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REPORT ON COMMUNITY BASELINE SURVEY

INCORPORATING KNOWLEDGE – ATTITUDE – PRACTICE & CUSTOMER SATISFACTION

VINH CITY – NGHE AN 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)

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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 Consulting Group GmbH
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
WB	World Bank
WTP	Willingness to Pay
WWC	Wastewater Management Company
WWM	Capacity Development in **Wastewater Management** (TC Component 2)
Vn-CIMDC	Vinh City Infrastructure Management and Development Joint Stock Company

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1. INTRODUCTION

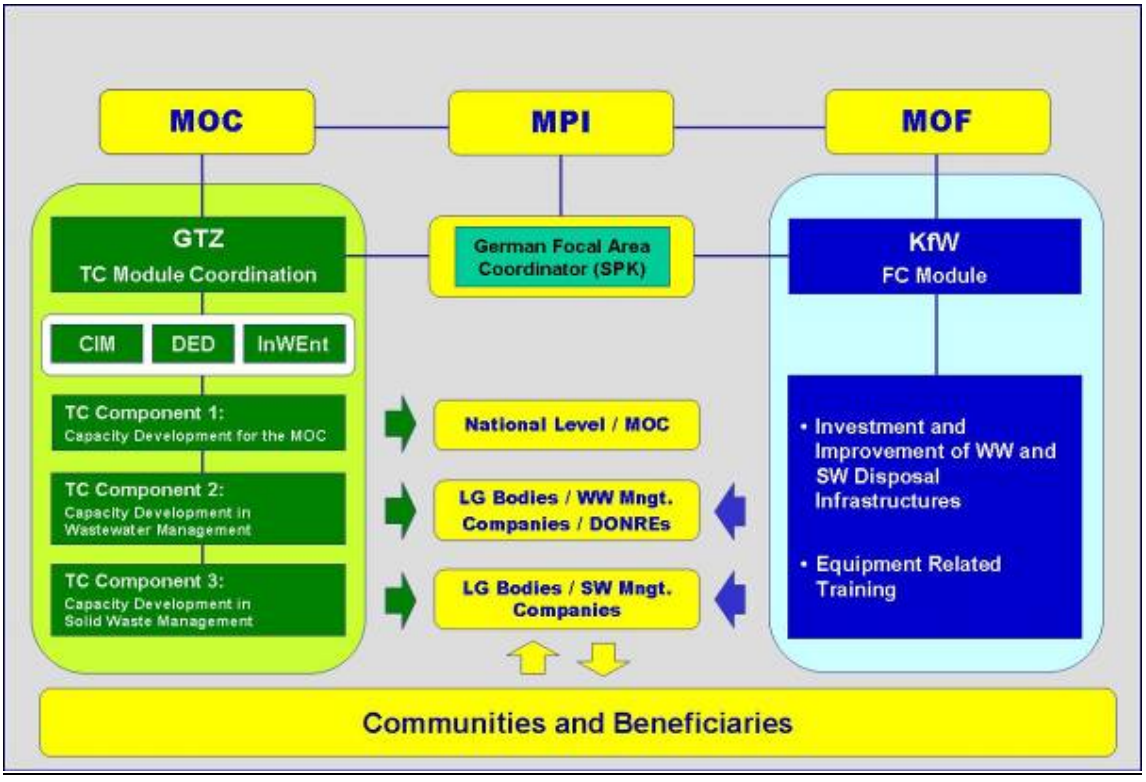
"Wastewater and Solid Waste Management in Provincial Centers" is a program funded by the German government and jointly implemented by different institutions of the Government of Vietnam and several German Development Cooperation (GDC) agencies. The program consists of two complementary modules (Figure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

In order to support the Wastewater Management Companies in improving their customer services, and in achieving gradual changes in community awareness and behaviour patterns, relevant reliable data are necessary for the planning of 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 Vinh City Infrastructure Management and Development Joint Stock Company (Vn-CIMDC- 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 Vn-CIMDC in order to improve the performance of its Customer Care Unit.
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 Vn-CIMDC on the subjects of participatory research, basic skills and techniques for conducting base-line studies.

3. SURVEY AREAS AND TOOLS FOR THE BASELINE STUDY

3.1 Survey Area

Six wards in the target area of the WWM-project in Vinh City: Le Mao, Quang Trung, Hung Binh, Truong Thi, Cua Nam and Hung Phuc.

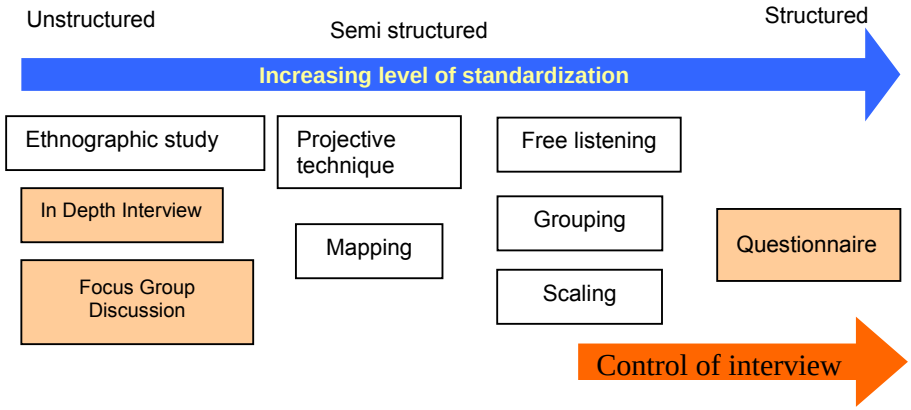
3.2 Survey Tools for the Baseline Study

The survey tools used in the baseline survey are:

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

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

Figure 3-1 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.

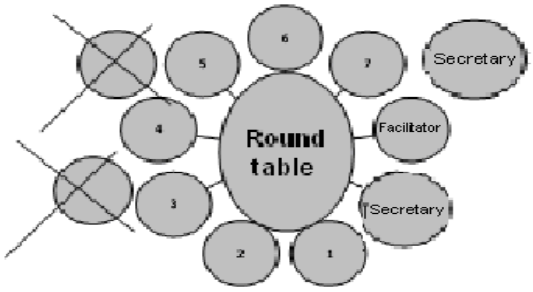
Focus group discussion (FGD)

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 carefully prepared and guided and the facilitator should be experienced. The discussion should be held in a spacious location that is suitable for a meeting and will not affect the discussion. For the discussion 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

A questionnaire has a structure of questions. The types of question can be open, close or both open and close.

The steps for designing a questionnaire:

- Determine the content of the questions
- Formulate the questions
- Arrange the questions in the right order
- Pre-testing the questionnaire to determine its level of reliability, validity and accuracy of language used as well as structure applied.

3.3 Estimation of Sample Size and Its Distribution in Wards

In order to compile results that allow conclusions to be drawn that extend from the unit of investigation (sample) to the whole population of interest (representative results), the sampling procedure and the sample size is of great importance for the study. There are two sampling approaches: Simple random sampling (SRS) and probability proportional to size (PPS). In this case, PPS is applied to determine the sample size. The formulas are taken from "The Power of Survey Design" by Giuseppe (WB library, 2006). As required, we aim for a 95% confidence level with a margin for error of 5% (confidence interval) and 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 respondents with a buffer of +5-10% in case the originally sampled respondent is not available at the moment the respective interview would take place. A total of about 380 - 400 households divided into 6 wards were selected for the present survey.

Table 3-1 Determination of sample size

City	Population in study area (estimated)	Minimum sample size
Vinh	**17.746**	360

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

Ward	Total number of households	Minimum sample size
Quang Trung	2.112	43
Truong Thi	3.950	80
Hung Binh	4.230	86
Hung Phuc	2.132	43
Le Mao	2.332	47
Cua Nam	2.990	61
Total	**17.746**	**360**

3.4 Some Characteristics of Wards Selected for the Baseline Study

Vinh is located at latitudes from 18°38'50"N to 18°43'38"N and longitudes from 105°56'30"E to 105°49'50"E; to the North it is about 295 km to Hanoi City; to the South about 350 km to Hue, 472 km to Danang City and 1447 km to Ho Chi Minh City.

Vinh is well known as a city with good urban planning. *"A clear space, wide roads and streets with many high buildings. This is the first impression when coming to Vinh. This is a typical character of Vinh, a character back in the history, a beautiful city with a lot of schools, factories, loading docks…"* This is a remark from professor and writer Ha Minh Duc about the "Red City" of today. During the open policy period, Vinh celebrated a number of major achievements in socio-economic development, infrastructure development and urban management. Vinh has an area of 64 km^2, a population of 260,000, is well connected to the traffic grids (railways, roads, airstrips and waterways), and has a long traditional history. Vinh is not only a city of Nghe An Province, but also a grade II city and an urban centre in North-Central Vietnam. Some socio-economic statistics of Vinh follow:

Economic statistics: The average annual economic growth has been 16-17% over the period of 2006-2010. Industry and construction have increased 18-19% over this period, services 14.5-15%, and agriculture-forestry-fishery 5-6%. The economic structure up to 2010: industry-construction 40.5%, services 58,0% and agriculture-forestry-fishery 1.5%.

Social statistics:

- Annual population growth: 3.0%
- Natural population growth: 0.65%
- Percentage of green area per inhabitant: Over 10 m^2/person
- The percentage of solid waste collection: 90%
- Compulsory education is primary (1-5)/Grade 1; to complete the secondary (6-9)/Grade 2; Vinh has 55 schools following national standards.
- Goals for 2010 include: 100% of wards and sub-wards will have a cultural centre; Title "cultural sub-ward" for 50% of sub-wards and "cultural unit" for 30% of neighbourhoods; Title "cultural household" for 90% of households; 2-3 cultural wards; 50% of wards fulfil the regulations of family planning (only 1-2 children per family); 100% of wards have national medicine services.
- Over 70% of households have well constructed houses; over 60% of households are classified within the moderate and rich group; reduction of poverty rate to below 1% per year in 2010 (the new poverty line). New job creation for over 4,000 people, 1,000 farmers shifted from agricultural production to industry and services; approximately 45-50% people have job education.
- The percentage of households with access to clean water supply is 100% (of which 90% have pipe water); power supply for 90% of households; per capita telephone ownership is 35/100 population.
- Traffic: 100% of roads and streets have asphaltic and concrete layer. The main street has street lighting and a good sidewalk.

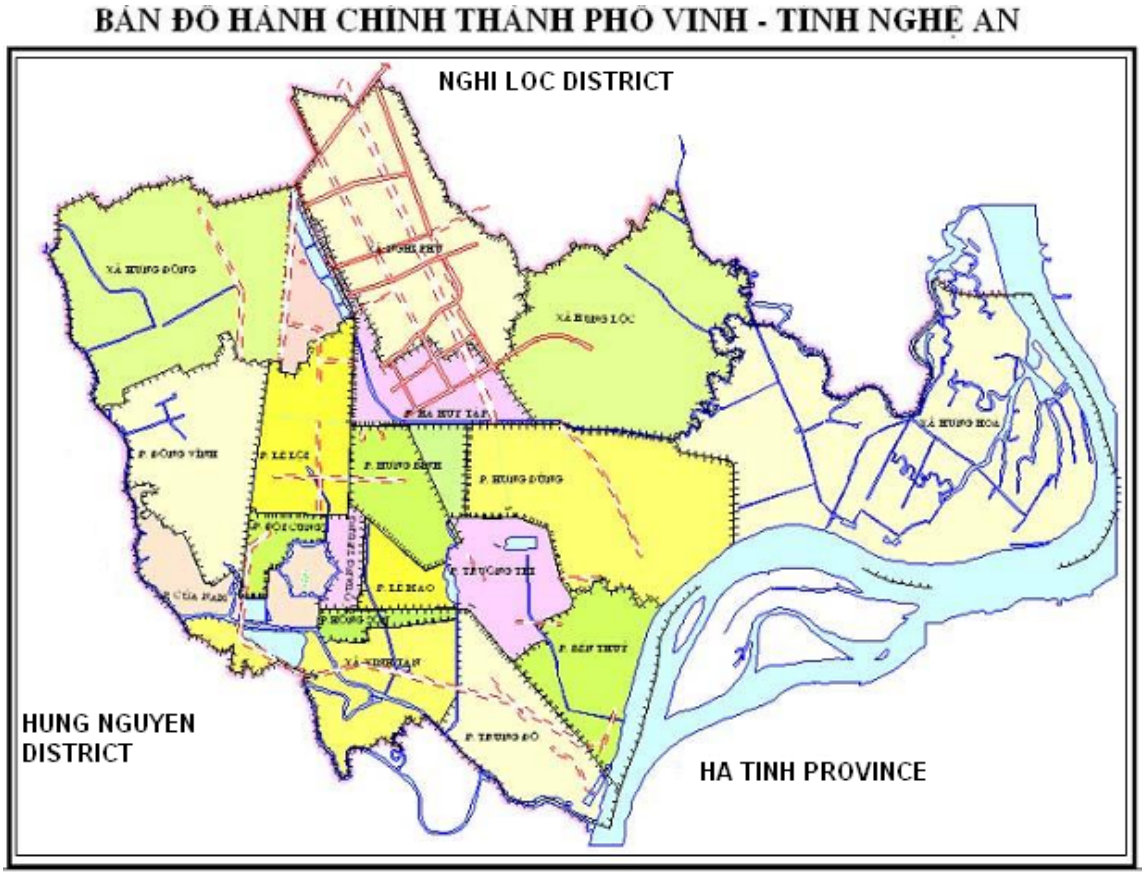
Based on data from the statistical department of Vinh and annual reports from wards as well as IDI notes with the heads of wards and city authorities, we have compiled the information presented in **Error! Reference source not found.**. Cua Nam Ward has the largest area, but the population density is lower than in Hung Binh and Truong Thi Ward. The map of Vinh is presented in Figure 3-3.

Table 3-3 General Information from wards surveyed in Vinh City (year 2006)

Ward	Natural area (km^2)	Average population (inhabitant)	Population density (inhabitant/km^2)
Quang Trung	0,58	8.200	14.138
Truong Thi	1,94	15.586	8.034
Hung Binh	1,62	18.006	11.115
Hung Phuc	1,14	8.822	7.739
Le Mao	0,87	10.995	12.592
Cua Nam	1,97	13.622	6.915

Source: Statistical year book of Vinh, p. 11

Figure 3-3 Vinh City and the wards selected for BLS



4. SURVEY PREPARATION AND IMPLEMENTATION

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. habil. 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**

4.1 CEPAC – the Baseline Survey Implementing Institution

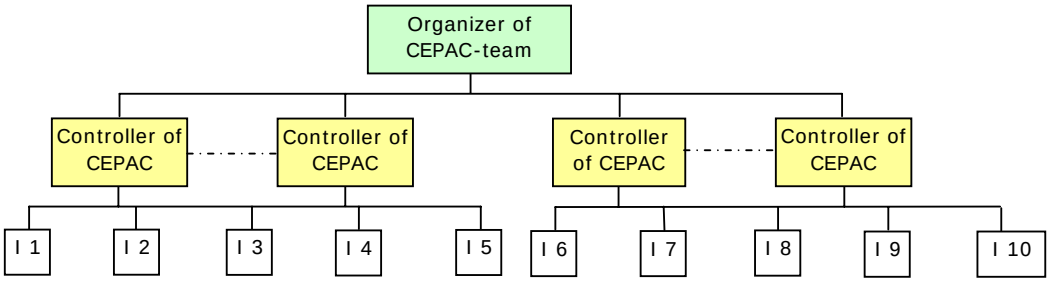
Survey techniques applied

- Application of face-to-face structured interview
- The informant: Head or main person of each household 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 control of survey quality

- 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 Sketch of organisation for the household survey



- Two CEPAC staff supervised each group of five 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 controlled in the evening.
- Quantitative data was analysed using the statistical software SPSS (Statistical Package for the Social Sciences). Qualitative data and information obtained was encoded as necessary.

4.2 Initial Requirements of CEPAC

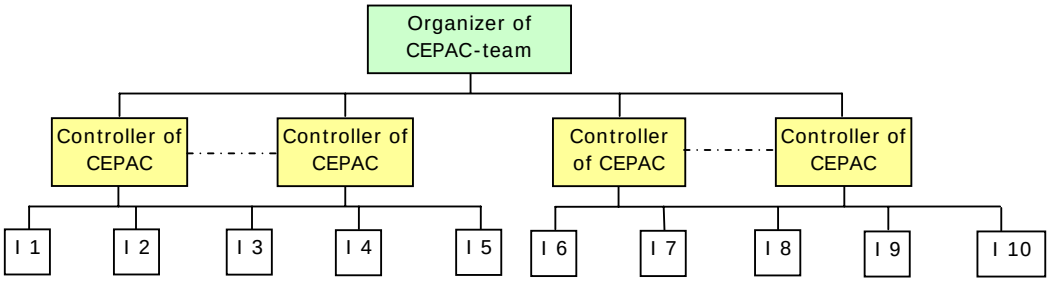
Survey techniques applied

- Application of face-to-face structured interview
- The informant: Head or main person of each household 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 control of survey quality

- 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 4-2 Sketch of organisation for the household survey



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- 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 October 11-13, 2008 in Company. 11 persons were delegated by the company: one from the department administration, two from planning, two from network management and six from the management of the apartment complex. See the list in Appendix 1. Mr. Tran Tien Duc from the WWM-project was present, as were four 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 4-3 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 six 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 October 13-18, 2008 in six wards with the close cooperation of 11 members delegated by the company and six CEPAC-members as technical providers and supervisors. In total, 411 households were interviewed, five FGDs were held, and eight IDIs were conducted with ward and city authorities (Appendix 3).

As outlined in the project proposal, CEPAC allocated 5-6 staff members 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 by the CEPAC team after the interviews were conducted 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 of 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 20 - 30 minutes/interview, which corresponds with the requirements of the WWM-project and CEPAC, Some interviews lasted up to 1.20 hours. Based on the requirements shown in Table 3-2,, the number of households surveyed in Quang Trung Ward was increased due to the high population density in the area with apartment complexes/buildings.

We wanted to increase the number of households surveyed in order to compare the knowledge of citizens living in such apartment complexes to those living in normal houses. Hung Phuc and Hung Binh Ward are located near each other. We focused the study on the frontier area between the two wards so that the number of households in Hung Phuc was increased and the number in Hung Binh decreased. All information is presented Table 4-1 and Table 4-2.

Table 4-1 The average length of interviews

Date	n	Minimum	Maximum	Mean	St. deviation
13.10.08	53	0:15	0:57	0:30	0:10
14.10.08	31	0:15	1:00	0:30	0:08
15.10.08	48	0:15	1:20	0:28	0:11
16.10.08	92	0:13	0:50	0:24	0:06
17.10.08	95	0:13	1:20	0:22	0:08
18.10.08	92	0:13	0:35	0:19	0:05

Table 4-2 Date and number of questionnaires returned from October 13-18, 2008

Date		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
13.10.08	n		42				11	**53**
	%		42.9				13.9	**12.9**
14.10.08	n		12	19				**31**
	%		12.2	40.4				**7.5**
15.10.08	n		23	21			4	**48**
	%		23.5	44.7			5.1	**11.7**
16.10.08	n		21	7			64	**92**
	%		21.4	14.9			81.0	**22.4**
17.10.08	n				38	57		**95**
	%				45.2	100.0		**23.1**
18.10.08	n	46			46			**92**
	%	100.0			54.8			**22.4**
Total	**n**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

5. THE RESULTS OF THE BASELINE SURVEY

In this part, we focus on analysing the data collected during the BLS implementation. The analysis follows the same sequence as the questions/content of the household questionnaire.

5.1 Characteristics of Respondents

CEPAC, company staff, and WWM consultants organised the survey implementation. Interviews were conducted with 411 household representatives in 6 wards: Le Mao, Quang Trung, Hung Binh, Truong Thi, Cua Nam and Hung Phuc. The determination of sample size, sample distribution, and household selection were based on agreements between the Company for Management of Urban Works of Vinh and CEPAC.

The number of household members. On average, there were 3.8 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 11 persons, while other households had only a few members.

The gender structure of respondents. According to Table 5-2 the numbers of both sexes selected as respondents for the household survey were nearly the same; 231 females

(56.2%) and 180 male (43.8%) were interviewed. More precisely, in Le Mao Ward there were 11 males (23.9%) and 35 females (76.1%); in Quang Trung 50 males (51.0%) and 48 females (49.0%); in Hung Binh 25 males (53.2%) and 22 females (46.8%), in Truong Thi 34 males (40.5%) and 50 females (59.5%), in Cua Nam 25 males (43.9%) and 32 females (56.1%) and in Hung Phuc 35 males (44.3%) and 44 females (55.7%).

Figure 5-1 Distribution of household members

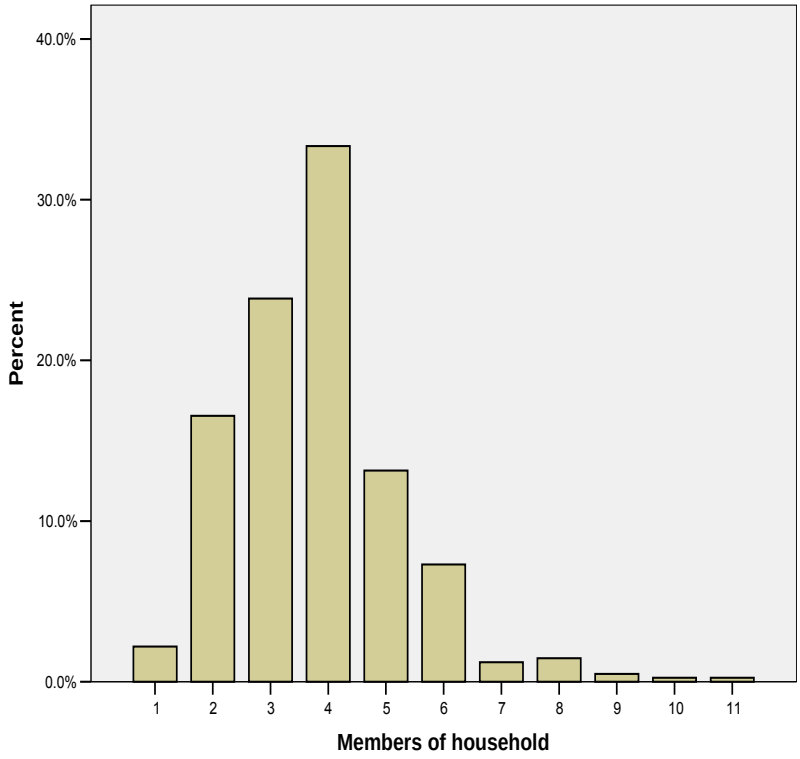


Table 5-1 Number of household members

HH-member		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
1	n	1	3		4	1		**9**
	%	2.2	3.1		4.8	1.8		**2.2**
2	n	8	16	5	17	8	14	**68**
	%	17.4	16.3	10.6	20.2	14.0	17.7	**16.5**
3	n	12	25	8	15	13	25	**98**
	%	26.1	25.5	17.0	17.9	22.8	31.6	**23.8**
4	n	17	29	16	29	17	29	**137**
	%	37.0	29.6	34.0	34.5	29.8	36.7	**33.3**
5	n	4	14	8	11	10	7	**54**
	%	8.7	14.3	17.0	13.1	17.5	8.9	**13.1**
6	n	3	8	8	4	5	2	**30**
	%	6.5	8.2	17.0	4.8	8.8	2.5	**7.3**
7	n			1	2	2		**5**
	%			2.1	2.4	3.5		**1.2**
8	n	1	1	1	2		1	**6**
	%	2.2	1.0	2.1	2.4		1.3	**1.5**
9	n		1			1		**2**

HH-member		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
	%		1.0			1.8		**0.5**
10	n		1					**1**
	%		1.0					**0.2**
11	n						1	**1**
	%						1.3	**0.2**
Total	**n**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-2 Gender structure of respondents

Gender		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Male	N	11	50	25	34	25	35	**180**
	%	23.9	51.0	53.2	40.5	43.9	44.3	**43.8**
Female	N	35	48	22	50	32	44	**231**
	%	76.1	49.0	46.8	59.5	56.1	55.7	**56.2**
Total	**N**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

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 six wards was rather homogeneous. Respondents' ages varied from 21 to 60 years old, but mainly fell between 51 and 60 for females (40.7%) and 51 and 60 for males (37.8%).

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 The average age of respondents

Ward	Gender	N	Minimum	Maximum	Mean	Std Deviation
Le Mao	Male	11	27	62	52.4	9.831
	Female	35	25	63	48.3	9.671
Quang Trung	Male	50	27	78	54.3	13.636
	Female	48	28	76	49.6	10.544
Hung Binh	Male	25	21	79	52.8	14.524
	Female	22	27	62	48.5	10.654
Truong Thi	Male	34	23	79	55.6	10.720
	Female	50	30	66	51.0	10.351
Cua Nam	Male	25	21	68	54.3	10.370
	Female	32	24	64	47.8	9.658
Hung Phuc	Male	35	27	72	54.2	10.380
	Female	44	27	69	48.9	8.915

Table 5-4 The distribution of respondents' age by sex

Gender	Age group	N	%	Commutative %
Male	<30	10	5.6	5.6
	31-40	13	7.2	12.8
	41-50	35	19.4	32.2
	51-60	68	37.8	*70.0*
	61-70	42	23.3	93.3
	>71	12	6.7	100.0
	Total	**180**	**100.0**	
Female	<30	8	3.5	3.5
	31-40	48	20.8	24.2
	41-50	60	26.0	50.2
	51-60	94	40.7	*90.9*
	61-70	20	8.7	99.6
	>71	1	0.4	100.0
	Total	**231**	**100.0**	

The educational level of respondents. Most respondents had completed high school education (Table 5-5). About 24.1%, 22.6% and 15.2% of respondents in Hung Phuc, Truong Thi and Le Mao Ward, respectively, had bachelor/master degrees or higher. Table 5-6 shows the differences based on gender. Generally there was some difference in education level according to sex, namely that the education level among males was higher than among females. In Hung Phuc Ward, 1.3% of female respondents were still "illiterate".

Table 5-5 Education level of respondents

Education level		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Illiterate	N						1	**1**
	%						1.3	**0.2**
Primary (1-5) / Grade 1	N					1		**1**
	%					1.8		**0.2**
Secondary (6-9) / Grade 2	N	7	13	14	13	20	14	**81**
	%	15.2	13.3	29.8	15.5	*35.1*	17.7	**19.7**
High school (10-12) / Grade 3	N	21	33	17	24	20	28	**143**
	%	*45.7*	*33.7*	*36.2*	*28.6*	*35.1*	*35.4*	***34.8***
Worker	N	2	8	2	6	4	4	**26**
	%	4.3	8.2	4.3	7.1	7.0	5.1	**6.3**
College	N	9	30	7	22	7	13	**88**
	%	19.6	30.6	14.9	26.2	12.3	16.5	**21.4**
Bachelor, master degree and higher	N	7	11	6	19	5	19	**67**
	%	15.2	11.2	12.8	22.6	8.8	24.1	**16.3**
Other	N		3	1				**4**
	%		3.1	2.1				**1.0**
Total	**N**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

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

Gen-der	Education level	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Male	Primary (1-5) / Grade 1					4.0		**0.6**
	Secondary (6-9) / Grade 2	9.1	12.0	20.0	14.7	32.0	17.1	**17.2**
	High school (10-12) / Grade 3	*36.4*	*36.0*	*40.0*	20.6	*32.0*	*25.7*	***31.1***
	Worker	9.1	6.0	8.0	8.8	8.0	5.7	**7.2**
	College	27.3	30.0	16.0	14.7	8.0	11.4	**18.3**
	Bachelor, master degree and higher	18.2	12.0	16.0	*41.2*	16.0	40.0	**24.4**
	Other		4.0					**1.1**
	Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Female	Illiterate						2.3	**0.4**
	Secondary (6-9) / Grade 2	17.1	14.6	40.9	16.0	37.5	18.2	**21.6**
	High school (10-12) / Grade 3	*48.6*	*31.3*	*31.8*	*34.0*	*37.5*	*43.2*	***37.7***
	Worker	2.9	10.4		6.0	6.3	4.5	**5.6**
	College	17.1	31.3	13.6	*34.0*	15.6	20.5	**23.8**
	Bachelor, master degree and higher	14.3	10.4	9.1	10.0	3.1	11.4	**10.0**
	Other		2.1	4.5				**0.9**
	Total	**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 Vinh at the time of survey implementation, the respondents were mostly pensioners and people with small private businesses and services. It was only in Hung Phuc that the respondents were mostly employees, officials, businessmen and pensioners. The percentage of "farmer" respondents was very small and not significant in Cua Nam Ward (5.3%).

Figure 5-2 Professional structure of respondents

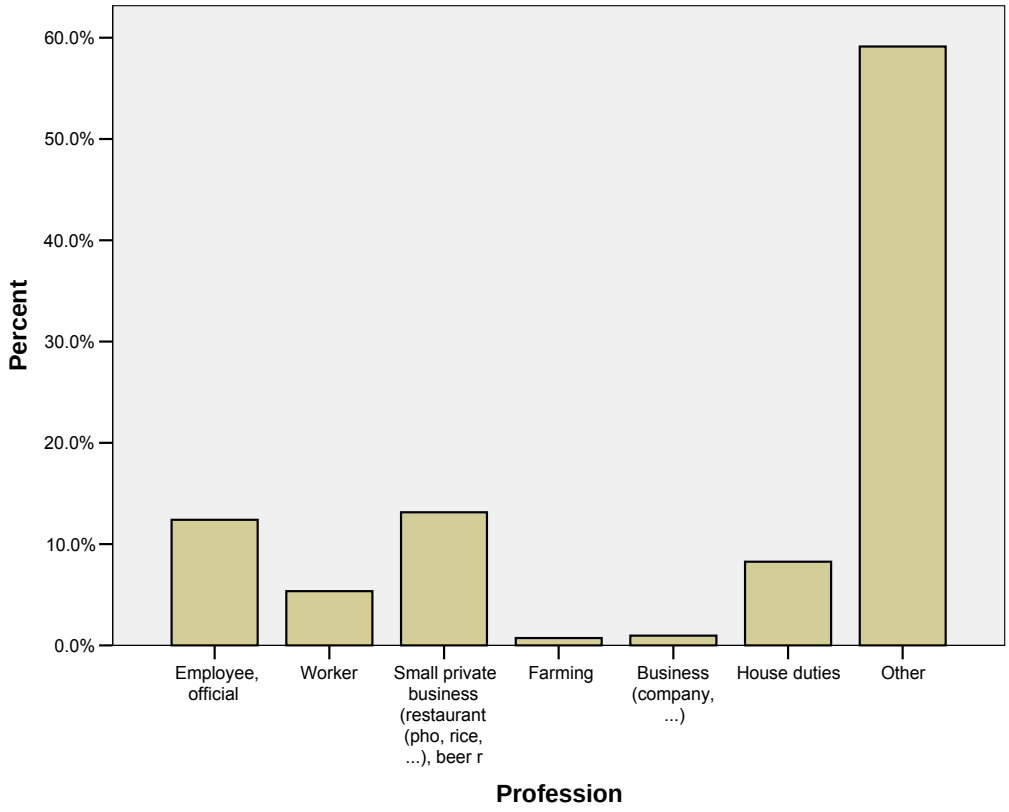


Table 5-7 Professional structure of respondents (Unit: %)

Profession	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Employee, official	10.9	13.3	12.8	10.7	3.5	20.3	**12.4**
Worker	4.3	4.1	6.4	4.8	8.8	5.1	**5.4**
Small private business (restaurant , etc), beer	19.6	15.3	6.4	11.9	22.8	5.1	**13.1**
Farming					5.3		**0.7**
Business (company, etc)		1.0			1.8	2.5	**1.0**
House duties	15.2	5.1	12.8	1.2	14.0	8.9	**8.3**
Pensioner	*43.5*	*52.0*	*46.8*	*64.3*	*38.6*	*53.2*	***51.3***
Free worker	4.3	1.0	10.6	4.8	3.5	5.1	**4.4**
Other	2.2	8.2	4.3	2.4	1.8		**3.4**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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. The average household income lies between 1 – 4 mill. VND/month (74.3%). However, in Hung Phuc and Le Mao Ward there are some households receiving more than 10 mill. VND/month. The differences are vast and it is noteworthy that the percentage of employees and officials in these wards (except Cua Nam Ward) 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)	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
< 1	6.5	1.0		1.2	3.5	2.5	**2.2**
1 – 2	30.4	26.5	14.9	*28.6*	*38.6*	*24.1*	***27.3***
2.1 – 3	*37.0*	*27.6*	*36.2*	22.6	26.3	20.3	***27.0***
3.1 – 4	10.9	19.4	14.9	*29.8*	14.0	22.8	**20.0**
4.1 – 5	6.5	11.2	12.8	8.3	5.3	13.9	**10.0**
5.1 – 6	2.2	5.1	12.8	6.0	7.0	10.1	**7.1**
6.1 – 7	2.2	5.1	6.4		3.5	2.5	**3.2**
7.1 - 8		2.0		1.2			**0.7**
8.1 - 9		2.0			1.8	1.3	**1.0**
9.1 - 10	2.2			1.2			**0.5**
>10.1	2.2					1.3	**0.5**
DK/DA			2.1	1.2		1.3	**0.7**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

In Vietnam, however, there are often other income sources, perhaps more important than the regular/official income. This income can be shown using other measurements. Income level, for example, decides the household's expenditures. Normally, expenditure varies directly according to income level. Therefore, the CEPAC team suggested checking other information such as the number of stories of the houses (Table 5-9), the daily food expenditures (Figure 5-3 and Table 5-10). 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 and Table 5-12).

The households with 1-1.5 story are very popular in all wards (56.7%). The households with more stories (more than 3 stories) are concentrated mainly in Quang Trung and Truong Thi. The average household food expenditure at the time of survey implementation was around 50,000 VND/day.

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

Stories of houses	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
1	*63.0*	*50.6*	*61.7*	*57.1*	*75.4*	42.3	***56.7***
1.5	2.2	1.2		8.3	3.5	3.8	**3.5**
2	30.4	38.6	38.3	29.8	17.5	*51.3*	**35.2**
2.5		2.4				1.3	**0.8**
3	2.2	6.0		3.6	3.5	1.3	**3.0**
4		1.2		1.2			**0.5**
5	2.2						**0.3**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Figure 5-3 Knowledge of daily food expenditure of household

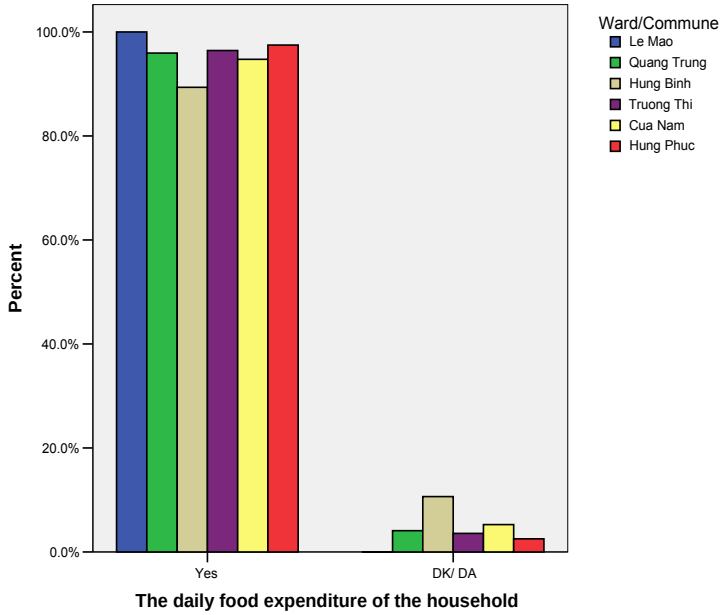


Table 5-10 Daily food expenditures for households (normal day) (Unit: 000' VND/day)

Ward	N	Minimum	Maximum	Mean	St. deviation
Le Mao	46	10	250	51.09	38.15
Quang Trung	98	15	150	54.15	27.01
Hung Binh	47	20	140	57.38	26.69
Truong Thi	84	15	300	54.20	36.46
Cua Nam	57	20	100	46.11	21.73
Hung Phuc	79	10	120	50.58	24.21

Table 5-11 Standard of living, self-evaluated by respondents (Unit: %)

Evaluation level	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Rich	4.3	8.2	4.3	7.1	7.0	5.1	**6.3**
Moderate	*93.5*	*91.8*	*93.6*	*89.3*	*93.0*	*91.1*	***91.7***
Poor	2.2		2.1	3.6		3.8	**1.9**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 5-12 Standard of living as evaluated by the interviewer (Unit: %)

Evaluation level	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Rich	8.7	22.4	10.9	11.9	14.0	25.3	**16.8**
Moderate	*89.1*	*77.6*	*87.0*	*84.5*	*84.2*	*73.4*	***81.5***
Poor	2.2		2.2	3.6	1.8	1.3	**1.7**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

5.3 Evaluation of Household Sanitation System

5.3.1 Toilet Coverage in Vinh City

Nearly 100% of the surveyed households in Vinh City have their own (private) toilets (Table 5-13). On average, 96.6% (varies between 92.9-100%) of households surveyed in all wards had septic tank toilets (Table 5-14). However, these figures are lower, based on IDIs and FGDs, also between 80-90%.

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

Own toilet	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Yes	100	100	100	100	100	98.7	**99.8**
No						1.3	**0.2**
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-14 Kind of toilet (Unit: %)

Kind of toilet	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Pit toilet		1.0				3.8	**1.0**
Central (off-site) sewage system		5.1			3.5		**1.7**
Septic tank toilet	100	92.9	100	100	93.0	96.2	**96.6**
Other		1.0			3.5		**0.7**
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.3.2 The Current Status of the Septic Tank Toilet

5.3.2.1 Construction and Location of the Septic Tank Toilets

According to Table 5-15, the septic tanks are normally located inside houses (72.8-87%). However, about 20.2% of septic tanks are located outside the houses due to a sufficient amount of available land outside the house (garden, etc). Most the septic tanks are 2 - 5 m^3.(Table 5-16), but on rare occasions there are septic tanks with a volume over 7 m^3. This information was checked and re-confirmed.

Table 5-15 Location of septic tank (Unit: %)

Location	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Inside house	87.0	72.8	85.1	79.8	75.5	84.0	**79.8**
Outside house	13.0	27.2	14.9	20.2	24.5	16.0	**20.2**
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

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

Volume of septic tank	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
1	4.3	8.5	4.8	1.2	6.3	1.3	**4.1**
1.5	4.3	8.5		2.5	6.3	2.7	**4.1**
2	19.6	18.3	14.3	14.8	18.8	9.3	**15.4**
2.5	2.2	5.6	2.4	1.2	2.1	6.7	**3.6**
3	*21.7*	*22.5*	*31.0*	*23.5*	*25.0*	*21.3*	***23.7***
3.5			2.4	3.7		2.7	**1.7**
4	28.3	11.3	11.9	21.0	8.3	30.7	**19.3**
4.5		1.4					**0.3**
5	13.0	8.5	21.4	11.1	12.5	10.7	**12.1**
5.5			2.4	1.2			**0.6**
6	2.2	8.5	7.1	2.5	6.3	9.3	**6.1**
6.5				1.2			**0.3**
7		1.4		3.7	4.2	2.7	**2.2**
8	2.2	1.4		2.5	4.2	1.3	**1.9**
9	2.2			2.5	2.1		**1.1**
10		2.8	2.4	6.2	2.1		**2.5**
12		1.4		1.2		1.3	**0.8**
15					2.1		**0.3**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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

Based on the survey results (Table 5-17), on average 96.7% of households discharge wastewater from their toilets into the septic tank. However, in Quang Trung Ward this percentage was slightly lower – 90.2% of households discharge toilet wastewater into the septic tank. We supposed 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 5-17 Kind of wastewater discharged into septic tank (Unit: %)

Kind of wastewater into septic tank	Le Mao	Quang Trung	Hung Binh	Truon g Thi	Cua Nam	Hung Phuc	Total
Toilet	100.0	90.2	97.9	100.0	96.2	98.7	**96.7**
Bathroom		1.1					**0.3**
Other					1.9	1.3	**0.5**
Toilet & bathroom		8.7	2.1		1.9		**2.5**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

In general, wastewater from household toilets in Vinh City is deposited into the public drainage system. Le Mao, Quang Trung, Hung Binh, Truong Thi and Hung Phuc Ward record high percentages varying between 95.7-97.8% (Table 5-18). Cua Nam Ward has the lowest percentage (84.9%). In an IDI with Mr. Nguyen Nhu Vinh, the head of the ward, as well as in FGD with citizens of the ward, we were able to determine why this percentage is so low. Cua Nam Ward is located in an area surrounding the city and there are a lot of lakes,

ponds, etc and many households are discharge wastewater directly into these water bodies. We think that the company needs to cooperate with the city council's strategy and heads of Cua Nam Ward by convincing and even supporting (if necessary) households in collecting and discharging wastewater from toilets into the public drainage system.

Figure 5-4 Some pictures from the survey in Cua Nam Ward

Mr. Nguyen Nhu Vinh shows the drainage situation of Cua Nam Ward on the map

FGD in Cua Nam Ward

Table 5-18 Where toilet wastewater is discharged

Waste water of septic tank		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Public drainage system	N	45	88	45	82	45	72	**377**
	%	97.8	95.7	95.7	97.6	84.9	96.0	**95.0**
Street, road	N				1			**1**
	%				1.2			**0.3**
River, open channel, pond or lake	N	1		2		5		**8**
	%	2.2		4.3		9.4		**2.0**
Infiltrate into soil, discharge into garden	N		3		1	3	3	**10**
	%		3.3		1.2	5.7	4.0	**2.5**
Public drainage system or garden	N		1					**1**
	%		1.1					**0.3**
Total	**N**	**46**	**92**	**47**	**84**	**53**	**75**	**397**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.3.2.3 Practical Septic Tank Operation Volume of Septic Tanks

In practice, an average 75.1% of respondents doesn't experience bad odour of septic tank in house (Table 5-19). In the case of experiencing bad odour (on average 19.9%) 15.5-23.4% of respondents say that the odour occurs sometimes. It is notable that 11.3% of respondents reported that the bad odour occurs very often (Cua Nam Ward).

Table 5-19 Overview of whether respondents experienced bad odour from in-house septic tanks

Bad odour of the septic tank in the house		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Yes, often	n	2	2	3	3	6	2	**18**
	%	4.3	2.2	6.4	3.6	11.3	2.7	**4.5**
Yes, rarely	n	10	20	11	13	10	15	**79**
	%	21.7	21.7	23.4	15.5	18.9	20.0	**19.9**
No	n	34	69	33	68	37	57	**298**
	%	*73.9*	*75.0*	*70.2*	*81.0*	*69.8*	*76.0*	***75.1***
DK/DA	n		1				1	**2**
	%		1.1				1.3	**0.5**
Total	n	**46**	**92**	**47**	**84**	**53**	**75**	**397**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

As shown in Table 5-20, a high 67.9% of households do not empty their septic tanks. Of those households that do empty their septic tanks (Table 5-21), 10.2% do so annually, 23.7% every 2-3 years, 22.9% every 4-5 years, 27.1% once every 5 years and 8.1% only empty the tank when it is full or blocked. After the wastewater treatment plant is in operation, the company should suggest to the city authorities that they set up legal guidelines that force households to regularly empty their septic tanks and order the regular collection, disposal and treatment of all sludge in the wastewater treatment plant. This will be a potential service offered by the company in the future.

Table 5-20 Respondents who empty their septic tanks

Empty the septic tank		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Yes	n	32	54	30	74	39	50	**279**
	%	69.6	55.1	63.8	88.1	68.4	63.3	**67.9**
No	n	14	38	17	10	14	25	**118**
	%	30.4	38.8	36.2	11.9	24.6	31.6	**28.7**
DK/DA	n		6			4	4	**14**
	%		6.1			7.0	5.1	**3.4**
Total	**n**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-21 Frequency of emptying the septic tank

Frequency		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Annually	N		8	1	1	2		**12**
	%		21.1	5.9	10.0	14.3		**10.2**
Each 2-3 years	N	3	10	4	5	4	2	**28**
	%	21.4	26.3	23.5	50.0	28.6	8.0	**23.7**
Each 4-5 years	N	5	6	5	3	3	5	**27**
	%	35.7	15.8	29.4	30.0	21.4	20.0	**22.9**
Each >5 years	N	2	3	4	1	3	6	**19**
	%	14.3	7.9	23.5	10.0	21.4	24.0	**16.1**
Any time if blocked or full	N	4	11	3		2	12	**32**
	%	28.6	28.9	17.6		14.3	48.0	**27.1**

Frequency		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Total	**N**	**14**	**38**	**17**	**10**	**14**	**25**	**118**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

According to Table 5-22, the percentage of households who use chemicals to aid the "digestion" process in septic tanks is high – over 62.8% in all wards. The use of chemicals becomes habitual as it is a quick and cheap way to manage the tanks and it postpones the relatively expensive task of emptying the tanks.

Table 5-22 Use of chemicals in septic tank toilets

Septic tank chemicals		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Yes	n	30	48	33	63	30	43	**247**
	%	65.2	54.5	70.2	75.0	56.6	57.3	**62.8**
Never	n	16	40	13	21	23	31	**144**
	%	34.8	45.5	27.7	25.0	43.4	41.3	**36.6**
DK/DA	n			1			1	**2**
	%			2.1			1.3	**0.5**
Total	**n**	**46**	**88**	**47**	**84**	**53**	**75**	**393**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.3.2.4 Awareness about Using the River or Field as a Toilet and Direct Flushing Toilets

In the case of households without their own toilets, people generally use public toilets or local fields/rivers. As this is a sensitive question, it was difficult to get reliable answers for analysing this situation. 86.9% of respondents believe that such behaviour "spreads dangerous diseases" and 74.6% believer it "pollutes the water source" (Table 5-23). Thus, the awareness level among the citizens is quite high, which can be pointed to as a positive result of the long-term ICE in Vietnam.

Table 5-23 Effects of using the river or field as a toilet and direct flushing toilet

If using the river as toilet		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Spreads dangerous diseases	n	43	68	43	79	48	64	**345 (86.9%)**
	%	12.5	19.7	12.5	22.9	13.9	18.6	**100**
Pollutes the water source	n	34	55	45	67	42	53	**296 (74.6%)**
	%	11.5	18.6	15.2	22.6	14.2	17.9	**100**
Not harmful	n			1		1	1	**3 (0.8%)**
	%			33.3		33.3	33.3	**100**
Other	n		5		1	1	1	**8 (2%)**
	%		62.5		12.5	12.5	12.5	**100**
Total	n	**46**	**91**	**47**	**84**	**53**	**76**	**397**
	%	**19.4**	**32.2**	**22.4**	**37**	**23.2**	**30**	**164.2**

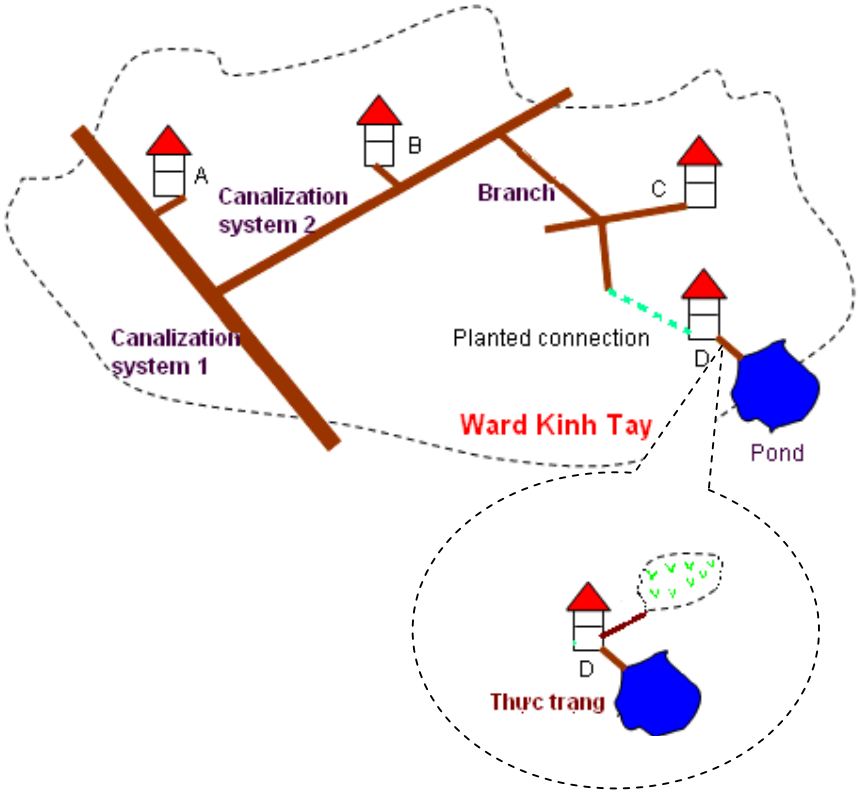
5.4 Evaluation of Connection Techniques and Household Wastewater Drainage

As in the sketch in Figure 5-5 concerning sewage connection techniques, there are 4 types of household connections to the public drainage system:

- Type 1: Direct connection with the canalisation system of grade 1
- Type 2: Direct connection with the canalisation system of grade 2
- Type 3: Direct connection with the canalisation system of grade 3 and branch
- Type 4: Drainage into surrounding area and not into public canalisation system

The collection and drainage system in urban areas of Vietnam is unsystematic and incomplete with canalisation systems of grade 1, 2, and the branch. This 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 Ministry of Natural Resources and Environment): "*The environment in many urban centers of our country is degraded and polluted because of pollution from the old canalization and drainage system degraded rapidly and therefore can not meet the demand ; the capacity of collection of solid waste is still not bad, in average only 60 - 70% solid waste, especially the harmful solid waste can not be collected and treated based on the regulations*". Thus the effects of collection and drainage are still low, and at the same time only a very small percentage of wastewater in Vietnam can be treated before being discharged into the river (surface water).

Figure 5-5 Sketch of kinds of connections with the public collection and drainage system of urban wastewater



Based on a report by the Company for Management of Urban Infrastructure, the company is responsible for canalisation of grade 1 and 2 systems. The canalisation and sewer of grade 3 and further grade (branch) are the charge of the commune and households. Normally, grade 1 and 2 systems are constructed by city authorities and managed by the company.

In this part, two aspects of household connection status are evaluated: (i) Household connection (type of wastewater canal) and (ii) drainage situation in the surrounding area as well as the level of awareness among respondents in terms of wastewater.

5.4.1 The Status of Household Connections and Wastewater Drainage

5.4.1.1 Where Does Household Wastewater Go?

According to Table 5-24 we can see that 95% of households are connected to the public system, but a small percentage of households still discharge wastewater into lakes and ponds. Typically, in Cua Nam Ward this percentage is still over 10%. This was confirmed in IDIs and FGDs. Many households, located near Ho Thanh Lake discharge their wastewater into the lake. In order to improve the wastewater situation, the company and WWM unit have to consider these wards.

Households were found not discharging wastewater into the public system. The company has to carefully check the locations of these cases. If these households do not have the possibility of being easily connected to the public system then the company has to formulate a plan for calling, convincing and even forcing all these households to connect with the public system.

Table 5-24 Where the household wastewater is discharged (excluding toilet water)

To where the wastewater		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Public drainage system	n	45	94	45	83	49	77	**393**
	%	*98*	*95.9*	*95.7*	*98.8*	*86.0*	*97.5*	***95.6***
Street, road	n		1	1			1	**3**
	%		1.0	2.1			1.3	**0.7**
River, open channel, pond or lake	n	1	1	1		6		**9**
	%	2.2	1.0	2.1		10.5		**2.2**
Infiltrate into soil, discharge into garden	n	0	1		1	2	1	**5**
	%		1.0		1.2	3.5	1.3	**1.2**
Public drainage system+ garden+infiltrate	n	0	1					**1**
	%		1.0					**0.2**
Total	**n**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.4.1.2 Structure and Blockages in Wastewaters Discharge Pipes

As seen in Table 5-25, an average 86.3% of households have covered drains, but Hung Phuc Ward has the lowest percentage (76.9%) followed by Hung Binh Ward (82.6%). Figure 5-6 shows the typical household connection with the public system or the tertiary system. According to Table 5-26, 91.3% of respondents said that the household drains have not been blocked within the last six months. If blockages occurred, 61.3% of respondents reported that it was only one time (Table 5-27).

Table 5-25 Structure of drain system of households

Drain		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Open	n	2	5	3	9	5	9	**33**
	%	4.4	5.2	6.5	10.8	9.6	11.5	**8.2**
Covered	n	42	89	38	72	45	60	**346**
	%	93.3	91.8	82.6	86.7	86.5	76.9	**86.3**

Drain		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Both	n	1	3	5	2	1	9	**21**
	%	2.2	3.1	10.9	2.4	1.9	11.5	**5.2**
DK/DA	n					1		**1**
	%					1.9		**0.2**
Total	**n**	**45**	**97**	**46**	**83**	**52**	**78**	**401**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-26 Blockage of household discharge system over the last six months

Blockage		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Yes	n	1	8	5	5	6	5	**31**
	%	2.2	8.2	10.9	6.0	11.5	6.4	**7.7**
No	n	44	88	40	78	46	70	**366**
	%	*97.8*	*90.7*	*87*	*94*	*88.5*	*89.7*	***91.3***
DK/DA	n		1	1			2	**4**
	%		1	2.2			2.6	**1**
Total	**n**	**45**	**97**	**46**	**83**	**52**	**78**	**401**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-27 Frequency of household blockages to discharge system over the last six months

Blockage frequency		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
One time	n		5	1	4	4	5	**19**
	%		62.5	20.0	80.0	66.7	83.3	**61.3**
Two times	n	1	2	4		1		**8**
	%	100.0	25.0	80.0		16.7		**25.8**
More often	n		1		1	1	1	**4**
	%		12.5		20.0	16.7	16.7	**12.9**
Total	**n**	**1**	**8**	**5**	**5**	**6**	**6**	**31**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Figure 5-6 Household drains are mostly covered or “half covered and half open”



5.4.2 Connection Status and Drainage of Water in Surrounding Areas

5.4.2.1 Drainage Situation in Surrounding Areas

According to Table 5-28, 47.9% of respondents rated the drainage situation in the surrounding area as good and 34.8% as moderate, but 16.5% of respondents still believe that it is bad. Hung Binh Ward, in particular, has the highest percentage (25.5%). Therefore, we must conclude that the people in Vinh City still do not seem to be optimistic about the drainage situation.

Table 5-28 Drainage situation in neighbourhood/surrounding area

Situation of drain		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Good	n	23	42	24	43	27	38	**197**
	%	50.0	42.9	51.1	51.2	47.4	48.1	**47.9**
Moderate	n	15	38	11	29	20	30	**143**
	%	32.6	38.8	23.4	34.5	35.1	38.0	**34.8**
Bad	n	8	17	12	11	9	11	**68**
	%	17.4	17.3	25.5	13.1	15.8	13.9	**16.5**
DK/DA	n		1		1	1		**3**
	%		1.0		1.2	1.8		**0.7**
Total	**n**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**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 Vinh City is located “behind the house” of surveyed households, on average 67.3%, highest in Hung Phuc Ward (74.4%) and lowest in Le Mao (44.4%, Table 5-29). Normally, the system’s location “behind the house” is difficult for controlling and management purposes, because the system can easily be transgressed by households for private purposes.

According to Table 5-30, an average of 29.5% of respondents reported that there was always a household or neighbourhood meeting if it was observed that the public drainage system space was being used for private purposes. However the percentage of responding that there was “Nothing to do” is still high (36.4%).

Table 5-29 Location of public drainage system relative to the household residence

Location of drainage system		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
In front of house	n	24	31	18	12	17	17	**119**
	%	53.3	32.0	39.1	14.5	32.7	21.8	**29.7**
Behind the house	n	20	63	27	69	33	58	**270**
	%	44.4	64.9	58.7	83.1	63.5	74.4	**67.3**
Other	n	1	3	1	2	2	3	**12**
	%	2.2	3.1	2.2	2.4	3.8	3.8	**3.0**
Total	**n**	**45**	**97**	**46**	**83**	**52**	**78**	**401**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-30 People's actions if they witness the public drainage system space being used for private purposes

The attitude of residents		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Meeting of households in surrounding & offer to stop using the space of public system	n	2	1	1	3	2	3	**13**
	%	100.0	7.1	20.0	50.0	40.0	27.3	**29.5**
Inform ward / company	n		5	2			1	**8**
	%		35.7	40.0			9.1	**18.2**
Nothing to do	n		7	1	1	2	5	**16**
	%		50.0	20.0	16.7	40.0	45.5	**36.4**
Household meeting & Inform ward / company	n					1	1	**2**
	%					20.0	9.1	**4.5**
Other	n		1	1	2		1	**5**
	%		7.1	20.0	33.3		9.1	**11.4**
Total	**n**	**2**	**14**	**5**	**6**	**5**	**11**	**44**
	%	**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 (67.9% - 93.3%, Table 5-31), but Hung Phuc Ward has the highest percentage of "open drains" (14.1%). Table 5-32 shows that 73.2% of households repaired/cleaned the drainage system in the surrounding area by themselves if the system was blocked. We believe that this is a good practice because it gives the residents responsibility for the drainage system. However, the company should continue cooperating with local authorities to maintain and protect the drainage system.

Table 5-31 Structure of drainage system in surrounding area

Drain		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Open	N	1	5	2	5	4	11	**28**
	%	2.2	5.2	4.3	6.0	7.7	14.1	**7.0**
Covered	N	42	85	32	75	46	53	**333**
	%	93.3	87.6	69.6	90.4	88.5	67.9	**83.0**
Both	N	2	7	11	3	1	11	**35**
	%	4.4	7.2	23.9	3.6	1.9	14.1	**8.7**
DK/DA	n			1		1	3	**5**
	%			2.2		1.9	3.8	**1.2**
Total	**n**	**45**	**97**	**46**	**83**	**52**	**78**	**401**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-32 People's actions in case of a drainage blockage

If blocking the drainage system		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Repair & clean by households	N	42	47	36	68	44	64	**301**
	%	91.3	47.9	76.6	80.9	77.2	81.0	**73.2**
Inform ward / company	N		19	6		1	2	**28**
	%		19.4	12.8		1.8	2.5	**6.8**
Nothing to do	N		6	1	5		4	**16**

If blocking the drainage system		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
	%		6.1	2.1	5.9		5.1	**3.9**
DK/DA	N	4	26	4	11	12	9	**66**
	%	8.7	26.5	8.5	13.1	21.0	11.4	**16.0**
Total	**N**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.4.3 Some Findings on Sanitation and Wastewater Drainage from IDIs and FGDs

Some opinions drawn from IDIs and FGDs are presented briefly below:

1. Le Mao Ward

- The connection rate (connection of household drains to the public system) is about 80%. About 20% of households still discharge wastewater directly into lakes, ponds, and rivers.
- The main drainage system is blocked. Over the last five years, the local authorities have invested 2000 mill. VND for the construction of new canals and the cleaning of the drainage system.

2. Quang Trung Ward

- The drainage system around the apartment buildings constructed by East Germany is now over 30 years old, does not work well, and is always blocked, particularly inside the buildings. The large septic tank for the entire block is always full and blocked; wastewater overflows from the septic tank.
- The new construction area (a gap construction) is located directly where rainwater and wastewater storage previously took place. This gap construction as opposed to planned construction causes bad drainage/inundation of the whole area.
- In the old (traditional) residential area, the residents constructed the public drainage system themselves along the street, and most of the household connections are in front of the houses.
- All canals in the ward are always blocked because the households living along the canal bank try to use the embankment for private purposes.
- The biggest problem is drainage in the apartment building as well as the collection of solid waste.
- Decision 31 of the city party committee (issued in 1998) has been implemented in the ward and all available resources have been mobilized for the construction of infrastructure, for example the cleaning the Nguyen Canh Chan Canal.

3. Hung Binh Ward

- Wastewater causes pollution in the sub-ward Vinh Quang, where the rate of cancer patients is particularly high (15 cases/200 households).
- Decision 31, issued in 1998 by the city party committee has been under implementation since 2001. The ward invested 7 billion VND for the maintenance of canals, especially in small streets, alleys and lanes.
- The ward is in agreement with the concept of “force-to-connection”. The connection should be allowed by the company and assigning a connection contract is welcome.
- Suggestions:
  - There is pollution from the beer factory’s wastewater. For five years, it has been impossible to grow crops in the agricultural land along the canal. The ward wants state support for the maintenance of canal number 2.
  - The groundwater is polluted by wastewater. Many years ago, the people could use well water for drinking and cooking. Now it is impossible because of pollution.

- In the future, all restaurants should make use of a primary wastewater treatment facility before discharging wastewater into the public system. The discharge into the public system should be regularly controlled and we need a sanction system for solving these environmental problems.

4. Truong Thi Ward

- IDI
  - The ward invested 1.2 billion VND for the drainage system, the cleaning of the canal, and the construction of canal number 3.
  - Pollution in the tertiary system is a big problem.
  - The percentage of households connected to the public system is about 70%, but 30% of household's still discharge wastewater directly into ponds and lake.
- FGD
  - The residents of Vinh City wish to stop pollution caused by wastewater. Industrial wastewater should be treated before being returned to the water source.
  - People worry about industrial wastewater. The wastewater from the beer factory, for example, causes bad odours and pollution.
  - The residents are worried about the tertiary system because it causes pollution and bad odours.
  - The percentage of households connected to the public system is nearly 100%. If the system is improved, there will be faster drainage and then there will no longer be inundation and flooding.
  - The residents can offer support and financially contributions if the wastewater treatment plant works well.

5. Cua Nam Ward

- IDI
  - In the old citadel, there are 500 households, but the necessary infrastructure is lacking. Infrastructural construction depends on city planning as well as the conservation of the old citadel. Most of the water is flowing down the natural slope and then into Ho Hao Thanh Lake. Ho Hao Thanh Lake has been transgressed by households living nearby and the canal bed is getting smaller due to solid waste disposal.
  - Every year, 1000m of small canals are maintained in order to solve the flooding problem. Because there is always heavy rain in Vinh, this causes flooding and inundation lasting whole weeks.
  - Cua Nam, Doi Cung and Quang Trung Ward are linked with Ho Thanh Lake and Nha Le Canal.
- FGD
  - The percentage of septic tank toilets is about 60%.
  - The drainage system has been planned since 2001 (part of plan for the conservation of the old citadel). Because of "hang planning" the infrastructure could not be constructed. Therefore, four wards located in the old citadel area have development challenges.
  - Ho Thanh Lake has been polluted for many years. Many households still discharge wastewater directly into Ho Thanh Lake. Some of the families in these households even enjoy good economic conditions and high education.
  - In order to solve the sanitation problem, the women's union arranged for poor households to be able to borrow money for the construction of septic tank toilets.
  - Many households keeping pigs or other animals and discharge all animal waste directly into lakes and ponds.
  - The ward organised the cleaning of the lakes/ponds.

- The people want an embankment to be built for the lakes and ponds to convince households to connect to the public system.

6. Hung Phuc Ward

- Vinh City was planned by Germany in 1977 as an "open hand" and the infrastructure was constructed based on this plan. Parts of the canal system such as Canal Nha Le, Canal Bac are good for drainage.
- The tertiary system drainage is still bad because of the small slope.

5.4.4 Awareness about Drainage, Wastewater Treatment and Wastewater Fee

Table 5-33 shows how the respondents feel about problems caused by bad drainage: Ranked first is Mosquitoes breeding (76.3%) and second, Bad odour (68.2%). These results reflect the real drainage situation in Vinh. This is a good drainage system and therefore flooding is rare in the city (27.6%). It is notable that the awareness level concerning "*Polluted water sources*" is still low and thus this subject should be emphasized in the public campaign.

Table 5-33 Problems caused by bad drainage

Problems caused		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total	
Mosquitoes breeding	n	19	32	20	33	22	35	**161**	**(76.3%)**
	%	11.8	19.9	12.4	20.5	13.7	21.7	**100.0**	
Spread diseases	n	2	14	8	13	12	9	**58**	**(27.5%)**
	%	3.4	24.1	13.8	22.4	20.7	15.5	**100.0**	
Bad odour	n	13	41	20	21	15	34	**144**	**(68.2%)**
	%	9.0	28.5	13.9	14.6	10.4	23.6	**100.0**	
Polluted water sources	n	3	7	10	7	3	6	**36**	**(17.1%)**
	%	8.3	19.4	27.8	19.4	8.3	16.7	**100.0**	
Flooding	n	9	15	5	4	9	6	**48**	**(22.7%)**
	%	18.8	31.3	10.4	8.3	18.8	12.5	**100.0**	
Others	n	1	6	1	3	1	1	**13**	**(6.2%)**
	%	7.7	46.2	7.7	23.1	7.7	7.7	**100.0**	

Environmental pollution is judged to be more critical and therefore the residents believe that the wastewater should be treated before being discharged into water bodies (on average 96.4%, in Table 5-34). In Table 5-35, 85.2% of respondents believe that "*This is obligation of all people to keep the green, clean and beautiful environment*". Only 21.3% of respondents are of the opinion that "*Collection & treatment of wastewater is costly and people have to contribute*".

According to Table 5-36 98.1% of respondents are of the opinion that the community (industry, hospitals, markets) has to pay for wastewater treatment. However, only 86.6% of households are in agreement with a financial contribution from households. There are other opinions as well such as: Follow the state regulation, state pays, what is the payment system for the people living in the apartment building? In addition, we conducted further analysis and checked whether the awareness level among residents is dependent on gender and educational level. Generally, there was no significant relation between the two sexes. It is notable, however, that respondents with a high educational level answered in a strategic manner, meaning that your WTP is normally lower.

Table 5-34 Awareness of community about necessity of wastewater treatment

Waste water should be treated (cleaned)		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Yes	n	44	93	46	86	56	77	**402**
	%	*95.7*	*92.1*	*95.8*	*98.9*	*98.2*	*98.7*	***96.4***
No	n	2	6	1	1	1		**11**
	%	4.3	5.9	2.1	1.1	1.8		**2.6**
DK/DA	n		2	1			1	**4**
	%		2.0	2.1			1.3	**1.0**
Total	**n**	**46**	**101**	**48**	**87**	**57**	**78**	**417**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-35 Awareness about reasons for wastewater treatment

Why should wastewater to be treated		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
This is obligation of all people to keep the green, clean and beautiful environment	n	29	73	42	59	41	60	**304**
	%	*78.4*	*88.0*	*93.3*	*83.1*	*83.7*	*83.3*	***85.2***
Collection & treatment of wastewater is costly and people have to contribute	n	8	16	4	20	13	15	**76**
	%	21.6	19.3	8.9	28.2	26.5	20.8	**21.3**
Other (based on state regulation)	n		1					**1**
	%		1.2					**0.3**
Total	**n**	**37**	**83**	**45**	**71**	**49**	**72**	**357**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-36 Community and household should pay for wastewater treatment

Question			Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Community (industry, hospitals, markets..) has to pay	Yes	n	46	95	47	81	56	78	**403**
		%	100.0	96.9	100.0	96.4	98.2	98.7	**98.1**
	Other	n		3		1	1		**5**
		%		3.1		1.2	1.8		**1.2**
	DK/DA	n				2		1	**3**
		%				2.4		1.3	**0.7**
Household has to pay	Yes	n	37	83	44	69	49	72	**354**
		%	80.4	84.7	95.7	83.1	86.0	91.1	**86.6**
	No	n	1	6	1	3	6	4	**21**
		%	2.2	6.1	2.2	3.6	10.5	5.1	**5.1**
	Other	n	8	9		9	2	2	**30**
		%	17.4	9.2		10.8	3.5	2.5	**7.3**
	DK/DA	n			1	2		1	**4**
		%			2.2	2.4		1.3	**1.0**

Figure 5-7 Beer factory in Vinh and un-treated/under-treated wastewater from beer factory

Beer factory causes pollution

The wastewater from the beer factory flows directly into the urban wastewater drainage system

There is a difference in how the WTP-study was conducted here in comparison with the study in Bac Ninh and Hai Duong. In Bac Ninh and Hai Duong, we started from a fixed value, and the expected highest value the subsequent time, and then implemented a bidding game with the respondent in a top-down direction. The study in Vinh started from three random values (4000, 5000 and 6000 VND/m^3). The number of questionnaires distributed with each of the three values was equal and the questionnaires were randomly selected and distributed. Using this starting value, we initially asked the respondent if (s)he wanted to pay less or more. If less, then the bidding game went in the top-down direction, otherwise the game went in a bottom-up direction. All results from this study are presented in Table 5-38 and Figure 5-8.

The results of the bidding game show that the average WTP is 2,590 VND/m^3 and the mode is 1,000 VND/m^3. There are small differences between the three starting value variants, and it follows the general principle that the high starting value also has a higher WTP. Three wards, Hung Binh (3,021), Hung Phuc (2,798) and Quang Trung (2,767), have somewhat higher WTP, however the WTP does not vary greatly between the six wards.

There were other reasons for why respondents “don’t want to pay for wastewater treatment” such as:

- Don’t know if the wastewater is clean or not.
- The living standard (income) of household is low
- Nowadays, citizens have to pay many different fees.
- State/city authority should pay for wastewater treatment
- Household’s wastewater doesn’t cause pollution.
- The drainage system is still not good, so why should we pay for it?

In addition, the following opinions/ideas were taken from IDIs and FGDs:

- The suitable or lowest wastewater fee in the first period.
- Mr. Nguyen Huu Dac (Vice head of Hung Binh Ward): The fee should correspond to per capita income: 500-600 thousand VND/month.
- FGD in Truong Thi Ward: Until now, there has been no campaign, and if the company wants to collect wastewater fees, then a public campaign should be done before. All residents know about the negative effects of industrial wastewater, but not all know about urban wastewater. Therefore, the negative effects of urban wastewater should be explained.

- Mrs. Nguyen Thị Hoang Thoa (Vice president of women's union of Vinh City): The most difficult thing is the level of awareness and knowledge of residents. If they understand the situation, then the fee of 10,000 VND/m^3 is not much. If the wastewater fee is high then the low income households can self-regulate their water consumption. The people with high educational level will only pay if a legal regulation exists. These people always have arguments against this concept.
- Mr. Chu Van Mai (Head of Le Mao Ward): Wastewater fee accounts for about 20% of the clean water tariff. A public campaign should first be done though so that the people understand the effects of the new drainage system and the wastewater treatment plant.
- Mr. Nguyen Nhu Vinh (Head of Cua Nam Ward): In the period from 2010-2015 the wastewater fee is 1/3 of the clean water fee.
- Mr. Nguyen Tat Thien (vice head of Truong Thi Ward): I fully understand that the wastewater fee should be collected, but in the present situation 5000 VND/m^3 for clean water and wastewater treatment is the right amount.

Based on the evaluation of study results, we believe that the wastewater fee can start from 1,000 VND/m^3 after the wastewater treatment plant becomes operational.

Signing a contract for wastewater collection and treatment. According to Table 5-39, 77.8% of respondents are ready to sign a contract after construction of the wastewater treatment system has been completed. The percentage of people who 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.

Table 5-37 Bidding for wastewater treatment – WTP for treatment of 1 m^3 wastewater, divided in 3 scenarios (Unit: 1000 VND/m^3)

Scenarios (starting point)	n	Minimum	Maximum	Mean	Median	Mode
1 (5000)	140	200	10000	2643	2000	1000
2 (6000)	139	500	7000	2775	2250	2000
3 (4000)	131	400	8000	2337	2000	1000

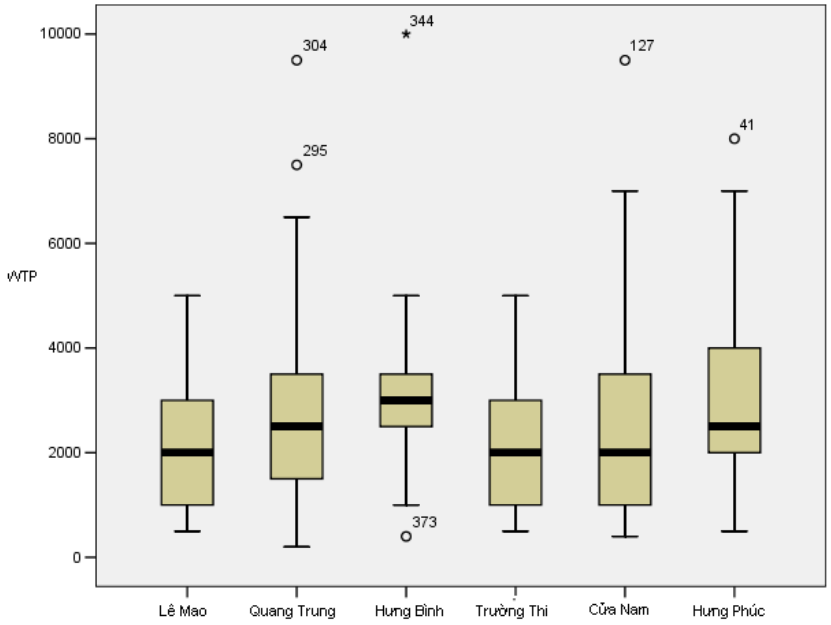
Table 5-38 Bidding for wastewater treatment – WTP for treatment of 1 m^3 wastewater (Unit: 1000 VND/m^3)

Ward	n	Minimum	Maximum	Mean	Median	Mode
Le Mao	46	500	5000	2320	2000	1000
Quang Trung	98	200	9500	2767	2500	1000
Hung Binh	47	400	10000	**3021**	3000	3000
Truong Thi	84	500	5000	2178	2000	1000
Cua Nam	57	400	9500	2419	2000	1000
Hung Phuc	79	500	8000	2798	2500	2000
Total	**411**	**200**	**10000**	**2590**	**2000**	**2000**

Table 5-39 Willingness to sign a contract for collection and treatment of wastewater

Willingness to signing a contract		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Yes	N	35	69	42	62	44	67	**319**
	%	*76.1*	*71.1*	*89.4*	*73.8*	*77.2*	*84.8*	***77.8***
No	N	1	3	2		1		**7**
	%	2.2	3.1	4.3		1.8		**1.7**
Other	N	9	23	1	21	12	11	**77**
	%	19.6	23.7	2.1	25.0	21.1	13.9	**18.8**
DK/DA	N	1	2	2	1		1	**7**
	%	2.2	2.1	4.3	1.2		1.3	**1.7**
Total	**N**	**46**	**97**	**47**	**84**	**57**	**79**	**410**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Figure 5-8 Bidding for wastewater treatment – WTP for treatment of 1 m^3 wastewater



5.5 Evaluation of Solid Waste Disposal in the Drainage System

Table 5-40 shows that there is still a problem regarding the throwing and disposal of solid waste into the drainage system. A small percentage of respondents (on average 7.8%) reported having done so. Solid waste disposal in the drainage system causes blockages in the public system. In Table 5-41 it is clear that 43.6% of households dispose of waste on the sidewalk, while 49.6% always put solid waste in the street's correct collection point where waste is collected by Vinh's Urenco.

Table 5-40 Frequency of solid waste disposal in the drainage system

Frequency		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Usually	n		1		3		1	**5**
	%		1.0		3.6		1.3	**1.2**
Sometimes	n	6	4	4	9	4	5	**32**

	%	13.0	4.1	8.5	10.7	7.0	6.3	**7.8**
Never	n	40	91	37	72	52	66	**358**
	%	*87.0*	*92.9*	*78.7*	*85.7*	*91.2*	*83.5*	***87.1***
DK/DA	n		2	6		1	7	**16**
	%		2.0	12.8		1.8	8.9	**3.9**
Total	**n**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-41 Where is the household's solid waste disposed of

Where is the solid waste disposed of		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Throw it on sidewalk or street	n	20	42	24	36	24	33	**179**
	%	43.5	42.9	51.1	42.9	42.1	41.8	**43.6**
Bury it	n	1						**1**
	%	2.2						**0.2**
Burning	n		7	11			8	**26**
	%		7.1	23.4			10.1	**6.3**
Throw it anywhere	n		1					**1**
	%		1.0					**0.2**
Other	n	25	48	12	48	33	38	**204**
	%	54.3	49.0	25.5	57.1	57.9	48.1	**49.6**
Total	**n**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.6 Evaluation of Information, Education and Communication

5.6.1 TV and Radio

Today, TV is considered a “live newspaper” for people. Nearly 100% of households have television sets. In terms of content and form, TV programs have become increasingly attractive and varied. Major TV programs such as VTV 1, 2 and 3 are watched more often than Nghe An's TV programs. About 91% of respondents answered that they watch central TV programs (VTV 1, 2, 3) every day, but only 83.5% answered that they watch Nghe An’s TV programs.

Table 5-42 Frequency of watching TV program

Watching Tivi	Frequency		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
VTV 1, 2, 3	Every day	n	43	89	42	80	52	68	**374**
		%	93.5	90.8	89.4	95.2	91.2	86.1	**91.0**
	4-6 days/week	n		3	4	2	2	7	**18**
		%		3.1	8.5	2.4	3.5	8.9	**4.4**
	1-3 days/week	n	3	6	1	2	2	4	**18**
		%	6.5	6.1	2.1	2.4	3.5	5.1	**4.4**
	Never	n					1		**1**
		%					1.8		**0.2**
Nghe An's programm	Every day	n	42	73	39	78	48	63	**343**
		%	91.3	74.5	83.0	92.9	84.2	79.7	**83.5**
	4-6 days/week	n	1	9	2	1	4	8	**25**
		%	2.2	9.2	4.3	1.2	7.0	10.1	**6.1**
	1-3 days/week	n	3	11	6	4	4	8	**36**
		%	6.5	11.2	12.8	4.8	7.0	10.1	**8.8**
	Never	n		3			1		**4**
		%		3.1			1.8		**1.0**
	DK/DA	n		2		1			**3**
		%		2.0		1.2			**0.7**

Today radio seems to be backward in comparison with other communication facilities. In its role as a "speaking newspaper" however, it has special 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. However, the percentage of respondents who "say no to radio" is 65.7% (Table 5-43). 17.3% of respondents listen to the radio every day. These respondents are mostly around 50 in both sexes (

Table **5-44**).

Table 5-43 Frequency of listening to the radio

Frequency		**Le Mao**	**Quang Trung**	**Hung Binh**	**Truong Thi**	**Cua Nam**	**Hung Phuc**	**Total**
Every day	n	8	16	9	16	12	10	71
	%	17.4	16.3	19.1	19.0	21.1	12.7	17.3
4-6 days/week	n	1	1	2			4	8
	%	2.2	1.0	4.3			5.1	1.9
1-3 days/week	n	4	13	11	13	2	11	54
	%	8.7	13.3	23.4	15.5	3.5	13.9	13.1
Never	n	33	66	23	55	43	50	270
	%	71.7	67.3	48.9	65.5	75.4	63.3	**65.7**
DK/DA	n		2	2			4	8
	%		2.0	4.3			5.1	1.9

Table 5-44 Who listens to radio

Ward	Sex	n	Minimum	Maximum	Mean	Median	Mode
Le Mao	Male	10	27	62	51.5	52	52
	Female	28	25	63	47.3	49.5	55
Quang Trung	Male	38	27	74	52.2	53.5	45
	Female	44	28	76	49.8	51.5	52
Hung Binh	Male	23	21	77	51.7	53	50
	Female	15	27	62	48.1	46	46
Truong Thi	Male	27	23	79	55.7	55	52
	Female	41	30	66	51.0	52	60
Cua Nam	Male	17	40	65	54.7	57	62
	Female	28	24	64	48.2	50	40
Hung Phuc	Male	30	27	72	53.0	55	60
	Female	39	27	69	48.4	50	40
Total	**Male**	**145**	**21**	**79**	**53**	**55**	**60**
	Female	**195**	**24**	**76**	**49**	**50**	**60**

5.6.2 Information on Wastewater and Drainage

Based on Table 5-45, some of the respondents have received information on wastewater/wastewater drainage over the last six months, however the percentage is still low (24.1%) because in comparison with Bac Ninh and Hai Duong City, in Vinh there has still been no public/community campaign. The respondents had received information on wastewater and drainage 1-2 times before (

Table 5-46). They received information mostly from TV (72.3%), loudspeaker (29.7%) and newspaper (26.7%) (Table 5-47). Based on experiences in Bac Ninh and Hai Duong as well as the IDIs and FGDs, we want to request that the WWM Unit and Company immediately implement a public/community campaign.

Table 5-45 Received information on wastewater within the last six months

Receive information		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Yes	n	7	27	7	22	15	21	**99**
	%	15.2	27.6	14.9	26.2	26.3	26.6	**24.1**
No	n	33	68	40	59	41	58	**299**
	%	71.7	69.4	85.1	70.2	71.9	73.4	**72.7**
DK/DA	n	6	3		3	1		**13**
	%	13.0	3.1		3.6	1.8		**3.2**
Total	**n**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-46 Frequency of receiving information on wastewater and drainage in the last six months (Unit: %)

Frequency	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
1 time		25.9	28.6	13.6	53.3	28.6	**26.3**
2 - 3 times		37.0	42.9	18.2	20.0	28.6	**26.3**
4 - 5 times		14.8	14.3	22.7	6.7	9.5	**13.1**
> 5 times	100	22.2	14.3	45.5	20.0	28.6	**33.3**
DK/DA						4.8	**1.0**
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 5-47 Information sender/ channel

From whom		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total	
Neighbour	n			1	4		4	**9**	**8.9%**
	%			11.1	44.4		44.4	**100.0**	
Company	n	1	5				2	**8**	**7.9%**
	%	12.5	62.5				25.0	**100.0**	
Health communicator / volunteer	n		1					**1**	**1.0%**
	%		100.0					**100.0**	
Respected people in the ward	n		3	2			2	**7**	**6.9%**
	%		42.9	28.6			28.6	**100.0**	
TV	n	7	23	6	18	7	12	**73**	**72.3%**
	%	9.6	31.5	8.2	24.7	9.6	16.4	**100.0**	
Radio	n		8	2			1	**11**	**10.9%**
	%		72.7	18.2			9.1	**100.0**	
Newspaper	n	4	10	3	5		5	**27**	**26.7%**
	%	14.8	37.0	11.1	18.5		18.5	**100.0**	
Loudspeaker	n		6	1	4	10	9	**30**	**29.7%**
	%		20.0	3.3	13.3	33.3	30.0	**100.0**	
Total	**n**	**7**	**27**	**7**	**22**	**17**	**21**	**101**	

5.6.3 Information on Street Lighting

It was rare that residents had been provided with information on street lighting, with the lowest percentage of 6.5% in Le Mao Ward and the highest, 25.5% in Quang Trung Ward (Table 5-48). Those people who received information had received it 2-3 times. 56.7% of respondents said that they had received information on street lighting 2-3 times over the last six months (Table 5-49).

Table 5-48 Received information on street lighting within the last six months?

Received information		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Yes	N	3	25	6	12	5	9	60
	%	6.5	25.5	12.8	14.3	8.8	11.4	14.6
No	N	37	71	41	60	44	67	320
	%	80.4	72.4	87.2	71.4	77.2	84.8	**77.9**

DK/DA	N	6	2		12	8	3	31
	%	13.0	2.0		14.3	14.0	3.8	7.5
Total	N	46	98	47	84	57	79	411
	%	100	100	100	100	100	100	100

Table 5-49 Frequency of information on street lighting

Frequency		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
1 time	N	1	11		2	2	1	17
	%	33.3	44.0		16.7	40.0	11.1	28.3
2 - 3 times	N	2	12	3	7	3	7	34
	%	66.7	48.0	50.0	58.3	60.0	77.8	**56.7**
4 - 5 times	N		2	1	1		1	5
	%		8.0	16.7	8.3		11.1	8.3
> 5 times	N			1	1			2
	%			16.7	8.3			3.3
DK /DA	N			1	1			2
	%			16.7	8.3			3.3
Total	N	3	25	6	12	5	9	60
	%	100	100	100	100	100	100	100

5.6.4 Evaluation of Communication Channels

5.6.4.1 Who are the Most Effective Informants?

According to Table 5-50 , the most influential people for communicating information are:

- "*The head of sub-ward*" (388/411 of respondents or 94.4%)
- "*Head of ward*" (96/411 of respondents 23.4%)
- Company (82/411 of respondents, 20%).

Table 5-50 The most influential person for communicating information

Most influential person		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Head of ward	N	13	9	21	18	12	23	**96**
	%	*28.3*	*9.2*	*44.7*	*21.4*	*21.1*	*29.1*	***23.4***
Head of sub-ward	N	46	90	44	82	50	76	**388**
	%	*100.0*	*91.8*	*93.6*	*97.6*	*87.7*	*96.2*	***94.4***
Company	N	10	12	20	10	8	22	**82**
	%	21.7	12.2	42.6	11.9	14.0	27.8	**20.0**
Health worker	N	1	7	7	5	8	5	**33**
	%	2.2	7.1	14.9	6.0	14.0	6.3	**8.0**
Women's union	N	1	6	3	5	4	8	**27**
	%	2.2	6.1	6.4	6.0	7.0	10.1	**6.6**
Youth organisation	N		2			2	1	**5**
	%		2.0			3.5	1.3	**1.2**
Other	N		3	2	1	1	2	**9**
	%		3.1	4.3	1.2	1.8	2.5	**2.2**
Total	**N**	**46**	**98**	**47**	**84**	**57**	**79**	**411**

	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.6.4.2 Public Meeting Organized by Company

According to Table 5-51, until now the company has never organized any public meeting. The company needs to organize meetings and public discussions so that people can know and understand what the company has to do and which difficult problems confront the company. The company can work closely with the community in cooperating to solve these 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.

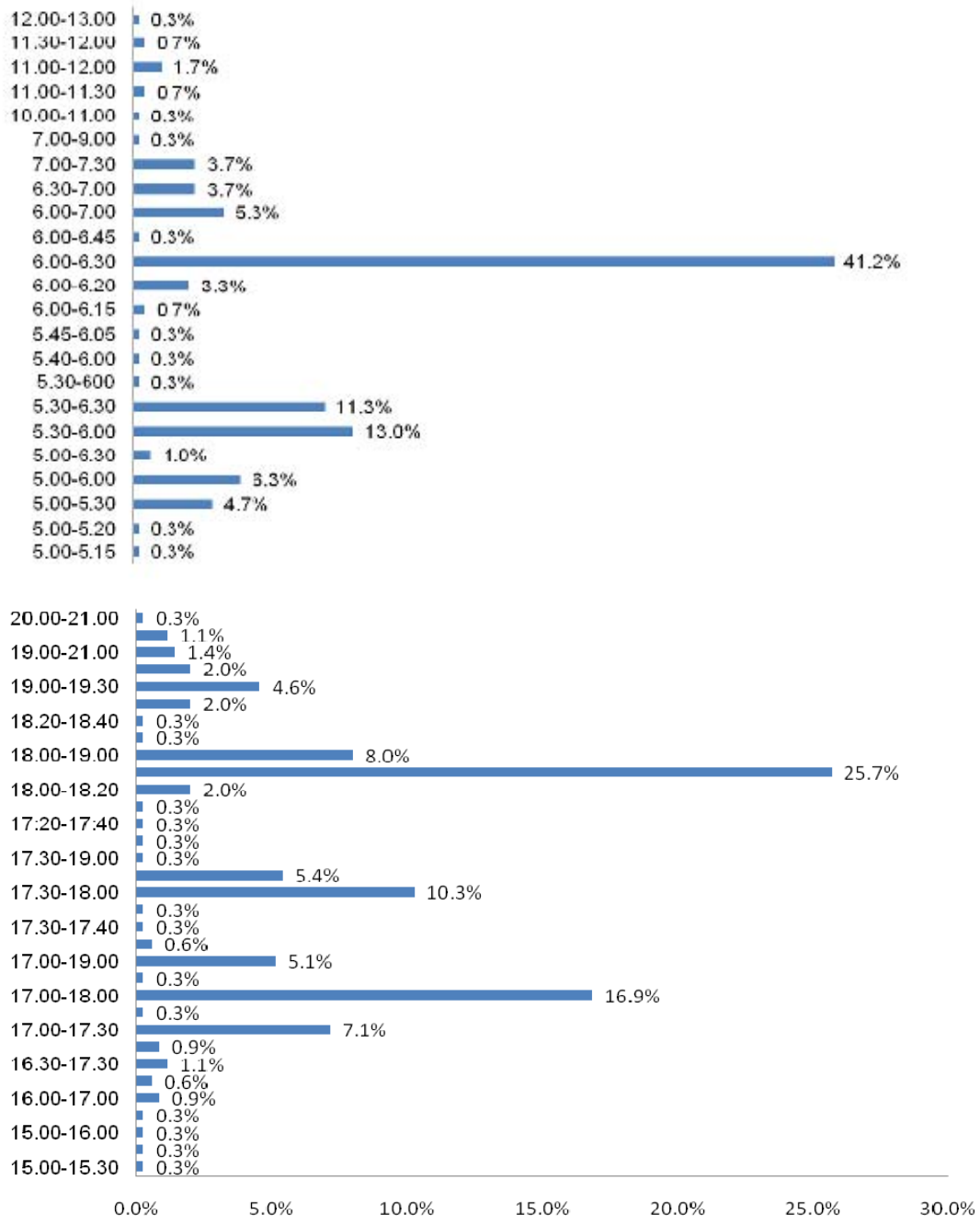
Table 5-51 Frequency of community meetings about company services

Frequency of meeting	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Never	100	87.8	100	100	98.2	93.7	**95.6**
< 1 month		2.0					**0.5**
2 months		1.0					**0.2**
2 - 6 months		3.1			1.8	5.1	**1.9**
> 6 months		4.1					**1.0**
KB/KTL		2.0				1.3	**0.7**
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

5.6.4.3 The Loudspeaker System and the Suitable Broadcasting Time

A loudspeaker system exists in all wards (Table 5-52). 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. Based on IDIs and FGDs as well as data analysis of household questionnaires, the broadcasting times should be in the morning from 6.00-6.30 am and in the afternoon from 5.00-7.00 pm (before the TV program "Thoi su", broadcast across the whole country).

Table 5-52 The most suitable time for broadcasting of ward's loudspeaker in the morning and afternoon



5.6.4.4 Evaluation of Communication Channels

As shown in Table 5-53, there are different instruments/tools, which the company can use to communicate with households. These channels are:

- "Very effective": Home visit (64.7%)
- "Effective": Ward/neighbourhood meeting (62.5%), Loudspeaker (66.7%), TV (60.1%) and Public campaign (58.2%)
- "Ineffective": Poster (56.2%), Notice board (53.8%), Radio (65.5%) and Newsletter (43.1%)

It is notable from IDIs and FGDs that leaflets are used too much nowadays. They are distributed everywhere and many people are not interested in reading them. Thus, the leaflet must be distributed directly by company staff when they collect the water bill. Of course it is

impossible for the infrastructure management company of Vinh to go to each household. Thus, the company should cooperate with the water supply company of Vinh in delivering leaflets to household so that both tools: leaflet and home visit, are combined effectively. The public campaign is the same as the leaflet.

Table 5-53 Effective ways of communicating with households

Channel	Rating		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Home visit	Inefficient	N		5		4	5	5	19
		%		5.1		4.8	8.8	6.3	4.6
	Efficient	N	11	32	10	24	19	25	121
		%	23.9	32.7	21.3	28.6	33.3	31.6	29.4
	Very efficient	N	35	59	35	56	33	48	266
		%	76.1	60.2	74.5	66.7	57.9	60.8	**64.7**
	DK/DA	N		2	2			1	5
		%		2.0	4.3			1.3	1.2
Neighbour-hood meeting	Inefficient	N		12	2	1	3	1	19
		%		12.2	4.3	1.2	5.3	1.3	4.6
	Efficient	N	30	58	30	52	36	51	257
		%	65.2	59.2	63.8	61.9	63.2	64.6	**62.5**
	Very efficient	N	16	27	15	31	18	27	134
		%	34.8	27.6	31.9	36.9	31.6	34.2	32.6
	DK/DA	N		1					1
		%		1.0					0.2
Loud-speaker	Inefficient	N	7	23	5	19	11	12	77
		%	15.2	23.5	10.6	22.6	19.3	15.2	18.7
	Efficient	N	27	69	38	42	39	59	274
		%	58.7	70.4	80.9	50.0	68.4	74.7	**66.7**
	Very efficient	N	9	6	4	18	6	8	51
		%	19.6	6.1	8.5	21.4	10.5	10.1	12.4
	DK/DA	N	3			5	1		9
		%	6.5			6.0	1.8		2.2
Poster	Inefficient	N	21	61	25	48	28	48	231
		%	45.7	62.2	53.2	57.1	49.1	60.8	**56.2**
	Efficient	N	22	34	15	29	27	22	149
		%	47.8	34.7	31.9	34.5	47.4	27.8	36.3
	Very efficient	N			1	2			3
		%			2.1	2.4			0.7
	DK/DA	N	3	3	6	5	2	9	28
		%	6.5	3.1	12.8	6.0	3.5	11.4	6.8
Leaflet	Inefficient	N	24	64	20	52	29	53	242
		%	52.2	65.3	42.6	61.9	50.9	67.1	**58.9**
	Efficient	N	21	31	19	29	25	16	141
		%	45.7	31.6	40.4	34.5	43.9	20.3	34.3
	Very efficient	N			2			1	3
		%			4.3			1.3	0.7
	DK/DA	N	1	3	6	3	3	9	25

Channel	Rating		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
		%	2.2	3.1	12.8	3.6	5.3	11.4	6.1
Black board, notice board	Inefficient	N	29	50	30	41	28	43	221
		%	63.0	51.0	63.8	48.8	49.1	54.4	**53.8**
	Efficient	N	15	44	16	36	24	33	168
		%	32.6	44.9	34.0	42.9	42.1	41.8	40.9
	Very efficient	N		4	1	1		1	7
		%		4.1	2.1	1.2		1.3	1.7
	DK/DA	N	2			6	5	2	15
		%	4.3			7.1	8.8	2.5	3.6
Radio	Inefficient	N	35	66	27	58	31	52	269
		%	76.1	67.3	57.4	69.0	54.4	65.8	**65.5**
	Efficient	N	7	27	15	18	19	21	107
		%	15.2	27.6	31.9	21.4	33.3	26.6	26.0
	Very efficient	N	1	3	2	1	4	2	13
		%	2.2	3.1	4.3	1.2	7.0	2.5	3.2
	DK/DA	N	3	2	3	7	3	4	22
		%	6.5	2.0	6.4	8.3	5.3	5.1	5.4
TV	Inefficient	N	4	8	3	13	10	8	46
		%	8.7	8.2	6.4	15.5	17.5	10.1	11.2
	Efficient	N	29	61	31	45	32	49	247
		%	63.0	62.2	66.0	53.6	56.1	62.0	**60.1**
	Very efficient	N	11	29	13	22	12	21	108
		%	23.9	29.6	27.7	26.2	21.1	26.6	26.3
	DK/DA	N	2			4	3	1	10
		%	4.3			4.8	5.3	1.3	2.4
Newspaper	Inefficient	N	17	50	19	34	18	39	177
		%	37.0	51.0	40.4	40.5	31.6	49.4	**43.1**
	Efficient	N	22	35	23	34	29	32	175
		%	47.8	35.7	48.9	40.5	50.9	40.5	**42.6**
	Very efficient	N	5	13	5	10	3	7	43
		%	10.9	13.3	10.6	11.9	5.3	8.9	10.5
	DK/DA	N	2			6	7	1	16
		%	4.3			7.1	12.3	1.3	3.9
Public campaign	Inefficient	N	2	17	8	16	6	10	59
		%	4.3	17.3	17.0	19.0	10.5	12.7	14.4
	Efficient	N	31	49	33	40	35	51	239
		%	67.4	50.0	70.2	47.6	61.4	64.6	**58.2**
	Very efficient	N	13	31	6	28	16	18	112
		%	28.3	31.6	12.8	33.3	28.1	22.8	27.3
	DK/DA	N		1					1
		%		1.0					0.2

5.6.4.5 Some General Remarks about Communication in Wards Resulting from IDIs and FGD

a) Le Mao Ward
   - The campaign should be organized as a short training during which the negative effects of wastewater are explained in terms of the effects on human health, households and community.
   - Training: Divided into many small groups under the organization of the (sub) ward.
   - Leaflet is not efficient. Sub-ward/neighbourhood meeting is more efficient.
   - Communication by loudspeaker system and forced-listen are very efficient.

b) Quang Trung Ward
   - Leaflet should be delivered to household; poster should be well designed (colourful).

c) Hung Binh Ward
   - Communication by leader of wards/sub-ward in combination with the loudspeaker system is more efficient.

d) Truong Thi Ward
   - Loudspeaker system is available from 6.30 to 17.30.
   - Meeting is not efficient because the people don't like meetings.
   - Providing leaflet to household is more efficient.
   - Until now, wastewater was not the subject of any campaign or communication.
   - The important role of women in communication.

e) Cua Nam Ward
   - Set up a hot line and regularly mention it over the loudspeaker system in the ward.
   - Rewards in the case of assistance in identifying people violating the regulations; Punishments for those violating the regulations.

f) Hung Phuc Ward
   - Communication in close cooperation/contribution of three parties: Residents + Party + Government.
   - Combination of all communication means, application of contrasting pictures for a better comparison.
   - Leaflet alone is not efficient.

g) The city's youth union

- The youth union has organised the cleaning Kenh Bac Canal (from Mai Hac De Street to the beginning of Kenh Bac Bridge) and the central lake.
- Opinion about wastewater fee: Collection of wastewater fee is necessary in order to enhance the knowledge/attitude of residents.
- The efficient communication channels are:
  - Loudspeaker system in ward
  - Integrated communication and implementation in the public places and leaflets.
  - Write and sign an agreement about throwing trash in the right place and time.
- The WWM-unit can cooperate with the youth union in communication strategy, for example with a competition in the urban area between wards and communes.

h) City women's union

- The role of women in family and their effect on husbands and children.
- The women's union has a good network (organization in 25 wards and communes, 360 small groups in sub-ward and 2000 groups in neighbourhoods).
- Organise information and hold a meeting on the topic of urban civilization, …
- Organize campaign of special days, for example women's day (international day on 08.03 & national day on 20.10) and Tet holiday.

- If there is only a small or nonexistent fund for communication then oral communication is recommended. The main communication means is neighbourhood meetings during which we have direct contact with the people.
- The leaflet is not efficient because people don't like reading it. It should be colourful and well designed so it makes a good impression. In the best case scenario, it can also be combined with other communication means.

i) TV broadcast station of Vinh

- TV broadcast station has 10 employees in charge of different sectors.
- The TV broadcast station has already broadcast some programs about the environment and pollution problems. The biggest challenge for Vinh is its environmental problems.
- Broadcast program: one program will be repeated twice per day.
- Subjective opinion: If the wastewater bill is about 50% of the clean water bill then it is possible.
- Cost for broadcasting is very high. The TV broadcast station will support the public campaign if it is a duty.

5.7 Evaluation of Consumer Satisfaction with Company's Services

5.7.1 Wastewater/Drainage Service

Based on Table 5-54, generally respondents were "satisfied" (76.4%) with wastewater & drainage services provided by the company. However, it is noteworthy that 15.8% of respondents were not satisfied – why? The reasons for dissatisfaction include the existing problems presented in Table 5-55. They are including: bad odour (32.6%), bad drainage (21.2%) and flooding (18.2%). However, the percentage of complaints was not high (Table 5-56). In order to improve the urban drainage and wastewater treatment in the future, the company has to set up or intensify the company's CCU and set up/continue keeping the hotline so that residents can easily inform the company about existing problems. In addition, the company has to enhance its PR and community work so as to improve the relation between the company as a service provider and the residents as customers.

In the tables from

Table 5-57 to Table 5-59 we present the courtesy level, efficiency and speed of company employees in solving the complaints of residents. Despite having fewer complaints and responses, we believe that it is necessary to analyse this problem. The percentage of respondents who were satisfied is 46.7%, but the percentage of satisfied with the company's efficiency in solving the complaints is still low (26,7%). Why is this so? If we refer back to Table 5-55 as well as the results of FGDs then we can see that the households have complained about bad odour from the sewer in Hung Phuc, Hung Binh and Truong Thi Ward. This is an unsolved problem. Only when the wastewater project is finished and the system works well will there be no more bad odour from the sewer.

Table 5-54 Satisfaction with wastewater and drainage service

Satisfaction		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Not satisfied	N	9	13	9	16	8	10	65
	%	19.6	13.3	19.1	19.0	14.0	12.7	15.8
Satisfied	N	37	70	36	68	49	54	314
	%	80.4	71.4	76.6	81.0	86.0	68.4	**76.4**
Very satisfied	N		7				1	8
	%		7.1				1.3	1.9
DK/DA	N		8	2			14	24
	%		8.2	4.3			17.7	5.8

Table 5-55 The existing problems related to wastewater and drainage service

Problem			Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Poor drainage	Yes	N	11	22	15	12	9	18	87
		%	23.9	22.4	31.9	14.3	15.8	22.8	21.2
	No	N	35	76	32	72	48	61	324
		%	76.1	77.6	68.1	85.7	84.2	77.2	**78.8**
Blocked pipes	Yes	N	5	9	13	14	5	11	57
		%	10.9	9.2	27.7	16.7	8.8	13.9	13.9
	No	N	41	89	34	70	52	68	354
		%	89.1	90.8	72.3	83.3	91.2	86.1	**86.1**
Open manhole	Yes	N	1	9	9	8	2	12	41
		%	2.2	9.2	19.1	9.5	3.5	15.2	10.0
	No	N	45	89	38	76	55	67	370
		%	97.8	90.8	80.9	90.5	96.5	84.8	**90.0**
Flooding	Yes	N	8	18	9	16	6	18	75
		%	17.4	18.4	19.1	19.0	10.5	22.8	18.2
	No	N	38	80	38	68	51	61	336
		%	82.6	81.6	80.9	81.0	89.5	77.2	**81.8**
Bad odour	Yes	N	12	34	18	29	13	28	134
		%	26.1	34.7	38.3	34.5	22.8	35.4	32.6
	No	N	34	64	29	55	44	51	277
		%	73.9	65.3	61.7	65.5	77.2	64.6	**67.4**

Table 5-56 Mentioned wastewater management problems
(split into "complained" and "not yet complained")

Problem			Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Poor drainage	Complained	N			3			3	6
		%			21.4			16.7	7.0
	Not yet	N	11	22	11	12	9	15	80
		%	100.0	100.0	78.6	100.0	100.0	83.3	93.0
Blocked pipes	Complained	N			2			2	4
		%			15.4			18.2	7.0
	Not yet	N	5	9	11	13	5	9	52
		%	100.0	100.0	84.6	92.9	100.0	81.8	91.2
Open manhole	Complained	N			1			1	2
		%			11.1			8.3	4.9
	Not yet	N	1	9	8	8	2	11	39
		%	100.0	100.0	88.9	100.0	100.0	91.7	95.1
Flooding	Complained	N			1			3	4
		%			11.1			16.7	5.3
	Not yet	N	8	18	8	16	6	15	71
		%	100.0	100.0	88.9	100.0	100.0	83.3	94.7
Bad odour	Complained	N			3	2		2	7
		%			16.7	6.9		7.1	5.2
	Not yet	N	12	34	15	27	13	26	127
		%	100.0	100.0	83.3	93.1	100.0	92.9	94.8

Table 5-57 Evaluation of courtesy level of company staff while handling the complaints

Rating		Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Poor	N	3	1		3	7
	%	60.0	33.3		60.0	**46.7**
Faire	N	2	2	1	2	7
	%	40.0	66.7	50.0	40.0	**46.7**
DK/DA	N			1		1
	%			50.0		6.7

Table 5-58 Efficiency of complaints management

Efficiency		Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Not solved	N	4	3	2	2	11
	%	80	100	100	40	**73.3**
Solved	N	1			3	4
	%	20			60	26.7

Table 5-59 Speed of solving the complaints

How long		Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
4 - 7 days	N				1	1
	%				20.0	6.7
Over 14 days	N	1	1	2	2	6
	%	20.0	33.3	100.0	40.0	**40.0**
DK/DA	N	4	2		2	8
	%	80.0	66.7		40.0	**53.3**

5.7.2 The Urban Lighting Services

Generally, Vinh's residents are satisfied (on average 77.1%) with the lighting services provided by the company. In Table 5-61 we can see the existing problems with the lighting services: Lighting density (9.5%), Lighting intensity (7.1%), Lighting affected by trees (6.8%) and Lighting duration (5.4%). According to Table 5-62, most of the existing problems have not yet been the subject of complaints (86.4-92.3%). Therefore, the company has to improve its services and to set up a hotline so that the people can easily inform the company about the situation.

Table 5-60 Satisfaction with the urban lighting services

Satisfaction		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Not satisfied	N	5	7	2	8	9	7	38
	%	10.9	7.1	4.3	9.5	15.8	8.9	9.2
Satisfied	N	41	73	41	72	41	49	317
	%	89.1	74.5	87.2	85.7	71.9	62.0	**77.1**
Very satisfied	N		16	2	2	1	6	27
	%		16.3	4.3	2.4	1.8	7.6	6.6
DK/DA	N		2	2	2	6	17	29
	%		2.0	4.3	2.4	10.5	21.5	7.1

Table 5-61 The existing problems in urban lighting services

Problem			Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Weak lighting intensity	Yes	N	4	7	4	6	2	6	29
		%	8.7	7.1	8.5	7.1	3.5	7.6	7.1
	No	N	42	91	43	78	55	73	382
		%	91.3	92.9	91.5	92.9	96.5	92.4	**92.9**
Lighting affecting by trees	Yes	N	3	5	4	9	3	4	28
		%	6.5	5.1	8.5	10.7	5.3	5.1	6.8
	No	N	43	93	43	75	54	75	383
		%	93.5	94.9	91.5	89.3	94.7	94.9	**93.2**
Lighting duration	Yes	N	2	3	1	7	2	7	22
		%	4.3	3.1	2.1	8.3	3.5	8.9	5.4
	No	N	44	95	46	77	55	72	389
		%	95.7	96.9	97.9	91.7	96.5	91.1	**94.6**
Lighting density	Yes	N	4	9	2	12	7	5	39
		%	8.7	9.2	4.3	14.3	12.3	6.3	9.5
	No	N	42	89	45	72	50	74	372
		%	91.3	90.8	95.7	85.7	87.7	93.7	**90.5**

Table 5-62 Mentioned existing problems with urban lighting services (split into “complained and “not yet complained”)

Items			Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
Weak lighting intensity	Complained	N			1		2		3
		%			25.0		100.0		10.3
	Not yet	N	4	7	3	6		6	26
		Cột %	100.0	100.0	75.0	100.0		100.0	89.7
Lighting affecting by trees	Complained	N			1		2		3
		%			25.0		66.7		10.7
	Not yet	N	3	5	3	9	1	4	25
		%	100.0	100.0	75.0	100.0	33.3	100.0	89.3
Lighting duration	Complained	N			1		2		3
		%			100.0		100.0		13.6
	Not yet	N	2	3		7		7	19
		%	100.0	100.0		100.0		100.0	86.4
Lighting density	Complained	N			1		2		3
		%			50.0		28.6		7.7
	Not yet	N	4	9	1	12	5	5	36
		%	100.0	100.0	50.0	100.0	71.4	100.0	92.3

6. CONCLUSION AND RECOMMENDATIONS

The followings are conclusions and recommendations from the baseline study:

1. *The training program* for conducting the survey was carried out as planned over three days from October 11-13, 2008. CEPAC provided technical assistance for company members on data collection techniques at different levels over an additional five days from October 14-18, 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 using a household questionnaire in 411 households in six wards: Le Mao, Quang Trung, Hung Binh, Truong Thi, Cua Nam and Hung Phuc. The average duration of each household interview for completing the questionnaire was 20 - 30 minutes. Nearly 100% of the completed questionnaires were verified in regards to their accuracy. Using the qualitative methodology framework, 8 IDIs and 5 FGDs were conducted, each with a duration of about one hour.

3. During the household survey, respondents were generally able to provide the necessary information for this study:
   - The gender of respondents was balanced in a total population with female respondents accounting for about 46.8-59.5% in all wards.
   - The average age of respondents varied between 21-60 years, among females 40.7% and males 37.8%;
   - The educational level of respondents was mostly secondary school and high school. In Truong Thi Ward, the educational level was higher than in other wards with the percentage of respondents having bachelor, master degree and higher at 22.6%. In Cua Nam Ward, the educational level was lower than in other wards (8.8% having bachelor, master degree and higher).
   - The main profession among respondents was as employees, officials, owners of small private businesses and services, workers, and pensioners.
   - The average monthly income of most households ranks among the moderate group in the region (74.3% with 1-4 mill. VND/month). The household income was compared with other information such as: estimation of living standard by respondents and interviewer as a neutral person, and food expenditures.

4. *The coverage of toilets.* Nearly 100% of household in Vinh have privately owned toilets. The septic tank toilet accounts for 80-90% of the toilets in all wards. These figures were confirmed in IDIs with the heads of wards and FGDs in sub-wards. Among respondents who do not have their own toilet and use rivers or fields as toilets, 86.9% believed that this "*Spreads dangerous diseases*" and 74.6% that it "*Pollutes the water resources*". Thus the awareness of residents in regards to this problem is high and is the result of a long-term IEC campaign related to sanitation.

5. *The septic tank*. The septic tanks are normally located inside the houses (72.8-87%). However, about 20.2% of households build septic tanks outside the house because there is sufficient area to build there (garden, etc). Most of the septic tanks were built with a size of 2-5 m^3 and septic tanks with a volume of over 7 m^3 are very rare. In the future, controlling external septic tank operation will be easier in comparison with construction inside the house.

6. *Operation of septic tank toilets*. Below, we listed the main findings:
   - Based on the survey results, over 96% of households follow the minimal standards of septic tank construction and allow only for the discharge of wastewater from the toilet into the septic tank, but our estimated figure is higher.

- The percentage of households connecting their septic tanks with the public system is high, on average 95% and with the lowest percentage, 84.9%, in Cua Nam Ward. Cua Nam Ward is located in the suburbs of Vinh where there are a lot of ponds, lakes, etc. leading households to discharge wastewater directly into these water bodies.
- During septic tank operation, an average of 75.1% of households don't experience bad odour. In the case of bad odour occurring, 15.5-23.4% of respondents said that it is rarely detected. Cua Nam Ward has the highest percentage (11.3%).
- 62.8% of households use "septic tank medicine" such as micro phot.

☞ *In the future, the company has to set up a plan for controlling the household septic tank; to recommend and stepwise to force regular emptying of the household septic tank as well as the collection of all sludge from emptying the septic tank and its subsequent transfer to the wastewater treatment plant.*

7. According to Table 5-24, 95% of households are connected with the public system. The percentage of households discharging wastewater into lakes and ponds is still high – in Cua Nam Ward, over 10%. In order to improve the sewage connections, the Company and WWM-Unit have to address these wards.
8. Over 75% of households have covered drains (household drainage) (according to the subjective evaluation this is 86.3% and based on the cross-evaluation is 83%). However, Hung Phuc Ward has the lowest percentage (76.9%) followed by Hung Binh Ward (82.6%).
9. The public system is located behind the houses of nearly 86.3% of the households. Le Mao Ward has the lowest percentage (44.4%) and Truong Thi Ward has the highest percentage (83.1%). Normally, the location "behind the house" is difficult to control and manage because the system can be easily transgressed by households for private purposes.
10. Households were found that are not discharging wastewater into the public system. The company must check into all such cases. If the reason is found to be an absence in the surrounding area of a tertiary sewer for connection, then the company can cooperate with the wards and sub-wards to convince the households to construct such a tertiary sewer.

    ☞ *In the worst case the company can financially support construction for these cases.*

11. Some respondents (16.5%) believe that the drainage situation in the surrounding area is still bad/not good. On average, about 47.9% of respondents rate the drainage as good. In IDIs and FGDs, the residents reported that at times there is flooding/inundation that lasts for weeks.

    ☞ *Thus the residents are still not optimistic about the drainage situation in Vinh, which needs to improve.*

12. If the drainage system in the home/street area is broken down, then the people or community have to maintain or repair it, or inform the company. In the FGDs, there were many complaints about bad drainage during the rainy season in alleys, hamlets, small streets, etc due to degradation of the drainage system. The company should address these issues in the framework of the drainage system. The attitude among residents in terms of using the public drainage system space for private purposes is still unconcerned with 36.4% of respondents answering that there's "Nothing to do" about this situation.
13. Some factories located in Vinh (beer factory) discharge untreated wastewater into the public system, causing pollution in the surrounding area and leading residents living in surrounding area to become very angry.

    ☞ *The WWM Unit and company have to check these cases and force the factories to treat the wastewater before discharging it into the public system.*

14. Table 5-33 shows how the respondents feel about problems caused by bad drainage: first, mosquitoes breeding (76.3%) and second, bad odour (68.2%). These results reflect

the real drainage situation in Vinh. This is a good drainage system and floods are rare in the city (27.6%). It is notable that the awareness about "*Polluted water sources*" is still low and thus we should emphasize this content in the public campaign.

15. The environmental pollution is more critical making residents believe that the wastewater should be treated before being discharged into water bodies (on average 96.4%, in Table 5-34). In Table 5-35 85.2% of respondents believe that "*This is obligation of all people to keep the green, clean and beautiful environment.*" Only 21.3% of respondents are of the opinion that "*Collection & treatment of wastewater is costly and people have to contribute*". 98.1% of respondents believe that the community (industry, hospitals, markets, etc) has to pay for wastewater treatment. However, only 86.6% of households agree that they should make a financial contribution. There are other opinions as well such as: follow the state regulation, the state pays, and what is the payment of those living in the apartment building? It is notable that respondents with high educational levels have doubts about the results of the wastewater treatment plant. Therefore, in the community campaign, we need to have strong arguments to convince such people.

16. The result of the bidding game shows that the average WTP is 2,590 VND/m^3. The mode is 1,000 VND/m^3. There is a small difference between the three starting value variants, which follow the general principle that the high starting value has a higher WTP. Three wards, Hung Binh (3,021), Hung Phuc (2,798) and Quang Trung (2,767), have high WTP. In the IDIs, most of the heads of wards believe that we can soon begin collecting between 500-1,500 VND/m^3.

    - *In order to collect the fee for wastewater collection and treatment, the company has to cooperate with the WWM-Unit in implementing different public campaigns and propose the establishment of a legal basis for the collection of a wastewater fee. Many people ask and have doubts about the outputs of the wastewater following treatment and want to know about the quality of the output in comparison with the untreated wastewater. Therefore, after the water treatment system is operational, the company should organise campaigns by using different communication channels and offer an "open day" for interested people to visit the system.*

17. The percentage of respondents who received information on wastewater/wastewater drainage over the last six months was low (24.1%) because unlike in Bac Ninh and Hai Duong City, in Vinh a community/publicity campaign has never been implemented. The residents had received information on wastewater and drainage only 1-2 times before. They received it mostly from TV (72.3%), loudspeaker (29.7%) and newspaper (26.7%) (Table 5-47).

    - *Based on experiences in Bac Ninh and Hai Duong as well as the IDIs and FGDs, we request that the WWM-Unit and Company immediately implement a public campaign.*
    - *The loudspeaker system is present in all wards and considered to be a cheap communication channel and a quick/short channel to the people. The broadcasting times are 6.00-6.30 and 18.00-19.00. An important concern is that brief and interesting articles should be provided for broadcast.*
    - *Three instruments/tools, which the company can use for communicating with households, are: (i) home visit, (ii) neighbourhood/sub-ward meeting, loudspeaker, TV and (iii) publicity campaign. In addition, it was recommended to use the "catholic church" because this channel has success in encouraging the education of children and pupils. Furthermore, this communication should be integrated into an existing program, organized in public places and combined with the delivery of leaflets. Another opinion is that the "communication by loudspeaker, 'force-to-listen' and assigning in an agreement" is very efficient.*
    - *The most effective people for communication with residents are: "Head of sub-ward" (94.4%) and "Head of ward" (23.4%). In addition, the role of women in communication was always mentioned in IDIs and FGDs. Furthermore, it was reported that there are*

many possibilities for cooperating with the company in offering information about wastewater. According tocomments given, the content and means of communication are very important. Meeting in a small group is always efficient. The cost for such meetings is of course high. The youth union of Vinh City is really helpful for communication.

- ☞ *Decision 31, issued in 1998 by Vinh's party committee on infrastructure development has been implemented in all wards. All resources have been mobilized for infrastructure construction, cleaning the canals, etc. The company has to continue its cooperation with wards in further implementation of the decision. Cleaning the Nguyen Canh Chan Canal was a good example.*

18. 15.8% of respondents still believe that wastewater drainage is not good. Based on Table 5-55, the existing problems in wastewater drainage are: bad odour (32.6%), bad drainage (21.2%) and flooding (18.2%). However, the percentage of complaints was not high (Table 5-56). In order to improve the drainage and wastewater treatment in the future, the company has to set up a hotline so that residents can easily inform the company about existing problems. In addition, the company has to enhance its service quality by improving relations between the company as a service provider and the residents as customers. As the residents do not like complaining, it is difficult to evaluate the efficiency and duration/speed of solving complaints.
19. In comparison with wastewater services, the lighting services received a more positive evaluation, but 9.2% of respondents were still not satisfied with the lighting services of the company. The existing problems with lighting services were: Lighting density (9.5%), Lighting intensity (7.1%), Lighting affected by trees (6.8%) and Lighting duration (5.4%). Most of the existing problems were not the subject of complaints (86.4-92.3%). Therefore, the company has to improve its services and set up a hotline so that the people can easily inform the company about such situations.

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

From the company for urban infrastructure management of Vinh

No.	Name	Unit
1	Bùi Quang Tạo	Dept. Organisation-Administrative
2	Hoàng Anh Tuấn	Dept. Planning-Technique
3	Hoàng Hồng Khanh	Dept. Planning-Technique
4	Ngô Trí Giáp	WG System management
5	Đinh Công Chính	WG System management
6	Hoàng Đức Nguyên	WG Apartment management unit Quang Trung
7	Lê Minh Trí	WG Apartment management unit Quang Trung
8	Thái Thị Thanh	WG Apartment management unit Quang Trung
9	Phạm Thị Oanh	WG Apartment management unit Quang Trung
10	Bành Thị Hồng Sâm	WG Apartment management unit Quang Trung
11	Hoàng Văn Bình	WG Apartment management unit Quang Trung

From WWM Project

- Tran Tien Duc

From CEPAC, institution in conduction of baseline survey

- Nguyễn Trung Dũng
- Nguyễn Tuấn Anh
- Phạm Thị Thanh Trang
- Bùi Thu Hoà
- Tăng Thị Khánh Vân
- Nguyễn Thị Quỳnh Hoa
- Nguyễn Văn Tuân
- Nguyễn Văn Thiết
- Lê Thị Thuyết

APPENDIX 2 TRAINING PROGRAM IN VINH

LESSON PLAN IN VINH

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	Presentation		60'	CEPAC

Time	Content	Method	Materials	Time	Person in charge
	- Quantitative & qualitative data survey - Question: Sort, type, structure - How to design a questionnaire	Brainstorming			
	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

Time	Content	Method	Materials	Time	Person in charge
	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
	- 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'	

Time	Content	Method	Materials	Time	Person in charge
	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 VINH

Survey schedule

Ward	Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	The authorities
390 HH (+10%)	50 HH	95 HH	50 HH	95 HH	50 HH	50 HH	
13.10		IDI (morning) FGD (afternoon)	IDI (chiều)				
14.10			FGD (afternoon)			IDI (morning)	
15.10							IDI Women union IDI Youth union
17.10	IDI (afternoon)			IDI (afternoon)	IDI (morning)		IDI Broacasting & tivi station of city

Implementation process of household survey

		Le Mao	Quang Trung	Hung Binh	Truong Thi	Cua Nam	Hung Phuc	Total
13.10.08	N		42				11	**53**
	%		42.9				13.9	**12.9**
14.10.08	N		12	19				**31**
	%		12.2	40.4				**7.5**
15.10.08	N		23	21			4	**48**
	%		23.5	44.7			5.1	**11.7**
16.10.08	N		21	7			64	**92**
	%		21.4	14.9			81.0	**22.4**
17.10.08	N				38	57		**95**
	%				45.2	100		**23.1**
18.10.08	N	46			46			**92**
	%	100			54.8			**22.4**
Total	**N**	**46**	**98**	**47**	**84**	**57**	**79**	**411**
	%	**100**	**100**	**100**	**100**	**100**	**100**	**100**

APPENDIX 4 SURVEY TOOLS

a) Household questionnaire

Name of City	Vinh
Company Name	Vinh City Infrastructure Management and Development Joint Stock Company
Ward/Commune	.....
Questionnaire Control number	.....
Name of Interviewer	.....
Address of House	.....
Location of house of respondent (Fulfilled by interviewer)	1 □ Located directly on the main street with big trees on the sidewalk 2 □ 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 PROVICIAL CENTERS

INTERVIEWER: →→ PLEASE READ OUT THIS TEXT TO THE RESPONDENT 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 respondent:** .....
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 (permanent at home):** ..... head

8. **Do you watch the central and local program such as VTV and BTV?** (Pls. mark X in the suitable one)

Program	Every day (1)	4-6 days in week (2)	1-3 days in week (3)	Never (4)	DK/DA (5)
VTV 1, 2, 3					
NTV					

9. **Do you hear the radio (local)?** (Pls. mark X in the suitable one)
1 □ Every day in week
2 □ 4-6 days in week
3 □ 1-3 days in week
4 □ Never
99 □ DK/DA

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

A SANITATION

10. **Do you have a toilet?** (Pls. mark X in the suitable one)
1 □ Yes
2 □ No →→ GO TO QUESTION 18
99 □ DK/DA →→ GO TO QUESTION 18

11. **If "Yes", what kind of toilet?** (Pls. mark X in the suitable one)
1 □ Pit toilet →→ GO TO QUESTION 20
2 □ Central (off-site) sewage system →→ GO TO QUESTION 20
3 □ Septic tank toilet
88 □ Other ..... →→ GO TO QUESTION 20

12. **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
13. **How many m3 does the septic tank have? m3**
14. **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
15. **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
16. **Do you experience bad odour in your house?** (Pls. mark X in the suitable one)
    1 □ Yes
    2 □ No
    99 □ DK/DA
17. **Do you empty your septic tanks?** (Pls. mark X in the suitable one)
    1 □ Never
    2 □ Annual
    3 □ 2-3 years
    4 □ 4-5 years
    5 □ >5 years
    6 □ Any time if blocked or fully
    99 □ DK/DA
18. **Do you use "septic tank medicine" such as micro phot, or others?** (Pls. mark X in the suitable one)
    1 □ Yes
    2 □ Never
    99 □ DK/DA
19. **If "No", where do you dispose of human waste?** (Pls. multichoice)
    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 ……...

20. 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'S CONNECTION

21. 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

22. 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

23. Is your waste water discharge pipe blocked in the last 6 months? (Pls. mark X in the suitable one)

1 □ 1 time
2 □ 2 times
3 □ Usually …….. times
4 □ Never
99 □ DK/DA

B2 THE DRAINAGE SYSTEM IN SURROUNDING/NEIGHBORHOOD

24. 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 ……..

25. 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

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

1 □ Yes
2 □ No
9 □ DK/DA

27. If Yes what to do?

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

B3 AWARENESS

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

1 □ Good →→ GO TO QUESTION 29
2 □ Bad
99 □ DK/DA

29. If "bad" what are the problems? (Pls. multichoice)

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

30. Is the public drainage system in sourrounding/neigborhood transgressed by other households? (Pls. mark X in the suitable one)

1 □ Yes
2 □ No →→ GO TO QUESTION 31
99 □ DK/DA →→ GO TO QUESTION 31

31. 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 ……

32. 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

33. 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
3 □ Other ……..
99 □ DK/DA

34. 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

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

1 □ Yes
2 □ No →→ GO TO QUESTION 36
3 □ Other …… →→ GO TO QUESTION 37
99 □ DK/DA

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

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

37. 44b. If "No" why?

……
…

38. <u>Scenarios</u>: The construction of the wastewater treatment plant (WWTP) of Vinh is finished and the cost for treatment of wastewater is very high, more than the cost of clean water treatment. If the WWTP is in operation than the situation of water pollution can be improved and in the future the water quality of sea, lake, ponds, … in city can be clean as water quality in the 1970s and 1980s. Now, we would like to ask how many can you pay for m^3 wastewater treatment? We start from 5.000 VND/m^3 **and How many are you willing to pay**?

1 □ More than 5.000 VND/m^3 GO TO QUESTION a)
2 □ Less than 5.000 VND/m^3 GO TO QUESTION b)

INTERVIEWER USES THE BIDDING GAME IN RIGHT DIRECTION AND REMARK WHERE THE INTERVIEREE IS WILLING TO PAY OR AGREEING

a) Bidding in bottom – top direction	**b) Bidding in top – down direction**
Other	5.000 VND/m^3
9.500 □	4.500 □
9.000 □	4.000 □
8.500 □	3.500 □
8.000 □	3.000 □
7.500 □	2.500 □
7.000 □	2.000 □
6.500 □	1.500 □
6.000 □	1.000 □
5.500 □	Other .....
5.000 VND/m^3 □	

39. 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

C SOLID WASTE

40. 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

41. 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 .....
99 □ DK/DA .....

PART III: INFORMATION, EDUCATION & COMMUNICATION PRACTICE

42. 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 (1)	No (2)	DK/DA (99)
Wastewater/drainage Service			
Street lighting services			

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

Information about	1 time (1)	2-3 times (2)	4-5 times (3)	>5 times (4)	DK/DA (99)
Wastewater/drainage Service					
Street lighting services					

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

1 □ The right in discharging wastewater
2 □ The obligation in discharging wastewater
3 □ Other (in details) .....

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

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 …….....

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

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 .....

47. 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

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

1 □ Yes
2 □ No →→ GO TO QUESTION 48
99 □ DK/DA →→ GO TO QUESTION 48

49. 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 ……..

50. 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	Ineffective	Effective	Very effective
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, &STREET LIGHTING SERVICES

SATISFACTION

51. 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	Street lighting services				

COMPLAINS ABOUT WASTEWATER AND DRAINAGE SYSTEM

52. 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 odour				
88	Other ……..				

COMPLAINS ABOUT STREET LIGHTING

53. 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		

EVALUATION OF COMPLAINT SOLUTION

54. 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

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

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

56. 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 respondent about the household situation (Pls. very polite)

57. 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 3.1-4 mill. VND
5 □ From 4.1-5 mill. VND
6 □ From 5.1-6 mill. VND
7 □ From 6.1-7 mill. VND
8 □ From 7.1-8 mill. VND
9 □ From 8.1-9 mill. VND

10 □ From 9.1-8 mill. VND
11 □ From 10.1-11 mill. VND
12 □ Over 11 mill. VND
99 □ DK/DA

58. If "YES" would you tell us about the average food expenses per day (not inclusive for rice, salt, fuel) …….. thousand VND/day

Bill for clean water per month ..... thousand VND/month

59. 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

60. If your household belongs to poor category, are you living officially under the poverty line?
1 □ Yes
2 □ No

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

.....

62. The general estimation of interviewer
1 □ Rich
2 □ Moderate
3 □ Poor

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

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

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!