/100 cc	mg/L	0	O			460	15000	230	1100000	1100	2400	3	3	230	9300000
2	FECAL COLI/100 cc	mg/L	0	O			240	4300	90	75000	460	2400	0	0	43	4600000
V.	LOGAM															
1	BESI	mg/L	1	5	.16	.16	.09	.13	.16	.1	.06	.51	.15	.16	.21	.11
2	TEMBAGA	mg/L	0	1	*	.05	*	.05	.05	*	*	*	*	*	*	*
3	TIMAH HITAM	mg/L	0	.1	*	*	*	.05	*	.05	*	*	*	*	*	*
4	CADMIUM	mg/L	0	.001	*	*	*	*	*	*	*	*	*	*	*	*
5	CHROMIUM	mg/L	0	.05	*	*	*	.05	*	*	*	*	.05	.05	*	*
6	NIKEL	mg/L	0	5	*	*	.05	.05	.05	*	*	.1	*	*	*	05
7	SENG	mg/L	1	15	.09	.1	.05	05	.1	.06	*	.1	05	.05	.05	.05
8	MANGGAN	mg/L	.05	5	.39	.13	.8	.09	.23	.05	.05	*	05	.08	.11	.1
9	CALSIUM	mg/L	75	200	15.52	12.32	32.06	32.06	28.06	12.02	24.05	32.06	32.06	32.06	*	*
10	MAGNESIUM	mg/L mg/L	30	150	9.27	14.15	4 88	9.76	2.44	4.88	9.76	7.32	4.88	7.32	9 76	4.88

Keterangan : *) tidak terdeteksi

5. HU and TA Management and Operation

The goal of the construction of HU and TA in North Jakarta was to provide clean water at closer distance to the poor community in the slum areas especially areas with no water supply facilities.

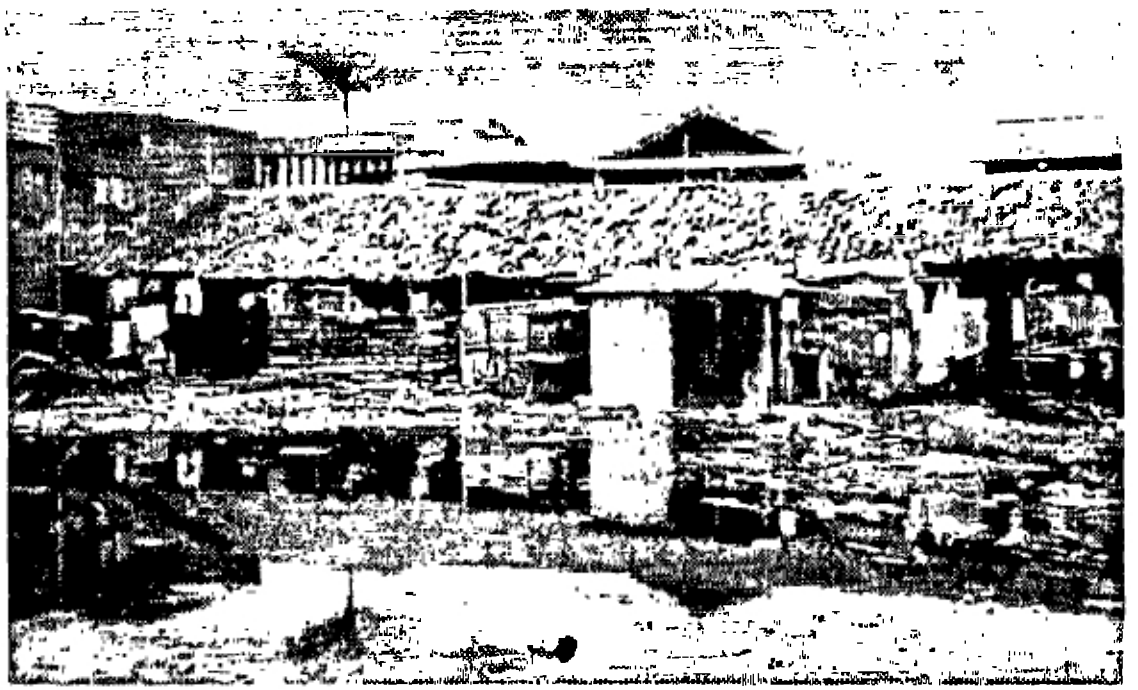
To achieve the goal the operation and management of the HU were as important as the technical aspects as discussed in chapter 4. The operation and management of government assisted HUs and TAs would influence the sustainability of the project. Without proper operation and management, the HUs and TAs might only give temporary benefit to the target group as it was likely to collapse after some time.

In the following chapter 5, some aspects related to the operation and management of the HUs and TAs will be discussed. For example, the approach practiced, the management of the facilities, financial management, clean water distribution system, the parties and actors involved, etc. While some of the aspects on the operation of the HUs will also be discussed namely on the water customers, water consumption, expenditure for clean water, etc.

5.1. System

5.1.1. The Approach

The slum area of North Jakarta had specific characteristics compared to other slum areas. It was very densely populated and the socio-economical as well as the socio-cultural condition were very heterogeneous. There were many who stayed only temporarily. These were the characteristics of the North Jakarta slum area. The condition was worse because it was located near the sea that the sea water intrusion to the ground water was such that it became brackish. Therefore, the ground water was not drinkable. The drainage around the slum area was very much influenced by the tides that the accumulated waste became the main source of contamination. Such condition was harmful for the community health.



General picture of housing condition in North-Jakarta slums
Accumulation of waste create unhealthy living condition

In order to release the community in the slum area of North Jakarta from their basic need problem, the GOI constructed some public hydrants (HUs). It was meant to bring clean water closer to the community. They were expected to get water at the HU themselves. So, by the existence of the HUs which were

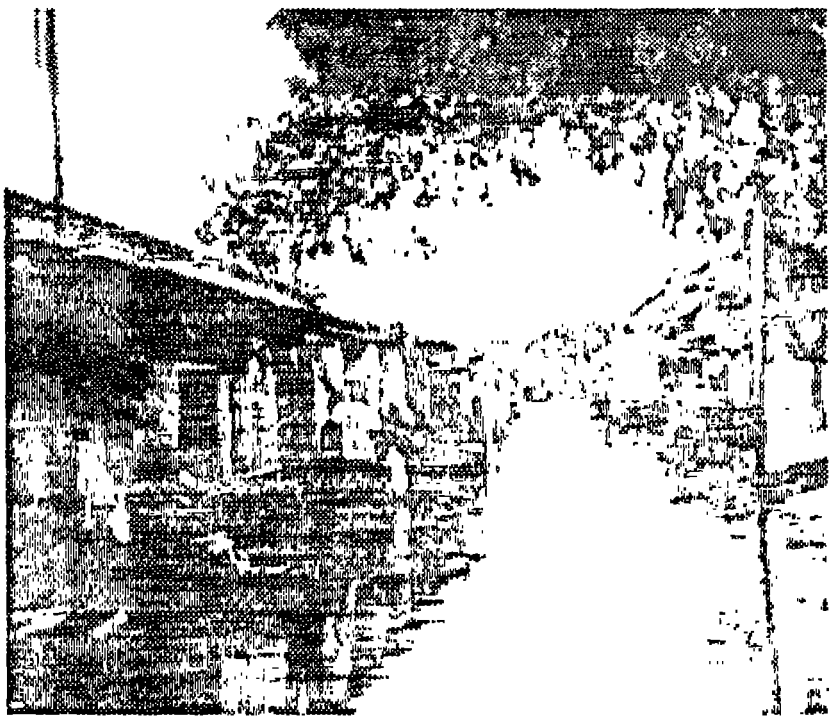
located scatteredly around the area , the community did not have to go to a long distance for clean water or at least they could get water at cheaper price.

To achieve the goal effectively and efficiently the GOI involved a third party in the HU and TA project, namely , the PAM DKI

Regarding the geographical condition of the NOrth Jakarta slum area, the most suitable and economical way was to use PAM water because in site development of water source was not possible.

A new distribution pipe line was installed. The installation was assisted by the GOI because PAM did not have any distribution pipe line in this area (as a company PAM should consider the economical aspect as they were to make profit in order to be self-supporting). Thus, PAM also got the benefit from the project because the new government assisted distribution pipe line was then granted to PAM. PAM had new assets without spending any for investment. Besides, the distribution pipe lines were not exclu sively used for HU. PAM was allowed to use the pipe line to serve new customers who lived along the new distribution pipe line. This was the second benefit for PAM because they could widen their market and had more customers without having to invest anything. As a consequence, however, PAM was given the responsibility to supply clean water to the community in the slum area of North Jakarta at cheaper price (social rate)

During high tide, dirty water and solid waste will enter the houses. At that time, they installed wooden boards across the walls and slept on



The location of the government assisted HU were supposed to be determined by the local community (kelurahan) as they were con sidered as the ones who really knew the area as well as the ones who were in need of clean water. Besides, it was also expected to be a way for community participation in the project. Such frame work was very appropriate to create a situation where the community could actively participate in overcoming their problem. But, if it was not careful and thoroughly implemented, it would open a chance for many different individual interest to distort the original objective regarding the 'site selection'. A more detail discussion on this issue will be discussed in 5.2.2.

To ensure that the community could benefit the HU and the sustainability of the HU, there should be one who could provide services and take care of the HUs.

Thus, the selection of location was done in accordance with the selection of the caretakers. The caretakers had to serve the community who needed water and paid the amount used to PAM. As

compensation the caretakers were allowed to sell the water at higher price than the price of PAM but should not be higher than the ceiling price as determined by PAM. Thus, the caretakers would gain profit in serving clean water to the community. But, the caretaker should provide 8 m2 of land where the HU could be constructed. The caretakers did not need to spend anything to get formalities clearance.

There were two kinds of water users namely, HU direct customers, people who bought water directly at the HU and they paid the price determined by the HU (the ceiling price), and the HU water vendor's customers, people who because of one or other reasons were not able to go the HU themselves and bought water from water vendors who bought water from HU (either private or government HUs). The price charged by water vendors to their customers was beyond the government control. The economic law happened, the higher the demand and the less supply there was, the higher the price would be. The existence of government HU was also a way to control the price charged by private HUs . If the private HU charged to high their customers would go to the government HUs where price of water was cheaper. In other word the government HUs were designed as "price stabilizer".

In areas where it was not possible for PAM and the government to install distribution line (because of technical or economical reasons), the government constructed water terminal (TA). The TAs were basically a water reservoir. The water was supplied from different water station and was sent to the TA by water truck specifically used for this purpose.

How far the HU and TA approach had reached its objective will be discussed in 5.2.

5.1.2. The operation and management of the facilities.

The maintenance of the HU facilities would be done by the care takers. For example, cleaning the HU, repainting it, exchanging the broken part or equipments, etc. It was only the water meter which was the PAM responsibility. The management system practiced was also given to the caretakers hands. For example, the time for the service, methods of payment, additional facilities and equipments provided, etc.

The maintenance of the distribution pipe line was the PAM respon sibility and PAM was also responsible for the smooth supply of clean water to both HU and TA . Thus breaking of pipes, loss of water pressure because of one or other reasons, etc. should be handled by PAM.

Unlike the system of payment between the HU and TA and their customers which were totally given to the caretakers hands, the caretaker had to pay monthly to PAM on the amount of water used. PAM would give sanction to those who did not pay in due time or those who broke PAM rules, The sanction could be a fine if one broke the water meter intentionally or to stop the water flow, etc. Basically the sanction for HUs caretakers were the same as the ones for PAM customers.

5.2. Actors Involved in Management and Utilisation of HU & TA.

5.2.1. Perusahaan Air Minum (PAM) DKI Jaya

PAM as the 'owner' of water source in HU and TA project and also as the one appointed as contractor and later on granted the responsibility over the operation and assets of HU and TA facili ties has a very important role not only in the implementation of the project but the operation, maintenance and management as well.

The goal of PAM was to serve clean water to the community in the slum area of North Jakarta at affordable price.

PAM function as the manager of the 'retailers', in this case the HUs and TAs caretakers. Thus, it was PAM that would control the caretakers whether they had served the community as they should be, give sanction if the caretakers broke the rules, and to manage the income that the project could be sustainable.

PAM technical capability, integrity, authority, and respectabili ty would influence the achievement of the goal. In other words, the HUs and TAs could not be treated the same as other PAM customers because the HU and TA project involved some social problems. Realizing its complexity, PAM DKI formed a special bureau to take care of the HU and TA project. Although at the time being only the PAM

headquater that has the special team for HU and TA, it has showed a wise policy in anticipating the different prob lems which may happen or to overcome the problems that have happened.

The management of the HU and TA project in North Jakarta was managed by the North Jakarta PAM branch office. The North Jakarta PAM branch office supervised several rayons namely, rayon Cilinc ing, Koja I, Koja II, Tanjung Priok I, Tanjung Priok II, Penjaringan I, and Penjaringan II. The division of rayon was based on the number of PAM customers in the respective area. Thus, if a certain number of customers have been achieved, a new rayon will be formed so as to simplify its administrative work. So, it is possible that one area may have more than one rayons.

Apparently, the role of the rayons are very important as they were the hands of the PAM of North Jakarta in managing the HU and TA project. The different rayons have been discussed in chapter 4.

5.2.1.1. Technical and Financial management

It was mentioned earlier that all technical aspects that guaran tee the smooth flow of clean water to HUs was the PAM responsi bility. Therefore, any breakage of the distribution pipe line which influenced the flow of water would be the responsibility of the technical bureau of the respective rayon.

Usually, it was the caretaker who would come to report to the respective rayon if there was something wrong with the water flow. The information would then reported to the technical bureau. Whereas breakage of water meter could either be reported by the respective caretaker or the PAM personnel in charge of check ing the water meter.

To manage the financial aspect regarding the amount used by the respective HUs, PAM provided a form to be filled up by the PAM personnel who checked the water meter every month. The data on the water meter position which mentioned the amount of water being used in the respective month which was recorded by the PAM personnel was given to the respective rayon financial bureau (the local term is the 'inkasso' counter). The caretaker who would come to pay their monthly used of water would come to the 'inkasso' counter. By then the 'inkasso' counter would have been ready with the data regarding the amount used and the amount to be paid by the respective caretaker. The caretaker himself actually knew beforehand the amount that they had to pay by referring to the data recorded in the meter form.

If because of one or another reason the water meter was broken, the recording would be based on the amount used in the earlier month, if the caretaker was satisfied, then it was used as a kind of standard amount . Very often however, the caretaker and the person in charge of recording the water meter would bargain on the amount to be recorded (the amount to be paid). Such bargain usually ended by the satisfaction of both parties as both had to compromise on the data to be recorded. The person in charge was happy because he worked fast and was able to get the 'compromise compensation' and the caretaker was also happy because they would not have to pay the amount that they actually used. In such a case it was PAM that was disadvantaged. This could happen such because the person in charge of recording the water meter position was not PAM personnel but one who was contracted by PAM to do the work.

5.2.1.2. Tariff of water for HU and TA

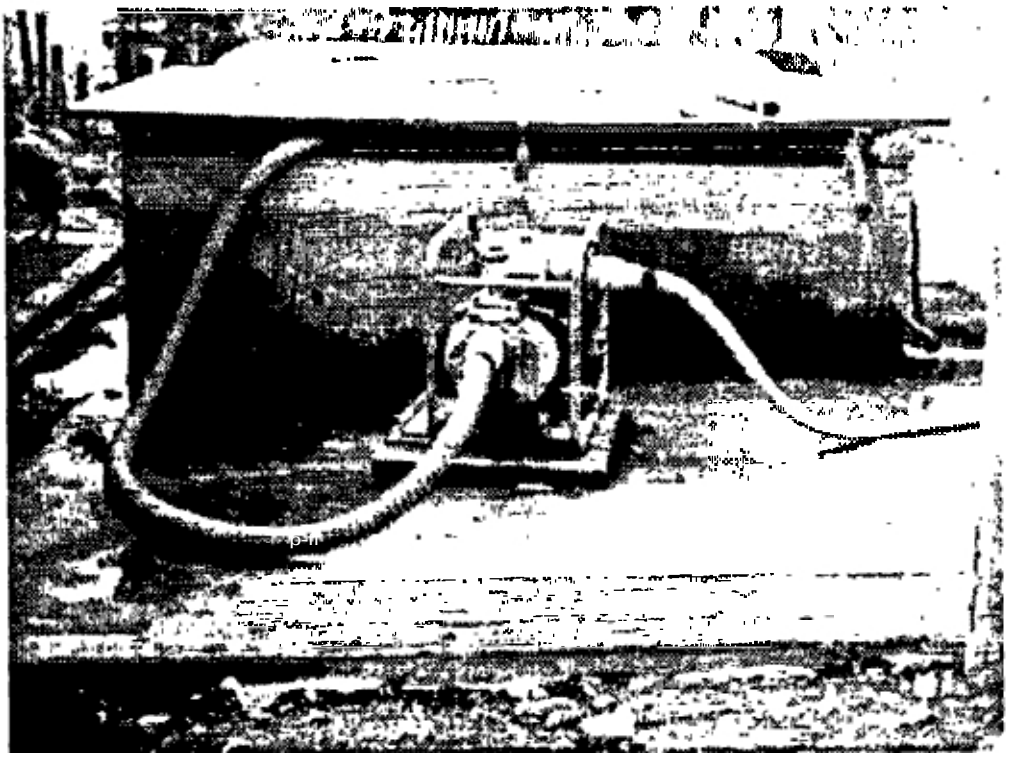
The government assisted HUs had to pay Rp. 150.- per m3 while TAs had to pay Rp. 500.- per m3. To have a better idea why PAM decid ed the aobve tariff for HU and TA, the following is the list of tariff of PAM DKI according to the Governor decision no 734, in 1988:

The tariff for 'Sosial Umum' was for public hydrants and public taps, and orphanage homes which is Rp. 150.- per m3. Thus, the tariff for HU and TA belong to 'Sosial Umum'. But, based on the allowed ceiling price of water sold by HU and TA, the tariff paid by the HU customers belong to the 'Non Niaga'/Non Commercial class 3 (usage of water between 31 m3 up to 50 m3 per month). This was similar to families consisted of 6 members that lived at Kebayoran Baru (an elite settlement) which each member was estimated to use 300 liters of water per day. Moreover, based on the price paid by HU water vendors customers, they paid the amount which according to PAM tariff belong to tariff 'khusus'/special or 'sangat khusus' /extremely special because it was so expensive (see 5.2.4).

The existence of HU and TA and the policy of PAM tariff had provided the impact of bringing down the water price in North Jakarta (see 5.2.4.3). But actually the price of water paid by the poor community in

the slum area of North Jakarta was still much more expensive compared to the tariff set by PAM. Thus, there is a dichotomy between economical aspect and social justice which will be discussed in chapter 6.

Type of Consumers	0-15 m3 Rp/m3	16-30 m3 Rp/m3	31-50 m3 Rp/m3	> 50 m3 Rp/m3
1. Social				
a. Social-General	150			
b. Social-Special	150	270	360	540
2. Non Commercial				
a. Household	180	360	550	900
b. Government Institution	270	450	725	1100
3. Commercial				
a. Small Business	600		1200	
b. Big Business	750		1500	
4. Industry				
a. Small Industry	630		1260	
b. Big Industry	840		1680	
5. Special Tarif				
T.Priok Harbour	2800			



5.2.2. HU and TA caretakers

The HU and TA caretakers were supposed to be selected by the community. Their main task was as water distributor and provided such services to the community both water users and water vendors.

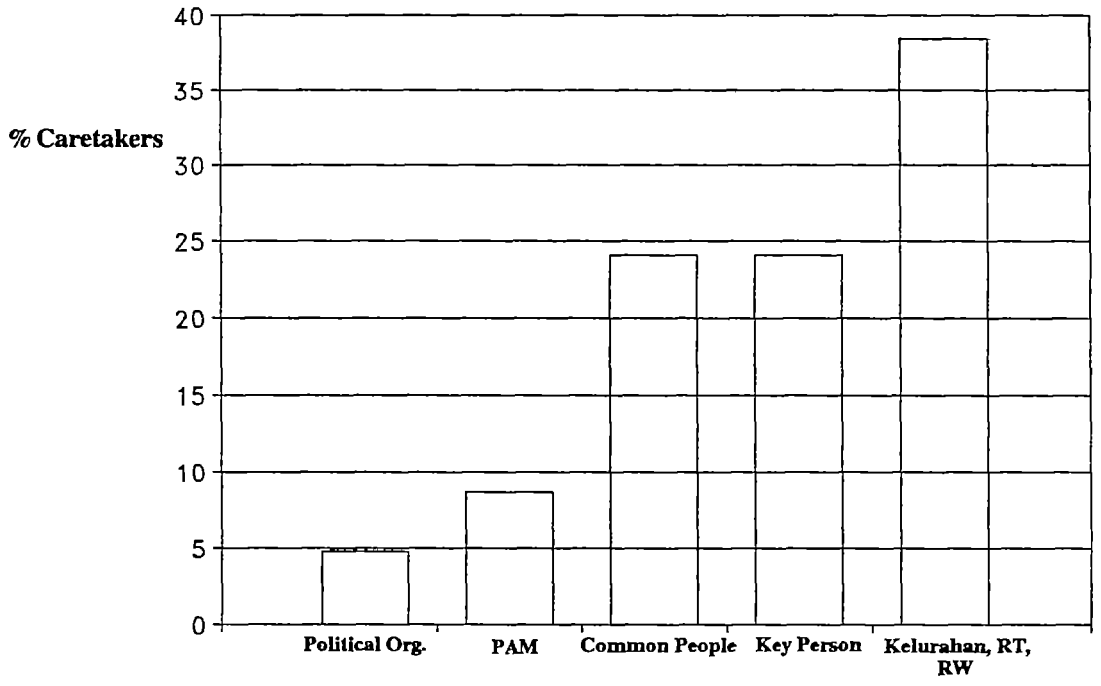
Periodically, the caretakers paid PAM the amount of water sold a set price which was a subsidized price. The caretakers were allowed to sell the water , but the Government had set a ceiling price namely Rp. 500 per m3 for HU and Rp. 1,000 per m3 for TA. The caretakers were not allowed to sell the water above the ceiling price. Such system would already give some profit to the caretakers and this was meant that they could use it for maintenance and also as compensation for their time and labor (their service). Thus the one being selected as caretaker were quite lucky as they were given free capital in the form of facilities and yet they gained profit from it.

As mentioned earlier, the HU and TA caretakers were supposed to be selected by the community. In reality however, in the phase I of HU and TA program which consisted of 94 HUs and 10 TAs the caretakers were:

* 8.65% of the total HUs and TAs caretakers were PAM personnel and /or those closely related to PAM personnel.
* 4.81% were those who had close relation with ruling political party.
* 38.46% were kelurahan personnel or the RW or RT where the HUs and TAs were located.
* 24.04% key person of the respective areas
* 24.04% common people who did not belong to any of the above criteria.

Why it happened such ? the answer will be discussed in the following part, while the name, code and address of the caretakers are provided in the following table.

Graph 5.1. Background of Caretakers and its percentages



HU & TA,: CODE, LOCATION & CARETAKERS

NO	CODE No	NOVAK	NOREK	CARETAKER	ADDRESS
a	**RAYON CILINCING**				
1	CL/SP/01	TA 01		H. IDR IS	RW03 Sukapura
2	CL/SP/02	ULH01	20356	H. GUBAR	Jl Raya Tipar, RT 04 RW 05
3	CL/SB/03	ULH01	20360	H.MANSUR	Jl. Kp Kandang RT 05 Rw 042
4	CL/SB/04	ULH01	20359	MARPAUNG	Jl. Kp Kandang RT 02 RW 04
5	CL/SB/05	ULH01	20361	H. NAJIHUN	Jl. H. Suit RT 05 RW 06
6	CL/SB/06	UKH04	24345	MARTONDANG	Jl. Kebantenan Raya I No. 1
7	CL/ST/07	ULH01	20366	H. SAAMAM	Jl. Kebantenan V No. 14
8	CL/CG/08	TA 02			Kampung Pedongkelan
9	CL/CG/09	TA 03		RUSLAN	Jl. Baku Sekolah
10	CL/KL/10	ULH02	20354	HUTAGAOL	Jl Pasar Pagi RT 02 RW 5
11	CL/MR/11	TA 04		MUSAMAK	Kp Bidara Marunda
12	CL/MR/12	TA 05		H. UMAN	Kp. Sarang Bangau Marunda
13	CL/CG/13	ULH02	20351	EFENDY	Jl. Sungai Landak RW 08
14	CL/KL/14	ULH02	20357	SUPRIATNA	Jl. Z. Topekong
15	CL/KL/15	ULH01	20358	H. A. HAMID	Jl. Masjid Al Alam RT 05 RW 4
16	CL/KL/16	ULH01	20362	BASARUDIN	Jl. Pembakaran Mayat
17	CL/KL/17	ULH01	20363	RASMO	Jl. Kerang Hijau V
18	CL/KL/18	ULHO1	20364	SAID	Jl. Mencos RT 04 RW 12
19	CL/KL/19	ULH02	20355	MADAWI	Jl. Raya Cilincing RT 02 RW 03
b	**RAYON KOJA I**				
20	KA/PG/01	UKH01	20002	TIMAN B. TAMAN	Jl. Mandor Unang RT 05 RW 03
21	KA/PG/02	UKH01	20004	H. ACANG	Jl. H. Oyar RT 04 RW 03
22	KA/PG/03	UKH01	20003	MARDJUKI	Jl. Kepu RT 04 RW 01
23	KA/PG/04	UKH01	20005	LEHAN	Jl. Raya Bekasi RT 03 RW 04
c	**RAYON KOJA II**				
24	KB/TS/01	UKH06	22542	M. SOLEH	Jl. Arrasydin RT 02 RW 01 no 6
25	KB/RB/02	UKH05	22541	RADISAN	Bendungan Melayu Gg Melati RW 18
26	KB/RB/03	UKH05	22545	D. NAINGGOLAN	Jl. K No 30 RT 3 RW 20 Plumpang B
27	KB/TU/04	UKH04	22540	SAHAD	Jl. Manggar 7 RT 09 RW 06
28	KB/LG/05	UKH03	22536	SAIMIN	Jl. Mawar Dalam Timur no 8 RT 02 RW 03
29	KB/KS/06	UKH02	22531	MIDUN	Jl. Cipucang III no 6 RT 08 RW 12
30	KB/KU/07	UKH01	22534	H. DJAMSARI	Jl. Dairi Raya RT 05 RW 06
31	KB/KU/08	UKH01	22532	R. SUBAGYO	Jl. Dusun Lorong 41 Rt 03 RW 13
32	KB/KU/09	UKH01	22533	SADINA	Lorong 64 no 14 RT 24 RW 08
33	KB/LG/10	UKH03	22535	MISKA	Jl. Lagoa Terusan IV DI RT 03 RW)3
34	KB/TU/11	UKH04	22537	M. YASIN	Jl. Kp Bulak RT 13 RW 01
35	KB/TU/12	UKH04	22539	SUHARNO	Komplek YUKA Blok B H/4 RT RW 8
36	KB/KU/13	UKH04	22538	SYARIF	Komplek YUKA Blok A ,T II RT 13 RW 08
37	KB/TU/14	UKH04	22546	SUYOTO	Jl. Toar RT 10 RW 02
38	KB/TS/15	UKH06	22543	H. MURTIAH	Jl. H Tiung Kp Mangga RT 04 RW 03
39	KB/TS/16	UKH06	22544	SITI HARTINI	Kp. Mangga Gg H Sun RT 01 RW 02
d	**RAYON T.PRIOK I**				
40	TA/SJ/01	UJH05	20019	H SIMIN	Jl. Kedondong RT 07 RW 06
41	TA/SJ/02	UJH05	20034	L. TOBING	Jl. Telaga Murni 3 RT 19 RW 01
42	TA/SJ/03	UJH05	20023	SITOMORANG	Jl. H Amsir RT 09 RW 03
43	TA/SJ/04	UJH05	20017	SUPARNO	JL. Baku III RT 15 RW 02
44	TA/SJ/05	UJH05	20018	ISKANDAR	Jl. Tembus RT 14 RW 02
45	TA/SJ/06	UJH05	20021	TAMBAK	Jl. Sunter Jaya RT 10 RW 01
46	TA/SJ/07	UJH05	20022	SUPARMAN	Jl. Bentengan 2 RT 02 RW 05
47	TA/SJ/08	UJH05	20020	BUNTORO	Jl. Bentengan RT 12 RW 05
48	TA/SJ/09	UJH05	20025	H. M. MAWAR	Jl. Sunter Kemayoran RT 02
49	TA/SJ/10	UJH05	20024	H. SAPRI	Jl. Sunter Bend. Dempet RW 03
50	TA/SJ/11	UJH05	20026	H. AHMAD	Jl. Mesjid RT 05 RW 11
51	TA/SA/12	UJH05	20029	SYACHRONI	Jl. Ancol Selatan RT 04 RW 07
52	TA/SA/13	UJH05	20030	NGAWILAH	Jl. Ancol Selatan RT 02 RW 07
53	TA/SA/14	UJH05	20027	SYAHRIL	Jl. Ancol Selatan RT RW 06
54	TA/SA/15	UJH05	20028	HUTAURUK	Jl. Ancol Selatan RT RW 06
55	TA/SA/16	UJH05	20033	RAKHMAD	Jl. Melur no 35
56	TA/SA/17	UJH05	20032	RATUAH	Jl. Barata RW 02
57	TA/SA/18	UJH05	20031	SARKONI	Jl. Barata RW 02
e	**RAYON T.PRIOK II**				
58	TB/KW/01	UJH04	20472	RADI	Jl. Giri Gg 16 no 15 RT 06 RW 15
59	TB/KW/02	UJH04	20471	NY.RUMIASIH	Jl. Merapi Barat
60	TB/SU/03	UJH03	20473	ASERI BIN SALEH	Jl. Darusalam no 13 RT 04 RW 8
61	TB/WS/04	UJH02	20459	R. GUNAWAN	Jl. Al Jihad Gg Rambutan no 33 RT 04 RW
62	TB/PP/05	UJH02	20460	DRS. UNTUNG	Jl. Kp Baru Lanji RT 12 RW 03
63	TB/PP/06	UJH02	20463	M. YONATHAN	Jl. Lanji RT 07 RW 06
64	TB/PP/07	UJH02	20464	NY. RUMNI AMINUR	Jl. Lanji RT 06 RW 16
65	TB/PP/08	UJH02	20465	HENDRI HARYADI	Jl. Lanji RT 10 RW 06
66	TB/WS/09	UJH02	20467	AMIN	Jl. Warakas Gg 14
67	TB/PP/10	UJH02	20461	MAHROJI	Kp. Baru Lanji RT 07 RW 05
68	TB/WS/11	UJH02	20462	SITI MARYAM	Jl. Warakas VI Gg 21 no 30 RT 08 RW 05
69	TB/WS/12	UJH02	20466	RATNAWATI	Jl. Warakas Gg 22 15 RW 08
70	TB/WS/13	UJH02	20468	HASAN	Jl. Warakas Gg 17 RT 09 RW 14
71	TB/TP/14	UJH01	20470	MARULI MANURUNG	Kp. Bahari RT 05 RW 15
72	TB/TP/15	UJH01	30469	NY. MAENAH BAKIRUN	Kp. Bahari RT 01 RW 12
f	**RAYON PENJARINGAN II**				
74	PB/PD/02	UIH04	20461	DJOKO ARIFIN	Jl. Budi Mulya RT 15 RW 11
75	PB/PD/03	UIH04	20462	RODJALI	Jl. Budi Mulya RT 13 RW 10
76	PB/PD/04	UIH04	20467	NY. SUKAWATI	Jl. Budi Mulya RT 02 RW 10
77	PB/PD/05	UIH04	20460	NY. AMINI JUHARA	Jl. Budi Mulya RT 10 RW 10
78	PB/PT/06	UIH07	20103	SUNARTO ALI	Jl. Pademangan Timur VI RT 10 RW 10
79	PB/PD/07	UIH04	20458	S. RADJAK	Jl. MKJ IX RT 18 RW 07
80	PB/PD/08	UIH04	20459	H. NURMAH	Jl. Budi Mulya RT 11 RW 12
81	PB/PD/09	UIH04	20465	M. SIPAYUNG	Jl. Budi Mulya RT 12 RW 12
82	PB/PD/10	UIH04	20463	NY. EUIS SUPIYATI	Jl. Budi Mulya RT 05 RW 12
83	PB/PD/11	UIH04	20466	DEDY SUNARTO	Jl. Budi Mulya RT 13 RW 12
84	PB/PD/12	UIH04	20464	SUKENDRA	Jl. Budi Mulya RT 08 RW 12
85	PB/AC/13	UIH03	20036	H. SUGINO	Jl. Mangga Dua Utara Rt 04 RW 05
86	PB/AC/14	UIH03	20435	M. AMIN	Kp. Bandan RT 07 RW 02
87	PB/PJ/15	UIH01	20456	M. ALIPANI	Jl. Pakin RT 02 RW 04
88	PB/PJ/16	UIH01	20457	AKIN SAGALA	Jl. Tanah Pasir RT 05 RW 08
89	PB/PJ/17	UIH01	20458	KUSMANA	Jl. Tanjung Wangi RT 06 RW 12
90	PB/PJ/18	UIH01	20459	RUDATIN	Jl. Tanjung Wangi RT 09 RW 08
91	PB/PJ/19	UIH01	20460	NY. S. HERMIATI	Jl Tanjung Wangi RT 15 RW 08
92	PB/PJ/20	UIH01	20461	RADJAT	Jl. Tanjung Wangi RT 06 RW 12
93	PB/PJ/21	UIH01	20462	DRS. M. INTAN	Jl Muara Baru no 4 RT 06 RW 17
94	PB/PJ/22	UIH01	20463	NY. ASTUTI	Jl. Muara Baru RT 07 RW 17
95	PB/PJ/23	UIH01	20465	TINGGAL	Jl. Muara Baru RT 16 RW 17
96	PB/PJ/24	UIH01	20466	NICHODOMAS	Gg. Mesjid RT 19 RW 17 Muara Baru
g	**RAYON PENJARINGAN I**				
97	PA/PG/01	UIH02	20111	JUPRI SARDAN	Jl. Kepanduan Kali Jodo RT 02 RW 05
98	PA/PG/02	UIH02	20108	H. KOSIM	Jl. Kebon Pala RT 01 RW 14
99	PA/PG/03	UIH02	20110	SUHERMAN TATANG	Jl. I RT 11 RW 06
100	PA/PG/04	UIH02	20109	HASAN WIDJAYA	Jl. B RT 18 RW 06
101	PA/PG/05	TA 06		MULYADI	Teluk Gong
102	PA/KP/06	TA 07		MAMAN	Kapuk Muara
103	PA/KP/07	TA 08		KSY. ALFATAH	Kel. Kapuk Muara
104	PA/KM/08	TA 09		SARPIN	Eks. Kel. Kamal Muara
105	PA/KM/09	TA 10		PRIO ASTORO	Pasar Ikan Kamal Muara

5.2.2.1. The recruitment process of HU and TA caretakers.

As described earlier, the candidates of HU and TA caretakers were supposed to be chosen by the community of the respective areas. "There should not be any involvement from either PAM or DAB in the selection process. The only requirement was that the candidate should provide a piece of land where the HU or TA could be installed.

The freedom to choose the caretakers was meant to enhance community participation with an assumption that the community would surely choose a person with good reputation, trustworthy, and could provide good service. In other words the community was considered as a kind of 'carta blanca'.

The result however was far from the one expected? The following summary of the monitoring report would show what actually happened in the field.

PAM and Pemda informed the staff at all the kelurahan involved regarding the concept and objectives of the installation of HU and TA. The fact was that the information was not well transferred to the lower level or it stopped at the kelurahan level. This provided opportunities to a certain group of people to monopolize the HU and TA.

The monitoring team found that even the head of RTs where the HUs and TAs were installed did not know about the plan nor that they were involved in the process of the selection of the care takers and locations. All the head of RTs interviewed said that the HU and TA caretakers were already decided from above.

Whereas according to the HU and TA caretakers, the process of their recruitment were as follow:

a. The kelurahan personnels together with the LKMD conducted survey for the location of the HUs and TAs. Then they offered some selected persons whether they would like to be the caretak ers of HUs or TAs. However, the offer were commonly given to
   - Influential person in the area, and to
   - those who were related to any of the kelurahan personnel or to higher government offices personnel.

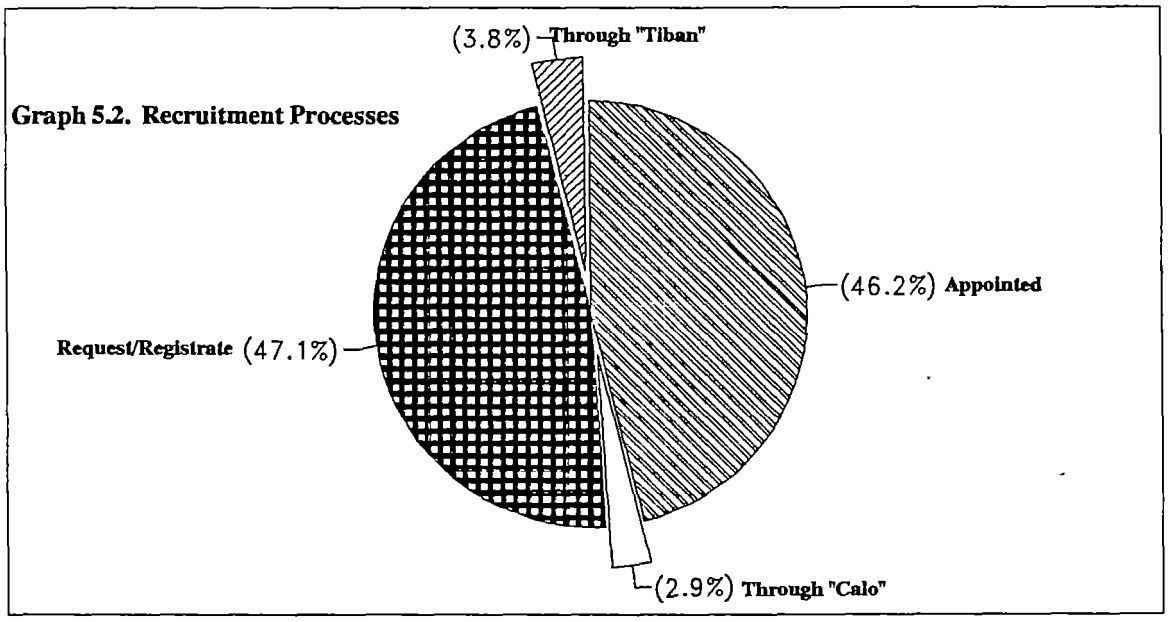
b. Someone heard about the HU and TA project either from their friend or relatives who were government officers and interested to become HU or TA caretakers. They then approached the kelurahan and requested to be appointed as caretakers. This was usually based on projected profit that could be gained by being caretakers of HU or TA.

c. In Jakarta, clean water supply alone had created a number of professions especially of selling services to handle formalities to people who wanted to get piped water from PAM . Similarly with the HU and TA project. They sold the information and services to deal with all formalities to anyone who was interested to become HU or TA caretakers. They of course ensured the interested people that being HU or TA caretakers were profitable business. They also ensured they had been given priority by PAM to appoint caretakers, or that they had access to the PAM personnel and that they could influence the decision making in PAM, etc. In other words, as it was their profession so they did everything to sell their services and to generate income (locally such a person is called 'calo'/scalper).

d. The last version was that someone who did not know anything about it and he was offered that his name and a piece of his land would be used for HU or TA (this phenomenon is called 'tiban'). This person did not need to do any thing as someone else would deal with all formalities and the daily management in taking care of the HU or TA. He would only be given a certain amount of money every month as compensation on the use of his name and his land.

Therefore, it was not surprising that at the beginning the monitoring team had to go to a number of difficulties to get information from the HU and TA caretakers. Some of them were so pragmatic that even before a dialogue was opened they tried to give money to the interviewer so that they would not continue asking questions. Some of them had to be in a very awkward attitude as they had to admit that actually they knew nothing and did nothing related to the HU or the TA.

Thus, it was concluded that the information of the first phase of the HU and TA project was only conveyed up to the kelurahan level and the LKMD. The bottom up approach expected where the grass root community would actively involved in it had not happened.



Graph 5.2. Recruitment Processes

The short schedule of the project implementation had more or less contributed to the above process because a bottom up process where the community was expected to be actively involved would need a longer period to happen as there should be a kind of a 'dynamic process', a process which needed time and was not possible to happen in a short period of time.

5.2.2.2. The range of expenditure spent to become HU or TA caretaker

The following description was only informative as it was based on secondary data provided by some HU or TA caretakers. Having stayed together in the monitoring location in the North Jakarta slum area, the monitoring team got to know the local community better including some of the HU and TA caretakers. The relation ship had grown as such that the caretakers which formerly were very reluctant to give information regarding their involvement began to tell the truth regarding the process how they got involved and appointed caretakers.A number of them however still did not want to discuss about their involvement.

From the information gathered, there were only 11 of the caretakers, about 10%, who admit that they had paid in order to become HU caretakers. The others said that they paid nothing. None of the TA caretakers said that they paid certain amount in order to become caretakers.

The caretakers considered the payment as 'capital' to buy the licence to become HU caretakers. The amount of money paid ranged from Rp. 400,000 to Rp. 1,500,000. The truth and reliability of the above information however could not be proved.

There were a number of reasons why they had to pay a certain amount of money, namely,

- The kelurahan held informal bidding to those who wanted to become caretakers. So, it was the one with the highest offer of payment (contribution was the preferred term used) would be the caretaker.
- They were informed that some money was needed to fulfill all formalities. The actual situation during the recruitment process was that there were a number of people who claimed that they had been appointed by the PAM to be caretakers or that they had been given quota for HU, etc.
- To complete the HUs installation. When the HUs were formally opened , the construction of many of them had not been completed. Once it was formally opened, the

contractor never came back to complete it. so, they had to spend some money to complete the installation.

- etc

Consequently most caretakers did not know that the HU and TA project was government aid project for social services. To them it was pure business , of buying and selling things.

5.2.2.3. Services provided by caretakers to water customers

The caretakers of HU and TA responsibility were to provide services to water customers. In general there were two kinds of water customers namely water users and water vendors (one who bought water in containers and sold it to others).

The daily services were taken care of by two types of caretakers namely,

a. the caretaker himself, his family members or his assistant

b. the caretaker sub contracted it to other person and it was the sub contractor that was responsible for the daily services.

There were two kinds of agreement between the caretaker and the sub-contractor namely,

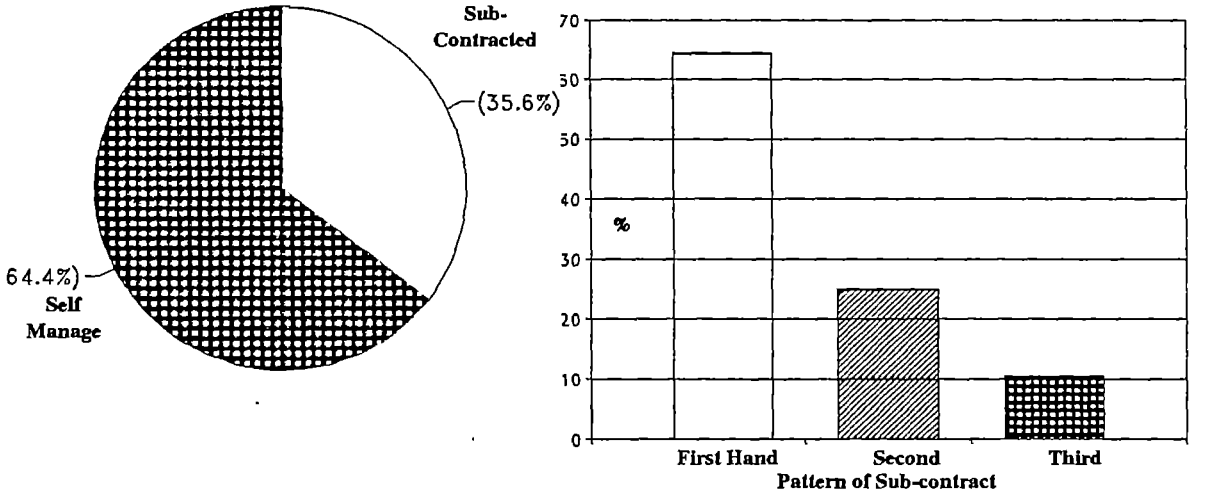
- The sub contractor paid certain fee monthly. With this system the sub contractor had the risk as he might only get profit if he sold more than the fixed monthly fee.
- The sub contractor was given monthly wages by the caretaker. The risk for profit or loss was still on the hand of the caretaker.

Data also showed that among the sub-contracted HUs and TAs , a number of them were sub-contracted again. So, the real caretaker of the HU or TA was already the third hand of the caretaker which name was formally registered. Such a situation was quite surpris ing considering that the HUs and TAs had only been in operation for six months when the monitoring was conducted.

The following table present data on the number of HU and TA caretaker by the caretakers themselves and those sub contracted to other person/party.

Graphs 5.3. the The Pattern of HU and TA management

Graph 5.4 Percentage of Sub-contract



In the years to come, it might happen that the management might be sub contracted to several other different parties/persons. The following graph show the sub contracting process.

The above table also shows that there were a number of cases in which the name of the actual daily caretakers of the HU and TA were not the ones registered.

5.2.2.4. Additional facilities and equipments for better service

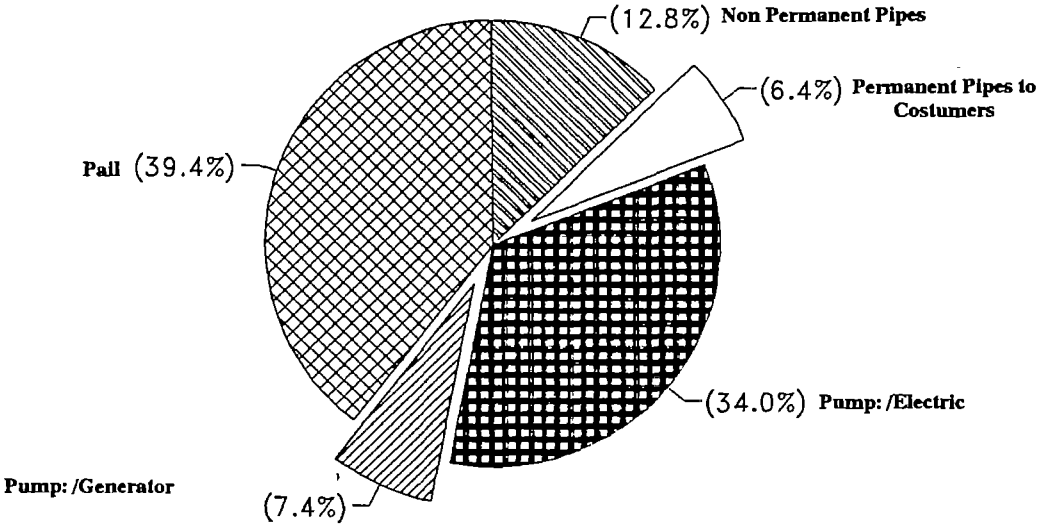
Majority of the HU and TA customers were water vendors. The percentage of water sold to direct customers was quite small compared to the amount of water sold to water vendors. To be able to sell better, the caretakers tried to satisfy the water vendor by providing additional facilities and equipments.

For example, the caretakers installed one or more pumps so that the water vendors (the customers) did not have to use pail to get the water from the water reservoir and they could do it faster. Some others even added a place where the water vendors could rest and had some snacks and drinks. There were even 12 caretakers who provided boarding rooms where the water vendors could stay. The payment for the rooms was already incorporated to the price of the water. Thus, the water vendors did not have to pay monthly rent as found in the common boarding rooms.

This surely showed the seriousness of the caretakers either the real ones or the sub-contractor in providing services to their customers.

The following graph table show data on the kind of facilities and equipments added to the HU and TA .

Graph 5.5. Additional Facilities at HU



5.2.2.5. Service time schedule

There was no exact time set for the service of the HU or TA. However, in general most water customers usually came in the morning and in the afternoon.

24 hours service was usually provided by those who lived in the place where the HU or TA were. Those who lived far from the HU or TA (usually the sub-contractors) would close them once there was no more customer came. The later had more or less a set service time which depended on the one who took care of it that very often when a water vendor came to get water it was already close. Therefore, most water vendor preferred to go to the ones open 24 hours that they could get water any time.

For example, the caretaker was a couple who worked in office and they did not hire an assistant to provide the services. As they had to go to work by eight o'clock, so the service was only open up to 7.30 and would only open again in the afternoon when they got back from work.

Besides the time schedule and the kind of services provided by the caretakers, there were also other factors which influenced certain costumers either individual or water vendors to choose to The HU was installed in the yard of the caretaker.

- The yard was clean and well taken care of (most common term used was 'gedong- an' or the one owned by the richer family). Most water push-carts used to sell water that had to go in and out the kampung was usually very dirty as the wheel would be full of mud or it

was wet because of the water that spilled from the container, etc. The condition was such that it made the place dirty. If the owner kept telling the water vendor to keep the place clean , etc, the water vendors would feel uneasy and were reluctant to buy water from that place. Such condition however did not seem to be a problem to the caretaker as they had a maternity hospital besides their house which itself consumed quite a lot of water. In other words the monthly rate of water used was quite high although they did not have many customers.

- There was also a case where the HU was built in the yard of the caretaker. But because the caretaker enlarged the house, it was then located in the living room of the house (the slab and the manhole). So the customers had to get water from a hose that was passed through a hole in the wall of the house.

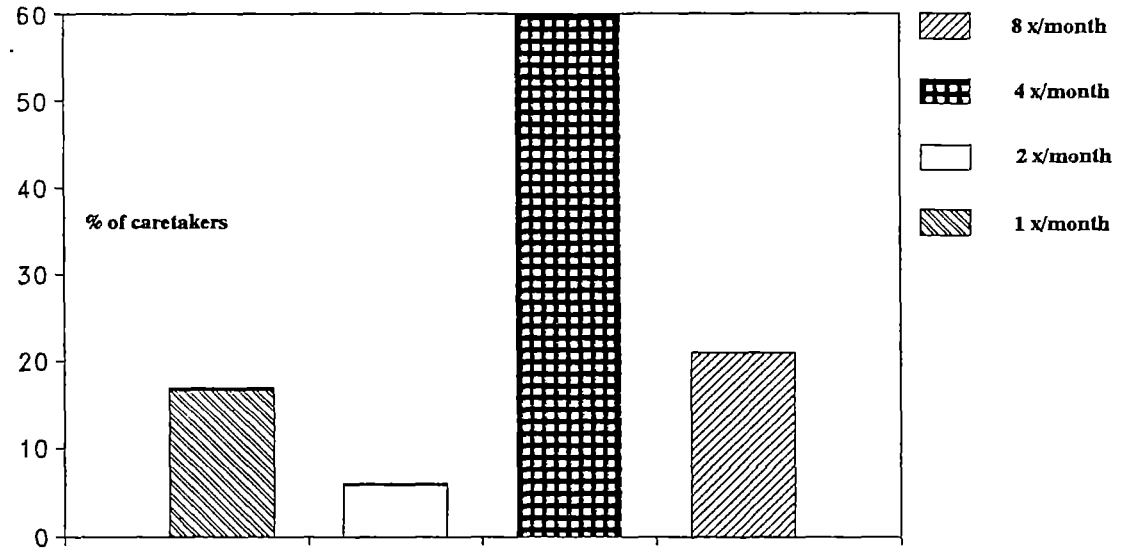
Thus, the location of the HU & TA, the attitude and the kind of services provided, and the egalitarian attitude of the caretaker had a lot of influence on the number of customers either individ uals or water vendors.

5.2.2.6. HU and Ta caretakers understanding about water quality

There were quite a variation on the caretakers understanding regarding clean water. Majority however said that clear water was clean water. This was because most of them did not really know by what was meant by water quality. Therefore the only equipment provided to improve the water quality was a piece of cloth which was used to filter the water to get rid of the dirt. This was found in almost all HU. The water was filtered before it was poured into the water cans. The cloth used was also of different kinds, from gauze to unused T shirt.

The frequency of cleaning HU also varied. In general however, the caretaker directly cleaned the HU if the water was dirty because if they did not clean it the customers, especially the water vendors would complain. If the caretakers did not pay attention to their complaint, the water vendors would go to the other HUs. Thus they might loss their regular customers.

The frequency of HU's cleaning was shown in the graph.



Graphs 5.6. Frequency of HU's cleaning

The following were data on the frequency of cleaning done by the HU caretakers

* 15% of caretakers cleaned the HU once every two months
* 5% of caretakers cleaned the HU twice a month
* 60% of caretakers cleaned the HU 4 times a month (once a week)
* 20% of caretakers cleaned the HU 8 times a month (twice a week) as according to them the water was often dirty so that they also had to clean it often.

5.2.2.7. HU water price and system of payment.

It was mentioned earlier that the price of water at HU and TA had been determined by PAM. The HU caretakers had to pay Rp. 150 per m3 to PAM and was allowed to sell the water at a ceiling price of Rp. 500 per m3. Whereas TA caretakers had to pay Rp. 350 per m3 to PAM and was allowed to a ceiling price of Rp. 1,000 per m3. In other words the HU caretakers could earn profit of Rp. 350 per m3 while the TA caretakers would get profit of Rp. 500 per m3.

The caretakers had to pay monthly to PAM. Every month a PAM

officer checked the amount of water used by every HU and wrote it on the customer form. The caretakers then had to go and paid the amount used to the PAM office, in this case the North Jakarta branch.

Such system were similar to an indirect consignment system used by PAM.

The price of water charged to the customers however varied as discussed below.

a. Price of water for HU customers

HU customers were individuals and water vendors that bought water directly at HU.

The following table present data on the price of water at HU during the monitoring period

Table: monthly price

From the above data regarding the price of HU water monitored for six months, there was one HU which practically sold no water to the community because the community around the HU consumed well water (KA/PG/02).

There were HUs that sold water under the ceiling price but there were also some that sold the water above the ceiling price.

Graph 5.7. Range of Water Price at Caretaker level

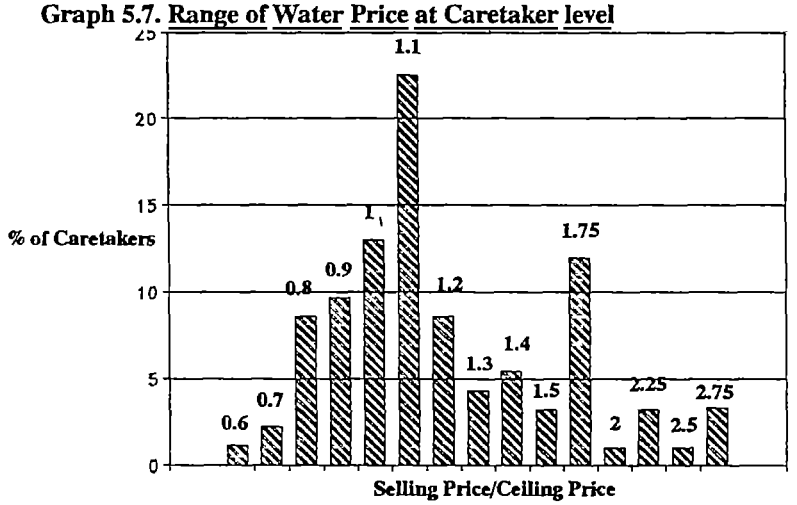


Table of the variation of HU water price.

- 1.1% caretakers sold at 0.6 times the ceiling price (Rp. 300/m3)
- 2.2% caretakers sold at 0.7 times the ceiling price (Rp. 350/m3)
- 8.6% caretakers sold at 0.8 times the ceiling price (Rp. 400/m3)
- 9.7% caretakers sold at 0.9 times the ceiling price (Rp. 450/m3)
- 13% caretakers sold at the same price as the ceiling price (Rp. 500/m3)
- 22.5% caretakers sold at 1.1% times the ceiling price (Rp. 550/m3)
- 8.6% caretakers sold at 1.2 times the ceiling price (Rp. 600/m3)
- 4.3% caretakers sold at 1.3 times the ceiling price (Rp. 650/m3)
- 5.4% caretakers sold at 1.4 times the ceiling price (Rp. 700/m3)
- 3.2% caretakers sold at 1.5 times the ceiling price (Rp 750/m3)
- 12.9% caretakers sold at 1.75 times the ceiling price (Rp. 875/m3)
- 1% caretakers sold at 2 times the ceiling price (Rp. 1000/m3)
- 3.2% caretakers sold at 2.25 times the ceiling price (Rp. 1125/m3)

TABLE : Water Price at HU/TA

NO	CODE	NOVAK	NOREK	CARETAKER	CEILING PRICE Rp/m3	SELLING PRICE NOV-DEC 89 Rp/m3	DEC-JAN 90 Rp/m3	JAN-FEB 90 Rp/m3	FEB-MAR 90 Rp/m3
RAYON CILINCING									
1	CL/SP/01	TA 01		H. IDRIS	1,000	3,030	3,030	3,030	3,030
2	CL/SP/02	ULH 01	20358	H. GUBAR	500	606	606	606	606
3	CL/SB/03	ULH 01	20360	H.MANSUR	500	455	455	455	455
4	CL/SB/04	ULH 01	20359	MARPAUNG	500	455	505	505	505
5	CL/SB/05	ULH 01	20361	H. NAJIHUN	500	505	505	505	505
6	CL/SB/06	UKH 04	24345	MATODANG	500	505	505	505	505
7	CL/SB/07	ULH 01	20366	H. SAAMAM	500	586	505	505	505
8	CL/CG/08	TA 02		ASWAD	1,000	1,515	1,515	1,515	1,515
9	CL/CG/09	TA 03		RUSLAN	1,000	1,515	1,515	1,515	1,515
10	CL/KL/10	ULH 02	20354	HUTAGAOL	500	505	505	501	501
11	CL/MR/11	TA 04		MUSAMAK	1,000	1,515	1,515	1,515	1,515
12	CL/MR/12	TA 05		H. UMAN	1,000	1,515	1,515	1,515	1,515
13	CL/CG/13	ULH 02	20351	EFENDY	500	505	474	474	474
14	CL/KL/14	ULH 02	20357	SUPRIATNA	500	505	505	505	505
15	CL/KL/15	ULH 01	20358	H. A. HAMID	500	505	505	505	505
16	CL/KL/16	ULH 01	20362	BASARUDIN	500	505	505	505	505
17	CL/KL/17	ULH 01	20363	RASMO	500	505	505	505	505
18	CL/KL/18	ULH 01	20364	SAID	500	421	758	758	758
19	CL/KL/19	ULH 02	20355	MADAWI	500	473	505	505	505
RAYON KOJA I									
20	KA/PG/01	UKH 01	20002	TIMAN B. TAMAN	500	606	505	505	505
21	KA/PG/02	UKH 01	20004	H. ACANG	500				
22	KA/PG/03	UKH 01	20003	MARDJUKI	500	884	857	857	857
23	KA/PG/04	UKH 01	20005	LEHAN	500	1,010	1,000	1,000	1,000
RAYON KOJA II									
24	KB/TS/01	UKH 06	22542	M. SOLEH	500	455	455	455	455
25	KB/RB/02	UKH 05	22541	RADISAN	500	495	758	758	758
26	KB/RB/03	UKH 05	22545	D. NAINGGOLAN	500	649	649	649	649
27	KB/TU/04	UKH 04	22540	SAHAD	500	303	455	455	455
28	KB/LG/05	UKH 03	22536	SAIMIN	500	303	278	278	278
29	KB/KS/06	UKH 02	22531	MIDUN	500	303	303	303	303
30	KB/KU/07	UKH 01	22534	H. DJAMSARI	500	303	400	400	400
31	KB/KU/08	UKH 01	22532	R. SUBAGYO	500	303	400	400	400
32	KB/KU/09	UKH 01	22533	SADINA	500	303	400	400	400
33	KB/LG/10	UKH 03	22535	MISKA	500	303	303	303	303
34	KB/TU/11	UKH 04	22537	M. YASIN	500	379	379	379	379
35	KB/TU/12	UKH 04	22539	SUHARNO	500	379	379	379	379
36	KB/TU/13	UKH 04	22538	SYARIF	500	379	379	379	379
37	KB/TU/14	UKH 04	22548	SUYOTO	500	649	455	455	455
38	KB/TS/15	UKH 06	22542	H. MURTIAH	500	454	455	455	455
39	KB/TS/16	UKH 06	22544	SITI HARTINI	500	455	455	455	455
RAYON T.PRIOK I									
40	TA/SJ/01	UJH 05	20019	H. SIMIN	500	625	379	379	379
41	TA/SJ/02	UJH 05	20034	L. TOBING	500	379	433	433	433
42	TA/SJ/03	UJH 05	20023	SITOMORANG	500	417	379	379	379
43	TA/SJ/04	UJH 05	20017	SUPARNO	500	500	433	433	433
44	TA/SJ/05	UJH 05	20018	ISKANDAR	500	505	433	433	433
45	TA/SJ/O6	UJH 05	20021	TAMBAK	500	505	379	379	379
46	TA/SJ/07	UJH 05	20022	SUPARMAN	500	400	521	521	521
47	TA/SJ/08	UJH 05	20020	BUNTORO	500	500	433	433	433
48	TA/SJ/09	UJH 05	20025	H. M. MAWAR	500	325	365	365	365
49	TA/SJ/10	UJH 05	20024	H. SAPRI	500	378	433	433	433
50	TA/SJ/11	UJH 05	20026	H. AHMAD	500	378	505	505	505
51	TA/SA/12	UJH 05	20029	SYACHRONI	500	631	505	505	505
52	TA/SA/13	UJH 05	20030	NGAWILAH	500	758	505	505	505
53	TA/SA/14	UJH 05	20027	SYAHRIL	500	505	433	433	433
54	TA/SA/15	UJH 05	20028	HUTAURUK	500	505	571	571	571
55	TA/SA/16	UJH 05	20033	RAKHMAD	500	758	631	631	631
56	TA/SA/17	UJH 05	20032	RATIJAH	500	758	505	505	505
57	TA/SA/18	UJH 05	20031	SARKONI	500		505	505	505
RAYON T.PRIOK II									
58	TB/KW/01	UJH 04	20472	RADI	500	505	505	505	505
59	TB/KW/02	UJH 04	20471	NY RUMIASIH	500		505	505	505
60	TB/SU/03	UJH 03	20473	ASERI BIN SALEH	500	758	758	758	758
61	TB/WS/04	UJH 02	20459	R. GUNAWAN	500	758	758	758	758
62	TB/PP/05	UJH 02	20460	DRS. UNTUNG	500	505	505	505	505
63	TB/PP/06	UJH 02	20463	M. YONATHAN	500	505	505	505	505
64	TB/PP/07	UJH 02	20464	NY. RUMNI AMINUR	500	505	505	505	505
65	TB/PP/08	UJH 02	20465	HENDRI HARYADI	500	505	505	505	505
66	TB/WS/09	UJH 02	20467	AMIN	500	505		379	379
67	TB/PP/10	UJH 02	20461	MAHROJI	500	505	505	505	505
68	TB/WS/11	UJH 02	20462	SITI MARYAM	500	505	505	505	505
69	TB/WS/12	UJH 02	20466	RATNAWATI	500	505	758	758	758
70	TB/WS/13	UJH 02	20468	HASAN	500	505	505	505	505
71	TB/TP/14	UJH 01	20470	MARULI MANURUNG	500	505	631	631	631
72	TB/TP/15	UJH 01	20469	NY. MAENAH BAKIRUN	500	607	631	631	631
RAYON PENJARINGAN II									
74	PB/PD/02	UIH 04	20461	DJOKO ARIFIN	500	625	1,212	1,212	1,212
75	PB/PD/03	UIH 04	20462	RODJALI	500	606	1,172	1,172	1,172
76	PB/PD/04	UIH 04	20467	NY. SUKAWATI	500	625	1,515	1,515	1,515
77	PB/PD/05	UIH 04	20460	NY. AMINI JUHARA	500	625	1,515	1,515	1,515
78	PB/PT/06	UIH 04	20103	SUMARTO ALI	500	505	433	433	433
79	PB/PD/07	UIH 04	20458	S. RADJAK	500	762	833	833	833
80	PB/PD/08	UIH 04	20459	H. NURMAH	500	762	762	762	762
81	PB/PD/09	UIH 04	20465	M. SIPAYUNG	500	536	833	833	833
82	PB/PD/10	UIH 04	20463	NY. EUIS SUPIYATI	500	740	833	833	833
83	PB/PD/11	UIH 04	20466	DEDY SUNARTO	500	757	1,667	1,667	1,667
84	PB/PD/12	UIH 04	20464	SUKENDRA	500	910	1,212	1,212	1,212
85	PB/AC/13	UIH 03	20036	H. SUGINO	500	1,893	556	556	556
86	PB/AC/14	UIH 03	20435	M. AMIN	500	607	833	833	833
87	PB/PJ/15	UIH 01	20456	M. ALIPANI	500	625	577	577	577
88	PB/PJ/16	UIH 01	20457	AKIN SAGALA	500	750	556	556	556
89	PB/PJ/17	UIH 01	20458	KUSMANA	500	750	741	741	741
90	PB/PJ/18	UIH 01	20459	RUDATIN	500	750	741	741	741
91	PB/PJ/19	UIH 01	20460	NY. S. HERMIATI	500	625	694	694	694
92	PB/PJ/20	UIH 01	20461	RADJAK	500	750	741	741	741
93	PB/PJ/21	UIH 01	20462	DRS. M. INTAN	500	568	556	556	556
94	PB/PJ/22	UIH 01	20463	NY. ASTUTI	500	568	556	556	556
95	PB/PJ/23	UIH 01	20665	TINGGAL	500	795	533	533	533
96	PB/PJ/24	UIH 01	20455	NICHODOMAS	500			417	417
RAYON PENJARINGAN I									
97	PA/PG/01	UIH 02	20111	JUPRI SARDAN	500	750	833	833	833
98	PA/PG/02	UIH 02	20108	H. KOSIM	500	750	833	833	833
99	PA/PG/03	UIH 02	20110	SUHERMAN TATANG	500	750	833	833	833
100	PA/PG/04	UIH 02	20109	HASAN WIDJAYA	500	750	833	833	833
101	PA/PG/05	TA 06		MULYADI	1,000	1,000	1,333	1,333	1,333
102	PA/KP/06	TA 07		MAMAN	1,000	1,250	1,667	1,667	1,667
103	PA/KP/07	TA 08		KSY. ALFATAH	1,000	1,250	1,667	1,667	1,667
104	PA/KM/08	TA 09		SARPIN	1,000	0			
105	PA/KM/09	TA 10		PRIO ASTORO	1,000	1,500	1,515	1,515	1,515

- 1% caretakers sold at 2.5 times the ceiling price (Rp. 1250/m3)
- 3.3% caretakers sold at 2.75 times the ceiling price (Rp. 1375/m3)

The above figures were the average price of the HUs which were monitored during the six months.(The price of water changed from time to time).

RP. 600 per m3 was still considered normal as it could be the impact of additional incentives provided and not really meant to make profit from the water.

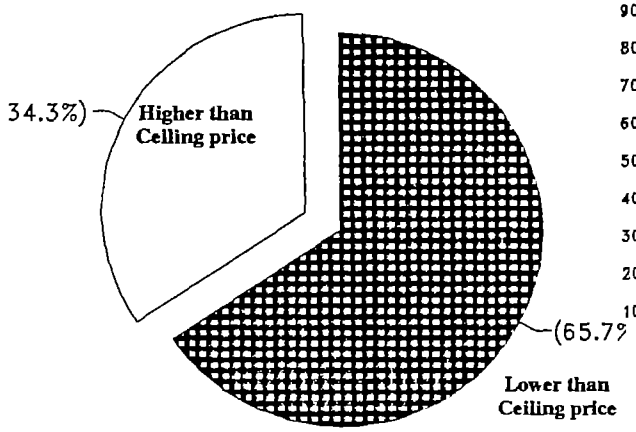
In general the price of water from HUs could be divided into:

- ☐ 65.7% sold at lower price than the ceiling price.
- ☐ 34.3% sold at higher price than the ceiling price.

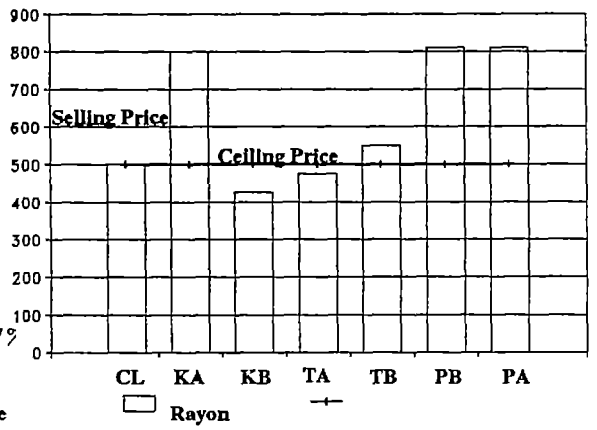
The following data shows the average HU waterprice by rayon.

- Rayon Cilining: the average price was the same as the ceiling price (Rp. 500/m3)
- Rayon Koja I : the average price was 1.6 times the ceiling price (Rp. 800/m3)
- Rayon Koja II: the average price was 0.85 times the ceiling price (Rp. 425/m3)
- Rayon Tanjung Priok I: the average price was 0.95 times the ceiling price (Rp. 475/m3)
- Rayon Tanjung Priok II: the average price was 1.1 times the ceiling price (Rp. 550/m3)
- Rayon Penjaringan II: the average price was 1.62 times the ceiling price (Rp. 810/m3)
- Rayon Penjaringan II: the average price was 1.62 times the ceil ing price (Rp. 810/m3).

Graph 5.8. Selling Price vs Ceiling Price



Graph 5.9. The Average of Selling Price/Rayon



b. System of payment of HU and TA

As mentioned earlier the HU and TA caretakers paid to PAM monthly at consignment basis. The HU and TA caretakers however, generally sell the water in cash. The customers either individuals or water vendors paid directly the amount of water they took. Thus to the caretakers, it was a very good business as the turn-over was very fast, once the tap was opened the money was collected.

However, there were some exception provided to water vendors, especially those who stayed at the boarding rooms provided by the caretakers. Some of them paid weekly , some others even paid it only before they went home.

The measuring system was also very loose as they did not measure it by volume. Instead they used 'can' or 'push-cart', whereas actually the size of one can was different from the other. The variable was also loose where rounding off the price was a common case. For example a certain push cart paid one hundred while a bigger one paid two hundred.

The average price used at the above table was prices that had been converted by its volume (m3)The real situation in the field was that many of the caretakers said that they sold the HU or

TA water according to the standard price given by PAM. But in reality some sold it at lower prices while others sold it at much higher prices than the ceiling price.

5.2.2.8. HU and TA operational cost

Considering the price to be paid to PAM and the ceiling selling price allowed, being a caretaker was surely a good business as they got at least Rp. 350 profit per m3. Moreover they got cash income and they did not even have to spent on advertisement or promotion.

Further analysis regarding the HU and TA business was presented as follow:

a. Investment on additional facilities

It was described earlier that the majority of HU and TA customers were water vendors using push-carts with cans in it. Therefore a number of facilities needed to be added to attract them to buy water from their HU or TA.

Facilities commonly added to HU or TA were water pumps so that the customer did not have to use pail to get the water instead they used pump which was much easier and lighter and therefore they could fill in their push-carts faster.

From 93 HUs monitored, 56 HUs fixed water pumps. Some others did not fix any pump because the water pressure was quite high so that they could just use a hose which was fixed to the outlet and directly channeled to the push-carts. Whereas there were also some HUs that did not fix water pump because they did not have many customers, etc.

The types of pumps used varied from electromotor type pump (DAB) which was not too costly to the expensive kind of submersible pump.

If the reasons for fixing the pump was to ease the process of filling the cans of the customers, usually they used the electro motor type of pumps as it was electric and the power was quite small that they could connect it to their household electric line.

But, if the reasons was in order to have bigger water discharge to the HU, they use bigger pump which should be connected to diesel/gasoline or kerosene motor. The pump was connected direct ly to inlet pipe so that bigger water discharge would go into the HU. this was commonly used in HUs which water pressure (hydraulic gradient) was low that the water discharge was also low. This was actually not allowed (against the rule) as it would surely disturb the flow of the water to the other places.

The investment for additional facilities spent ranged from Rp. 80,000 to Rp. 500,000 or averagely Rp. 220,000 per HU.

Besides adding pumps, they also needed to spent averagely Rp. 52,500 on other things such as the additional electric cable, fittings (fuse), pipe, hose, pipe accessories, etc.

So, the average amount spent for additional facilities was Rp. 273,500.-

Considering the number of people that used the pump which of course each person handled it differently from others plus their minimum knowledge regarding the pump itself, the life time of the pump would not be long. It was estimated that the pump would have to be changed after a year. Besides the motor should be regularly being serviced. During the monitoring it was found that some of the HU caretakers had to repair the motor almost once a week.

The depreciation cost and maintenance cost for one electro motor pump was approximately Rp. 30,000 per month.

b. Monthly expenditure

The monthly expenditure were classified as follow:

- fuel (gasoline or kerosene) and/or electricity fee
- labor : assistant, especially caretakers who could not provide the services himself because he/she had other work
- tools/equipments
- contributions (sumbangan)
- 'service' money

Expenditure for fuel (gasoline or kerosene) and electricity fee

It was difficult to get data on the amount of electricity (the total KWH) used to operate the pump because it was mixed with the use of electricity for the household. To get the data, the team compared the total Kwh used before the pump was fixedd and their average total KWh used with the pump in operation. The difference was regarded as the amount used to operate the pump. It was much easier to get data on the expenditure for fuel. Averagely the caretaker spent Rp. 22,500 for electricity and/or fuel.

The amount was relatively low because they used the household tariff (R1 or R2) for electricity which was quite low because it was a subsidized rate.

Expenditure for labor/assistant

The caretakers who were not able to manage the HU on daily basis usually hired someone to manage the HU.

Others sub-contracted the HU to other person as described earli er. The following specifically discussed the expenditure for hired assistant which wages was given either daily, weekly, or monthly. According to a number of caretakers interviewed, it was easy to get an assistant because there were many who looked for a job . but it was not easy to hire a good and trustworthy assist ant which was very important because they did not only manage the HU but the income as well. A number of cases happened where the assistant did not give all the income collected to the caretaker.

The assistant would be given an agreed amount wages plus three meals a day. If the caretakers wife did not work outside the house, she would provide the meals for the assistant. But if she had a job (most of them did), the assistant would take some money from the day income for his meals. Usually an assistant spent Rp. 1,500 per day.

The monthly income of the assistants ranged from Rp. 25,000 (the lowest) to Rp. 125,000 (the highest). Or, averagely the wages was Rp. 65,200 per month.

Thus, plus the three meals a day the average expenditure for having an assistant was Rp. 110,200 per month (wages plus meals).

Expenditures on short lived tools and equipments.

Equipments such as hose, filter,tap, etc., would not last long and once they were broken they had to be changed with a new one. It could be small, but the expenditures for such equipments was pretty big, averagely Rp. 18,600 per month.

Expenditures for various contributions

There were various contributions, formal or informal that had to be burdened by the caretakers. For example, contribution for Hansip (local guard), contributions for kelurahan, RT, RW etc. There was no standard amount of monthly contributions. The amount would increase subsequently in certain occasions such as during the local festivities day or the country independence day (August 17), etc. There were also cases where the neighbors wanted com pensation because of some reasons such as their place became dirty , messy and crowded. Most HU caretakers preferred to pro vide the contribution rather than being disturbed.

From the data collected in 5 months, the average monthly expenditures for the various contributions was Rp. 14,300 per month. The data was only orally told by the caretakers. There were no other data that could be used to better measured the average contribu tions. It should be noted here that most caretakers were quite reluctant to reveal the exact amount they spent on contributions.

The above description shows that what was meant by 'contributions' were not always contributions as it means but very often it was a kind of non formal tax given to small mafia.

Problems of various contributions were not faced by a number of caretakers. These were caretakers who had higher position or respected in the community. For example, those with high educational background, or those with position in the government offices (the local GOLKAR

Commissioner). So, only caretakers who were common people that had to provide various contributions.

Expenditures for 'service'

It was difficult to get an exact term for the following type of expenditures. In the field the term used was either 'service', 'ongkos jalan' (transport cost), or 'uang bensin' (cost for gasoline) and all were always followed by 'ikhlas' (with no regret).

Actually it was a certain amount of money given to the person in charge who monitored the HU and TA condition. For example, the one that checked the HU water meter, a visit from certain person nel of the government department, etc. The Yayasan Dian Desa monitoring team also got similar service as they thought they were of the same group of people that usually came to monitor the HU or TA.

It seems that it had become a rule or a habit to give certain amount of money (uang jalan) to anyone who came to visit the HU or TA, either the one who checked the meter, personnel from PAM, or any other officers related to the HU activities.

Besides money they also provided 'cigarettes' of certain standard brand, in this case the 'Dji Sam Soe' cigarettes, the most expen sive cigarettes. Many of the caretakers admitted that they did not dare to serve other brands as they were afraid that the person would get offended.

The amount of money given to these persons varied, depending on several aspects,namely, the number of HU customers, whether or not the HU caretakers did some things which was actually forbid den regarding the operation of the HU (for example, selling at higher price, using pump to get bigger discharge, etc), the level of position of the persons, etc. The minimum amount given was Rp. 3,000.

The Yayasan Dian Desa monitoring team experienced it themselves. At the beginning of the monitoring, every time the team came and interviewed the HU and TA caretakers, they always tried to give money . Some put the money in envelopes and some others tried to put the money into the teams pockets. The amount that could be seen was between Rp. 3,000 to Rp. 5,000.

During the monitoring, if the team found out some deviation such as using pump to get bigger water discharge or to install pipe line to individual houses, etc. the amount given increased up to Rp. 10,000. The term was 'uang pengertian' (please understand) or 'uang damai' (let be in peace).

The amount got much higher when the PAM office of North Jakarta sent the letter of notice regarding the monitoring that would be carried out by the Yayasan Dian Desa team (actually the monitor ing had been going on) when the letter arrived. It was mentioned in the letter that the caretakers should assist the team well. As a result, the caretakers really received and assisted the team very well according to their standard. They provided bigger amount of money up to Rp. 20,000 and they apologized for their earlier attitude because they did not know that the team was representatives from the central government. Their attitude became formal and awkward and they even provided much better kind of snacks. In general their attitude changed once they knew that the team was representatives of the central government.

The monitoring team tried politely to refuse all the money to be given . This had even made the caretakers felt uncomfortable because they thought that the money was not enough or that they team might had other intention. It happened that some of them added the amount of money, while some others sent someone else to give the money to the team as they thought that the team did not want to receive the money in front of other people, etc.

It was quite a hard job itself to refuse those kind of gift from the caretakers. The impact was that the data collected during that period could have been distorted from the reality as they would only tell the good things, so the data were not valid.

After sometime however, as the monitoring team lived in the same area together with the local people, they began to understand the team position so they were not suspicious anymore. Being so the visit of the team was not regarded as a visit to look for the HU or TA faults but as partners. The relationship became normal. Surprisingly, the information that the team did not want to receive the 'ongkos jalan' money spread very fast not just among the HU and TA

caretakers but also among the water vendors. In other words something which made them feel released spread very fast.

From the result of the interview, it was concluded that the amount of expenditures spent for contributions was Rp. 15,000 per month.

Similarly with the 'contribution' money, there were also some caretakers who were not bothered with 'service money' because they had position , educated or were of the respected person in the area.

Based on the above scenario, the following was the average month ly expenditures of HUs. It should be noted here that expenditure for personnel was either the wages to pay the assistant or HU caretakers time and labor (of those with no assistant).

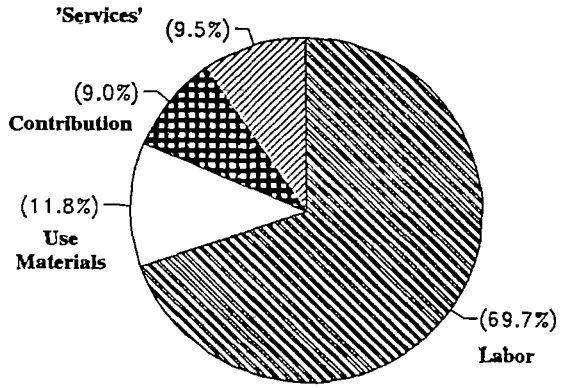
1. Monthly expenditures of HU without additional pump
   - Labor cost = Rp. 110,200
   - Use Equipments = Rp. 18,600
   - Contributions = Rp. 14,300
   - Service money = Rp. 15,000

   Total = Rp. 158,100

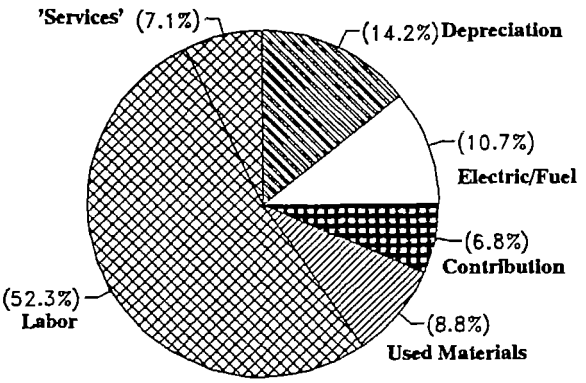
2. Monthly expenditures of HU with additional pump
   - Depreciation cost = Rp. 30,000
   - Electricity/fuel = Rp. 22,500
   - Labor = Rp. 110,200
   - Use Equipments = Rp. 18,600
   - Contributions = Rp. 14,300
   - Service money = Rp. 15,000

   Total = Rp. 210,600

Graph 5.10. Expenditure Distribution: Without Pump



Graph 5.11. Expenditure Distribution: With Pump



c. Break-even point

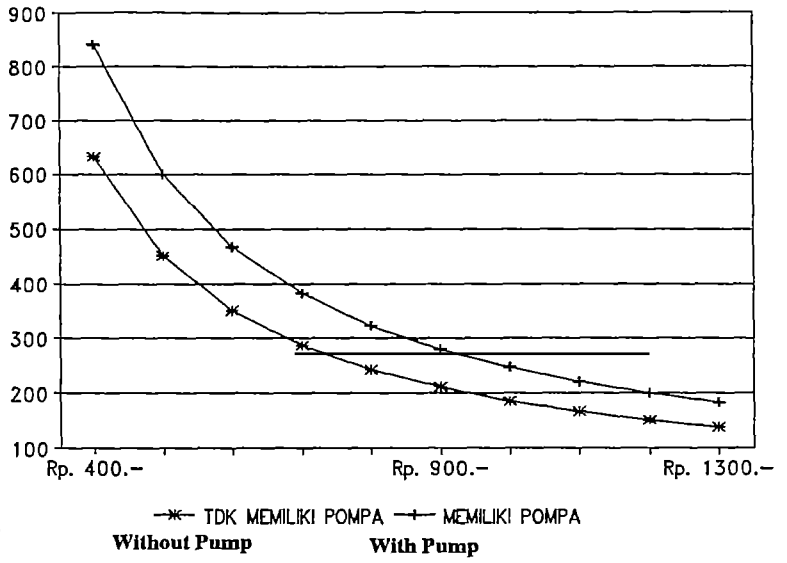
The total amount of water (by m3) that should be sold by each HU to reach break even point depended on the profit collected per m3. In other words it depended on the selling price of the water.

Basically if the HU could get profit of Rp. 350 per m3;

- HU with out additional pump should averagely sell 450 m3 a month or 15 m3 a day.
- HU with additional pump should be able to sell 601 m3 per month or averagely 20 m3 per day to reach the break even point.

The following graph shows the correlation of the amount of water that should be sold and the price of the water to reach break- even-point.

Graph 5.12. Break-Even Point of Caretaker Cost



5.2.2.9. The total amount of water sold by HU (in m3)

The total amount of water sold varies from one HU to the other. Thus the monthly income were also different from one another.

In general, the income was influenced by the following aspects:

- The economical condition of the customers. In area where the costumers were from better economical strata, it was not diffi cult to get them to pay higher prices. Besides, they also used more water than those of low economic strata. For example, as presented at the following table, HU Penjaringan customers mostly lived in real estates. So, compared to the other HUs those at Penjaringan could sell higher amount of water.
- The number of HU competitors in one area If there were more than one HUs in the same area either the government HUs or those owned by private (households that sold the PAM water) the price of water would be very competitive.
- The service provided by the HU caretakers. As described above, there were some HU caretakers who did not like his place to get messy or crowded and were not symphatetic at providing the serv ices. On the other hands there were caretakers who tried hard to please the customers by providing the best service he could.

The collection of data on the total m3 of the water sold by the HUs were conducted as follow:

The team checked the water meter of every HU and noted the posi tion. It was then cross-checked with the data written in the user's form which was available at every HU. This data were taken to the PAM North Jakarta branch office for confirmation. It was only then that the team were able to get the average amount paid by HU caretakers to PAM.

The following table present data collected in 4 periods (months) namely, November/December 1989, December 1989/January 1990, January/February 1990, and February/March 1990.

Table 9. Total Volume (M3) Sold in 4 Periods

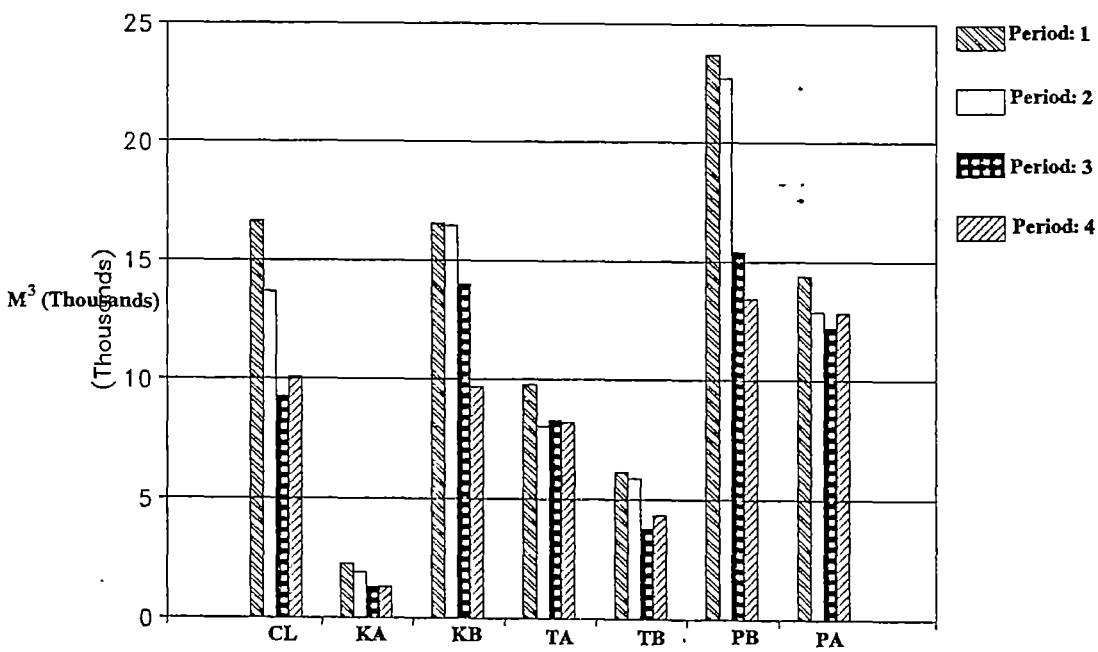
NO	KODE	1	2	3	4	Sub Total	
	Cililincing (CL)						
1	CL/SP/01	78	12	12	36	138	
2	CL/SP/02	902	939	765	959	3565	
3	CL/SB/03	2177	1474	1107	1152	5910	
4	CL/SB/04	2037	1700	267	959	4963	
5	CL/SB/05	1787	1450	810	950	4997	
6	CL/SB/06	468	639	259	51	1417	
7	CL/SB/07	468	639	259	151	1517	
8	CL/CG/08	60	5	10	35	110	
9	CL/CG/09	130	20	70	95	315	
10	CL/KL/10	699	405	318	226	1648	
11	CL/MR/11	300	40	40	75	455	
12	CL/MR/12	130	20	20	25	195	
13	CL/CG/13	2451	1371	800	802	5424	
14	CL/KL/14	2440	1804	1673	1367	7284	
15	CL/KL/15	655	537	495	385	2072	
16	CL/KL/16	1322	1175	1000	1390	4887	
17	CL/KL/17	72	250	250	250	822	
18	CL/KL/18	720	710	500	600	2530	
19	CL/KL/19	406	596	765	837	2604	
a	**Total CL**	**17302**	**13786**	**9420**	**10345**	**50853**	
	Koja I (KA)						
20	KA/PG/01	935	957	977	786	3655	
21	KA/PG/02	36	0	0	0	36	
22	KA/PG/03	1229	881	246	349	2705	
23	KA/PG/04	45	45	45	154	289	
b	**Total KA**	**2245**	**1883**	**1268**	**1289**	**6685**	
	Koja II (KB)						
24	KB/TS/01	400	395	300	360	1455	
25	KB/RB/02	400	573	632	410	2015	
26	KB/RB/03	472	359	397	388	1616	
27	KB/TU/04	1629	835	740	628	3832	
28	KB/LG/05	248	195	700	395	1538	
29	KB/KS/06	214	80	54	5	353	
30	KB/KU/07	3133	2683	2258	1048	9122	
31	KB/KU/08	1306	1450	950	900	4606	
32	KB/KU/09	2504	2158	1834	1629	8125 50016	
33	KB/LG/10	563	720	614	523	2420	
34	KB/TU/11	1513	1835	1691	1433	6472	
35	KB/TU/12	1170	2399	961	579	5109	
36	KB/TU/13	1181	994	1227	492	3894	
37	KB/TU/14	189	170	213	211	783	
38	KB/TS/15	1047	1053	999	588	3687	
39	KB/TS/16	555	547	434	111	1647	
c	**Total KB**	**16524**	**16446**	**14004**	**9700**	**56674**	
	Tanjung Priok I (TA)						
40	TA/SJ/01	899	175	232	232	1538	
41	TA/SJ/02	435	548	602	602	2187	
42	TA/SJ/03	919	1051	861	436	3267	
43	TA/SJ/04	213	202	118	318	851	
44	TA/SJ/05	799	589	343	343	2074	
45	TA/SJ/O6	601	341	285	385	1612	
46	TA/SJ/07	104	118	116	111	449	
47	TA/SJ/08	874	179	236	227	1516	
48	TA/SJ/09	106	245	401	388	1140	
49	TA/SJ/10	579	659	527	494	2259	
50	TA/SJ/11	482	551	418	319	1770	
51	TA/SA/12	897	1746	1215	1169	5027	
52	TA/SA/13	677	852	445	561	2535	
53	TA/SA/14	735	298	276	305	1614	
54	TA/SA/15	398	449	266	266	1379	
55	TA/SA/16	276	38	725	725	1764	
56	TA/SA/17	332	0	156	156	644	
57	TA/SA/18	426	0	1066	1169	2661	
d	**Total TA**	**9752**	**8041**	**8288**	**8206**	**34287**	
	Tanjung Priok II (TB)						
58	TB/KW/01	1822	1294	947	1063	5126	
59	TB/KW/02	81	529	30	152	792	
60	TB/SU/03	432	617	440	276	1765	
61	TB/WS/04	101	159	47	124	431	
62	TB/PP/05	1041	1307	460	679	3487	
63	TB/PP/06	480	217	375	284	1356	
64	TB/PP/07	92	83	150	150	475	
65	TB/PP/08	423	376	100	312	1211	
66	TB/WS/09	150	10	50	300	510	
67	TB/PP/10	225	215	150	145	735	
68	TB/WS/11	380	375	464	291	1510	
69	TB/WS/12	139	34	22	18	213	
70	TB/WS/13	220	470	203	199	1092	
71	TB/TP/14	280	176	279	79	814	
72	TB/TP/15		275	47	250	572	
e	**Total TB**	**5866**	**6137**	**3764**	**4322**	**20089**	
	Penjaringan II (PB)						
74	PB/PD/02	997	1102	1135	762	3996	
75	PB/PD/03	1003	1020	733	747	3503	
76	PB/PD/04	946	773	767	410	2896	
77	PB/PD/05	500	300	300	300	1400	
78	PB/PT/06	1776	1702	313	354	4145	
79	PB/PD/07	420	450	558	501	1929	

80	PB/PD/08	1030	450	550	342	2372
81	PB/PD/09	1374	952	1197	891	4414
82	PB/PD/10	793	3791	857	603	6044
83	PB/PD/11	659	682	515	334	2190
84	PB/PD/12	205	58	141	125	529
85	PB/AC/13	400	0	0	0	400
86	PB/AC/14	435	804	688	385	2312
87	PB/PJ/15	767	473	1137	662	3039
88	PB/PJ/16	212	114	234	335	895
89	PB/PJ/17	673	766	528	621	2588
90	PB/PJ/18	1962	1049	2046	1670	6747
91	PB/PJ/19	1926	1360	743	1553	5582
92	PB/PJ/20	1077	1102	686	660	3525
93	PB/PJ/21	1874	1020	733	493	4120
94	PB/PJ/22	3761	3791	857	866	9275
95	PB/PJ/23	886	952	665	574	3077
96	PB/PJ/24				241	241
f	**Total PB**	**23696**	**22711**	**15383**	**13429**	**75219**
	Penjaringan I (PA)					
97	PA/PG/01	2904	1865	1837	1576	8182
98	PA/PG/02	5333	4745	2792	4517	17387
99	PA/PG/03	3123	2494	1230	1125	7972
100	PA/PG/04	3000	3713	6374	5632	18719
101	PA/PG/05	260	260	310	245	1075
102	PA/KP/06	520	520	0	240	1280
103	PA/KP/07	520	520	370	125	1535
104	PA/KM/08	0	0	0	0	0
105	PA/KM/09	130	50	125	50	355
g	**Total PA**	**15790**	**14167**	**13038**	**13510**	**56505**
Jakarta Utara		**91175**	**83171**	**65165**	**60801**	**300312**

Legends:

* 1 = Volume in November/December
* 2 = Volume in Desember/January
* 3 = Volume in January/February
* 4 = Volume in Februari/March

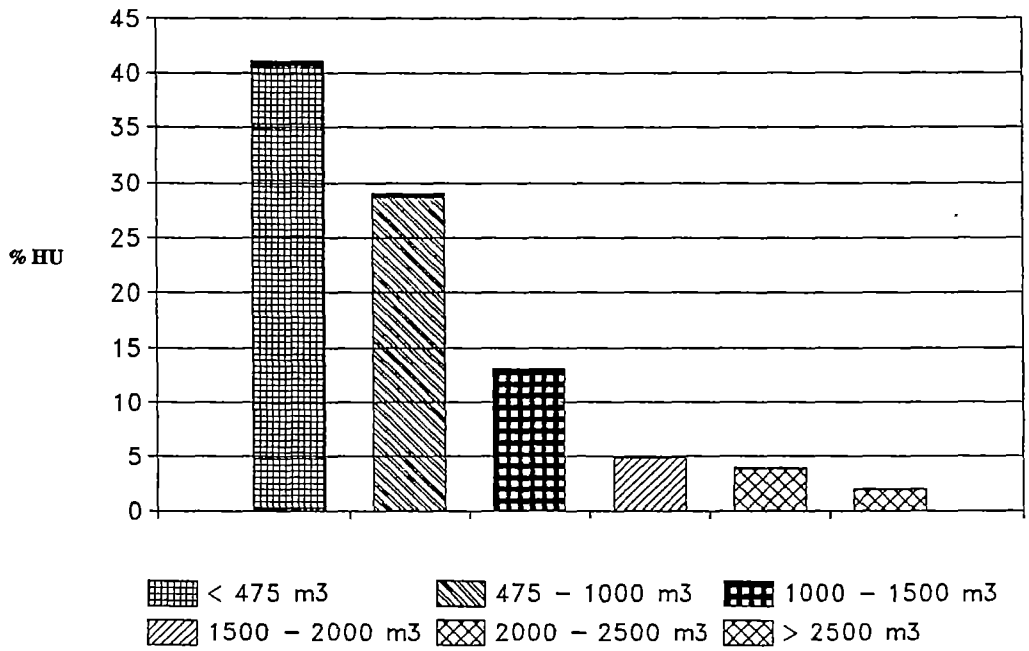
Graph 5.13. Total Voleme Sold in 4 Periods



The result of the analysis of the distribution of water of the HUs taken from the data collected, were as follow:

M^3/Month		HU	%
< =475	m3	41	43.6%
>475 - 1000	m3	29	30.8%
>1000 - 1500	m3	13	13.8%
>1500 - 2000	m3	5	5.3%
>2000 - 2500	m3	4	4.3%
>2500	m3	2	2.2%

Graph 5.14. Range of the average of the total volume sold by HU/month



As mentioned earlier the sale of 475 m3 was the breakeven point without calculating the operational cost. So, considering the operational cost, there were 43.6% of the HU which had never gained any profit as they had not reached the breakeven point.

In total however the total amount of water sold monthly by the 94 HUs which were monitored at phase I was 75,544 m3. In other words, the cash turn over within the community where the 94 HUs were located was approximately Rp. 37,500,000 per month.

The total amount paid to PAM was 75,544 m3 x Rp. 150 = Rp. 11,181,650.

In more detail, the income of PAM from the HUs were :

- 15.6% of the total monthly income of PAM from the 94 HUs came from 42 HUs (44.6%), that was Rp. 1,751,413.-
- 43.3% of the total monthly income of PAM from the 94 HUs came from 38 HUs (40.4%), that was Rp. 4,846,050.-
- 41.1% of the total monthly income of PAM from the 94 HUs came form 14 HUs (15%), that was Rp. 5,584,188.-

The above distribution showed that there were some HUs that could sell a lot of water so that they paid more to PAM , but there were also HUs that did not sell much. This however, does not automatically mean that the HUs that sold much water had reached the target group. A separate chapter will discuss about it.

5.2.2.10. Water Terminal

The above description discussed more of HUs caretakers because in this monitoring there were much more HUs compared to the number of TA. Besides, the availability and the amount of water in the TAs still depended on the supply of water from water trucks. This also affected the service time, the amount of water that could be sold to the customers etc.

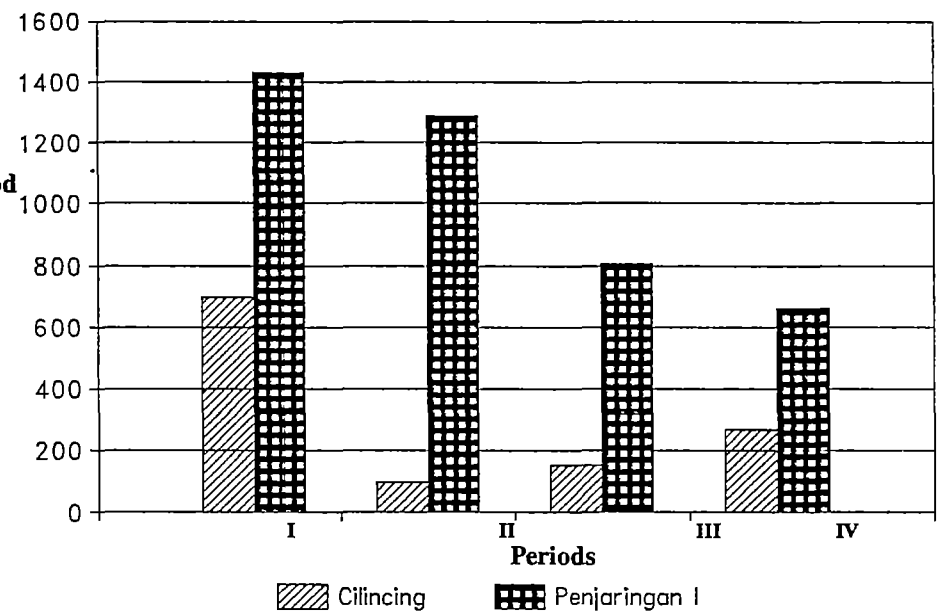
The ceiling price determined by PAM for TA water was Rp. 1,000 per m3. In reality however there were a number of TA caretakers that sold the water at higher prices. About 50% of the TAs sold water at Rp. 1,500 per m3 while the rest sold at Rp. 3,000 per m3.

The 10 TAs constructed in the phase I project was located at two (2) rayon, namely , 5 TA were located at rayon Cilincing (**CL/SP/01, CL/CG/08, CL/CG/09, CL/MR/11** and **CL/MR/12**) and 5 other TAS were located at rayon Penjaringan I (**PA/PG/05, PA/KP/06, PA/KP/07, PA/KM/08** and **PA/KM/09**). The total amount of water (by m3) sold by the TAs could be found at the following table.

The total amount of water sold by the TA at rayon Cilincing during the monitoring period was 1213 m3 while the total amount of water sold by the TAs at rayon Penjaringan I was 5398 m3.

Rayon	I	II	III	IV	Total
a. Rayon Cilincing	698	97	152	266	1213
b. Rayon Penjaringan I	2128	1387	957	926	5396

Graph 5.15. Total Volume Sold by TA/Rayon/Period



5.2.3. Water vendor

The water vendor was usually called 'tukang air' or 'kereta dorong (push-cart). This chapter will discuss about who the water vendors were, the process of becoming water vendors in North Jakarta, their daily activities, income, etc.

Information regarding water vendor in North Jakarta or in other areas were very often bias. It really depended on the source of the information.

Those who had enjoyed the development efforts and lived comfort ably often considered the water vendors as ones that disturbed the environment as they made the environment dirty, caused traffic jam or

even accused the water vendors as the ones that made water so costly because the took too much profit. On the other hands, to the women in the slum area where economical condition was low, water vendors were heroes because if they did not exist then the women would have to face a lot of problem in getting clean water.

To administrators, the water vendors were troublesome because it was difficult for them to know where they were as many of them did not even have certain place to live.

Thus there were various types of stereotypes regarding opinions on water vendors.

Actually there had been a number of cases that happened around us. For example;

The north African people (Senegal, Algiers, Morocco, Sahara), faced economical and political problems in South European countries. Whereas actually their ancestors who came to those countries centuries ago had contributed to the success of the respective country , Paris, Rome, etc.

In Jakarta there were a lot of construction projects. Many labors from villages were hired to do the work. These people usually were quite satisfied given very minimum facilities. But, once the project was completed people tried to get rid of them as they were then considered as harmful to the environment.

The fate of the water vendors could end the same way . At present they were still heroes and needed by certain group of people, especially the community of low economical strata.

Actually the 'take and give' relationship at the low economical strata community had contributed to the strength of self reliance of the group so that they were able to survive the hard life.

There were also cases where the water vendors provided loans to some poor families

In villages where clean water was rare, water vendors also exist. For example, in Kabupaten Gunung Kidul, in several villages in Lombok, Sumba, etc. The relationship between the water vendor and the customers at the villages however was still based on social and traditional values gotong royong (of helping each other). Thus the payment was just a token of appreciation for the help provided. Unlike in North Jakarta where it was regarded as busi ness and so was the relationship between the customers and the water vendors.

Actually, even in North Jakarta, especially in poor community group a specific pattern and characteristic of the relationship between the water vendors and the customers had naturally de veloped.

The short illustration above shows that policy development for slum area should consider carefully the various different social factors and employment opportunities.

140 water vendors were interviewed in order to get a reliable information. The water vendors interviewed were from all the areas where HU and TAs were located (all rayons). Those inter viewed were not only those who took water from government HUs and TAs but also those who took water from private HUs in that area.

5.2.3.1. General characteristics of water vendors

There was no data when the profession of water vendor started.However,the number increased by the increasing number of population that lived in that area.

Many water vendors came from Brebes/Tegal and Tasikmalaya. Of course there were some that came from other areas but the tow groups mentioned were the biggest ones.

Only by interviewing older people who were around 60 years old or older that the team were able to get information regarding the existence of water vendors.

An old figure from Brebes said that in the old days, especially during the D.I (Darul Islam) movement, many of the villagers from Brebes migrated to Jakarta because they felt unsafe and was threatened by the D I followers.They then lived scatteredly in Jakarta but many settled in North Jakarta area. Having no skill but being farmers they had to do anything to survive. One of the possible job was being a water vendor.

The fact that being a water vendor could earn enough for the family had initiated them to sponsor their fellow villager to come to Jakarta to be water vendors. For example,whenever there was an increase need, he would go to their village to get their friends or relatives who needed a job. After working as water vendors for several months and they had collected a good sum of money,they would return to their village to be replaced with another group and so on. It was also he that made all the ar rangement including the groups. Who would go to Jakarta depended on several factors e.g. failure of harvest, one that was getting married etc. Basically those who urgently needed money. Indirect ly that had put him in a higher position among his fellow villag ers as he was considered as someone who could assist one to get a job.

His function was merely as "liaison" person as he did not take any fee for it. According to him, he did it based on solidarity to help their friends in the village (moral obligation).

The services provided to the new comers were also well organized. Once the new group arrived Jakarta, they would have place to stay, and was given the working area including where they should get the water , the push-carts and the cans. The push carts can either be rented from others or used the ones formerly used by the former vendors,etc. So, only a day after arriving Jakarta they could start to work to earn money. Some of them would stay on but some others would go back to their village after they collected enough money. Those who stayed usually kept on working as water vendors. Thus, in general there were two kinds of water vendors, the seasonal (temporary) ones and the permanent ones.

In order to avoid unhealthy competition among the water vendors, they had an unwritten agreement or code ethic that **a water vendor should not offer/sell water to customer of another vendor unless the customers themselves asked for it.**

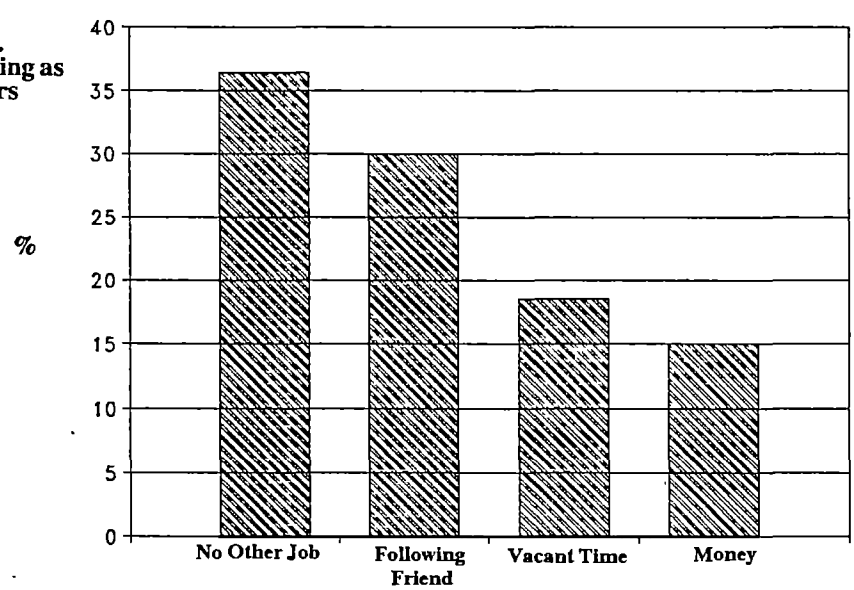
Similar to becak drivers,the profession of "water vendor" was not monopolized by certain age group. The age of water vendors ranged from teenagers to those older than 60 years old.

The following table shows the range of age of water vendors:

Age	Percentage of Water vendors
< =20 years	4%
>20 - 30 years	32%
>30 - 40 years	28%
>40 - 50 years	24%
>50 years	12%

The youngest water vendor found during the monitoring period was 14 years old.

Graph 5.16.
Reason for working as water vendors



5.2.3.2. Water vendors activities

There was no exact working hours for the water vendors. In general most of the activities were done in the morning and in the afternoon. So most of them usually start working at 5.00 o'clock in the morning up to 9.00 a.m, then took a rest and started to work again at 14.30 p.m.

Selling water here did not mean merely to sell the water, but it included carrying the water to the bathroom or the kitchen where the water container of the customer was. Very often, the bathroom or the kitchen were located at the back part of the house. In the slum area because of the condition of the house, it was not even possible for the water vendor to carry water through the house as he would have to pass the bedroom, etc. So, instead they had to go through the back door. To reach the back door they had to go through narrow and sometimes muddy alleys. In such condition, they could not use their push cart. Instead they used 'pikulan'(wooden or bamboo carrier) to carry the water and they could carry two cans at one journey. Such work of course was time and labor consuming. So, it was understandable that the condition of the house was one factor that influenced the water price as it also influenced the number of push carts of water that could be sold by the respective water vendor in a day. However, there were also other factors that influenced the number of push-carts of water that could be sold in a day namely:

- The age of the vendor, the older the water vendor was the less number of push carts of water he could sell.
- Condition of the area where the customer lived.
- The distance between the HU and the House of the customers.

The following table presents data on the number of push carts of water sold per day.

Frequency per day	Persentage
< =5	24%
>5 - 10	76%
>10	1%

From the table it can be seen that in general a water vendor could sell 5 to 10 push carts of water a day. The ones that could sell more than 10 push carts a day were really exceptional. The older people on the other hand mostly sell less than 5 push-carts of water a day.

It was described in the earlier chapter that the amount of water per push-carts was not always the same. There was a push-cart with 14 cans and there was also a push-cart with 6 cans. The bigger push-cart could be loaded with two rows while the smaller one could only be loaded with one row of cans of water. The cans used were of different volume too. Push-carts with one row of cans was more popular because most of the customers lived in area with narrow alleys. The following data were based on the total volume of water sold per day by the water vendors.

Liter per day	Percentage of Water vendors
< =1500 liters	1%
>1500 - 3000 liters	65%
>3000 liters	34%

It can be seen that majority of water vendors sold 1500 - 3000 liters of water per day. In other words, a water vendor had to carry 1.5 to 3 tons of load a day.

Taking an average of radius of 1 km in serving the customers, and that a water vendor could finish the job of transporting 1.5 to 3 tons of water in 4 to 6 hours, it means that they spent 120 kgm/second or an equivalent of 1.5 horse power.

The above illustration show the hard work of a water vendor. The work was much tougher and harder during the rainy season as most of the area where the customer lived were often in flood either by the rain or by the sea water during the high tides.

5.2.3.3 Buying and selling prices

Water vendors bought the water at the price charged by the HU caretakers (see 5.2.2.7). Some bought at Rp. 500 per m3 which means at the ceiling price while other paid more than Rp. 500.- or above the ceiling price. The average price of water charged by the HUs was Rp. 580.- per m3 while the highest price found was Rp. 920 per m3. The highest price was found at rayon Penjaringan. The reason was because the customers in this area mostly came from middle economic strata.

Data given by HU caretakers regarding the price of water they charged to water vendors varied. Some HU caretakers sold water at three times the ceiling price. But, data given by water ven dors on the price they paid for clean water from HU were not the same as those provided by HU caretakers as none of the water vendors said that they ever paid at such high price. **The fact was that HU caretakers charged differently to water vendors and to direct customers. The latter would be discussed in a separate chapter.**

Price of water at private HU was the same as the government HU. This shows that the private HUs used the price of government HU as standard price.

Water vendors that bought water at TA paid higher price, namely Rp. 1650 per m3 , a much higher price than the ceiling price which was only Rp. 1,000 per m3.

Having discussed the buying price of water paid by water vendor, the following will discuss about the selling price of water vendor.

There were many variation of selling price as the price was determined by the individual water vendor and there was no standard price. All water vendors interviewed explained that the selling price depended on the distance of the house of the cus tomers to the respective HU. The farther the house was from HU the higher the price was.

However, even for the same distance, 60% of water vendors sold at different prices. It happened so because of the following factors:

The economical condition of the customers. If the customers came from middle or high economic strata they would charge higher price.

- Lower prices was given to regular customers (discounted price)
- System of payment, cash or credit. A number of customers paid weekly or monthly. Some of the water vendors explained that there were also some customers who after taking water for sometimes did not pay it because of many different reasons. In such a case, the water vendors usually could not do anything but to forget it. Be cause of such risk, they usually sold at lower prices to custom ers that paid in cash and they charged higher price to those paid in credit.
- Whether the water was to be consumed or for business. To be consumed means the customer used the water for domestic needs whereas for business means that the customers had a business which consumed a lot of water such as restaurants, prostitution complex, etc.
- There were also other reasons for charging different prices to different customers as some of the reasons merely based on solidarity where the water vendors try to practice cross subsidy among their customers.

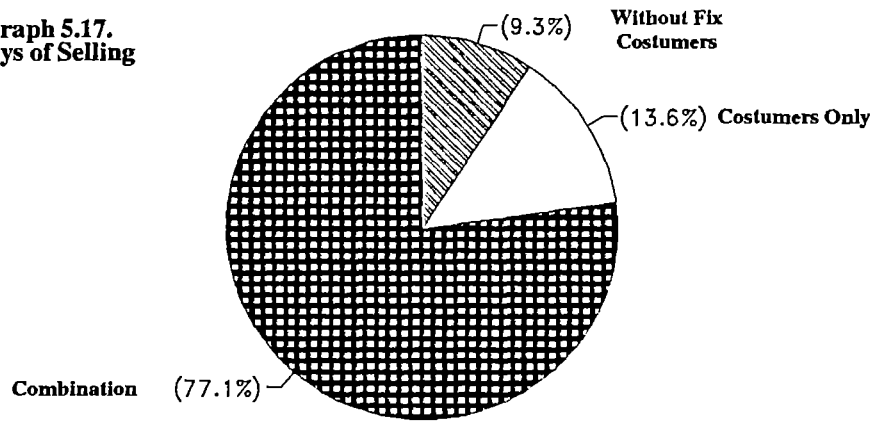
Having lived with the water vendors for six months, the monitoring team got the impression that the water vendors knew very well about market demand. For example, they understood very well that if they charged the same price to richer families they would be able to sell more water which meant higher income. But, most of them did not care about it. Some of them said " Let them buy at higher price because the water is just for washing cars", Some others who sold water at Kramat Jaya Housing complex at two times the regular price said "Let them pay more because they are rich and live comfortably". On the other hand, they sometimes sold water without taking any profit to poor families and to families whom they knew were in economical problems. So, in selling water and determining the price, there were a number of different reasons which mainly based on the water vendors subjective feel ing rather than from economical point of view.

Thus, the water vendors had practiced the 'Robin Hood' style, getting more from the rich to cover the need of the poor. In other words they had practiced a small scale cross subsidy system among the heteregenous economical condition of their customers in North Jakarta.

The average selling price was Rp. 2,800 per m3. The range of prices was a minimum of Rp. 1,250 per m3 and the maximum was Rp. 4,600 per m3.

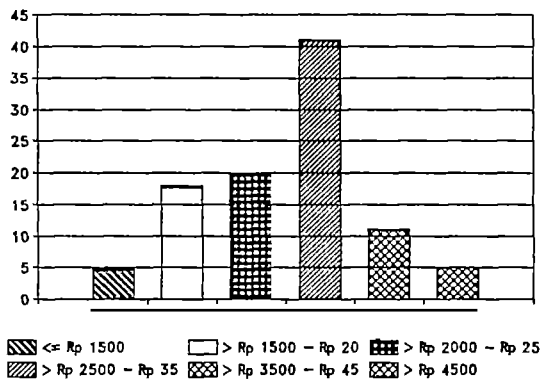
The special price was given to certain customers were found to be around 1.2 to 2 times the average price.-

Graph 5.17.
Ways of Selling



The different selling price of water vendors were presented at the following table

Selling price / m3	Percentage of Water vendors
< = Rp. 1,500	5%
>Rp. 1,500 - Rp. 2,000	18%
>Rp. 2,000 - Rp. 2,500	20%
>Rp. 2,500 - Rp. 3,500	41%
>Rp. 3,500 - Rp. 4,500	11%
>Rp. 4,500	5%



While the table below shows the comparison of buying and selling price

Selling/buying price		Persentage
< =1.5	x buying price	4%
>1.5 - 2	x buying price	17%
>2 - 2.5	x buying price	20%
>2.5	x buying price	55%

From the above data it can be seen that majority of water vendors (75%) sold the water at two times the buying price.

5.2.3.4. The profit gained or the income of water vendors.

Basically what was meant by profit was the difference between the selling price and the buying price. In the case of water vendors, the profit was actually the wages for their labor. In this chap ter however, it would still be referred to as 'profit'.

The profit gained by a water vendor ranged from Rp. 760 to Rp. 4,000 per m3. Thus the average profit gained was Rp. 2260 per m3. Total profit divided by cash capital would show the ratio of the 'mark-up' set by the water vendor as presented below.

Benefit/Buying price		Persentage
>1.5 - 2	x buying price	0%
>2 - 2.5	x buying price	0%
>2.5 - 3	x buying price	10%
>3 - 3.5	x buying price	16%
>3.5 - 4	x buying price	24%
>4	x buying price	46%

The above analysis on profit ratio showed that in general water vendors gained more than 2.5 times the buying price. There were even 46% of the total water vendors interviewed who gained profit 4 times the buying price. So, they gained quite a high profit compared to the capital they spent. However, if the analysis was based on the total absolute gained, there would be a different illustration as shown below.

It was discussed in the earlier chapter regarding the total amount of water sold by the water vendors in a day. Those who lived comfortably where they only needed to turn the tap whenev er they needed water would never imagine that 1 m3 of water weighed 1 ton. So, to carry it was a hard job.

The water vendors daily income was the amount of water they sold in a day times the profit they gained per m3. Averagely, the water vendors income was Rp. 6,000 per day as from the total sample respondents the income ranged from Rp. 2,200 to Rp. 13,600 per day. Considering that a water vendor worked 30 days a month (because most water vendors did not work only if they were sick), their monthly income range were as presented at the following table

Gross Income/Month	Persentage of Water vendors
< =Rp. 100,000	12%
>Rp. 100,000 - Rp. 200,000	56%
>Rp. 200,000 - Rp. 300,000	22%
>Rp. 300,000	10%

Majority of water vendor earned between Rp. 100,000 to Rp. 300,000 per month. However, to get the net income , it still had to be deducted by various other expenses spent as discussed in the following chapter.

5.2.3.5. Water vendor's expenditure

The main expenses was for food. Either those who had settled down in Jakarta or those who stayed at boarding rooms or rented houses. Therefore they always tried to be thrifty with their expenses on food. This could be seen from the variation of menu they ate. Most of them had the obsession that they should bring as much money as they could when they went back to their village.

Those who lived with their family had no problem with meals as the wives usually prepared it for them. Those who were still bachelors or did not bring the family along usually ate at 'wa- rung' that served cheaper meals that were available around the area. Averagely, they spent Rp. 500 per meal including tea or coffee. If they ate in a 'warteg' (warung tegal) or Rp. 1,500 per day. It means that they spent Rp. 45,000 a month.

Other main expenses was on cigarettes. Therefore they were quite happy if there were HU caretakers that provided cigarettes for free because they bought water from the respective HUs.

Water vendors who did not have their own push-cart had to rent it on daily basis which cost ranged from Rp. 600 to Rp. 700. Whereas those with their own push-cart should also provide cer tain amount as they had to repair it almost once a week. The parts that often needed to be changed was the bearing. Most push- carts used the bearing for becak which was actually not designed for such heavy load. Therefore it was not surprising that it would not last. Usually they spent Rp. 15,000 a month to change the bearings and to do other repairs.

Thus averagely either with or without push-cart, a water vendor spent Rp. 15,000 for equipments.

The following table shows the range of net profit/income gained by water vendor.

Net Income/Month	Percentage of Water vendors
< = Rp. 40,000	12%
> Rp. 40,000 - Rp. 140,000	58%
> Rp. 140,000 - Rp. 240,000	22%
> Rp. 240.000	10%

5.2.4. Water customers

As human basic need clean water users came from all strata, from the poor ones who had to be thrifty in using clean water to those who used clean water for washing cars as it had become part of their needs.

This monitoring would not discuss the different economic strata of the community in the monitoring area. However, general de scription on the economical condition of the community would be reflected from the various data provided. In general it could be concluded that those who bought water directly at HU (HU direct customers) were of lower economic strata than those who bought water from water vendors. Or, those who used less amount of clean water usually came from low economic strata families.

From the total 650 sample respondents however, only 641 of the respondents were considered valid. The rest were not valid be cause they were non-permanent residence who were only there for a short period of time. The 641 respondents consisted of

- 144 (22.5%) HU direct customers
- 497 (77.5%) HU water vendor's customers.

Families of better economical condition used PAM water (term used for water from HU and TA) for cooking, drinking and other domes tic purposes such as, washing, bathing, some even used it for washing cars. While those of the poor families, PAM water was only used for drinking and cooking. The poorer families usually used either well water (which was brackish) or rain water (especially during the rainy season) for other purposes. A detail data regarding water consumption was presented in a separate chapter.

5.2.4.1. HU customers.

HU customers were community that used water from HU. There were two types of HU customers namely HU direct customers and HU water vendor's customers.

5.2.4.1.1. HU direct customers.

HU direct customers were those who bought water directly at HU and carried it home by themselves.

- The main reason was for saving because if they bought directly at HU they could save several hundred rupiah. These customers usually came from low economic strata that a few hundred rupiah was quite a meaningful amount to them and worth the trouble.
- The HU was near their houses.

Besides saving, there were also other factors that made them preferred to buy water directly at HU namely,

* There were members of the family who had time and were capable of carrying water from HU. This was possible if one or more family members were self-employed so that they had flexibility in their working time. For example, the wife did some sewing at home or opened small stores, etc.
* The environment factors. In a 'kampung' where most people car ried water by themselves, it was considered as a habit. On the other hand, if most of the people in the area bought the water, then buying water at HU and carried it home themselves was con sidered unusual. Most of them did not admit that they were ashamed to do it, they preferred to say that it was 'unusual'. Actually, they were afraid that if they did something which others didn't they would be gossiped by the neighbors. Thus, HU direct customers might be of the low economical strata families but those who bought water did not always come from better (middle) economic strata.

a. Ways of getting water

The general hypothesis of the project planner was that the in stallation of the HU would ease the surrounding community in getting clean water as it was at closer distance than before. In reality however, there were a number of factors which hindered the community to get water at HU directly by themselves. For example, a poor family usually only had one or two pails, it was quite tiring if they had to go back and forth the HU several times a day. To overcome this problem, some HU rent push-carts. The rent for the push cart was not charged separately but was incorporated into the price of the water. This resulted on the high price of water which sometimes was even higher than the ceiling price given by the government.

The HU caretakers reason for charging high price was because those who buy water and borrow a push-cart including the cans very often did not return it right away so that if they were running out of push cart and there were other customers who needed it they had to get it from the customer's house. This was then compensated by the price of water charged to the customers.

There were some families that took water from HU using pails either with or without bamboo/wooden carrier (pikulan). One pail contained approximately 15 liters. With a pikulan one person could only carry 2 pails or 30 liters and they usually took only once or twice a day as they also used the pails as water storage. This person usually did not formally pay the HU caretakers. In stead they would put a 'contribution' into the available box, usually a coin of Rp. 50. He regarded it as mere contribution and did not realize that he had paid the water at three times higher than the ceiling price.

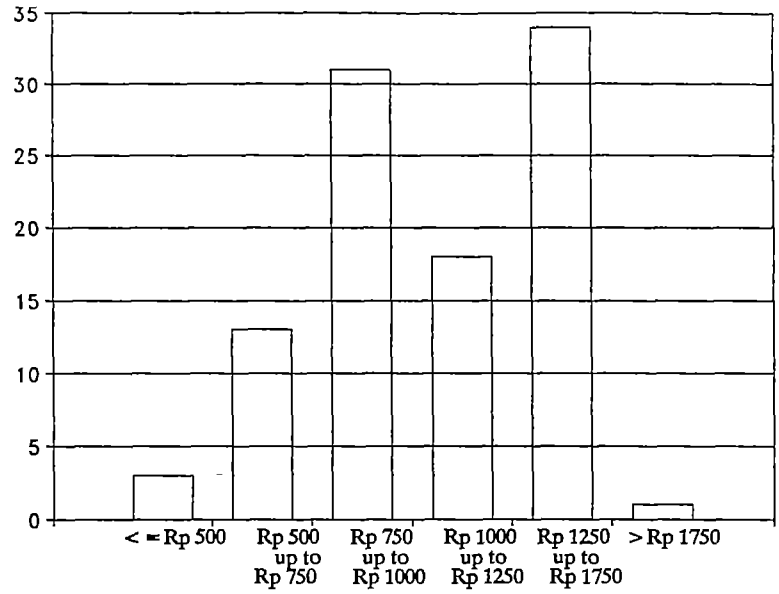
During the monitoring, when they were asked why did not pay the water they took every three days or every three times so that the volume of water they took was at the price they paid, most of them said that they felt uneasy if they came and took some water without paying anything.

b. Price of water for HU direct customers.

In fact, the price charged to HU direct customers should not be higher than Rp. 500 per m3 or the ceiling price given by the government. In reality most of them paid at higher price as pre sented at the following table.

Price per m3	Percentage of Direct customers
< = Rp. 500	3%
> Rp. 500 - Rp. 750	13%
> Rp. 750 - Rp. 1,000	31%
> Rp. 1,000 - Rp. 1,250	18%
> Rp. 1,250 - Rp. 1750	34%
> Rp. 1,750	1%

Graph 5.18.
The Range of Price at Direct Costumers



The average price paid during the 6 months monitoring period was Rp. 1,114 per m3.

The data also shows that 97% of the HU direct customers bought water at higher price than the ceiling price. The amount men tioned represented the amount paid to get clean water. There was no clear division of how much they paid for the rent of push-cart and how much for water. Compared to the price charged to water vendor, HU direct customers paid higher price. The reason given by HU caretakers were because most water vendors had their own push-carts. Actually it was also because water vendors knew better how to bargain and they were also keener regarding prices. HU caretakers themselves were usually very careful in charging water vendors because water vendors were their main customers and they were afraid that they lost them if they charged too high.

However, there were several HUs which exclusively served only direct customers. They did not sell water to water vendors. They were **TB/WS/04, TA/SA/15,** and **KB/KS/06.** But, as seen at the data presented at the above table on HU price list, the price of water at the above mentioned three HUs were more expensive than the others. The reasons given by the respective caretakers regarding the high price was that because it included the facilities, e.g. the push-cart and the cans.

Generally however, the customers were not bothered by the price because of the following reasons:

- Most of them did not know how to convert the m3 to cans (they did not know how many cans equal to one m3)
- They did not know the real price
- The price they paid now was already cheaper compared to before , when they had to buy water from water vendors
- A combination of respect towards HU caretakers and ignorance.

The last factor would be discussed further separately.

c. Clean water consumption

As discussed earlier, the daily amount of clean water used by a family might reflect their economical condition, especially in the area where the community had to pay for it. As they had to pay for clean water, naturally those of the low economic strata could only afford to buy water for their basic needs such as drinking and cooking.

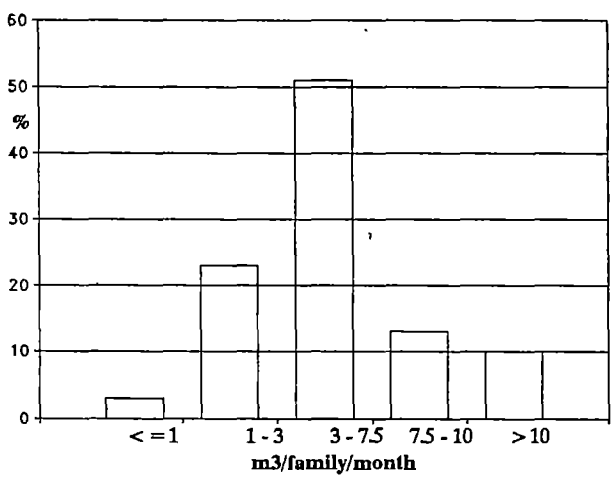
The following table presents data on the monthly amount of water consumed by HU direct customer families and their monthly expenses for clean water.

Consumption (m3)/Family/Month		Percentage
< =1	m3	3%
>1 - 3	m3	23%
>3 - 7.5	m3	51%
>7.5 - 10	m3	13%
>10	m3	10%

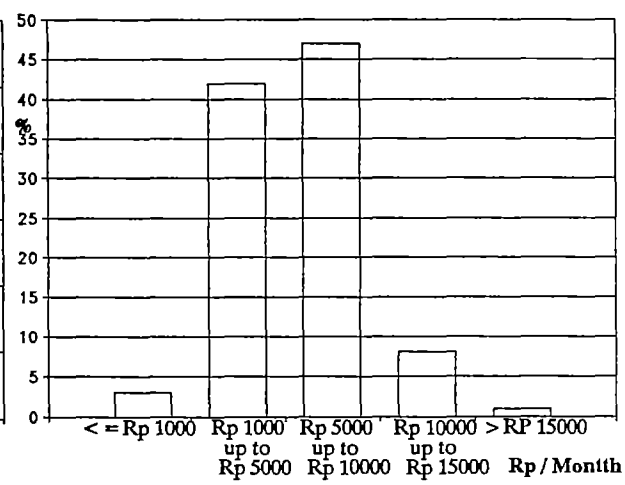
The average total amount of water used per month per family was 5.5 m3. Based on the price of water per m3 as discussed earlier, the following table shows data on the family monthly expense on clean water.

Consumption (Rp)/Family/Month	Percentage
< = Rp. 1,000	3%
> Rp. 1,000 - Rp. 5,000	42%
> Rp. 5,000 - Rp. 10,000	47%
> Rp. 10,000 - Rp. 15,000	8%
> Rp. 15,000	1%

Graph 5.20. Water Consumption/Family/Month



Graph 5.21. Expenditure for clean water/month



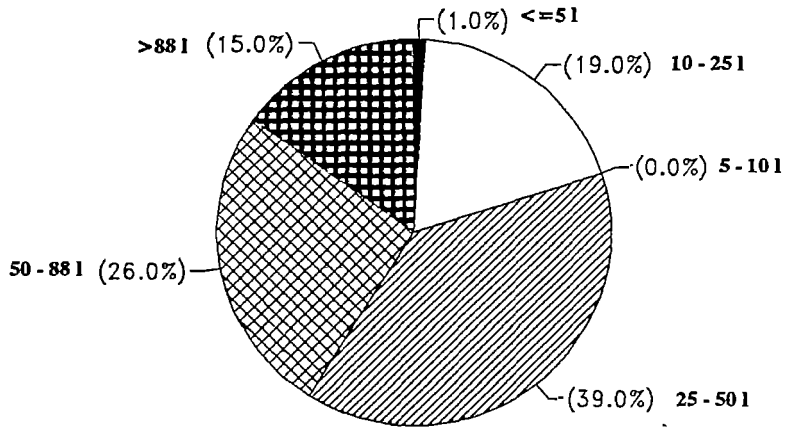
From the above description it could be seen that majority of HU direct customers spent up to Rp. 10,000 per month for clean water.

By getting along with the community and the HU direct customers, the monitoring team found that most of these families had budget ed the monthly amount to be spent on clean water. It means that if the water price was high they would get less water instead of adding the expenses. If they could not have enough water with the budgeted amount then they would have to use other water source although the water quality was poor. For example, well water which was usually brackish and dirty. Thus , it means that the amount of clean water consumed did not always reflect the total amount of the people's need for clean water. It also means that the total amount of water used as shown at the above table might not be accurate to be used as data to determine the per capita water consumption because of the above reasons and also because the variation of the number of family members. There were a family of two but there were also a family of ten.

The following analysis took into account the number of family members in order to get data on the per capita consumption of clean water of HU direct customers as presented below.

Consumption (l)/Capita/day	Percentage
< = 5 l	1%
>5 - 10 l	0%
> 10 - 25 l	19%
>25 - 50 l	39%
>50 - 88 l	26%
>88 l	15 %

Graph 5.22. Water Consumption/Capita/Day



The average per capita consumption was 57 liters per day.

5.2.4.1.2. HU water vendor's customers

HU Water vendor's customers were families that bought water from water vendors that took water from HU.

It was mentioned earlier that HU direct customers usually came from low economic strata families. It does not mean however , that water vendor's customers were of better economic strata from HU direct customers as the reasons for buying water were as follow:

- The HU was far from their houses
- All the family members worked or had a permanent job of their own so that they had no time to get water from HU themselves.
- Majority of families in the area bought water from water vendors so that they felt uneasy/ashamed if they bought and carried water from HU themselves.

a. Systems of buying clean water from water vendors.

Mainly there were two systems, as regular customers of one par ticular water vendor, and buying water from different water vendors at anytime they needed clean water.

Families with daily routine need of water, especially those which husband and wife were both working preferred to be regular customers of a certain water vendor.

There were a number of factors that influenced the choice of a water vendor as the regular supplier for clean water, e.g. the water vendor came from the same area, the leader of the water

vendors was considered reliable, etc. However, the choice was mainly based on one that they considered trustworthy. To most families it was important to have one they could trust . Moreover those who both work so that when the water vendors came there was no one in the house as the children too might still be at school. Because of such condition, water containers were usually put at the back part of the house where the water vendors could reach without entering the house. The water vendors usually should go through narrow path at the side of the house.

Other fact on such condition was that the back part of the house was the place where the waste water was drained and also where the family put the garbage. These were sources of water contami nation as described in the chapter discussing water quality.

Regular customer usually paid the total cans of water supplied on weekly basis. This transaction was based merely on trust as there was no written data that could be referred to for calculation. It was possible that the water vendors forgot the exact number of cans of water that had been supplied as he had a lot of customers and there was no written proof that they could refer to. To overcome this , some water vendor made signs of the number of cans by writing it with a chalk on a part of the house, usually the wall or the back door lace.

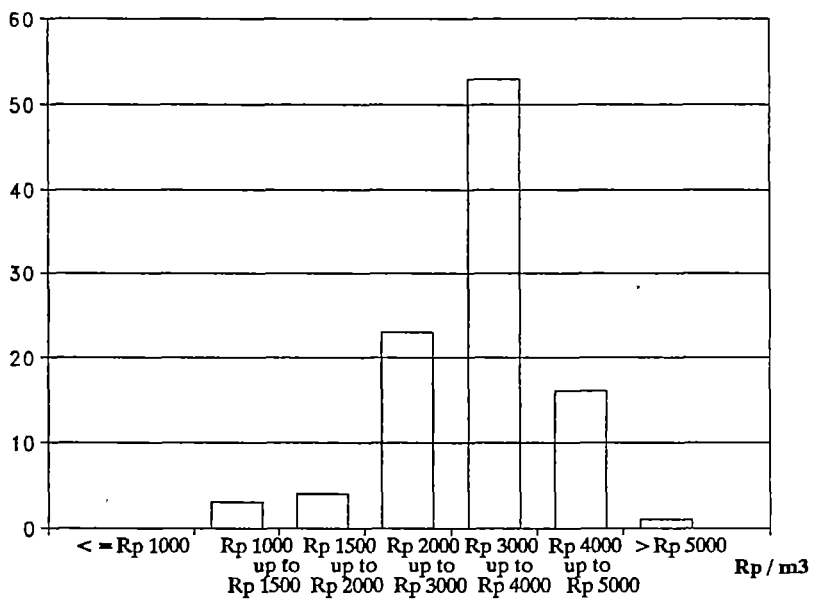
Small families or those who did not need regular supply of clean water usually did not want to become regular customer of a cer tain water vendor. They would just call a passing by water vendor whenever they needed and then ordered a certain amount of water as they needed. The order usually came in a few hours. In such a case, the customer had to call the water vendors because there had been an unwritten code ethics among the vendors that they should not sell water to the customer of a water vendor unless the customer himself called him.

b. Price of water paid by HU water vendor's customers

It was discussed in the earlier chapter regarding the water vendor's selling price. The price varied widely as presented below.

Price per m3	Percentage of Direct customer
< = Rp. 1,000	0%
> Rp. 1,000 - Rp. 1,500	3%
> Rp. 1,500 - Rp. 2,000	4%
> Rp. 2,000 - Rp. 3,000	23%
> Rp. 3,000 - Rp. 4,000	53%
> Rp. 4,000 - Rp. 5,000	16%
> Rp. 5,000	1%

Graph 5.23. Range of Prices at Costumers level



The table shows that the average price of clean water paid by the HU water vendor's customers was Rp. 3,000 per m3. It was surely much more expensive than the price paid by HU direct customers who averagely paid Rp. 1,750 per m3. It was therefore understand able that HU direct customers were quite happy with the price they paid though it was already three times higher than the ceiling price determined by the government.

The negative impact of such condition of water prices was felt by the low economic strata families as they had to limit their use of clean water only to the most needed ones.

c. Clean water consumption

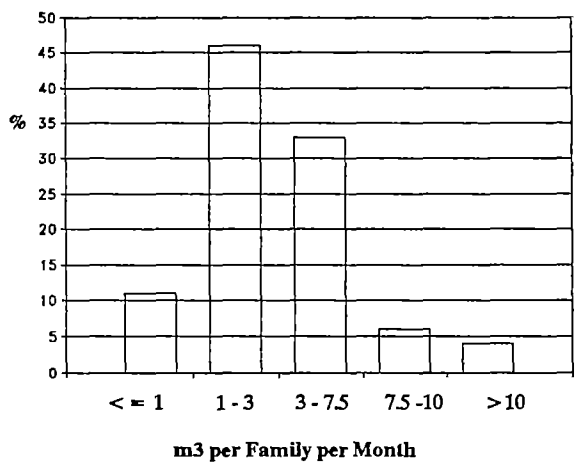
From earlier data, the average amount of water consumption of water vendors customers was 3.5 m3 per month. It was lower than the amount consumed by HU direct customers which was averagely 5.5 m3 per month. The following table presents data on total of monthly water consumption of families who were HU water vendor's customers

Consumption (m3)/Family/Month		Persentage
< = 1	m3	11%
> 1 - 3	m3	46%
> 3 - 7.5	m3	33%
> 7.5 - 10	m3	6%
> 10	m3	4%

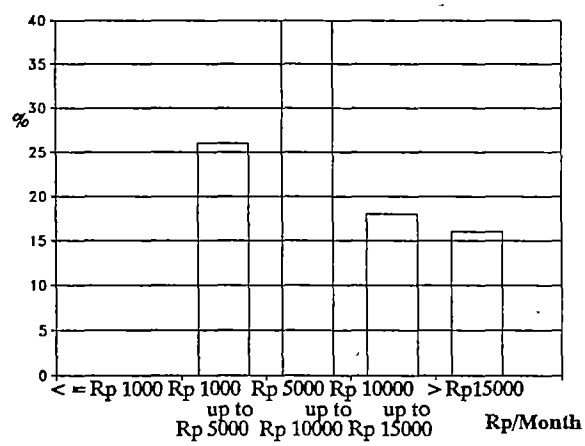
From the data on the above table it can be seen that 57% of families consumed less than 3 m3 per month. 3 m3 was surely much too title amount of clean water to be used by a family in a month. Such families really had to be careful in using clean water, yet no expenditure could be saved due to its high price.

The monthly expenditures of families who were water vendors cus tomers were presented at the following table.

Consumption (Rp)/Familiy/Month	Persentage
< = Rp. 1,000	0%
> Rp. 1,000 - Rp. 5,000	26%
> Rp. 5,000 - Rp. 10,000	40%
> Rp. 10,000 - Rp. 15,000	18%
> Rp. 15,000	16%



Graph 5.24.
Water Consumption/Family/Month



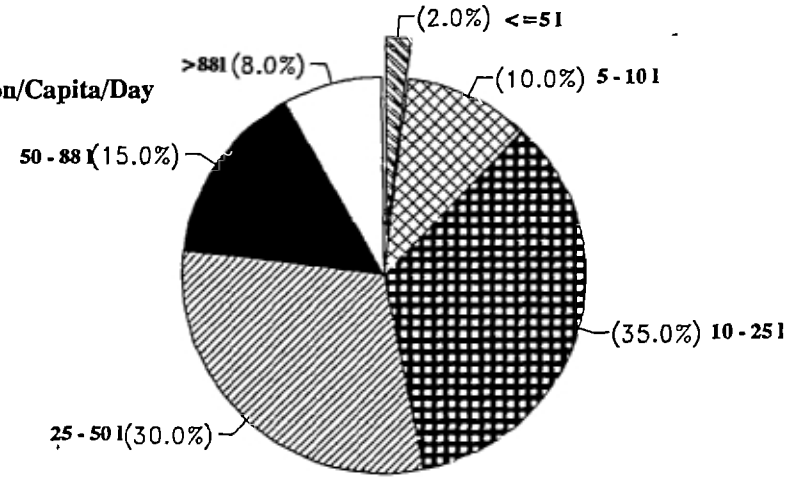
Graph 5.25.
Expenditure for Water/Month

Similar case was found with the low economic strata families of HU water vendor's customers as they usually had set a budget for clean water. No such thing was found with the middle economic strata families as they could afford to pay the amount of clean water needed without certain limits.

The different between HU direct customers and water vendor cus tomers was that with the same amount of money , the HU direct customers could have more clean water. This of course influences the per capita water consumption as presented below.

Consumption (l)/Capita/day		Persentage
< =5 l	per capita per day	2%
>5 - 10 l	per capita per day	10%
>10 - 25 l	per capita per day	35%
>25 - 50 l	per capita per day	30%
>50 - 88 l	per capita per day	15%
>88 l	per capita per day	8%

Graph 5.26.
Range of Water Consumption/Capita/Day



The average per capita consumption was 40 liters per day which was lower than the average per capita consumption of the HU direct customers who consumed 57 liters per capita per day.

There were 47% of the water vendor customers who had to live and to survive with 25 liters of clean water per person per day. It means that there were more people of HU water vendor's customers who had to live with such minimum amount of clean water. Though in appearance they might look better economically but they had to repay it by suffering from the limited amount of water they could have.

5.2.4.2. TA Customers

The earlier discussion was mainly on HU water customers. so, this part would discuss mainly on TA customers. TA water customers were also divided into two namely TA direct customers and TA water vendor's customers.

From the total respondents who were TA water customers, 60% were TA direct customers and 40% were TA water vendor's customers. The percentage was the opposite of the HU customers as majority of HU customers were HU water vendor's customers.

The reasons were:

- The community lived around the TA were of low economic strata so that they preferred to go and to buy water directly at TA.

- There were less TA water vendors compared to HU water vendors. Many of TA water vendors only worked part time. For example, some bigger children who sold water after school or adults who had some time free. These people usually sold water only for addi tional income.
- The environment condition of the kampung where the TAs were installed still had a lot of similarities with village condition (For example: Kampung Marunda). There were less competition among the community who live in the kampungs located in the middle of the city.
- Water at TA was not always available because the availability of water depended on the supply from water trucks.

5.2.4.2.1. TA direct customers

a. Methods of getting water from TA

Most of TA customers used pails, cans, or jerry cans, that they could only get a little amount at one journey. Some of them used pikulan, others used bycicle and some others carried them with hands.

b. Price of water paid by TA direct customers

The ceiling price of TA water determined by the government was Rp. 1,000 per m3. It means that everyone that used TA water should pay the same price. In reality however, most TA water customers had to pay more than the ceiling price. The variation however, was not as many as the price paid by HU customers.

Data from all the sample respondents of TA direct customers show that there were only two level of prices paid by the customers, namely, Rp. 1,515 per m3 and Rp. 3,000 per m3 as presented below.

Price/m3	Percentage of Direct customers
Rp. 1,515 per m3	57%
Rp. 3,000 per m3	43%

The average price per m3 was Rp. 2,160.

The price Rp. 1,515 per m3 means that it was 1.5 times the ceiling price. In this case, actually the TA caretakers did not really intend to increase the price to their benefit but the price was such because of the selling system. Prices charged to customer was usually based on per can basis so that there was always a tendency to rounding off the price. So, even the customers did not realize that they had paid more than the ceiling price. The price of Rp. 3,000 per m3 charged by TA caretakers who really wanted to make profit. Such high price was charged by TA caretakers who did not sell water to water vendors. Such caretakers were the ones that wanted to have exclusive customers who mostly were small business people (pedagang). They did not like to serve water vendors whom they considered could disgrace the TA reputation. The price however twice the price of the other TAs.

TAs that sold water at Rp. 3,000 per m3 were PA/PG/07 and PA/PG/08.

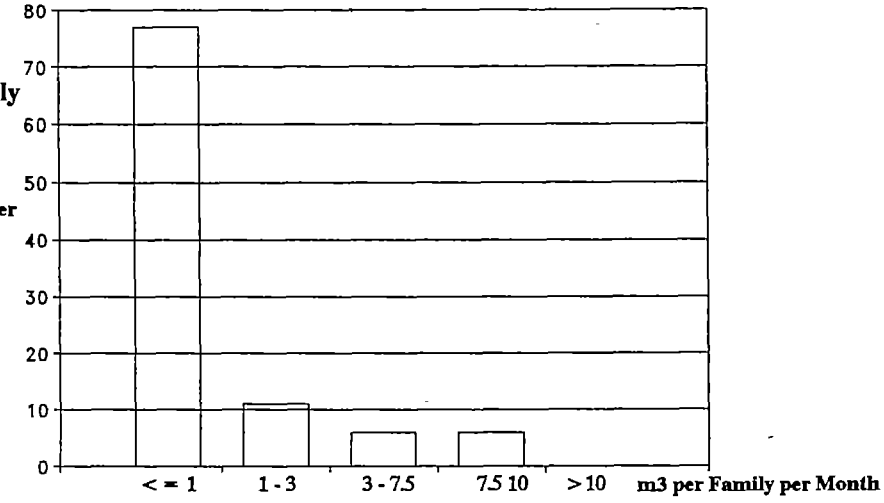
Similar case was also found with HU (Please refer to chapter on HU direct customers)

c. Clean water customers.

The limited amount of water available at the TAs plus the high cost of water resulted on the low clean water consumption of the families of TA water customers as presented at the table below.

Consumption (m3)/Family/Month	Persentage
<=1 m3	77%
>1 - 3 m3	11%

>3 - 7.5	m3	6%
>7.5 - 10	m3	6%
>10	m3	0%



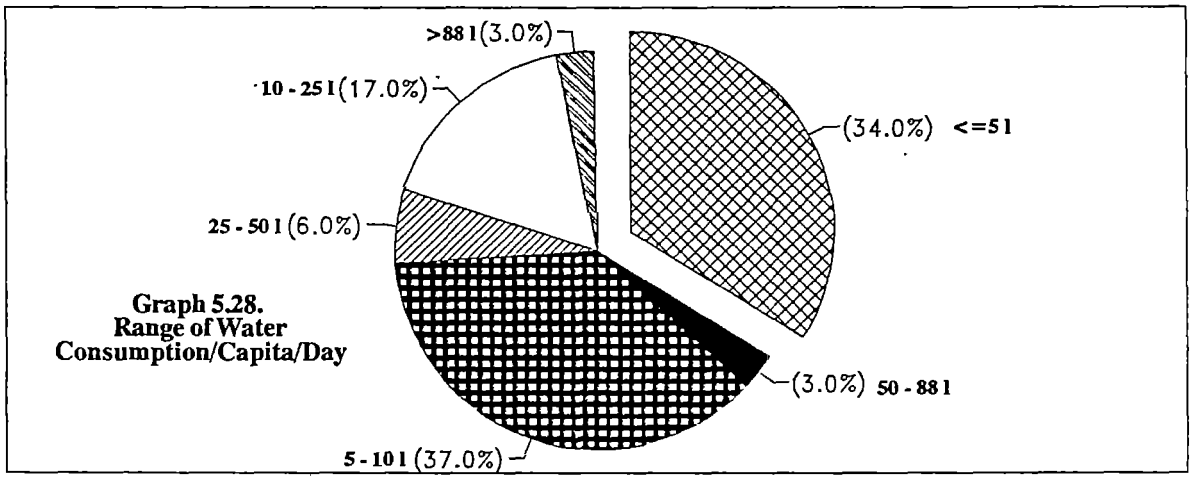
Graph 5.27. Water Consumption/Family /Month

Just similar to the case of HU, TA direct customers were also those of low economic strata. From the data it could be seen that 77% of the families who were TA direct customers only consumed less than 1 m3 of clean water per family per month or 30 liters per day. It means that they only used clean water for drinking and cooking purposes or possible for brushing teeth.

Taking into account the number of family members in the analysis gave a data on the per capita consumption of clean water as presented at the table below.

Consumption (l)/Capita/day		Persentage
<=5	liters	34%
>5 - 10	liters	37%
>10 - 25	liters	17%
>25 - 50	liters	6%
>50 - 88	liters	3%
>88	liters	3%

The average per capita consumption of clean water per day was 13.8 liters.



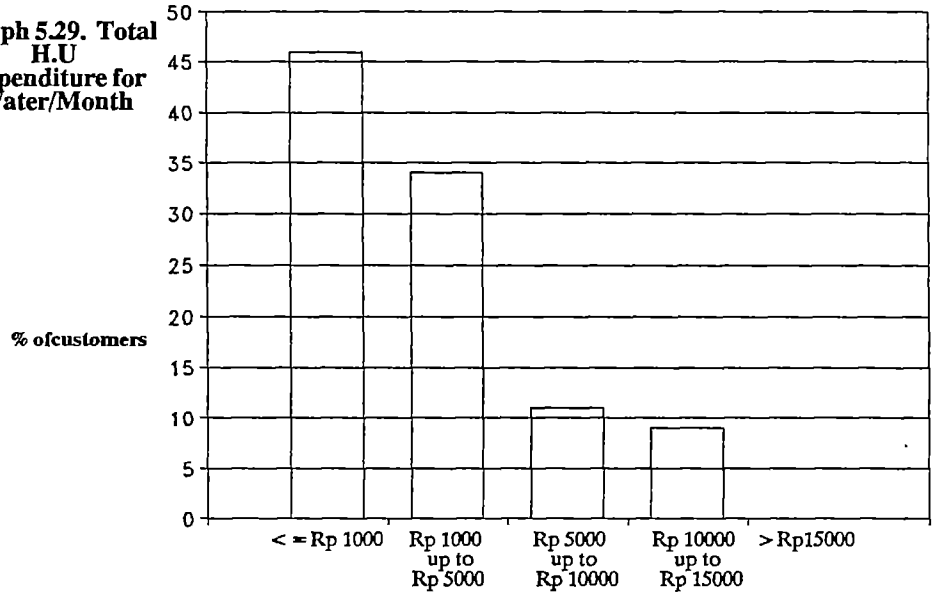
Graph 5.28. Range of Water Consumption/Capita/Day

The data also shows that there were 71% of the TA direct custom ers who only used 10 liters of clean water per person per day. This reflected that clean water was only used for main purposes. In other words, to these people, clean water was a luxury.

Actually, they did not have clean water before the TAs were installed. The reasons why they could only use such a little amount of clean water was mainly because of their economical condition. The following data provided a description on the economical condition of the customers as it provided data on the amount of expenses they spent on clean water and as mentioned earlier, most families usually had budgeted a certain amount.

Consumption (Rp)/Familiy/Month	Persentage
< = Rp. 1,000	46%
> Rp. 1,000 - Rp. 5,000	34%
> Rp. 5,000 - Rp. 10,000	11%
> Rp. 10,000 - Rp. 15,000	9%
> Rp. 15,000	0%

Graph 5.29. Total H.U Expenditure for Water/Month



The data shows that 80% of the families spent less than Rp. 5,000 per month for clean water.

5.2.4.2.2. TA water vendor's customers

a. System of buying clean water from water vendors

It was mentioned earlier that there were some TA water vendors but most of them only worked part time.

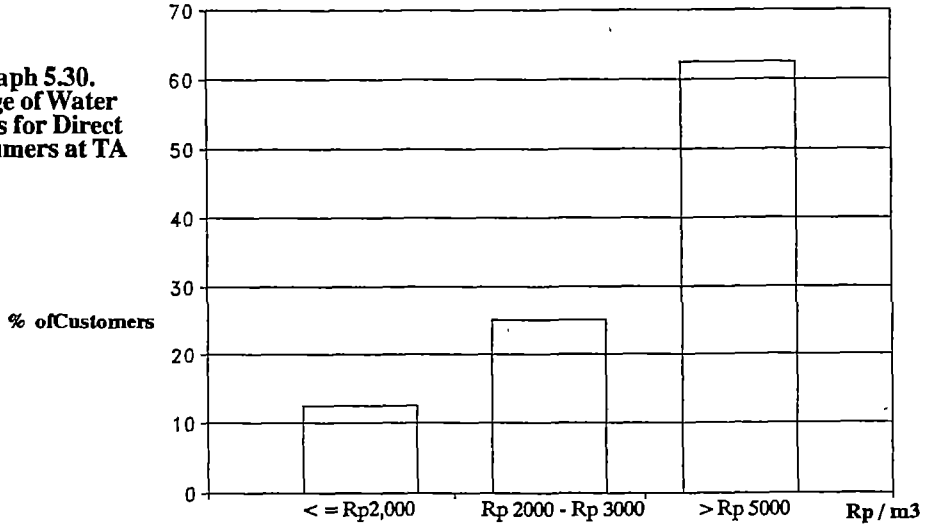
b. Price water paid by T.A water vendor's customers

Cost of water paid by TA water vendor's customers varied widely, but the variance was not as many as the cost paid by HU water vendor's customers.

The following table presents data on the range of cost of water paid by TA water vendor's customers which averagely was Rp. 4,330 per m3.

Price/m3		Percentage
< = Rp. 2,000	per m3	12.5%
>Rp. 2,000 - Rp. 3,000	per m3	25%
>Rp. 5,000	per m3	62.5%

Graph 5.30. Range of Water Prices for Direct Costumers at TA



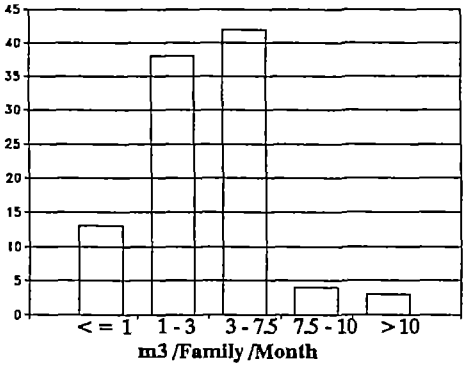
The part time water vendors usually took less profit compared to the full time ones. This was understandable as the full time water vendors main income was from selling water whereas the part time ones were usually students who helped their neighbors after school. The highest price charged by part time water vendors was Rp. 3,000 while the highest price charged by full time water vendor was Rp. 5,000 per m3. The full time water vendors usually sold water to middle economic strata families so that they could sell the water at higher prices.

c. Clean water consumption.

The following table presents data on the total monthly amount of water consumed by TA water vendor's customers families.

Consumption (m3)/Family/Month		Persentage
< =1	m3	13%
>1 - 3	m3	38%
>3 - 7.5	m3	42%
>7.5 - 10	m3	4%
>10	m3	3%

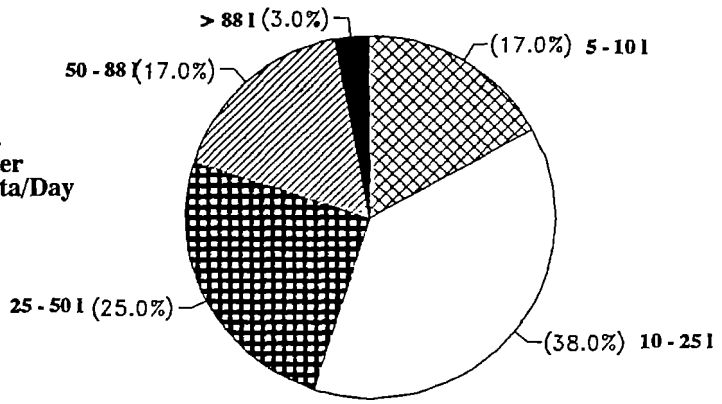
Graph 5.31. Water Consumption /Family/Month



The average per capita consumption of the TA vendor's customers was 31 liters per capita per day, almost twice the amount consumed by the TA direct customers. The detail data on the per capita water consumption was presented at the following table.

Consumption (l)/Capita/day		Percentage
< = 5	liters	0%
> 5 - 10	liters	17%
> 10 - 25	liters	38%
> 25 - 50	liters	25%
> 50 - 88	liters	17%
> 88	liters	3%

Graph 5.32.
Range of Water Consumption/Capita/Day



The above data which shows that the TA water vendor's customers consumed more water than TA direct customers reflected that in general TA water vendor's customers came from better economical condition compared to TA direct customers.

An opposite condition was found with HU water customers because those who were HU water vendor's customers consumed less water than the HU direct customers. This was also a proof that HU water vendor's customers bought water not because they could afford it but more because they felt ashamed if they had to buy and carried water by themselves. Another reason was because the working pat tern of the family members did not allow them to be able to get water by themselves.

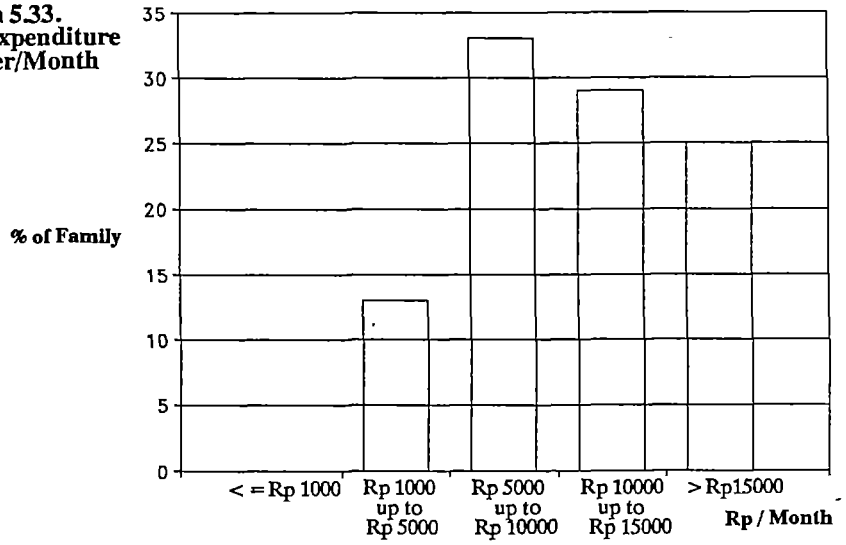
The amount spent by TA water vendor's customers ranged from Rp. 1,000 to Rp. 15,000 as presented below.

Consumption (Rp)/Familiy/Month	Percentage
< = Rp. 1,000	0%
> Rp. 1,000 - Rp. 5,000	13%
> Rp. 5,000 - Rp. 10,000	33%
> Rp. 10,000 - Rp. 15,000	29%
> Rp. 15,000	25%

There were 87% of customers that spent more than Rp. 5,000 per month. Thus compared to TA direct customers, TA water vendor's customers spent more expenses on clean water. In other words the TA water vendor's customers usually came from middle economic strata and the TA

direct customers were generally from low economic strata, the ones who really needed assistance to obtain clean water to fulfill their daily basic needs.

Graph 5.33. Range of Expenditure fotr Water/Month



5.2.4.3. Former price of water and its changes.

It was quite interesting to analyze the changes on the price of water before and after the existence of the clean water supply project. But, it was very difficult to make the analysis because there was no written data available.

There were many variations and factors that should be carefully analyzed when discussing about the price of water paid by the community. The variance of the price itself were so many that in one Kelurahan or even within one RT the price varied. The reasons could be because the houses were located at narrow or muddy alleys that the water vendors should go to a certain degree of difficulties to supply water, or it could be of any other reasons ,such as special prices was given to families that came from the same area/village, or to families that because of certain condition was symphatized by the water vendors. In such cases usually the water vendors did not care whether or not they had to go through narrow alleys or difficulty to supply water.

The variety of price was also influenced by the economical condi tion or the kind of jobs of the customers. For example, it was found in Kali Jodo and Kramat Jaya area that the closer neighbors could buy at much cheaper prices than the other customers, or because the customer was a whore monger who because of the 'job' consumed a lot of water. For the latter, certain term was used by the water vendors as they always referred to as 'water for business' not for 'consumption'. To each of this kind the water vendors charged different prices.

The above illustration described the difficulty of getting data of the present prices of water. It was even more difficult to get data regarding the former price of water before the existence of HU and TA. Thus, the team had to be extra careful at collecting data as there were a number of data provided which were not rele vant. The following illustration might give a picture of the difficulties that were faced by the monitoring team in getting data on 'former price of water'.

The first difficulty was that during the interview sometimes many respondents confused the meaning of 'former' as some referred to one year ago while others referred to as ten years ago.

For example, one of the respondents, a bachelor, enthusiastically told the interviewer that formerly he never faced clean water scarcity problem, but now he felt that it was a big problem for him to get clean water as he had to buy it while his economical condition was already low. It was only after several hours

chatting that the interviewer realized what he really meant. The real condition was that he used to work in a manufacturing company in cleaning service section and also as a night guard. So, practically he spent most of his time in the factory, meaning to say that he took a bath, having meals and slept in the factory. So, he never faced clean water scarcity. However, several months ago he was discharged from the company. It was then that he had to face the problem of clean water.

Another example of a confusing information happened in the fishermen kampung, Marunda. Most of them said that formerly water was very cheap or they almost spent nothing on water . But now they had to spend much more to pay for it. It was later understood that what they meant by 'formerly' was when they still used well water which they did not have to buy. Later on when the water quality of the well became worse (salty) and by the installation of HU and TA, they started buying clean water which to them was additional expenses.

Some others gave quite extreme data on water prices. After analyzing it further it was found out that such extreme prices happened on special occasion only. For example, if water was scarce because one of the pipe was broken which automatically caused the increase of price of water. But it was only temporary as once the HU pipe was repaired the price came to normal again.

The above illustration show that data could be easily distorted if the interviewer were not careful and keen enough to the situation. Moreover, if data were collected in a short time without any further consideration to the different aspects which influenced the collected data. In such a case, possibility of distortion of data was high.

Realizing such possibility as described above, the YDD monitoring team used the following methods.

- Direct interview
  The data collected from direct interview had to be reviewed several times. For example: direct interview to water vendors. The data on water prices could not all be directly taken as there were a number of data that were not valid. Therefore, the data were selected. The first selection was that the data that were considered valid were only those within 10 - 24 months before November 1989. In other words , data on prices 3 months before November 1989 and data on prices in 1986 or earlier were discarded.
  Secondly, selection process paid special attention to the custom ers' profession as there were certain customers with certain profession who were given special price e.g. a whore monger). Such data were also discarded as it was not valid.
  The third selection process was to discard any data on prices which referred to a special or temporary condition such as during flood or breakage of HU, etc which had caused on unrealistic prices.
  Besides the three above selection process, the team also looked closely to the period of time or how long had the respondent lived in the area. Data from new comers were considered not valid because they would only tell what they heard and not what they really know and experience.
  After going through the selection process, the team once again interview the selected ones to confirm the data. It should be noted here that the interviews mostly done informally as it was the most effective way to get true information.
- The one supportive factor to the success of the interviews was because the monitoring team stayed at the study location all the time during the monitoring period. This way had made them better accepted by the local people and the result was that it had made the work easier.
  The second interview was mainly for confirmation and revision if any of the former data.
- For additional data on former price, the team interviewed some older people who had lived in the area for a long time. Most of the old people interviewed were 60 years old or older. They were interviewed because as one who had lived the area for a long time and experienced themselves could give important data and informa tion regarding condition of water and the problems in the different kampungs in North Jakarta. These data could also be used to confirm former data or even to revise it if considered necessary.

Even after going through such efforts, the YDD monitoring team still considered that the data collected were not perfect because of the complexity. However, they had done the best and extra carefully in

collecting the data to be as valid as possible. What was described above was the maximum the team could do.

The division of data was made in accordance to the pattern used by the PAM of North Jakarta as they would be the one most concern with clean water supply problem.

5.2.3.4.1. HU customers

HU customers were customers of private HUs and PAM HUs which were better known as sample HU or which were now referred to as the Bappenas's HUs.

a. HU direct customers

It was explained earlier that HU direct customers mostly came from low economic strata families as the main reason for getting water at the HU by themselves was to save money.

The total respondents interviewed to get information of 'former price of water' was 154. Out of the 154 respondents however, only 120 which were considered valid to be used as data for analysis. The 34 ones were considered not valid because of the above men tioned reasons.

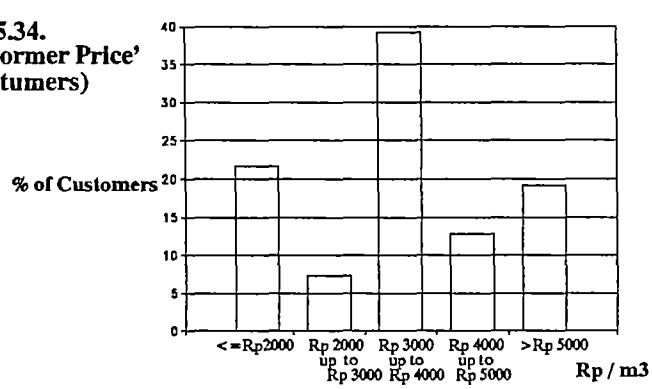
It should be noted here that many of the respondents only got water by themselves at the HU lately that was after the HU was installed. So, what was meant by 'former price' mentioned by the HU direct customers respondents was not the price that they paid by directly buying water themselves but rather the expenses they spent on water formerly before the existence of the HU.

This analysis was not classified per area (rayon) either. The result of the analysis mainly show the amount of expenses saved on water by those who were willing to get water directly at the HU.

The data on former expenses spent on water before HU existence varied as presented at the following table:

Former price per m3		Percentage
< = Rp. 2,000	per m3	21.6%
> Rp. 2,000 - Rp. 3,000	per m3	7.2%
> Rp. 3,000 - Rp. 4,000	per m3	39.2%
> Rp. 4,000 - Rp. 5,000	per m3	12.8%
> Rp. 5,000	per m3	19.2%

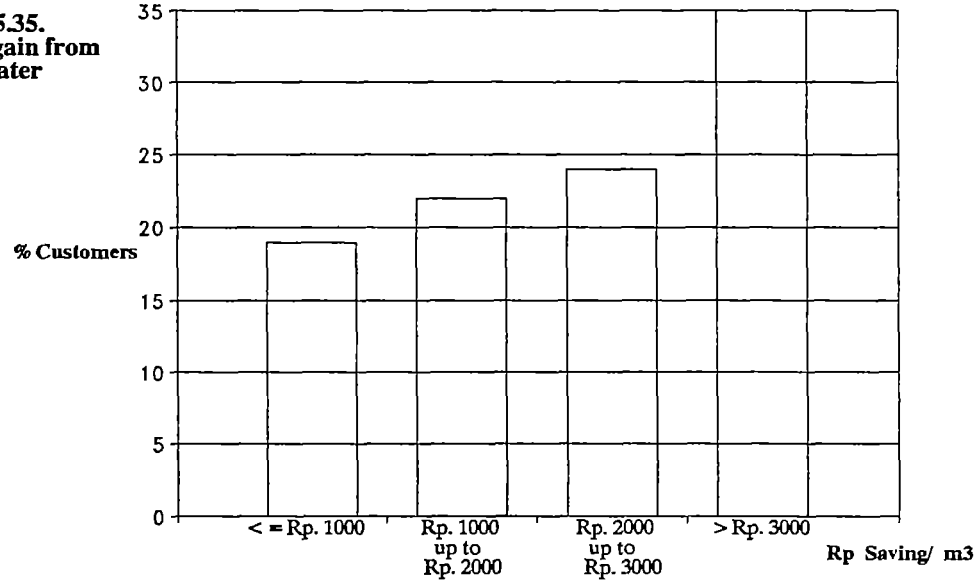
Graph 5.34.
The Range of 'Former Price' (Direct Costumers)



The above data on 'former price'compared to the data on the present expenses on water of HU direct customers (see table on water price of HU direct customers), show the difference which actually was the amount saved as can be seen at the table below.

Rp Saving per m3		Percentage
< =Rp. 1,000	per m3	19%
>Rp. 1,000 - Rp. 2,000	per m3	22%
>Rp. 2,000 - Rp. 3,000	per m3	24%
>RP. 3,000	per m3	35%

Graph 5.35.
Rp. Saving gain from 1 m^3 water



Averagely HU direct customers saved 74% compared to their former expenses spent on clean water. In other words they only spent a quarter of the amount they used to spent formerly for the same amount of water. So, it was worth for their labors and time spent to get water at HU.

It should also be noted here that they could save quite a mean ingful amount of money although most of them , 97% of the HU direct customers, still paid at higher price than the ceiling price.

Thus if the rules regarding the price of water at HU was enforced plus intensive explanation and information to the community so that they knew about their rights and the real price of water, the community would be able to save a lot of their expenses on clean water.

As described earlier, most families had certain budget allocated for clean water. Therefore, if they could get clean water at cheaper price it means that they would be able to have more clean water which would have some impact on the community health and their living condition.

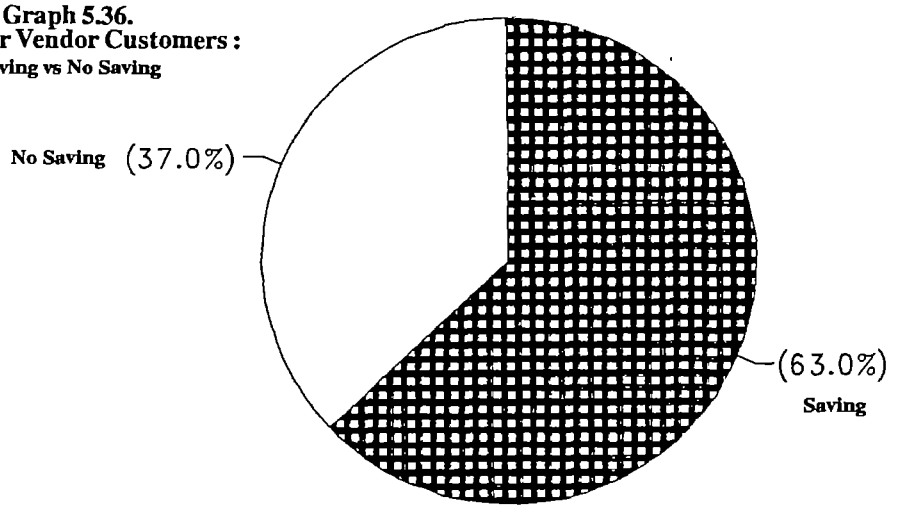
b. HU water vendor's customers

It was more complex to analyze the data collected from HU water vendor's customers because there were quite a number of variables that influenced the price of water paid by the customers. After selection, there were only 459 out of the 700 respondents which data were considered valid.

From the 459 respondents that were scateredly lived in some dif ferent locations, there were 291 or 63% who admitted that they paid less for clean water while the rest 37% said that the price of water was just the same. The latter however admitted that al though they paid the same price they did get some benefit by the existence of the HUs as it was easier to get clean water then.

The former data on those who paid less for clean water after the existence of HUs would be discussed further.

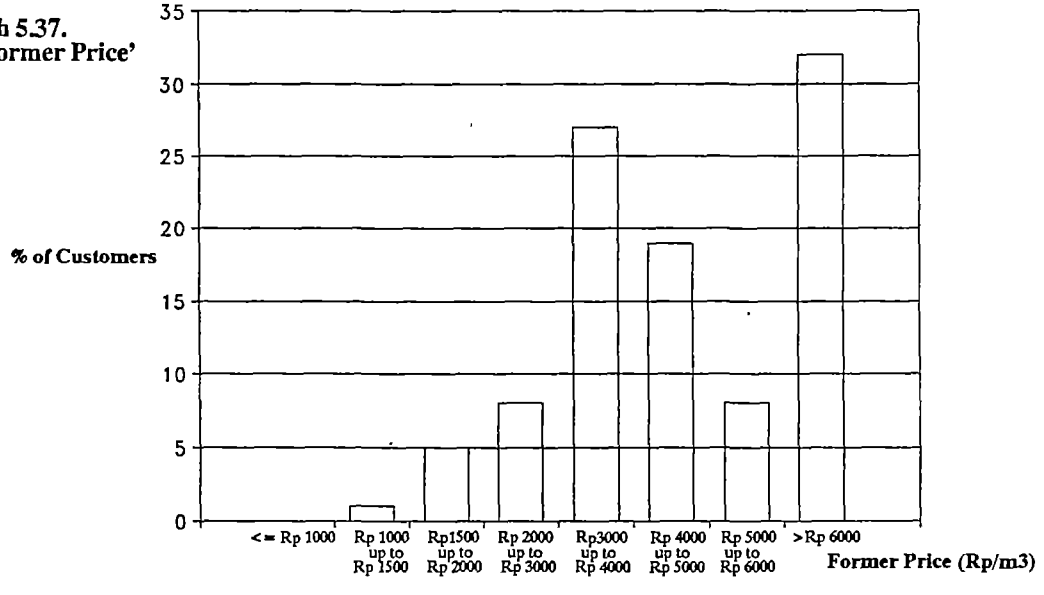
Graph 5.36.
HU Water Vendor Customers :
Saving vs No Saving



The following table presents data on the former price.

Former Price per m3		Percentage
< = Rp. 1,000	per m3	0%
> Rp. 1,000 - Rp. 1,500	per m3	1%
> Rp. 1,500 - Rp. 2,000	per m3	5%
> Rp. 2,000 - Rp. 3,000	per m3	8%
> Rp. 3,000 - Rp. 4,000	per m3	27%
> Rp. 4,000 - Rp. 5,000	per m3	19%
> Rp. 5,000 - Rp. 6,000	per m3	8%
> Rp. 6,000	per m3	32%

Graph 5.37.
Range of 'Former Price'

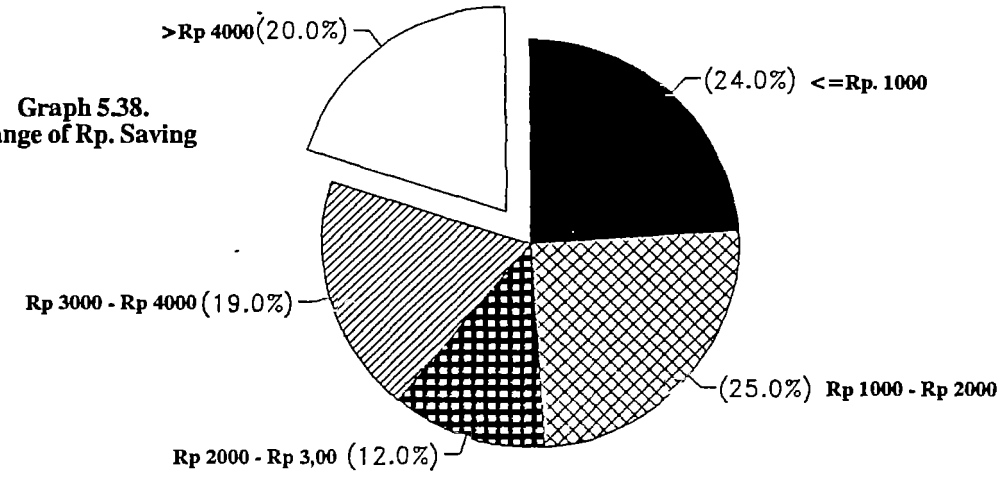


Comparison of the former price and the present price can be found in the chapter on water price for HU customers.

The difference between the former price and the present price reflected the amount of saving on the expenditures for clean water of HU customers. For example, one who formerly paid Rp. 6,000 per m3 of clean water and now spent only Rp. 4,000 means that he saved Rp. 2,000 for every m3 of clean water. However, there were only 63% of the total respondents who could save their expenditure on clean water by the existence of HU. The following were data on the amount of money that could be saved by HU cus tomers (63%)

Saving/M^3	(From 63% Costumers)
< =Rp. 1,000	24%
>Rp. 1,000 - Rp. 2,000	25%
>Rp. 2,000 - Rp. 3000	12%
>Rp. 3,000 - Rp. 4000	19%
>Rp. 4,000	20%

Graph 5.38.
Range of Rp. Saving



The above data described the dynamic change of water prices paid by HU customers. To get a better and clear idea of the percentage of saving of HU customers on their expenses on water, each respondents should be analyzed otherwise data would not be valid. For example, One who used to spent Rp. 20,000 a month and saved Rp. 1,000 should not be treated and analyzed the same way as those who formerly spent Rp. 5,000 and saved Rp. 1,000. Such data were presented below:

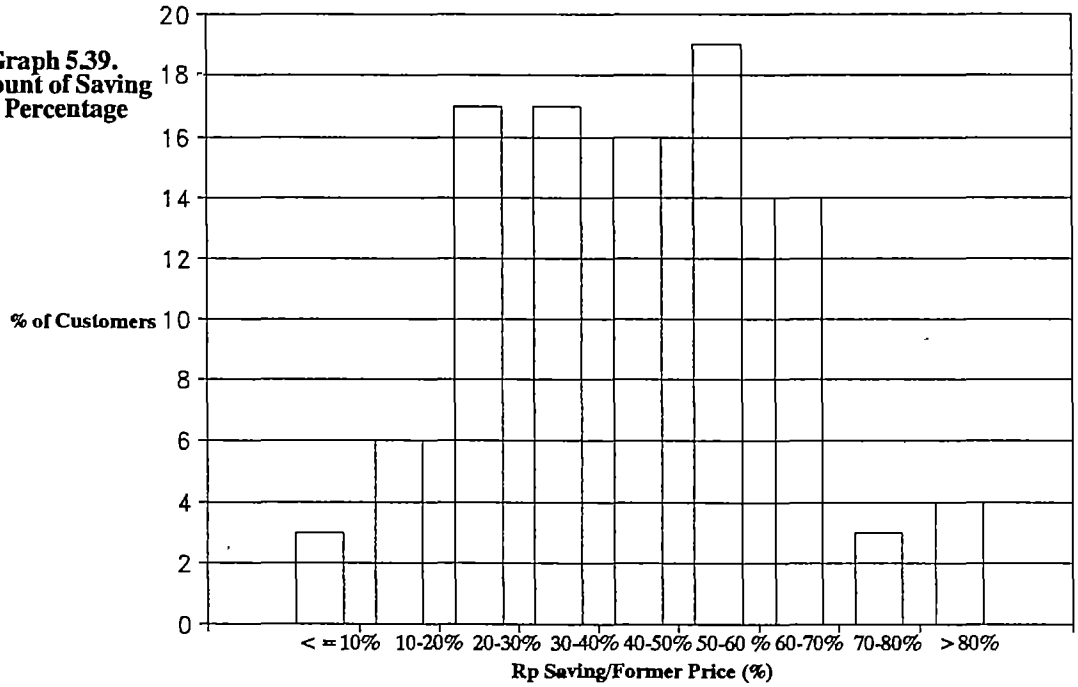
%Saving	From 63% Customers
< =10%	3%
>10% - 20 %	6%
>20% - 30%	17%
>30% - 40%	17%
>40% - 50%	16%
>50% - 60%	19%
>60% - 70%	14%
>70% - 80%	3%
>80%	4%

The above table should be read as follow :

- 3% out of the 63% of the HU customers saved 10 % from former expenditure
- 4% out of the 63% of HU customers saved 80% of their former expenditure (In other words, they paid only one fifth of the former amount for the same amount of water).
- etc.

The above data also shows that there were 40% out of the 63% of HU Water Vendor customers (or 25% of total HU Water Vendor Customers) that saved their expenditures on clean water and pay less than half of their former expenditure for same amount of clean water.

Graph 5.39. Amount of Saving in Percentage



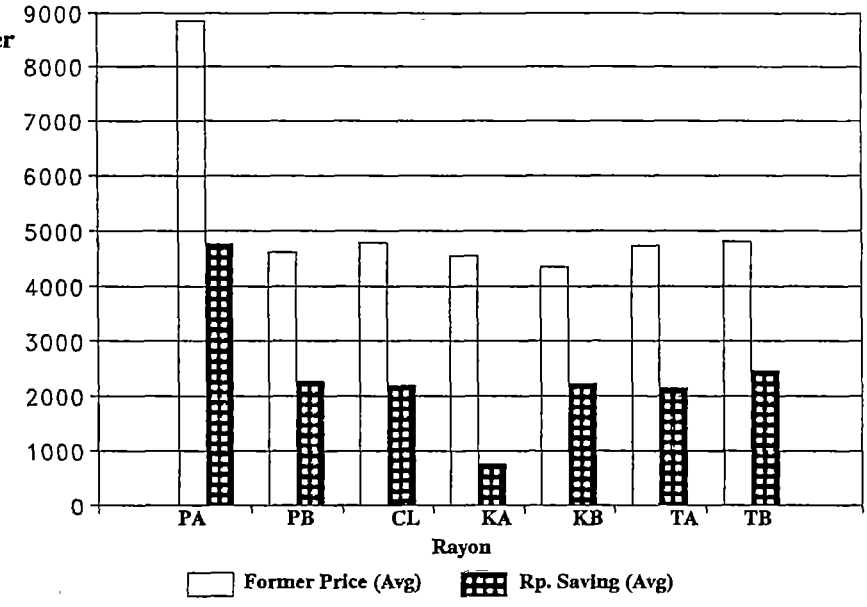
The changes on water prices however was not the same for all the places in North Jakarta area. In some places water prices now was much less compared to than before the existence of HU, but in other areas there was no changes in prices. The following analysis was done by rayon. The following table shows the comparison of the average former price of clean water and the average present price of clean water by rayon.

Rayon	Former Price (Average)	Former Price - Existing Price (Average)
Penjaringan I	Rp. 8,852	Rp. 4,756
Penjaringan II	Rp. 4,617	Rp. 2,276
Cilincing	Rp. 4,788	Rp. 2,189
Koja I	Rp. 4,545	Rp. 758
Koja II	Rp. 4,351	Rp. 2,226
Tanjung Priok I	Rp. 4,731	Rp. 2,144
Tanjung Priok II	Rp. 4,806	Rp. 2,466

The above data indicated the impact of the existence of HU at every rayon.

The above data was better interpreted as there were certain percentage of community at Rayon Penjaringan I who were happy by the existence of HU as they could save more than half of their expenditures on clean water. While community at Koja I might not be as happy as the ones at Penjaringan I since percentage of saving is relatively smaller though absolute price of clean water is cheaper than Penjaringan I.

Graph 5.40.
The Averages of Former Price and Average of Saving
For Each Rayon



Rayons with a great slump on water prices were those which formerly did not have or with only one or two private HUs.

From the data collected, a great slump of water prices was found at:

- Rayon Cilincing:
  - * Jl. Bakti, Semper Timur/Kebantenan, and Sukapura. The main reason was because formerly there was no HU in the area so that most community had to buy water from water vendors who bought water from water truck that came from Jakarta Selatan which water was well known as 'Bogor water'.
  - * Marunda area, Before the TA was installed, only the middle eco nomic strata families could buy 'Bogor water' or water from drilled well as the price was quite expensive.
- Rayon Koja II:
  - * Tanah Merah/Rawa Badak and Yuka Kompleks. The main reason was also because formerly there was no HU in the area.
- Rayon Tanjung Priok I:
  - * Sunter Agung; As formerly there was no HU the community in this area , formerly the community had to buy water from the neighbor kampung.
- Rayon Tanjung Priok II:
  - * Papanggo/Kampung Lanji and Warakas: formerly there was no HU in most of the places except at Warakas which already had a few but was not enough for the supply of the community
- Rayon Penjaringan I:
  - * Pejagalan and Teluk Gong: There were only a few HUs
  - * Kapuk Muara; Formerly there was no TA and water was taken from Jelambar/Jembatan Dua of Jakarta Barat which was quite a distance.
- Rayon Penjaringan II:
  - * Tanjung WAngi, Tanah Pasir and Ancol/Kp Bandan; Formerly there were only a few HUs. Even at Kp. Bandan, formerly there was none and now there were two HUs.

The above data shows that the water price could go down quite a lot if the HUs and TAs were appropriate located in areas where facilities of clean water supply was still at minimum or none. In other words, if the choice of location for HUs and TAs were trusted to the Kecamatan or Kelurahan or the LKMD, it was diffi cult to control the influence of the different interest of the different people involved.

The impact was that very often they forgot to consider the places where clean water supply was most needed as individual interest was stronger.

5.2.4.3.2. TA water customers

The variation of data of the former prices of water in the area of TA water customers was not as many as those found in HU customers.

The first group were those who formerly used well water (brack ish). Now they go to the TAs. Though they had to pay for it, at least they could now have fresh water.

The second group were those who formerly had to buy water at high price, mostly came from middle economic strata , as they had to pay Rp. 9,200 per m3 for water from drilled well and Rp. 12,300 per m3 for water sent by water truck or 'Bogor water'. Whether or not the water really came from Bogor , no one knew.

The saving of TA customers were:

- TA direct customers saved 60% to 80% compared to when they still had to buy drilled well water or "Bogor water'.
- TA water vendor's customers could save 30% to 60% for the same amount of water after the existence of TA in their area .

It should be noted here that most TA customers were those who formerly never had fresh water as they had to consume brackish water from the well. So, the impact of TA existence should not only be seen from the point of view of the amount of money saved but also the number of people who could enjoy the availability of clean water, something which in the old days was a real 'luxury' to them, and was almost impossible to afford to get.

6. Analysis and Discussion

The earlier chapters discussed on the condition of HU and TA, profile of caretakers, profile of water vendors, profile of water customers, etc. This chapter will discuss on several issues of interest cross sectorally. A cross sectoral discussion on the issues of interest would give inputs to decision makers especially for future similar programs.

6.1. Community's perception and respect towards the government assisted HU and TA project.

The objective of the HU and TA project was to help the community in the slum area in North Jakarta to overcome their problem of clean water supply. But, did the community know that the HU and TA was a government assisted project, which was really meant for them ?. To answer such questions the opinion of several group of people that were directly involved should be analyzed.

Water users: Most water users did not know about the project assistance. Even some head of RTs where the HUs were located did not know the process. Majority of the community only knew that the HUs and TAs were privately built and owned by the caretakers. They never knew that there was a process until that person became a caretaker. While those who knew that the HU and TA were not privately owned by the caretakers only knew as far as that they became caretakers because they had money so that they could get the license to sell the water from HU or TA. Even the group of people who got the benefit by the existence of HU and TA as they spent less for clean water did not know that water became cheaper because of the assistance from the government. Most of them thought that water became cheaper because there were a lot more water vendors than before.

Such degree of ignorance of the community regarding the project of course resulted on no respect nor appreciation towards the government efforts/projects which were actually designed and constructed for them.

However, there was an exception such as in Marunda. The community in Marunda knew that the existence of the TA was because of government assistance.

HU and TA caretakers: Only a few caretakers knew the objective of the government in implementing the HUs and TAs project. Most of them either did not know at all or only knew a little about it. Most of them only knew that **there was a cheap hydrant.** This of course reflected the process of the selection and appointment of caretakers (see 5.2.2, 5.2.2.1, and 5.2.2.2) which show that:

- 10% of the caretakers said that they paid (to them it was a capital spent) to become caretakers. Such data was very difficult to get as most caretakers were reluctant to talk about it. So, it was possible that the percentage of caretakers that became care takers because they paid could be more than 10%.
  The amount they spent varied from several hundred thousand to one million rupiah. Regardless the amount they spent, even if they spent only a few thousand rupiah it was enough to loss their respect and appreciation towards the government efforts/assist ance in overcoming clean water supply problems for the community in the area. The general perception that existed now was that the HU and TA were just business matters.
- The process of selection of the caretakers were also affected (see graph 5.2). 46% of caretakers were appointed because they were rich, influential, personnel of kelurahan or other govern ment institutions. 47.1% were those who got to know about the project and they registered to be caretakers. These people man aged everything themselves. There were 2.9% of caretakers who registered to be caretakers through 'calo'. These were mainly the ones who had to pay certain amount of money to become caretakers. The rest 3.8% were vague caretakers meaning that their names were used but the ones who really took care of the HU/TA were other persons than they were given certain amount of money as compensation.

- Consequently in the first phase of the government assisted HU and TA project , by referring to graph 5 it can be seen that a big percentage of the caretakers were kelurahan personals or those closely related to any of the kelurahan personnel.

Because of such condition, it was not surprising that in the practical operation there was a different scenario from the original plan of the planners.

For example:

The original concept developed was that the caretakers were supposed to be in a position of 'nothing to loose', meaning to say that they would never have to endure any losses to whatever hap pened to the HU. Therefore, the caretakers could own the HU through certain selection process and formalities free of charge. In other words everything was provided and they only had to operate the HU and TA to serve the community. The only require ment was that the caretakers had to serve the community that needed clean water by selling it at a ceiling price of Rp. 500 per m3 for HU and Rp. 1,000 per m3 for TA. This was already three times the price that they paid to PAM as the 2/3 was meant to compensate their time and labor in serving the community. Thus, even in the years to come when there was no more customer buying water from the HU or TA because there had been new pipe lines to the houses in the area, at least the caretaker had had a pipe line for PAM water and had ever enjoyed the profit out of it.

The real scenario however was different from what the planners expected. At present, there were a number of HU and TA caretakers who were somewhat panic because their sale was not as much as before which was caused by the installation of HU and TA project phase II. So, there was a change in the demand supply. A combination between panic and competition resulted different symptoms, especially those who paid some money to be caretakers. They felt that they had not reached the break even and yet there had been other competitors. Gossip and issues could not be avoided, such as, "The government was unfair as they had been put in difficult position, even before they reached the break even the government had installed new HUs and TAs so that their business was in loss. such subjective opinion could not be avoided.

It should be noted here that most of the community were simple people that they also had simple way of thinking which was very different from what the planners thought.

There were also cases where one caretaker owned several HUs and TAs (see 5.2.2.1.). In this case the caretaker used several names of either his relatives or even friends whom he gave money as compensation for using their names. Juridically and formally it was not his mistake. However, the common people would look at it differently and silently but wisely had their own opinion about it.

The above scenario was a description which would shortly be faced by the government if no remedy action was conducted.

Thus it was proposed that the government should seriously think and find ways to overcome the complex problems that exist until the original objective of the installation of HU and TA could be achieved. A first step would be to make the project known (trans parent) to all community so that it may not be controlled by a certain group of people only. Information dissemination through formal lines (Kecamatan, kelurahan) should be balanced by other information lines so that common people who were the target group could be involved. This was also a way to enhance the community sense of ownership towards the project.

The various problems that happened in the first phase was under standable due to the limited time , and limited information dissemination. However, it should be used as valuable inputs in planning and implementing the future programs. The first and most important thing was to make the project and all of its aspects transparent to everyone.

6.2. Price of water versus real expenditure for clean water

Discussion on the correlation between the price of water and the expenditure spent by the community for clean water should be considered from several different point of view, namely,

- To compare the present price and the former price of water paid by the community for clean water. If the price of water in areas where HUs and TAs were installed was lower than before, it means that the government assistance had reached its objective in bringing down the price of water. This was based on a comparison between former price

and the present price of the same subject, in this case the community in the slum areas in North Jakarta.

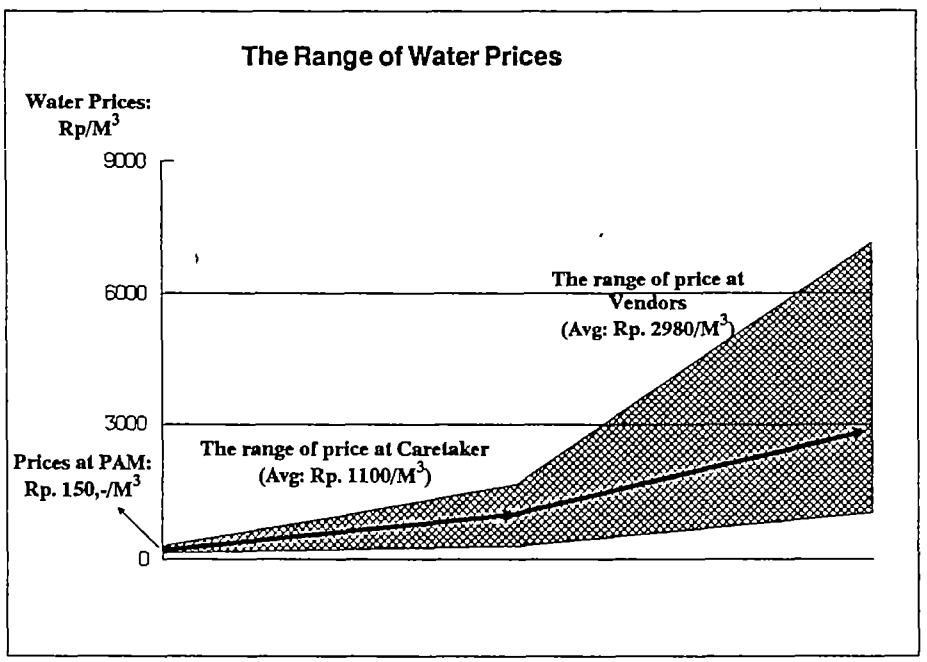
- North Jakarta was not an isolated area. So, the condition of the neighboring areas should also be considered, namely condi tion in West Jakarta, East Jakarta, etc. It was also important to compare the condition of those lived in the slum areas and those who lived in better areas. In other words, comparison between those who lived in the slum areas and those who got the privilege and were able to live in better condition areas should be taken into consideration.
- The concept of the installation of HU and TA themselves should be considered, namely what was the uniqueness of HU and TA, what was something new that exist by the installation of HU and TA.

Tariff for clean water from PAM for HU government assisted project was Rp. 150 per m3 which means that the HU caretaker had to pay Rp. 150 per m3 water he sold or he used.

HU caretaker was allowed to sell water at a ceiling price of Rp. 500 per m3. In reality however there were HU that sold at lower prices but there were also HUs that sold at higher prices than the ceiling price determined by PAM. The water price at HU ranged from Rp. 300 to Rp. 1,375 per m3 (see 5.2.2.7).

The description of the water price charged by HUs were in accord ance to the data on the price of water paid by the HU direct customers (see 5..4.1.1.b). Whereas those who bought water from water vendor paid much higher prices , a minimum of Rp. 1050 and a maximum of Rp. 6,100 per m3 (see 5.2.4.1.2.b).

The following graph show the range of price of water charged by HUs to water users.

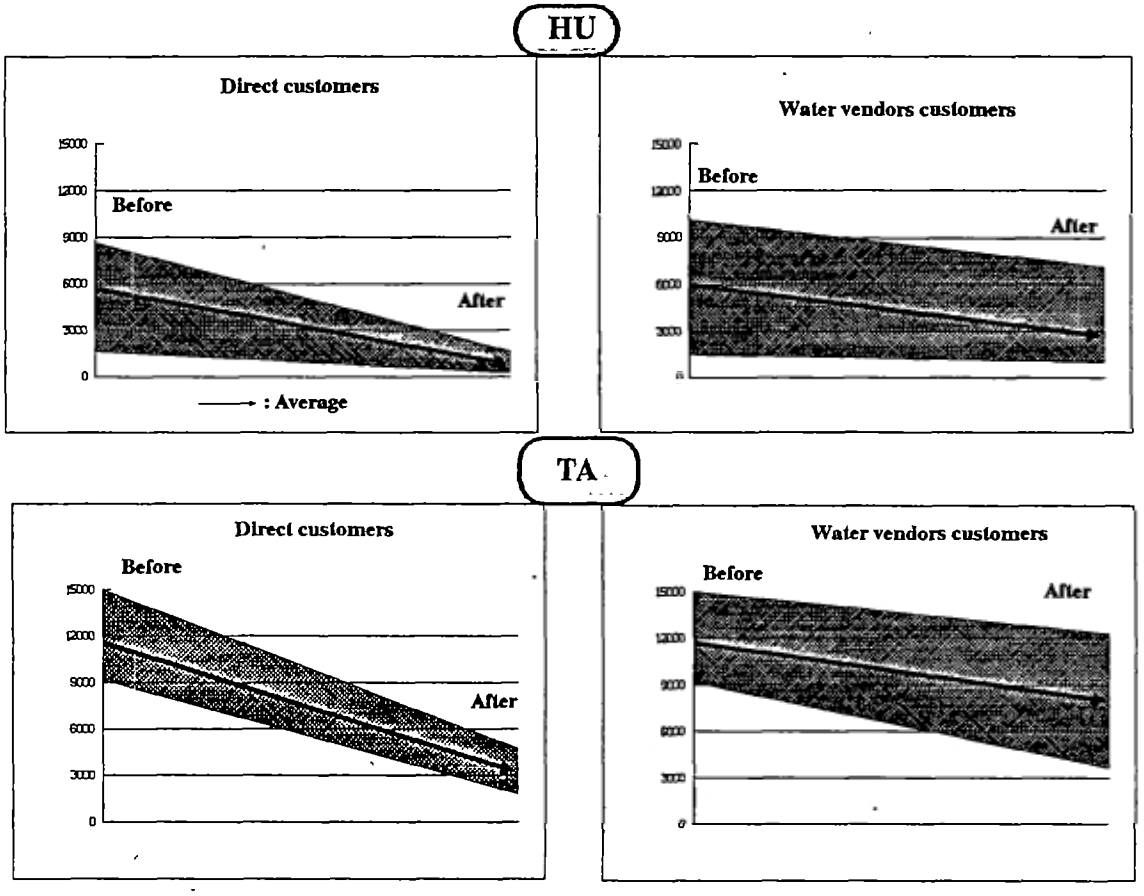


Such prices however was lower when compared to the former price (see 5.2.4.3.). Formerly, HU **direct customers** paid between Rp. 1,700 to Rp. 7,000 per m3 of clean water (see graph 5.34). Thus there was quite a big difference to the present price they paid, the price was much lower. The amount of money saved was discussed in part 5.2.3.1.a. and was presented in graph 5.35.

To **water vendor customers.** there were only 63% of them that paid at lower price, while 37% of them paid the same amount as before. The amount of money saved by water vendor customers because of the difference in water prices was discussed in 5.2.4.3.1.b and were presented in graph 5.38 and graph 5.39.

TA water customers were also divided into two groups, namely **TA direct customers** and **TA water vendor customers**. The variation of prices either the former price or the present price was not as many as found with HU water prices. Formerly, TA water customers paid between Rp. 9,200 to Rp. 12,300 per m3. However, there were quite many of the community which did not know the former price because they never bought any water as they used well water (brackish).

The following graphs show the decrease of water price by the existence of HUs and TAs.



The main impact on the existence of HUs and TAs were the additional supply of clean water which influenced the slump on water price. The decrease however varied depending on several factors. But, the main factor that influenced the price was the site selection for the HUs and TAs locations.

As described earlier, the price of water was now lower than before. The following was a comparison on the price of water compared to those who were PAM direct customers.

Type of Consumers	0-15 m3 Rp/m3	16-30 m3 Rp/m3	31-50 m3 Rp/m3	> 50 m3 Rp/m3
1. Social				
a. Social-General	← 150 →			
b. Social-Special	150	270	360	540

2. Non Commercial				
a. Household	180	360	550	900
b. Government Institution	270	450	725	1100
3. Commercial				
a. Small Business	← 600 →		← 1200 →	
b. Big Business	← 750 →		← 1500 →	
4. Industry				
a. Small Industry	← 630 →		← 1260 →	
b. Big Industry	← 840 →		← 1680 →	
5. Special Tarif				
T.Priok Harbour	← 2800 →			

To make the comparison easier, an average price of each was used as standard namely, **for HU:**

- HU direct customer paid Rp. 1,150 per m3
- HU water vendor customers paid Rp. 2,990 per m3

for TA:

- TA direct customer paid Rp. 2,165 per m3
- TA water vendor customer paid Rp. 4,326 per m3

Thus, compared to PAM direct customers,

- HU direct customer paid the amount of money for clean water the same as PAM household customer class IV, household which supposed to consume 50 m3 per month or about 300 liters per person per day. In Jakarta such classes were those who lived in Real Estate areas such as Pondok Indah where water was used to wash car and to water plants. The real physical condition of the community in the slum area in North Jakarta of course was very different from the condition of such elite housing complex as Pondok Indah.
- HU water vendor customers paid the amount of money which was the same as the special tariff charged to the ships at the Tan jung Priok harbor.

TA customers:

- Both TA direct customers and TA water vendor customers paid the amount which was the same as the special tariff charged to ships at Tanjung Priuk harbor whereas the monitoring team believed that none of the TA customers had ever had any boat or ship.

The above description show that economically the community had enjoyed the assistance as they spent less on clean water compared to before the HUs and TAs were installed. But, based on social justice, actually the price they paid was still much higher than those who had got and enjoyed the previlage to be PAM direct customers (with pipe line to the house). Moreover their mistake was because they were so poor so that they had to live in areas where there was no PAM pipe line.

The dichotomy between the economical consideration and social justice should be considered carefully by policy makers. This was not an easy or simple case as it involved both technical and financial aspects in order to make the community in the slum area in North Jakarta to be able to enjoy the same tariff as the PAM customers.

On the other hand, pragmatically the HUs and TAs project had not given any 'economic satisfaction' but at least it was able to provide 'physical satisfaction'. For example, to make such a project transparent to all community affected by the project and to prevent it from being used by certain group of opportunist people/calo especially in its management, to guarantee that the water was sold at the price determined by the government, etc. Such efforts would give 'physical satisfaction' to the affected community.

The following is discussion on the uniqueness of the concept of the government assisted HUs and TAs, or simply to say what was new with the project.

As the HUs and TAs project used PAM water, so first of all we should know the PAM policy. PAM was a company owned by Pemda. The objective was to provide clean water to the community of all strata, from the poor ones to the wealthy ones. For 'cost recov ery' PAM charged the water users certain prices. Based on social justice, PAM applied different tariff to different economic strata of the users (User charges). By applying 'cross-subsidy' it was expected that even distribution on the result of develop ment efforts could happen. This was what differentiate the gov ernment owned company from private owned company as the latter would only though of making profit.

Such policy was also practiced by the PAM DKI. This was proved by the structure of tariff which always included a tariff specially applied for social purposes. Based on the decision of the Gover nor in 1988, tariff for public hydrants or public taps and also for orphanage homes belonged to the public social tariff category which was Rp. 150 per m3. Thus, from policy point of view the policy applied to HU and TA was not new.

The question was if such policy existed why would it need a special project for clean water supply in slum areas (poor area) such as the Poverty Alleviation Program

There were a number of reasons such as,

- ☐ Clean water supply for slum area which notably occupied by poor people was not a priority. In other words the policy may exist but in the field it was not considered as urgent
- ☐ The revenue and potential margin collected was not yet enough to subsidize the low economic strata. In other words, the cash flow of the company may be in danger if they subsidize to much to the low economic strata. Thus, it means that the poor people may have to wait and be patient. This is normal as the company has to be self sufficient as well.
- ☐ The capacity of the personnel that specially manage the commu nity in the slum areas are not yet enough as the methods is different from those used for regular PAM customers which mostly are from middle or high economic strata. The limitation f person nel may be the obstacle that clean water supply in slum areas or for poor people cannot be managed thoroughly yet.
- ☐ The slum area is located too far from the existing PAM pipe line so that the investment to install new pipe line to the area will be too high for the company. This reason however may not be appropriate as at present there are a number of HUs which are located in areas with existing PAM pipelines.
- ☐ etc.

Nevertheless, all the above reasons may be simplified into one namely, **'the lack of incentive'.**

Thus, before the existence of the Poverty Alleviation Project, the rareness of water supply project for poor community area/slum area was because of the lack of incentive for the company. The initiation of the government assisted project of HU and TA, has encouraged the PAM company to provide additional number of public HU and TA. Apparently, the government assisted HU and TA has function as an incentive to PAM to reactivate their efforts to serve poor community which is actually one of their task as well.

Such a situation may not happen in North Jakarta only, but it may also happen in other PAM in other cities. So, the central government may need to reconsider their policies so as to question whether the central government should always provide incentive to encourage the respective company in serving the poor people which actually is one of their task. Or, would the company provide services to the poor community only if there is an incentive from the central government. This is important as it is the poor community who will get the impact either positively or negatively.

6.3. Clean water Consumption and the Community's Expenditure for clean water.

One indicator to measure the quality of life of a certain community was the amount of water consumed. The amount of water con sumed of course was influenced by several different factors. In areas where clean water was abundantly available and was in a relatively short distance , education and knowledge on hygiene, health and sanitation have a lot of influence to the amount of water consumption. Whereas in areas which are relatively far from clean water sources, distance and easiness in getting water are the main factors that influence the amount of water consumed. Places where the community have to buy the clean water and the economical condition of the community itself are also the main factors that influence the amount of water consumed by certain community. All the above mentioned factors in North Jakarta have become a complex issues which resulted on the reality of clean water supply consumption.

The following description only describe the clean water consump tion of community that consumed HU and TA water either those of government or private HUs and TAs that were taken as samples in this monitoring evaluation. In other words the following will provide a portrait of the condition of the community in the slum area in North Jakarta regarding their clean water consumption.

The Research and Development Section of PAM DKI Jaya have two standard for water consumption of the community in DKI Jakarta, namely, 150 l per person per day and 100 liter per person per day.

The standard of 150 liters per person per day is assumed to be used for:

* drinking and cooking : 15 l
* bathing : 45 l
* washing : 25 l
* others : 65 l

Whereas the division of use of the 100 l/person/day is:

* drinking and cooking : 15 l
* bathing : 45 l
* washing : 25 l
* others: 15 l

The difference is only in the amount supposed to be used for other purposes.

However, in reality consumption of clean water of the community in the slum area in North Jakarta was as follow:

Consumption liter/capita/day	HU		TA	
	Direct customers HU	Water vendor's customers	Direct customers TA	Water vendor's customers
< = 5 l/capita/day	1%	2%	34%	0%
>5 - 10 l/capita/day	0%	10%	37%	17%
>10 - 25 l/capita/day	19%	35%	17%	38%
>25 - 50 l/capita/day	39%	30%	6%	25%
>50 - 88 l/capita/day	26%	15%	3%	17%
>88 l/capita/day	15%	8%	3%	3%

The above table show that there was higher percentage of HU direct customers that consumed 25 liter per person per day compared to those who bought from water vendors. No data was available on their water consumption before the existence of HU. Assuming that formerly they bought water from water vendors (because the water source was too far from their houses), so the impact of the existence of HU was mainly that as it was closer they could go and bought water directly at the HU. Being so, they could

get more water with the same budget they saved for clean water. Thus, indirectly it increased the quantity of water they consumed.

Majority of TA customers however, consumed clean water less than 10 liters per person per day.

The comparison between the number of HU direct customers and HU water vendors customers was the opposite of the comparison of TA direct customers and TA water vendor customers. HU water vendor customers did not reflect that they were of the better economic strata as can be seen on the percentage of those who consumed less than 25 l/person/day. It may be concluded that the location of HU (distance to get water directly) was one important factor. On the other hand, TA water vendors customers were usually those of the better economic strata as can be seen that their daily consump tion was higher than TA direct customers.

However, the family expenditure on clean water may give a different picture as can be seen below:

Expenditure on clean water Rp./Family/Month	HU		TA	
	Direct customers HU	Water vendor's custtomers	Direct customers TA	Water vendor's customers
< = Rp 1,000	3%	0%	46%	0%
> Rp 1,000 - Rp 5,000	42%	26%	34%	13%
> Rp5,000 - Rp10,000	47%	40%	11%	33%
> Rp10,000-Rp15,000	0%	18%	9%	29%
> Rp 15,000	0%	16%	0%	25%

The above table show that majority of community spent up to Rp. 10,000 monthly. It should be noted however, that those who got water by themselves got more water than those who bought from water vendors as described earlier. Thus the expenditure did not necessarily reflect the amount of water consumed.

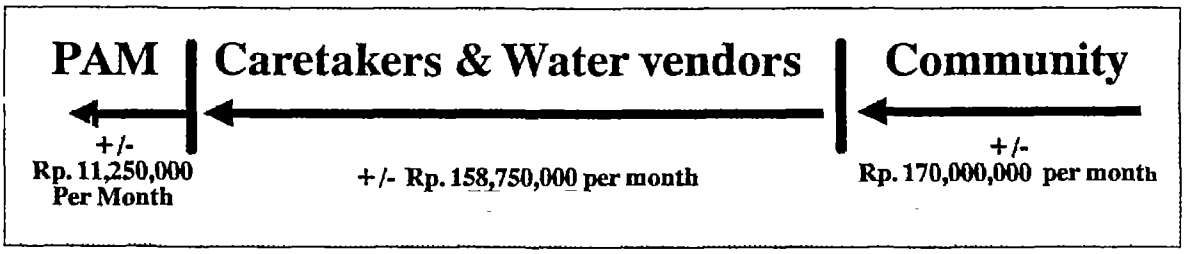
There was high percentage of TA water vendor customers that spent more than Rp. 10,000 per month for clean water. On the other hand, quite a high percentage (46%) was also found on TA direct customers that spent less than Rp. 1,000 per month for clean water. These were the community group that consumed piped water only for very special purposes (drinking and cooking) and used other sources such as well water or rain water, etc for their other purposes.

The above analysis show that water consumption of the community in the slum area of North Jakarta was much lower than the standard set for people in the city. Thus, it also reflected their living standard and economical condition.

The low consumption of clean water was very much influenced by two factors namely, the distance of water source (HU and TA) and the water price. The distance was the result of the appropriateness in locating the HU and TA, while the price was influenced by many different factors see 5.2.2. and 5.2.3.)

The amount of water distributed to the community during the 4 months monitoring period was about 300,000 m3. This amount was taken from the notes from 94 HUs and 10 TAs without considering the many different factors that influenced the noting of the amount of water such as the unfunctioning of the water meter, such as noting which was based on estimation only, etc. Thus, the averagely monthly consumption was **75,000 m3** per month. To simpli fy the analysis, a standard of Rp. 150 per m3 was used as the price that should be paid by all HUs. This means that PAM income from the HUs was around Rp. **11,250,000** per month. If only the caretakers sold the water at ceiling price, it means that they collected Rp. 37,500,000 per month. In reality, many of HU care takers sold at much higher price than the ceiling price.

Considering the average price paid by the direct customers which was Rp. 1,150 per m3 and water vendor customers that averagely paid Rp. 2,990 per m3, it means that the community expenditures on clean water was around **Rp. 170,000,000.** (for 94 HUs and 10 TAs). Thus, there was a difference of **Rp. 158,750,000** per month which was enjoyed by the different group of people in between the PAM and the water users or the community as illustrated below:



Such an interdependent relationship was like a "balloon". Any action taken that benefited one group will certainly disadvan tage the others. For example, if the target group was the public community, like it or not, the caretakers and water vendors, should be eliminated which means this group of people may loose their source of income. Such cases, of course, is a very difficult choice and decision to make.

- The dilemma is that based on **management norms, administration and other factors just to make things go on smoothly and easily**, it is the caretakers who should be maintained and let the water vendors die. This can be done by constructing more HUs and TAs so that the dissemination is such that the distance becomes so short to a level that water vendor is not needed anymore. Such method may be easier for the government as the caretakers usually have permanent address and have some supported facilities such as land,etc.
- On the other hand, considering **productive employment aspect, history and social justice** regarding the water vendors, they should be the ones prioritized. The water vendors are the ones who have provided clean water services to the community for a long time. They are the ones who have been the heroes of many families as they have helped them overcome their problem. Whereas the caretakers can be considered as a group of people that are lucky as they are chosen as caretakers regardless the different factors that influence it. Besides, to many caretakers, the income from HU and TAs are only additional income so that they may not be in big problem even if they stop being caretakers. On the other hand, thousands of water vendors may be in great problem if they lost their job, which to most of them is the only job and the only source of income.

Each one may have its consequence and impact . So, policy makers should carefully considered all and every aspects.

The monitoring team however wonder why no water vendor was given the chance to be HU or TA caretakers ? Whereas actually they were the front troops that bring clean water to the families who were in need of clean water.

After they have rendered the communities with such a needed and along time services; where will these water vendors go..?.

Helping the parents from the burden of family works: get the water directly from the HU

6.4. Control by the government vs private sector

There are several ways, each of which may have its advantages and disadvantages in overcoming clean water supply problem in the slum areas which may also mean how to get clean water closer to the community that live in the slum areas. It should be noted too, that one method which may be successful in one area may not be appropriate to be implemented in other areas because the natural condition of the area, the community habit and socio- cultural condition and the condition of the respective PAM may not be the same.

For example, For North Jakarta, the best way to overcome the water problem in this area was by using PAM water because there was no spring and it was not possible to utilize ground water which quality was very low because of intrusion of sea water and also contamination from industrial waste. In other cities the condition may be different as there may be other alternatives but the PAM water, for example, spring water or utilization of ground water or mini plant of surface water puri fication, etc which could be more economical than using PAM water. Besides, it was also independent as it does not depend on one centralized source of water. Therefore, Clean water supply program of the Poverty Alleviation Program does not necessarily have to be identical as utilization of PAM pipe line in the respective city. Besides, the heterogeneity of ethnic group of the slum areas in other places or other cities may not be as complex as those in North Jakarta. So, in other areas it may be possible that the cultural and traditional values can be utilized as the basis of overcoming the water problem within certain group of community.

The condition of the PAM DKI may also be very different to those in other cities. Having so many customers of different economic strata it may not be difficult for PAM DKI to practice cross- subsidy. In other cities , though the PAM wants to practice cross-subsidy where the income and profit from one group can be allocated to cover the cost for social services, but their income may not be enough to practice such cross-subsidy system.

The above illustration show the importance of practicing 'multi- channel' approach in order to overcome the problem of the commu nity in the slum area.

Particularly for the case of the slum area in North Jakarta, the following alternative should be considered, namely:

Does it really have to wait for HU from the government in order to overcome the problem of clean water supply for the community in the slum areas in North Jakarta. Whereas actually, only a few hundreds meters away there have been a number of houses that have had a pipeline from PAM. It reflects the heterogeneity of the area as even in one RT the better economic strata who live at the side of the main street may have had PAM pipe line in their houses and only a few hundred meters behind, hundreds of houses which also means hundreds of families have to face water problem daily. An alternative would be that if the PAM customers are allowed to sell

water to the community around their house, it is likely that there will be additional of hundreds of HUs without PAM or the government have to invest again.

It means that a policy should be made whether the efforts to bring clean water closer to the community in the slum areas should be controlled by the government only, that was by the installation of HU and TA, or to let private sectors to be involved, by letting the PAM customers to sell water to public. The following discussion may give a better picture on this issue.

- Clean water as one of human basic need is a sensitive issue, especially to poor community in the slum areas. To them, clean water worth the same as rice. So, a little changes either in its supply or its price will make thousands of people feel unsafe. So, it may not be wise to let the private sector alone to deal with such issues.
- If it is totally given to the private sector to manage, the water price will be very much influenced by the supply-demand situation where if there are many PAM customers sell water there will be tight competition that the water price will get cheaper. But it should be noted that most of PAM customers only sell water as additional income. Consequently they will not allocate much of their time just for selling water instead they will only sell water if they have the time. Apparently, once they felt that selling water do not give them a good profit anymore, they will stop selling. If many of them stop selling water, supply of water will decrease and therefore the price will go up again, and so on. The ones to endure the impact are the water users, the poor community as the supply and also the price cannot be stabilized. Such basic need of course should be managed well and should never be put in unstable condition.
- On the other hand if it should be totally managed by the govern ment, the first problem will be the investment needed as it can be very big investment considering the number of slum areas in Indonesia. Moreover if it is not only a project to be managed but more of a long term water supply project to fulfill the community's needs for clean water.
- Besides, because of the limited control done as well as the existence of many different interest, the original objective and methods may be deviated that it becomes ineffective during its implementation. In other words at certain scale, government may not be able to control the field activities effectively. The following are some examples of the lack of control on the HU :
    - * 34% of the HU caretakers sell water above the ceiling price set by the government ever since its operation started.
    - * Some caretakers suck water directly from the inlet pipe by using water pump ever since they started to operate the HU al though it was forbidden.
    - * The fact that several HUs were owned by one person who used several different names for formalities only.
    - * etc (see chapter 4 and 5)

Such deviations happened even though during the first phase there were only 94 HUs and 10 TAs and it was PAM DKI which in some aspects had better capability compared to other PAM in other areas.

It may be wise to consider dual track approach in implementing clean water supply project for the poor community in the slum areas, namely,

- ☐ Firstly, The government start the program by constructing some assisted HU and TA where all the facilities and standard price will be set by the government so as to open the channel and to determine the standard price of water. Thus, if later on some private PAM customer will sell water, they may not be able to sell at high price because there are government HUs that sell water at cheaper price. In other words the government HUs will be used as standard to be followed. However, to achieve such situa tion it is important that the government HUs should be managed as such that they are respected by the private HUs.
- ☐ After the construction and operation of the government HUs, the private sectors (PAM direct customers) are given permission to sell water. Formalities of getting such permissions should be made as simple as possible so that there will be a lot of private sectors that are interested to sell water because the more people to sell the better services of water consumption would be achieved.

In other areas where the problems are not as complex as in North Jakarta, co-financing project may be possible to be practiced. In this case, by cooperating with community organizations/NGOs that are involved in clean water supply. The respective NGO may collect fund from the community and from

different other sources. The collected fund plus the government fund can be used to con struct a sustainable clean water supply facilities in slum areas. The cooperation between the government and the NGO has the same objective namely to provide clean water to the poor community in the slum area. Whereas sustainable here means that the NGO should be responsible over the physical construction of the facilities and at the same time they, together with the community, should maintain the facilities and be self-sufficient. Of course the NGO should be one who have had the experience and have shown certain level of capacity and capability in managing such a program. Such co-financing program pattern may also indirectly provide the opportunity for community organization to participate in serving basic need to the community. On the other hand it may be a concrete form of the government decentralized policy in overcoming community basic need problems and in opening employment opportunities.

The only woman water-vendor in the surveyed area

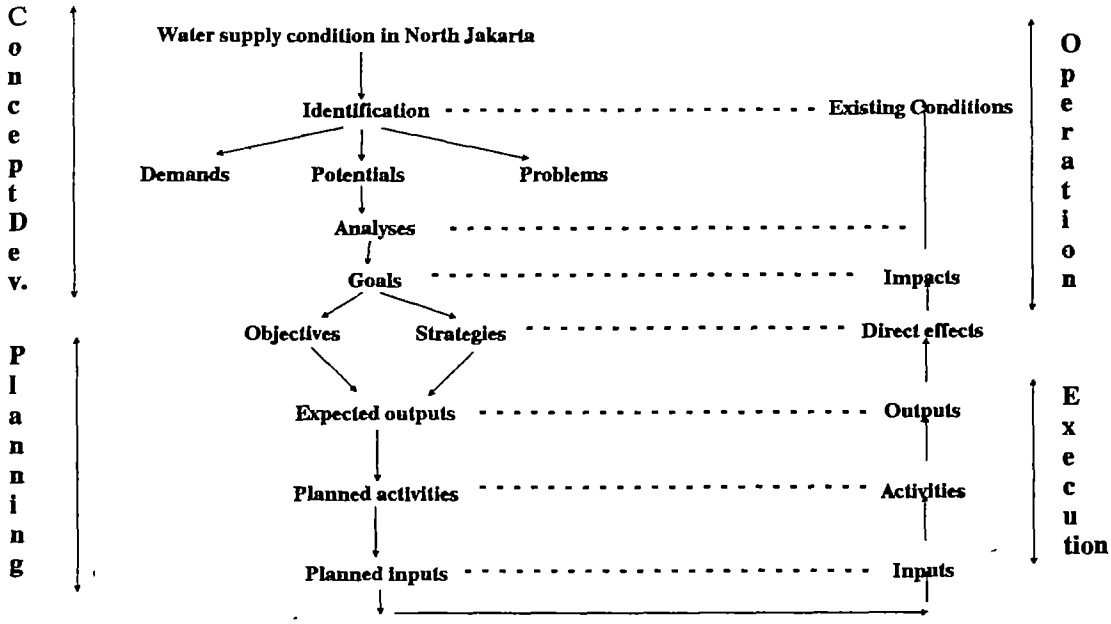
6.5. Monitoring problems on HU/TA program.

The main objective of a monitoring is to make sure that the implementation and operation of a project is in accordance to the original plan as well as to collect data which may be used as the basis of an evaluation whether or not the implementation is in accordance to the plan. These will be valuable input to planners so that they may take remedy action as early as possible when necessary.

A program, actually can be divided into several phases based on the type of activities which one is related to the others. A monitoring and evaluation which can be done in accordance with the phases of the program activities will be more effective and useful for the benefit of the program itself. It is such because the condition of a program at a certain period of time cannot be evaluated or analyzed if it is not related to the earlier condi tion and situation. For example, the problem of small water discharge found at several HUs so that the caretakers should use a pump to suck water from the inlet pipe. This problem seem to happened at the operational stage. Actually, looking back on the choice of location, such problem should have been anticipated during the planning stage or before the construction began by considering the hydraulic gradient of the location and the water discharge of the water source.

In analyzing the monitoring itself could have been better if divided into , the following phases are identified. A better results could have been achieved if the phases as shown in the following diagram are followed.

Diagram 1.: Phases of HU & TA program and monitoring



The dashes lines shows the best time to do monitoring and evaluation. Monitoring opportunities means to find out whether the implementation is in accordance with the plan whereas evaluation opportunity means to identify to what extent an adopted hypothe sis is effective. Therefore, a monitoring and an evaluation should not be done separately because they support each other. Conducting a continuous monitoring at certain intervals or from one phase to the other will be a better, easier, and faster way to identify any deviation or problems that arises during the project implementation so that immediate remedy action can be carried out before the project has gone too far. Thus, in the end the program may achieve its objective and is really imple mented according as planned.

6.5.1. Monitoring and Evaluation: The physical and non-physical aspects.

Referring to Diagram 1, in general there are two types of activi ties to be monitored and evaluated namely the physical activities as well as non-physical aspects of the activities.

a. The physical aspect

The physical aspects of a monitoring and evaluation includes: facilities, budget, materials, etc as well as the managerial aspects such as the project schedule, logistics, etc.

It is important to maintain an on going and continuous monitoring and evaluation even on physical activities. For example If the deviation is found after the physical construction is completed which means that the planning and the implementation does not fit each other, then it will be too late to take action to repair it or it may need a big budget in order to refit the construction to the plan.

- A real example regarding the HU project was the missing of some parts of the facilities of the HU such as the concrete apron, and drainage and also the poor work done so that there were a lot of leaks especially in the connection of taps and other pipe accessories. Such deviations could have been easier to be overcome had it identified while the construction was still going on. While the present condition when the project was over and yet there were a number of things found out still needed to be done, it was very difficult to do something about it.

Usually, monitoring and evaluation of a physical construction/activities is conducted by the field supervisors team. In this case should be done by DAB/Cipta Karya.

b. Non-physical aspect.

The non-physical aspects to be monitored and evaluated are the conceptual factors that influence the success of the program. For example, the implementation strategy, output and input which may have certain impact to the community participation, etc. An example regarding the HU/TA project in North Jakarta is as follows:

- Originally the project is to actively participate the community who are the target group of the HU/TA program. The community participation is meant to identify obstacle and also potential aspect which may not have been identified earlier. Being such, it is expected that the communication and information flow will be better at the community level so that the program becomes trans parent to every one and therefore it supports the success of the program. Such is the plan. The reality however, majority of water users, the water vendors and the community, even the caretakers themselves did not know about the real objective of the HU/TA program. This was because the community participation was only up to the kelurahan /LKMD level. The HU locations were chosen by the kelurahan personnel, PAM personnel or certain people that had their own interest or by one with certain power in the community, to be agreed by the LKMD. As a result most of the HU did not function as it should be. The goal was not achieved as in reali ty both the HU caretakers and the community considered the HUs as privately owned and was merely operated as business to get profit.

It was mentioned earlier that the physical activities should be monitored and evaluated by the Directors team. But, it is not yet decided nor that it is clear who is to do the monitoring and evaluation for the non-physical aspects. Whereas actually from the discussion in the earlier chapter, specifically for this HU/TA program it is the non-physical aspects which may have direct impact to the long term goal and success of the HU/TA program.

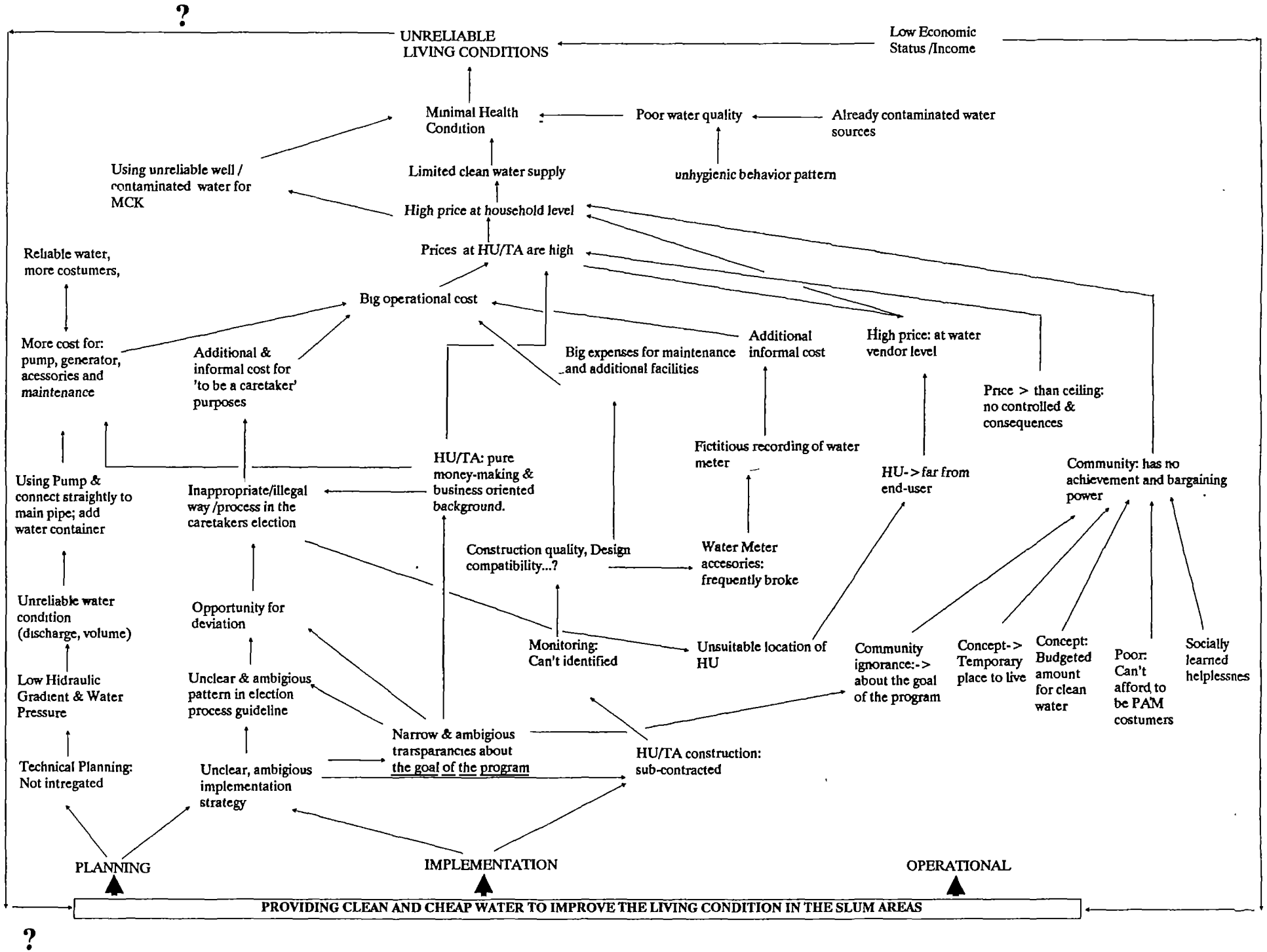
The monitoring and evaluation of non-physical aspects should not only include data recording and the interpretation of the obvious cases, but it should also analyze various other kinds of data and the interpretation should be done conceptually, perceptively and by closely considering the future of the program. Thus it needs a certain degree of sensitivity, attention, and also a specific approach which may facilitate better and wider reach in data and information gathering. For certain non-physical aspects, such sensitivity and keenness may avoid the program from complicated problems in the long run as there will be immediate feed back needed to take remedy action. This is especially important to any issues regarding the transparency of the program as discussed in chapter 5 (see also discussion on social justice and psychologi cal satisfaction in 6.2).

Diagram 2 illustrate a logical framework as the result of a conclusion made regarding the problems of the HU/TA programs as discussed in the earlier chapters. The diagram may give a better picture on the importance of monitoring and evaluation on both the physical and the non-physical aspects and also the phases of the program activities.

6.5.2. Monitoring and evaluation: The parties involved and their roles.

Regardless the physical and non-physical aspects of a monitoring and an evaluation, the involved parties very often regard it as a kind of control system; the negative connotation is to find the mistake. This resulted on negative understanding on the community so that they always try to avoid the interview or to avoid to answer any questions based on fact but rather to mention only the good things. Consequently facts and data collected would not help to understand if there ares any problems or other obstacles re garding the progress and future of the project. Instead of sup porting the monitoring and evaluation process for better results, the data and facts collected may even become obstacles to the success and achievement of the goal of the program. Thus it also disadvantages the community.

The community perception that 'big brother is watching' may become a boomerang to the progress and development of the program. So, such perception should be changed until the community understand that a monitoring and evaluation is not one way commu nication or to find the mistakes but it is a partnership in managing the program which together they should achieve the best result for the benefit of the community themselves. Being so, assertiveness (openness) which are the most important factors in a


?
UNRELIABLE LIVING CONDITIONS
Low Economic Status /Income
Minimal Health Condition
Poor water quality
Already contaminated water sources
Using unreliable well / contaminated water for MCK
Limited clean water supply
unhygienic behavior pattern
High price at household level
Prices at HU/TA are high
Reliable water, more costumers,
Big operational cost
More cost for: pump, generator, acessories and maintenance
Additional & informal cost for 'to be a caretaker' purposes
Big expenses for maintenance and additional facilities
Additional informal cost
High price: at water vendor level
Price > than ceiling: no controlled & consequences
Fictitious recording of water meter
HU/TA: pure money-making & business oriented background.
HU-> far from end-user
Community: has no achievement and bargaining power
Using Pump & connect straightly to main pipe; add water container
Inappropriate/illegal way /process in the caretakers election
Construction quality, Design compatibility...?
Water Meter accesories: frequently broke
Unreliable water condition (discharge, volume)
Opportunity for deviation
Monitoring: Can't identified
Unsuitable location of HU
Community ignorance:-> about the goal of the program
Concept-> Temporary place to live
Concept: Budgeted amount for clean water
Poor: Can't afford to be PAM costumers
Socially learned helplessnes
Low Hidraulic Gradient & Water Pressure
Unclear & ambigious pattern in election process guideline
Narrow & ambigious trarsparancies about the goal of the program
HU/TA construction: sub-contracted
Technical Planning: Not intregated
Unclear, ambigious implementation strategy
PLANNING
IMPLEMENTATION
OPERATIONAL
PROVIDING CLEAN AND CHEAP WATER TO IMPROVE THE LIVING CONDITION IN THE SLUM AREAS
?

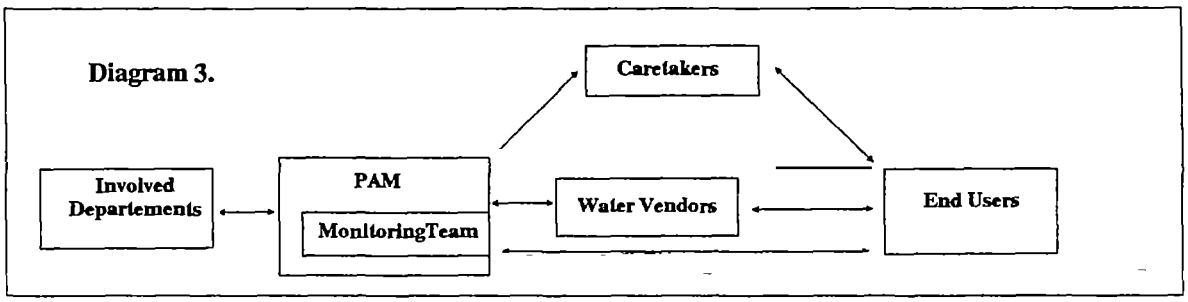
monitoring and evaluation may exist. All parties involved in a monitoring and evaluation should feel that they are in the same boat instead of watching each other's boats.

Thus the success and benefit of a monitoring and evaluation is very much influenced by the same understanding of the basic concept of a monitoring and evaluation of both the team and the program caretakers and all the parties being monitored and evaluated.

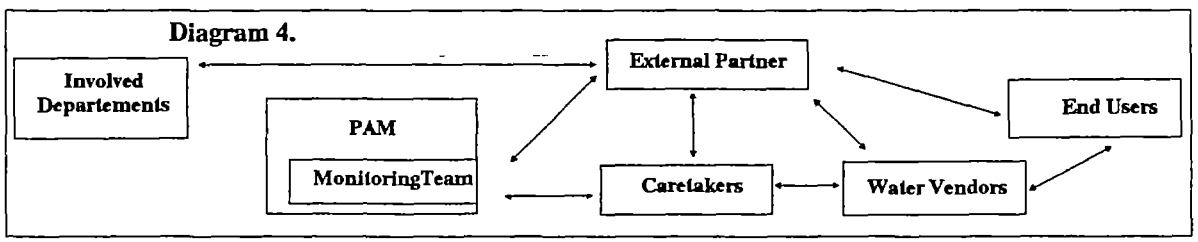
The following are suggestions of two general scenarios /pattern of monitoring and evaluation particularly for HU and TA program.

The first scenario is that the monitoring and evaluation is to be done by PAM. The advantages and disadvantages of such monitoring and evaluation pattern are

- Access to data and facilities can be maximum; utilization of in- house facilities.
- Monitoring and evaluation need a lot of personnel and time allocation; if PAM personnel have to do the monitoring and evalu ation and at the same time continue to do their daily job, it will be too hard for them.
- As mentioned earlier, monitoring and evaluation should also look closely into the non-physical aspects. On the other hand, the in- house human resources of PAM are mainly those with technical background and orientation that their mind are used to practical and patternized things. Whereas field monitoring and evaluation require more of conceptual, interpretation and decision making process.
- Other disadvantage which may happen is that PAM as the program executor at certain level may not be objective enough if they are to monitor and evaluate their own program. In other words, asser tiveness may not be fully achieved.



The second scenario is to involve an independent party as a partner to PAM in conducting monitoring and evaluation. It means that the independent party should not do it all by themselves either, but to act as partner add-in the PAM in-house monitoring team so that both parties can support each other especially regarding the out flow - in flow of data between the two parties involved. Besides, data from an independent party may be more objective in its interpretation and they provide interpretative data (result of monitoring and recommendation (result of evaluation) on some factors which may not be identified if the first scenario is used.



Another advantage in involving independent party is that indirectly it shows a neutral and objective opinion based on reality. The second scenario is illustrated at diagram 4.

Based on the logical framework of the existing problems (see diagram 2) and also based on the condition that the HU/TA program is already at operational stage, the best factor to be used as standard for the monitoring in order to achieve its goal would be the 'water price at household level' who buy water

directly from HU or from water vendors. Situation and condition is such that by knowing any changes of water price at household level, it may be traced back to find the reasons and factors that caused the in crease of price from the very beginning. So, a remedy action can be carried out as early as possible and be exactly in accordance to the problems and factors to be overcome.

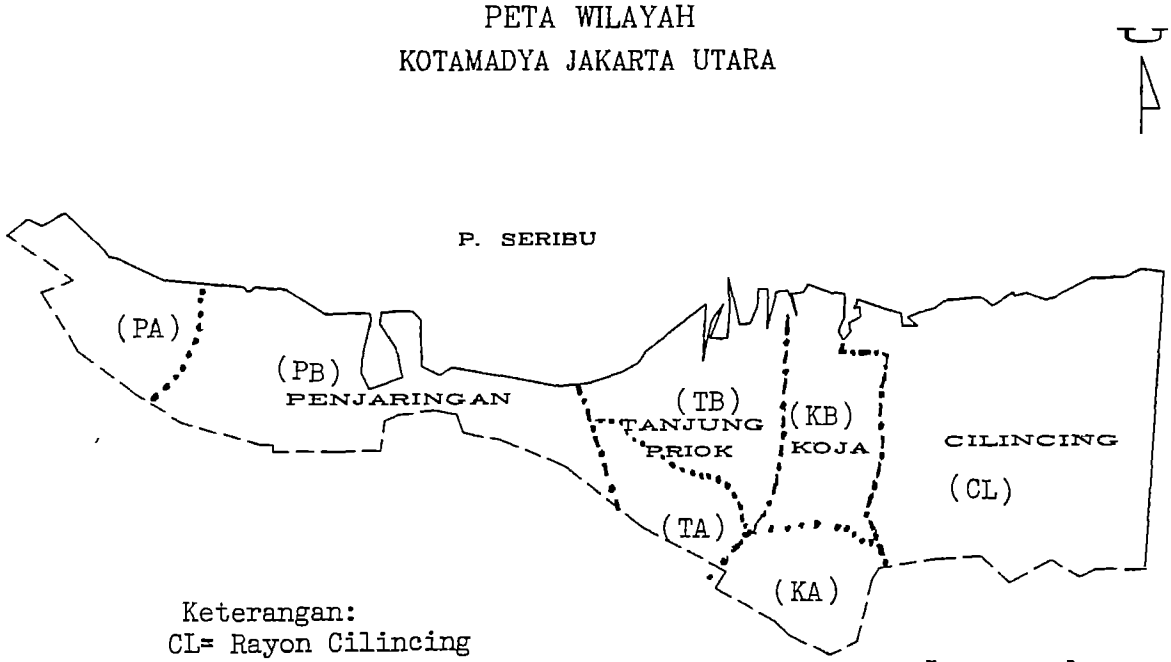
However, it is just as important to have a clear decision on who is going to do the monitoring and evaluation, and to whom the result of the monitoring and evaluation should be submitted to be further processed. Because, the result of the monitoring and evaluation which may identify problems and deviations of plan as well as the factors that caused them and the proposed strategy to overcome it may not be useful unless there is a further action.

Those who know the fluctuation of water price at household level are: the HU/TA caretakers, the water vendors and the household who are the water users. From the logical framework however, it can be seen that the disadvantaged group is the household as the end-users (It may be assumed that the information from the water users/household may be the most objective ones. In such a case, they may be the best source of information and therefore they may also the best one to do the monitoring, specifically for water price at household level.

On the other hand, changes on water price sometimes happened beyond the control of the caretakers (whether they like it or not they have to increase the water price). In this case, the care takers may be the best and reliable source of information for a monitoring. Result can be better if the caretakers themselves like to be involved in conducting the monitoring,

The difficulties anticipated would be how far , either the care takers or the household water users would voluntarily like to participate in the monitoring. From a trial effort done by YDD team in two months during the monitoring period, result of their participation have been quite promising. During the two months period, the monitoring team visited each of the 82 heads of RT that represent all the location of HUs and TAs including the area where the water from the HU and TA was sold. The monitoring team asked them to make a monthly report on the fluctuation of water price in their area. For this, the team sent some forms to be filled up to the heads of RT and asked them to return it by post after being filled up (the envelope and stamp were made avail able). From the two forms sent, 66 (80%) were returned. This shows that such system may be a good potential source of informa tion . The question was to whom should the information be sent. The most suitable choice would be the PAM of North Jakarta as the company that was responsible on the overall management of the HU and TA. However, people may question PAM credibility to do such monitoring regarding water price because as the government owned company PAM was expected to be self-reliant while increase of water price means increase of PAM income. Actually such doubt should not happen because in reality, the factors that causes the increase of water price mainly happen at the level of the care taker and water vendors.

PETA WILAYAH
KOTAMADYA JAKARTA UTARA

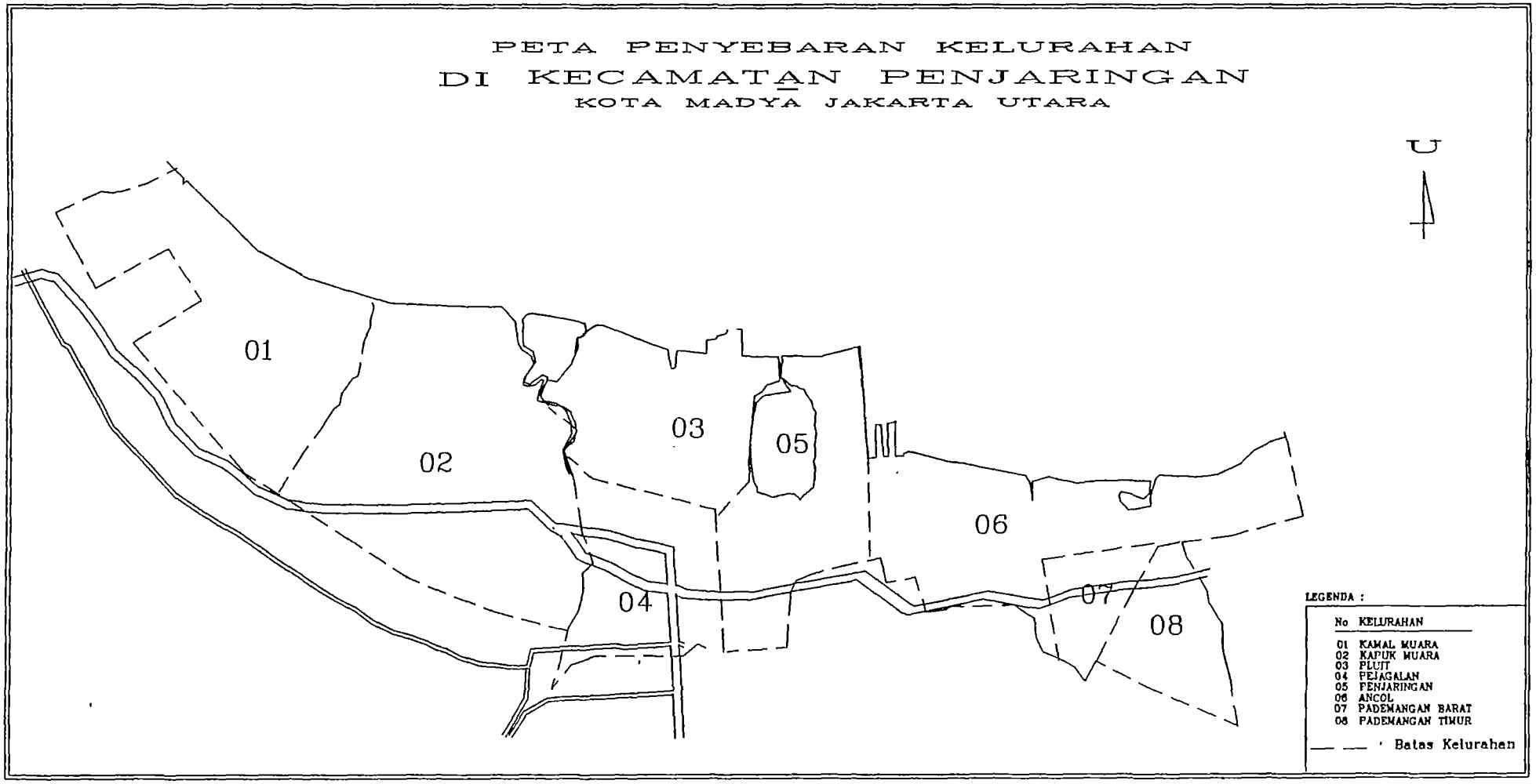


Keterangan:
CL= Rayon Cilincing
KA= Rayon Koja I
KB= Rayon Koja II
TA= Rayon Tanjung Priok I
TB= Rayon Tanjung Priok II
PB= Rayon Penjaringan II
PA= Rayon Penjaringan I

Legenda :

——— Batas Propinsi
– – – – – Batas Kotamadya
-.-.-.-. Batas Kecamatan
..... Batas Rayon

PETA PENYEBARAN KELURAHAN
DI KECAMATAN PENJARINGAN
KOTA MADYA JAKARTA UTARA



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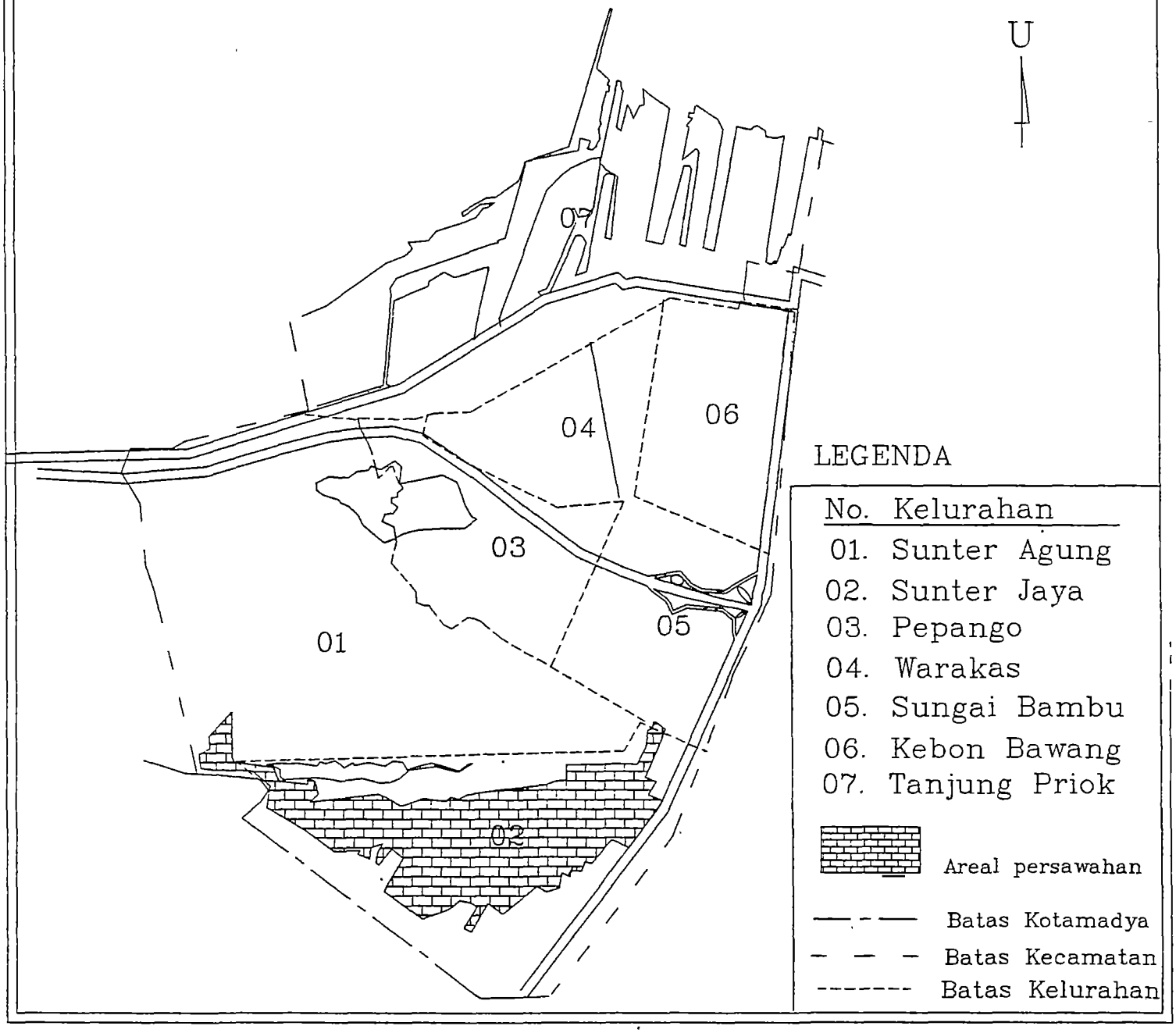
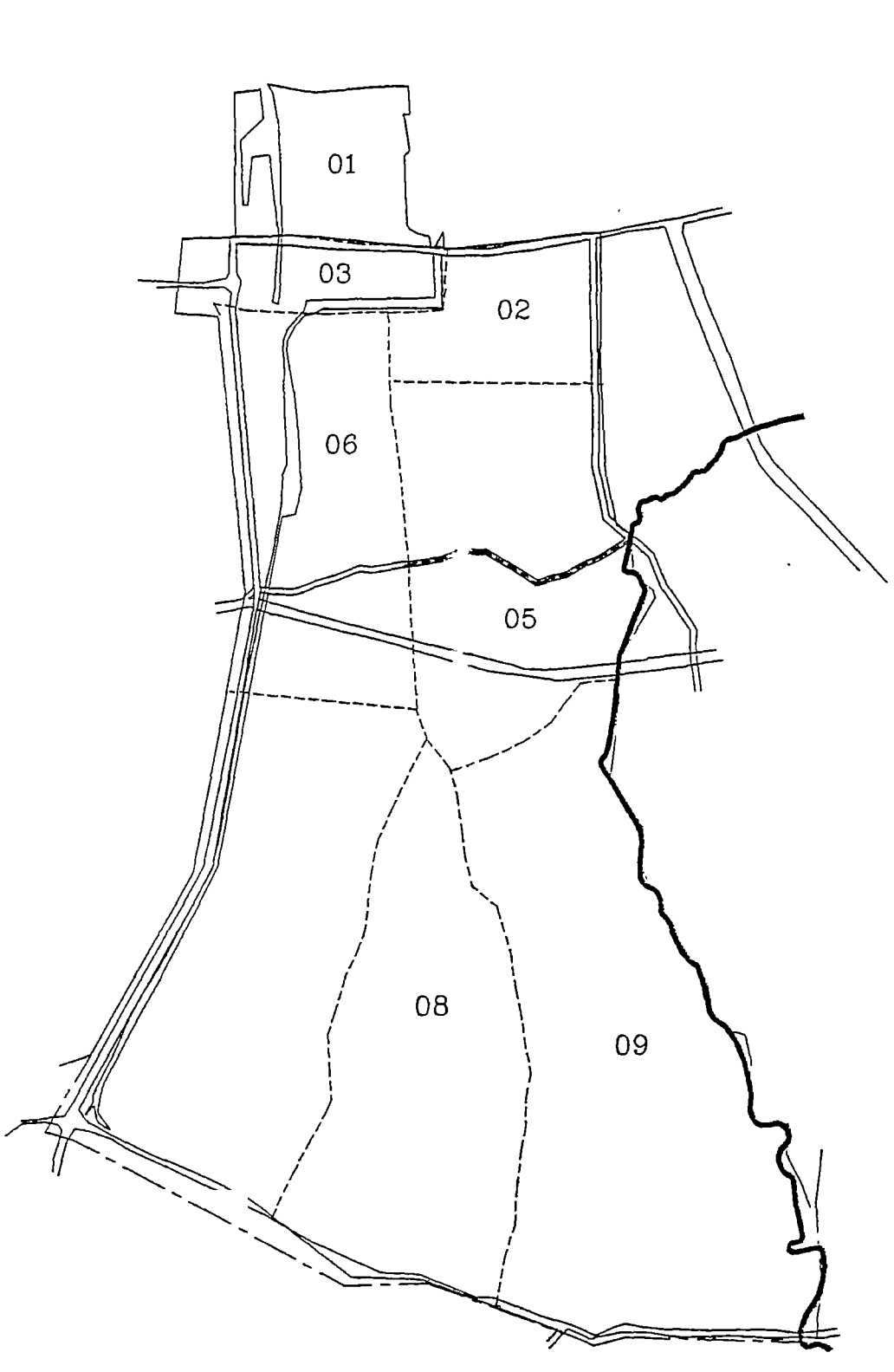
DI KECAMATAN TANJUNG PRIOK
KOTA MADYA JAKARTA UTARA



PETA PENYEBARAN KELURAHAN
DI KECAMATAN KOJA

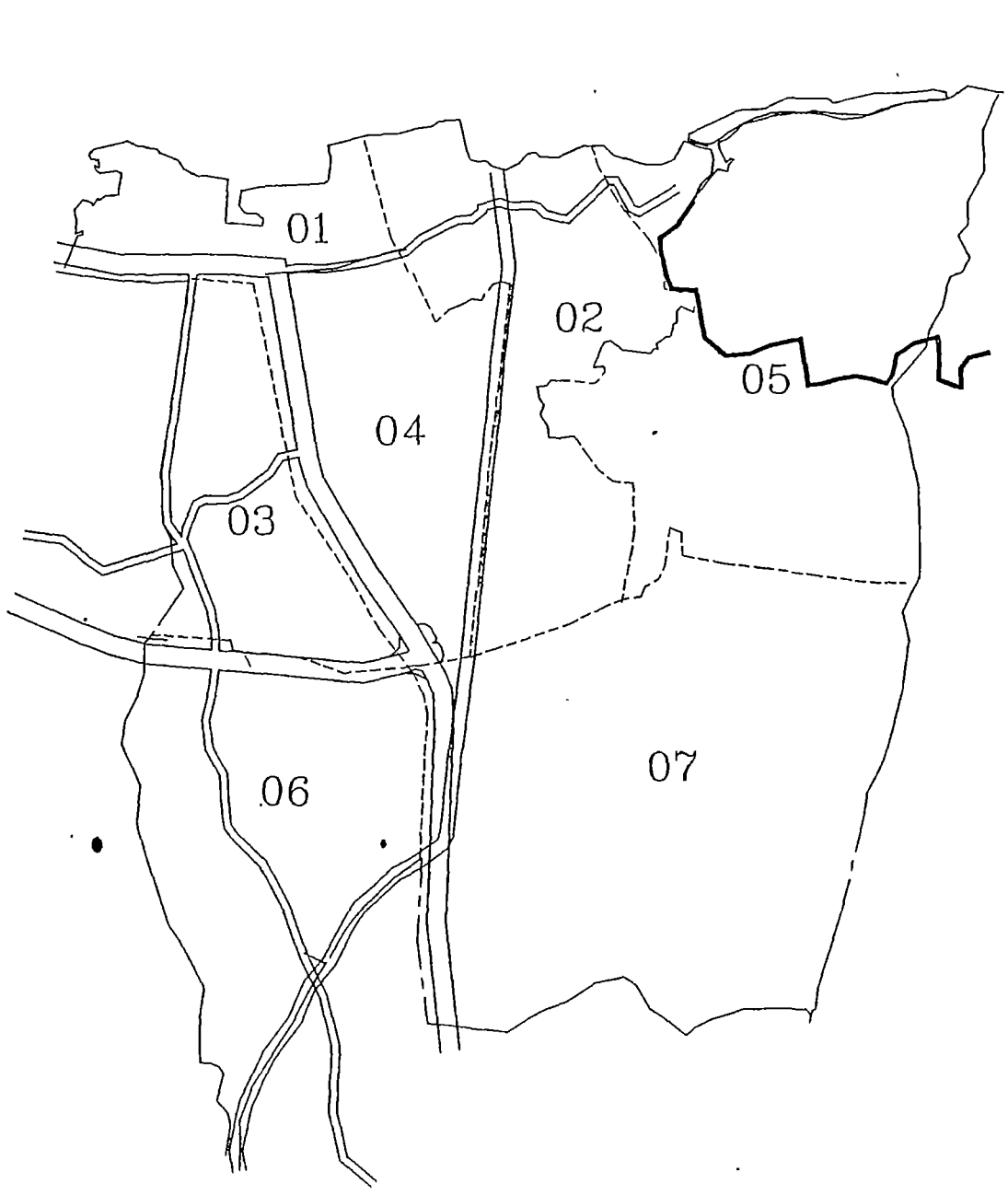
KOTA MADYA JAKARTA UTARA



LEGENDA

NO.	KELURAHAN
01.	KOJA UTARA
02.	LEGOA
03	KOJA SELATAN
04.	TUGU UTARA
05.	TUGU SELATAN
06.	RAWA BADAK
07.	KLAPA GADING BARAT
08.	KLAPA GADING TIMUR
09.	PEGANGSAN II

PETA PENYEBARAN KELURAHAN
DI KECAMATAN CILINCING
KOTA MADYA JAKARTA UTARA

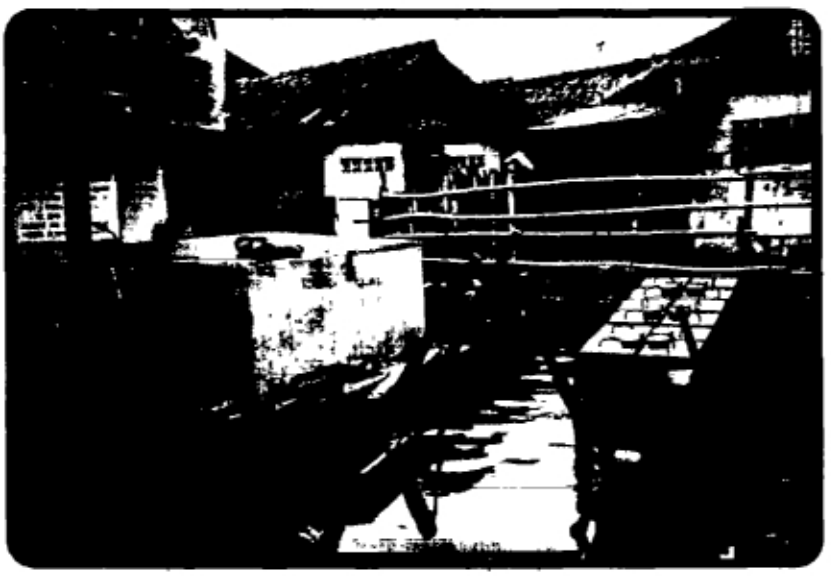


LEGENDA

01 KALI BARU
02. CILINCING
03. SEMPER BARAT
04. SEMPER TIMUR
05. MARUNDA
06. SUKAPURA
07. ROROTAN

MONITORING DAN EVALUASI HIDRAN UMUM DAN TERMINAL AIR DI JAKARTA UTARA

Laporan Akhir



Kerjasama antara:

Badan Perencanaan Pembangunan Nasional (BAPPENAS)
United Nations Children's Fund (UNICEF)
Yayasan Dian Desa

Yayasan Dian Desa
Yogyakarta
Mei, 1990