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REPORT ON
COMMUNITY BASELINE SURVEY

INCORPORATING
KNOWLEDGE – ATTITUDE – PRACTICE
& CUSTOMER SATISFACTION

NINH KIEU DISTRICT – CAN THO CITY

Hanoi, March 2009

Ministry of Construction – Hanoi

in cooperation with

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH

Technical Assistance on behalf of GTZ by GFA Consulting Group & Associates

Your contact
with GFA Consulting Group GmbH

Gudrun Krause

Fax +49 (40) 6 03 06169

Email: gudrun.krause@gfa-group.de

Address

GFA Consulting Group GmbH

Eulenkrugstraße 82

D-22359 Hamburg

Germany

This report was prepared by

Center for Social Work and Community Development Research and Consultancy (SDRC)

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ABBREVIATIONS

BLS	Baseline Survey
CCU	Customer Care Unit
CPA	Community Participatory Approach
CPM	Community Participatory Management
CRM	Customer Relation Management
FGD	Focus Group Discussion
Hh	Household
IdI	In-depth Interview
IEC	Information - Education – Communication
KAP	Knowledge - Attitude – Practice
MO	Mass Organization
PAC	Public Awareness Campaign
SDRC	Center for Social Work and Community Development Research and Consultancy
VND	Vietnam Dong (currency)
WSDC	Can Tho Water Supply and Drainage Company
WWM	Waste Water and Solid Waste Management

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EXECUTIVE SUMMARY

This baseline survey (BLS) was implemented in 5 wards of Can Tho City's Ninh Kieu District in the scope of the German- funded Waste Water and Solid Waste Management Program (WWM), which is currently implemented in six provinces of Vietnam. The objective of the BLS was to determine the current knowledge, attitudes and practice of people regarding waste water and environmental sanitation services at the household and community level. The study aims to identify, among other things, the most effective means of informing, educating and communicating with the community in order to improve the quality of the Can Tho Water Supply and Drainage Company (WSDC).

The survey used a participatory approach with the involvement of 12 WSDC- staff to collect data together with 4 staff of Ho Chi Minh City- based Center for Social Work, Community Development Research and Consultancy (SDRC). Survey tools were developed by a group of consultants, and tailored to the specific circumstances of each surveyed province. A four-day full-time training was provided to local staff of the 3 southern provinces in March 2008. The data collection in Can Tho City was done in May 2008. Data collection tools included: a household questionnaire that was used to interview 400 households in the survey area, focus group discussions (FGD) facilitated to 9 community groups and in-depth interviews (IdI) with 7 key informants at the city, district and ward levels. The analysis of quantitative data was done with the program SPSS (version 12.0), while qualitative data from FGD and IdI were categorized according to specific entries to illustrate and validate with quantitative data.

Can Tho City infrastructure for water supply covered 80 per cent of the population in the whole city, and more than 90 per cent of the population in Ninh Kieu District. The Water supply service was highly appreciated by 75 per cent of the users, while moderately appreciated by 22.8 per cent. Dissatisfied customers made up 1.5 per cent, mainly on low water pressure at rush hours to reach 2nd floor of buildings, and uncertain standards and norms to assess the quality of water by the users. Complaints of chlorine smell and particle residue were also cited as poor water quality for drinking. Current applied tariff of water supply (since 2004) was assessed reasonable by 64 per cent, rather expensive by 24 per cent and expensive by 10 per cent of the respondents.

Can Tho City infrastructure for waste water main drainage system could reach less than 50 per cent of the whole city, and more than 70 per cent of the main streets in Ninh Kieu District. Drainage system in residential areas was mainly set up by the residents themselves. The connection to main sewerage system was not equally possible on some main streets, lanes and alleys. 99.5 per cent of the surveyed households had in-door toilets; however the assessment of their cleanliness was based totally on the respondents' answers to time length of construction, time length for drainage of septic tanks. The knowledge about sanitation and heath was rather basic with only 53.5 per cent of the respondents fully aware of the cause-and-effect chain of consequences from inappropriate discharging wastewater straight into waterways and rivers. This insufficient knowledge was almost evenly distributed among male and female respondents.

More than half of the residents (54.8 per cent) were satisfied with the current drainage situation, the others- as well as even some satisfied residents- complained of the clogged flow of sewer drains, of the strong bad smell of the stagnant waste water in open drains and in some canals.

Ninety one per cent of the household respondents agreed on the necessity for waste water treatment. From these households, 93.4 per cent shared their willingness to pay for waste water treatment, but most of them were waiting for a tariff calculated by the government in full consideration of its affordability to the general public.

Ninh Kieu District organization for household solid waste has been allocated to the Urban Work Management Company. Household garbage collection was done daily in late

afternoon, from 5:00 pm onwards. Complaints on untidiness of garbage collection, of inappropriate schedule for garbage collection, lack of garbage bins at some empty plots and public places such as wet markets were mentioned by household respondents and FDG participants.

Information and Communication channels as practiced in the neighborhoods ranged from mass media means to interpersonal and interactive methods. Most of the respondents found that they got access to general information mostly transmitted through television, newspapers, radio broadcasting and loudspeaker airing. Most favored communication channels were in effectiveness decreasing order: home visits, neighborhood and ward meetings, public campaigns. Although scoring as moderately effective, written forms of communication such as newsletters, leaflets, posters, and notice boards were necessary to remind of local news or updated guidance and information. The ward loudspeaker system was mostly listened by households in narrow alleys and by elderly people in the early morning.

Influential persons for information communication identified were: ward leaders, neighborhood heads and professional staff dealing with the specific issues, i.e. WSDC representatives, health workers. Mass organization representatives were also cited along with respected persons in the community such as retired officers, but they received little preference from the general public when dealing with water supply, waste water and solid waste management issues.

Information and communication between service providers and service users in terms of complaint handling and solution finding re the WSDC- services have been assessed as poorly prepared and performed. The WWM- unit for Customer Care thus should work more effectively with that responsible for IEC-activities.

Recommendations are made with regards to improving the service delivery as well as the quality of the services of the WSDC. Recommendations are grouped into four sections: for water supply and waste water management handled by WSDC, for garbage collection performed by the Urban Management Office, for IEC activities from WSDC together with local authorities at ward, district and city levels, and for the WSDC Customer Care Unit.

CHAPTER I: INTRODUCTION

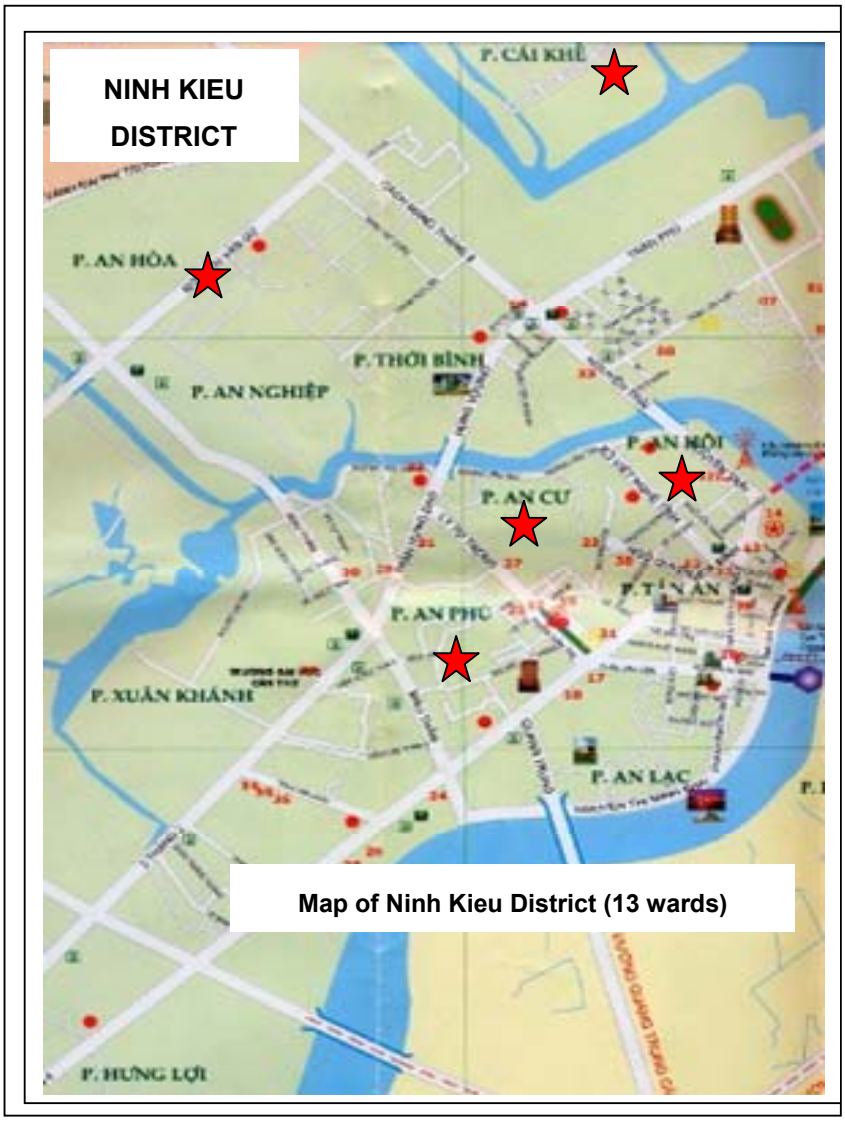
I. LOCATION OF SURVEY

Can Tho City is the main province among the 13 southern Vietnam provinces situated in the Mekong Delta, also called the "Nine dragon river delta" where the Mekong River finishes its 4 500km journey from China, Myanmar, Laos, Thailand down to Southern Vietnam before its entry into the South China Sea.

With a natural area of 1,390 sq.km on the western bank of Hau river, Can Tho City is located 169 km away from Ho Chi Minh City by land road. The population is 1,147,067 people in 2006. Basic infrastructure such as electricity serves more than 95.0 per cent of the population. Ninety per cent of its urban people and seventy seven per cent of its rural people have access to clean water.

Can Tho City has eight districts. Ninh Kieu District with its 13 wards is the hub of administrative, economic, educational and socio-cultural activities of the whole city. With a population of 208 000 people, Ninh Kieu district is striving to acquire the image of a "Green – Clean – Charming" district since January 2004.

(The symbol is to mark the 5 surveyed wards: An Hoi, An Hoa, An Lac, An Phu and Cai Khe in Ninh Kieu District of Cantho City).



Map of Ninh Kieu District (13 wards)

II. BACKGROUND OF THE SURVEY

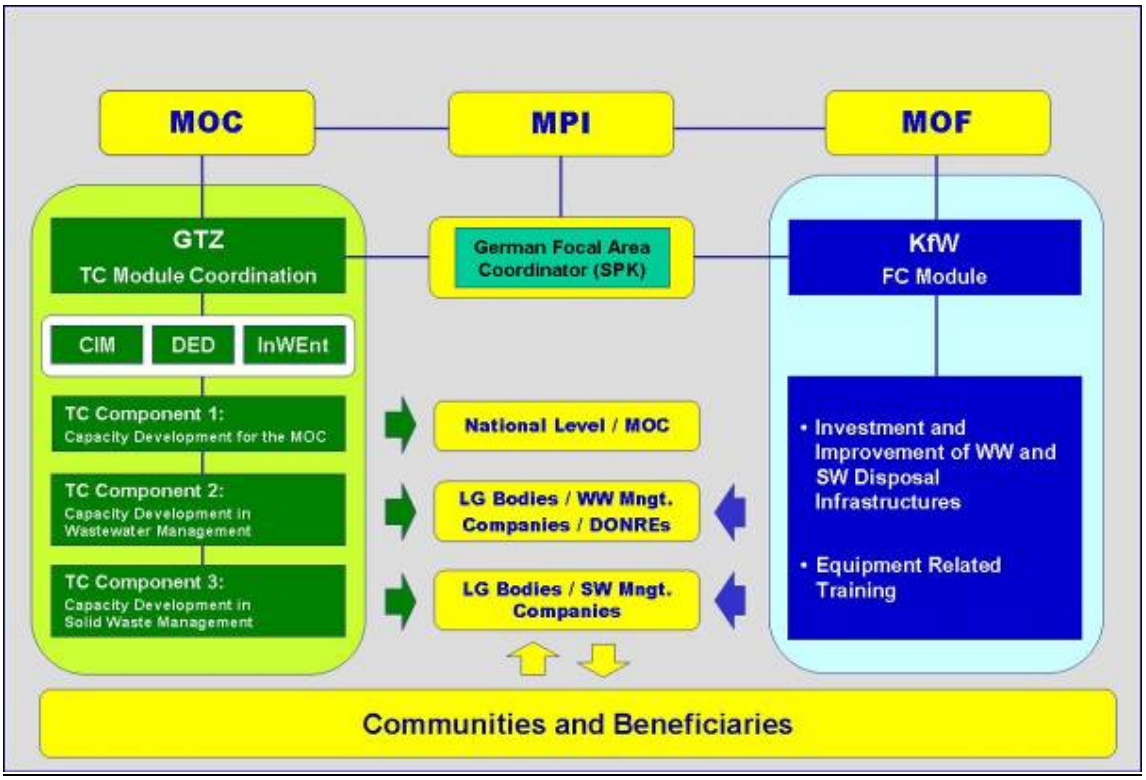
"Wastewater and Solid Waste Management in Provincial Centers" is a program funded by the German government and jointly implemented by different institutions of the Government of Vietnam and several German Development Cooperation (GDC) agencies. The program consists of two complementary modules (Figure 1):

a) the Financial Cooperation (FC) module, jointly financed by the German Development Bank (KfW) and the Government of Vietnam (GoV), and

b) the Technical Cooperation (TC) module, implemented by the German Technical Cooperation (GTZ), the German Development Service (DED) and InWEnt with the Ministry of Construction (MOC) as the responsible line ministry.

The FC module focuses on the provision of new infrastructure facilities for wastewater and solid waste management in currently six provincial cities in Vietnam. The TC module consists of three components that provide "Capacity Development for the MOC" (TC Component 1), "Capacity Development in Wastewater Management" (TC Component 2) – also referred to as "WWM" – and "Capacity Development in Solid Waste Management" (TC Component 3) – also referred to as "SWM".

Figure 1: Set-up of German Development Cooperation for Wastewater and Solid Waste Management in Vietnam



The overall objective of the cooperation program reads:

"Conditions for sustainable wastewater disposal and solid waste management are improved."

The present study was conducted in the scope of TC Component 2 (WWM) that is implemented by GFA Consulting Group on behalf of German Technical Cooperation (GTZ) and commenced in February 2005. In August 2008, WWM launched its second phase that is scheduled to end in July 2011.

At this point, WWM is providing technical support to local governments, public wastewater companies (WWC) and Departments of Natural Resources and Environment (DONRE) in six provincial urban centers in Vietnam, including the cities of Bac Ninh, Hai Duong, Vinh, Can Tho, Soc Trang and Tra Vinh. Depending on the outcome of ongoing investment studies and the availability of sufficient funds, an extension of WWM to more cities is foreseen within the current phase. WWM focuses on creating favorable conditions for improved public

wastewater services and raising awareness on wastewater related issues among the communities and beneficiaries. The overall objective of TC Component 2 is accordingly:

"Wastewater management in the supported provincial centers is improved."

In order to achieve this objective, WWM applies a holistic approach and concentrates its activities on capacity building on the following seven areas:

- Local Government Level
  - Creating favorable local institutional framework conditions for wastewater management
- Wastewater Company Level
  - Institutional & organizational development
  - Financial management & tariff calculation
  - Asset management, operation & maintenance (O&M) and documentation
  - Customer relations management and community participation, and
  - Human resource management
- DONRE Level
  - Surface water and effluent discharge monitoring

The present Community Baseline Survey (BLS) is attributed to the support of the WWCs in the improvement of customer relations and community participation. The TC component commissioned two Vietnamese consulting companies to implement a total of six surveys. Necessary preparations were made in close collaboration with the Customer Care Units (CCUs) of the participating WWCs as well as WWM advisors. Preparations included, among other things, the finalization of data collection tools, training of interviewers, and interviewee selection. The surveys in the three Northern provinces were conducted by the sub-contractor CEPAC, a Vietnamese company specialized in household surveys. SDRC, another Vietnamese survey institution, was commissioned to conduct this study in the three provinces in the Project Area South, **Can Tho**, Soc Trang and Tra Vinh.

III. OBJECTIVES OF THE SURVEY

The objectives of the survey are as follows:

1) To determine *the current practices of urban people* in the program sites regarding the management of water supply, wastewater, storm water and sanitation.
2) To determine *the current knowledge of people* in the program sites regarding the management of water supply, wastewater, storm water and sanitation.
3) To determine *the current attitudes of people* in the program sites towards the management of water supply, wastewater, storm water and sanitation.
4) To determine *the main influences on customers' attitudes* towards water supply, wastewater, storm water and sanitation.
5) To determine *the main constraints on customers* increasing their knowledge of water supply, wastewater, storm water and sanitation.
6) To provide *information* to the Water Supply and Sewage Companies and other stakeholders in order *to improve the effectiveness* of their CRM and CPM programs, including targeted Program Information Campaigns, Public Awareness Campaigns, the developing of IEC materials and selection of suitable Pilot Measures.

7) To provide *information on customer satisfaction and needs* to the Water Supply and Sewage Companies in order to improve the performance of Customer Care Units.
8) To identify the most effective means of informing, educating and communicating with the community on program-related issues.
9) To determine, the views of customers regarding the level of services provided by the company including as well as their attitudes concerning wastewater tariffs.
10) To provide on- the-job capacity building to officers of partner companies on the subjects of participatory research, basic skills and techniques for conducting base-line studies.

CHAPTER II: METHODOLOGY

I. SCOPE OF THE SURVEY

1. Survey Sites and Respondent Sampling

WWM advisors and SDRC consultant have applied random sampling of 400 household interviewees (margin of error of 5 % (confidence interval) at a confidence level of 95 %.) based on a comprehensive customer list together with staff of the Water Supply and Drainage Company of Can Tho City in November 2007. Among the 13 wards of Ninh Kieu District in Can Tho, 5 wards were chosen based on their proximity to the planned main water drainage pipes. These wards are An Hoi, An Lac, An Phu, An Hoa and Cai Khe wards.

Respondents of the survey were selected from three main clusters to provide information, they are:

- At the City level: representatives of leaders from the City People's Committee, and from the Water Supply and Drainage Company.
- At the ward level: local authorities at the Ward People's Committee, government agencies and mass organizations in the 5 wards.
- At the household level: water customers spread over different neighborhoods in the 5 wards.

2. Survey Tools and Data Collection

The survey adopts the community participatory approach (CPA) to involve the stakeholders (the decision-makers at city and ward levels, the service suppliers and the service customers). Quantitative and qualitative data are necessary to provide as factual as possible the situation and customer satisfaction re water supply and drainage in the city. Data collection tools were designed by the consultant group, presented to the WMM Program staff, and approved by the Water Supply and Drainage Company. Data collection tools comprised of a quantitative questionnaire applied to interview neighborhood residents at household level, qualitative guideline interviews for focus group discussion at ward level, and a question schedule for in-depth-interviews with key informants/ city and local authorities (on this, please refer to Appendix 2).

Before the survey implementation in the three Mekong Delta provinces, the survey enumerators, who are staff of the WSDC, got trained in participatory data-collection methods. Equipped with skills from a 4 day full-time training in Tra Vinh province in March 2008, the twelve survey enumerators of WSDC were well prepared to conduct the data-collection in May 2008 (from May 4 to May 13) together with four SDRC staff as supervisors.

Prior to the data-collection period, the Program staff (WWM) (Mrs. Nghiem) and two WSDC officers (Mr. Nam and Mr. Xuan Phuong) have informed and made appointments with the survey key respondents. Lists of selected households are made according to the sampling methods agreed in November 2007. Key informants, whether individuals or gender segregated groups are requested to share their time with the survey team on specific days (see study schedule).

The WSDC staff took care to cover the survey respondents in the ward neighborhoods; SDRC staff facilitated the focus group discussions and the in-depth-interviews to gather illustrations, better explanation of the actual situation and satisfaction of water supply and drainage system in the surveyed wards. Thus quantitative data from neighborhood survey could be cross-checked and clarified with qualitative information from the focus group discussion and in-depth interview results.

During the data collection, available reports from previous year (2007) were collected at the city and ward agencies. SDRC also participated into the survey in the neighborhoods, randomly interviewed the households listed on the selected neighborhoods and households

in other non-selected neighborhoods. WSDC staff was refreshed of the principles of participatory survey methods and skills in the beginning of Day 1 survey. At the end of each collection data day, filled questionnaires are reviewed in order to check the answers and to get them clarified in time. The following of each collection data day, all the survey team (WSDC, SDRC and Program staff) got recapitulation of the work done, shared experiences, received blank questionnaires for the following day. The Program staff (Mrs. Nghiem) was present in all team meetings at the WSDC Conference Room #4, and supported data collection - i.e. some FGD at the ward meeting rooms- as and when required. One WSDC officer (Mr. Xuan Phuong) assisted the facilitation of FGD, and he facilitated the 8th FGD, a women's group.

Focus group discussions

3. Data Analysis

Data from household level from 400 questionnaires with respondents within the age bracket 20-60 years old were computed and processed using SPSS software program (Version 12.0). Variances were expressed in cross-classified tables, probing correlations within diverse variances for findings and analysis.

Information from the 9 FGD was recorded on big sheets of paper during the discussions, and orally wrap-up to the group at the end of the discussions. These discussion results were re-typed and tabulated according to the dealt topics.

The key informants were interviewed at their offices; the interviewers asked their permission for tape- recording. Among the 7 IdI, four are tape-recorded and three are not. It should be noted that the two key informants at city level and one at ward level consented to have the interviews taken notes on copybook only. All the key informants provided their agency annual reports year 2007 for further reference of their activities and achievements in 2007 and their plans in 2008. (See annex References).

The qualitative data served to illustrate quantitative results, and also to analyze specific elements in consideration with quantitative findings. Conclusions are drawn and recommendations made to meet the survey objectives and the survey audience: the Water Supply and Drainage Company, the city authorities and concerned government agencies, the mass organizations and their memberships and the water customers.

4. Survey Schedule

In total, there were 7 in-depth-interviews with key informants at city and ward levels, 9 group discussions in 3 wards and 400 households in the 5 selected wards of Ninh Kieu District. The schedule of the data collection and survey report is presented below:

No	Tasks	Time
1.	Discussion between WWM Consultant and SDRC staff: - Preparation and Planning - Design of survey tools	March 03-04 3 Mekong delta towns/city
2.	Discussion among related partners: WWM Consultant and SDRC staff and Directorate board of related official company of the three provinces: - Tra Vinh Water Supply and Drainage Company - Soc Trang Urban Management Company - Can Tho Water Supply and Drainage Company	March 05-07 March 05 March 06 March 07
3.	Short training course for staff of the three related companies of Tra Vinh, Soc Trang and Can Tho.	March 19-22
4.	Planning for the survey	March 24
5.	Data collection in Can Tho City	May 04 – 13
6.	Data entry, processing and analysis	May 15 – 22
7.	Draft report Writing in English and Vietnamese	June – August
8.	Workshop on Can Tho BLS results	September 25
9.	Finalization of Can Tho BLS	October

5. Quality Control

Several quality management measures have been undertaken by the SDRC research team in close consultation with the company's and WWM staff to assure the reliability and validity of the data collected. Main measures included:

- Pre-test of questionnaires: Before the beginning of the main quantitative data collection, questionnaires were pre-tested during mocked interviews and also in the field with a small sample size. The rationale was to familiarize interviewers with the questionnaire and its structure. Additionally, at this stage potential pitfalls in structure and/or understanding of the questionnaire could be cleared.
- Supervision of interviewers: Interviewers were grouped and each group was supervised by a staff member of SDRC. The supervisor was, on the one hand, the principal contact partner for interviewers during the data collection process. On the other hand, he/ she was responsible to oversee the data collection and to ensure the proper conduct of interviews and thus valid data.
- Questionnaire-check after submission: Each day, after interviews were finished, the interviewers submitted their completed questionnaires to the SDRC staff. They then checked whether the questionnaires have been completed accurately and in accordance with the given standard. In case of inadequacies interviewers were asked to either solve the problem immediately or if necessary to go back to the respective household in order to solve the objection.
- Random-check whether interviews really have been conducted: A WWM staff randomly called 10 per cent of interviewees and asked them whether they really have been interviewed in the course of the BLS and how the interview process was.
- Recording of in-depth interviews: According to the latest standards in social research, in-depth interviews were electronically recorded – when allowed to- with a tape recorder. Subsequently, these interviews were transliterated and thus made available for proper categorization in accordance with the research interests.

II. SURVEY TEAM

WWM Program staff (mostly to assist logistics, administrative and communication matters): Mrs. Nguyen Thi Nghiem

Twelve interviewers from Can Tho City Water Supply and Drainage Company:

Mr. Ma Thanh Nam	Mr. Nguyen Xuan Phuong
Mr. Le Van Truong	Mr. Pham Thanh Vu
Mr. Nguyen Ngoc Hung Phuong	Mr. Bui Vu Ngoc
Mr. Le Thanh Dien	Ms. Nguyen Thi Thien Duyen
Mr. Trinh Cong Doan	Ms. Tran Thi Thuy Dung
Mr. Tran Nguyen Son Vinh	Ms. Nguyen Thi Hong Ngu

Four SDRC staff:

Ms. Doan Tam Dan	Ms. Tran Ai My
Ms. Phan Thi My Nhung	Ms. Truong Nguyen Bao Tran (May 4-10)/

III. ADVANTAGES AND LIMITATIONS OF THE SURVEY

Advantages

Well prepared sampling procedure, data collection tools and information of selected survey sites and potential respondents in due time.

- Relevant staff of Can Tho City Water Supply and Drainage Company was trained according to their survey tasks.
- The WSDC personnel are young and performed the survey enthusiastically and dutifully while still handling the company's daily routine work. The 10-day survey period spread over the weekend, they just got half-a day break on Sunday afternoon.
- The survey sites are located within 5 km of the WSDC headquarters thus circulation back and forth for briefing and de-briefing in the morning and late afternoon was convenient and all numerators were punctual.
- Respondents whether from the neighborhood, ward and city level were cooperative once they accepted to share their time.
- The participatory approach of the survey created non-threatening atmosphere to listen the needs and satisfaction levels of the city and their dwellers concerning water supply and drainage as well as waste collection.
- The on-the-job coaching for customers' interviews reaped some rewarding results, with lesser and lesser corrections and omissions by the end of the survey period.

Limitations

- The questionnaire was designed and been re-adjusted to each province. Although language use was appropriate to the local people, the sequence of satisfaction probing was not in tune with the situation in Ninh Kieu district, where the management of water drainage in the neighborhood, specially in the lanes and alleys, rested on household heads' responsibilities and on the neighborhood and ward management. Therefore the description of the units/ agencies which receive and solve complaints leaves many questionnaires unable to probe the elements/causes of complaints. This was detected right after the first day of data-collection, and addressed consequently. However that question was still unsatisfactorily implemented by some interviewers who would stick to

the questionnaire wording, even though they understood that their company did not handle this responsibility yet.

- The survey happens one month after the training in Tra Vinh. The WSDC staff as household interviewers missed preliminary formalities to introduce the survey objectives and their roles during the survey. This was reminded and improved the following days.
- Few household respondents forwarded complaints concerning water drainage services although the poor situation of water drainage is eye-catching.
- The survey was carried out during office hours at the day time, some households were closed. The next household on the right was then approached. Household interviewees there were mostly women and elderly people.
- Among the 5 selected wards, the survey covered households in all neighborhoods of two wards, and households in only one particular neighborhood of the 3 remaining wards. Although precaution was given by organizing FGD in the 3 wards with a single neighborhood on the list of customer residents, some issues could be missed out due to a great variety of conditions between neighborhoods in a same ward. SDRC staff took action by going to neighborhoods with concerns raised by the FGD members, and making some household interviews not on the list of selected households in the ward.
- Some key informants (3 over 7) preferred not to be tape-recorded during the interviews, even though they had well prepared answers. However, they were very cooperative and provided available reports to the survey team.
- The interviewers, especially some SDRC staff, missed the orientation session by the program staff and/or the WSDC leaders in the beginning of the data-collection. They caught up after the two first days of data gathering through listening to WSDC staff and the customers at ward and neighborhood levels.

CHAPTER III: RESULTS OF THE SURVEY

Chapter III presents the baseline survey results. An overview of the general information of the surveyed households helps to understand the household respondents, their current knowledge-attitudes-practice/ behavior related to water use, waste water & sanitation as well as the current information, education, and communication practice in the surveyed areas. The general situation of the services is also presented together with the assessment of the household respondents of these services through their levels of satisfaction and suggestions for improvement of piped water, waste water and solid waste services.

I. GENERAL INFORMATION OF THE SURVEYED HOUSEHOLDS

This part provides basic information on the surveyed households, the survey respondents, the household size and practice as of water use and waste disposal.

1. Age and Gender of the Household Respondents

More than two thirds of the household respondents are women (68 per cent); the male respondents make up 32%. Their ages ranges from 20 to 60 years.

One third of the respondents are aged between 20-40 years old, two thirds are between 41-60 years old.

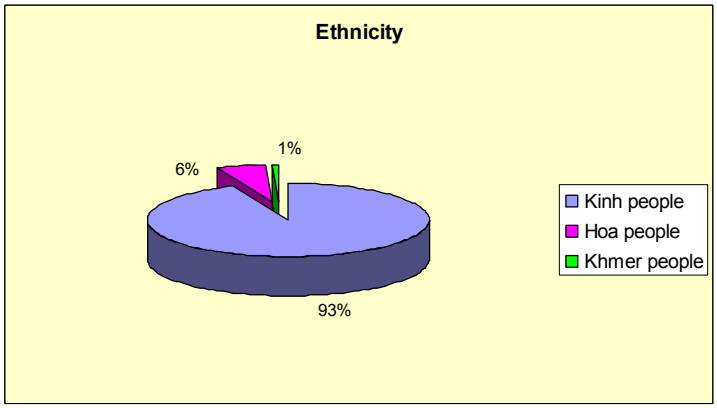
Table 1: Age and gender of the household respondents

Age / Gender	Age brackets					Total
	20-30	31-40	41-50	51-60	>60	%
Male	16	28	38	43	2	127 32
Female	26	58	99	87	3	273 68.
Total **%.**	**42** **10.5**	**86** **21.5**	**137** **34.25**	**130** **32.5**	**5** **1.25**	**400** **100.0**

2. Ethnicity

More than 90 per cent of the respondents were Kinh people (93.5), the remaining were from two other ethnic groups, Hoa people (5.75) and Khmer people (0.75).

Figure 2: Ethnicity



3. Educational Level

Most of the respondents have secondary education levels from grade 6-9 (36.0) and grade 10-12 (35.2). One tenth of them have lower school education level, among them 4 women told that they never attend school. Nearly one fifth have professional training and higher education, 18.0 per cent have university/ college degrees and 0.5 per cent had master degree.

Table 2: Education level of the respondents

Education level	Male respondents	Female respondents	Total (%.)
Illiteracy	0	4	4 (1.0)
Grade 1-5	9	27	33 (9.0)
Grade 6-9	31	113	144 (36.00)
Grade 10-12	49	92	141 (35.25)
Vocational education	1	0	1 (0.25)
University/ College	36	36	72 (18.0)
Master degree	1	1	2 (0.50)
Total **%.**	**127** **31.0**	**273** **68.0**	**400** **100.0**

4. Occupation of the Respondents

As it could be expected, the women are mostly engaged into housework, and small trading. However, it could be noted that they also hold regular jobs in government offices or in factories. Occupations or jobs that female respondents did not perform are related to mechanics (truck/motorbike taxi drivers), higher studies (engineering, medicine) and military service.

The wide range of occupation & job of the respondents shows the great diversity of work of people in the city. Beside their need of clean water for personal consumption, some respondents also need the use of water for production work, such as food vending, cake making and welding.

Table 3: Occupation of the respondents

Profession	Male respondents	Female respondents	Total (%)
Government workers	24	34	58 (14.5)
Salaried workers	8	7	15 (3.75)
Small trading	27	77	104 (26.0)
Farmers	3	2	5 (1.25)
Private business	3	2	5 (1.25)
Housework	3	108	**111** (27.75)
Hired labor	2	1	3 (0.75)
Motorbike taxi driver	2	0	2 (0.5)
Carpenter/Welder/Tailor	17	27	44 (11.0)
Retired officers	18	10	28 (7.0)
Students	8	5	13 (3.25)
Engineer/ Medicine Doctor	2	0	2 (0.5)
Truck drivers	7	0	7 (1.75)
Soldiers	3	0	3 (0.75)
Total **%**	**127** **31.75**	**273** **68.25**	**400** **100.00**

5. Average Monthly Households Income in Last 12 Months (Estimated)

The household sizes of the 400 surveyed households vary from single person house to more than 5-person house. The tabulation of monthly household incomes together with the household size shows great differences of money availability among the households of the same size.

Table 4: Average monthly income by household size

Income by household size	< 0.5 million	0.5 to < 1 million	1.0 to < 2 million	2.0 to < 3 million	3.0 to 5 million	More than 5 million	No answer	Total of Hh by size
1 person	0	0	1	1	0	1	0	3
2 persons	1	4	12	5	1	1	0	24
3 persons	0	4	18	20	10	8	1	61
4 persons	0	6	19	35	30	15	0	105
5 persons	1	1	10	16	25	15	3	71
> 5 persons	2	4	27	31	37	33	2	136
Total Hh by income and %	**4** **1.0**	**19** **4.75**	**87** **21.75**	**108** **27.0**	**103** **25.75**	**73** **18.25**	**6** **1.5**	**400** **100.0**

6. Average Monthly Income by Respondents' Occupation

The result as found in the following Table may not be totally reliable, because it is based primarily on the statements of the household respondents. However, it can be used as a valuable approximation in the determination of household's socio-economic status.

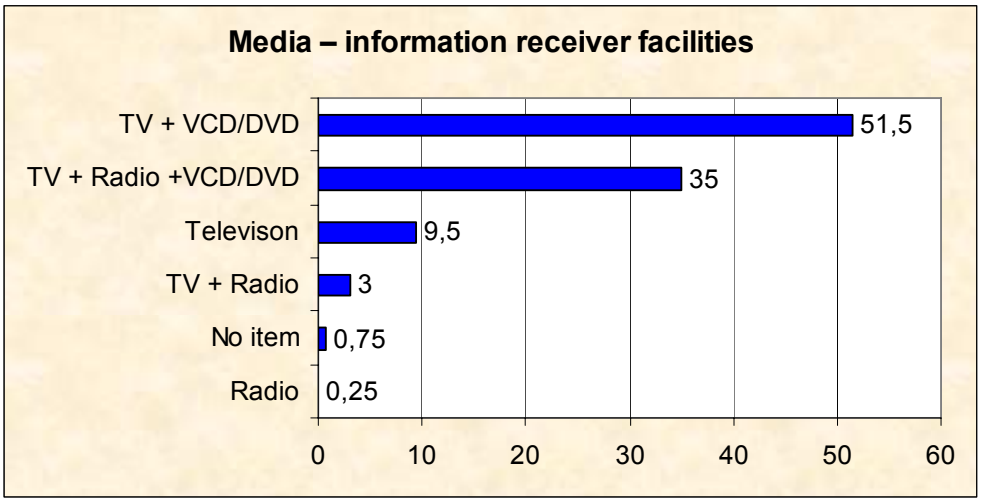
Table 5: Average monthly income by respondents' occupation

Occupations	Monthly Household Income (in VND)							Total (%.)
	< 0.5 million	0.5 to < 1 million	1.0 to < 2 million	2.0 to < 3 million	3.0 to 5 million	More than 5 million	No answer	
Government officers	1		13	9	17	17	1	**58 (14.5)**
Salaried workers		1	1	4	6	3		**15 (3.75)**
Small trading	2	9	26	26	24	16	1	**104 (26.0)**
Farmers		1	1	2			1	**5 (1.25)**
Private business				1	1	3		**5 (1.25)**
Housework		5	27	39	23	16	1	**111 (27.75)**
Hired labor			3					**3 (0.75)**
Motorcycle taxi driver		1			1			**2 (0.75)**
Carpenter/ Welder/Tailor	1	1	11	8	15	6	2	**44 (11.0)**
Retired officers		1	4	10	5	8		**28 (7.0)**
Students				7	5	1		**13 (3.25)**
Engineer/Medicine doctor						1		**2 (0.5)**
Truck drivers				1	6	1		**7 (1.75)**
Soldiers			1	1		1		**3 (0.75)**
Total	**4**	**19**	**87**	**108**	**103**	**73**	**6**	**400**
%.	**1.0**	**5.0**	**22.0**	**27.0**	**26.0**	**18.0**	**2.0**	**100.0**

7. Household Media, Information Receiver Facilities

Nearly all the households have a television set (99%). One tenth (38 households) have just the television set, 51% (206 Hh) have also a VCD or DVD player, and 35% (140 Hh) have 3 items: television set + VCD player + radio set. Only 3 households (less than 0.1%) did not have any information receiver set. And 1 household owner told he preferred to listen to the radio rather than to watch TV. Thus, it could be said in the community, nearly all the households have audio-visual facilities to access information.

Figure 3: Media – information receiver facilities



II. KNOWLEDGE – ATTITUDE – PRACTICE (KAP) SURVEY RELATED TO WATER USE, WASTEWATER & SANITATION

This part provides information on KAP of people in the survey sample related to water use, waste water and sanitation. These facts will provide stakeholders involved in program activities with a better understanding on the current situation of water use, waste water and sanitation in the surveyed areas.

1. Water Use

The main source of water in Ninh Kieu district and especially in the five surveyed wards is the piped water supply network of Can Tho City Water Supply and Drainage Company (see Tables 6-8).

Focus group discussions (FGD) pointed out that the highly polluted water in the canals/ arroyos[1] running through and around the neighborhoods has forced the residents to use piped water for all domestic purposes: cooking, drinking, washing and also for construction, building and production if needed. Households in isolated or remote places, such as Neighborhood 3 Song Hau and Neighborhood 1 of Cai Khe ward did not have a piped water supply network reaching their houses. Therefore they use water from drilled wells, and from the river ready to use after a simple treatment with alum to lay down the residues.

Talking about the quality of the water supply, on the first assessment the water supply received high mention of clarity, strong pressure. Further are the shortcomings such as irritating smell of Chlorine on some days of the month, low pressure of water flow at noon time and early evening (5:00 – 7:00 pm). Water stored in plastic containers was found a little greasy the day after. Water distilled through ceramic filters leaves yellow deposit that needs to be washed every week or every other day.

Key informants shared good news of water supply over recent years, with the city's new policy for housing registration and more dynamic responsive operations of the WSDC, the households could install their own water meter clocks. Prior to 2001, the installation needed legal housing registration, money to buy the water meter clock and necessary pipes (more than 1 million VND), and fees to get it installed and connected to the water supply network. Nowadays a simple demand filled to the customers' service will start the installation of a water meter clock and connection to the water supply network, without big financial worries

[1] An *arroyo* is a nearly vertically walled, flat floored stream/channel that forms in fine, cohesive, easily eroded material.

for the purchase of water meter clocks. It was now provided free and paid for through monthly rental fees (4,000 VND).

Household questionnaires showed the almost sole source of water used for **cooking is piped water (**99.75 per cent). Customers who highly appreciated its quality made up 78 per cent, 21 per cent found it acceptable and only 0.5 per cent found it of low quality. In general, the quality of piped water used for cooking scored highly.

Table 6: Water for cooking, its sources and quality ratings

The main source of water for cooking	Dirty	Average	Good	Don't know	Total %
Piped water	2 0.5	84 21.0	312 78.0	1 0.25	399 99.75
Bottled water		1 (0.25)			1 (0.25)
Total %	**2** **0.5**	**85** **21.25**	**312** **78**	**1** **0.25**	**400** **100**

90.75 per cent of households used **piped water for drinking**. Some households (9.25 per cent) use bottled water. The assessment of the piped water quality for drinking purpose was stricter with 78 per cent labeling it good, 21.25 per cent finding it all right, and 0.5 per cent disliked it. Those who used bottled water for drinking assessed bottled water good by 78.4 per cent and average by 21.6 per cent.

Table 7: Water for drinking, its sources and quality ratings

The main source of water for drinking	Dirty	Average	Good	Don't know	Total %.
Piped water	2 0.5	77 21.25	283 78.0	1 0.25	363 90.75
Bottled water		8	29		37 9.25
Total %	**2** **0.5**	**85** **21.25**	**312** **78**	**1** **0.25**	**400** **100**

With regards to the water used for **bathing & washing,** almost all households (98.5 per cent) use piped water. A few numbers of households use drilled well water (1.25 per cent), and rain water (0.25).

Assessing its quality for washing purpose, piped water was mentioned well by 78.7 per cent, average by 20.8 per cent and dirty by only one respondent or 0.25 per cent. The skeptical respondent who was just keeping his answer "don't know" said he had no reference criteria to assess the quality of water supply.

Table 8: Water used for bathing & washing, its sources and quality ratings

The main sources of waterfor bathing & washing	Dirty	Average	Good	Don't know	Total %.
Piped water	1 0.25	82 20.8	310 78.7	1 0.25	394 98.5
Rain water	-	1	-	-	1 0.25
Drilled well water	-	2	3	-	5 1.25
Total %	**1** **0.25**	**85** **21.25**	**313** **78.25**	**1** **0.25**	**400** **100**

Payment for piped water bill per month

Every month, the WSDC staff went to households to record the number of cubic meters of water used, then at the second time in the month to present bills and collect the tariffs. Tariffs for domestic use were set by cubic meter use, i.e. 3,000VND per m3. For households with productive activities, each member is entitled 4 m3 of water use per month. Surplus of 4 m3 use was charged extra fees. Tariffs for productive use (i.e. private business) were set higher than those for domestic use, 4,000VND per m3.

Table 9 shows the average monthly water bill payment by household size. It could be noticed that some big families used very minimal piped water amount as disclosed in their water bills. Single member households have also used less or more to the allowed standard m3 (less than 10,000VND or 3m3, more than 4m3 with payment 20,000 to 50,000VND).

Table 9: Monthly water bill payment by household size (in VND)

Monthly water bill payment by household size	<10,000	10,000 to < 20,000	20,000 to < 30,000	30,000 to < 50,000	50,000 to < 100,000	More than 100,000	Total of Hh by size
1 person	1		1	1			3
2 persons	1	2	5	10	5	1	24
3 persons		3	6	17	27	8	61
4 persons			5	30	46	24	105
5 persons		2	1	13	33	24	71
> 5 persons	2			13	41	78	136
Total **%.**	**4** **1.0**	**7** **1.75**	**18** **4.5**	**84** **21.0**	**152** **38.0**	**135** **33.75**	**400** **100.0**

The survey result on opinions of customers about the affordability or cost of piped water revealed that the customers in majority (64 per cent) found it acceptable; the others found it rather expensive (23.75 per cent) to even expensive (9.75 per cent). A slight number of respondents assessed it cheap (0.8 per cent).

Table 10: Affordability of the current water supply tariff by household size

Affordability ratings by household size	Expensive	Rather expensive	Acceptable	Cheap	No answer	Total
1 person			3			**3**
2 persons	1	2	18	1	2	**24**
3 persons	5	9	47			**61**
4 persons	12	17	71	1	4	**105**
5 persons	7	24	40			**71**
> 5 persons	14	43	77	1	1	**136**
Total	**39**	**95**	**256**	**3**	**7**	**400**
%.	**9.75**	**23.75**	**64.0**	**0.75**	**1.75**	**100**

Nevertheless, customers shared their satisfaction levels on the water supply service as follows: three-fourths declared very satisfied, nearly one-fourth felt quite satisfied, and 1.5 per cent alleged unsatisfied. Thus it could be said that the water supply service once in place and currently used in the neighborhoods was very much appreciated thanks to the affordable price, the availability of water all day, the water meter clock installed in each house.

Table 11: Satisfaction levels of the water supply service by household size

Water supply satisfaction levels by household size	Dissatisfied	Moderately satisfied	Very satisfied	Total (%.)
1 person			3	3
2 persons	1	4	19	24
3 persons	2	20	39	61
4 persons	2	20	83	105
5 persons	1	16	54	71
> 5 persons		31	105	136
Total	**6**	**91**	**303**	**400**
%.	**1.5**	**22.75**	**75.75**	**100.0**

2. Sanitation/Household Toilets

Results on availability of household toilets show that nearly all households had in-house toilets (99.5 per cent). Only 2 households or 0.5 per cent did not have their own toilets.

In-house toilets are of various types: septic tank toilets (98.5), pit toilet (0.25), toilets straight on sewage system (0.3) and on canals (1.0). Table 12 reveals that households with septic tank toilets were located in the main streets and in the lanes and alleys. Households with unhygienic toilets could be spotted along the lanes and alleys. And respondents from these households shared that they could not build clean latrines due to unfavorable economic or spatial conditions. The 4 households with toilets straight to the canals are of different sizes with 2 households of more than 5 persons, 1 of 5 persons and 1 of 2 persons. The single household with toilet to the sewage system has 4 persons, and the household with pit toilet has 3 persons.

Two households (one 2 persons and one 4 persons Hh) did not have in-house toilets, the household members used toilets of their neighbors, or public toilets at their work places.

Table 12: Toilet types by household locations

Toilet types by household locations	Septic tank toilets	Pit toilets	Toilets		Total (%.)
			Straight on sewage system	Straigh t on canal	
Main streets	61				61
Lanes	261		1	2	264
Alleys	60	1		1	62
Down end the alley	10			1	11
Total %.	**392 98.5**	**1 0.25**	**1 0.25**	**4 1.0**	**398 99.5**

Among the eight households (2%) without proper hygienic toilets, five were willing to access credit for building toilets. The three other respondents were hesitant, because as a young member or a bride in the family, they could not decide. But if they have choice, all the 8 respondents would like to have their own family toilets, they disliked the idea of common or shared toilets with neighbors.

Sanitary maintenance of the septic tank toilets

Regarding the daily sanitary maintenance of the septic tank toilets, the households flushed them with water. Now and then, whenever the tanks are full (25 per cent) or blocked (18.9 per cent), they called for sanitary services. Nowadays, some households (13.5 per cent) utilize commercial micro biotic solutions to keep their toilets unblocked.

Most of the household respondents did not remember exactly the length of time, or the number of times their toilets have been emptied. Occasionally, it happened while they repaired the houses or replaced the sanitary items (7 households or 1.8 per cent).

Thirty one toilets (7.9 per cent) were newly built, thus still a long time to get full. One hundred eleven toilets (28.3 per cent) were said to have never been blocked so far.

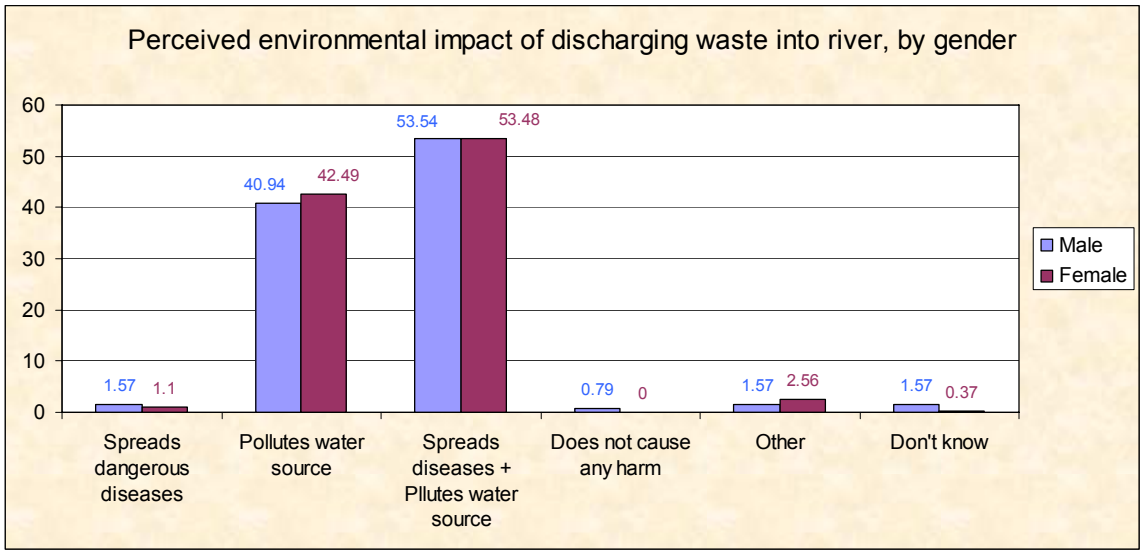
Household awareness of environment sanitation and public health

Data reveal that the knowledge about the link between sanitation and health is rather basic (Figure 4). Only 53.5 per cent mentioned that disposing faeces into the river pollutes the water and thus diseases can spread in the community. Thus, almost 47 per cent were not fully aware of this cause-and-effect-chain. Consequently, it seemed to be worth having a deeper look into this issue, differentiated according to socioeconomic categories:

- By ward locations: Highest of awareness in Cai Khe (70 per cent); average in An Hoa (66 per cent), An Phu (59.2 per cent); and low in An Lac (41.6 per cent), An Hoi (40 per cent).
- By household locations: Highest at “Down end” (90.91 per cent), average on “main street” (59.02 per cent), “alley” (52.38 per cent), “lane” (50.94 per cent).
- By respondents’ ethnicity: Average with “Khmer” (66.67 per cent) and “Kinh” (54.28 per cent) and low with “Hoa” (39.13 per cent).
- By household socio-economic status: Average with the “better-off” (59.09 per cent) and the “medium” (52.82 per cent) and low with the “poor” (26.09 per cent).

- By age brackets: Highest with respondents within the age brackets "21-30" and "41-50" (63.15 per cent and 59.85 per cent, respectively); Average with those in other age brackets (between 50 per cent and 47.69 per cent) and lowest with the oldest respondents of "61 and older" (40 per cent).
- By gender: Figure 4 shows that men's knowledge and women's knowledge on negative effects did not differ much (53.54 per cent versus 53.48 per cent concerning diseases and polluted water sources)

Figure 4: Perceived environmental impact -by gender



FGD participants were also clear in visioning and talking the negative impact of improper waste management. And they also reproached the dog owners not being careful in handling their pets' excreta - thus it is found in the lanes and paths, in front of others' houses.

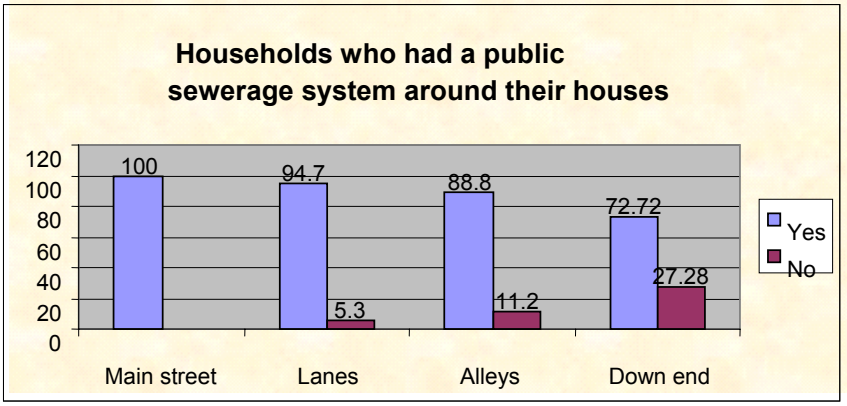
FGD participants from MO groups shared that Can Tho City has made continuous efforts since early 1990's to encourage and support households to built in-house septic toilets with the allocation of revolving credit funds to poor families.

3. Wastewater Drainage

With regards to waste water drainage, 94 per cent of the households affirmed there is a public sewage system around their houses. Only 6 per cent (24 households) told there is not such a system nearby their houses whether located in lanes (14 Hh), alleys (7 Hh) or down end the paths (3 Hh). It was found that all the households located on main streets were certain of a public sewage system around, while those along big lanes to narrowing alleys and footpaths could assert its existence depending on the location of the neighborhoods in a same ward.

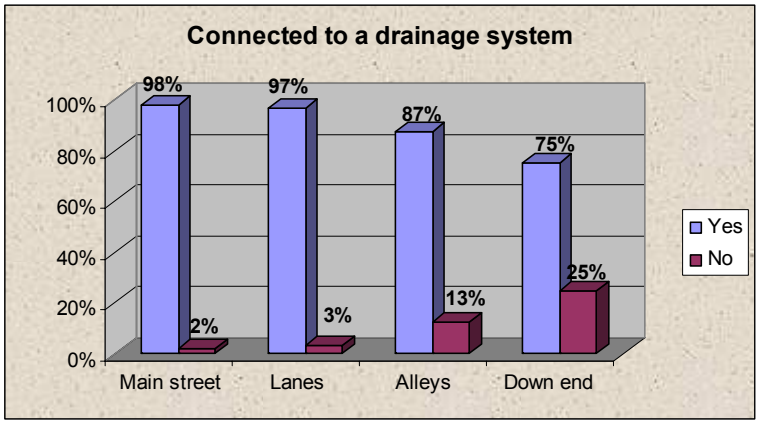
Waste water came from the daily household activities and in some neighborhoods from wet markets, metallurgic enterprises, and hospitals. All waste water goes into sewers through connections if possible, otherwise it runs into nearby canal/arroyos or it is just dumped on the pathways.

Figure 5: Household access to a public sewerage system



Among the households confirming the public sewerage system around their houses, 95 per cent (358 of 376 Hh) were connected to the drainage system while 5 per cent (18 Hh) were not. The connections were mostly done over 3 years ago (83 per cent 298/358 Hh), recent connections within the last 12 months were performed by 15 households (4 per cent) and connections made the last three years were from 34 households (10 per cent).

Figure 6: Connection of the houses to a drainage system



Concerning the types of connection to the drainage system, the households had installed:

- covered drains - 79 per cent (284/358),
- open drains - 10 per cent (36/358),
- drains leading to a natural waterway – 9.2 per cent (33/358)
- a combination of covered and open drains – 1.1 per cent (4/358),
- and typically one household made open drains leading to their garden.

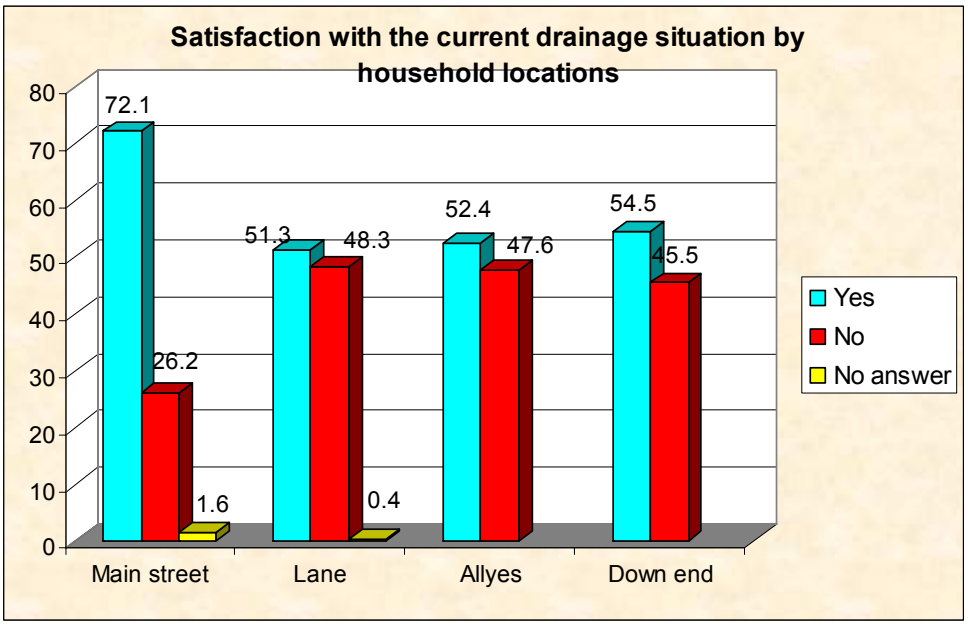
Covered drain | Covered and open drains | Open drain

Satisfaction with the current drainage situation around the home

Slightly more than a half of the household respondents 54.75 per cent (219/400) said they were satisfied with the current drainage situation around their home. However, correspondingly the nearly other half were not satisfied at all.

Looking at the household locations, it was found that satisfied and unsatisfied were respondents equally distributed from main streets to lanes and down end to the alleys. A closer look at the households on main streets revealed that 72.1 per cent were satisfied and 26.2 per cent were not. Of the two skeptical respondents, who did not shared their opinions; one lived in a main street, and one in a big lane.

Figure 7: Satisfaction with current drainage situation by household location

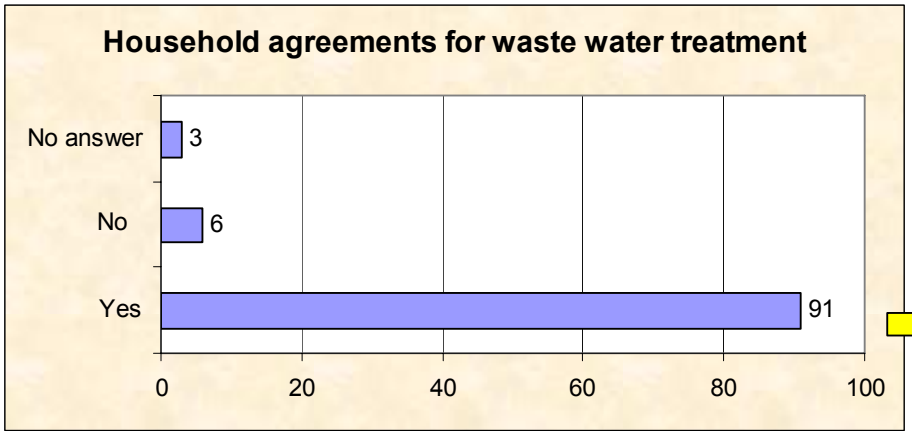


The satisfaction issue related with the connection to the drainage system reveals that among those connected (358/ 376 Hh), 57.5 per cent (206 Hh) were satisfied. Among those not connected (18 Hh), 28 per cent (5 Hh) seemed to be satisfied anyway.

Agreement on/ attitude towards the treatment of waste water

To the question "Do you agree that waste water should be treated before it returns to the river?" 91 per cent (364/400 Hh) of the households answered yes, 6 per cent (23/400 Hh) answered no, and 3 per cent (13/400 Hh) did not answer.

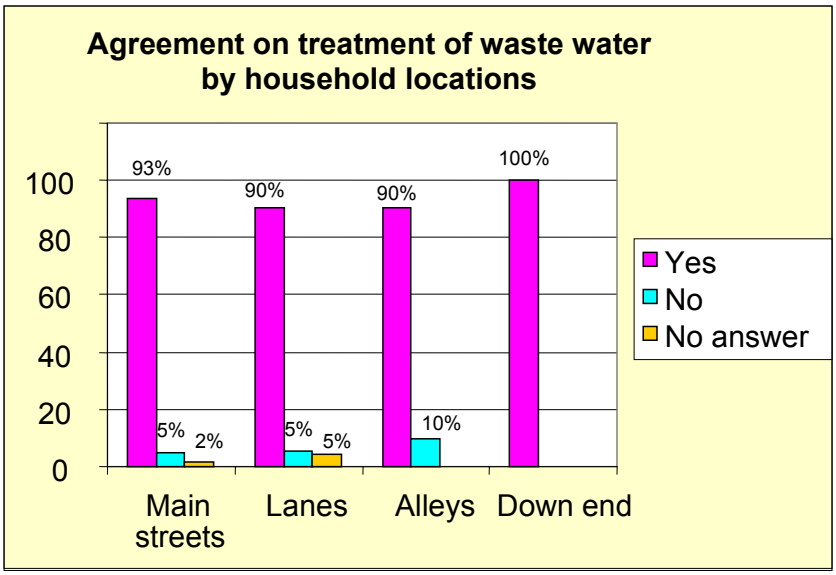
Figure 8: Household agreements for waste water treatment



Correlated with household locations, it was found that households at the down end of the alleys were very supportive of waste water treatment (100 per cent) (Figure 9). It can be assumed, that they are obviously affected by waste water and thus, by experience, see the necessity of its treatment. The thirteen households or 3.25 per cent without answer are located on a main street (1Hh) and big lanes (12 Hh). Perhaps they did not really need better water supply and improved drainage system.

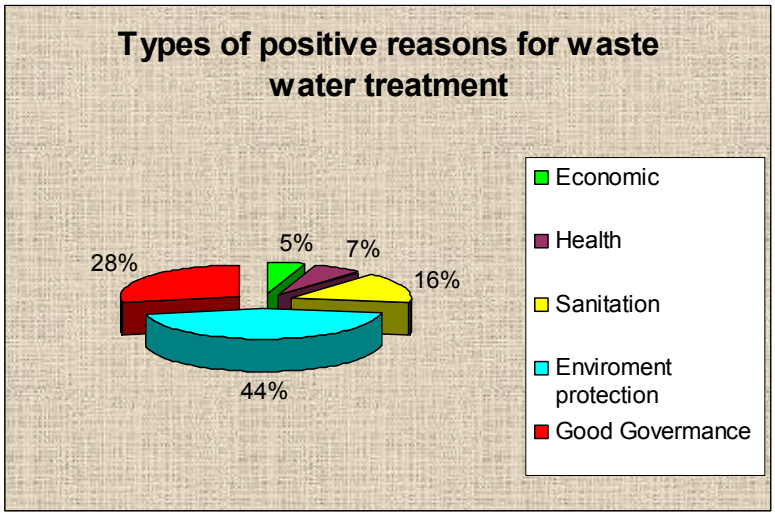
Additionally, while 93.8 per cent of interviewees classified as "better-off" agreed waste water treatment, only 69.6 per cent of the "poor" did so. The cause of a lack of awareness or the fear of additional costs or both the same time, can at this stage only be assumed. This has to be examined in more details. Another issue in this regard, worth a deeper examination, is the fact that only 50 per cent of the age bracket "≤ 20 years" agreed on the need for wastewater treatment. In contrast, 100 per cent of interviewees older than 61 years did so. In this case lack of awareness can be assumed and this has to be tackled by appropriate IEC/ PAC measures.

Figure 9: Support for waste water treatment by household location



Reasons for waste water treatment were classified into 5 main types: economics, health, community sanitation, environment protection and good governance. Figure 10 below shows the different types of opinions of interviewees re perceived positive impacts of wastewater treatment.

Figure 10: Types of positive reasons for waste water treatment



It was noted that environment protection was frequently mentioned (44 per cent), and good governance (28 per cent) also scored better than community sanitation (16 per cent), health issues (7 per cent) and economic matters (5 per cent).

Table 13: Reasons for supporting waste water treatment by household incomes

Types of reasons / household income	Economics	Health	Community sanitation	Environment protection	Good governance	Absolute Percent
< 500,000 VND	-	-	-	3	-	3 0.95
500,000 to < 1,0000,000VND	-	-	2	5	4	11 3.47
1 M to < 2 M VND	5	3	11	28	21	68 21.45
2 M to < 3 M VND	3	4	13	41	27	88 27.76
3 M - 5 M VND	4	8	16	32	19	79 24.92
> 5 M VND	4	5	8	32	15	64 20.19
Unknown income	-	1	-	-	3	4 1.26
Absolute **Percent**	**16** **5**	**21** **7**	**50** **16**	**141** **44**	**89** **28**	**317** **100**

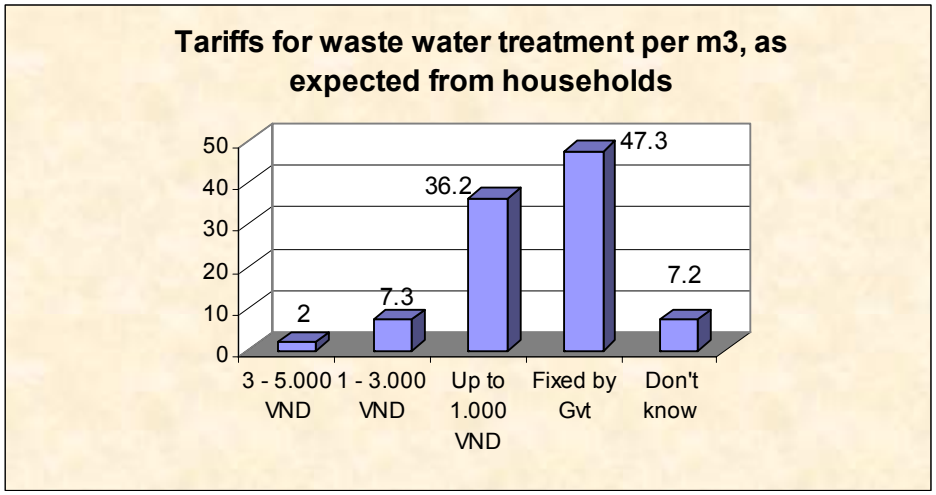
Looking at the household incomes, it was found that household respondents from all range of incomes were inclined for environment protection. This could be because most of them are from farming backgrounds, thus having a closer attachment to nature. Respondents were liable to good governance or collective participation for the community welfare, this corresponds to the watchword “Government and people work together”. Community sanitation was also considered an important reason for waste water treatment by households of different incomes (except those under 500,000VND per month), thereby leading to cleaner water in the canals/arroyos and reducing bad smells.

Payment for waste water treatment

Among those who supported waste water treatment, 93.4 per cent (340/364) expressed their willingness to pay for it. Interestingly, the study revealed a correlation between level of education and water treatment payment. With rising education, interviewees were more willing to pay for waste water treatment. While only half of the illiterate interviewees were willing-to-pay, all university educated interviewees stated to be so. A similar observation could be found alongside the socio-economic status of interviewees, albeit in a weaker occurrence: in contrast to 88.1 per cent of the better-off, only 65.2 per cent of the poor were willing-to-pay.

Furthermore, they are willing to pay per m3 as follows:

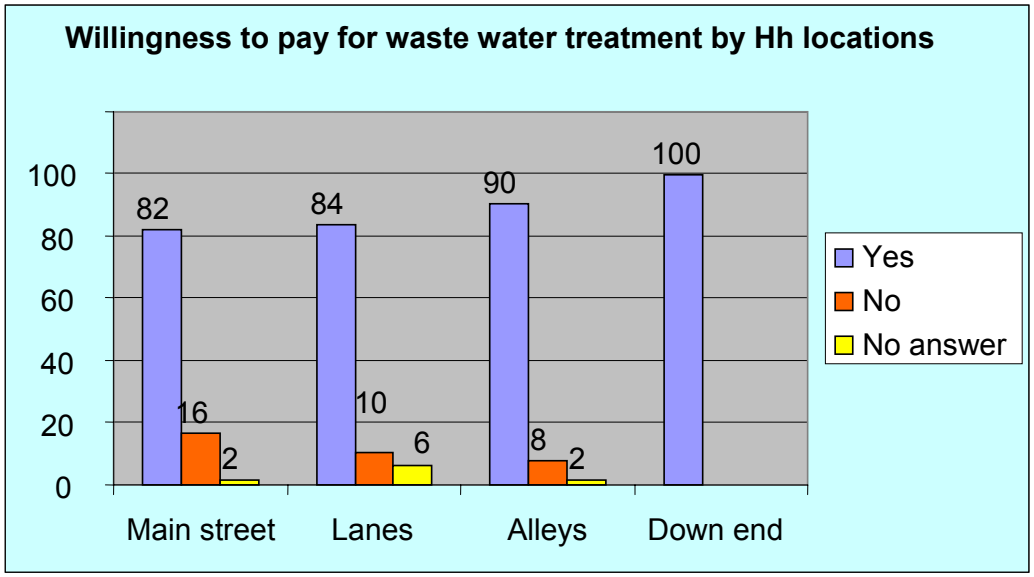
Figure 11: Tariffs for waste water treatment per m3- household expectations



Nearly half of the positive respondents (47.3 per cent) were expecting the tariff, to be calculated by the government or the company, to be affordable to the general public. They would agree on basis "I follow others, but it should be appropriate to people's income".

36.2 per cent of the positive respondents were willing to accept a tariff up to 1,000 VND per m3, and they belonged to all the range of incomes. Other respondents (7.4 per cent) opted for between 1,000 to 3,000 VND per m3. A few of them (2.1 per cent) agreed to disburse between 3,000 to 5,000 VND per m3. The latter belonged to households with incomes from 1 million to 5 Million dong per month.

Figure 12: Willingness to pay for waste water treatment by household locations



From Figure 12, it was found that 100 per cent of households down end of the alleys were supportive and willing to pay to waste water treatment. Meanwhile 90 per cent of households on alleys, 84 per cent of households on lanes and 82 per cent of households on main streets displayed such supportive attitude.

4. Solid Waste

Use of solid waste collection service

The Urban Work Management Office estimated that 90 per cent of the households in the 13 wards of city used the garbage collection service, and 5 per cent composted their household waste in pits dug in their gardens.

The study focused on areas from the inner city, and found nearly all the interviewed households (99.75 per cent) used the garbage collection service. Among the 400 households interviewed, only one household did not use the local solid waste collection service. This particular household has 5 members, and lived in a lane. The household respondent did not state why the household does not use such service.

Frequency of solid waste collection by the service

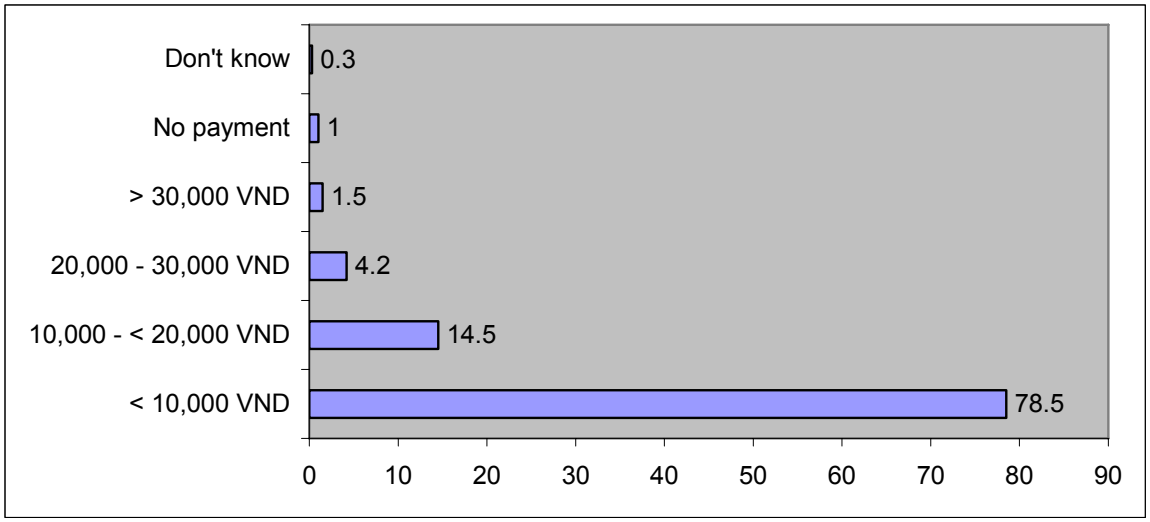
Household solid waste was collected once a day, late afternoon by 5:00 or 6:00 p.m. One household respondent who lived on a lane remarked that the collection was done twice a day when solid waste is abundant.

Table 14: Frequency of solid waste collection

Frequency of collection	Main street	Lane	Alley	Down end	Total and %.
Everyday	61	262	63	11	**397** **99.50**
2 - 3 times/ day		1			**1** **0.25**
Do not know/ No answer		1			**1** **0.25**
Total **%.**	61 **15.25**	264 **66.25**	63 **15.75**	11 **2.75**	**399** **100**

Payment for solid waste collection service per month

Figure 13: Monthly payment for garbage collection



Only 1.0 per cent of the households stated that they would not pay for the waste collection service. They were from households of three persons (1Hh), five persons (2Hh), and more than five persons (1Hh). These households are exempt because their heads assisted the waste collectors to collect the monthly service fees. One Khmer household with more than five persons was exempt to pay because it was found to be too poor to pay.

78.5 per cent of the households paid less than 10,000 VND per month for the solid waste collection service, 14.5 per cent paid from 10,000 – less than 20,000 VND per month. Households who paid more than 20,000 VND are from households with 3 persons. Six households with more than five persons, paid more than 30,000 VND (Table 15 below).

Table 15: Monthly payment for solid waste collection by household location

Monthly payment for collection	Main street	Lane	Alley	Down end	Total and %
Pay nothing		2	1		**3** **0.75**
Poor household, exemption to pay				1	**1** **0.25**
< 10,000 VND	22	227	54	10	**313** **78.45**
10,000 to < 20,000 VND	24	27	7		**58** **14.54**
20,000 to < 30,000 VND	10	6	1		17 **4.26**
> 30,000 VND	4	2			**6** **1.50**
Don't know	1				**1** **0.25**
Total **%**	**61** **15.25**	**264** **66.15**	**63** **15.75**	**11** **2.75**	**399** **100**

Garbage disposal of those households not using the solid waste collection service

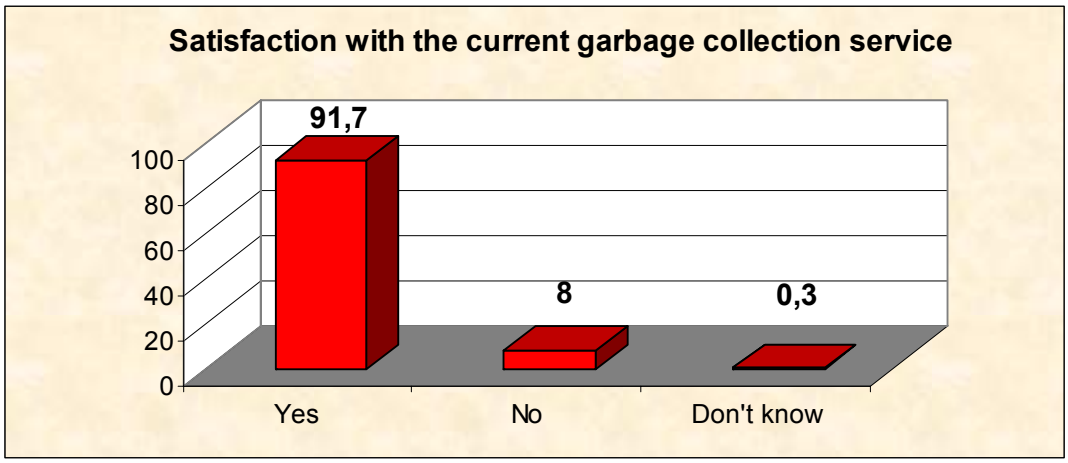
Garbage was thrown to the canal

Regarding the household (5 persons living on a lane) not using the solid waste collection service, the respondent said garbage was thrown to the canal all year around, regardless rainy or dry seasons. The household respondent (male, 45 years old) said he saw no harmful effect of throwing garbage into river.

The Urban Work Management Office also mentioned that 0.5 per cent of households still dispose of garbage into rivers, arroyos, canals etc. because the garbage collectors could not go into narrow alleys. These household residents are said to be "irresponsible" and with "low awareness" about environment protection.

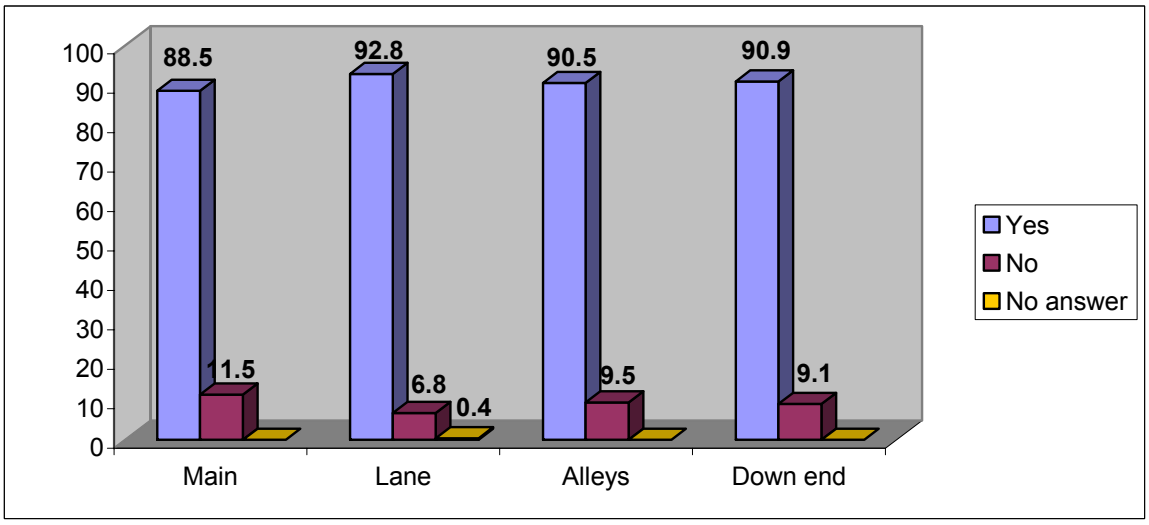
Satisfaction with the solid waste collection service

Figure 14: Satisfaction with the current garbage collection service



Figures 14 showed that majority of respondents (91.7 per cent) were satisfied with the current household solid waste collection management. Less than 10 per cent were not satisfied with the solid waste collection.

Figure 15: Satisfaction with solid waste collection by household location



Those households dissatisfied with the service have 3 or more persons in their families, and they lived either on main streets (7Hh), lanes (18Hh), and alleys (6Hh) or down end the alleys (1Hh).

One household respondent, who did not give a clear yes or no answer, complained that in his neighborhood, some houses were awful with lots of garbage. In fact, these households made a living from recycable materials.

Suggested improvements should focus on

- better sanitation (4 opinions),
- solid waste collection timing (4 opinions)
- reducing bad smell (4 opinions), and
- reducing flies (4 opinions).

Male participants in FGD, said that waste collection on main streets and in big lanes was good, but in alleys and especially the end of alleys, garbage was left out, and in some places waste building materials were thrown into the canals. In some neighborhoods, the situation is worse i.e. Neigborhood 1, Cai Khe ward, more than 100 households put their garbage into plastic bags and threw them into the river.

Female participants in FDG complained of bad odors on days when garbage is abundant, the garbage collectors took the garbage out of the plastic bags in order to squash the volume of garbage. Scattered in the neighborhoods, households involved into food processing - i.e. making soy bean paste, mid-autumn cakes- used to throw the residues into the river. Houses on stilts were expanded and occupied larger spaces on the arroyos, especially Chua canal running through Neighborhoods 2, 3 and 5 of An Hoa ward, whose bed is becoming narrower but is a bigger recipient of all kinds of human waste and rubbish. The women also complained of animal/pet faeces in the canals and on the footpaths.

Mixed groups composed of community leaders in FGD found that local wet markets need better garbage collection meaning during the market hours and not only by end of market day. They conceded that 80 per cent of households living on lanes and alleys are using the daily garbage collection services. 20 per cent of households at the end of the alleys and next to river banks are disposing their garbage in the nature: burying them or throwing them in the river. Push carts for garbage collection could not go further into narrow alleys; therefore garbage from households down ends of the alleys was missed. Such omission has kept some residents persisting in their habits of dropping waste in common unguarded places.

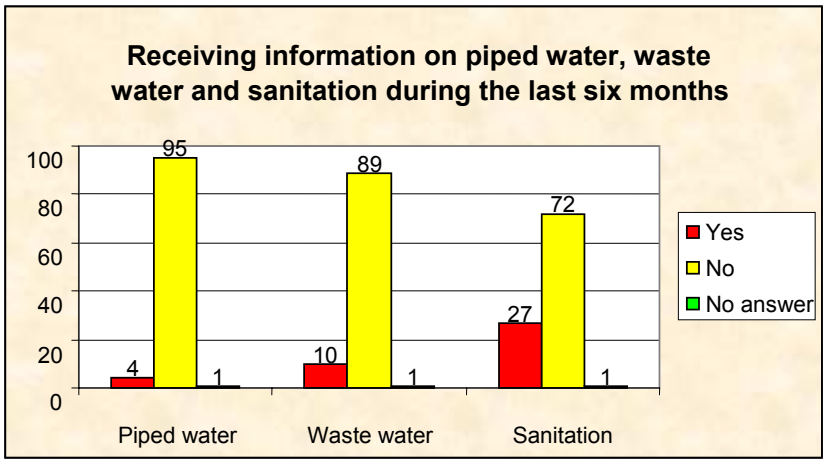
III. INFORMATION, EDUCATION AND COMMUNICATION

This part revealed information on the existing information-education-communication activities (IEC activities) related to piped water, waste water and sanitation in the surveyed sites. Then the findings on the most effective means for carrying out the IEC practice within the community.

1. Received Information Regarding Piped Water, Wastewater and Sanitation

Most of household respondents told that they did not receive any information on piped water, waste water and sanitation in the last 6 months. 95 per cent households did not get any information on piped water, 89 per cent had no information on waste water, and 72 per cent had no information on sanitation.

Figure 16: Received information on piped water, waste water and sanitation



Those who received information on two issues (waste water and sanitation) are: salaried workers, hired workers and students. Truck drivers and one soldier had information on one issue only (waste water); the farmer just remembered the information on sanitation issue.

Those who did not get any information on the three issues are those in private business, the motorbike drivers, the sole engineer, and the sole physician.

After analyzing the data as regards level of being informed about above mentioned three issues no significant differences/correlations could be found between the categories “ward of interviewees”, “location of interviewees”, “gender”, “ethnicity”, “socioeconomic status” and “age cluster”,.

Kind of information received

Regarding the kind of information on waste water, 10 responses received information on rights with regard to waste water disposal, 7 responses received information on obligations with regard to waste water disposal, 4 responses received information on both rights and obligations with regard to waste water disposal, 2 responses received information on free installation of water meters and 24 responses had other information.

Frequency of receiving information

For the small percentage who did receive information, it was rarely received on piped water; seldom received on waste water issues, but more often received on sanitation matters.

Table 16: Frequency of information received on piped water - by Hh location

Water supply info. Frequency	Main street	Lane	Alley	Down end	Total
1 time	1	2	1		**4**
2 - 3 times	2	4	1		**7**
4 - 5 times					**-**
> 5 times		3			**3**
Don't know	1	1			**2**
Total	**4**	**10**	**3**		**16**

Table 17: Frequency of information received on waste water - by Hh location

Waste water info. Frequency	Main street	Lane	Alley	Down end	Total
1 time	1	2	4		**7**
2 - 3 times	2	14	1	1	**18**
4 - 5 times		2	2		**4**
> 5 times		8			**8**
Don't know	1	2			**3**
Total	**4**	**28**	**7**	**1**	**40**

Table 18: Frequency of information received on sanitation - by Hh location

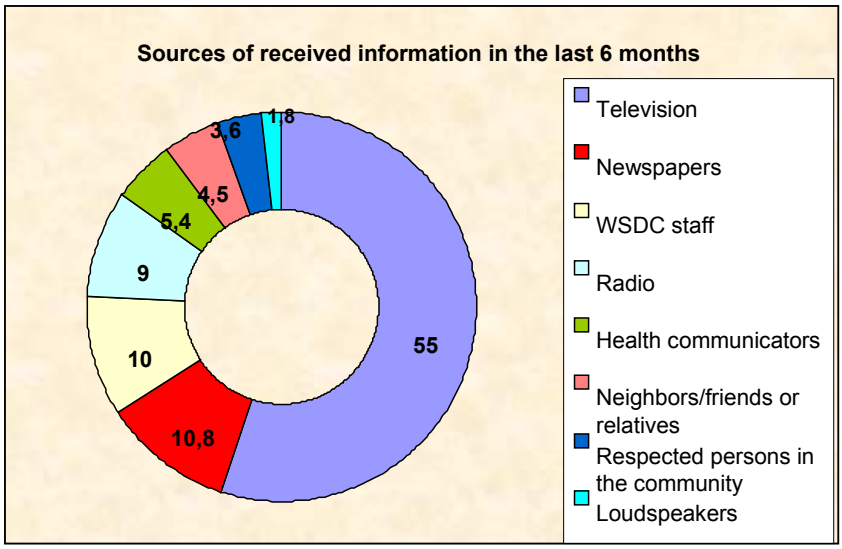
Sanitation info. Frequency	Main street	Lane	Alley	Down end	Total
1 time	4	16	4		**24**
2 - 3 times	6	35	10	1	**52**
4 - 5 times		2	1		**3**
> 5 times	1	15	3		**19**
Don't know	1	2	1		**4**
Total	**12**	**70**	**19**	**1**	**102**

Information on the three issues had been heard 2-3 times by approximately half of those who got information. For the others, the frequency of hearing information was very diverse from 1 time, 4 or 5 times to above 5 times. Those who did not remember the number of times on that particular issue usually live on main streets and big lanes.

Sources of received information

The sources of information for the respondents are from television (55 per cent), newspapers (10.8 per cent), WSDC staff (10.0 per cent), radio broadcasting (9.0 per cent), health communicators (5.4), neighbors/friends or relatives (4.5 per cent), respected persons in the community (3.6 per cent) and by loudspeakers (1.8 per cent).

Figure 17: Sources of received information in the last 6 months



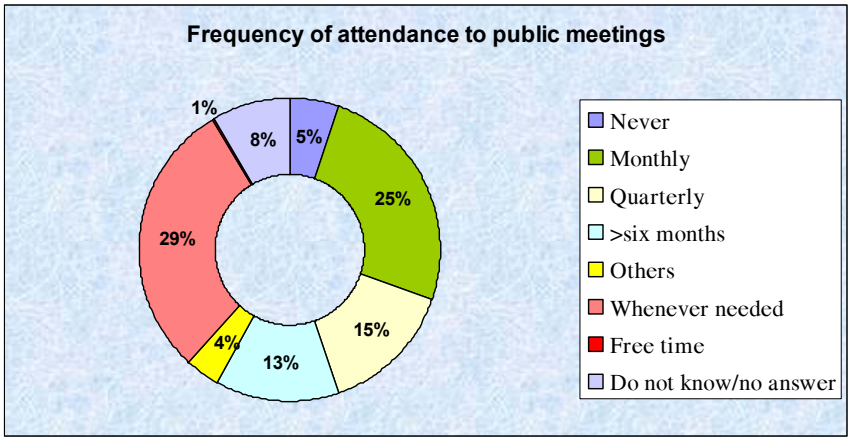
2. Most Influential Persons to Communicate Information Regarding Water, Wastewater and Sanitation

According to the household respondents, among the most influential persons for information communication, the local leaders at ward and neighborhood levels scored the best (44.2 per cent). Then came the WSDC representative and staff (28.5 per cent), the health workers (15.8 per cent). From the community members, influential persons for communication could be respected persons, i.e. neighborhood leaders or retired officers, women's union heads and youth union leaders. Besides, many respondents also answered it could be anyone or they could make up their minds.

Table 19: Most influential persons for information communication

Most influential persons for IEC activities	Main street	Lane	Alley	Down end	Total and %
Ward leaders	31	114	27	5	**177** **44.2**
WSDC representatives	16	74	21	3	**114** **28.5**
Health workers	11	37	13	2	**63** **15.8**
Women's Union	2	13			**15** **3.7**
Youth Union		2	1		**3** **0.7**
Respected persons	2	8			**10** **2.5**
Whoever	2	8		1	**11** **2.7**
Don't know	1	8	4	1	**14** **3.5**

Figure 18: Frequency of attendance to public meetings held in the wards



The attendance to public meetings in their neighborhoods or at their wards was done mostly when needed on specific events, i.e. last year election of local leaders, by 29 per cent of the respondents. One fourth of the respondents went to public meetings monthly (25.0 per cent). Others made it quarterly or every 6 months (15 per cent and 13 per cent, respectively). Some respondents just attended when they had free time (1 per cent), or remembered they made it irregularly (4 per cent). The other remaining respondents had never attended the public meetings in their wards (5 per cent) or did not know about public meetings (8 per cent).

Table 20: Frequency of attendance to public meetings by household locations

Frequency of public meetings	Main street	Lane	Alley	Down end	Total and %
Never	7 11.5	11 4.2	3 4.8		**21** **5**
Monthly	18 29.5	61 23.0	18 28.6	3 27.3	**100** **25.0**
Quarterly	5 8.2	41 15.5	10 15.6	2 18.2	**58** **15**
6 months	9 14.7	32 12.1	9 14.4	3 27.3	**53** **13**
Now and then		12 4.5	3 4.8		**15** **4**
Whenever needed	20 32.8	80 30.2	16 25.4	2 18.2	**118** **29**
Only on free time		2 0.7			**2** **1**
Did not know/ No answer	2 3.3	26 9.8	4 6.4	1 9.0	**33** **8**
Total	**61** **100.0**	**265** **100.0**	**63** **100.0**	**11** **100.0**	**400** **100**

It is interesting to see in Table 20, that households down the end of the alleys seemed to attend public meetings, if they knew the event place and schedule. Except one household respondent who did not give answer, 91 per cent of the households down end of the alleys were present in the meetings, whether monthly or six months (27.3 per cent), quarterly or when needed (18.2 per cent).

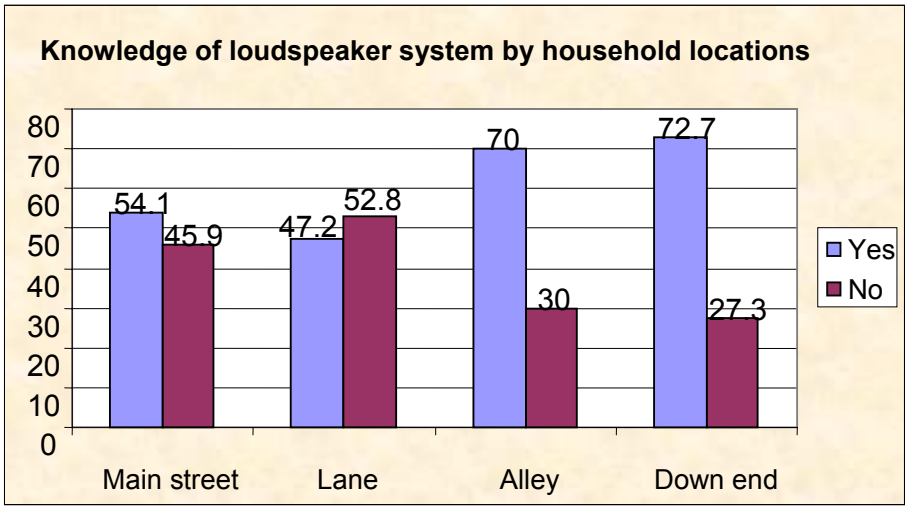
Respondents with households on alleys had 88.8 per cent attendance to public meetings. The other 11.2 per cent missing were those who never go to public meetings (4.8 per cent) and those who did not know the event/ did not give answer (6.4 per cent).

Respondents who lived on lanes and on main streets had an equal percentage of attendance to public meetings (85.3 and 85.2 respectively). But those who never joined public meetings had a higher percentage (11.5) from houses on main streets, than that (4.2) from houses on lanes. Nevertheless, some respondents on main streets were regular to the meetings unless they did not know the events (3.3). Respondents on lanes were many who did not know or did not answer (9.8), and there was 0.7 per cent who attended meetings only when they had free time.

Loudspeaker system in the ward

Loudspeaker systems are set up in all the 5 surveyed wards. However residents knowledge about the existence of loudspeakers in the neighborhoods varied. More than half of the household respondents (52.5 per cent) agreed there was a loudspeaker system in the ward. Households located in the alleys and down end of the alleys (70 per cent and 72.7 per cent respectively) knew the existence of loudspeakers more than those located on lanes and main streets (47.2 per cent and 54.1 per cent respectively).

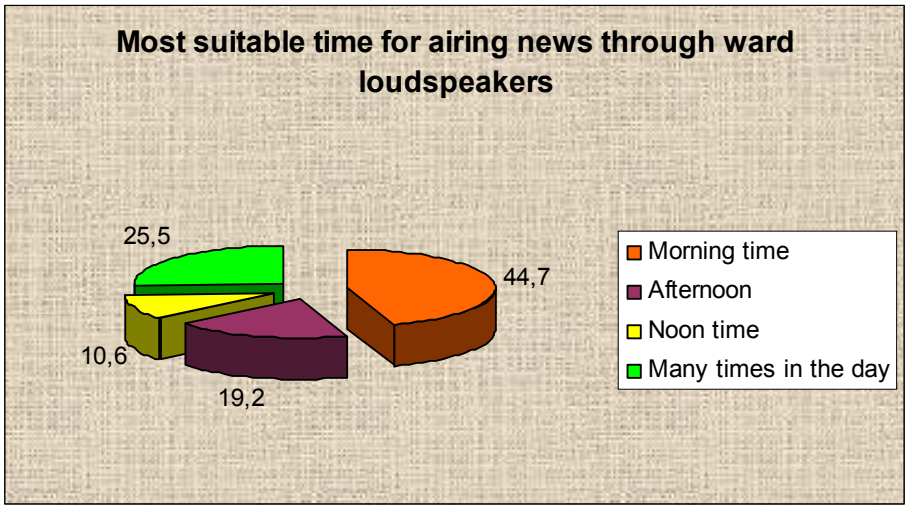
Figure 19: Knowledge of existing loudspeaker system in the surveyed wards



Suitable time to listen information from ward loudspeaker system

Answering the question of the most suitable time for airing news and information from the loudspeakers, nearly half of the household respondents (44.7 per cent) preferred early morning time, 19.2 per cent told they would listen in the afternoon, 10.6 per cent conceded at noon time, meanwhile the remaining respondents (25.5 per cent) made up their minds for during morning, late evening or many times in the day.

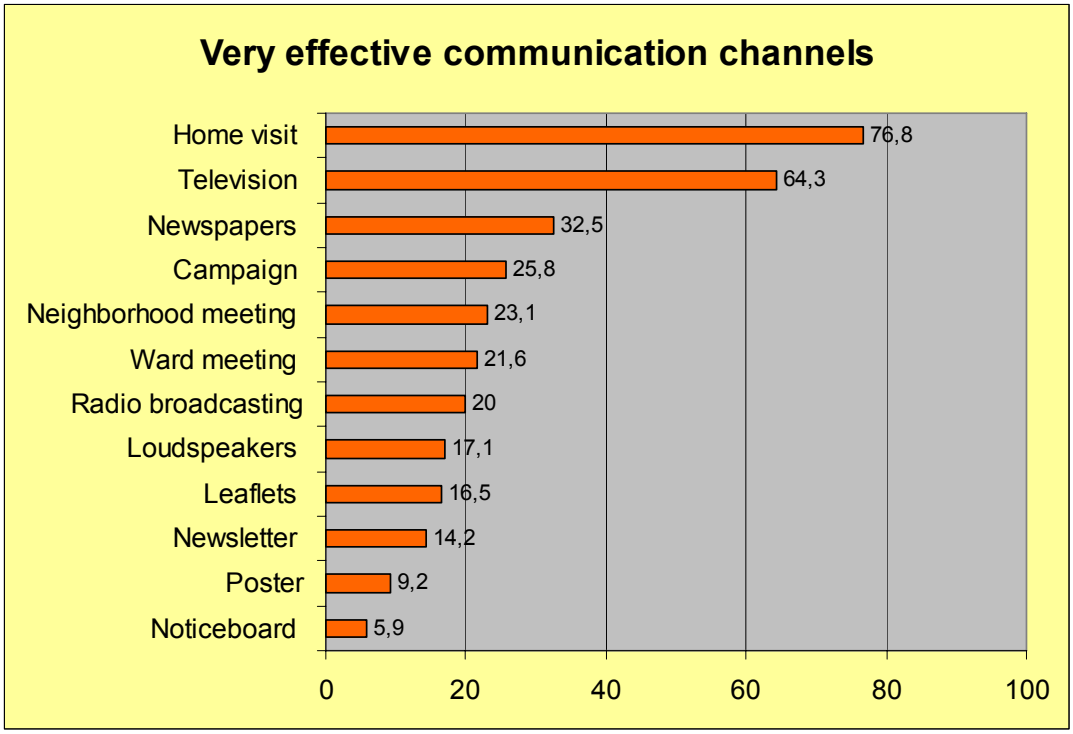
Figure 20: Most suitable time for airing news through ward loudspeakers



3. Perceived Effectiveness Level of Used Communication Channels

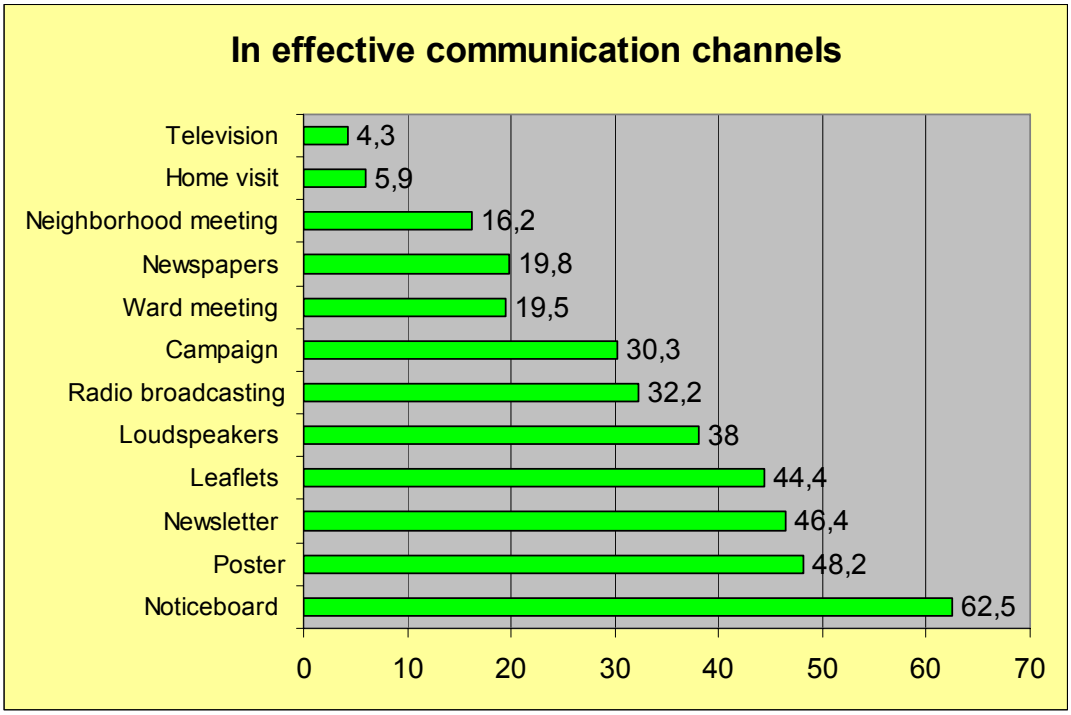
Regarding the effectiveness of different types of communication channel, the household respondents had assessed the effectiveness of the following communication channels.

Figure 21: Very effective communication channels



The “ineffective” communication channels had been disclosed as following order of least ineffective to most ineffective:

Figure 22: Ineffective communication channels



A comparison of percentages from most "effective" communication channels to those from least "ineffective" communication channels would provide an assumption of Top 5 "most preferred" communication channels as confirmed by the household respondents. These channels are in order of greatly to mildly preferred ones: home visits, television, newspapers, neighborhood meetings and ward meetings.

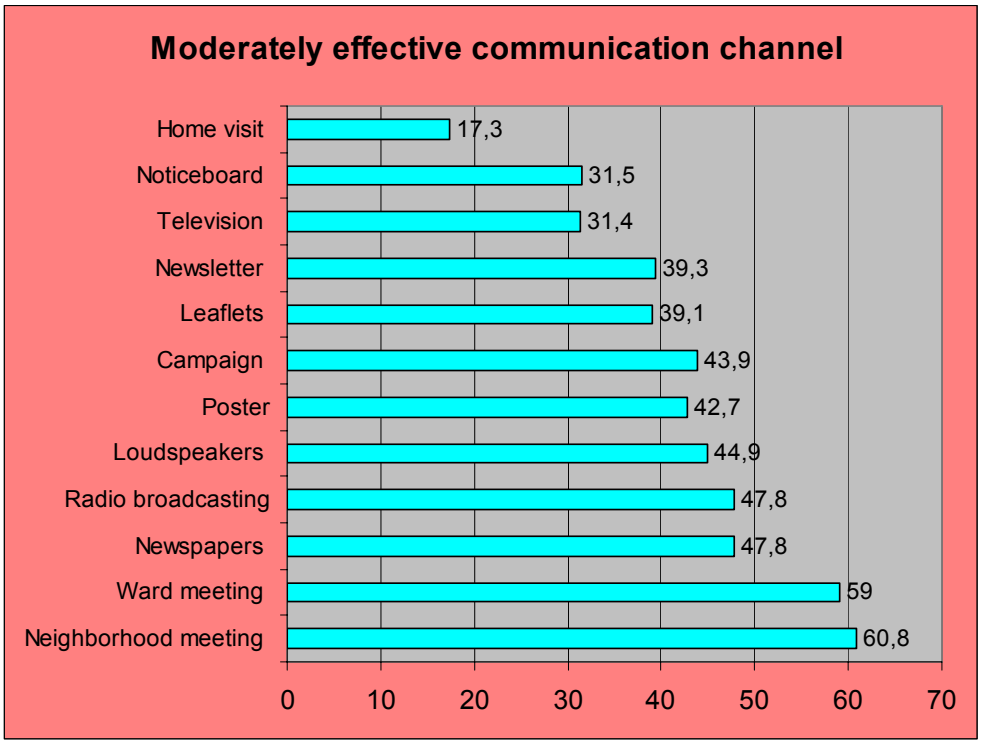
The campaign event could attract attention of the community, but its effectiveness as communication channel to the households was assessed not so high.

Table 21: Comparison of most effective with least effective communication channels

Communication channels	Effective	Ineffective	"Most preferred"
Home visit	76.8	5.9	70.9
Television	64.3	4.3	60.0
Newspapers	32.5	19.8	12.7
Neighborhood Meeting	23.1	16.2	6.9
Ward meeting	21.6	19.5	2.1
Campaign	25.8	30.3	(4.5)

Communication channels assessed as moderately effective are as follows:

Figure 23: Moderately effective communication channels



Again, the channels “neighborhood meetings” and “ward meetings” proved to be acceptable and effective by more than half of the respondents with neighborhood meetings scoring a little higher than ward meetings. However neighborhood meetings were often initiated by the ward authorities who provided the purpose and contents of the meetings, or supported neighborhood meetings to deal with specific issues in the neighborhood, such as the dredging of canals.

Suggestions for other effective communication channels from 6 household respondents are: communication in schools and education in the neighborhoods (2 respondents in the age bracket 51-60 years old); use of a combination of communication channels for better results and talks in coffee shops on streets (2 respondents in the age bracket 41-50 years old); posting in the Internet through website of WSDC, small group discussion in the neighborhood (2 respondents in the age bracket 20-30 years old). Those in the age bracket 31-40 years old, and those above 60 years old did not mention any other communication channels.

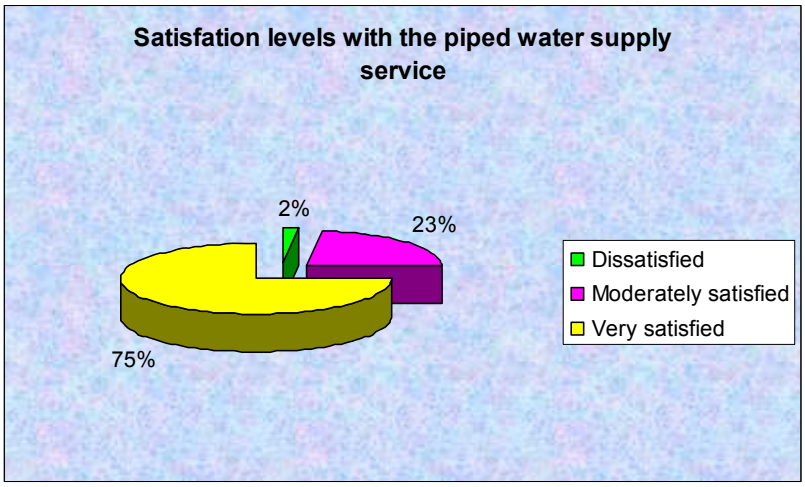
IV. SATISFACTION WITH PIPED WATER, WASTEWATER AND SOLID WASTE COLLECTION SERVICES

This part investigated the levels of satisfaction on the provision of piped water, the services of waste water and solid waste collection.

1. Satisfaction with the Piped Water Supply Service

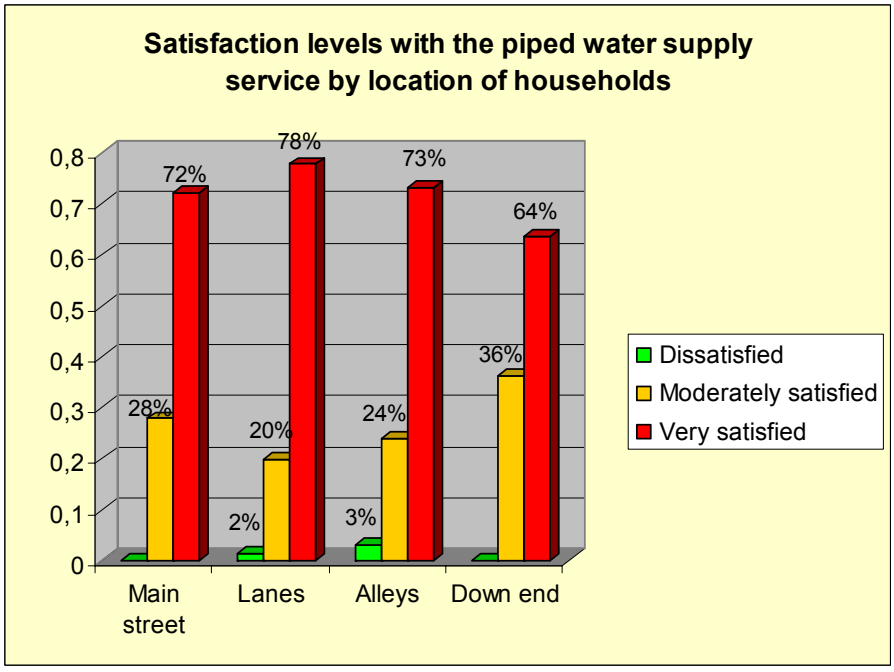
75 per cent of the household respondents were very satisfied, and 23 per cent of them were moderately satisfied with the piped water supply service. Thus, only 2 per cent of them had expressed dissatisfaction with the service.

Figure 24: Satisfaction levels with the water supply service



Looking at the household locations of the respondents, dissatisfied water users lived on lanes and alleys. The other respondents told they were very satisfied to moderately satisfied, but residents at down the end of alleys had opinions of moderately satisfied with highest percentage (36 per cent) among those living on main streets (28 per cent), alleys (24 per cent) and lanes (20 per cent).

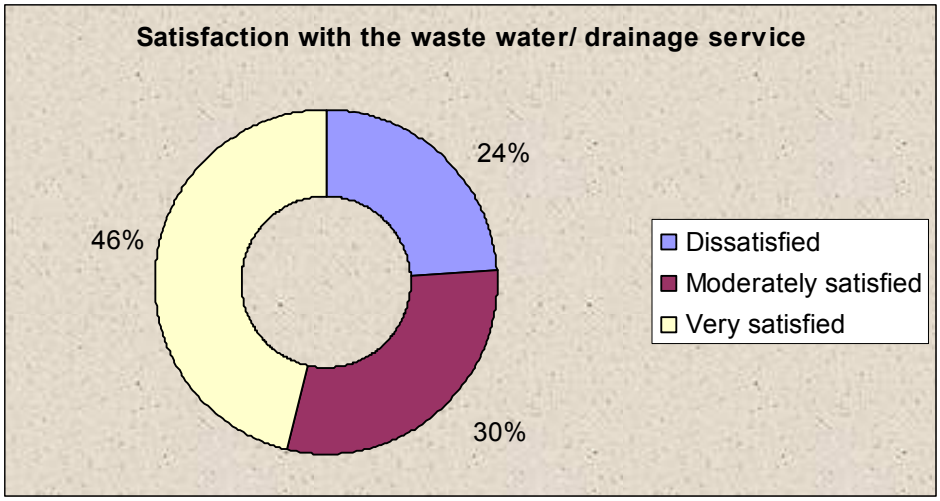
Figure 25: Satisfaction with piped water supply service by Hh locations



2. Satisfaction with the Wastewater/Drainage Service

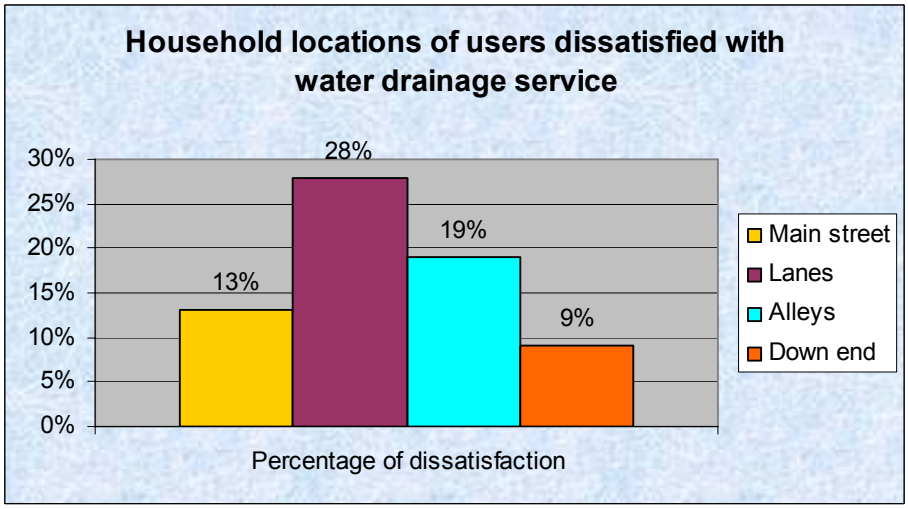
Forty six per cent and 30 per cent of the household respondents were respectively very and moderately satisfied with the waste water/ drainage service. Nearly one fourth of them (24 per cent) were dissatisfied with the service (Figure 26).

Figure 26: Satisfaction levels with the waste water/ drainage service



Respondents who expressed their dissatisfaction lived in households situated on different locations: main streets (13 per cent of households on main streets), lanes (28 per cent), alleys (19 per cent) and down end of the alleys (9 per cent) (Figure 27).

Figure 27: Satisfaction levels with water drainage service by Hh locations

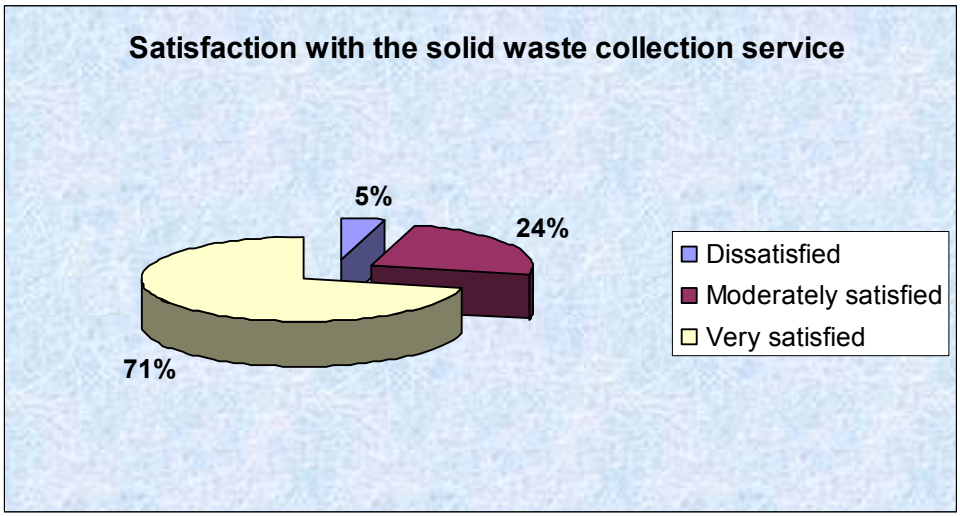


Although all were connected to the main sewerage system, households on main streets experienced inconvenience during rainy season with low flooding caused by rain water and overflowing of waste water. Households located on lanes were mainly connected to the sewerage system, and some felt disadvantaged by the upgrading of main streets with higher asphalt cover. These households were in lower level and suffered more of flooding and overflowing of waste water. Households situated on alleys and down end of the alleys also experienced disadvantages and inconveniences. Especially those at the end of alleys who felt unable to have their house floors raised higher due to financial reasons and also due to possible impacts as water flowed to other residential areas.

3. Satisfaction with the Solid Waste Collection Service

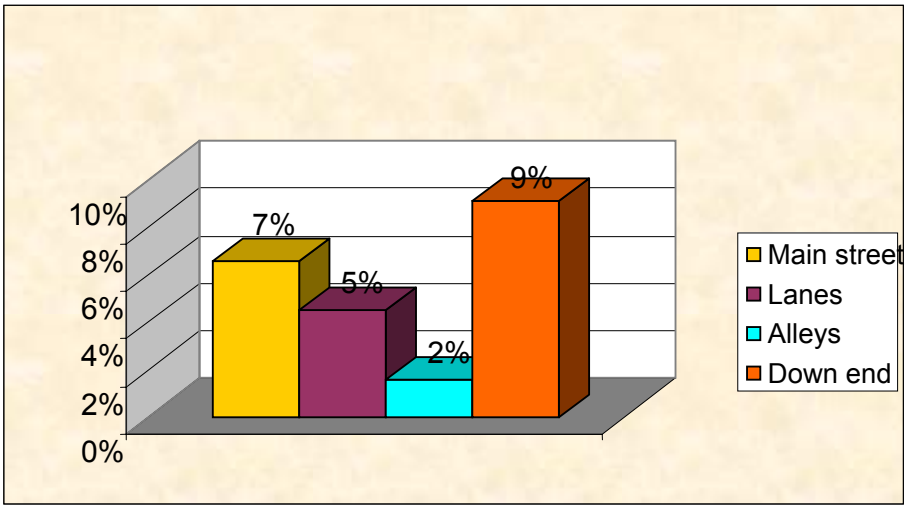
With regard to household solid waste collection, 71.0 per cent and 24.0 per cent of the household respondents were very and moderately satisfied with the solid waste collection service. Dissatisfied with the garbage collection service were 5.0 per cent of the service users.

Figure 28: Satisfaction levels with the solid waste collection service



Dissatisfied household respondents lived both on main streets (7 per cent of households on main streets), lanes (5 per cent), and alleys (2 per cent) and down the end of the alleys (9 per cent). It seems that households down end of the alleys and households on main streets experienced more disappointment in garbage collection service than those located on lanes and alleys.

Figure 29: Dissatisfaction levels with the solid waste collection service by household locations

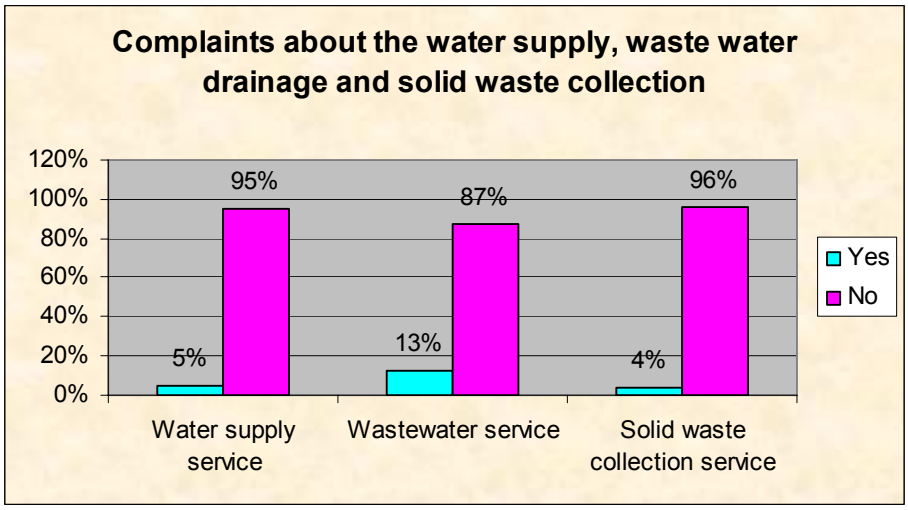


This could be explained by the fact garbage collectors have difficulties reaching households in narrow alleys, and solid waste on main streets where business (small shops, peddling, street food vendors) takes place was collected only at the end of the day - from 5:00 p.m.

4. Complaints about the Quality of Water Supply and Sanitation Services

Although partially or completely dissatisfied with the services, the household respondents made complaints only when things went wrong. Dealing with solid and waste water matters, the users mostly made complaints straight to the neighborhood leaders, who then reported to the ward leaders. Dealing with water supply, the users went straight to the WSDC offices or they addressed to WSDC staff when the latter came to their houses to collect water use fees. Concerning the solid waste collection issues, the users spoke either straight to the waste collectors and/or through the residential group and neighborhood leaders, when users could not meet waste collectors.

Figure 30: Complaints - water supply, waste water and solid waste



Dissatisfaction issues of piped water supply and services:

- Quality of the piped water (6 opinions)
- Frequent disruption of water supply or disruption without notice (2 opinions)
- Low water pressure at certain times of the day (7 opinions)

Water-meter clock:

- Inaccuracy of the water-meter clock (4 opinions)
- Payment for the water-meter clock (1 opinion)

Services to water customers:

- Wrong recording of water cubic meters consumed in the previous month (2 opinions)
- Unfriendly staff who collect payment of water use (1 opinion)
- High charges of the water bills (10 opinions)

Dissatisfaction issues of waste water drainage service

Nearly one fourth of the household respondents (23.75 per cent) confirmed their dissatisfaction with the waste water drainage service, but complaints issues about waste water drainage were numerous:

- Flooding, over-flown waste water (61 opinions – among them 3 from main streets, 48 from lanes, 10 from alleys)
- Poor drainage (58 opinions – among them 6 from main streets, 45 from lanes, 7 from alleys)

- Bad smell from sewers (50 opinions – among them 2 from main streets, 39 from lanes, 9 from alleys)
- Clogged drains/ sewers (43 opinions – among them 3 from main streets, 36 from lanes, 4 from alleys)
- Open sullage pits (3 opinions from lanes)
- Narrow sewers/small drains (2 opinions from main street and lane)
- Unsafe sewer covers on sidewalks – covers with hooks (1 opinion from main street)

It should be noted that the complaints on waste water drainage were raised by households located on main streets, lanes and alleys. No complaint was made by residents from down end of the alleys, perhaps due to their close proximity to the rivers – big recipients of waste water or due to their other worries/ anxiety of displacement to another residential area. With the urban upgrading of Can Tho province to Can Tho City in 2004, it was foreseen that 5,000 residents in slum areas on river banks will be relocated on new residential areas with basic urban infrastructure.

Dissatisfaction issues of solid waste collection service

Although 8.25 per cent of the household respondents were not satisfied with the current garbage collection service, only 4.5 per cent expressed their dissatisfaction and only 3.5 per cent actually complained.

Dissatisfaction issues on solid waste collection service were told concerning:

- No collection of garbage on empty lots, and no garbage bins available (41 opinions)
- Inappropriate time and timing of the garbage collection (30 opinions)
- Inappropriate places for the transfer of garbage into trucks (12 opinions)
- Poor performance of the garbage collectors concerning tidiness and removal of household ware items (8 opinions)
- Poor garbage management supervision (7 opinions)

5. Courtesy of Relevant Company's Staff in Handling Customers' Complaint

Regarding the response of WDSC staff to the complaints on piped water supply service, the eight unsatisfied customers found the WDSC staff attitude to handle the complaints as follows:

- ✓ Good (3 opinions)
- ✓ Normal (2 opinions)
- ✓ Inadequate (3 opinions)

There was no assessment of Excellent/ very good or mediocre/ very bad.

Meanwhile the eight plaintiffs on waste water drainage found WDSC staff attitude as:

- ✓ Good (5 opinions)
- ✓ Normal (1 opinion)
- ✓ Inadequate (1 opinion)
- ✓ Mediocre (1 opinion)

Concerning complaints on solid waste collection, the service users were dealing directly with the garbage collectors while the latter were performing their daily routine. Complaints were

more often made verbally at the users' front door, although 14 household respondents answered that they had made complaints through the mediation of the neighborhood heads.

Two direct complaint issues were verbally addressed by the household residents to the Company of Urban Work Management Office.

6. Effectiveness of the Complain Solving

Among the 8 complaints on water supply issues, 5 could be addressed and taken into action with three results assessed as "resolved" and two results assessed "partially solved".

The effectiveness of solutions concerning complaints on water drainage issues have been difficult to assess. However, among the 12 respondents who gave their opinions, 3 felt the complaints have been "resolved", 5 told the complaints to be partially resolved and 4 assessed their complaints "unresolved".

The 2 complaints addressed to the Urban Work Management Office had been both "partially resolved".

7. Speed of Complain Resolution

Among the total of 5 solutions to the water supply issues, the time for problem solving stretched from 1 day to 14 days: 1 day (1complaint), 2-3 days (1 complaint), 4-7 days (1 complaint), 8-14 days (1 complaint).

Solutions to waste water drainage seemed also been completed in different time lapses from 1 day (2 complaints), 2-3 days (2 complaints), 4-7 days (1 complaint) and 8-14 days (1 complaint).

One complaint on solid waste collection was resolved within 1 day.

8. Suggestions for the Improvement of the Current Water Supply and Waste Management Service

From FDG participants, suggestions for improvement of the three basic urban services were specifically voiced as follows:

On water supply

- ✓ Samples of piped water should be tested regularly;
- ✓ To assess the use of chlorine was it within or above the norms?
- ✓ Should eliminate the residues in piped water, should treat piped water bmore effectively.
- ✓ Should inform customers how to gauge piped water within standard norms.

On waste water drainage

- ✓ Treatment of waste water before its return into the river is very necessary, however chemical used for waste water treatment are they safe or not?
- ✓ Should have a plant/ place to treat waste water to ensure better sources of water, and good health to everybody.
- Wet markets and in particular Market area 3 of Cai Khe Commercial Centre should have their waste water from aquatic and agricultural products disposed properly, and not straight to the waterways or rivers.
- Should dredge drains and sewers to enable the flow of waste water.
- Should pay attention to waste water drainage in lanes and alleys, should perform dredging before rainy seasons.

- Should install sewers in small lanes and alleys where on-site upgrading of the areas was not yet done.
- Should build waste water treatment systems in the localities.
- Should ensure rapid waste water flow in order to avoid the flooding of dirty water.
- WSDC should perform quarterly dredging of the drains and sewers in the neighborhoods.
- To enlarge and expand the waste water drainage system. Every lane and alley should have covered and unclogged drains.
- Should build good waste water drainage systems in the neighborhoods, not harmful to living environment.
- Calculate the costs for waste water treatment thoroughly but at reasonable and reliable prices.

Solid waste management

- ✓ Should collect garbage in the morning from 6:00 to 7:30 am
- ✓ Garbage collection should be done properly and at different times of the day
- ✓ The garbage collectors need to perform better and collect all the trash left
- ✓ Solid waste left at the sullage pits should be collected

Communication

- More communication on environment sanitation
- Communication for awareness raising and behavior change.
- Not only slogan, but real action for clean environment, suitable solid waste disposal and appropriate waste water management.
- Should enforce the laws and punish the violations. Make them known on public media.
- Don't allow the vendors to dispose their garbage anywhere and directly to the sewers.
- Involve more participation.
- Once people see their interests, then they will not deny their responsibilities of protection and conservation.
- Information on Can Tho city television in the evening news 6:30 – 7:00 pm.

CHAPTER IV: CONCLUSIONS AND RECOMMENDATIONS

I. CONCLUSIONS

This part presents the situation on piped water, waste water and solid waste management services in Ninh Kieu District, and the knowledge attitude practice of the service users. The actual information and communication activities are also recapitulated.

1. Basic Infrastructure regarding Piped Water Supply, Wastewater Treatment and Solid Waste Management in the 5 Wards under study

Can Tho City has eight districts with a population of 1.1 million inhabitants. Water supply infrastructure covered 80 per cent of the population. In Ninh Kieu urban district, water supply covered more than 90 per cent, with almost all water distribution pipes renovated. The maintenance of water supply was made most appropriate with periodic quality tests by WSDC, and occasionally by the City Environment and Industry Office.

Can Tho City waste water drainage system reaches a little less than 50 per cent of the whole city. Ninh Kieu district was more privileged with approximately 70 per cent of the main roads equipped with water drainage sewers in 11 out 13 wards. In spite of efforts to keep the drainage sewers unblocked, the water drainage system was in poor situation all year long during rainy and sunny seasons. The system was built long 35 years ago with plain concrete sewers, and has been gradually replaced with ferro-concrete sewers. Coupled with the tidal system of the Mekong river and its estuary branches, Can Tho city as a low lying area and a high population is experiencing increasing problems of irrigation flow: stagnant water during period's of low tide and overflowing drains during high tides; smelly during hot season and dirty floods after tropical rains.

Recently with road infrastructure upgrading on main streets, residential quarters in low lying lanes and alleys suffer more periods of clogged and stagnant waste water, most of the times it would takes 3 to 4 hours for the dirty flow to be drained away. Although dredging work has been performed by WSDC on main trunk sewers, by ward authorities on arroyos in their neighborhoods, it was said these efforts were just reactive and piecemeal rather than proactive and comprehensive attempts to manage the situation. In 2007, WSDC used 3 billion VND ($US 200,000) of public fund to dredge some sewers, repair sullage pits on main streets, among them Tran Boi Chau, Ngo Gia Tu and Nguyen Trai streets. One neighborhood had its arroyo dredged 700 m length at the cost of 2 million VND ($US 120), but two months later the canal returned to its previous state and needed to be dredged again. One ward representative said they had to organize to do the dredging quarterly, but often times in different parts of the ward; seldom at the same place.

Solid waste management was considered as the essential factor to keep the area unspoiled and the drains unclogged. The garbage collection was performed by the Urban Work Company at the household doors with monthly fees set 5,000 VND ($US 0.32) for households in lanes and alleys, 10,000 VND ($US 0.75) for households on main streets, or 30,000 VND (less $US 2) for households with small enterprises. But households in narrow alleys or near to river banks or on stilts above canals could not use the garbage collection service. Equipment for garbage collection has been improved greatly with more convenient push carts with a cover, and big garbage trucks to carry collected garbage to dumpsite at the neighboring province Hau Giang previously within Can Tho province.

2. Management Authorities and Responsibilities

The three services - water supply, waste water drainage and solid waste collection in Ninh Kieu district are currently performed by two companies, WSDC and Urban Work Management Company. WSDC operates in all eight districts of Can Tho City, while the Urban Work Management Company was contracted by the Urban Management Office of Can Tho City.

Water supply service has been a continuing service to Can Tho City by WSDC. The management of drainage system was transferred to the WSDC in 2004. Since then, the drainage system has been checked, updated information of the conditions and put on maps for monitoring and further planning. WSDC assumes the responsibilities of maintenance of trunk sewers. Drainage system in residential areas has been assumed by the households themselves and the local authorities at neighborhood and ward levels.

Drainage system in hospitals and industrial places are under control and supervision of their respective managing bodies. Ninh Kieu city has 10 hospitals and 13 health stations. Only the Policlinic Hospital under the Health Ministry has installed a waste water treatment plant for very basic not yet complete treatment before flowing into the municipal drainage sewers. Eight out of 9 municipal Industrial factories did not have their own waste treatment system. If there exists any system thanks to the exhortation of the Environment and Resources Department and the check-up made by the Police of Environment section last year in 2007, most of the factories tried to do their best but only 10 per cent had treated their waste water adequately.

Solid waste from health institutions was disposed together with ordinary solid waste; there was no separate collection system. Industrial waste, construction waste, waste from productive activities in the neighborhoods as well as waste from garden/ trees if collected by the municipal garbage system all went to the dumping site in Dong Thanh commune, Phung Hiep district of Hau Giang province.

2008 was proclaimed the Year for Urban Civilization in Can Tho City. Many IEC activities took place in the first 4 months and there will be more in the coming months. Local and central television released news and information on environment and waste water sanitation. The ward authorities have proved their creativity to achieve highest results in sanitation: creation of a mobile communicators' group on bicycles to reach down end the alleys (An Lac), consolidation of a Law Club (An Hoi) to design information bill board (An Hoi), better communication network between ward authorities and the information houses in the neighborhoods (An Phu, An Hoa) and greater involvement of Mass organizations (Cai Khe).

WSDC is also working on better and effective communication on water tariffs to the city residents in coordination with the ward leaders. WSDC is organizing a group of communicators to perform IEC tasks. Members of the group are 1 or 2 staffs from the personnel of WSDC agencies, and heads of this group will be 2 or 3 professional and experienced staffs. Another group for Care of Customers will also be set up to handle complaints per agency locations in various parts of the city. WSDC agencies will receive complaints, answer them, and monitor the solutions applied for customers.

3. KAP related to Water Use, Wastewater and Sanitation

Water supply

Surveyed households in the 5 surveyed wards have access to piped water, and used it for cooking (99.75 per cent), drinking (90.8 per cent) and washing (98.5 per cent). Well water and rain water were the other sources of water for washing. Bottled water was the second water source for cooking and drinking.

Almost all the consumers (99.0 per cent) perceived the piped water quality for cooking as good or at least average (78.0 and 21.0 per cent, respectively). Consumers of piped water for washing also appreciated it good and average with nearly the same percentage as for cooking purpose (78.7 and 20.8, respectively). Meanwhile consumers of piped water for drinking showed some reservation but the rating of quality was also high with 78 per cent as good, 21.25 per cent as average. The water was described by some as "dirty" which referred to the residue of water particles and the sometimes strong smell of chlorine.

With monthly payments of piped water use by the majority of the households in the sums of between 50,000 to 100,000 VND (38.0 per cent), and above 100,000 VND (33.8 per cent), the affordability of piped water for home consumption was assessed as "acceptable" by the

majority of the respondents (64.0 per cent), “rather expensive” or “expensive” by 23.7 per cent and 9.7 per cent respectively. Some households with large numbers of inhabitants used piped water sparingly.

There was a broad consensus that the piped water system was “highly satisfactory” - three fourths (75.0 per cent) of interviewees were very satisfied, 22.8 per cent quite satisfied and only 1.5 dissatisfied. Situation of water supply is improving with easier installation of water - meter clocks, affordable tariffs, no shortage of water supply unless low water pressure at rush hours to reach 2nd floor. However the assessment concerning piped water quality was that it still lacks clear indicators and norms for local community and customers to refer to.

Waste water management

Waste water drainage at household level involves various mechanisms for handling domestic and home production liquid wastes. Disposal of domestic waste is through in-house sullage pits, septic tanks and through connection to available drainage system.

Almost all the surveyed households had in-house toilets (99.5 per cent). The number of households with unhygienic toilets or without in-house was small (2.0 per cent), and mainly due to unfavorable economic or spatial conditions.

Knowledge of suitable time to drain the toilet septic tanks was uncertain among household respondents. And nearly half of these toilets (45.0 per cent) were drained away when full or blocked.

More than half of the household respondents (53.3 per cent) saw two harmful effects of indiscriminate disposal of human excreta: pollution of water sources and spreading of diseases. A few of them were aware of water pollution (48.0 per cent). A few of them mentioned the only harmful effect was the spread diseases (4.5 per cent). Some respondents cited other negative effects such as bad smells, unhygienic/uncivilized habits (1.75 per cent). This shows that the the link between unsafe wastewater disposal and public health is not sufficiently understood by the community. This has to be tackled with appropriate public awareness raising campaigns.

There was 94 per cent of households that confirmed a public sewerage system nearby, and 5.0 per cent of them were not connected to it. The connections were mainly covered drains (79.0 per cent), some open drains (10.0 per cent). The remaining ones went direct into waterways.

54.75 per cent of the respondents told they were satisfied with the current drainage situation around their houses. The others were not satisfied at all. Not all water consumers were connected to main trunk sewers, and in some neighborhoods households with productive activities such as cake making, soy bean paste processing discharged waste water into the existing sewer systems or straight to the canals. The sewers experienced blockages especially during rainy seasons, with overflows in some parts along the main streets, and in the lanes and alleys. During sunny seasons, stagnant waste water emitted bad smell from open drains and blocked waterways.

91.0 per cent of the respondents agreed on the necessity to have waste water treated before returning to the rivers, mainly for protection of water sources (44.5 per cent), in response to collective governance (28.1 per cent), for community sanitation (15.8 per cent). Reasons as for individual health or economics consideration were also mentioned but at low incidence (6.6 and 5.0 per cent respectively).

Among those who agreed to have waste water treated, 93.4 per cent said they were willing to pay for waste water treatment. It should be noted that all the households down end the alleys were willing to pay, those from the other locations presented lower percentage of willingness, gradually decreasing to 90 per cent for those on alleys, 84 per cent for those on lanes, and 82 per cent for those on main streets.

7.2 per cent of those willing to pay did not know which appropriate amount to pay and 47.3 per cent are waiting for tariff calculated by the government, in full consideration of its affordability to the general public. A large number of respondents (36.2 per cent) thought to pay less than 1,000 VND. The remaining are willing to pay between 1,000 to 3,000 VND (7.4 per cent) and 3,000 to 5,000 VND (2.1 per cent) per cubic meter of water use.

Solid Waste Management

The management of solid wastes is primarily the responsibility of the Urban Work Management office. Areas within the surveyed areas have access to these services, and all of them receive a regular daily waste collection service. The collection of domestic waste is supposed to be on a house-to-house basis; however households on narrow alleys had to bring their waste to the garbage collection carts.

Ocular observation in the surveyed areas revealed: indiscriminate garbage dumping in empty spaces and along the roads; pet waste found on footpaths; plastic bags almost littered everywhere, and especially near the sewer manholes.

99.0 per cent of the household paid fees for garbage collection, 1.0 percent were exempt from paying due to their roles as neighborhood leaders assisting the garbage collectors, or because they large and poor families.

Less than 10.0 per cent was not satisfied with the current garbage collection situation and wished to see improvements in: more appropriate schedule/ times for solid waste collection, more tidy waste collection, less bad smells and flies from the garbage carts. FGD participants suggested better garbage management supervision and other locations for the transfer of garbage into trucks.

Above results showed that the solid waste management as currently performed has accentuated the problematic situation of waste water drainage.

4. IEC on Water Supply and Wastewater

There was little information concerning water supply and waste management in the last 6 months (Nov. 2007 to Apr. 2008). Information dealing with sanitation matters was only heard by 27.0 per cent, on waste water issues by 10.0 per cent, and on piped water concerns by 4.0 per cent of the households.

News and information had been diffused through mass media channels: television (55 per cent), radio broadcasting (9 per cent) and newspapers (11 per cent). Specific local communication channels were neighborhood notice boards and ward loudspeaker system (2 per cent).

Looking for influential persons for information communication, the respondents trusted in 3 top persons: ward leaders (44.2 per cent), WSDC representatives (28.5 per cent) and health workers (15.8 per cent). The respondents expected local authorities together respective professional workers to communicate the issues and solutions in their communities.

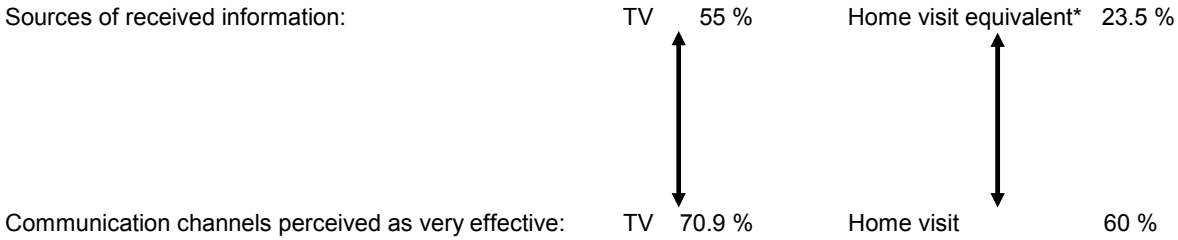
As of May 2008, neighborhood residents who were present in most of the ward meetings are those living down end the alleys (91 per cent of themselves), then came those on the alleys (88.8 per cent), on the lanes and main streets (85.3 per cent equally).

It seems that residents down the end of the alleys were also keen to listen to information from loudspeakers (72.7 per cent). Those on alleys and main streets exceeded half of their constituents (70 and 54.1 per cent respectively); those on lanes less than half of them listened to the loudspeaker systems (47.2 per cent). However, in general, loudspeaker systems in the neighborhoods were assessed moderately effective by 45 per cent of all the household respondents.

Probing on the effectiveness of different types of communication channels, interpersonal and interactive channels received high appreciation such as home visits (77 per cent), fairly high appreciation, namely neighborhood (61 per cent) and ward meetings (58 per cent), campaign

(44 per cent). Among mass media means, television scored highest (64 per cent), fairly high: newspapers and radio broadcasting (48 per cent equally), poster (43 per cent), newsletter and leaflets (roughly equal by 39 per cent), notice-boards (31 per cent). Interactive communication methods were also suggested to take part in school settings, neighborhood groups and street coffee places.

If above mentioned is summed up, the following picture emerges: TV and home visits as the most preferred communication channels by interviewees are used inconsistently. While TV and home visits are interviewees' two most preferred communication channels, especially face-to-face channels ("home visit equivalents used") are not used frequently enough.



The above figure indicates the two most frequently used communication channels vs. two most preferred communication channels by interviewees

* Home visit equivalents include: neighbors, health worker, friends, family, etc.

5. Communication between Service Providers and Service Users

As for customer care services whether of water supply, waste water or solid waste management, the survey results revealed many verbal complaints (grumbling) but negligible written complaints addressed to the service provider offices. This was partly due to customer care units not being fully operational, and also partly due to there no clear procedural guidance for addressing complaints to the concerned agencies.

The management supervision bodies existed but seemed to operate within a certain hierarchy not yet well known in detail or made widely known to the general public. This Waste water management program has been initiated in 2006 and evolved since then. The World Bank Urban Upgrading program has also been operating since 2004. Many public works are taking place in Ninh Kieu District and the whole Can Tho City. Information to the public was through people's council sessions. But some council representatives seemed confused of the program activities and progress. Newsletter and leaflets with updated information and concise technical guidance – an output of the waste water management program – are more than welcome but needs real investment to get the most benefits reaching customers and the general public.

II. RECOMMENDATIONS

Recommendations are made with regards to improve the service delivery as well as the quality of the services. Recommendations are grouped into four sections: for water supply and waste water management handled by WSDC, for garbage collection performed by the Urban Management Office, for IEC activities from WSDC together with local authorities at ward, district and city levels, and for the WSDC Customer Care Unit.

1. Recommendations for Water Supply and Wastewater Management

- The training of the staff in contact with customers, whether during their tours in the neighborhoods or at the office reception desks, should focus on developing customer care personnel who have attentive attitudes and detailed knowledge of procedures, policies and services that allows them to attend to customers' needs and address their complaints.

- Expert staffs or consultants for customers' care unit should supervise the staff involved and help to design and ensure the implementation of:
  a. Newsletters on quarterly basis: update of program progress and activities, articles on technology distributed to the program ward and neighborhood authorities
  b. Leaflets dealing with Water Supply Mechanism: procedures, connections, technology employed; Water Quality Criteria, tests by WSDC, by Environment management office, and also available simple tests by the customers.
  c. Leaflets dealing with Waste Water Management: procedures, connections; mapping of main and sub – sewerage systems, etc.
  d. Leaflets dealing with hygienic septic toilet building and maintenance, appropriate handling ways to keep septic tanks clean not polluting the drainage waterways, suitable time to carry on the toilet tanks drainage.
  e. Descriptive standards and prescriptive requirements for effective management of both piped water supply and waste water drainage.
  f. Website for customers' consultation.

Pricing of Water supply and Water treatment tariffs

- WSDC should secure a price affordable to the general public: the water supply pricing has been revised and waste water management contribution tariffs should be fixed accordingly before promulgation and adoption of new tariff.
- Special charges and exemptions should be considered as previously done per household but restructured according to actual conditions, i.e. types of businesses, size of households etc.
- Clear and separate details on the bills concerning environment sanitation tariff and waste water management tariff.

2. Recommendations for Garbage Collection

- Re-consideration of the household garbage collection times should be done together with the neighborhood residents.
- Re-organization of garbage collection in collective places, such as markets, main street pavements and sidewalks; provision of municipal garbage bins with medium capacity in empty plots.
- Stricter guidelines for daily garbage collection and better communication between garbage collectors and household owners on the type and size/ volume of household garbage, time of collection, ways to inform households in narrow passages.
- Instructions for hard rubbish collection, i.e. broken furniture, floor coverings, building material… should be informed of the place and time to dispose them and of extra charges to pay to the collectors' company. This information should be made public and known by the neighborhood leaders and residents.
- Residue or waste from household businesses, i.e. cake making, soya bean paste processing, poultry dressing… should be disposed appropriately with instructions from the environment office, and the health services.
- Should design more convenient garbage carts to enable the garbage collectors safe and clean separation of recyclable material (glass, plastic, aluminum cans) from organic waste material.
- Should encourage household owners to use less plastic bags to wrap the organic waste, thus lessen the smell of rotten waste confined in plastic bags.

Pricing of Garbage collection tariffs

1. Tariff for ordinary household garbage collection should be kept as currently required but more re-organization work and precise information should be performed.
2. Special tariff for hard household rubbish collection should be calculated according to types of removal and disposal facilities needed.

3. Recommendations for Information, Education and Communication

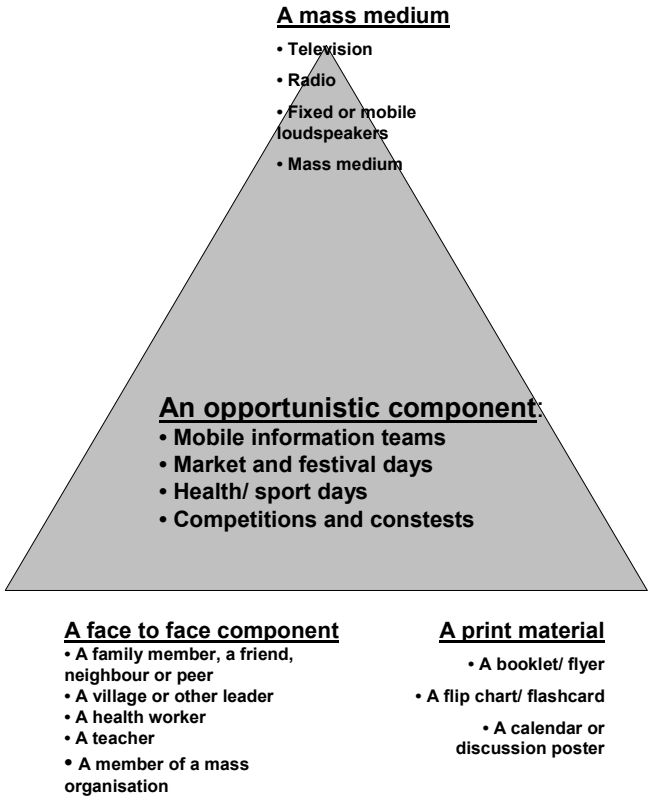
In general, the study found out that very few interviewees have been informed in the last six months about the company's services. Thus, in a first step the IEC campaigns should be intensified considerably and be repeated regularly since they are central in two aspects that are of pivotal importance for the program's success: namely, in raising interviewees' awareness on positive health and environmental impacts of the program and thus in the creation of willingness of interviewees to pay revenue rates suitable for an economically sound operation of services.

These campaigns should be custom-tailored as regards channels/ sources used, and contents of IEC messages. Below are recommendations in this respect.

WWM IEC channels

The study found out that the actually used sources/ channels to inform, educate and communicate with people are not fully identical with the channels perceived as most effective by commuters themselves. Thus, channels used should be in accordance with those perceived as effective by the people. Additionally, IEC campaigns proved to be most effective if the four groups of channels- a mass medium, a face-to-face component, a print material and an opportunistic component- are combined. This is called by UNICEF the Δ- Formula (Figure 31).

Figure 31: UNICEF's basic [∆] formula for the IEC strategic approach in Vietnam



Source: UNICEF (2001), Effective Information, Education and Communication in Vietnam, Hanoi.

According to interviewees statements following channels are recommended to be used together: Home visits (face-to-face component) by a respected and trained person (see more information below). On this occasion the respective information sender should also distribute printed materials (leaflets, brochures) and discuss the contents with the households.

Simultaneously, TV spots should be used to disseminate IEC messages since this channel is perceived as very effective by interviewees and TV-sets are available in almost all households interviewed (99 %).

Additionally, IEC training by IEC experts should be organized beforehand for local cadres/ household group heads. Then the leaders will affect IEC to the people at the meetings. During the IEC meetings, visual aids should be used (poster/photos) to show and discuss the positive and negative effects. Handouts should also be distributed for further readings. Video films on wastewater and others sanitation education can also be programmed at these meetings. This will enhance better understanding for everyone.

WWM IEC sources

Face-to-face communication is perceived as very effective by interviewees. Asked about *who* is the most influential communicator, majority answered (in descending order) "head of ward" and "company staff" and "health worker". Thus, these sources should be mobilized and integrated thoroughly in IEC measures. However, it is essential that these motivators receive sufficient training, materials and support in order to implement their tasks.

It is international experience that the best results from IEC activities are achieved when participatory methods are used. The focus should therefore be on a participatory process

with the establishment of a dialogue and the provision of background information and explanations so that people can make their own choice.

To motivate key people's participation in WWM IEC activities: some alternative communication channels should be used in tandem with existing mainstream ones. The local people should elect motivators, as they are keen on choosing the right persons. These elected person will cooperate, share workload with professionals – who often lack time to perform IEC. And the people network (e.g. the health volunteer network includes: Buddhist monks, Catholic priests, retired cadres, teachers…) should be supported to build capacity and motivation.

To improve the communication, knowledge and skills of WWM IEC senders and message producers: in order to achieve the objective, the capacity of agents at wards should be oriented first and then, the people network (senders) consolidated. Along with the knowledge and skills in WWM, the knowledge and skills in communication, group work, teambuilding, monitoring of the mentioned agents (senders) should be improved.

WWM IEC process

Use a combination of information channels presented below in order of most preferred and effective to lesser impact:

a. First by WSDC staff and Garbage collectors at the customers' doors,
b. Through ward and neighborhood meetings with newsletter contents, thus at three month periods, or when urgent matters or actions are required
c. Through the City television transmission and radio airing as well as through the loudspeaker systems in the neighborhoods, to announce before, during and after the actions.
d. Through a ward campaign to start the implementation of an IEC program, followed by neighborhood meetings in small community groups with leaflets distribution for thorough understanding…
e. Through local newspapers.
f. Use of websites – information from the City level, from respective agencies i.e. WSDC, Urban Work Management.

Involve the ward authorities and stimulate their creativity through contest for best neighborhood within the ward in the dissemination of policies, and good coordination for waste water and solid waste management. Experiences, good and bad practices for clean environment will be recounted and acknowledged in the WSDC newsletters.

Involve the city authorities in the dissemination of information on Infrastructure planning and building of any current actual programs, i.e. Urban upgrading of World Bank and Waste Water Management of GTZ, with specific details of locations, activities, expected results and deadlines. This information should be aired in television transmission, radio broadcasting and loudspeakers.

4. Recommendations for the WSDC Customer Care Unit

Customers of WSDC should urgently be informed about their rights and obligations as regards to water supply, waste water and solid waste services. Especially their right to complain to/ inform the company as the service provider in case problems arise, general problems occur or suggestions for service improvement can be made. It is of crucial importance to establish a relationship between the customer and their service provider - a relationship in that the service provider feels responsible in providing the best possible service to its customers. In order to be able to do that the company needs suggestions from its customers on how to improve the service quality. Thus, it is obvious that this relationship should be "two-way".

In order to establish the trustful relationship described above the company should pro-actively get in an ongoing dialogue with its customers. Two basic issues have to be addressed in this connection:

- First, company's staff - up to the management board - has to internalize a mind-set in that they are there to provide a service for the people and not the people have to be happy to receive a service at all. This is crucial in the mid and long-term since the targeted full cost-recovery of the service through customer fees can only be achieved if the latter are satisfied with the services they receive, understand the value of the services (mainly health implications) and thus are willing-to-pay for them.
- Second, basically the first step is to inform the people that there is a unit where they can complain and that it is their right to do so. The BLS results in this regard indicate that the knowledge about the existence of a Customer Care Unit - that is inter-alia responsible for complaint handling - is very low and customers are reluctant to use this option, which seems to be grounded in socio-cultural reasons.

In order to achieve above mentioned, the same information channels that are recommended to be used for the IEC campaigns should be used - albeit with adjusted contents. This would be effective and efficient.

Increase users' willingness-to-pay

The survey revealed that interviewees generally are to a high percentage willing to pay for wastewater management and solid waste collection services. However, they should be thoroughly informed about health and hygiene issues and its link with water/ wastewater/ solid waste, applied technology options, the cost of these, the organizational "requirements" etc. This strengthens the awareness of stakeholders, convinces them that payments are necessary and thus supports revenue rates suitable for an economically sound operation of these services.

As in the customer relations paragraph, it is recommended to use for this purpose the same information channels that should be used for IEC campaigns in general.

APPENDICES

APPENDIX 1: LIST OF KEY INFORMANTS

Names	Agencies	Positions	Idl Dates	Notes
Nguyen Hoang Tuan (Mr.)	An Lac Ward Ninh Kieu District	Vice-chairperson Ward People's Committee	May 06, 2008	
Nguyen Van Giang (Mr.)	An Hoi Ward Ninh Kieu District	Vice-chairperson Ward People's Committee	May 07, 2008	
Vi Le Lai (Mr.)	An Hoa Ward Ninh Kieu District	Vice-chairperson Ward People's Committee	May 08, 2008	Mrs. Tham Chairperson attended the interview – No tape recording
Nguyen Thi Thanh Thuy (Mrs.)	An Phu Ward Ninh Kieu District	Vice-chairperson Ward People's Committee	May 09, 2008	
Nguyen Van Dep (Mr.)	Cai Khe Ward Ninh Kieu District	Vice-chairperson Ward People's Committee	May 10, 2008	
Nguyen Van Thanh (Mr.)	Urban Management Office of Ninh Kieu District	Deputy head	May 12, 2008	No tape recording
Truong Quoc Trang (Mr.)	Water Supply and Drainage Company - Can Tho City	Director – in charge of Water Supply	May 12, 2008	No tape recording
Total : 07 Key informants				

Idl = in-depth interview

List of Focus Group Discussions

Wards	Types of groups	Date	Location of FGD
An Hoi	1. Mixed group (MO & local leaders) 2. Female group (residents) 3. Male group (residents)	May 7, Morning May 7, Afternoon May 7, Afternoon	Ward Meeting room -id- -id-
An Hoa	1. Mixed group (MO & local leaders) 2. Female group (residents) 3. Male group (residents)	May 8, Morning May 8, Afternoon May 8, Afternoon	Ward Meeting room Neigh. Meeting room Neigh. Meeting room
Cai Khe	1. Mixed group (MO & local leaders)	May 10, Morning May 10, Afternoon	Ward Meeting room -id-

Wards	Types of groups	Date	Location of FGD
	2. Female group (residents) 3. Male group (residents)	May 10, Afternoon	-id-

APPENDIX 2: DATA COLLECTION TOOLS

1. Household Questionnaire

Questionnaire Control number	**Ward/Commune:**
Name of Interviewer:	**Residential area/hamlet:**
Telephone No.	**Residential unit:**
Date/Time	**Address:**
Name of City/Province:	**Telephone Number of Interviewee:**

BASELINE SURVEY QUESTIONNAIRE

Waste Water Management Program

INTERVIEWER: PLEASE READ OUT THIS TEXT TO THE INTERVIEWEE

CAREFULLY BEFORE YOU START WITH THE INTERVIEW!

In the framework of waste water & solid waste management in provincial centers program, we are conducting the baseline survey incorporating Knowledge-Attitude-Practice & Consumer-Satisfaction-Survey, related with the waste water, solid waste and sanitation, in different levels. On behalf of the program management we would like to thank you very much for your cooperation and having time to answer the questions. All information provided by you will be considered for this study only and not used for any other purposes.

PART 1 FAMILY STATUS

1. ***Name of interviewee: . . . . . .***
2. ***Age: . . . . . .***
3. ***Gender:***

1 □ Male

2 □ Female

4. ***Ethnicity:***

1 □ Kinh

2 □ Khmer

3 □ Hoa

4 □ Other, please specify……..

5. Education level:

1 □ Illiterate

2 □ Grade1-5

3 □ Grade 6-9

4 □ Grade 10-12

5 □ University/college

6 □ Vocational education

7 □ Other, please specify…….....

6. Profession:

1 □ Official

2 □ Worker

3 □ Small-scale Trading

4 □ Farming

5 □ Fishing

6 □ Private business

7 □ Home Duties

8 □ Other, please specify. . . . . .

7. Average monthly household income in last 12 months (estimated)?

1 □ < 500,000 VND

2 □ 500,000 - under 1 million VND

3 □ 1- under 2 Million VND

4 □ 2- under 3 Million VND

5 □ 3- under 5 Million VND

6 □ 5 Million VND or over

8. Number of members registered in the households?

1 □ One

2 □ Two

3 □ Three

4 □ Four

5 □ Five

6 □ > Five

9. Does your household possess one or more of the following facilities?

Note: Multiple answers possible!

1 □ TV

2 □ Radio

3 □ VCD/DVD

4 □ Other, please specify……

PART II KAP SURVEY RELATED TO WATER, WASTE WATER and SANITATION

A. WATER

10. What are the main sources for the following purposes?

Note: Multiple answers possible!

Cooking water quality scale: 1- Poor, 2- Acceptable, 3- Good

		Cooking	Drinking	Bathing &Cloth Washing
		Water quality	Water quality	Water quality
1 □	Rain water			
2 □	River			
3 □	Pond, lake			
4 □	Pump (drilled well)			
5 □	Buying water			
6 □	Piped water			
7 □	Pure water/ bottled water			
8 □	Other, please specify …… ……			

11. If you are connected to a piped water system how much do you pay for water per month?

1 □ I am not connected → **GO TO QUESTION 13**

2 □ < 10,000 VND

3 □ 10,000- <20,000 VND

4 □ 20,000- <30,000 VND

5 □ 30,000 - <50,000 VND

6 □ 50,000 - <100,000 VND

7 □ 100,000 VND or over

12. How do you consider the cost of piped water?

1 □ Expensive?

2 □ Rather expensive?

3 □ Moderate?

4 □ Cheap?

5 □ Don't Know/ No answer

B. SANITATION

13. Do you have a household toilet?

1 □ Yes (Continue with questions 14 & 15)

2 □ No→ **GO TO QUESTION 16**

14. If "Yes", what kind of toilet?

1 □ Septic tank toilet (continue with question 15 and then go to question 19 forwards)

2 □ Pit toilet→ GO TO QUESTION 19

3 □ Central (off-site) sewage system→ GO TO QUESTION 19

4 □ River toilet→ GO TO QUESTION 19

5 □ Other, please specify . . . . . .→ **GO TO QUESTION 19**

15. If you have a septic tank, how often do you empty the tank?

1 □ Whenever it is blocked

2 □ Whenever it is full

3 □ Other, please specify……..

16. If "No toilet", where do you dispose of human waste?

1 □ In the river

2 □ In the street

3 □ In the field

4 □ Use plastic (PVC) bag

5 □ Use neighbor's latrine

6 □ In Public Toilet

7 □ Other, please specify

8 □ I don't know/ No answer

17. If you don't have a toilet yet, are you willing to borrow money in order to build a sanitary household toilet?

1 □ Yes, why?

2 □ No, why not?

3 □ I don't know/ No answer

18. Would you share a toilet in common with one of your neighborhoods?

1 □ Yes, Why?

2 □ No, why not?

3 □ I don't know/ No answer

19. What is the influence of using the river or field as a toilet on the environment?

Note: Multiple answers possible!

1 □ Spreads dangerous diseases?

2 □ Pollutes the water source?

3 □ Is not harmful?

4 □ Other, please

5 □ Don't know?

C. WASTE WATER DRAINAGE

20. What are the sources of waste water around your house?

1 □ Daily activities in the household (bathing, cleaning, washing)

2 □ Nearby Hospital

3 □ Nearby Industrial area

4 □ Construction in neighbourhood

5 □ Nearby Market

6 □ Other, please specify . . . . . .

21. Is there any public sewerage system around your house?

1 □ Yes (continue with next questions)

2 □ No→ **GO TO QUESTION 25**

22. Is your house connected to a drainage system?

1 □ Yes

2 □ No → **GO TO QUESTION 25**

23. If your house is connected to a drain, what type of drainage system is it?

1 □ Open drain

2 □ Covered drain

3 □ Drain leading to a pond, canal or garden

4 □ Other, please specify……..

24. How long have you been connected?

1 □ < 1 year

2 □ 1 to 3 years

3 □ >3 years

4 □ I don't know/ No answer

25. Are you satisfied with the current drainage situation around your home/street?

1 □ Yes, Why?..... → GO TO QUESTION 27

2 □ No

3 □ I don't know/ No answer

26. If No, what are the problems?

Mosquitoes breeding

1 □ Spread diseases

2 □ Bad odors

3 □ Polluted water source

4 □ Flooding

5 □ Other, please specify……..

27. As a general principle, do you agree that waste water should be treated (cleaned) before it returns to the river or sea?

1 □ Yes

2 □ No

3 □ Don't Know / No answer

28. Are you willing to pay for waste water treatment?

1 □ Yes, why?.....

2 □ No, why not?..... → GO TO QUESTION 30

3 □ I don't know/ No answer→ **GO TO QUESTION 30**

29. How much are you willing to pay for treating waste water per m3?

1 □ > 5.000 VND

2 □ > 3.000 - 5.000 VND

3 □ > 1.000 - 3.000 VND

4 □ Up to 1.000 VND

5 □ Other

6 □ I don't know/ No answer

D. SOLID WASTE

30. Do you use solid waste collection service?

1 □ Yes (continue with 31, 32)

2 □ No → **GO TO QUESTION 33**

31. How often is the solid waste collected?

1 □ Every day

2 □ 2-3 times per week

3 □ Once per week

4 □ Other, specify

5 □ Don't know/No answer

32. How much are you willing to pay for solid waste collection service per month?

1 □ Nothing

2 □ < 10,000 VND

3 □ 10,000 - < 20,000 VND

4 □ 30,000 VND or over

5 □ Don't know/No answer

33. If you don't use solid waste collection service, how do you process the solid wastes?

Note: Multiple answers possible!

1 □ Bury it

2 □ Burn it

3 □ Throw it in the field

4 □ Throw it in the river, lake, ditch

5 □ Other, please specify. . . . . .

6 □ I don't know/ No answer

34. Do the above mentioned method/s of solid waste processing change in the wet season or during floods?

1 □ Yes, which method/s? ……and in what way?.....

2 □ No

35. Are you satisfied with the current solid waste management practices in your area?

1 □ Yes→ GO TO QUESTION 39

2 □ No

3 □ I don't know/ No answer→ **GO TO QUESTION 39**

36. What do you suggest should be improved?

1 □ Hygiene problems

2 □ Frequency of collection

3 □ Costs of collection should be reduced

4 □ Blocked drains

5 □ Water pollution

6 □ Smell

7 □ Flies

8 □ Other, please specify……..

37. Are you willing to pay for improved solid waste collection service?

1 □ Yes

2 □ No → GO TO QUESTION 39

3 □ Don't know/No answer

38. If yes, how much are you willing to pay per month?

1 □ < 10,000 VND/month/household

2 □ 10,000 - < 20,000 VND/month/household

3 □ 20,000 VND/month/household or over

4 □ Other

5 □ Don't know/No answer

39. What are some possible solutions to existing solid waste management problems?

……
……
……
……

PART III INFORMATION, EDUCATION, COMMUNICATION PRACTICE

40. Did you receive any information in the last six months on the following issues?

Note: Multiple answers possible!

Information about	Yes	No	Don't know/ No answer
1. Piped water			
2. Wastewater			
3. Sanitation			

41. If yes, what kind of information did you receive?

1 □ Rights in regard to waste water disposal?

2 □ Duties in regard to waste water disposal?

3 □ Other **(please specify)** .....

42. If yes, how often did you receive this information in the last 6 months?

Frequency of information receiving	Piped water	Wastewater	Sanitation
1 □ 1 time			
2 □ 2-3 times			
3 □ 4-5 times			
4 □ More than 5 times			
5 □ I don't know/ No answer.			

43. If yes, from what sources did you get the information?

1 □ Neighbors/Friends

2 □ Public Works Company

3 □ Health communicator/ volunteer

4 □ Respected people in the ward

5 □ TV/Radio/Newspaper/Loudspeaker (please circle if applicable)

6 □ Member of mass organization (name agency)……

7 □ Other, please specify . . . . . .

44. Who is the most influential person to communicate about water, waste water & sanitation?

1 □ Head of ward

2 □ Representative of the Company

3 □ Health worker

4 □ Member of Women's Union

5 □ Member of Youth Union

6 □ Respected person

7 □ Other, please specify. . . . . .

45. How often are public meetings held in your ward?

1 □ Never

2 □ Monthly

3 □ Quarterly

4 □ > 6 months

5 □ Other

6 □ I don't know/ No answer

46. Is there a loudspeaker system in your ward?

1 □ Yes

2 □ No

47. If 'Yes', What is for you the most suitable time for listening to broadcasts from the loudspeakers?

Note: Multiple answers possible!

1 □ Early Morning

2 □ Mid Morning

3 □ Noon

4 □ Afternoon

5 □ Evening

6 □ Other

48. Ranking exercise: How do you rate the following channels for the Company to communicate with you (the households)?

Note: Multiple answers possible!

1- Ineffective; 2- Moderately effective; 3- Very effective

Channel	*1-Ineffective*	*2- Moderately effective*	*3-Very effective*
1 □ Home visit			
2 □ Neighborhood meeting			
3 □ Ward meeting			
4 □ Loud speakers			
5 □ Poster/			
6 □ Leaflet/			
7 □ Newsletter			
8 □ Radio			
9 □ TV			
10 □ Newspaper			
11 □ Notice Board			
12 □ Public Campaign			
13 □ Other *(Please specify)* ……..			

PART IV CUSTOMER SERVICE SATISFACTION ON PIPED WATER, WASTEWATER & SOLID WASTE SERVICES

49. Are you satisfied with the water supply, wastewater and solid waste services?

Note: Multiple answers possible!

		1- Dissatisfied	2- Moderately Satisfied	3-Very Satisfied
1 ☐	Water Supply Service?			
2 ☐	Wastewater/drainage Service?			
3 ☐	Solid waste Collection Service?			

Complaints

50. Have you ever complained to the Company about one or more of the following services? IF YOU HAVE NEVER COMPLAINED GO TO QUESTION 56

		YES	NO
1	Water Supply Service		
2	Wastewater/drainage Service		
3	Solid waste Collection Service		

51. What have you complained about Water Supply? (check if it applies)

1	☐	Billing/Charges	6	☐	Poor pressure
2	☐	Incorrect Meter reading	7	☐	Poor installation
3	☐	No water and/or discontinuity of supply	8	☐	Incorrect meter operation
4	☐	Leaks (before the meter)	9	☐	Other (name)
5	☐	Water Quality			

52. What have you complained about Wastewater/drainage? (check it if applies)

1	☐	Poor Drainage	5	☐	Bad odour
2	☐	Blocked Pipes	6	☐	Billing/Charges
3	☐	Open manhole	7	☐	Other (name)
4	☐	Flooding			

53.

Courtesy of Company's staff

53. How would you rate the courtesy of Company staff who handled your complaint?

		Very Poor	Poor	Fair	Good	Very Good
1	Water Supply Complaint					
2	Wastewater/drainage complaint					
3	Solid waste Collection/management					

54. Effectiveness of complaint resolution:

		Not resolved	Partly resolved	Resolved
1	Water Supply Complaint			
2	Wastewater/drainage complaint			
3	Solid waste Collection/management			

55. Speed of resolution

From the date that you made your complaint, how long did it take for the Company to resolve it?

		1 day	2-3 days	4-7 days	8-14 days	>14 days
1	Water Supply Complaint					
2	Wastewater/drainage complaint					
3	Solid waste collection and management					

56. Do you have any ideas to improve and the water supply and waste water services?

……
……
……
……
……

END OF INTERVIEW

Thank you for your cooperation!

2. IN-DEPTH INTERVIEW QUESTIONS FOR WARD PEOPLE COMMITTEE

I. General information

1. The Socio – Economic situation in 2007
2. The general situation of environmental sanitation in ward
3. The general assessment of the environmental sanitation situation

II. Specific information

1. Infrastructures of wastewater/solid waste treatment

1.1 What do you assess on the infrastructures of wastewater/solid waste treatment in ward?

1.2 What do you think of the management of wastewater treatment from the hospital and industrial areas?

1.3 What do you assess the management of wastewater/ solid waste treatment, sanitation and public light system, trees and parks?

2. Information – Education – Communication Activities?

2.1 Do you have any activities of IEC on wastewater/ solid waste treatment, sanitation in your ward?

2.2 Do you have any the order to combine for IEC among the Mass Organizations on the wastewater/solid waste treatment and environmental sanitation?

2.3 Are there any results? Are there any methods to assess?

2.4 What do you think the roles of people to combine operating on wastewater treatment and protecting environment?

2.5 How do you encourage people to participate in IEC on protecting environment and public schemes?

III. Orientation on wastewater/solid waste treatment

1. What do you think of the CTWSSC will operate in the market mechanism?
2. Are there other programs on Environmental sanitation in the city? What kinds of activity? And belong to which organizations and countries?
3. Are there any provisions for the company? (Human resources, policies and combine with other organization in propaganda)
4. Do you have any orientation for wastewater treatment from hospital, Industrial areas?
5. Do you have any policies to maintenance - monitoring and evolution for the scheme after it operating?

3. IN-DEPTH INTERVIEW QUESTIONS FOR LOCAL LEADERS

I. General information

The Socio- Economic situation of the district in 2007

II. Specific information

1. Infrastructures of wastewater/solid waste treatment:

1.1 How do you assess the infrastructures of wastewater/solid waste treatment in city?

1.2. What do you think of the management of wastewater treatment from the hospitals and industrial areas?

1.3 How do you assess the management of wastewater/ solid waste treatment and sanitation?

2. Information – Education – Communication Activities?

2.1 How do you think about the IEC activities from the Mass organizations on wastewater/solid waste treatment and environmental sanitation?

2.2. Do you have any policy/ order to combine IEC among the Mass Organizations on the wastewater/solid waste treatment and environmental sanitation?

2.3. Are there any results? Are there any methods to assess?

2.4. What do you think of the roles of people to participate into operating on wastewater treatment and protecting environment?

2.5 How do you encourage people to participate in IEC on protecting environment and public schemes?

III. Orientation on wastewater/solid waste treatment:

3.1 What do you think of WSDC will operate in the market mechanism?

3.2 Are there other programs on Environmental sanitation in the city? What kinds of activity? And belong to which organizations and countries?

3.3 Are there any provisions for the company? (Human resources, policies and combine with other organizations in propaganda)

3.4 Do you have any orientation for wastewater treatment from hospitals, Industrial areas?

Thank you

4. ISSUES TO BE DISCUSSED IN FOCUS GROUP DISCUSSION

I. Behavior related to wastewater and sanitation

1. Is there a public sewerage/drainage system around your house your house connected to the public sewerage/drainage system?
2. Are there industrial areas, hospital, construction in your neighborhood?
3. Have you effected by disposing wastewater from these sources (health, traffic, daily activities, business)
4. How do you think of the situation of sanitation in your neighborhood?
5. And how do you assess the activities of sanitation?
6. How much do you pay for the activities of sanitation per month?

7. What do you think of wastewater treatment's payment (the necessarily payment, the cost of payment, the procedure of payment, and the time of payment)

II. Information – Education – Communication

1. Are there any activities of IEC on Wastewater, solid waste, and sanitation currently?
2. What kinds of method, facilities? And who are responsible?
3. According to you, what kinds of benefit which these activities of IEC bring to you in wastewater, solid waster treatment and sanitation?
4. What kinds of information will be appropriated with you and other people in neighborhood? (the contents and forms of communication)
5. What kinds of communicating form will be appropriated in your condition and the other people in your neighborhood?
6. What do you think about the role of people in IEC on sanitation (asking them how do they stop throwing the garbage into canal/river?

III. Improvement

1. The most important thing to do following:
   - Clean Water supply
   - Wastewater treatment
   - Drainage system
   - Establishment and improvement the solid waste collection service
   - Other schemes (specific)
2. Why do you think it is the most important thing?
3. Do you have any suggestions for wastewater treatment and sanitation currently?
4. Do you have any suggestions for improvement?
5. What kind of community solutions which can contribute to the program?

Thank you