Project GTZ TA No: 07.2023.5-001.00
Project Document No: BLS - HD 001

Edition: 01

REPORT ON COMMUNITY BASELINE SURVEY

INCORPORATING KNOWLEDGE – ATTITUDE – PRACTICE & CUSTOMER SATISFACTION

HAI DUONG CITY – HAI DUONG PROVINCE

Hanoi, April 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 Environment, People and Community (CEPAC)

TABLE OF CONTENTS

APPENDICES

ABBREVIATIONS

BLS	Baseline Survey
CCU	Customer Care Unit
CEPAC	Center for Environment, People And Community
CSS	Consumer Satisfaction Survey
DOC	Department of Construction
DONRE	Department of Natural Resources and Environment
DOH	Department of Health
FA	Financial Assistance
FGD	Focus Group Discussion
GFA	German GFA
GTZ	Gesellschaft für Technische Zusammenarbeit
IDI	In-depth Interview
KAP	Knowledge Attitude Practice
KfW	Kreditanstalt für Wiederaufbau
SOE	State Owned Enterprises
SPSS	Statistical Package for the Social Sciences
TA	Technical Assistance
TCVN	Vietnamese Standard
UPWM	Hai Duong Urban Public Works Management One Member Limited Liability Company
WB	World Bank
WTP	Willingness to Pay
WWC	Wastewater Management Company
WWM	Capacity Development in **Wastewater Management** (TC Component 2)

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

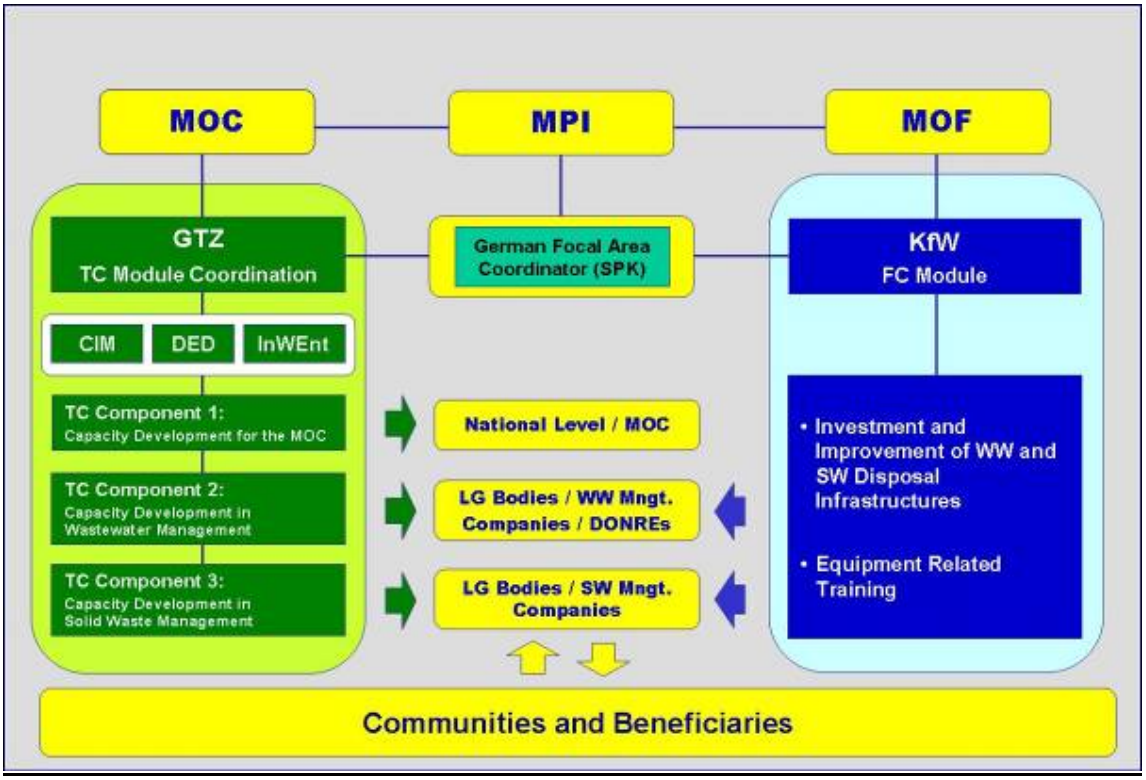
"Wastewater and Solid Waste Management in Provincial Centers" is a program funded by the German government and jointly implemented by different institutions of the Government of Vietnam and several German Development Cooperation (GDC) agencies. The program consists of two complementary modules (Figure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

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 providing new infrastructural facilities for wastewater and solid waste management; it currently targets 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 1-1 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 within the scope of TC Component 2 (WWM), which is being implemented by the GFA Consulting Group on behalf of German Technical Cooperation (GTZ). Implementation commenced in February 2005. In August 2008, WWM launched its second phase, which 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 centres 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 additional cities is foreseen within the current phase. WWM focuses on creating favourable conditions for improved public wastewater services and raising awareness on wastewater related issues among the communities and beneficiaries. Accordingly, the overall objective of TC Component 2 is that:

"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 in the following seven areas:

- Local Government Level
  - Creating favourable 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 meant to aid the WWCs in improving 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 respondent selection. The surveys in the three Northern provinces (Bac Ninh, **Hai Duong**, Vinh) were conducted by the sub-contractor CEPAC, a Vietnamese company specializing in household surveys. SDRC, another Vietnamese survey institution, was commissioned to conduct the studies in the three provinces in the Project Area South, Can Tho, Soc Trang and Tra Vinh**.**

2. THE BASELINE SURVEY OBJECTIVES

In order to support the Wastewater Management Companies in improving their customer services, and in order to achieve gradual changes in community awareness and behaviour patterns, the collection of reliable data on these subjects is necessary for planning corresponding activities.

Thus, the objectives of this 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 mainly to the Hai Duong Urban Public Works Management One Member Limited Liability Company (UPWM - subsequently also referred to as "the company") 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.

3. SCOPE AND TOOLS FOR BASELINE SURVEY

3.1 Scope of Survey

Seven wards in the target area of the WWM-project in Hai Duong City: Pham Ngu Lao, Nguyen Trai, Le Thanh Nghi, Tran Phu, Quang Trung, Tran Hung Dao and Binh Han.

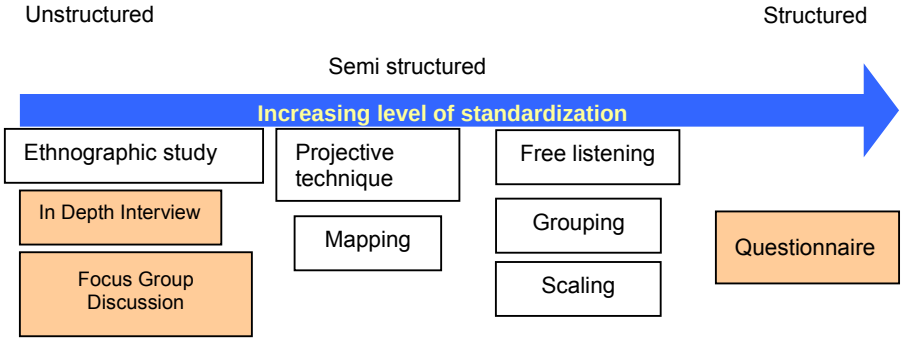
3.2 Tools for Baseline Survey

The survey tools used in the baseline survey are:

- Quantitative method of using household questionnaires,
- Qualitative methods of using in-depth interviews (IDI) and focus group discussions (FGD)

As shown in Figure 3-1 DI and FGD are classified as unstructured survey tools and are therefore less controlled interview processes In comparison, household questionnaires are classified as highly structured surveying tools.

Figure 3-1 Classification of survey tools



3.2.1 Qualitative Method

In-depth Interview (IDI)

IDIs are interviews with key persons playing a special role and/or function in the community, and are considered as representative of the ideas of the community. The informant can be an authority figure, a key community figure, or a respected representative of the community.

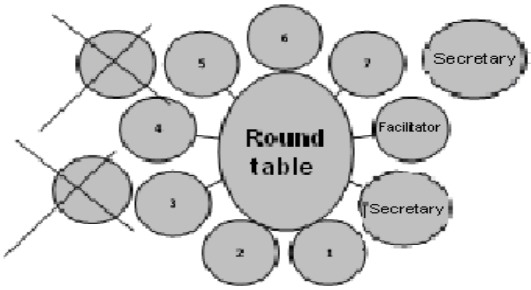
Focus group discussion (FGD)

A FGD is a special type of discussion, which includes around 6 to 12 persons. This group is guided by a facilitator (and an observer) sitting in the group. The members of the group

should be homogeneous, for example the heads of a sub-ward or youth's union ... The members discuss a topic and are free to give their ideas and suggestions freely regarding the discussion topic.

The facilitator listens; if necessary s/he can guide the discussion in terms of content or order of respondents. The FGD mainly provides information about the awareness, attitude and practices of the group.

Figure 3-2 Group discussion – Theory and practice



The FGD should be prepared and managed carefully and the facilitator should be experienced. The place that the FGD is held should be suitable for a meeting and should not have an influence on the discussion. For the discussion of wastewater management, 5-10 open questions should be prepared and directed in such a way as to get the necessary information.

3.2.2 Quantitative Method

The questionnaire is used during household interviews and is a tool for measuring and surveying. In order to ensure the necessary accuracy and reliability, the questionnaire is carefully developed in several phases: first the goals of the survey are determined, then variables are designated, and finally the questionnaire is pre-tested.

The structure of questionnaire

The questionnaire consists of structured questions. The types of question can be either "open," meaning the range of answers is not limited, or "closed" in which case the answers are limited to a predetermined set. Questionnaires can also contain a combination of open and closed questions.

The steps for designing a questionnaire:

- Determine the contents of questions
- Form the question
- Arrange the questions in the right order
- Pre-testing the questionnaire to determine its level of reliability and accuracy as well as any comprehension problems

3.3 Estimation of Sample Size and Its Distribution in Wards

The sample size is important to the study. There are two approaches: The simple random sampling (SRS) method and the probability proportional to size (PPS) method. In this case, the PPS method is applied to determine the sample size. The formulas are taken from Giuseppe's *"The power of survey design"* (WB library, 2006). As required, we aim for a 95% confidence level with a margin for error of 5%, using a conservative response distribution of 100%. The formula is defined as:

$$n = \frac{\left\{ z_{1-\alpha/2}\sqrt{2\bar{p}(1-\bar{p})} + z_{1-\beta}\sqrt{p_1(1-p_1)+p_2(1-p_2)} \right\}^2}{(p_1-p_2)^2}$$

Where:

$z_{1-\alpha}$= significance level of 95% (1.645)

$z_{1-\beta}$= sampling power of 90% (1.282)

p_1= percentage of tap water use (estimation) (80%)

p_2= estimated percentage of tap water use in next year (additional 10%)

$p=(p_1+p_2)/2$

The minimum sample size in Hai Duong is therefore 360 +/-5-10%. A total of about 380 - 400 households divided into 7 wards were selected for this survey.

Table 3-1 Determination of sample size

City	Population in study area (estimated)	Number of households in study area (estimated)	Minimum sample size
Hai Duong	78.839	18.148	360

Table 3-2 Distribution of sample size for the selected wards

Ward	Total number of households	Minimum sample size
Quang Trung	3.200	63
Tran Phu	2.000	40
Le Thanh Nghi	2.000	40
Tran Hung Dao	1.381	27
Nguyen Trai	2.250	45
Pham Ngu Lao	3.317	66
Binh Han	4.000	79
Total	**18.148**	**360**

3.4 Some Characteristics of Wards Selected for the Baseline Study

Geographical and political position. Hai Duong City is an economic, political, socio-cultural centre, a provincial city. It shares a border in the East with Thanh Ha and Nam Sach districts. In the West it has a border with Cam Giang district, in the South with Gia Loc and Tu Ky districts and in the North with Nam Sach district.

In 2000, the residential area accounted for 14.1% of the total area, in 2005 it had increased to 23.6% of the total area of city. In 2000, the urban area was 415.95 ha, or 11.5% of the total city area, in 2005 this was 707.7 ha, or 19.5%. The rural area in 2000 was 96.53 ha, or 2.7%, and in 2005 had become 148.15 ha or 4.1%. The average area per capita in urban areas in 2000 was 36.7 m^2/head in which had increased to 55.8 m^2/head by 2005. Most inhabitants are concentrated in the central wards of the city such as: Tran Phu, Pham Ngu Lao, Nguyen Trai, Le Thanh Nghi, Quang Trung,... Binh Han Ward covers the largest area, but has the lowest population density. The highest population density is in Pham Ngu Lao and Le Thanh Nghi wards.

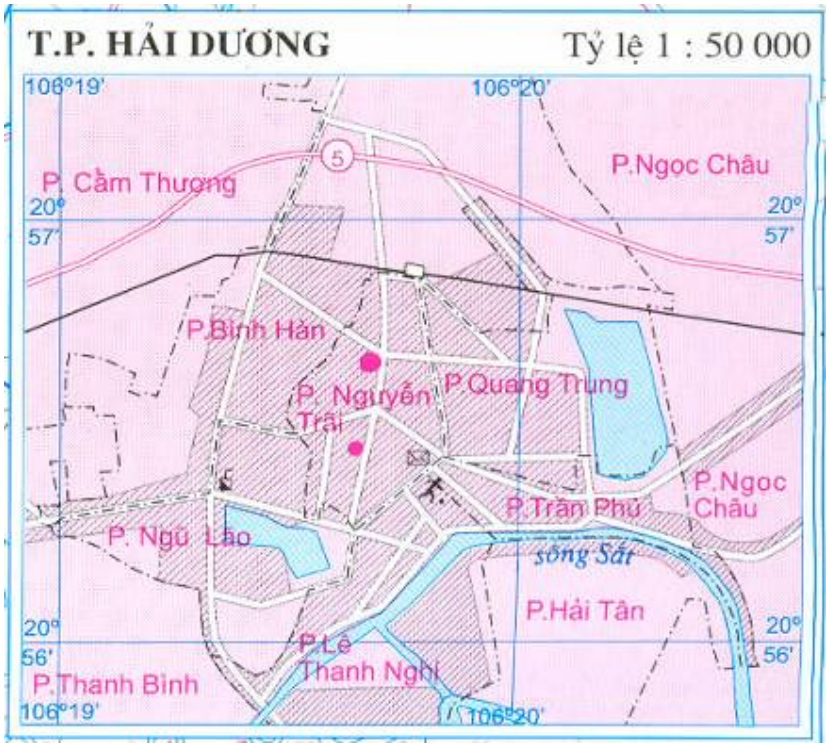
According to the data provided by the statistical department of Hai Duong City, the average population of the city in 2005 was 143,650. Today, the population of city accounts for about 8.48% of the total provincial population. The population density is 3,965/km^2, 3.85 times the density in the province as a whole. The rate of annual population growth is very high. In period from 2002-2005, the average rate of population growth was 2,45%/year, 5.4 times

higher than the whole province (0.45%) and around 1.8 times higher than the previous year's rate.

Table 3-3 General information about Hai Duong City (year 2005)[1]

No.	Criterion	Hai Duong Province	Hai Duong City
1	Area (km^2)	1,662.2	36.2
2	Population (1000 inhabitants)	1,711.5	143.6
3	GDP (milliard VND)	13,665.0	2.252.8
4	GDP per capita (mill. VND)	8.0	15.7
5	Export value (mill. USD)	109.0	67.0

Figure 3-3 Hai Duong City and the wards selected for baseline study



The status of social-economic development. GDP of Hai Duong City in the period from 2001-2005 increased to 14.47%/year, with the industry and construction branches having the highest growth rates, an average of 21.6%/year in the period from 2001-2005. In regards to the economic volume, the GDP of 2005 (price basis of 1994 in comparison) has doubled in comparison with 2000; GDP of 2005 on the basis of current prices was 2,266 milliard VND. GDP per capita in 2005 was very high (15,7 mill. VND per capita, around 986.3 USD), is twice that of the whole province and 1.3 times higher than other provinces of the Red River Delta.

Hai Duong town was upgraded to Hai Duong City in August 1997. During the development periods, the city was always a political, economical, cultural and social centre of the province, even in the time when both Hai Duong and Hung Yen province were joined as one province.

[1] Source: The statistical year book of Hai Duong City and Hai Duong Province, data given by the Institute for strategical development on the basis of statistical data about the provinces and cities in the Red River Delta

In 1997, Hai Duong Province was re-established and Hai Duong City was selected again as the political, economical, cultural and social centre of the province. In the last 10 years since the re-establishing of the province, with the general development of country and of Hai Duong province in mind, Hai Duong City was expanded and invested in to improve the social-economic infrastructure so as to serve the production and welfare needs of the citizens and to serve as a point of investment flow. The living standards of citizens has improved.

With an area of 36.23 km^2, Hai Duong is the smallest administrative unit in the province, accounting for 2,2% of the natural area in Hai Duong Province. At present Hai Duong City includes 13 wards: Pham Ngu Lao, Nguyen Trai, Le Thanh Nghi, Tran Phu, Quang Trung, Tran Hung Dao, Cam Thuong, Binh Han, Ngoc Chau, Thanh Binh, Hai Tan and two communes: Viet Hoa and Tu Minh.

In the period from 2001-2005, with the aid of a social-economic development program, 12,856 new jobs were created, an average of 2570 new jobs per year. These jobs were created in the following areas: agriculture 163 jobs (1.3%), industry and construction 8,247 jobs (64,1%), tourist and service sector 3,124 jobs (24,3%) and 1,322 people going abroad for work (10,3%). This was a big effort on the part of the Hai Duong City authorities.

City is advantageously located in the traffic grid. The city is an important point on the railway between Ha Noi and Hai Phong, it contains over 10 km of main road number 5, and is well connected with the navigation system (Thai Binh river flows along the East and North of the city). The city is advantageously located in the traffic grid and constitutes a centre of the main economic development zone of North Vietnam. Hai Duong City has many opportunities for development of industry and services, such as customs depot services for export goods and trading.

Based on data from the statistical department of city and annual reports from the wards as well as IDI notes with the heads of the wards, we have a crude picture of income (profession) structure in the wards selected for surveying: Quang Trung, Tran Phu, Le Thanh Nghi, Tran Hung Dao, Nguyen Trai, Pham Ngu Lao, Binh Han. The profession structure in wards includes: Agriculture, fishing, service, industry, etc. (Table 3-5 **Income (profession) structure by ward**

Table 3-4 Land area, average population and population density in 2006[2], by ward

Ward	Land area (km^2)	Average population (inhabitants)	Population density (inhabitants/km^2)
Quang Trung	0.9800	13.000	13,265
Tran Phu	0.6300	9.000	14,285
Le Thanh Nghi	0.8396	13.000	15,483
Tran Hung Đao	0.3780	5.691	15,055
Nguyen Trai	0.5700	9.000	15,789
Pham Ngu Lao	0.7984	13.148	16,467
Binh Han	2.2400	16.000	7,142

[2] Data from IDIs with heads of ward

Table 3-5 Income (profession) structure by ward[3]

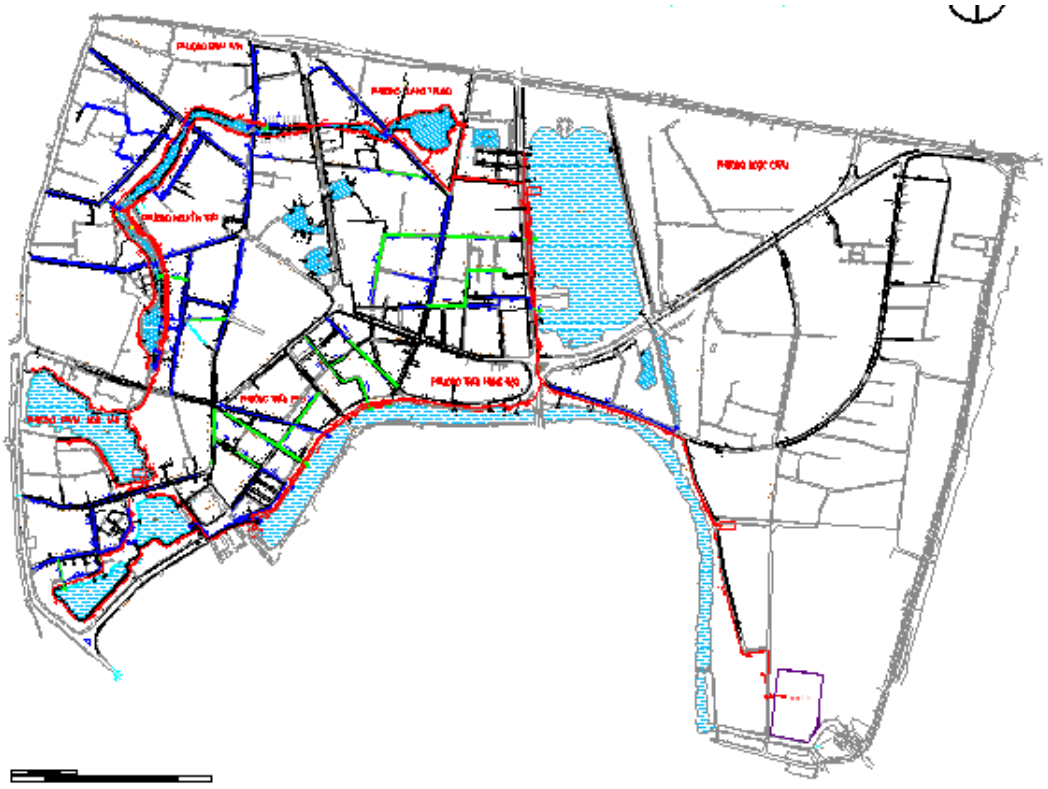
Ward	Agriculture, fishery	Industry, construction, trading, mechanics	Services	Other
Total City	**1.3**	**64.1**	**24.3**	**10.3**
QuangTrung				
Tran Phu	3.0	20.0	77.0	-
Le Thanh Nghi	-	60.0	30.0	10.0
Tran Hung Dao	-	37.0	63.0	-
Nguyen Trai				
Pham Ngu Lao	-	66.0	34.0	-
Binh Han	3.0	50.0	47.0	-

Table 3-6 Total number of households and poverty rate in 2006[4]

Ward	Number of households (hh)	Poverty rate (%)	Number of poor households (hh)
Quang Trung	3,200	2.80	90
Tran Phu	2,000	1.65	33
Le Thanh Nghi	2,000	0.50	10
Tran Hung Dao	1,381	2.43	33
Nguyen Trai	2,250	1.70	41
Pham Ngu Lao	3,317	1.80	61
Binh Han	4,000	0.24	10

[3] Data from IDIs with heads of ward
[4] Statistical data from annual reports of wards

Figure 3-4 Sewage system - Hai Duong City



Source: Project documents

4. SURVEY PREPARATION AND IMPLEMENTATION

4.1 CEPAC – the Baseline Survey Implementing Institution

CEPAC was established in 2006 by a group of 6 university teachers from the Faculty of Economy and Management of Natural Resources at the Hanoi Water Resources University, under the leadership of assoc. Prof. Dr. habil. Nguyen Trung Dung, vice-director of the department of Economics and Natural Resource Management. CEPAC has implemented projects financed by the Water Resources University, Ministry of Agriculture and Rural Development, and international organizations.

Name of institution	CEPAC
Director	Assoc. Prof. Dr. hail. Nguyen Trung Dung
Address	65 phố Khương Thượng, quận Đống Đa, Hà Nội
Mobil	0084-4-5636354, 0983064990
E-mail	center_epac@yahoo.com.vn

4.2 Initial Requirements of CEPAC

Survey techniques applied

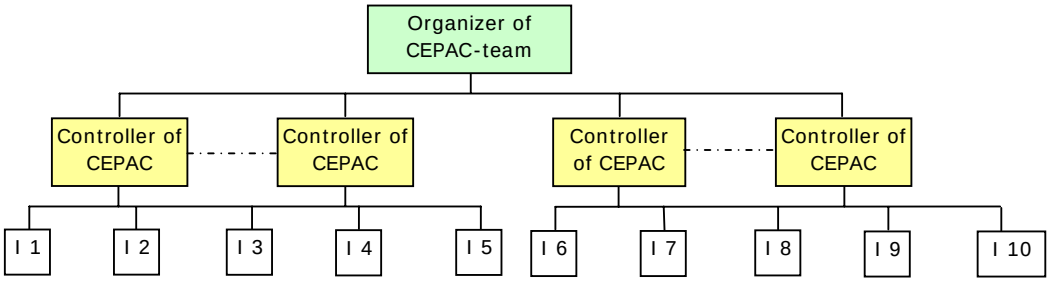
- Conducting of face-to-face structured interview
- The informant: Head of household or leading person of each household will be interviewed
- Age of the respondents: 25-60
- Gender balance between female and male respondents.

- The necessary duration of an interview is 35+ minutes.

Assurance and quality control of survey

- The interviewers went to households that had been randomly selected before the start of data collection. If the key informant of the household was not at home or was unable to provide information, the interviewer either returned at another time or interviewed a neighbouring household.

Figure 4-1 Organisational sketch for the household survey



- Two CEPAC-staff supervised each group of 5 interviewers from the counterpart company. They worked together in controlling/assuring the survey quality. They randomly checked the time, location and interview duration of the interviewers. In many cases, they accompanied the interviewer throughout the entire process.
- A general organizer managed all 4 controllers and controlled the daily reporting on the situation of the interviewers.
- Each day, all the returned questionnaires were checked to ensure that the information gathered was accurate and comprehensive.
- A meeting was held each afternoon with the survey organizer, supervisor and all interviewers. The issues of the day were canvassed and reported, and solutions were proposed.
- All questionnaires were collected in the evening; interview time, date, and relevant information were recorded
- Quantitative data was analysed using the statistical software SPSS (Statistical Package for the Social Sciences). Qualitative data and information obtained was encoded as necessary.

4.3 The Training Program for Baseline Survey and Survey Skills

A three-day training program was organised for the assigned staff from 16th to 18th April 2008 in Hotel Dong Xanh (Hai Duong City). 13 persons were delegated by the company: one from the drainage department, eight from the network management, three from the funeral department, and one from the planning and trading department. See the list in Appendix 1. Mr. Axel Binder and Mrs. Nguyen Thuy Ha from the WWM-project were present. There were 6 persons from CEPAC.

The tasks, as described by the project, were to:

- Provide the necessary service and assistance to the company, enabling it to conduct a baseline survey (BLS) incorporating KAP (Knowledge-Attitude-Practice) and Customer-Satisfaction-Survey (CSS). After this survey, the company staff should be able to organise and manage the execution of similar studies.
- Ensure that the survey quality was as high as possible.

Figure 4-2 Some pictures from the training program


The three-day training program therefore focused on the following lessons /topics:

- Session 1: General knowledge and participatory approach
- Session 2: Introduction to the baseline survey of the WWM-project in 6 provinces
- Session 3: Survey tools and skills
- Session 4: Household questionnaires
- Session 5: Field work – data collection
- Session 6: Data processing using SPSS
- Session 7: Report writing

The training program is presented in Appendix 2. Generally, the results of the training program, according to participant evaluation, showed the training to be both successful and very practical. The training contents were further developed during practical field application.

4.4 The Progress of Survey Implementation

The field survey was conducted from 18th to 23rd April 2008 in seven wards with the close cooperation of 13 members delegated by the company and six CEPAC-members as technical providers and supervisors. In total, 395 household interviewed, seven FGDs were held, and 11 IDIs were conducted with ward and city authorities (Appendix 3).

As outlined in the project proposal, CEPAC allocated 5-6 staff to work as project managers, technical assistants and supervisors of data collection. The following general agreements applied:

- A meeting for submitting the questionnaires and checking all problems should take place during the day and be held from 5.00 - 5.30 pm each day
- One member of CEPAC should continuously supervise and provide technical assistance for 2-3 company persons during the execution of the survey,
- Nearly 100% of the questionnaires were controlled during the day and, if necessary, corrected the following day.

The duration of interviews. In order to assure the quality of the surveys and data collection, CEPAC required a minimum length for all household interviews. During the first days the interviewers were not able to conduct the survey as proficiently, so the duration for each interview was longer than in the latter days of surveying as the interviewers gained experience in interviewing techniques. Generally, the average duration of an interview varied between 30 - 40 minutes/interview, which corresponds with the requirements of the WWM-project and CEPAC, Some interviews lasted up to 1.23 hours! The highest number of household questionnaires was returned for Quang Trung Ward. There was little difference between the number of interviews planned and those actually carried out. The random selection of respondents and the sample size were assured. This information is presented in Table 4-1 and Table 4-2.

Figure 4-3 Submitting and checking the returned questionnaires every afternoon

Table 4-1 Average duration of conducted interviews

Date	Number of questionnaires	Percentage (%)	Duration per HH-Interview (hh:min)			
			Minimum	Maximum	Mean	St. deviation
18.04.08	22	5.6	0:28	1:23	0:46	0:13
19.04.08	71	18.0	0:20	1:20	0:37	0:13
20.04.08	61	15.4	0:20	1:17	0:35	0:11
21.04.08	86	21.8	0:13	1:05	0:30	0:08
22.04.08	62	15.7	0:20	1:05	0:31	0:10
23.04.08	93	23.5	0:10	1:10	0:30	0:08
Total	**395**	**100**	**0:13**	**1:23**	**0:33**	**0:11**

Table 4-2 Date and number of questionnaires returned from 18th – 23rd April 2008

Date	Number of questionnaires	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao
		22						
	%	18.6%						
19.04.08	n	71						
	%	60.2%						
20.04.08	n	24	35			1		1
	%	20.3%	51.5%			1.2%		4.2%
21.04.08	n	1	26			59		
	%	0.8%	38.2%			72.0%		
22.04.08	n				35	11		16
	%				61.4%	13.4%		66.7%
23.04.08	n		7	13	22	11	33	7
	%		10.3%	100.0%	38.6%	13.4%	100.0%	29.2%
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**
	%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

5. THE BASELINE SURVEY RESULTS

In this part, we concentrate on analysing the data collected from the BLS implementation. The analysis follows the sequence of questions/content in the household questionnaire.

5.1 Characteristics of Respondents

CEPAC, company staff, and WWM consultants organised the survey implementation. 395 household representatives in 7 wards: Quang Trung, Le Thanh Nghi, Pham Ngu Lao, Nguyen Trai, Binh Han and Tran Hung Dao, were interviewed. The determination of sample size, distribution of sample, and household selection were based on the agreement between the Company for Urban Works of Hai Duong City, WWM and CEPAC.

The number of household members. On average there were 3.62 persons per household (Figure 5-1 and Table 5-1). In most cases, households had 4 persons. In a few cases, households had as many as 9 persons, while other households had only a few members.

The gender structure of respondents. The numbers of both sexes selected as respondents for the household survey were nearly the same; 198 females and 197 males were interviewed. More precisely, in Quang Trung Ward there were 61 males (51,7%) and 57 females (48,3%); in Tran Phu 40 males (58,8%) and 28 females (41,2%); in Le Thanh Nghi 4 males (30,8%) and 9 females (69,2%), in Pham Ngu Lao 26 males (45,6%) and 31 females (54,4%), in Nguyen Trai 38 males (46,3%) and 44 females (53,7%), in Binh Han 20 males (60,6%) and 13 females (39,4%) as well as Tran Hung Dao 8 males (33,3%) and 16 females (66,7%).

Figure 5-1 Distribution of household members

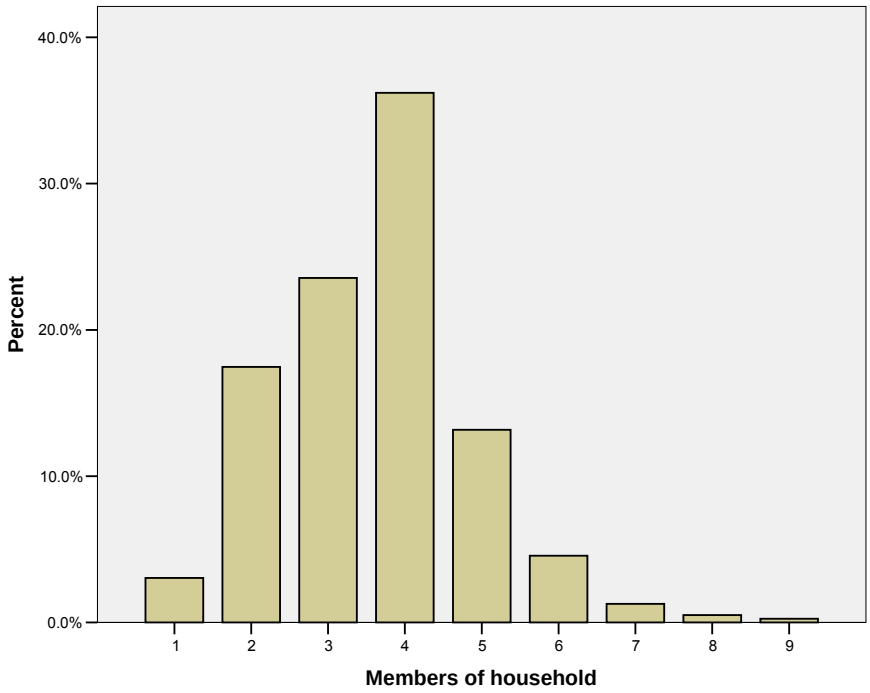


Table 5-1 Number of household members

HH-mem-bers		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
1	n	4	2	3	1	1		1	**12**
	%	3.4	2.9	23.1	1.8	1.2		4.2	**3.0**
2	n	21	17		7	16	5	3	**69**
	%	17.8	25.0		12.3	19.5	15.2	12.5	**17.5**
3	n	25	19	4	16	19	7	3	**93**
	%	21.2	27.9	30.8	28.1	23.2	21.2	12.5	**23.5**
4	n	46	18	5	19	34	12	9	**143**
	%	39.0	26.5	38.5	33.3	41.5	36.4	37.5	**36.2**
5	n	12	6	1	10	7	8	8	**52**
	%	10.2	8.8	7.7	17.5	8.5	24.2	33.3	**13.2**
6	n	8	4		3	3			**18**
	%	6.8	5.9		5.3	3.7			**4.6**
7	n	1	1		1	1	1		**5**
	%	0.8	1.5		1.8	1.2	3.0		**1.3**
8	n	1	1						**2**
	%	0.8	1.5						**0.5**
9	n					1			**1**
	%					1.2			**0.3**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-2 Gender structure of respondents

Gender		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Male	n	61	40	4	26	38	20	8	**197**
	%	51.7	58.8	30.8	45.6	46.3	60.6	33.3	**49.9**
Female	n	57	28	9	31	44	13	16	**198**
	%	48.3	41.2	69.2	54.4	53.7	39.4	66.7	**50.1**
	n	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
Total	**%**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

The age structure of respondents. The average age of respondents and age distribution by gender are presented in Table 5-3 and Table 5-4. Generally, the age and gender of respondents in the 7 wards was rather homogeneous. The ages varies from 20-80 years old, but mainly fell between 41 and 50 for females (30,3%) and 51 and 60 for males (33%).

Respondents proved to be old enough to have some knowledge of technical matters as well as general knowledge regarding socio-economic problems of wastewater and drainage. Hence, they were able to provide the information needed for the BLS.

Table 5-3 Average age of respondents

Ward	Gender	n	Minimum	Maximum	Mean	Std. Deviation
Quang Trung	Male	61	20	79	53.69	12.828
	Female	57	27	80	51.84	11.965
Tran Phu	Male	40	31	82	56.88	12.815
	Female	28	32	70	49.93	10.456
Le Thanh Nghi	Male	4	42	77	59.25	15.392
	Female	9	45	75	57.89	11.385
Pham Ngu Lao	Male	26	32	76	54.58	12.529
	Female	31	23	70	49.68	11.253
Nguyen Trai	Male	38	25	80	53.11	12.196
	Female	44	22	71	48.20	12.153
Binh Han	Male	20	33	80	56.85	12.942
	Female	13	35	58	47.08	7.029
Tran Hung Dao	Male	8	33	73	49.88	12.206
	Female	16	35	80	53.00	13.261
Total		**395**	**20**	**85**	**52.54**	**12.293**

Table 5-4 Distribution of respondent's age by sex

Gender	Age (group)	Frequency	%	Commutative %
Male	< 30	4	2.0	2.0
	31 – 40	19	9.6	11.7
	41 – 50	47	23.9	35.5
	51 – 60	65	33.0	68.5
	61 – 70	31	15.7	84.3
	> 70	31	15.7	100.0
	Total	**197**	**100.0**	
Female	< 30	6	3.0	3.0
	31 – 40	41	20.7	23.7
	41 – 50	60	30.3	54.0
	51 – 60	46	23.2	77.3
	61 – 70	32	16.2	93.4
	> 70	13	6.6	100.0
	Total	**198**	**100.0**	

The educational level of respondents. Most respondents had completed secondary and high school education (Table 5-5).In Quang Trung and Le Thanh Nghi Ward, about 15% of respondents had bachelor/master degrees or higher (21,2% and 11,8% respectively). Table 5-6 shows the differences based on gender. In Le Thanh Nghi Ward, 33% of all female respondents were "illiterate." The percentage in Quang Trung and Tran Phu wards was smaller in comparison, about 2% – 4%. The difference in educational level of males and females in Le Thanh Nghi Ward was high.

Table 5-5 Educational levels of respondents

Education level		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Illiterate	n	2	2	3	1				**8**
	%	1.7%	2.9%	23.1%	1.8%				**2.0%**
Primary (1-5) / Grade 1	n	5	2	1	5	2	2	1	**18**
	%	4.2%	2.9%	7.7%	8.8%	2.4%	6.1%	4.2%	**4.6%**
Secondary (6-9) / Grade 2	n	22	16	3	21	30	10	6	**108**
	%	18.6%	23.5%	23.1%	*36.8%*	36.6%	*30.3%*	25.0%	**27.3%**
High school (10-12) / Grade 3	n	33	25	2	21	23	9	10	**123**
	%	28.0%	*36.8%*	15.4%	*36.8%*	28.0%	27.3%	*41.7%*	***31.1%***
Worker	n	12	4	1	2	3	8	2	**32**
	%	10.2%	5.9%	7.7%	3.5%	3.7%	24.2%	8.3%	**8.1%**
College	n	19	11	1	3	18	1	3	**56**
	%	16.1%	16.2%	7.7%	5.3%	22.0%	3.0%	12.5%	**14.2%**
Bachelor, master degree and higher	n	25	8	2	4	6	3	2	**50**
	%	21.2%	11.8%	15.4%	7.0%	7.3%	9.1%	8.3%	**12.7%**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 5-6 Educational levels of respondents, by gender (male and female) (Unit: %)

Gender	Education level	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Male	Illiterate		2.5						**.5**
	Primary (1-5) / Grade 1	3.3	2.5		7.7	2.6	10.0		**4.1**
	Secondary (6-9) / Grade 2	13.1	22.5	50.0	42.3	44.7	35.0	12.5	**27.9**
	High school (10-12) / Grade 3	32.8	35.0	25.0	26.9	21.1	15.0	62.5	**29.4**
	Worker	13.1	7.5		3.8		20.0		**8.1**
	College	16.4	20.0		7.7	18.4	5.0	12.5	**14.7**
	Bachelor, master degree and higher	21.3	10.0	25.0	11.5	13.2	15.0	12.5	**15.2**
	Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Female	Illiterate	3.5	3.6	33.3	3.2				**3.5**
	Primary (1-5) / Grade 1	5.3	3.6	11.1	9.7	2.3		6.3	**5.1**
	Secondary (6-9) / Grade 2	24.6	25.0	11.1	32.3	29.5	23.1	31.3	**26.8**
	High school (10-12) / Grade 3	22.8	39.3	11.1	45.2	34.1	46.2	31.3	**32.8**
	Worker	7.0	3.6	11.1	3.2	6.8	30.8	12.5	**8.1**
	College	15.8	10.7	11.1	3.2	25.0		12.5	**13.6**
	Bachelor, master degree and higher	21.1	14.3	11.1	3.2	2.3		6.3	**10.1**
	Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

The professional structure of respondents: Due to the professional structure in Hai Duong at the time of survey implementation, the respondents were mostly pensioners and people with

small private businesses and services. Only in Quang Trung and Nguyen Trai wards were the respondents mostly employees and officials. However, in Binh Han Ward, the percentage of "businessman" respondents was high. The percentage of "farmer" respondents was very small and not significant; in Binh Han Ward, it was about 3%.

Figure 5-2 Professional structure of respondents

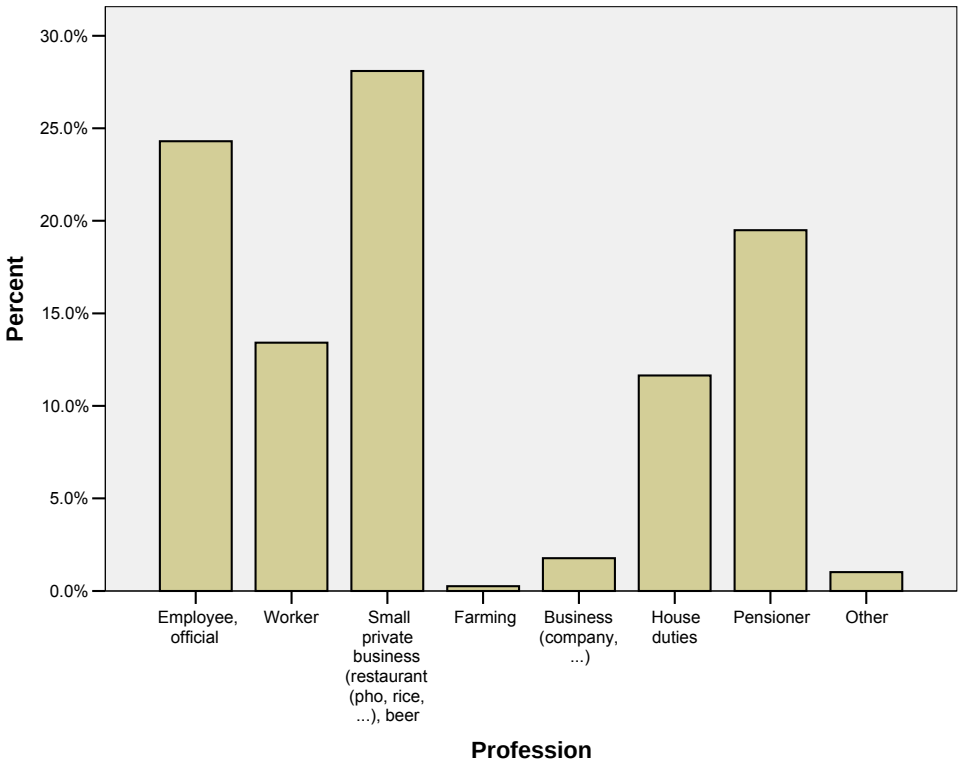


Table 5-7 Professional structure of respondents (Unit: %)

Profession	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Employee, official	*35.6*	30.9	15.4	5.3	25.6	12.1	12.5	**24.3**
Worker	17.8	13.2	*30.8*	8.8	13.4	6.1	4.2	**13.4**
Small private business (restaurant , ...), beer	23.7	*36.8*	23.1	*40.4*	14.6	*36.4*	*33.3*	***28.1***
Farming						3.0		**.3**
Business (company, ...)	0.8		7.7	1.8	3.7	3.0		**1.8**
House duties	7.6	7.4	15.4	21.1	12.2	9.1	20.8	**11.6**
Pensioner	12.7	11.8	7.7	22.8	*28.0*	30.3	29.2	**19.5**
Other	1.7				2.4			**1.0**
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.2 Some Aspects and Comments on Household's Living Standard

The definition of general standard of living among the households surveyed is relatively complicated. In many cases, we understand it as the monthly household income as shown in Table 5-8. Based on Table 5-8, the average household income lies between 1 – 3 mill. VND/month. However, in Quang Trung Ward there are some households receiving 8.1 – 10 mill. VND/month. The differences are vast and it is noteworthy that the percentage of employees and officials in these wards is high, which means that this kind of knowledge about income levels is public and people didn't hesitate to talk about it.

Table 5-8 Household income per month over the last 12 months (Unit: %)

Income (mill. VND)	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
< 1	5.9	4.4	23.1	5.3				**4.1**
1 - 2	23.7	*33.8*	30.8	31.6	28.0	21.2	*33.3*	**28.1**
2.1 - 3	*28.0*	16.2	*38.5*	*33.3*	*32.9*	*30.3*	29.2	***28.4***
3.1 - 4	17.8	23.5		15.8	18.3	18.2		**17.0**
4.1 - 5	11.9	5.9	7.7	3.5	6.1	12.1	25.0	**9.1**
5.1 - 6	5.1	4.4		3.5	7.3	12.1	8.3	**5.8**
6.1 - 7	3.4	1.5		3.5	2.4			**2.3**
7.1 - 8		1.5				3.0		**.5**
8.1 - 9	.8							**.3**
9.1 - 10	.8							**.3**
DK/DA	2.5	8.8		3.5	4.9	3.0	4.2	**4.3**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

However, in Vietnam there are often other income sources, perhaps more important than the regular/official income. This income can be shown using other measurements, for example income decides the household's expenditures. Normally, expenditure varies directly with income level. Therefore, the CEPAC team suggested checking other information such as the number of stories of the houses (**Error! Reference source not found.**), the daily food expenditures (Figure 5-3 and **Error! Reference source not found.**), and the main household assets (car, motorbike, air conditioner and TV). In addition, we used two measurement methods: Self-estimation by the household surveyed, and estimation by the interviewer as a neutral person (Table 5-11).

Table 5-9 Number of stories of the houses (Unit: %)

Stocks of house	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
1.0	16.1	11.9		15.8	20.7	27.3	16.7	**16.8**
1.5	.8	3.0		5.3	3.7	6.1	4.2	**3.0**
2.0	*62.7*	*59.7*	*84.6*	*61.4*	*57.3*	*54.5*	*58.3*	***60.7***
2.5	2.5	3.0			2.4			**1.8**
3.0	16.9	17.9	15.4	17.5	15.9	12.1	20.8	**16.8**
3.5		1.5						**.3**
4.0	.8	3.0						**.8**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Figure 5-3 Knowledge of daily food expenditure of household

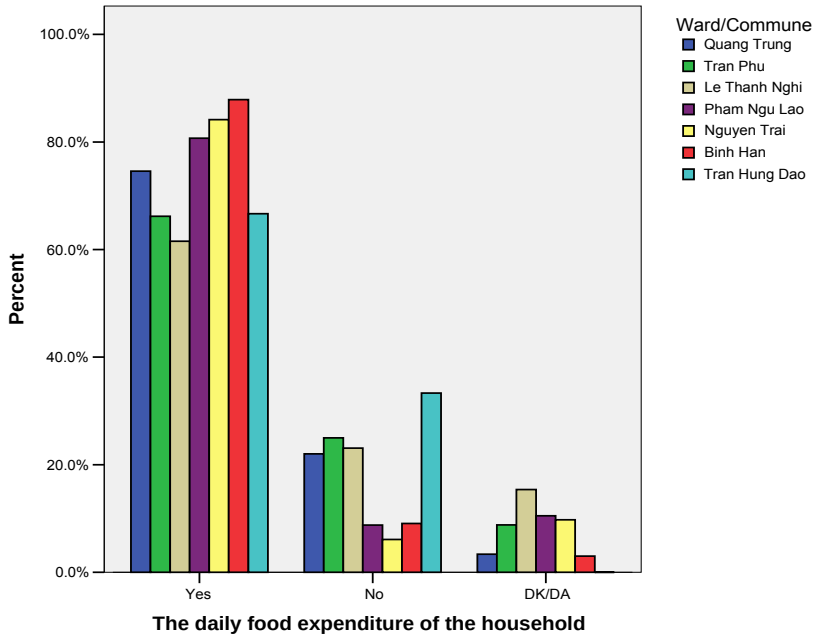


Table 5-10 Daily food expenditures for households (normal day) (Unit: %)

Food expenditure	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
< 20	13.5	2.0		2.2	2.9			**5.2**
21 - 30	12.4	19.6	12.5	19.6	*23.2*	3.4	17.6	**16.5**
31 - 40	18.0	11.8	*50.0*	19.6	15.9	*37.9*	11.8	**19.1**
41 - 50	*27.0*	*27.5*		*30.4*	20.3	17.2	*23.5*	***24.3***
51 - 60	9.0	5.9	12.5	4.3	17.4	27.6	*23.5*	**12.3**
61 - 70	3.4	7.8		17.4	4.3	3.4	5.9	**6.5**
71 - 80	6.7	5.9	25.0	4.3	7.2	3.4	11.8	**6.8**
81 - 90		2.0			1.4			**.6**
91 - 100	9.0	7.8		2.2	7.2	6.9		**6.5**
DK/DA	1.1	9.8					5.9	**2.3**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-11 Standard of living as evaluated by the interviewer (Unit: %)

Evaluation level	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Rich	17.8	14.7	23.1	10.5	8.5	3.0	8.3	**12.7**
Moderate	*80.5*	*83.8*	*76.9*	*86.0*	*91.5*	*93.9*	*87.5*	***85.6***
Poor	1.7	1.5		3.5		3.0	4.2	**1.8**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-12 Percentage of poor households (officially registered)

Poor household		Quang Trung	Pham Ngu Lao	Binh Han	Total
Yes	n	2	1	1	4
	%	66.7	50.0	100.0	66.7
No	n	1	1		2
	%	33.3	50.0		33.3
Total	**n**	**3**	**2**	**1**	**6**
	%	**100.0**	**100.0**	**100.0**	**100.0**

5.3 Evaluation of Household Sanitation System

5.3.1 Toilet Coverage in Hai Duong City

Nearly 100% of the surveyed households in Hai Duong city have their own (private) toilets. More than 90% of households surveyed in all wards had septic tank toilets. The percentage of pit toilets in Pham Ngu Lao, Nguyen Trai, and Quang Trung wards varies between 1,7% - 3,5%. These facts were confirmed in IDIs with the ward leaders and FGDs in the wards as following:

- Quang Trung Ward: Septic tank toilets account for 99% of all toilets; the remaining 1% have direct flushing and/or pit toilets. There were no public toilets.
- Tran Phu Ward: Septic tank toilets account for 90% of all toilets; the remainder have direct flushing and/or pit toilets. There are some public toilets at or inside the old apartment blocks. Households use them because the toilets have been there from the time the apartment blocks were built and they often they don't have enough space to build a private toilet.
- Le Thanh Nghi Ward: Septic tank toilets account for 100% of the toilets; there are no public toilets. The drainage lines from the septic tank toilets run into the public drainage system of Hai Duong city.
- Tran Hung Dao Ward: Almost all toilets are septic tank toilets. There are only 10 households using a public toilet and they use it because it has always been part of the state-built apartment block.
- Pham Ngu Lao and Binh Han wards: Septic tank toilets account for 100% of all toilets; there are no public toilets. The drainage lines from the septic tank toilets run into the public drainage system of Hai Duong city.

The percentage of pit toilets in Pham Ngu Lao, Nguyen Trai and Quang Trung wards varies between 1,7% - 3,5% (Table 5-14). The opportunity for these households to change from pit toilets to septic tank toilet is limited. Householders indicate either that they:

- Are too poor at present, and/or
- They will change, but only at some future date if and when they are able to build a new house.

Table 5-13 Percentage of households with private toilets (Unit: %)

Own toilet	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	97.5	98.5	100.0	100.0	100.0	100.0	100.0	**99.0**
No	2.5	1.5						**1.0**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-14 Classification of kind of toilets (Unit: %)

Kinds of toilet	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Pit toilet	1.7			3.5	2.4			**1.5**
Central (off-site) sewage system	0.9						4.2	**0.5**
Septic tank toilet	97.4	100.0	100.0	96.5	97.6	100.0	91.7	**97.7**
Other							4.2	**0.3**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Loans for building toilets. In IDIs and FGDs, we mentioned this topic and there were some important ideas, for example:

If there was a loan program for improving toilets, they would be willing to participate. The best structure would be to borrow from "security pass" organizations such as: The Women's Union, War Veteran's Union,or Union of elderly people…..(IDI with Mr. Pham Ngoc Chat, the president of Le Thanh Nghi Ward).

5.3.2 The Actual Condition of Septic Tank Toilets

5.3.2.1 Construction and Location of the Septic Tank Toilets

Most the septic tank toilets have two chambers (Table 5-15). The percentage of three-chambered septic tank toilets is highest in Tran Hung Dao Ward. Septic tank toilets are normally located inside houses (87,9% - 98,5%), due partly to insufficient land area for building outside the house (garden) (Table 5-16).

Table 5-15 Number of chambers in septic tanks (Unit: %)

Number of chambers	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
One	.9	3.0		5.4	8.8	9.1		**4.2**
Two	*75.2*	*80.6*	*46.2*	*83.9*	*72.5*	*84.8*	*65.2*	***76.1***
Three	19.5	11.9	7.7	7.1	15.0	6.1	34.8	**14.8**
DK/DA	4.4	4.5	*46.2*	3.6	3.8			**4.9**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-16 Location of septic tank (Unit: %)

Location	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Inside house	*91.2*	*98.5*	*92.3*	*92.9*	*90.0*	*87.9*	*95.7*	*92.5*
Outside house	8.0	1.5	7.7	7.1	8.8	12.1	4.3	7.0
DK/DA	0.9				1.3			0.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

5.3.2.2 Volume of Septic Tanks

Most of the septic tanks are 2 - 3 m^3 (Table 5-17). 8 m^3 septic tanks are very rare. In Tran Phu Ward, the number of households with a large septic tank (3 - 5m^3) is higher than in the other wards. The volume of septic tanks, however, depends on the number of household

members, the area used for construction of septic tanks, and the cost. The relation between "the living standard of households" and "the volume of septic tank" is tested by using chi quare and cross tabulation.

Table 5-17 Volume of septic tank (Unit: m^3)

Ward/Commune	n	Minimum	Maximum	Mean	Std. Deviation
Quang Trung	118	1	8	2.8	1.202
Tran Phu	68	1	5	2.7	1.110
Le Thanh Nghi	13	2	3	2.7	0.488
Pham Ngu Lao	57	1	4.5	2.4	0.786
Nguyen Trai	82	1	5	2.4	0.757
Binh Han	33	1	4	2.6	0.820
Tran Hung Dao	24	1	5	2.7	0.817

5.3.2.3 Kind of Wastewater Deposited in the Septic Tank and Where It Subsequently Goes

Based on the survey results in Table 5-18, nearly 100% of households dispose wastewater from their toilets into the septic tank. However, in Quang Trung Ward it was slightly lower - 93,6% households dispose of toilet wastewater in the septic tank. We estimate that this number is generally high because when constructing and operating septic tanks, households generally follow the minimal technical requirements and only let wastewater from their toilets run into the septic tanks.

Table 5-18 Kind of wastewater disposed of in septic tanks (Unit: %)

Kind of wastewater	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Toilet	93.8	100.0	100.0	100.0	98.8	100.0	100.0	**97.9**
Bathroom	4.4							**1.3**
Other	0.9							**0.3**
DK/DA	0.9				1.3			**0.5**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

In general, wastewater from households in the city is deposited in the public drainage system. In Tran Phu Ward, in particular, nearly 100% of the surveyed households dispose of wastewater in the public drainage system. However, in Le Thanh Nghi Ward, 38.5% of households surveyed drained their wastewater into rivers, canals and ponds. There were no households that disposed of wastewater in their gardens or let it soak into the soil. We think that the company needs to cooperate with the city council's strategy, by convincing and even supporting (if necessary) households in collecting and disposing of wastewater from toilets into the public drainage system. In the case of Le Thanh Nghi Ward, we have to determine the reasons why 38.5% dispose of their septic tank wastewater into the rivers, channels and ponds instead of the public system. The reason may be that since the ward is located along the Sat River, *more things* go into the river. Indeed, this point was confirmed by Mr. Pham Ngoc Chat, leader of ward: "*Nearly 90% dispose wastewater from toilet into the public system. However 10% dispose wastewater directly into river*".

Table 5-19 Where is the wastewater from toilets discharged? (Unit: %)

Wastewater from septic tank	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Public drainage system	98.2	100.0	61.5	91.1	93.8	90.9	100.0	**94.8**
River, open channel, pond or lake	0.9		38.5	8.9	6.2	9.1		**4.9**
DK/DA	0.9							**0.3**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

5.3.2.4 Practical Septic Tank Operation

More than 85% of respondents *don't* experience bad odours from septic tanks in their houses. In the cases of those who do experience bad odours (4.3%-15%) say they only occur occasionally (Table 5-20 and Table 5-21).

Table 5-20 Percentage of septic tanks emitting bad odours (Unit: %)

Bad odour from the septic tank in the house	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	15.0	14.9		10.7	6.3		4.3	**10.1**
No	*85.0*	*85.1*	*100.0*	*87.5*	*91.3*	*100.0*	*95.7*	***89.1***
DK/DA				1.8	2.5			**0.8**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-21 Frequency of experiencing bad odour from the septic tank

Frequency		Quang Trung	Tran Phu	Pham Ngu Lao	Nguyen Trai	Tran Hung Dao	Total
Usually	n				1.0		**1.0**
	%				20.0		**2.8**
Sometime	n	16.0	8.0	4.0	4.0	1.0	**33.0**
	%	*100.0*	*88.9*	*80.0*	*80.0*	*100.0*	***91.7***
Rarely	n		1.0	1.0			**2.0**
	%		11.1	20.0			**5.6**
Total	**n**	**16.0**	**9.0**	**5.0**	**5.0**	**1.0**	**36.0**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

A high 73% of households don't empty their septic tanks. 26% empty the septic tanks once every 5 years (or even more rarely) and 14.6% only when the septic tank is full or blocked. The percentage using chemicals to aid the “digestion” process in septic tanks is high; over 55% in all wards (not counting Le Thanh Nghi Ward) (from Table 5-22 to Table 5-25). The use of chemicals becomes a habit, because it is a quick and cheap way to manage the tanks and postpones the relatively expensive task of emptying the tanks.

Table 5-22 Respondents who Empty their septic tanks

Empty the septic tank		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	28	24	3	14	22	1	6	**98**
	%	24.8	35.8	23.1	25.0	27.5	3.0	26.1	**25.5**
No	n	82	42	10	42	57	32	16	**281**
	%	*72.6*	*62.7*	*76.9*	*75.0*	*71.3*	*97.0*	*69.6*	***73.0***
DK/DA	n	3	1			1		1	**6**
	%	2.7	1.5			1.3		4.3	**1.6**
Total	**n**	**113**	**67**	**13**	**56**	**80**	**33**	**23**	**385**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-23 Frequency of emptying septic tank

Frequency		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Annually	N	1	2						**3**
	%	3.3	9.1						**3.1**
2 – 3 years	N	7	7		3	7	1		**25**
	%	23.3	*31.8*		23.1	31.8	*100.0*		***26.0***
4 – 5 years	N	4	4		6	8		2	**24**
	%	13.3	18.2		*46.2*	*36.4*		*40.0*	**25.0**
> 5 years	N	6	6	3	3	6		1	**25**
	%	20.0	27.3	*100.0*	23.1	27.3		20.0	***26.0***
Any time if blocked or full	N	9	3		1			1	**14**
	%	*30.0*	13.6		7.7			20.0	**14.6**
DK/DA	N	3				1		1	**5**
	%	10.0				4.5		20.0	**5.2**
Total	**N**	**30**	**22**	**3**	**13**	**22**	**1**	**5**	**96**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-24 Use of chemicals in septic tank toilets

Septic tank chemicals		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	62	35	4	27	51	20	14	213
	%	54.9	52.2	30.8	48.2	63.8	60.6	60.9	55.3
No	n	48	31	9	29	27	13	9	166
	%	42.5	46.3	69.2	51.8	33.8	39.4	39.1	43.1
DK/DA	n	3	1			2			6
	%	2.7	1.5			2.5			1.6
Total	**n**	**113**	**67**	**13**	**56**	**80**	**33**	**23**	**385**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-25 Frequency of chemical use in septic tank toilets

Frequency		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Annual	n	57	29	4	27	48	19	12	**196**
	%	*93.4*	*82.9*	*100.0*	*96.4*	*94.1*	*95.0*	*85.7*	***92.0***
Several years	n	3	3			1	1		**8**
	%	4.9	8.6			2.0	5.0		**3.8**
If blocked	n		3		1	1		2	**7**
	%		8.6		3.6	2.0		14.3	**3.3**
DK/DA	n	1				1			**2**
	%	1.6				2.0			**0.9**
Total	**n**	**61**	**35**	**4**	**28**	**51**	**20**	**14**	**213**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

5.3.2.5 Willingness To Pay for Emptying the Septic Tank

The scenario presented to respondents by our research team is that the company is trying to improve its service of emptying septic tanks but at the same time the fuel prices have increased. Thus, the company is planning to increase the price for emptying septic tanks. How much are you willing to pay for emptying the septic tank?

Based on the analysed results in Table 5-26, WTP for emptying the septic tank once is 388,430 VND. Some statistical characteristics are also presented (median, mode, std. Deviation, Cs). A ward by ward analysis shows that the WTP is nearly the same in all wards. Tran Hung Dao Ward has the highest value (407,000 VND/one emptying) and the standard deviation is very small meaning that this average value is representative of all wards.

In addition, we tested the relationship between "Estimation of living standard of household by interviewer" and "WTP for emptying the septic tank" by using cross-tabulation. The analysis showed that both factors share a statistical relationship.

Table 5-26 WTP for emptying the septic tank (Unit: VND/one time)

Ward/Commune	n	Minimum	Maximum	Mean	Median	Mode	Std Deviation
Quang Trung	105	300	600	378.1	350	350	55.0
Tran Phu	64	350	600	395.3	350	350	62.8
Le Thanh Nghi	13	350	450	369.2	350	350	38.4
Pham Ngu Lao	36	350	450	393.1	400	350	43.3
Nguyen Trai	66	300	550	390.9	400	350	58.1
Binh Han	32	350	450	393.8	400	350	39.7
Tran Hung Dao	21	350	500	407.1	400	400	39.6
Total	337	300	600	388	350	350	54

5.3.2.6 Awareness of Dangers of Direct Waste Disposal

Analysis has shown that citizens do not fully understand the effects of direct waste disposal into the drainage system. 46.2% of respondents in Le Thanh Nghi Ward and 25% in Tran Phu Ward thought it was "not harmful" (Table 5-27). This is a warning sign about the level of community awareness. The company and local government should cooperate to implement an information campaign raising awareness about the effect of direct disposal of toilet water. In comparison, the people in Binh Han Ward have a higher level of awareness. Most of them

believe that the direct disposal of toilet water "spreads dangerous diseases" and "pollutes water sources."

Table 5-27 Effects of using the river or field as a toilet and using direct flushing toilets

Item		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Spreads dangerous diseases	Cases	62	33		29	61	30	17	232
	Row Resp. %	26.7	14.2		12.5	26.3	12.9	7.3	100.0
	Col Resp. %	52.5	48.5		50.9	74.4	90.9	70.8	58.7
Pollutes the water source	Cases	100	48	7	54	81	30	23	343
	Row Resp. %	29.2	14.0	2.0	15.7	23.6	8.7	6.7	100.0
	Col Resp. %	84.7	70.6	53.8	94.7	98.8	90.9	95.8	86.8
Not harmful	Cases	7	18	6	1	1		1	34
	Row Resp. %	20.6	52.9	17.6	2.9	2.9		2.9	100.0
	Col Resp. %	5.9	26.5	46.2	1.8	1.2		4.2	8.6
Other	Cases	3	1		1		1		6
	Row Resp. %	50.0	16.7		16.7		16.7		100.0
	Col Resp. %	2.5	1.5		1.8		3.0		1.5
DK/DA	Cases	6	1		2				9
	Row Resp. %	66.7	11.1		22.2				100.0
	Col Resp. %	5.1	1.5		3.5				2.3
Total	Cases	118	68	13	57	82	33	24	395
	Row Resp. %	45.1	25.6	3.3	22.0	36.2	15.4	10.4	158.0
	Col Resp. %	150.8	148.5	100.0	152.6	174.4	184.8	170.8	158.0

5.4 Evaluation of Sewage Connections and Household Wastewater Drainage

As in the sketch in Figure 5-4 there are 4 types of household connections with the public drainage system:

- Type 1: Grade 1 direct connection with the canal system
- Type 2: Grade 2 direct connection with the canal system
- Type 3: Grade 3, direct branched connection with the canal system
- Type 4: Drainage into surrounding area and not into the public canalisation system

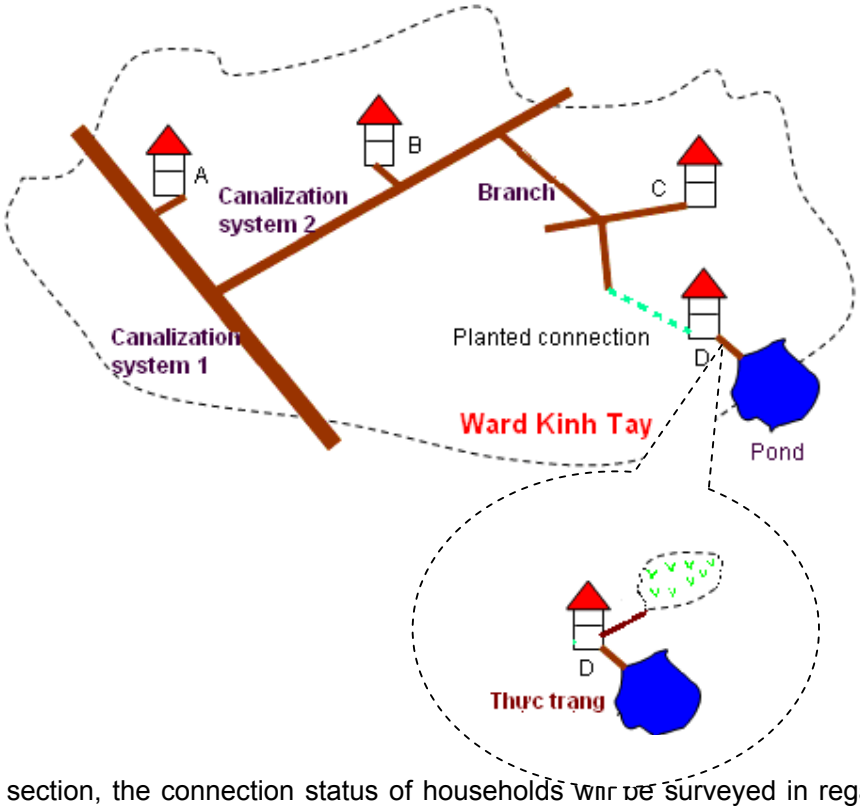
The collection and drainage system in urban areas of Vietnam is unsystematic and incomplete. This fact is mentioned in the "National strategy for environmental protection up to 2010 and direction to 2020" (12.2003 of Mr. Mai Ai Truc, Minister of Natural Resources and Environment): "*The environment in many urban centers of our country is degraded and polluted because the old canal and drainage system has degraded rapidly and cannot meet demand ; the capacity for collecting solid waste is still not bad, on average only 60 - 70% solid waste, especially the harmful solid waste cannot be collected and treated based on the regulations*". Thus, the effects of collection and drainage are still low. At the same time, only a very small percentage of wastewater in Vietnam is treated before it is discharged into the rivers (surface water).

The present status of drainage systems. Quoting the "General planning for Socio-economic Development of Hai Duong City up to 2020":

- The drainage system of the city is a combined system for drainage of wastewater and rainwater. This combined system suitable for delta terrain (flat landform) with seasonal concentration of rainfall amount such as Hai Duong city. At the same time it is necessary to build pumping stations for supporting drainage.
- The city's drainage system has a total length of 35 km with a density of 0,23 km pipe/km road. However the efficiency is low (40-60%) because it lacks manholes, and culverts are blocked by sedimentation.

- More attention is paid for the wastewater drainage by the city's government, for example organisation for cleaning and maintaining 9,763 m drainage pipe, implementation of some projects such as embankment for lakes, embankment for river Cau Cat, wastewater collection and treatment ... Generally, the existing system can meet demand and requirements of drainage in the old city. However, the city lies below the water level of the river and therefore it is very difficult to discharge water to the river so bad drainage as well as flooding exists in many places in city, especially in rainy season. In addition, in new parts/wards/communes of city there is no drainage system.

Figure 5-4 Sketch of connections - public collection and drainage systems



In the next section, the connection status of households will be surveyed in regards to two issues: (i) Household connections (type of connection, kind of wastewater, canals) and (ii) the type of drainage from streets as well as the awareness of respondents about wastewater.

5.4.1 The Status of Connections and Household Wastewater Drainage

5.4.1.1 Where Does Household Drainage Go?

Based on Table 5-28 Where the household wastewater is discharged (excluding toilet water) it can be seen that most households are connected to the public system. Le Thanh Nghi Ward has the lowest percentage of households disposing wastewater into the public drainage system (only 53,8%). A short summary of (qualitative) results taken from IDIs and IFDs follows:

- Quang Trung Ward: Toilet drainage runs into the public drainage system. There are no households disposing directly into lakes or ponds. However, some households still discharge wastewater generated from raising pigs into Hao Thanh Lake. In Sub-ward 11, 50% of households still discharge wastewater into Hong Quang Lake, Cong Ba Cua. In this ward, 50% of households discharge wastewater into the public drainage system. In Sub-wards 13, 17 and 18, about 80% of households discharge wastewater into Dat Do Lake, Cai Lake, and Thanh Nien Lake.

- Tran Phu Ward: Toilet drainage mainly enters into the public drainage system. 3% of households along Chuong Duong Street dispose of waste directly into rivers/lakes. Downtown, the company constructed a public drainage system and all households are connected to this system.
- Le Thanh Nghi Ward: Almost all households in this ward discharge wastewater into the public drainage system and then into rivers/lakes/ponds such as: Bach Dang Lake, Cau Cat River, Co Khi Lake. Approximately 15% of households directly discharge wastewater into lakes. There is still flooding in Sub-ward 17 in the Khuong Nghiep Lake area leading to houses being flooded. Households located along the river bank still discharge waste into the river. The four lanes (28, 38, 50 and 60) of Sub-ward 8 and houses along Bui Thi Xuan Street discharge wastewater directly into the lake. About 10 houses on every block discharge wastewater into the river. In Sub-ward 10, located near the sports hall, about 90 households around the Thanh Lai Lake (Binh Han) discharge wastewater directly into the lake. As there is no exit drainage into the Bach Dang River, it often floods. The Nam Cuong area has an elevation 1 meter lower than the surrounding area, so there is always a risk of flooding. Actually, 70% of these households discharge wastewater into the lake as well. Sub-ward 7 has an elevation 1 meter lower than water level of the city's drainage system making it difficult for them to connect to the public drainage system or discharge wastewater into the Sat River. During the rainy season, the area is often flooded. In area 5 (near areas 4, 6 and 7) at the end of Thong Nhat Street on the right side of Binh Minh Lake, households discharge wastewater into the lake. The embankment of Hao Thanh Lake causes flooding on both sides. Households there want to connect with the public drainage system.
- Tran Hung Dao Ward: The drainage system conditions here are not good. There are three streets discharging wastewater directly into lakes/rivers (about 355 households). Because of high water levels outside, the wastewater in the area cannot be drained. Thus, there is constant flooding. Recently, the system was improved and now the flooding only lasts a few hours. To deal with the rising water levels, the ward organised the cleaning of the drainage system. In the city itself, virtually 100% of households are connected with the drainage system. On Bach Dang Street and in the area around Hao Thanh Lake, wastewater is still not collected.
- Nguyen Trai Ward: Households discharge wastewater into the public drainage system. Still, many households don’t have a sense of responsibility, so solid waste is thrown into the system, resulting in blockages. Furthermore, some households store building materials near the drainage system and these materials get into the system as well. The manholes don't have sewerage racks and/or sand traps. In the old part of Nguyen Trai Ward, households are connected to the public drainage system. The drains built by households connect with the public drainage system in Areas 8 and 6 (opposite Sub-ward 8). In 1996, the banks of Hao Thanh Lake were constructed. Due to poor design, the drainage systems for Cong Tue Tinh Cong Pham Ngu Lao are too small, resulting in poor drainage into Binh Minh Lake and Bon Voi Lake. This water is subsequently pumped into the Sat River.
- Pham Ngu Lao Ward: The wastewater and rainwater drainage systems are very bad. The percentage of households with connections to the public drainage system is 100%. Flooding still happens and the ward and community have informed company so a solution can be found. The people and the ward must find a solution, however, as the company cannot help.

Table 5-28 Where the household wastewater is discharged (excluding toilet water)

Where wastewater is discharged		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Public drainage system	n	116	68	7	50	78	29	24	**372**
	%	*98.3*	*100.0*	*53.8*	*87.7*	*95.1*	*87.9*	*100.0*	***94.2***
Public road	n	1							**1**
	%	0.8							**0.3**
River, open channel, pond or lake	n	1		6	7	4	4		**22**
	%	0.8		46.2	12.3	4.9	12.1		**5.6**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.4.1.2 Structure and Blockages in Wastewaters Discharge Pipes

Analysis shows that the percentage of households building closed drains is very high (over 91,7%), while open drains account for only a small percentage - about 1,7% - 6,1% (Table 5-29 Structure of household discharge systems). The percentage of open drains in the Binh Han, Nguyen Trai and Pham Ngu Lao Wards, however, is still high. The company should co-operate with the wards in solving this problem by encouraging people to change to closed drains in order to guarantee environmental sanitation and protect the drains from getting blocked. In Table 5-30 Blockages in household discharge systems and Table 5-31, it can be seen that blockages of household drainage are rare.

Table 5-29 Structure of household discharge systems

Drain		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Open drain	n	2			2	4	3		**11**
	%	1.7			3.5	4.9	9.1		**2.8**
Covered drain	n	115	68	13	52	76	29	23	**376**
	%	*97.5*	*100.0*	*100.0*	*91.2*	*92.7*	*87.9*	*95.8*	***95.2***
Both, open and covered drain	n	1				2	1		**4**
	%	0.8				2.4	3.0		**1.0**
DK/DA	n				3			1	**4**
	%				5.3			4.2	**1.0**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-30 Blockages in household discharge systems

Block		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	10	5		5	3	1	1	**25**
	%	8.5	7.4		8.8	3.7	3.0	4.2	**6.3**
No	n	106	63	13	52	79	32	22	**367**
	%	*89.8*	*92.6*	*100.0*	*91.2*	*96.3*	*97.0*	*91.7*	***92.9***
DK/DA	n	2						1	**3**
	%	1.7						4.2	**0.8**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-31 Frequency of blockages in household discharge systems

Blocking frequency		Quang Trung	Tran Phu	Pham Ngu Lao	Nguyen Trai	Binh Han	Total
Usually	N	1		2			**3**
	%	12.5		*66.7*			**14.3**
Sometime, rarely	N	7	6	1	3	1	**18**
	%	*87.5*	*100.0*	33.3	*100.0*	*100.0*	***85.7***
Total	**N**	**8**	**6**	**3**	**3**	**1**	**21**
	%	**100**	**100**	**100**	**100**	**100**	**100**

5.4.2 Connection Status and Drainage of Water in Surrounding Areas

5.4.2.1 Drainage Situation in Surrounding Areas

Based on the household evaluation as well as the statistical analysis in Table 5-32, it can be said that overall the wastewater drainage system is perceived as rather bad, with almost 50 per cent of respondents considering it as “not good”. The best conditions (nearly 100%) are in Le Thanh Nghi Ward, but conditions are still bad in the wards Quang Trung (65.8%), Phạm Ngu Lao (57.9%), Binh Han (57.6%). An average of 49.5% of all respondents rated the sewage situation in their area as “not good.” This shows that the tertiary system and the small branches of the drainage system in these wards have problems. In the future, the company must cooperate with the wards in requesting and convincing households and communities to repair, maintain and construct new tertiary systems.

Table 5-32 Drainage situation in surrounding areas

Drainage and sewage situation around the home/street		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Good	n	38	37	13	24	53	14	13	**192**
	%	32.5	54.4	100.0	42.1	*64.6*	42.4	*54.2*	**48.7**
Not good	n	77	31		33	29	19	6	**195**
	%	*65.8*	*45.6*		*57.9*	35.4	*57.6*	25.0	***49.5***
DK/DA	n	2						5	**7**
	%	1.7						20.8	**1.8**
Total	**n**	**117**	**68**	**13**	**57**	**82**	**33**	**24**	**394**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.4.2.2 Public Drainage System Location and Use of Space

Generally, the public drainage system in Hai Duong is located in front of the surveyed households with the percentage varying between 60% - 81% in all wards (Table 5-33). Among the remaining households (17% - 31%), the drainage system is "behind the house." In Binh Han Ward, this percentage is relatively high (31,3%). Based on notes from the IDIs and FGDs, the drainage systems "behind the house" are at high risk because the households can use the space above the system for their private purposes, thus making it difficult to maintain.

Table 5-33 Location of public wastewater drainage systems

Location		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Front of house	n	85	56	8	46	63	21	17	**296**
	%	72.0	82.4	61.5	80.7	76.8	63.6	70.8	**74.9**
Behind house	n	29	11	3	11	18	11	6	**89**
	%	24.6	16.2	23.1	19.3	22.0	33.3	25.0	**22.5**
Other	n	4	1	2		1	1	1	**9**
	%	3.4	1.5	15.4		1.2	3.0	4.2	**2.3**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-34 shows that in Le Thanh Nghi Ward the risk of people using the area/space designated to the public system for private purposes is very high (38,5%). The company should cooperate with the local government (ward) to screen all cases and carrying out a campaign to prevent this problem from happening.

Table 5-34 Using public drainage system area for private purposes

Is there private use?		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	1	1	5	3	4	1	1	**16**
	%	0.8	1.5	38.5	5.3	4.9	3.0	4.2	**4.1**
No	n	114	67	8	53	77	31	22	**372**
	%	*96.6*	*98.5*	*61.5*	*93.0*	*93.9*	*93.9*	*91.7*	***94.2***
DK/DA	n	3			1	1	1	1	**7**
	%	2.5			1.8	1.2	3.0	4.2	**1.8**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.4.2.3 Structure and Blockages of the Public Drainage System

The drainage system is largely covered (87,9% - 100%, Table 5-35). The system is only open in the Binh Han, Nguyen Trai, Quang Trung and Pham Ngu Lao Wards. Based on Table 5-36, 18.2%-37.3% of respondents reported that the public system in Hai Duong was blocked with the highest number of reports in Quang Trung Ward (37.3%) and Tran Phu Ward (32.4%). The frequency of blockages was mostly reported as "sometimes, rarely".

Many households have a low level of awareness about the system and thus let solid waste and even building materials fall into the drainage system resulting in blockages. Some points taken from notes on IDIs and FGDs in the wards follow:

In IDI with Mr. Nguyen Xuan Thang of Quang Trung Ward: The flooding is mostly concentrated at Nguyen Van To Street; Sub-ward 4, 5, 6; Quang Trung Road, Sub-ward 7, Bac Son Street, Do Luong Street, and Rang Nhan Road. During the rainy season, the company solved problems quickly, but on Rang Nhan Road there are no provincial construction works. Flooding and poor wastewater drainage is common, and people request that ward and/or company solve the problems.

In different FGDs, the people said that the drainage system was constructed many years ago and now can no longer meet the current demands, for example the concrete pipe of 300 is too old and now filled with solid waste and sedimentation, causing flooding.

In IDI with Mrs.Trinh Thi Hanh in Tran Phu Ward: In the sub-wards Ngan Son, Mac Thi Buoi, Tuy Hoa, Dong Xuan, Tran Binh Trong and Chuong Duong, there is flooding during the rainy season. The company does not solve the flooding problem during the rainy season quickly or

expeditiously. In the case of drainage system blockages, the ward has tried to contact with company, but it has responded slowly, and sometimes contacting them is impossible, particularly on weeends (Saturday and Sunday).

In FGD in Binh Han Ward: The leaders of the sub-wards complained about the wastewater flooding problem. According to Mrs. Nguyen Thi Phang, sub-wards 5 and 8 need the resolution, because wastewater comes from everywhere and then cannot drain properly (Figure 5-5 and Figure 5-6).

The company should have a hotline and the citizens should be able to contact them at any time. It must ensure that drainage systems are connected in Binh Han Ward. In the cases of the Beer Company and Machine Company 693, both companies should have obligations to the community, and DONRE of Hai Duong City should intervene in order to minimize the pollution.

Table 5-35 Structure of household connections to the public drainage system

Public drain		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Open drain	n	2			2	4	3		**11**
	%	1.7			3.5	4.9	9.1		**2.8**
Covered drain	n	115	68	13	52	76	29	23	**376**
	%	*97.5*	*100.0*	*100.0*	*91.2*	*92.7*	*87.9*	*95.8*	***95.2***
Both open and covered drain	n	1				2	1		**4**
	%	0.8				2.4	3.0		**1.0**
DK/DA	n				3			1	**4**
	%				5.3			4.2	**1.0**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-36 Blockages of the public drainage system

Blockage situation		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	44	22		11	15	6	5	**103**
	%	37.3	32.4		19.3	18.3	18.2	20.8	**26.1**
No	n	73	46	13	45	66	27	19	**289**
	%	*61.9*	*67.6*	*100.0*	*78.9*	*80.5*	*81.8*	*79.2*	***73.2***
DK/DA	N	1			1	1			**3**
	%	0.8			1.8	1.2			**0.8**
Total	**N**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Citizen behaviour in case of system blockage. Generally, citizens are responsible in dealing with maintenance and protection of the drainage system in their living area. People in Binh Han Ward and Nguyen Trai Ward repair the system if it is damaged or blocked, but in Pham Ngu Lao Ward, the people don't care about the blocked drains and in many cases the ward government has to solve the drainage problem.

Drains get blocked and wastewater flooding often occurs. The ward and community requested that the company repair and maintain the system, but the company didn't have the measurements and therefore the ward and citizens repaired it themselves. (IDI with the Head of the People's Committee of Pham Ngu Lao Ward)

Some "hot" issues regarding the construction of the drainage system. In IDIs and FGDs, the citizens complained about the duration and expansion of drainage construction projects. It is preferable if the construction were to be intensified and finished as quickly as possible. The construction affects people's lives and business.

Table 5-37 People's actions in case of a drainage blockage

What to do		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Repaired by the whole neighbourhood	n	34	28	8	17	24	12	5	**128**
	%	28.8	*41.2*	*61.5*	29.8	*29.3*	*36.4*	20.8	**32.4**
Inform Company	n	58	24	1	14	21	12	13	**143**
	%	*49.2*	35.3	7.7	24.6	25.6	*36.4*	*54.2*	***36.2***
Do nothing	n	8	8	3	5	17	5	3	**49**
	%	6.8	11.8	23.1	8.8	20.7	15.2	12.5	**12.4**
Repaired by the whole neighbourhood & Inform Company	n	3	3					1	**7**
	%	2.5	4.4					4.2	**1.8**
DK/DA	n	15	5	1	21	20	4	2	**68**
	%	12.7	7.4	7.7	*36.8*	24.4	12.1	8.3	**17.2**
Total	**N**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Figure 5-5 Street/alley and yard of household in Sub-ward 5 of Binh Han Ward

Figure 5-6 Public drainage system blockage in Binh Han Ward

(The public drainage system (pipe diameter of 1000 mm) alternates between being and open and a closed system. In the settled area, it is covered and beneath the surface, then it becomes open again, but closes in the area surrounding factory 693 (underground for 100 m), and then becomes an open system once again at the waste collection station)

5.4.3 Awareness about Wastewater Treatment and Wastewater Fee

5.4.3.1 Awareness about Situation of Wastewater Drainage

Table 5-38 represents what respondents think about problems associated with bad drainage: First, bad odour (75.4%); Second, flooding (71.4%) Third, mosquitoes breeding (66.3%). These results reflect the real drainage situation in Hai Duong City.

Table 5-38 Problems caused by bad drainage

Problems		Quang Trung	Tran Phu	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Mosquitoes breeding	Cases	50	25	18	23	9	7	132
	Row Response %	37.9	18.9	13.6	17.4	6.8	5.3	100.0
	Col Response %	62.5	78.1	56.3	79.3	47.4	100.0	***66.3***
Spread diseases	Cases	37	18	8	19	5	6	93
	Row Response %	39.8	19.4	8.6	20.4	5.4	6.5	100.0
	Col Response %	46.3	56.3	25.0	65.5	26.3	85.7	46.7
Bad odour	Cases	55	26	26	27	9	7	150
	Row Response %	36.7	17.3	17.3	18.0	6.0	4.7	100.0
	Col Response %	68.8	81.3	81.3	93.1	47.4	100.0	***75.4***
Polluted water sources	Cases	50	22	15	22	5	5	119
	Row Response %	42.0	18.5	12.6	18.5	4.2	4.2	100.0
	Col Response %	62.5	68.8	46.9	75.9	26.3	71.4	59.8
Flooding	Cases	57	18	28	22	13	4	142
	Row Response %	40.1	12.7	19.7	15.5	9.2	2.8	100.0
	Col Response %	71.3	56.3	87.5	75.9	68.4	57.1	***71.4***
Other	Cases	2		1	1			4
	Row Response %	50.0		25.0	25.0			100.0
	Col Response %	2.5		3.1	3.4			2.0

Status of the wastewater drainage system. These problems still exist in many wards but are particularly prevalent in Le Thanh Nghi Ward, which accounts for 38.5% (Table 5-34) of reported problems. Reports are more uncommon in other wards (under 10%). It is important to note that in Le Thanh Nghi Ward nearly 100% of respondents do not care about the transgression of the drainage system (Table 5-39). This percentage is also high in Pham Ngu Lao Ward and Nguyen Trai Ward, with similar responses from more than 2/3 of the surveyed households. This fact is highly alarming in regards to the sense of responsibility among households and the community. One special thing is that this so-called transgression is not informed to ward or company. We think that it is "afraid" or "don't care" of community (Not sure what these two sentences mean!).

Table 5-39 Community behaviour - using public drainage for private purposes

If yes, what to do		Quang Trung	Tran Phu	Le Thanh Nghi	Nguyen Trai	Binh Han	Total
With other households in neighbourhood to organize a meeting	N			1	1	1	**3**
	%			33.3	25.0	100.0	**21.4**
Do nothing	N		5	2	3		**10**
	%		*100.0*	*66.7*	*75.0*		***71.4***
Other	N	1					**1**
	%	100.0					**7.1**
Total	**N**	**1**	**5**	**3**	**4**	**1**	**14**
	%	**100**	**100**	**100**	**100**	**100**	**100**

People's behaviour in the case of break-downs of the local drainage system (blocked pipes, closed canal, stolen manhole covers). In the case of problems with the community's drainage system, the people often repair the system (29,3%-61,5%, Table 5-40). Sometimes, the community informs the company if the system belongs to the company (24,6%-54,2%). It is notable that the percentage of "afraid" or "don't care" responses is not insignificant. In some cases, the community repairs the system and also inform the company (2,5%-4,4%).

Table 5-40 Community behaviour - regarding break-downs of the drainage system (Unit: %)

What is done if the local drainage system has problems	Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Repaired by the whole neighbourhood	28.8	41.2	61.5	29.8	29.3	36.4	20.8	**32.4**
Inform the Company	49.2	35.3	7.7	24.6	25.6	36.4	54.2	**36.2**
Do nothing	6.8	11.8	23.1	8.8	20.7	15.2	12.5	**12.4**
Repair & Inform company	2.5	4.4					4.2	**1.8**
DK/DA	12.7	7.4	7.7	36.8	24.4	12.1	8.3	**17.2**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

5.4.3.2 Awareness of People Concerning Wastewater Treatment and Fee

Necessity of wastewater treatment. Figure 5-7 shows that 96.2% of respondents believe that it is necessary to treat wastewater before discharging it into the river. This was especially apparent in Nguyen Trai Ward and Binh Han Ward where 100% of respondents were in agreement about the necessity of wastewater treatment. Based on these facts, the pollution due to wastewater is already critical, a fact that all inhabitants of Hai Duong City believe and has been confirmed in IDIs and FGDs.

Figure 5-7 Awareness of community about wastewater treatment

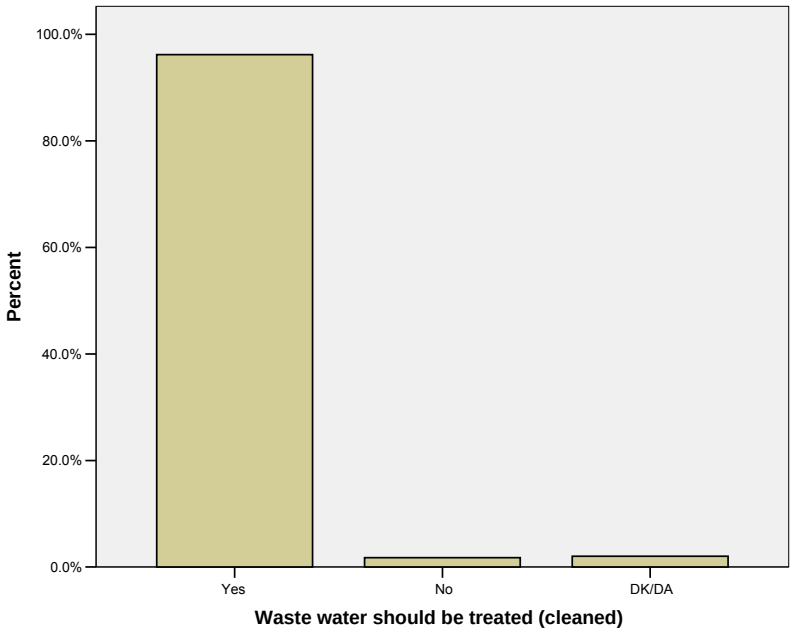


Table 5-41 Awareness of community about wastewater treatment

Wastewater should be treated (cleaned)		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	111	66	12	53	82	33	23	**380**
	%	*94.1*	*97.1*	*92.3*	*93.0*	*100.0*	*100.0*	*95.8*	***96.2***
No	n	5			2				**7**
	%	4.2			3.5				**1.8**
DK/DA	n	2	2	1	2			1	**8**
	%	1.7	2.9	7.7	3.5			4.2	**2.0**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-42 shows that over 94% of respondents think that the community (industry, hospital, market, etc) should pay for wastewater treatment; 91.3% believe that households should pay as well, so there is only a small difference.

Table 5-42 Community and households should pay for wastewater treatment

Question			Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguye n Trai	Binh Han	Tran Hung Dao	Total
Community (industry, hospitals, markets..) has to pay for wastewater treatment	Yes	n	97	67	13	54	81	33	24	369
		Col %	83.6	98.5	100.0	96.4	98.8	100.0	100.0	*94.1*
	No	n	14							14
		Col %	12.1							3.6
	Other	n	2							2
		Col %	1.7							0.5
	DK/DA	n	3	1		2	1			7
		Col %	2.6	1.5		3.6	1.2			1.8
	Total	n	116	68	13	56	82	33	24	392
		Col %	100	100	100	100	100	100	100	100
Household has to pay for wastewater treatment	Yes	n	104	65	11	43	79	33	24	359
		Col %	88.1	95.6	84.6	78.2	96.3	100.0	100.0	*91.3*
	No	n	7	2	1	2	1			13
		Col %	5.9	2.9	7.7	3.6	1.2			3.3
	Other	n	3			3	1			7
		Col %	2.5			5.5	1.2			1.8
	DK/DA	n	4	1	1	7	1			14
		Col %	3.4	1.5	7.7	12.7	1.2			3.6
	Total	n	118	68	13	55	82	33	24	393
		Col %	100	100	100	100	100	100	100	100

Reasons for paying wastewater fee. While surveying people's reasons for paying a wastewater fee, 36,4% - 75% of respondents think "it is the obligation of all people to keep the environment green, clean and beautiful." However, a smaller percentage (3,1% - 33,3%, on average 16.5%) think that "collection and treatment of wastewater is costly and people have to contribute." This statistic is a warning to the WWM-project and company concerning the collection of wastewater fee and the necessity of carrying out various campaigns before implementation.

There are other opinions from respondents who "*don't want to pay for wastewater treatment*":

- The wastewater system is a kind of public system
- State should pay for wastewater treatment
- State should support such systems
- State takes money from citizens already

- Not necessary to pay
- Pay only for clean water, not for wastewater
- Domestic wastewater accounts for a smaller portion of total than industrial wastewater
- The living standard (income) of households is low
- Firstly free, then pay with suitable fee

Table 5-43 Reasons for paying for wastewater treatment

If yes, reason		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Collection and treatment of wastewater is very costly and people have to contribute (1)	n	23	12		3	13	1	8	**60**
	%	21.7	18.5		6.7	16.3	3.1	33.3	**16.5**
This is the obligation of all people to keep the environment green, clean and beautiful (2)	n	72	49	4	27	47	24	15	**238**
	%	*67.9*	*75.4*	*36.4*	*60.0*	*58.8*	*75.0*	*62.5*	***65.6***
(1)+(2)	n	7	2	6	13	19	7	1	**55**
	%	6.6	3.1	54.5	28.9	23.8	21.9	4.2	**15.2**
Other	n	1			1	1			**3**
	%	0.9			2.2	1.3			**0.8**
DK/DA	n	3	2	1	1				**7**
	%	2.8	3.1	9.1	2.2				**1.9**
Total	**n**	**106**	**65**	**11**	**45**	**80**	**32**	**24**	**363**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Bidding for WTP of wastewater treatment. In FGDs, people talked about the 10% wastewater fee which is already being collected in the water bill and that the flooding problems still cannot be solved and canal cleaning is too formal. After we offered our explanation, people understood that this fee is only a small amount as a reminder of the environmental problem. In the framework of a bidding game for WTP of wastewater treatment, we introduced the following scenario: In light of the wastewater collection and treatment system operations, all inhabitants have to pay for wastewater treatment in order to maintain the system's operation by the company. What is the maximum amount that a household can pay? Based on statistical data and analysis (Table 5-44 and Figure 5-7, the minimum mean is 1673 VND/m^3 (Binh Han Ward) and the maximum is 2192 VND/m^3 (Le Thanh Nghi Ward). The standard deviation varies between 468-1377.

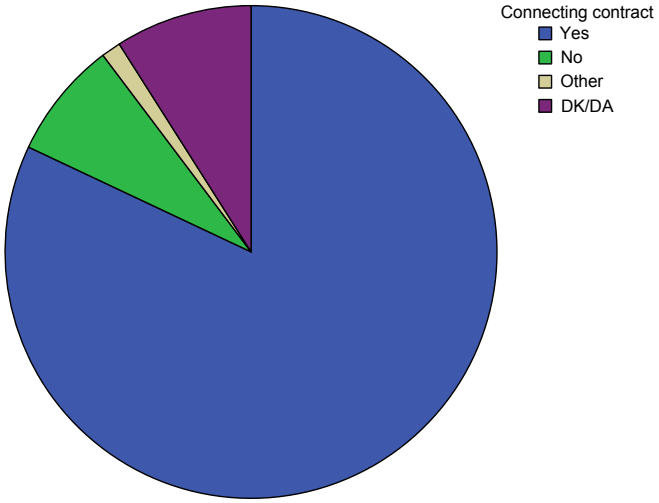
Table 5-44 Bidding for wastewater treatment – WTP for treatment of 1 m^3 wastewater (Unit: 1000 VND/m^3)

Ward	Count	Minimum	Maximum	Mean	Median	Mode	Std Deviation
Quang Trung	82	1000	5000	1689	1000	1000	995.79
Trần Phú	50	1000	5000	1820	1500	1000	1029
Le Thanh Nghi	13	1000	5000	2192.3	1500	1000	1377.5
Pham Ngu Lao	29	1000	3500	1982.8	1500	1000	949.46
Nguyen Trai	46	1000	5000	1902.2	2000	1500	786.13
Binh Han	26	1000	3000	1673.1	1500	2000	467.81
Tran Hung Dao	17	1000	3000	1852.9	2000	1500	606.34
Total	**263**	**1000**	**5000**	**1817.5**	**1500**	**1000**	**925.14**

Signing a contract for wastewater collection and treatment. 88% of respondents are ready to sign a contract after construction of wastewater treatment system is completed (Figure 5-8). The percentage that say they will not sign is small. Based on this fact, we can see that

people consider wastewater collection and treatment as services and think they need to sign for legal reasons.

Figure 5-8 Ready to sign wastewater collection and treatment contract



5.5 Evaluation of Solid Waste Disposal in the Drainage System

Table 5-45 shows that there is still a problem regarding the throwing and disposal of solid waste in drainage system. In Le Thanh Nghi Ward, a high percentage of respondents (38,5%) reported doing so, but the percentage is lower in Binh Han Ward (3,8%). The difference between these figures is high, perhaps because the people in Binh Han Ward have greater awareness of the public drainage system.

Table 5-45 Frequency of solid waste disposal in the drainage system

Disposal of solid waste into the public drainage system		**Quang Trung**	**Tran Phu**	**Le Thanh Nghi**	**Pham Ngu Lao**	**Nguyen Trai**	**Binh Han**	**Tran Hung Dao**	**Total**
Usually	n	19	8	5	11	5	1	1	**50**
	%	16.1	11.8	38.5	19.3	6.1	3.0	4.2	**12.7**
Sometimes	n	26	16	2	13	15	4	1	**77**
	%	22.0	23.5	15.4	22.8	18.3	12.1	4.2	**19.5**
Never	n	68	43	6	31	61	27	21	**257**
	%	*57.6*	*63.2*	*46.2*	*54.4*	*74.4*	*81.8*	*87.5*	***65.1***
DK/DA	n	5	1		2	1	1	1	**11**
	%	4.2	1.5		3.5	1.2	3.0	4.2	**2.8**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

If solid waste is collected, the people are aware that they should put all solid waste on the sidewalk of the street for collection (38.5% - 74%, in Table 5-32). However, some households throw solid waste into rivers, canals and ponds. The percentage of such households is high in Le Thanh Nghi Ward (38.5%, Table 5-46). During our survey in Hai Duong City, we saw that the company staff tried hard to remove all waste and duckweed from canal T2 to the bank and then transport it to a landfill. This is an unfavourable situation as people throw solid waste into the canal and then the company staff has to take it away (Figure 5-9).

Table 5-46 Where the household's solid waste is disposed

Where the solid waste is disposed		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Throw it to sidewalk or street (1)	n	70	46	5	23	36	15	13	**208**
	%	*59.3*	*67.6*	*38.5*	40.4	43.9	*46.9*	*54.2*	***52.8***
Throw it in the river, ditch, field (2)	n	6	1	5	5	2	4		**23**
	%	5.1	1.5	*38.5*	8.8	2.4	12.5		**5.8**
Throw it anywhere	n				1				**1**
	%				1.8				**0.3**
(1)+(2)	n		1		2	1			**4**
	%		1.5		3.5	1.2			**1.0**
Other	n	42	20	2	25	43	13	11	**156**
	%	35.6	29.4	15.4	*43.9*	*52.4*	40.6	45.8	**39.6**
DK/DA	n			1	1				**2**
	%			7.7	1.8				**0.5**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**32**	**24**	**394**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

The citizens made some suggestions as to how solid waste can be collected in order to improve wastewater drainage:

- Campaign to tell the citizens to put all solid waste in the right place,
- Awareness campaign for citizens,
- Hire means of transportation for bringing solid waste to the collection point,
- Establish a sanction system with pecuniary penalties.

We should establish a sanction system with pecuniary penalties for citizens who violate the environmental sanitation conditions, dig drainage connections without permission, or discharge/dispose wastewater directly into Hao Thanh Lake. An environmental police force should be established (IDI with head of Tran Hung Dao Ward)

Figure 5-9 Company staff try hard to remove all waste and duckweed from canal T2 to the bank and then transport it to a landfill

5.6 Evaluation of Trees on Streets and in Parks

5.6.1 Trees on Streets

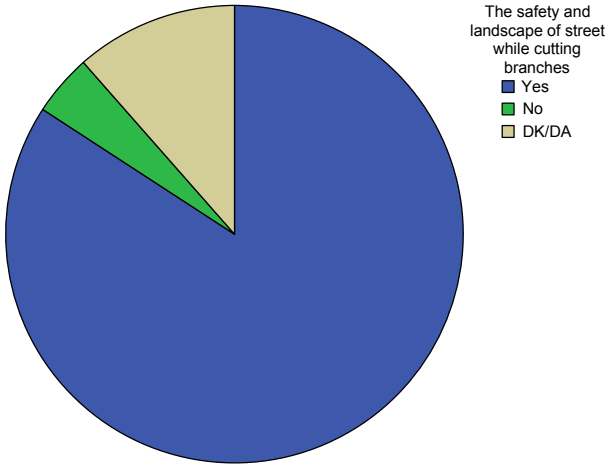
According to Table 5-47, 50% - 90.9% of respondents think that it is suitable to have trees on the street, while 9.1% - 37.5% think this is not suitable. Tran Hung Dao Ward showed the highest percentage (37.5%) of people who believed there should not be trees on streets, so we tried to determine the reasons. In IDI with the head of the ward, Mr. Nguyen Hong Thinh informed us that the planted trees, "Bang," attract a lot of insects in the summer and the company should replace this kind of tree.

Table 5-47 Are trees along the street suitable?

How suitable are trees along the street		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Suitable	n	83	56	11	46	51	30	12	**289**
	%	*70.3*	*82.4*	*84.6*	*80.7*	*62.2*	*90.9*	*50.0*	***73.2***
Not suitable	n	35	12	2	9	25	3	9	**95**
	%	29.7	17.6	15.4	15.8	30.5	9.1	37.5	**24.1**
DK/DA	n				2	6		3	**11**
	%				3.5	7.3		12.5	**2.8**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Most of respondents believe that this "kind of tree" is not suitable (23%). Other opinions as to why the trees are unsuitable were: Bough, branch; Height of tree; Planted location; Aroma; Flower colour; Shed leaves and Insecticide. Furthermore, the people suggested the planting of additional trees and that the variety of tree be changed from "bang" for example. A number of respondents think that "prune down/off tree and branches" meets the safety and landscaping requirements of the street (Figure 5-10).

Figure 5-10 Pruning trees and branches - safety and landscape implications?



5.6.2 Verdure, Trees and Parks

More than 50% of respondents often go to park (Figure 5-11) an average of19.6 times/month. They think that verdure in the park is suitable (80%, Figure 5-12), however there are still about 10% people think that it is not suitable. 32% of respondents complain about the variety of trees, while the remaining 61.8% list a number of other important issues such as:

- The sanitation in the park is still bad
- The planting of more trees/grass
- The architecture is not nice and the other kinds of tree are not suitable.

Figure 5-11 Go to the park

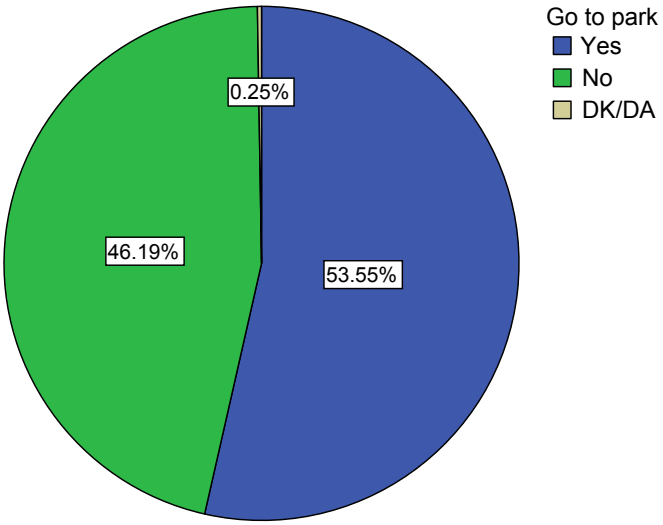


Figure 5-12 Are planted trees, verdure in the park suitable?

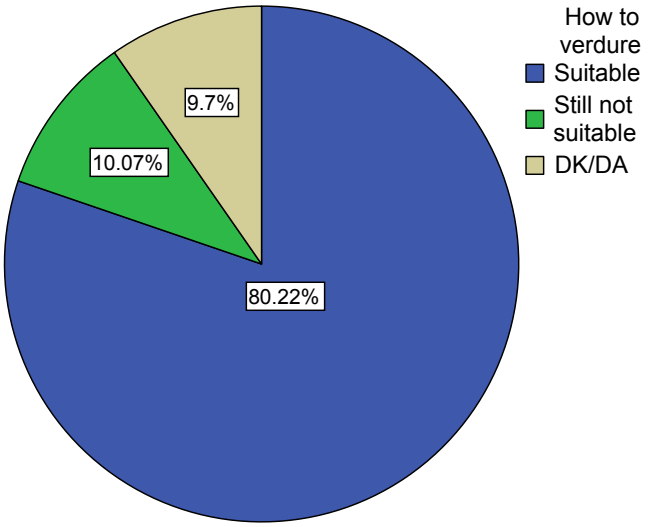


Table 5-48 If "still not suitable" what are you unsatisfied with?

Problem	**n**	**%**
Kind of tree	9	26.5
Kind of tree & Flower colour	1	2.9
Kind of tree & Location	21	2.9
Other	2	61.8
Kind of tree & Other	2	5.9
Total	**34**	**100.0**

5.7 Evaluation of Street Lighting System

About 88.35% of respondents have electric lights in the area around their households. They are satisfied with the intensity of the lighting and the lighting period (starting and ending times). However there are still a number of other issues: the strengthening of lighting at three/four-way crossroads; people who have no electric light around their household area want it in order to improve their safety. If the company improves lighting, the community is ready to contribute, for example, 50% financial support from the city council and 50% from the community to build/supplement the lighting system in small alleys such as Alley 33 (IDI with the head of Le Thanh Nghi Ward).

Figure 5-13 Street lighting in household's area

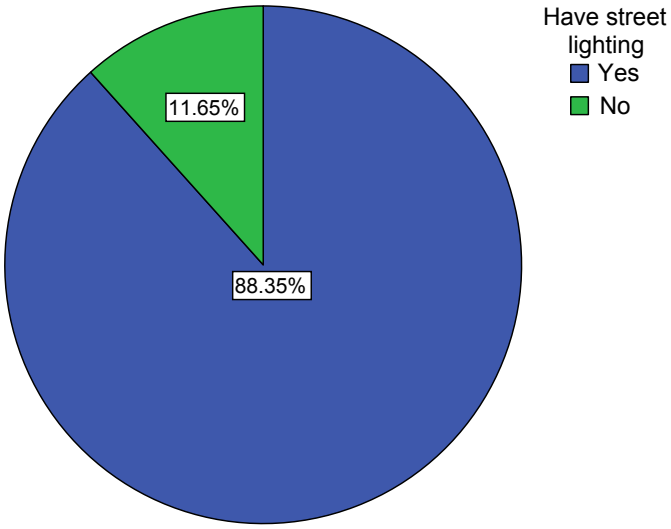


Table 5-49 Street lighting problems

Street lighting			Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Lighting intensity	Good	n	98.0	60.0	12.0	27.0	62.0	23.0	21.0	**303.0**
		%	86.0	88.2	92.3	79.4	88.6	88.5	87.5	**86.8**
	Bad	n	15.0	8.0	1.0	7.0	8.0	3.0	3.0	**45.0**
		%	13.2	11.8	7.7	20.6	11.4	11.5	12.5	**12.9**
	DK/DA	n	1.0							**1.0**
		%	0.9							**0.3**
	Total	**n**	**114.0**	**68.0**	**13.0**	**34.0**	**70.0**	**26.0**	**24.0**	**349.0**
		%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Lighting time	Good	n	97.0	67.0	12.0	31.0	61.0	26.0	20.0	**314.0**
		%	85.1	98.5	92.3	91.2	87.1	100.0	83.3	**90.0**
	Bad	n	16.0	1.0	1.0	3.0	9.0		4.0	**34.0**
		%	14.0	1.5	7.7	8.8	12.9		16.7	**9.7**
	DK/DA	n	1.0							**1.0**
		%	0.9							**0.3**
	Total	**n**	**114.0**	**68.0**	**13.0**	**34.0**	**70.0**	**26.0**	**24.0**	**349.0**
		%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

5.8 Evaluation of Information, Education and Communication

5.8.1 TV and Radio

5.8.1.1 TV

Today, TV is a “live newspaper” and a “mensurate meal” for people. Nearly 100% of households have a television. Concerning the content and form, TV programs have become increasingly attractive and varied. Major TV programs such as VTV 1,2,3 are watched more often than Hai Duong's TV programs. About 84,8% of respondents answered that they watch central TV programs (VTV 1, 2, 3) every day, but only 56,5% answered that they watch Hai Duong TV programs.

Table 5-50 Frequency of watching TV programs

Frequency of watching			Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
VTV 123	Every day	n	108	55	13	43	69	24	23	**335**
		%	91.5	80.9	100.0	75.4	84.1	72.7	95.8	**84.8**
	4-6 days	n	4	4		8	4	4		**24**
		%	3.4	5.9		14.0	4.9	12.1		**6.1**
	1-3 days	n	4	8		6	8	5	1	**32**
		%	3.4	11.8		10.5	9.8	15.2	4.2	**8.1**
	Never	n	2	1						**3**
		%	1.7	1.5						**0.8**
	DK/DA	n					1			**1**
		%					1.2			**0.3**
	Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
		%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
HDTV	Every day	n	65	33	10	26	50	20	19	**223**
		%	55.1	48.5	76.9	45.6	61.0	60.6	79.2	**56.5**
	4-6 days	n	10	3		1	2			**16**
		%	8.5	4.4		1.8	2.4			**4.1**
	1-3 days	n	31	25	2	23	19	13	4	**117**
		%	26.3	36.8	15.4	40.4	23.2	39.4	16.7	**29.6**
	Never	n	11	5	1	7	11		1	**36**
		%	9.3	7.4	7.7	12.3	13.4		4.2	**9.1**
	DK/DA	n	1	2						**3**
		%	0.8	2.9						**0.8**
	Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
		%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.8.1.2 Radio

The percentage of households with radios is relatively small (less than 1/3 of households). Today, radio seems to be backward in comparison to other communication facilities. But in its role as a “speaking newspaper” it has particular advantages when compared to other communication technologies. The information presented on the radio is updated everyday, so TVs and radios can easily replace one another. It is therefore no surprise that in Le Thanh Nghi Ward there weren’t many radios, but the people regularly watch the central TV programs (100%).

Table 5-51 Households with radios

Own a radio		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	N	24	8		13	17	5	2	**69**
	%	20.3	11.8		22.8	20.7	15.2	8.3	**17.5**
No	N	93	60	13	44	65	28	21	**324**
	%	78.8	88.2	100.0	77.2	79.3	84.8	87.5	**82.0**
DK/DA	N	1						1	**2**
	%	0.8						4.2	**0.5**
Total	**N**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-52 Frequency of radio listening

Listening frequency		Quang Trung	Tran Phu	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Every day	n	17	8	7	10	3		**45**
	%	70.8	100.0	53.8	58.8	60.0		**65.2**
4 - 6 days	n			1	1	1		**3**
	%			7.7	5.9	20.0		**4.3**
1 - 3 days	n	4		4	2	1		**11**
	%	16.7		30.8	11.8	20.0		**15.9**
Never	n	3			3		2	**8**
	%	12.5			17.6		100.0	**11.6**
DK/DA	n			1	1			**2**
	%			7.7	5.9			**2.9**
Total	**n**	**24**	**8**	**13**	**17**	**5**	**2**	**69**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.8.2 Receiving and Reading Information about City Regulations

Although information about the city regulations is made available, only about 50% of respondents answered that they had already read it. In Le Thanh Nghi Ward, in particular, 53,5% of respondents hadn't read the city regulations.

Table 5-53 Respondents who had read the city regulations

Read "the City regulation"		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	64	31	6	21	50	18	15	**205**
	%	54.2	45.6	46.2	36.8	61.0	54.5	62.5	**51.9**
No	n	49	35	7	27	23	15	9	**165**
	%	41.5	51.5	53.8	47.4	28.0	45.5	37.5	**41.8**
DK/DA	n	5	2		9	9			**25**
	%	4.2	2.9		15.8	11.0			**6.3**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.8.3 Information on Wastewater and Drainage

Over the last 6 months, the number of "households which get information on wastewater/wastewater drainage" has generally been highest in Tran Phu Ward (52.9%) and lowest in Binh Han Ward (12.1%) (Table 5-54). In our opinion, the wastewater project is visible everywhere in Hai Duong City, which makes this percentage seem a little low. Thus WWM and the company should cooperate closely in future campaigns so that people gain a better understanding of the wastewater drainage system which is under construction and its important role in improving the environment in Hai Duong City. In addition, it is of major importance to orient people towards the protection of the wastewater drainage system.

Table 5-54 Received information on wastewater in last 6 month

Received information on wastewater		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	26	36	6	10	24	4	4	**110**
	%	22.0	52.9	46.2	17.5	29.3	12.1	16.7	**27.8**
No	n	87	27	5	47	56	28	16	**266**
	%	73.7	39.7	38.5	82.5	68.3	84.8	66.7	**67.3**
DK/DA	n	5	5	2		2	1	4	**19**
	%	4.2	7.4	15.4		2.4	3.0	16.7	**4.8**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Ana analysis of the frequency of responses shows that most of households received information "sometimes" (50% - 100%). In Tran Hung Dao Ward, 16.7% of respondents received the information on wastewater/drainage, however 75% answered that this only happened "rarely". The company should pay more attention to Tran Hung Dao Ward. In FGDs in Tran Hung Dao Ward, the participants suggested carrying out additional campaigns to increase people's awareness of the project. Until now, they haven't been able to understand that the wastewater system follows the general principle of separate collection of wastewater and rainwater.

Table 5-55 Frequency of receiving information on wastewater and drainage

Frequency (about water service)		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Often	n	6	1		1	4			**12**
	%	22.2	2.7		10.0	17.4			**10.8**
Sometimes	n	19	31	3	7	16	4	1	**81**
	%	70.4	83.8	50.0	70.0	69.6	100.0	25.0	**73.0**
Rarely	n	2	5	3	2	3		3	**18**
	%	7.4	13.5	50.0	20.0	13.0		75.0	**16.2**
Total	**n**	**27**	**37**	**6**	**10**	**23**	**4**	**4**	**111**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.8.4 Information on Trees

People have received limited information about trees. It is only the people who are interested in trees, gardens, parks and the urban landscape, who pay attention to this kind of information. They receive information infrequently, or only "sometimes."

Table 5-56 Received information about trees within the last 6 months

Received information about trees		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	22	31	3	8	11	2	1	**78**
	%	18.6	45.6	23.1	14.0	13.4	6.1	4.2	**19.7**
No	n	90	32	8	49	68	30	19	**296**
	%	*76.3*	*47.1*	*61.5*	*86.0*	*82.9*	*90.9*	*79.2*	***74.9***
DK/DA	n	6	5	2		3	1	4	**21**
	%	5.1	7.4	15.4		3.7	3.0	16.7	**5.3**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-57 Frequency of information about trees, parks, etc. being received

Frequency (about trees)		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Often	N	6	1			1			**8**
	%	27.3	3.2			9.1			**10.3**
Sometime	N	16	28	3	6	10	2	1	**66**
	%	*72.7*	*90.3*	*100.0*	*75.0*	*90.9*	*100.0*	*100.0*	***84.6***
Rarely	n		2		2				**4**
	%		6.5		25.0				**5.1**
Total	**n**	**22**	**31**	**3**	**8**	**11**	**2**	**1**	**78**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.8.5 Information about Street Lighting

Inhabitants are rarely provided with information about street lighting. The lowest value recorded was 4.2% in Tran Hung Dao Ward, the highest, 42.6%, in Tran Phu Ward (Table 5-58). The people who receive information are mainly the heads of sub-wards and/or the leaders of wards. Over 70% of respondents responded that they "sometimes" get this information (Table 5-59).

Table 5-58 Received information about street lighting within the last 6 months

Received information about street lighting		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguye n Trai	Binh Han	Tran Hung Dao	Total
Yes	n	22	29	3	8	12	4	1	**79**
	%	18.6	42.6	23.1	14.0	14.8	12.1	4.2	**20.1**
No	n	90	34	8	49	66	28	19	**294**
	%	*76.3*	*50.0*	*61.5*	*86.0*	*81.5*	*84.8*	*79.2*	***74.6***
DK/DA	n	6	5	2		3	1	4	**21**
	%	5.1	7.4	15.4		3.7	3.0	16.7	**5.3**
Total	**n**	**118**	**68**	**13**	**57**	**81**	**33**	**24**	**394**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-59 Frequency of information about street lighting being received

Frequency (about lighting)		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	6	1		1	1			**9**
	%	27.3	3.3		12.5	9.1			**11.4**
No	n	16	28	3	6	10	4	1	**68**
	%	*72.7*	*93.3*	*100.0*	*75.0*	*90.9*	*100.0*	*100.0*	***86.1***
DK/DA	n		1		1				**2**
	%		3.3		12.5				**2.5**
Total	**n**	**22**	**30**	**3**	**8**	**11**	**4**	**1**	**79**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.8.6 Evaluation of Communication Channels

5.8.6.1 Where Does the Information Come From and Who are the Most Effective Informants?

Based on Table 5-60, the most effective information source, according to the opinions of the people/community, is"respected people in the ward" as well as "the company." This was especially evident in Le Thanh Nghi Ward, where nearly 100% of respondents answered that their information comes from "Respected people in the ward".

According to Table 5-61 the most effective people for communicating with others are: "the head of sub-ward" and "leader of ward." Until now, all information has been provided to each household by these persons.

Table 5-60 Who are the community's information sources?

		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Neighbour/ friend	Cases	2	12		5	12	2		33
	Row Response %	6.1	36.4		15.2	36.4	6.1		100.0
	Col Response %	7.7	32.4		50.0	48.0	50.0		*29.2*
Company	Cases	9	6		2	10	3	4	34
	Row Response %	26.5	17.6		5.9	29.4	8.8	11.8	100.0
	Col Response %	34.6	16.2		20.0	40.0	75.0	100.0	*30.1*
Health communicator	Cases		2		1				3
	Row Response %		66.7		33.3				100.0
	Col Response %		5.4		10.0				2.7
Respected person	Cases	18	25	7	6	12	2	1	71
	Row Response %	25.4	35.2	9.9	8.5	16.9	2.8	1.4	100.0
	Col Response %	69.2	67.6	100.0	60.0	48.0	50.0	25.0	*62.8*
TV	Cases	3	1		2	7			13
	Row Response %	23.1	7.7		15.4	53.8			100.0
	Col Response %	11.5	2.7		20.0	28.0			11.5
Radio	Cases	1			1				2
	Row Response %	50.0			50.0				100.0
	Col Response %	3.8			10.0				1.8
Loudspeaker	Cases	5	5		1	1	1		13
	Row Response %	38.5	38.5		7.7	7.7	7.7		100.0
	Col Response %	19.2	13.5		10.0	4.0	25.0		11.5
Other	Cases	1				4	2	1	8
	Row Response %	12.5				50.0	25.0	12.5	100.0
	Col Response %	3.8				16.0	50.0	25.0	7.1

		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Total	Cases	26	37	7	10	25	4	4	113
	Row Response %	34.5	45.1	6.2	15.9	40.7	8.8	5.3	156.6
	Col Response %	150.0	137.8	100.0	180.0	184.0	250.0	150.0	156.6

Table 5-61 The most influential person for communicating information

Most influential communicator		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Head of ward	Cases	29	13		29	37	17	2	**127**
	Col Response %	24.6	19.1		50.9	45.1	51.5	8.7	***32.2***
Head of sub-ward	Cases	107	65	13	56	80	33	21	**375**
	Col Response %	90.7	95.6	100.0	98.2	97.6	100.0	91.3	***95.2***
Company	Cases	18	5		13	19	3	2	**60**
	Col Response %	15.3	7.4		22.8	23.2	9.1	8.7	***15.2***
Health worker	Cases	3	2		7	4			**16**
	Col Response %	2.5	2.9		12.3	4.9			**4.1**
Member of Women's Union, elderly people, etc.	Cases	22	7	6	9	20	8		**72**
	Col Response %	18.6	10.3	46.2	15.8	24.4	24.2		**18.3**
Member of Youth Union	Cases	1							**1**
	Col Response %	0.8							**0.3**
Respected people	Cases	11	6	4	19	10	7		**57**
	Col Response %	9.3	8.8	30.8	33.3	12.2	21.2		***14.5***
Other	Cases	8	1						**9**
	Col Response %	6.8	1.5						**2.3**
Total	Cases	**118**	**68**	**13**	**57**	**82**	**33**	**23**	**394**
	Col Response %	**168.6**	**145.6**	**176.9**	**233.3**	**207.3**	**206.1**	**108.7**	**182.0**

5.8.6.2 Public Meetings Organized by the Company

According to Table 5-62, the company has almost never organized any public meetings. The company needs to organize meetings and public discussions so that people can know and understand what the company has to do and what difficult problems the company is confronting. The company can work closely with the community in cooperating to solve the problems. The situation should be avoided in which each "goes their own way," where the community and company do different things and have different interests.

Table 5-62 Frequency of community meetings about company services

Frequency of company's public meetings in the ward		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Never	n	114	58	12	43	62	26	23	**338**
	%	*96.6*	*85.3*	*92.3*	*75.4*	*75.6*	*78.8*	*95.8*	***85.6***
< 1 month	n	1	1						**2**
	%	0.8	1.5						**0.5**
DK/DA	n	3	9	1	14	20	7	1	**55**
	%	2.5	13.2	7.7	24.6	24.4	21.2	4.2	**13.9**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.8.6.3 The Loudspeaker System

A loudspeaker system exists in all wards (Table 5-63). This is the community's daily communication channel and is perhaps the easiest method for disseminating information to the people. This traditional communication channel is highly reliable and effective, however, the big issues are broadcasting time and frequency in order to reach as many people as possible so that people can get more information. From IDIs and FGDs as well as data analysis of household questionnaires, the broadcasting times, according to Table 5-64 should be:

- For people under 40 years old: 5.00-7.00 am, 11.00-12.00 am and 5.00-7.00 pm
- For people over 40 years old: 6.00-7.00 am and 5.00-6.00 pm

Table 5-63 The loudspeaker system in the wards

Frequency (about light)		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Yes	n	109	64	12	50	80	32	22	**369**
	%	*92.4*	*94.1*	*92.3*	*87.7*	*97.6*	*97.0*	*91.7*	***93.4***
No	n	9	3		5	2	1	2	**22**
	%	7.6	4.4		8.8	2.4	3.0	8.3	**5.6**
DK/DA	n		1	1	2				**4**
	%		1.5	7.7	3.5				**1.0**
Total	**n**	**118**	**68**	**13**	**57**	**82**	**33**	**24**	**395**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.8.6.4 Evaluation of Communication Channels

As shown in Table 5-64, there are different instruments/tools, which the company can use for communicating with households. These channels are:

- "Very effective": Home visit (84.4%), ward/neighbourhood meeting (67.3%)
- "Effective": Loudspeaker (54.3%), TV (56.5%), Publicity campaigns (46.8%), Leaflet (41.7%), poster (45,3%).
- "Ineffective": Poster, notice board, radio and newsletter

Posters and leaflets are classified as both "effective" and "ineffective" because the recorded percentages were nearly equal. Information gathered during the IDIs and GFDs suggested that leaflets are used too much nowadays. They are distributed everywhere and many people are not interested in reading them. Thus, leaflets must be directly distributed by company staff when they collect water bills. Of course, it is impossible for the Hai Duong Urban Works Company to go to each household. Thus, the company should cooperate with the Hai Duong Water Supply Company in delivering leaflets to households, so that both tools: leaflets and face-to-face communication from company representatives are effectively combined.

Table 5-64 The most effective communication channels for company use (ranked)

Channel	Evaluation		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguyen Trai	Binh Han	Tran Hung Dao	Total
Home visit	Ineffective	n	5	1		2	1		3	12
		Col %	4.2	1.5		3.5	1.2		12.5	3.1
	Effective	n	36	2		7	3		1	49
		Col %	30.5	3.0		12.3	3.7		4.2	12.5
	Very effective	n	77	64	11	48	78	33	20	331
		Col %	65.3	95.5	100.0	84.2	95.1	100.0	83.3	84.4
	Total	n	118	67	11	57	82	33	24	392
		Col %	100	100	100	100	100	100	100	100
Ward, Neighbourhood meeting	Ineffective	n	7	4			2		1	14
		Col %	5.9	6.0			2.4		4.2	3.6
	effective	n	31	20	1	16	32	13	1	114
		Col %	26.3	29.9	9.1	28.1	39.0	39.4	4.2	29.1
	Very effective	n	80	43	10	41	48	20	22	264
		Col %	67.8	64.2	90.9	71.9	58.5	60.6	91.7	67.3
	Total	n	118	67	11	57	82	33	24	392
		Col %	100	100	100	100	100	100	100	100
Loudspeakers	Ineffective	n	18	7		6	5		4	40
		Col %	15.3	10.4		10.5	6.1		16.7	10.2
	effective	n	54	41	7	26	44	29	12	213
		Col %	45.8	61.2	63.6	45.6	53.7	87.9	50.0	54.3
	Very effective	n	46	19	4	25	33	4	8	139
		Col %	39.0	28.4	36.4	43.9	40.2	12.1	33.3	35.5
	Total	n	118	67	11	57	82	33	24	392
		Col %	100	100	100	100	100	100	100	100
Posters	Ineffective	n	64	35	4	27	34	13	20	197
		Col %	54.2	52.2	36.4	48.2	41.5	39.4	83.3	50.4
	effective	n	50	29	7	25	44	18	4	177
		Col %	42.4	43.3	63.6	44.6	53.7	54.5	16.7	45.3
	Very effective	n	4	3		4	4	2		17
		Col %	3.4	4.5		7.1	4.9	6.1		4.3
	Total	n	118	67	11	56	82	33	24	391
		Col %	100	100	100	100	100	100	100	100
Leaflets	Ineffective	n	51	20	3	18	23	18	21	154
		Col %	43.2	29.9	27.3	32.1	28.0	54.5	87.5	39.4
	effective	n	52	36	7	16	43	6	3	163
		Col %	44.1	53.7	63.6	28.6	52.4	18.2	12.5	41.7
	Very effective	n	15	11	1	22	16	9		74
		Col %	12.7	16.4	9.1	39.3	19.5	27.3		18.9
	Total	n	118	67	11	56	82	33	24	391
		Col %	100	100	100	100	100	100	100	100
Notice boards	Ineffective	n	84	46	11	41	36	10	23	251
		Col %	71.2	68.7	100.0	73.2	43.9	30.3	95.8	64.2
	effective	n	30	19		8	37	13	1	108
		Col %	25.4	28.4		14.3	45.1	39.4	4.2	27.6
	Very effective	n	4	2		7	9	10		32
		Col %	3.4	3.0		12.5	11.0	30.3		8.2
	Total	n	118	67	11	56	82	33	24	391
		Col %	100	100	100	100	100	100	100	100
Radios	Ineffective	n	66	51	11	42	44	20	21	255
		Col %	55.9	76.1	100.0	75.0	53.7	60.6	87.5	65.2
	effective	n	43	15		9	30	13	3	113
		Col %	36.4	22.4		16.1	36.6	39.4	12.5	28.9

Channel	Evaluation		Quang Trung	Tran Phu	Le Thanh Nghi	Pham Ngu Lao	Nguye n Trai	Binh Han	Tran Hung Dao	Total
	Very effective	n	9	1		5	8			23
		Col %	7.6	1.5		8.9	9.8			5.9
	Total	n	118	67	11	56	82	33	24	391
		Col %	100	100	100	100	100	100	100	100
TV	Ineffective	n	26	20	4	18	15	4	11	98
		Col %	22.0	29.9	36.4	32.1	18.3	12.1	45.8	25.1
	effective	n	67	43	7	22	42	29	11	221
		Col %	56.8	64.2	63.6	39.3	51.2	87.9	45.8	56.5
	Very effective	n	25	4		16	25		2	72
		Col %	21.2	6.0		28.6	30.5		8.3	18.4
	Total	n	118	67	11	56	82	33	24	391
		Col %	100	100	100	100	100	100	100	100
Newspapers	Ineffective	n	60	45	9	40	41	17	16	228
		Col %	50.8	67.2	81.8	71.4	50.0	51.5	66.7	58.3
	effective	n	48	21	2	13	36	16	8	144
		Col %	40.7	31.3	18.2	23.2	43.9	48.5	33.3	36.8
	Very effective	n	10	1		3	5			19
		Col %	8.5	1.5		5.4	6.1			4.9
	Total	n	118	67	11	56	82	33	24	391
		Col %	100	100	100	100	100	100	100	100
Publicity campaigns	Ineffective	n	21	6	2	12	12	1	10	64
		Col %	17.8	9.0	18.2	21.4	14.6	3.0	41.7	16.4
	effective	n	62	47	9	17	32	11	5	183
		Col %	52.5	70.1	81.8	30.4	39.0	33.3	20.8	46.8
	Very effective	n	34	14		27	38	21	9	143
		Col %	28.8	20.9		48.2	46.3	63.6	37.5	36.6
	DK/DA	n	1							1
		Col %	0.8							0.3
	Total	n	118	67	11	56	82	33	24	391
		Col %	100	100	100	100	100	100	100	100

5.9 Evaluation of Consumer Satisfaction with Company's Services

5.9.1 Wastewater/Drainage Service

Between 9.1% and 53.8% of respondents think that the company's wastewater service is quite "good" (Table 5-65) depending on the ward. Le Thanh Nghi Ward, for example, has good wastewater services. Table 5-6565 shows the percentage that rated the service as "bad" fluctuates between 10.5% and 33.3%. The worst evaluation results were in Binh Han Ward (33.3%), followed by Quang Trung (22.9%) and Nguyen Trai (18.3%).

Table 5-66, shows that there are some problems related with wastewater: Bad drainage, blocked pipes/canals, open manholes, flooding and bad odours. There are three main problems: "bad odours" (40.3%), "flooding" (38.5%) and "bad drainage" (36.2%). The main causes for these problems as identified in this evaluation are: an old wastewater drainage system; small pipes and inadequate slope causing poor drainage in the pipeline. The problem of open manholes was rarely mentioned.

In general, there are problems related with wastewater and drainage, but people hesitate or even avoid complaining to the company (Table 5-67). Only 10% of cases result in formal complaints. People avoid complaining because most think that bad drainage or blockages are community or neighbourhood problems.

Only households in the Quang Trung, Tran Phu and Nguyen Trai wards complained to the company. The courtesy level displayed when solving the problems was judged either "normal" (66.7%) or "good" (33.3%) while Table 5-68 shows most of the solutions to the

problems were rated either “good” or “fair.” Most of the problems were solved within one day and in some cases required 2-3 days or 4-7 days (only 1/4 to 1/3 of cases).

Table 5-65 Satisfaction with wastewater and drainage service

Waste-water & drainage service	Quang Trung		Tran Phu		Le Thanh Nghi		Pham Ngu Lao		Nguyen Trai		Binh Han		Tran Hung Dao		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Not satisfied	27	22.9	12	17.6			6	10.5	15	18.3	11	33.3	3	12.5	74	18.7
Satisfied	29	24.6	22	*32.4*			29	*50.9*	29	35.4	15	*45.5*	4	16.7	128	*32.4*
Very satisfied	42	*35.6*	20	29.4	7	*53.8*	20	35.1	36	*43.9*	3	9.1	12	*50.0*	140	*35.4*
DK/DA	20	16.9	14	20.6	6	46.2	2	3.5	2	2.4	4	12.1	5	20.8	53	13.4
Total	118	100	68	100	13	100	57	100	82	100	33	100	24	100	395	100

Table 5-66 Existing problems related with wastewater and drainage service

Ward	Problems	Yes		No	
		n	%	n	%
Quang Trung	Poor drainage	55	46.6	63	53.4
	Blocked pipes	31	26.3	87	73.7
	Open manhole	12	10.2	106	89.8
	Flooding	58	49.2	60	50.8
	Bad odour	64	54.2	54	45.8
Tran Phu	Poor drainage	24	35.3	44	64.7
	Blocked pipes	18	26.5	50	73.5
	Open manhole	10	14.7	58	85.3
	Flooding	21	30.9	47	69.1
	Bad odour	22	32.4	46	67.6
Le Thanh Nghi	Poor drainage			13	100.0
	Blocked pipes			13	100.0
	Open manhole			13	100.0
	Flooding			13	100.0
	Bad odour			13	100.0
Pham Ngu Lao	Poor drainage	23	40.4	34	59.6
	Blocked pipes	10	17.5	47	82.5
	Open manhole	11	19.3	46	80.7
	Flooding	30	52.6	27	47.4
	Bad odour	24	42.1	33	57.9
Nguyen Trai	Poor drainage	18	22.0	64	78.0
	Blocked pipes	8	9.8	74	90.2
	Open manhole	4	4.9	78	95.1
	Flooding	25	30.5	57	69.5
	Bad odour	32	39.0	50	61.0
Binh Han	Poor drainage	19	57.6	14	42.4
	Blocked pipes	4	12.1	29	87.9
	Open manhole	1	3.0	32	97.0
	Flooding	14	42.4	19	57.6
	Bad odour	10	30.3	23	69.7
Tran Hung Dao	Poor drainage	4	16.7	20	83.3
	Blocked pipes	4	16.7	20	83.3
	Open manhole			24	100.0
	Flooding	4	16.7	20	83.3
	Bad odour	7	29.2	17	70.8
Total	**Poor drainage**	**143**	***36.2***	**252**	**63.8**

Ward	Problems	Yes		No	
		n	%	n	%
	Blocked pipes	**75**	**19.0**	**320**	**81.0**
	Open manhole	**38**	**9.6**	**357**	**90.4**
	Flooding	**152**	***38.5***	**243**	**62.5**
	Bad odour	**159**	***40.3***	**236**	**59.7**

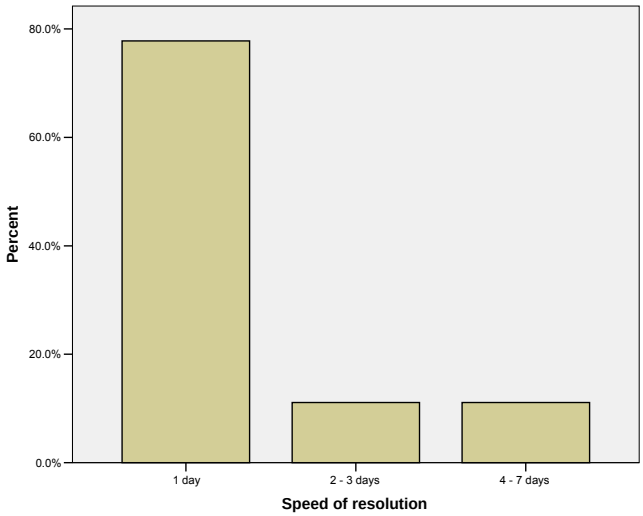
Table 5-67 Wastewater problems: Formal Complaints registered

Problem	Complained		Still not complained		Total	
	n	%	n	%	N	%
Poor drainage (complained)	4	2.8	139	97.2	**143**	**100.0**
Blocked pipes (complained)	5	6.7	70	93.3	**75**	**100.0**
Open manhole (complained)	2	5.3	36	94.7	**38**	**100.0**
Flooding (complained)	3	2.0	149	98.0	**152**	**100.0**
Bad odour (complained)	3	1.9	156	98.1	**159**	**100.0**

Table 5-68 Evaluation of courtesy level in solving the complaints

Rating	Rate the courtesy of company staff		Effectively resolve the complain	
	n	%	n	%
Good	3	33.3	4	44.4
Fair	6	66.7	4	44.4
Poor			1	11.1
DK/DA				
Total	**9**	**100**	**9**	**100**

Figure 5-14 Complaints made: the speed of resolution



5.9.2 Park Services and Trees Lining Streets

Table 5-69 indicates that services related to trees lining street were rated satisfactory or very satisfactory by 76.5% of the respondents. Some problems remain however, for example among respondents in Quang Trung (11.9%), Nguyen Trai (18.3%) and Tran Hung Dao wards (16.7%) who see the services as unsatisfactory.

The following problems were identified:

- Trees chopped down: Tran Hung Dao Ward
- Trees relocated: Tran Hung Dao Ward
- Boughs/branches cut: Pham Ngu Lao Ward
- Trees infested with insect pests: Nguyen Trai Ward
- Planting of new trees in Quang Trung, Tran Phu, Le Thanh Nghi, Nguyen Trai and Tran Hung Dao wards
- Use of pesticides: Bin Han and Nguyen Trai wards.

The following comments have been summarized from IDI and FGD notes:

- The park and tree services are good, but the company should not use “prickle rice trees”.
- Boughs and branches should be trimmed in a timely manner. Trees with large overhanging boughs should be cut or replaced with new trees for protecting the electrical lines and houses.
- Young trees are provided by the company, but the trees are too small and stunted.
- The “Sau” tree is often planted - it has a lot of leaves, but children often pick the fruits.
- “Bang” trees which attract insects are also planted. The “Bang Lang” trees have fewer leaves, so the company should not plant them.
- Services concerning green vegetation, gardens, etc are relatively good, but there are still a number of “Bang” trees which get insects in the summer - the company needs to replace this variety of tree.

Table 5-69 Satisfaction with tree and park services

Tree, park services	Quang Trung		Tran Phu		Le Thanh Nghi		Pham Ngu Lao		Nguyen Trai		Binh Han		Tran Hung Dao		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Not satisfied	14	11.9	2	2.9			1	1.8	15	18.3			4	16.7	36	9.1
Satisfied	33	28.0	27	*39.7*	2	15.4	18	31.6	29	*35.4*	22	*66.7*	6	25.0	137	*34.7*
Very satisfied	50	*42.4*	25	*36.8*	5	*38.5*	36	*63.2*	30	*36.6*	11	33.3	8	*33.3*	165	*41.8*
DK/DA	21	17.8	14	20.6	6	46.2	2	3.5	8	9.8			6	25.0	57	14.4
Total	118	100	68	100	13	100	57	100	82	100	33	100	24	100	395	100

Table 5-70 Problems related with tree and park services

Problem		Quang Trung		Tran Phu		Le Thanh Nghi		Pham Ngu Lao		Nguyen Trai		Binh Han		Tran Hung Dao		Total	
		n	%	N	%	n	%	n	%	n	%	n	%	n	%	n	%
Chop down trees	Yes	6	5.1	3	4.4					1	1.3	2	6.1	1	5.0	13	3.4
	No	112	94.9	65	95.6	13	100.0	56	100.0	77	98.7	31	93.9	19	95.0	373	96.6
Relocate	Yes	1	0.8	1	1.5					1	1.3			2	10.0	5	1.3
	No	117	99.2	67	98.5	13	100.0	56	100.0	77	98.7	33	100.0	18	90.0	381	98.7
Cutting boughs, branches	Yes	5	4.2	3	4.4			5	8.9	2	2.6	2	6.1	1	5.0	18	4.7
	No	113	95.8	65	95.6	13	100.0	51	91.1	76	97.4	31	93.9	19	95.0	368	95.3
Pesticides	Yes	6	5.1	4	5.9	1	7.7	2	3.6	7	9.0	3	9.1	1	5.0	24	6.2
	No	112	94.9	64	94.1	12	92.3	54	96.4	71	91.0	30	90.9	19	95.0	362	93.8
New planting	Yes	16	13.6	8	11.8	1	7.7	2	3.6	7	9.0	1	3.0	5	25.0	40	10.4
	No	102	86.4	60	88.2	12	92.3	54	96.4	71	91.0	32	97.0	15	75.0	346	89.6
Falling down	Yes	3	2.6	1	1.5					1	1.3			1	5.3	6	1.6
	No	114	97.4	67	98.5	13	100.0	56	100.0	77	98.7	32	100.0	18	94.7	377	98.4

Table 5-71 Complaints about tree and park services

Complaint about	Not yes		Total	
	n	%	n	%
Chop down tree (complained)	13	100.0	13	100.0
Relocate tree (complained)	5	100.0	5	100.0
Cutting of bough, branch (complained)	18	100.0	18	100.0
Pesticide use (complained)	24	100.0	24	100.0
New planting (complained)	40	100.0	40	100.0
Falling down of tree (complained)	6	100.0	6	100.0

5.9.3 The Urban Lighting Services

Almost all respondents are pleased with the street lighting service. This service was ranked as being “normal” or “well” (Table 5-72). However there are still a number of existing problems, which the company needs to consider and solve (**Table 5-74**Table 5-73) such as:

- Intensity of lighting is still weak (Quang Trung, Tran Phu and Tran Hung Dao ward),
- Intensity of lighting is affected by trees (Binh Han ward),
- Lighting time/duration is not suitable,
- The large distance between streetlights (Pham Ngu Lao, Nguyen Trai and Binh Han ward).

Various ideas were expressed in FGDs:

- Design and add to the lighting system in alley/gateways, investment in form of 50:50 - community contributes 50% and the state contributes 50%.
- The lighting intensity is weak - not enough lighting. Lighting time must to be longer.
- Lighting should be intensified at three or four way intersections in order to reduce traffic accidents.
- Streetlights should be erected in more suitable locations.

Table 5-72 Satisfaction with the urban lighting services

Lighting services	Quang Trung		Tran Phu		Le Thanh Nghi		Pham Ngu Lao		Nguyen Trai		Binh Han		Tran Hung Dao		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Not satisfied	1	0.8	2	2.9			1	1.8	2	2.4	3	9.1	2	8.3	11	2.8
Satisfied	34	28.8	17	25.0	1	7.7	27	47.4	32	39.0	18	54.5	4	16.7	133	33.7
Very satisfied	64	54.2	41	60.3	6	46.2	24	42.1	37	45.1	8	24.2	14	58.3	194	49.1
DK/DA	19	16.1	8	11.8	6	46.2	5	8.8	11	13.4	4	12.1	4	16.7	57	14.4
Total	**118**	**100**	**68**	**100**	**13**	**100**	**57**	**100**	**82**	**100**	**33**	**100**	**24**	**100**	**395**	**100**

Table 5-73 Problems related to street lighting

Problem		Quang Trung		Tran Phu		Le Thanh Nghi		Pham Ngu Lao		Nguyen Trai		Binh Han		Tran Hung Dao		Total	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Lighting intensity	Yes	11	9.649	8	11.76			3	6	5	6.667			3	12.5	30	**8.108**
	No	103	90.35	60	88.24	13	100	47	94	70	93.33	26	100	21	87.5	340	**91.89**
Lighting affecting by trees	Yes	3	2.632	2	2.941			1	2	2	2.667	2	7.692			10	**2.703**
	No	111	97.37	66	97.06	13	100	49	98	73	97.33	24	92.31	24	100	360	**97.3**
Lighting duration	Yes	12	10.53	1	1.471			3	6	6	8			4	16.67	26	**7.027**
	No	102	89.47	67	98.53	13	100	47	94	69	92	26	100	20	83.33	344	**92.97**
Lighting density	Yes	5	4.386	3	4.412			6	12	6	8	2	7.692			22	**5.946**
	No	109	95.61	65	95.59	13	100	44	88	69	92	24	92.31	24	100	348	**94.05**

Table 5-74 Complaints about street lighting

Problem	Not yes		Total	
	n	%	n	%
Lighting intensity (complained)	30	100.0	30	100.0
Lighting intensity affecting by tree on the street (complained)	10	100.0	10	100.0
Lighting duration (complained)	25	100.0	25	100.0
Lighting density (complained)	21	100.0	21	100.0

5.9.4 Funeral Service and Services in Cau Cuong Graveyard

Funeral services were evaluated as “satisfactory” or “very satisfactory” by 70% of respondents. However, in Binh Han Ward this service is regarded by more people as only “satisfactory” rather than “very satisfactory.” As funeral services are considered a very delicate “psychic” issue, many respondents may be afraid of answer this question. Generally, there is more praise than complaining in regards to funeral services. At the graveyard, graves are arranged in rows and divided into plots/squares, ensuring the same height of graves making the graveyard looks orderly.

However, in the FGD at Tran Phu Ward, there were some complaints about the big difference between the costs of the construction contract for building/repairing graves and the real construction costs incurred by the third company. The builder can actually only receive 1.1 million VND per grave, while the contractual amount is 3 million VND. The differences between the contractual costs and the actual building costs are considerable. This fact does not guarantee the quality of the construction. Hence, the company should also regulate this problem to avoid such “negative” issues. The statistical results are represented in Table 5-75 and Table 5-76.

Table 5-75 Satisfaction with funeral service

Funeral services	Quang Trung		Tran Phu		Le Thanh Nghi		Pham Ngu Lao		Nguyen Trai		Binh Han		Tran Hung Dao		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Satisfied	15	12.7	10	14.7			10	17.5	20	24.4	18	54.5	2	8.3	75	**19.0**
Very Satisfied	68	*57.6*	39	*57.4*	13	*100*	36	*63.2*	32	*39.0*	9	*27.3*	5	*20.8*	202	***51.1***
DK/DA	35	29.7	19	27.9			11	19.3	30	36.6	6	18.2	17	70.8	118	**29.9**
Total	**118**	**100**	**68**	**100**	**13**	**100**	**57**	**100**	**82**	**100**	**33**	**100**	**24**	**100**	**395**	**100**

Table 5-76 Satisfaction with funeral services in Cau Cuong graveyard

Graveyard services Cau Cuong	Quang Trung		Tran Phu		Le Thanh Nghi		Pham Ngu Lao		Nguyen Trai		Binh Han		Tran Hung Dao		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Not satisfied	1	0.9											1	4.2	2	**0.5**
Satisfied	13	11.1	11	16.2			10	17.5	20	24.4	19	57.6	1	4.2	74	**18.8**
Very Satisfied	66	*56.4*	37	*54.4*	13	*100*	36	*63.2*	30	36.6	8	24.2	4	16.7	194	***49.2***
DK/DA	37	31.6	20	29.4			11	19.3	32	39.0	6	18.2	18	75.0	124	**31.5**
Total	**117**	**100**	**68**	**100**	**13**	**100**	**57**	**100**	**82**	**100**	**33**	**100**	**24**	**100**	**394**	**100**

6. CONCLUSION AND RECOMMENDATIONS

Followings are the conclusions and recommendations from the baseline study:

1. *The training program* for conducting the survey was carried out as planned over three days from 16th to 18th April 2008. CEPAC provided technical assistance for company members in data collection in different levels over an additional 5 days from 19th - 23rd April 2008. The skills provided covered: team work and surveying as well as methods for data collection and analysis. It is anticipated that following the training program and survey implementation, the company members should be able to carry out similar studies on a small scale in the future.
2. *The quantitative method* was applied in BLS and supplemented with qualitative methods. Interviews were conducted in 395 households in 7 wards using a household questionnaire: Quang Trung, Tran Phu, Le Thanh Nghi, Pham Ngu Lao, Nguyen Trai, Binh Han and Tran Hung Dao. The average duration per household interview for completing the questionnaire was 35-40 minutes. Nearly 100% of the completed questionnaires were verified in regards to their accuracy. Using the qualitative methodology framework, 11 IDIs and 7 FGDs were conducted, each with a duration of about 1 hour.
3. In the household survey: Generally, the respondents were able to provide the necessary information for this study:
   - The gender of respondents was balanced with the total population. The female population is about 40% - 67% in all wards.
   - The age of respondents varied between 41 – 50 years (female) and 51 – 60 years (male);
   - The educational level of respondents was mostly secondary and high school. In Quang Trung and Le Thanh Nghi wards, about 15% of respondents have bachelors, or masters degrees, or higher.
   - The main profession of respondents included working as employees, officials, owners of small private business or services, workers and pensioners.
   - The average monthly income of most households falls within the region's middle class (28.1% with 1-2 million VND/month, 28.4% with 2.1-3 million VND/month). Household income was compared with other information such as: estimation of living standards by respondent and interviewer, household assets, food expenditure.
4. *The coverage of toilets.* More than 97% of households have privately (owned) toilets. Septic tank toilets account for more than 91.7% of the toilets among the household surveyed. Pit toilets still exist, but the percentage is small (Quang Trung Ward 1.5%, Pham Ngu Lao 3.5% and Nguyen Trai 2.4%). Reasons given for not changing from traditional systems to newer ones included: still waiting for construction of new house, the old one is still functioning well, etc. Offering loans for the construction of toilets is a good

idea, but people hesitate to borrow and repay money for toilets. The cost for construction of a septic tank toilet is about 5.5 million VND.

5. Most of the septic tank toilets have two chambers. The percentage of household toilets with three chambers is especially high in Tran Hung Dao Ward. The septic tanks are mostly constructed inside houses (87.9% - 98.5%) and not in the garden or yard, because there is no space for construction. The septic tanks mostly have a volume of 2-3 m3 (48.6%-100%). 93.8% of households follow the general principle of discharging toilet wastewater into the septic tank and then into the public drains. However, it should be noted that in Le Thanh Nghi Ward 38.5% of households still discharge wastewater from septic tanks into rivers, canals, and ponds. 85% of households rarely detect bad odours from their septic tanks. Normally, they empty their septic tanks less than once every five years or if the tank is full. More than 55,3% of households use “septic tank chemicals” such as Micro phot.
6. The acceptable price for the emptying of septic tanks is, on average, 388 thousand VND/time (for all wards averaged together) or varies between 369 – 407 thousand VND/time in each of the seven wards. It can generally be said that most of the septic tanks in Hai Duong City were not properly maintained and operated in such a way that there are possible harmful impacts to the groundwater, especially to the household’s drinking water supply.

   ☞ *The company has to set up a plan in the future to control household septic tanks, to recommend and gradually force the regular emptying of household septic tanks and to collect the sludge from emptied septic tanks and treat it in the wastewater treatment plant.*

7. Wastewater *collection* in Hai Duong is very complicated due to the flat landscape (delta terrain), the seasonally heavy rains, the rapid urbanization process, and the numerous natural protected areas (lakes, ponds, ditches, etc). The drainage system is too old, incomplete and seriously degraded. The previously constructed concrete pipe of 300 is now filled with solid waste and sedimentation which needs to be removed. Druing IDIs and FGDs, the heads of wards and citizens said they were very happy about the wastewater project and hope that the wastewater collection, drainage and treatment system will be finished as soon as possible in order to avoid flooding in areas such as Binh Han Ward. Many respondents complained that the construction company has a bad implementation plan for the construction of the city’s drainage system. The company should organize a type of "rolling the mat" construction starting from the end of the drainage system. There are many problems associate with the construction: building materials are everywhere, excavation sites are all over the place, no covers are placed over the unfinished manholes, the wastewater system is stopped for long periods during construction leading to bad odours and flooding of houses, and the lives and businesses of the citizens are affected.
8. According to Table 5-29 the percentage of households connected to the public system for wastewater collection is approximately 98.3% (Quang Trung Ward), 100% (Tran Phu and Tran Hung Dao Ward), 53.8% (Le Thanh Nghi Ward), 87.7% (Pham Ngu Lao Ward), 85.1% (Nguyen Trai Ward) and 87.9% (Binh Han Ward). The percentage of households still discharging wastewater into rivers, canals and ponds is about 46.2% in Le Thanh Nghi Ward and very low in other wards. The drainage system from households to the public system is mostly covered - 98.3% in Quang Trung Ward, 100% Le Thanh Nghi Ward and Tran Phu Ward, 94.7% Pham Ngu Lao, 96.3% Nguyen Trai, 93.9% Binh Han and 91.7% Tran Hung Dao. But some households still have open drains, for example 6.1% of households in Binh Han. The open drains exist mostly in new/bordering wards.

   ☞ *In order to increase the collection rate, the city government has to enforce its decrees and set up a legal framework for the company. According to this decree, the community and households have to construct, repair, maintain and complete the drainage of tertiary systems and branches, while the company is in charge for the 1st and 2nd grade systems.*

9. 20 households were found that do not discharge their toilet wastewater into the public system and 22 households that do not discharge other types of wastewater into the public system.

   ☞ *The company has to check all these cases. If the reason is found to be that there is no tertiary sewer in the area surrounding the household, then the company should cooperate with wards and sub-wards to convince households to construct tertiary sewers. In cases of serious poverty, the company should consider offering financial support.*

10. The drainage and sewage situation around the home/street is currently evaluated as "not good" (25% - 65,8%). If the drainage system in the home/street area breaks down, then the people or community have to repair it or inform the company. In the FGDs, there were many complaints about bad drainage in alleys, hamlets and small streets during the rainy season due to degradation of the drainage system. Contributing factors include the drainage pipe concrete of 300, a lack of slopes necessary for wastewater systems, sedimentation and solid waste blocking pipes, and the incomplete status of the system.

    ☞ *The drainage system company should look into the drainage situation in Quang Trung Road and the industrial zones Viet Hoa and Cam Thuong.*

11. Table 5-38 shows what respondents see as problems caused by bad drainage: First, bad odour (75.4%); Second, flooding (71.4%) and Third, mosquitoes breeding (66.3%). These results reflect the current drainage situation in Hai Duong City. Also, it should be mentioned that "flooding" and "polluted water source" were ranked lower than the other factors. "Polluted water source," a factor which can have long-term effects on the whole region's environment, is among the final factors on the list. Hence, the WWM-project and company must try to raise awareness of this problem in an information campaign.

12. Behaviour of people in the case of breakdowns in the local drainage system (pipe, closed canal, steal manhole cover). People often have to maintain the community drainage system themselves (29,3%-61,5%, Table 5-40. If the system belongs to the company, the community sometimes informs them (24,6%-54,2%). It should be noted that the percentage of "afraid" or "don't care" responses is significant. In some cases, the community has to repair the system and also inform the company (2,5%-4,4%).

13. The environmental pollution related with wastewater has become increasingly critical, leading 96.2% of respondents to agree that wastewater should be treated (cleaned) before it returns to the river or sea. Table 5-42 shows that more than 93% of respondents think that the community (industry, hospital, market, etc) should pay for the wastewater treatment; 91.3% think that households should pay as well. Respondents were asked about the *wastewater fee* and 36,4% - 75% of respondents think "this is obligation of all people to keep the green, clean and beautiful environment." A smaller percentage (3,1% - 33,3%, overall average: 16.5%) think that "collection and treatment of wastewater is costly and people have to contribute." Other typical opinions include "state should pay for wastewater treatment," "we should pay only for clean water, not for wastewater", etc

    ☞ *The WWM-unit and company need to carry out different campaigns concerning the collection of the wastewater fee.*

14. 88% of respondents are prepared to sign a contract following the completion of construction on a wastewater treatment system. The price they are ready to pay for wastewater treatment is 1246.88 VND/m^3. The median value is 1000 VND/m^3.

    ☞ *In order to achieve cost recovery from wastewater collection, drainage and treatment, the company has to implement a lot of activities in the future such as communication campaigns while also working with the government to establish the legal framework for collecting a wastewater fee.*

15. Many people have doubts about the end product of wastewater following treatment; they want to know about the quality of the output in comparison with the untreated wastewater.

- ☞ *After the treatment system is constructed and operational, the company should organise campaigns by using different communication channels and an "open day" for interested people to visit the system.*

16. Based on statistical analysis, most of households think that the trees lining street are suitable (73,2%). They do, however, mention some problems such as: kinds of tree, location, pruning of tree and branches. In regards to verdure, trees and parks, around 80% of households believe that the trees in parks are suitable. There are, however, some issues that are not suitable, for example the kinds of trees.
17. More than 85% of respondents have public street lighting in their neighbourhood. 79.4% - 92.3% and 83.3% - 100% of them evaluated the lighting intensity and lighting time as excellent and good, respectively. They do suggest, however, that the company supply/expand the lighting services and indicated that the community is ready to make a financial contribution, for example, 50% of financial support from the city council and 50% from the community to build/supplement the lighting system in small alleys such as Alley 33 (IDI with the head of Le Thanh Nghi Ward).
18. In regard to funeral services, 51.1% of respondents think that these services are quite good. However, some are of the opinion that services in Cau Cuong graveyard still have problems such as bad service and problems related to the contract for construction of graves (large discrepancies between the costs agreed in contract with the client and the actual costs of the unit being constructed).
19. The percentage of households that have received information on wastewater in the last 6 months is higher than the percentage who received information on street trees and lighting. This rate is approximately 27.85% for wastewater, 19.7% for street trees and 20,1% for street lighting. This percentage is too low in comparison with Bac Ninh City and WWM and the company should organise more information campaigns about wastewater and the project.
20. In regard to consumer satisfaction with company services:
    - The wastewater system: 10.5% - 33.3% of respondents are not satisfied. Existing problems that were mentioned include bad drainage (36,2%) and bad odours (40,3%). The number of citizens who complained, however, was low (< 7%). Complaints were mostly about pipe blockages - 6,7%.
    - Trees along streets: 2.9% - 18.3% of respondents are not satisfied. Existing problems that were mentioned include new planting of trees (10.4%), trees with pests (6.4%), and other problems such as chopping down trees, relocating them, etc.
    - Street lighting: Some elements that are currently criticized: the lighting time (7,0%), long distances between street lights (5,9%), weak lighting (8,1%), lighting density affected by trees (2,7%). Most, however, did not issue formal complaints.
21. As shown in Table 5-64, there are different instruments and tools, which the company can use to communicate with households. These include:
    - "Very effective": Home visit (84.4%), ward/neighbourhood meetings (67.3%)
    - "Effective": Loudspeakers (54.3%), TV (56.5%), Publicity campaigns (46.8%), Leaflets (41.7%), Posters (45,3%).
    - "Ineffective": Posters, notice boards, radio and newsletter

    ☞ *Community campaigns are classified as "effective" so the WWM project and company have to improve their community campaigns and delivery of leaflets as leaflets are often misused (a lot of leaflets are delivered by other companies). According to the respondents, the company could even deliver leaflets while collecting the water bill, but the urban works company cannot do it. Hence, the company should cooperate with the water supply company in the delivery of leaflets. The company campaign can be integrated with other cultural meetings, competitions, etc. The WWM unit and company should improve their information campaigns so that citizens better understand the wastewater project.*

APPENDIX 1 LIST OF PARTICIPANTS AT TRAINING PROGRAM AND IN SURVEY IMPLEMENTATION

From the company Hai Duong

No.	Name	Unit
1	Khuong Dinh Thien	Drainage
2	Nguyen The Quang	Department for business
3	Hoang Sy Bau	Funeral services
4	Nguyen Thi Hong Loan	
5	Nguyen Thi Hong Hoa	
6	Tran Duc Thanh	Network management
7	Pham Xuan Huong	
8	Nguyen Tien Manh	
9	Le Van Tri	
10	Nguyen Thi Thu Ha	
11	Trinh Hoai An	
12	Nguyen Van Thoi	
13	Duong Van Len	

From WWM project

- Axel Binder
- Nguyen Thuy Ha

From CEPAC, institution in conduction of baseline survey

- Nguyen Trung Dung
- Nguyen Tuan Anh
- Tran Chien Thang
- Pham Thi Thanh Trang
- Bui Thu Hoa
- Nguyen Thi Hoa
- Phan Thi Hang
- Nguyen Hoang Hoa

APPENDIX 2 TRAINING PROGRAM IN HAI DUONG

LESSON PLAN

Time	Content	Method	Materials	Time	Person in charge
Day 1	Opening ceremony				
08-11.30 am	- Welcome guest and participants			5'	CEPAC
	- Ice-breaking			10'	
	- Introduction of BLS			15'	GTZ-Staff
	- Objectives and arrangements of the training			10'	CEPAC
	- Introduction of the training program			10'	CEPAC
	Tea break and photo taking			30'	
	Session 1: Participatory approach - Introduction to participatory approach - Examples of water supply, waste water and sanitation in developing countries	Presentation Brainstorming		50'	CEPAC
	Tea break			15'	
	Session 2: Introduction to the baseline survey of WWM-project in 6 provinces - Baseline study - Knowledge-Attitudes-Practice study - Consumer satisfaction study is [IN]	Presentation Brainstorming		40'	CEPAC
	Exercise 1: Public WC-Practice in cites – What to do?	Working in a group of 3 participants	A1, pens	25'	CEPAC
11.30-01.30 pm	Lunch together for starting training program			120'	
1.30-4.30 pm	**Session 3**: Survey tools & skills - Quantitative & qualitative data survey - Question: Sort, type, structure	Presentation Brainstorming		60'	CEPAC

Time	Content	Method	Materials	Time	Person in charge
	- How to design a questionnaire				
	Tea break			15'	
	- Some skills needed for a successful survey: Questioning and listening skills	Presentation Brainstorming		20'	CEPAC
	Exercise 2: Design a small questionnaire with a given topic	Working in a group of 3 participants	A1, pens	50'	CEPAC
	Tea break			15'	CEPAC
	- Presentation of 3 groups - Evaluation of questionnaires	Plenary	A1, pens	50'	CEPAC
Day 2 7.30-11.30 am	**Session 3**: Cont' - Practice instruction for qualitative survey	Presentation Brainstorming	A1, pens	20'	CEPAC
	Exercise 3: Conducting In-depth interview and evaluation	Fish-bowl	In-depth questionnaire	20'	CEPAC
	Tea break			15'	CEPAC
	Session 4: Household questionnaire Understanding the household questionnaire	Presentation	Household questionnaire	50'	CEPAC
	Tea break			10'	
	Exercise 4: Conducting the household survey	Working in a group of 3 participants & role play	Household questionnaire	50'	CEPAC
	Tea break			10'	
	- Evaluation	Plenary	A1, pens, ..	20'	CEPAC
	- Survey plan: Organizational issues & principles	Brainstorming	A1, pens, ..	10'	CEPAC
	Session 3: Cont' - Practice instruction for qualitative survey	Presentation Brainstorming	A1, pens	30'	CEPAC
11:30-01.30 am	Lunch			120'	
01.30-04.30 pm	**Session 5**: Field work – Data collection	Field work			
	- Go to the field and data collection (6 groups)	Deviation in group of 2-3 participants and conduct survey in the real world (selected households)	Household questionnaire	100'	CEPAC

Time	Content	Method	Materials	Time	Person in charge
	- Preparation for result presentation (draft report)	Working on presentation	A1, pens	30'	CEPAC
Day 3 08-11.30 am	**Session 5**: Cont' - Presentation of results from field work and share experiences from the field - What participants have experienced from the field - Difficulties during conducting survey - How do they cope with difficulties - Finalization of household questionnaire	Plenary Presentation	A1, pens	60'	CEPAC
	Tea break			10'	
	Session 6: Data processing by SPSS	Presentation		45'	CEPAC
	Tea break			10'	
	Game show “Who wants to be a millionaire?" related with topics in water, wastewater, sanitation in Germany and Vietnam	Game show		40'	CEPAC
	Session 6: Cont'			45'	CEPAC
11:30-01.30 am	Lunch			120'	
01.30-04.00 pm	**Session 6**: Cont' (IF NEEDED)			50'	
	Tea break			10'	
	Session 7: Writing report - Outlines of report - Use of the report in community project	Presentation		50'	CEPAC
	Tea break			10'	
	Wrap-up, evaluation and close	Plenary		30'	CEPAC
Day 4 08-11.30 am	**Session 8**: Pre-test of household questionnaire - Pre-test of 3-4 questionnaires - Evaluation	Plenary Presentation	A1, pens	120'	CEPAC

APPENDIX 3 SURVEY SCHEDULE IN HAI DUONG: PLANNED AND ACTUAL

Survey schedule

Ward	Quang Trung	Tran Phu	Nguyen Trai	Tran Hung Dao	Pham Ngu Lao	Binh Han	Le Thanh Nghi
Household survey							
360 Households (+10%)	114 Households	70 Households	81 Households	35 Households	60 Households	25 Households	15 Households
19-20 April	7 Households/ I'wer day x 9 I'wers x 2 day						
21 April		8 Households/ I'wer day x 9 I'wers x 1 day					
22 April			8 Households/ I'wer x 10 I'wers 1 day				
23 April				9 Households/ I'wer x 11 I'wers x 1 day			
24 April						8 Households/ Interviewer x 5 I'wers x 1 day	
Indepth interview (IDI) and Focus Group Discussion (FGD)							
21 April	8.00 h 1 FGD 10.00 h 1 IDI	14.00 h 1 FGD 15.30 h 1 IDI					
22 April				14.00 h 1 FGD 15.30 h 1 IDI			8.00 am 1 FGD 10.00 am 1 IDI
23 April			8.00 h 1 FGD 10.00 h 1 IDI			02.00 pm 1 FGD 03.30 pm 1 IDI	

Ward	Quang Trung	Tran Phu	Nguyen Trai	Tran Hung Dao	Pham Ngu Lao	Binh Han	Le Thanh Nghi
24 April					8.00 h 1 FGD 10.00 h 1 FGD		
Indepth interview (IDI) with departments							
22 April	8.00 h IDI with Dept. for Urban Management 9.00 h IDI with Dept. Culture and Communication 14.00 h IDI with head of people committee of Hai Duong City (Mr. Pham Quang Vinh) 15.30 h IDI with Dept. for health care						

Process of implementation of household survey

	Ward/Commune													
	Quang Trung		Tran Phu		Le Thanh Nghi		Pham Ngu Lao		Nguyen Trai		Binh Han		Tran Hung Dao	
	Date		Date		Date		Date		Date		Date		Date	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
18.04.08	22	18.6%												
19.04.08	71	60.2%												
20.04.08	24	20.3%	35	51.5%					1	1.2%			1	4.2%
21.04.08	1	.8%	26	38.2%					59	72.0%				
22.04.08							35	61.4%	11	13.4%			16	66.7%
23.04.08			7	10.3%	13	100	22	38.6%	11	13.4%	33	100	7	29.2%
Total	118	100%	68	100%	13	100	57	100%	82	100%	33	100	24	100%

APPENDIX 4 SURVEY TOOLS

a) Household questionnaire

Name of City	**Hai Duong**
Company Name	**Hai Duong Urban Public Works Management One Member Limited Liability Company**
Ward/Commune	**.....**
Questionnaire Control number	**.....**
Name of Interviewer	**.....**
Address of House	**.....**
Location of house of interviewee (Fulfilled by interviewer)	**Located directly on the main street with big trees on the sidewalk** **Located in the alley or small street without big trees on the sidewalk**
Telephone No.	**.....**
Date	**..... / ..... / 2008**
Begin of interview	**…….. hour …… minutes**

QUESTIONNAIRE

Waste Water Management Project in Provincial Centers

INTERVIEWER: →→ PLEASE READ OUT THIS TEXT TO THE INTERVIEWEE CAREFULLY BEFORE YOU START WITH THE INTERVIEW!

In order to enhance the service quality in drainage and wastewater treatment for the inhabitants, therefore in the framework of waste water management project in Hai Duong Town, 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 project management we would like to thank you very much for your cooperation and having time to answer the questions. Every 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** (Pls. mark X in the suitable one)
   1 □ Kinh
   88 □ Other

5. Education level (Pls. mark X in the suitable one)

1 □ Illiterate
2 □ Primary (1-5) / Grade 1
3 □ Secondary (6-9) / Grade 2
4 □ High school (10-12) / Grade 3
5 □ Worker
6 □ College
7 □ Bachelor, master degree and higher
88 □ Other .....

6. Profession (Pls. mark X in the suitable one)

1 □ Employee, official
2 □ Worker
3 □ Small private business (restaurant (pho, rice, ...), beer restaurant, grocery, ...)
4 □ Farming
5 □ Business (company, ...)
6 □ House duties
88 □ Other .....

7. Number of members resident in the household (always at home): ..... head

8. Television

1 □ Yes
2 □ No →→ GO TO QUESTION 10
99 □ DK/DA →→ GO TO QUESTION 10

9. If "Yes", how often do you watch the central and local program such as VTV and BTV? (Pls. mark X in the suitable one)

Program	Every day	4-6 days	1-3 days	never	DK/DA
VTV					
BTV					

10. Radio

1 □ Yes
2 □ No →→ GO TO QUESTION 12
99 □ DK/DA →→ GO TO QUESTION 12

11. If "Yes" how often do you hear the radio (local)? (Pls. mark X in the suitable one)

1 □ Every day
2 □ 4-6 days
3 □ 1-3 days
4 □ Never
99 □ Don' know / Don't answer

PART II: KAP RELATED TO SANITATION, SOLID WASTE AND WASTE WATER

A SANITATION

12. Do you have a toilet? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No →→ GO TO QUESTION 26
99 □ DK/DA →→ GO TO QUESTION 26

13. If "Yes", what kind of toilet? (Pls. mark X in the suitable one)

1 □ Pit toilet →→ GO TO QUESTION 27
2 □ Central (off-site) sewage system →→ GO TO QUESTION 27
3 □ Septic tank toilet
88 □ Other ..... →→ GO TO QUESTION 27

14. Then how many chambers does your septic tank have? (Pls. mark X in the suitable one)

1 □ One
2 □ Two
3 □ Three
99 □ DK/DA

15. How many m3 does the septic tank have? ..... m^3

16. Is your septic tank inside or outside of house (yard, garden)? (Pls. mark X in the suitable one)

1 □ Inside house
2 □ Outside house (yard, garden)
99 □ DK/DA

17. Which kind of <u>waste water do you dispose into septic tank</u> of household? (Pls. mark X in the suitable one)

1 □ Toilet
2 □ Bathroom
3 □ Kitchen
4 □ Waste water from business/services
88 □ Other ……..
99 □ DK/DA

18. To where do you discharge your wastewater (from toilet)? (Pls. mark X in the suitable one)

1 □ Public drainage system
2 □ Public road
3 □ River, open channel, pond or lake
4 □ Infiltrate into the soil, flow into garden, ...
99 □ DK/DA

19. Do you experience bad odor in your house? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No →→ GO TO QUESTION 21
99 □ DK/DA →→ GO TO QUESTION 21

20. If yes, how often? (Pls. mark X in the suitable one)

1 □ Usually
2 □ Sometime, rarely
3 □ Never

21. Do you empty your septic tanks? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No →→ GO TO QUESTION 23
99 □ DK/DA →→ GO TO QUESTION 23

22. If yes, how often? (Pls. mark X in the suitable one)

1 □ Annual
2 □ 2-3 years
3 □ 4-5 years
4 □ >5 years
5 □ Any time if blocked or fully
99 □ DK/DA

23. Do you use "septic tank medicine" such as micro phot, or others? (Pls. mark X in the suitable one)

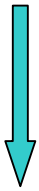
1 □ Yes
2 □ Never →→ GO TO QUESTION 25
99 □ DK/DA →→ GO TO QUESTION 25

24. If yes, how often?

1 □ Annual
2 □ Several years
3 □ If blocked
99 □ DK/DA

25. How are you willing to pay for emptying the septic tank? (the average distance between septic tank and car is 30m). INTERVIEWER USES THE BIDDING GAME IN BOTH DIRECTION AND REMARK WHERE THE INTERVIEWEE IS WILLING TO PAY OR AGREEING Down direction

600.000 VND/m^3 □
550.000 □
500.000 □
450.000 □
400.000 □
350.000 □



26. If "No", where do you dispose of human waste? (Pls. mark X in the suitable one)

1 □ In the river
2 □ In the waste water system (canal system)
3 □ In the street / field
4 □ Use neighbor's latrine
5 □ Public Toilet
88 □ Other . . . . . .

27. Do you think using the river or field as a toilet? (Pls. mark X in the suitable one)

1 □ Spreads dangerous diseases?
2 □ Pollutes the water source?
3 □ Is not harmful?
88 □ Other .....
99 □ DK/DA

B WASTE WATER / DRAINAGE

B1 HOUSEHOLD

28. To where do you discharge your wastewater (other not from toilet)? (Pls. mark X in the suitable one)

1 □ Public drainage system
2 □ Public road
3 □ River, open channel, pond or lake
4 □ Infiltrate into the soil, flow into garden
99 □ DK/DA

29. If your house has drainage, what type of drainage do you have? (Pls. mark X in the suitable one)

1 □ Open drain
2 □ Covered drain
3 □ Both, open and covered drain
99 □ DK/DA

30. Is your waste water discharge pipe blocked? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No →→ GO TO QUESTION 32
9 □ DK/DA →→ GO TO QUESTION 32

31. If "yes", how often? (Pls. mark X in the suitable one)

1 □ Usually
2 □ Sometime, rarely
99 □ DK/DA

B2 THE DRAINAGE SYSTEM IN SURROUNDING/NEIGHBORHOOD

32. Where is the public/community drainage system? (Location in comparison with the house of household)

1 □ In front of house
2 □ In back of house
3 □ Other ……..

33. What type of this drainage system? (Pls. mark X in the suitable one)

1 □ Open drain
2 □ Covered drain
3 □ Both, open and covered drain
99 □ DK/DA

34. Is this drainage system blocked? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No →→ GO TO QUESTION 36
9 □ DK/DA →→ GO TO QUESTION 36

35. If Yes what to do?

1 □ Cleaned by households
2 □ Inform ward, Company
3 □ Do nothing
99 □ DK/DA

B3 AWARENESS

36. How is the drainage and sewage situation around your home/street? (Pls. mark X in the suitable one)

1 □ Good
2 □ Bad
99 □ DK/DA

37. If "bad" what are the problems? (Pls. mark X in the suitable one)

1 □ Mosquitoes breeding
2 □ Spread diseases
3 □ Bad odors
4 □ Polluted water source
5 □ Flooding
88 □ Other .....

38. Is the public drainage system in surrounding/ neighbourhood transgressed by other households? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No →→ GO TO QUESTION 40
99 □ DK/DA →→ GO TO QUESTION 40

39. If "YES" what do the people to do?

1 □ Households meeting and try to stop this transgression
2 □ Inform ward, company
3 □ Do nothing
88 □ Other ……

40. In the case of broken-down of the local drainage system (pipe, closed canal), steal manhole cover ... is , what did the people do?

1 □ Repaired by the whole neighborhood
2 □ Inform the Company
3 □ Do nothing
99 □ DK/DA

41. As a general principle do you agree that waste water should be treated (cleaned) before it returns to the river or sea? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No
99 □ DK/DA

42. As a general principle do you agree that the community (industry, hospitals, markets etc) should pay for waste water treatment? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No
3 □ Other ……
99 □ DK/DA

43. Are you agreed that household should pay for waste water treatment? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No
3 □ Other ……
99 □ DK/DA

44. If "YES" why? (Pls. mark X in the suitable ones)

1 □ Collection and treatment of wastewater is very costly and citizen should have financial contribution
2 □ This is obligation of all people to keep the green, clean and bountiful environment
88 □ Other .....
99 □ DK/DA

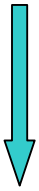
44b. If "No" why?

……

45. How much would you be willing to pay for treating waste water per m^3?
INTERVIEWER USES THE BIDDING GAME IN BOTH DIRECTION AND REMARK WHERE THE INTERVIEREE IS WILLING TO PAY OR AGREEING

Down direction

5.000 VND/m^3 □
4.500 □
4.000 □
3.500 □
3.000 □
2.500 □
2.000 □
1.500 □
1.000 □



Other …….

DK/DA

46. After starting operation of waste water treatment system would you connect with the system? (Explain that the connection will be written down as a agreement / contract) (Pls. mark X in the suitable one)

1 □ Yes
2 □ No
3 □ Other
99 □ DK/DA

47. What are some possible solutions to existing waste water management problems?

……
……
……

C SOLID WASTE

48. Do you dispose solid waste into the public drainage system (if exists)? (Pls. mark X in the suitable one)

1 □ Usually
2 □ Sometime
3 □ Never
99 □ DK/DA

49. If "No Service" Where do you dispose of your solid waste? (Pls. mark X in the suitable one)

1 □ Throw it to sidewalk or street
2 □ Throw it in the river, ditch, field
3 □ Bury it
4 □ Burn it
5 □ Throw it anywhere
88 □ Other .....

50. What are some possible solutions to existing solid waste management problems, especially which are affecting the drainage system?

……
……

D1 PLANTED TREES ON THE STREET

51. Are the planted trees suitable?

1 □ Suitable →→ GO TO QUESTION 53
2 □ Still not suitable
99 □ DK/DA →→ GO TO QUESTION 53

52. If "Still not suitable", in which problems are you not satisfied?

1 □Kind of tree
2 □ Bough, branch
3 □ Height of tree
4 □Planted location
5 □ Aroma
6 □ Flower color
7 □ Shed leaves
8 □ Insecticide
99 □ Other .....

53. Do the prune down / off tree and branches meet the safety and landscape of street?

1 □ Yes
2 □ No
99 □ DK/DA

D2 TREES, VERDURE AND PARK

54. Do you go to the park?

1 □ Yes
2 □ No →→ GO TO QUESTION 56
99 □ DK/DA →→ GO TO QUESTION 56

55. If "yes" how often do you go to park every month? ..... times / month

56. Are the planted tree, verdure in the park suitable?

1 □ Yes →→ GO TO QUESTION 58
2 □ No
99 □ DK/DA →→ GO TO QUESTION 58

57. If "still not suitable" in which problems are you not satisfied:

1 □ Kind of tree
2 □ Flower color
3 □ Insecticide
4 □ 2 Planted location
88 □ Other ……..

E STREET LIGHTING

58. Do you have street lighting in your surrounding area?

1 □ Yes
2 □ No →→ GO TO QUESTION 60
99 □ DK/DA →→ GO TO QUESTION 60

59. If "Yes" which are not satisfied? (Pls. mark X in the suitable one)

No.	Problem	Good	Bad	DK/DA
1	**Lighting intensity**			
2	**Duration and time (starting and ending lighting)**			
3	**Other**			

60. If "still not suitable" in which problems are you not satisfied?

.....

PART III: INFORMATION, EDUCATION & COMMUNICATION PRACTICE

61. Do you already read "the City regulation"

1 □ Yes
2 □ No
99 □ DK/ DA

62. Did you receive any information on wastewater, solid waste, planted tree, park, street lighting & funeral services in the last six months? (Pls. mark X in the suitable one)

Information about	Yes	No	DK/DA
Wastewater/drainage Service			
Tree, park services			
Street lighting services			

63. If yes, was it? (Pls. mark X in the suitable one)

Information about	Often	Occasionally	Rarely
Wastewater/drainage Service			
Tree, park services			
Street lighting services			

64. 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) .....

65. If yes, from what sources did you get the information? (Pls. mark X in the suitable one)

1 □ Neighbors / Friends
2 □ Company for water supply, wastewater Hai Duong
3 □ Health communicator / volunteer
4 □ Respected people in the ward
5 □ TV
6 □ Radio
7 □ Newspaper
8 □ Loudspeaker
88 □ Other …….....

66. Who is the most influential person to communicate about water, waste water & sanitation? (Pls. mark X in the suitable one)

1 □ Head of ward
2 □ Head of subward
3 □ Company for water supply, wastewater Hai Duong
4 □ Health worker
5 □ Member of Women's Union, elderly people, …
6 □ Member of Youth Union
7 □ Neigborhood
88 □ Other .....

67. How often are public meetings on the services provided by company held in your ward? (Pls. mark X in the suitable one)

1 □ Never
2 □ < 1 month
3 □ Every 2 months
4 □ 2-6 months
5 □ > 6 months
99 □ DK/DA

68. Is there a loudspeaker system in your ward? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No →→ GO TO QUESTION 69
99 □ DK/DA →→ GO TO QUESTION 69

69. If "Yes", What is the most suitable time for listening to broadcasts? (Pls. mark X in the suitable one)

1 □ when …….. time: from …… to ……..
2 □ when …….. time: from …… to ……..
99 □ DK/DA

70. Ranking exercise: What are the most effective channels for the Company to communicate with you (the households)? (1 - Ineffective, 2 - effective, 3 - Very effective, 99 - DK/DA) (Pls. mark X in the suitable one)

No	Channel	1	2	3	DK/DA
1	**Head of**				
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	**Publicity Campaign**				

88 Other (Please specify)
.....

PART IV: CUSTOMER SERVICE SATISFACTION ON WASTEWATER, SOLID WASTE, PLANTED TREE, PARK, STREET LIGHTING & FUNERAL SERVICES

SATISFACTION

71. Are you satisfied with following services provided by company? (1- Not satisfied 2 - Satisfied, 3 - Very Satisfied, 99 - DK/DA) (Pls. cycle the suitable one)

No	Services	Evaluation			
		1	2	3	DK/DA
1	Wastewater/drainage Service				
2	Tree, park services				
3	Street lighting services				
4	Funeral services				
5	Graveyard services Cầu Cương (construction, maintenance, hygienic, cleaning, grave care, ..)				

COMPLAINS ABOUT WASTEWATER AND DRAINAGE SYSTEM

72. If you have ever been dissatisfied with the service have you ever complained to the Company? (If so pls. mark X in the suitable column)

No	Problem	Existing		Complain	
		Yes	No	Complained	Still not complained
1	**Bad drainage**				
2	**Block of pipe**				
3	**Open manhole**				
4	**Flooding, innundation**				
5	**Bad odor**				
88	**Other ……..**				

73. How would you rate the courtesy of Company staff who handled your complaint? **(**Pls. mark X in the suitable one)

1 □ Poor
2 □ Faire
3 □ Good
99 □ DK/DA

74. How effectively did they resolve your complaint? (Pls. mark X in the suitable one)

1 □ Ineffective
2 □ Effective
3 □ Very effective
99 □ DK/DA

75. Speed of resolution: From the date that you made your complaint, how long did it take for the Company to resolve it? (Pls. mark X in the suitable one)

1 □ 1 day
2 □ 2 – 3 day
3 □ 4 – 7 day
4 □ 8 – 14 day
5 □ over 14 day
99 □ DK/DA

COMPLAINS ABOUT TREE AND VENDURE

76. What have you complained about planted tree on the streets?

No	Problem	Ever	Not yet
1	**Chop down tree**		
2	**Relocate**		
3	**Cutting bough, branch**		
4	**Pesticide**		
5	**New planting**		
6	**Falling down of tree**		
88	**Other**		

77. How would you rate the courtesy of Company staff who handled your complaint? **(**Pls. mark X in the suitable one)

1 □ Poor
2 □ Faire
3 □ Good
99 □ DK/DA

78. How effectively did they resolve your complaint? (Pls. mark X in the suitable one)

1 □ Ineffective
2 □ Effective
3 □ Very effective
99 □ DK/DA

79. Speed of resolution: From the date that you made your complaint, how long did it take for the Company to resolve it? (Pls. mark X in the suitable one)

1 □ 1 day
2 □ 2 – 3 day
3 □ 4 – 7 day
4 □ 8 – 14 day
5 □ over 14 day
99 □ DK/DA

COMPLAINS ABOUT STREET LIGHTING

80. What have you complained about street lighting?

No	Problem	Ever	not yet
1	**Lighting intensity**		
2	**Lighting intensity affecting by trees on the street**		
3	**Lighting duration**		
4	**Lighting density**		
88	**Other**		

81. How would you rate the courtesy of Company staff who handled your complaint? (Pls. mark X in the suitable one)

1 □ Poor
2 □ Faire
3 □ Good
99 □ DK/DA

82. How effectively did they resolve your complaint? (Pls. mark X in the suitable one)

1 □ Ineffective
2 □ Effective
3 □ Very effective
99 □ DK/DA

83. Speed of resolution: From the date that you made your complaint, how long did it take for the Company to resolve it? (Pls. mark X in the suitable one)

1 □ 1 day
2 □ 2 – 3 day
3 □ 4 – 7 day
4 □ 8 – 14 day
5 □ over 14 day
99 □ DK/DA

Before ending the interview, the interviewer asks the interviewee about the household situation (Pls. very polite)

84. Household income per month in last 12 months (estimated) (Pls. mark X in the suitable one)

1 □ Under 1 mill. VND
2 □ From 1-2 mill. VND
3 □ From 2.1-3 mill. VND
4 □ From 3.1-5 mill. VND
5 □ From 5.1-6 mill. VND
6 □ From 6.1-7 mill. VND
7 □ From 7.1-9 mill. VND
8 □ From 9.1-11 mill. VND
9 □ Over 11 mill. VND
99 □ DK/DA

85. Do you know the daily food expenses of your household?

1 □ Yes
2 □ No →→ GO TO QUESTION 74
99 □ DK/DA →→ GO TO QUESTION 74

86. If "YES" would you tell us about the expenses

1 □ Under 20 thousand VND
2 □ From 21-30 thousand VND
3 □ From 31-40 thousand VND
4 □ From 41-50 thousand VND
5 □ From 51-60 thousand VND
6 □ From 61-70 thousand VND

7 □ From 71-80 thousand VND
8 □ From 81-90 thousand VND
9 □ From 91-100 thousand VND
99 □ Other .....

87. Generally in the region, to which category does your household belong?

1 □ Rich →→ GO TO QUESTION 88
2 □ Moderate →→ GO TO QUESTION 88
3 □ Poor
9 □ DK/DA →→ GO TO QUESTION 88

88. If your household belongs to poor category, are you living officially under the poverty line?

1 □ Yes
2 □ No

89. Do you have something to add or suggest related to the above issues

.....
.....

90. The general estimation of interviewer

1 □ Rich
2 □ Moderate
3 □ Poor

91. Kind of household's house: ……. with ……. floor

92. Information about main household's assets

No	Asset	Num-ber	Buy in year	Brand	Amount (mill. VND)
1	**Tivi**				
2	**Refre**				
3	**Motorbike**				
4	**Aircon**				
5	**Car**				

The interview ended at ..... hour ..... minutes

END OF INTERVIEW

Thank you for your cooperation!

Signature of controller **Signature of interviewer**

b) In-depth interview guidelines

Interview Guideline for Vice Chairman/Chairwoman of Ward People Committee

I. General information

1. How is the social-economic development situation of the ward (summary – can refer to annual report of 2007)
2. How is the general situation re environmental sanitation in your ward?
3. How is the situation of wastewater treatment and environmental sanitation in your ward area?

II. Specific information

1. Infrastructure and services related to wastewater/solid waste collection:

1.1 How do you think of wastewater/solid waste treatment system in your city?

1.2 How is the non-domestic wastewater/solid waste treatment managed (wastewater and solid waste from hospitals, manufactory etc)?

1.3 How is your opinion about the management of wastewater/solid waste and environmental sanitation – green parks and public lighting system?

2. Public information and education campaign

2.1 What are public information (communication) activities related to wastewater/solid waste and environmental sanitation carried out by the ward?

2.2 Is there any guidance on the cooperation structure between relevant agencies and mass organizations in public information of water supply and environmental sanitation?

2.3 What is the impact (benefit) of public information? How can the impact be measured?

2.4 What is the cooperative role of communities in wastewater treatment as well as environmental sanitation?

2.5 How can community participation in environment/public works protection be increased?

III. Orientation for wastewater/solid waste treatment

1. What is your opinion of company's customer-oriented operations under market mechanism?
2. Are there similar projects funded by other external organizations in the ward area? If any, what organizations? What are the main activities supported by these organizations?
3. What are supporting activities of ward PC provided to the company to carry out public information in cooperation with other organizations and agencies?
4. What is the proposal of ward PC for the treatment of wastewater/solid waste discharged from hospitals and production bases etc?
5. What is the policy of community participation to maintain these public works after construction? (i.e. household connection to public sewerage system, do not dispose waste freely anywhere)

Thank you very much!

Interview Guideline for Officials of Urban Management Department
(City Urban Management Department)

I. General information

1. What is general situation of city urban management department operations (summary- can refer to annual report of 2007)?
2. What are the function and duties of this department in environmental sanitation management?
3. What is your general assessment of environmental sanitation in the city area?

II. Specific information

1. Infrastructure related to wastewater/solid waste treatment:

1.1 What is your opinion of infrastructure conditions related to wastewater/solid waste treatment in the city?
1.2 How is the treatment of wastewater/solid waste from hospitals, manufactory etc managed?
1.3 How is community's opinion about the department's operations in wastewater treatment and environmental sanitation?
1.4 How is your opinion about the management of wastewater/solid waste and environmental sanitation by the company?

2. Public information and education campaign

2.1 What public information (communication) activities related to environmental sanitation are carried out by local authorities?
2.2 What is the cooperative role of communities in wastewater treatment as well as environmental sanitation?

III. Orientation for wastewater/solid waste treatment/green parks/public lighting system

1. How do you think of wastewater fee payment? (the necessity, rate of wastewater fee, collection procedure: who and when to collect wastewater fee)
2. Is the plan of environmental sanitation system planning prepared by city urban management department? (method and period of implementation
3. How is your opinion of the company's role in socialization and its market-oriented operation plan?
4. Does the city urban management department have a plan to support the company in coming time?
5. What are your proposals for improving the current situation?

Thank you very much!

Interview Guideline for Leaders of City People Committee

I. General information

1. What is the social-economic situation of the city? (summary – can refer to annual report of 2007)

II. Specific information

1. Infrastructure related to wastewater/solid waste treatment

1.1 What is your opinion of infrastructure conditions related to wastewater/solid waste treatment in the city?

1.2 How is the treatment of wastewater/solid waste from hospitals, manufactory etc managed?

1.3 How is your opinion of the management of wastewater/solid waste and environmental sanitation?

2. Public information and education campaign

2.1 How is the public information of wastewater/solid waste treatment and environmental sanitation carried out by other relevant agencies?

2.2 Is there any guidance on the cooperation structure between relevant agencies and mass organizations in public information on water supply and environmental sanitation?

2.3 What is the impact (benefit) of public information? How can the impact be measured?

2.4 What is the cooperative role of communities in wastewater treatment as well as environmental sanitation?

2.5 How can community participation in environment/public works protection be increased?

III. Orientation for wastewater/solid waste treatment/green parks/public lighting system management

1. What is your opinion of company's customer-oriented operations under market mechanism?
2. Are there similar projects funded by other external organizations in the ward area? If any, what organizations? What are the main activities supported by these organizations?
3. What are supporting activities of CPC to the company? (policies, legal framework, human resources training, facilitating the company to cooperate other relevant agencies in the implementation of public information)
4. How is the orientation for the treatment of wastewater/solid waste discharged from hospitals and industrial parks etc?

Thank you very much!

c) Focus Group Discussion guideline

GUIDELINE FOR FOCUS GROUP DISCUSSION

I. Behavior related to water/solid waste and sanitation

1. What is the current situation of wastewater/solid waste treatment in your living place? Is there any sewerage system for wastewater collection and treatment in your place?
2. Is there any enterprise/manufactory in your place?
3. How is wastewater/solid waste treated? Is your daily life affected by this wastewater/solid waste treatment? (health, transport, daily activities, business etc)
4. How is the environmental situation in your living place?
5. How are sanitation services provided?
6. What is the operation cost of sanitation services?
7. How do you think of wastewater fee payment? (the necessity; rate of wastewater fee, collection procedure: who and time to collect wastewater fee)
8. How do you think of the current situation of public green trees and public lighting system?

II. Public communication

1. What are public communication activities related to wastewater/solid waste treatment and environmental sanitation carried out in your area?
2. What are methods/means of public communication used? Who takes responsibility for public communication?
3. What is the effect of this public information to wastewater/solid waste treatment and environmental sanitation?
4. What kind of communication is suitable for you family and your neighborhood conditions (in terms of information content and method of communication)?
5. What method of communication do you think that suitable for your and family and neighborhood conditions?
6. What is the role of communities in environmental sanitation communication? (focusing on how to encourage people not to discharge waste into canals and sewers)

III. Improvements

1. What is the most important issue to be improved?
   - Improvement and development of water supply system
   - Wastewater treatment area
   - Improvement and establishment of solid waste collection services
   - Other structures (if any).
2. Why do you think this is the most important issue?
3. How is your opinion of existing wastewater treatment and environmental sanitation?
4. What is your recommendation/proposal for situation improvement?
5. What are solutions of community contribution to wastewater treatment and environment sanitation improvement?

Thank you very much for your answering!