



Insights from actions: Environmental Communication Practices in Vietnam

Le Thien Tri

*Faculty of Natural Resources and Agricultural Sciences
Department of Urban and Rural Development
Uppsala*

**Master thesis
Environmental Communication and Management
Swedish University of Agricultural Sciences**

Vietnam, 2009

*SLU sveriges lanbruksuniversitet
Faculty of Natural Resources and Agricultural Sciences
Department of Urban and Rural Development
Uppsala*

Author: Le Thien Tri

Supervisor: Lars Hallgren: SOL Environmental communication, Uppsala

Examiner:

Lotten Westberg: SOL, Environmental communication, Uppsala
Hans Peter Hansen; Unit for Environmental Communication, SLU

Course name: Practice and Thesis Work in Environmental Communication and Management, 15 HEC

Application code: SLU-40117

Level and Depth: Master D

Acknowledgement

I would like to thank all of the people who have helped and inspired me during the course of writing this thesis, which is the outcome of my study and research in the Swedish university of Agricultural Sciences.

I could not have written this thesis without the invaluable support of Mr. Nguyen Tuan Thanh and Le Hoang Long, who are major contact persons, introducing informants for my interviews. My special thanks also go to Dr. Truong Tien Hai, Mr. Don Audet, , Mr. Le Dinh Trung, Mr. Nguyen Tan Phong, Mr. Cuong and Ms. Nguyen Thi Kim Oanh and her students in Van Lang University for their time and information, which are the primary input for producing this thesis.

I would like to save the deepest gratitude for Professor Lars Hallgren, Vanessa Coronel and their colleagues, who have patiently guided me through the learning process, topic development and writing. Their advice and guidance, as well as experiences have inspired me in the course of learning and getting mature.

I gratefully acknowledge the support from Colenco Power Engineering Company for offering a good working environment, data and other resources in relation to the Ho Chi Minh City Environmental Sanitation project, which is also a vital part leading to my thesis completion.

And lastly, I am much indebted with Mr. Tran Hung and Don Audet for their valuable time and advice spent on reading this thesis with critical scientific discussion. Very special thanks to my classmate, April Hammerand , for her distant support to record the lectures while I was away from Sweden.

Declaration

I, (Tri Le) hereby declare that this thesis, entitled “Insights from actions: environmental communication practices in Southern provinces - Vietnam” submitted as partial requirement for the Master of Arts program in Environmental Communication and Management, is my own work and expressed in my own way. Any use made within it of works of other authors in any form is properly acknowledged in the text as well as in the list of References.

I hereby also acknowledge that I was informed about the regulations pertaining to the assessment of this Master thesis and about the general completion rules for the Master of Arts Program in Environmental Communication and Management defined by Swedish University of Agricultural Sciences.

Signed

Date *June 8th, 2009*.....

Table of Contents

| | |
|---|-----|
| Abstract | vii |
| CHAPTER 1 - INTRODUCTION | 1 |
| 1.1 Background | 2 |
| 1.2 Aims | 2 |
| 1.3 Scope of work | 2 |
| 1.4 Methodology | 3 |
| 1.5 Literature review | 5 |
| CHAPTER 2 – COMMUNICATION PRACTICES | 12 |
| 2.1 Communication tools and methods used in projects with national resources | 13 |
| 2.1.1 <i>Law and regulations</i> | 13 |
| 2.1.2 <i>Community education</i> | 14 |
| 2.1.3 <i>Public hearing:</i> | 15 |
| 2.1.4 <i>Panels, band roles, posters, leaflets and decals:</i> | 16 |
| 2.1.5 <i>Radio, loud speakers</i> | 16 |
| 2.1.6 <i>Television channel</i> | 17 |
| 2.1.7 <i>Daily Newspapers</i> | 17 |
| 2.1.8 <i>Women association</i> | 18 |
| 2.2 Additional communication channels and approaches used by foreign inputs. | 18 |
| 2.2.1 <i>Collaboration and participatory approach</i> | 19 |
| 2.2.2 <i>Strong focus on problem perception</i> | 19 |
| CHAPTER 3 - OBSTACLES | 21 |
| 3.1 <i>Limited knowledge</i> | 22 |
| 3.2 <i>Bureaucracy</i> | 24 |
| 3.3 <i>Decrease in government's reliability</i> | 25 |
| 3.4 <i>Increasing distrust in media</i> | 25 |

| | | |
|--|--|----|
| 3.5 | <i>Weak law enforcement</i> | 26 |
| 3.6 | <i>Poor infrastructures</i> | 27 |
| 3.7 | <i>Lack of skilled resources:</i> | 27 |
| 3.8 | <i>Society impacts individual's behavioral patterns.</i> | 28 |
| CHAPTER 4 – CONCLUDING NOTES | | 29 |
| REFERENCES | | 33 |
| Appendix 1 – Cost estimate for IEC program for first phase | | 34 |
| Appendix 2: Statistics of public opinions on options for the future of polyethylene bags | | 35 |

Abstract

The thesis explores practices of environmental communication in the context of Southern Vietnam where there are many long term and emerging problems in environment and natural resources management. Understanding the different perspectives about the roles of communication in dealing with these problems will be the first effort to have access to the most common and significant features of environmental communication in this area. From that basis, the thesis is looking forward to generate a set of notable issues for project developers to consider before implementing an environmental communication activity. With a complementary background in cultural studies and local insight, I apply communication models and theories learnt from the practices of developed contexts like European countries and the North America into analyzing the practices in the Southern provinces of Vietnam. Communication models from Robert Cox, Ulrich Nitsch, Doug McKenzie and other authors will be used as fundamental premises to suggest differences in perspectives and applied practical initiatives, providing recommendations for later projects.

CHAPTER 1 - INTRODUCTION

1.1 Background

My considerable time involved in the Ho Chi Minh City Environmental Sanitation Project stimulated interest in environmental communication, particularly in a country where it is in its own development progress, encountering lots of environmental problems: resource use and management, a lack of environment-friendly habits, environmental regulation violations etc.

The knowledge received from the Master's program of Environmental Communication and Management developed a new view in my own mind, compared to the experiences I have had. Issues that I have known are addressed and solved differently in other countries. Case studies and practical experiences mainly developed from the reality of developed countries in "the North" countries opened a new outlook into the problems in my country, this in turn developed curiosity to know more about how people deal with environmental communication in Vietnam.

My expectation in this thesis is also aiming at an attempt to draw some common features of working with environmental communication issues, based on the experiences and perspectives shared by those environmental workers I have met.

1.2 Aims

The thesis is aiming at investigating how different people who have more or less experience in working with environmental issues perceive the role of communication in dealing with environmental issues and discuss specific characteristics of an environmental communication projects.

1.3 Scope of work

Vietnam is a long and narrow country with 1735km distance between the Northern capital city, Hanoi, to the busiest economic city in the South, Ho Chi Minh City. With limited time and resources, this thesis confines itself to information provided by people who are currently based in Ho Chi Minh City. Their working experiences are therefore mainly in the southern part of the country however, somehow reflecting the general trends of communication strategies. As a result, there are some limitations on the thesis' conclusions in terms of geographical perspectives.

Informants' profiles

Nguyen Tuan Thanh, Mr., BSc.
Institution: Vinacontrol Joint stock company
Position: Environmental Engineer

Nguyen Tan Phong, Mr., Ph.D.
Institution: University of Technology
Position: Lecturer, Head of Laboratory, Independent consultant

Le Thi Kim Oanh, Ms, MSc.
Institution: Environmental Management Dept., Van Lang University
Position: Lecturer, Independent consultant

Cuong, Mr., BSc.
Institution: Saigon Water Supply Corporation
Position: Environmental Engineer

Truong Tien Hai, Mr., Ph.D.
Institution: Colenco Power Engineering AG.
Position: Deputy Project Team Leader, Independent consultant

Le Dinh Trung, Mr., BSc.
Institution: Van Lang University, Environmental Dept.
Position: (hidden, as required)

Trang, Ms, MSc.
Institution: Vinacontrol Joint stock company
Position: Head of Environmental Management Dept.

Students from Environment and Community Health Course
Institution: Van Lang University

Don Audet, Mr., B. Comm, C.P.A.
Institution: HCMC Environmental Sanitation Project
Position: Project Team Leader, Independent consultant

1.4 Methodology

The thesis research question bases its content on information captured from the working experience of environmental, communication, public relation consultants. Qualitative interview is the appropriate method for data collection with social science nature research, though, depending on the question and competence of the researcher.

It captures contextual data based on the working experiences and perspectives at deeper level. It not only opens a way to explore at larger extend of their experiences, but also their feeling, evaluation, opinions and allow interaction with the interviewer. In other way, I am the co-producer of data. The interviews are conducted in an unstructured way from the beginning because I know nothing about the informants until we meet.

The communication theory and practice I have accumulated during the study in Sweden provides a starting point to facilitate the meeting, making the informants feel at ease, encouraging the information sharing process. The interview usually starts with a daily topic to make informants feel at ease, then, gradually switched to the topic by very open-ended questions. The facilitation skills helped me a lot in conducting these interviews with these people. Most of them are from technical background, who themselves perceived to have limited communication skills, making them hesitate to encounter questions from social nature. Meeting facilitation skills such as paraphrasing, talking with positive tone, facial expressions, room settings switching back and forth, connecting the story they were sharing to daily-life context, etc. did change their mood and willingness to share. When trust level is increased, more information will be shared.

In the context of Vietnam with special political settings making people cautious to share information, the most suitable place, from my perspective, is not in their working place. The office space will degrade the sharing possibility as people tend to provide formally authorized published information rather than their own perspectives. Instead, informants were really happy to be invited to a cozy coffee place, talking as friends.

To avoid bias and personal evaluation which may influence the story line, I decided to be naïve in all interviews, without any prepared questions. The only things I prepared were a good mood and available time. Based on the conversation, I eventually explored their experiences and perspectives, switching from open-ended questions concerning their lives, work, experiences, homeland, etc. to issues of my concerns.

1.5 Literature review

The thesis is an effort to understand insiders' perspectives about the reality of communication in natural resource management and environmental issues, specifically focused on the context of South Vietnam. The author hopes to sketch an overall picture, displaying significant characteristics of environmental communication initiatives in the area, to some extents, it is assumed to have similar traits with other country in developing world.

“Communication” is term understood differently from time to time. Looking back, there were different ways of defining it, from the very simply way of information transmission from sender to receiver to the more complicated one as symbolic action:

“Assuming that language and symbols do more than transmit information: they actively shape our understanding, create meanings and orient us to a wider world” (Cox, 2006).

In this thesis, I would like to use Cox's definition of environmental communication whenever this phrase is used; as in my perception, it is the clearest definition for further exploration of my data:

“Environmental Communication to mean the pragmatic and constitutive vehicle for our understanding of the environment as well as our relationships to the natural world; it is the symbolic medium that we use in constructing environmental problems and negotiating society's different responses to them” (Cox, 2006, p.12).

In this definition, communication is reflecting two way interactions, reflecting the relationships of human beings and nature, and in that interaction, one has opportunity to impact on the other.

The master program of Environmental Communication and Management in Swedish University of Agricultural Sciences (SLU) confirms that most:

“Projects in natural resource management and sustainable development often fail because different perspectives and interests are not taken into account”.
(Program homepage, SLU, 2008)

Through facilitating communication processes, focusing on people to people and people to nature interactions, problems can be solved and conflicts can be managed. The whole program is scheduled with privilege for facilitation, communication and conflict management skills as fundamental tools to achieve a smooth progress in later natural sources management and environmental communication project work. However, reality and practices base largely on in the experiences of European and North America countries. Examples, case studies and field trips are conducted in the context of well-developed countries, such as Sweden and Norway. There have been lots of discussions and concerns raised by participating students from Asia and Africa worried about the feasibility of applying these theories in these areas. Are there any special features that should be taken into consideration upon establishing a new project?

Robert Cox¹ seems to be the most familiar name to those who find their interest in environmental communication. He published *Environmental Communication and the Public Sphere* in 2006, offering a comprehensive introduction environmental communication. Cox describes how communication actually influences people’s perceptions about the surrounding environment as well as suggesting actions and approaches to deal with conflicts in this field. He believes that external conditions, our interactions with others or the policy choices have great impact on the role of communication. Advocacy campaigns, collaborations and consensus decision making, public hearings or media program are among the suggested tools to apply when dealing with people with different perspectives and interests. Cox is also in favor of community participation in decision making process, particularly in those that influence directly or indirectly to impacted people. In the book introduction, he quotes from environmental communicator James Cantrill (1993)

¹ Robert Cox is a Professor of Communication Studies and the Ecology Curriculum at the University of North Carolina (Cox, Robert (2007)).

“If we wish to assist those who advocate environmental policy, we must attend the myriad ways in which people make sense out of environmental discourse itself”. (Cox, 2006 - p.68).

I am on the same track with Cox, to support community participation in making decision related to them, rather letting someone else at the so-called management level choose what they think necessary for others.

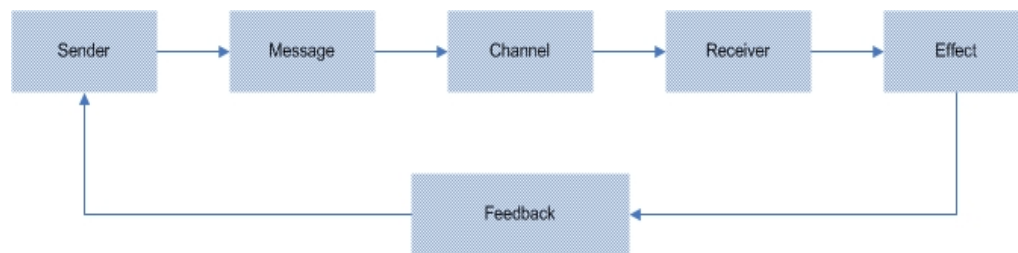
In the same track with Robert Cox, Ulrich Nitsch (1999) recognizes the diversity of background and interest in different people.

“People have the capacity for independent thought based on their individual values and experiences”.

According to Nitsch, our prior knowledge and experiences act as filters to information we are exposed to. The situation and context that decide how people interpret received information. That means, we cannot control how people think and behave, but we can still affect the way they interpret information. He proposes different models of communication that have been used around the world: the classical communication model and diffusion theory.

The classical model of communication comprises of six main components: sender, message, channel, audience, effect and feedback, which constitute a process by which sender wants to deliver a message to an audience in order to achieve a specific effect through a selected content and medium. The final effect of this communication process will be monitored by some forms of feedback (Nitsch, 1999). The model strongly emphasizes the role of the sender of information. The information sent out may be biased by the sender’s view, in which, he or she is the focal point who perceive the target group as an object to be influenced. With environmental information, there is no immediate advantage; no direct benefit to the receiver, therefore, the receiver should themselves actively and willingly participate in deciding

what they want, which might fail to adapt the expectation of the target group and consequently, fail to communicate effectively.



Classical communication model

Another model presented by Nitsch is the relevance model. The relevance model represents communication as an encounter or exchange between the sender and target group that is actively seeking for information. Information must be presented in a way that matches preconditions of the target group and its potentials for receiving it. The preconditions include all aspects that are relevant to the accessibility of the information: time, place, cost, media, methods and language (Nitsch, 1999). This model soon reveals the weakness of a high demand on sender's knowledge.

In 2007, Doug McKenzie published another communication approach that I am in favor of upon dealing with environmental communication, the community-based social marketing approach, the CBSM². Community-based social marketing is an alternative communication model that will promisingly bring about effectiveness due to pragmatic approach. The approach has its own characteristics and is achieved through different steps: identifying barriers to a sustainable behavior, designing a strategy that utilizes behavior change tools, piloting the strategy with a small segment of a community, and finally, evaluating the impact of the program once it has been implemented across a community. These steps maximize the likelihood of being successful. For example: the literature review allows your program to build on the work of others; the focus groups and phone survey allow you to determine what barriers will need to be overcome in order to design an effective community-based social marketing strategy; piloting the strategy will allow you to test its impact and

² Community-based Social Marketing: CBSM in short.

further refine the strategy to increase its effectiveness; and evaluating the program once it has been implemented across the community will allow you to speak with confidence regarding its impact and provide you with the data you need to ensure continued funding. This model allows greater impact through bilateral interaction with lower long-term cost. It also opens to community participation wherein the insiders decide what they want. Though the approach is attached to many positive comments, it requires longer preparation time and effort before implementation. A time constraint context is not recommended for this one.

To have a closer look to reality to form a base for later comparison, I would like to look into the Environmental Sanitation Project in Ho Chi Minh City, the biggest sanitation project in the area, funded and supervised by the World Bank. The project was funded to focus on infrastructure development with respect to drainage and wastewater facilities. Lives of people in the project area have been affected, and the Community Education and Communication program was designed to reduce and eliminate critiques from the public and mass media.

With major goals to increase public awareness of the benefits once the project is successfully implemented and to facilitate people to change their hygiene behavior not littering, using proper sanitary facilities, using piped water, and using solid waste collection service, the consultants proposed the following approaches, heading to reach achieve the goals:

- Home visits: to households directly impacted in the project area, conducted by trained resources. These people will be trained with environmental sanitation knowledge and communication skills.
- Public meetings: 30 persons or more (including household leaders) will be provided with information on project activities under each phase to mobilise their support to the project implementation activities; the meeting is also an opportunity for public hearing, during which, affected people can raise their opinions for consideration.
- Small group discussion: focus group with selected people to deal with specific problem, comprising of 12 – 15 persons, mostly women. This group shall be supported to set up a specific action plan to resolve the problems.

- Mass media: folding leaflets, posters, television programs: to provide information on the project benefits, to soothe the public of ongoing disadvantages.

The Environmental education and communication is a combination between one way information providing method and participatory approach. Some of the activities allow affected people to involve, having their voice heard. In conclusion the proposal stresses on reason hindering communication within the project framework:

- People do not have sufficient information because IEC (Information, Education and Communication) activities are not properly focused and funded.
- The solution requires the attention of relevant government agencies, and more than all others, the Project itself should consider IEC activities are one of the most important factors contributing to the success of the Project implementation.
- People's knowledge relating to environmental sanitation such as clean water, drainage, wastewater and solid wastes is at a limited level.
- The IEC capacity of staff in the relevant local agencies had not been enough to launch an IEC campaign due to that they have not provided enough knowledge about clean water and environmental sanitation as well as trained IEC skills. They still thought that communication was "to tell people" and had no notion about two way communications.
- Most governmental agencies staffs are not accustomed to participatory approach, what they have been doing are obviously top-down model. People generally have very limited opportunities to participate in decision making process.

Different authors, institutes have their own preferred method to approach the diversity of interests and backgrounds. Most of the above references, to some extent, have "the North"³ origins. The SLU, Robert Cox, Ulrich Nitsch base their facts and figures in the United States or Europe as evidence and reality for their arguments, which is more like to reach success when apply to similar contexts. The deliverable from HCMC Environmental Sanitation project was prepared for a relatively different context, a developing country. Public

³ The North generally refers to wealthy developed countries, a term commonly used in several World Bank reports.

awareness, culture, social behavior, educational background, religions, etc. are not much the same. The proposed communication methods, however, were prepared by World Bank Consultants, with experiences learnt from AusAID projects (Australia)⁴, combining locally used methods with his own experiences in his home country.

⁴ The report was prepared by Dr. Truong Tien Hai and Don Audet, two informants I have interviewed.

CHAPTER 2 – COMMUNICATION PRACTICES

“A fundamental requirement for dealing with environmental problems is that we recognize and understand them properly [...] How we deal with environmental problems is affected by our perception of it” (Nitsch, 1999).

A large number of environmental projects and personal experiences have been shared by many informants. There are some popular communication methods that were seen in most of projects. Though they may sound similar in terminologies, they develop a great deal of difference when apply in reality. The following parts will discuss their diversified perspectives reflected from their experiences, received though my personal frame of preferences. I understand the necessity to separate their own opinions, however, it is unavoidable that information we decide take notes also reflect our own perspective to consider it as important.

The analyzing of data after interview provides a pretty clear distinction between two groups of experience: experiences in project with and without foreign inputs. Foreign input includes but not limited to using foreign consultants, referencing materials and funding. I will discuss their perspectives in two different categories.

2.1 Communication tools and methods used in projects with national resources

2.1.1 Law and regulations

This is the top priority strategy used to deal with environmental problem, unsustainable behaviors or issues that require public commitment. Seven out of nine informants suggested using law and regulations to put things under control which tend to obtain public “agreement”, making it easier for the management to achieve prescribed goals and objectives within the shortest timeframe. For instance, there is now an ongoing project conducted in District 6 of Ho Chi Minh City⁵ focusing on reducing waste discharged directly into the nearby canal. A project consultant, lecturing at Van Lang University, proposes applying strict regulations to immediately stop the pollution, whose implementation will be monitored by temporary environmental police. They

⁵ A sub-urban district located southward of the city.

expect to change the discharge habit existing for decades in the area in just a day or two. Environmental police will monitor and check the site randomly, making sure that no one will throw anything down the canal. Financial sanctions will be applied on someone caught red-handed.

This idea originated from a special case taken place last year. The Government then forced motorbike riders to wear helmets regardless of the strong opposition received from many urban motorcycle riders. For convenient reasons, people have not been accustomed to carrying a big, heavy hat every time they get on their lovely motorbikes. However, with strict law enforcement, monitored by street police regularly checked, helmets are now a companion of motorbike drivers.

2.1.2 *Community education*

It derives from the general assumption I have heard from almost all informants about the low educational background resulting in low awareness about ‘everything’, including environmental issues. *“Burdens of life distance people from other concerns, people need to be full before they can think of beauty”*, Thanh from Vinacontrol. Thus limits communication efforts as *“communicators failed to transfer their knowledge to the public”*, said the Environment Engineer in Saigon Water Supply Corporation (Mr. Cuong, informant). *“When people do not have to worry about food, money and other necessities, talking about environment would be much easier”*. People need both general and specialized education programs to first understand environmental project goals and objectives; second, to see how a person’s traditional way of life, habit, and behaviors are harmful to his surrounding environment, how it is bad for his life and later generations so that he or she will properly change it in a more sustainable way.

However, during the course of interviewing for data, I shared some data from student research proving different causes and effects. The research focused on exploring people’s awareness and the possibility of changing behavior accordingly. 86% of the investigated people indicate that they understand how bad the damage is that plastic/ polyethylene⁶ bags can cause to environment

⁶ Local name: nylon bags

and community health; 88% people support the idea of a more environmental friendly bag as a substitute but 67% of them disagree to pay a small amount of money for the substitute products (*See Appendix 2*). Or, another observation of my own, in the city, it is very easy to find a waste collection bin with lots of waste in nylon bags thrown outside the collection bin. When I asked, they showed understanding of how much benefit they would have if putting waste in proper place, but they do not care to change their behavior.

“Surveys show that a majority of the population of many countries is aware of the threats to our environment and think something needs to be done about them. This is true for both industrial and developing countries” (Dunlap et al 1992, Olsen et al 1992) (Ulrich 1999)

Interviewees expressed different perspectives about the roles of environmental education. It is unclear how education can create impact on ordinary people’s attitudes and behaviors. Some strongly believe that education has something to do with behavior change; others proved that education itself cannot make people choose alternative actions. However, to urge the process of sudden behavior changes in the community, environmental communicators tend to combine education to laws and regulations approaches in a view achieve sustainable behaviors and through education, ordinary people will understand why the authorities force them to behave differently.

2.1.3 *Public hearing:*

Two informants (Oanh, Hai) described a typical “public” session to be organized with representatives from Women’s Association, Commune Leader, and Environmental/Medical/

Hygiene Experts, etc. lecturing about the benefits people will get by changing their ordinary ways of life or from the projects. The session is then continued with Q&A⁷ section in which questions from affected people will be responded by experts. This is also what was named “public hearing”. Normally, a public hearing is conducted when everything has been established and is on track, the major aim is to convince the community to believe in future prospects of the project and stop complaining about ongoing activities affecting their lives.

⁷ Questions and Answers

2.1.4 *Panels, band roles, posters, leaflets and decals:*

These are major information channel opening for public access. As said above, a general assumption influences the choice of communication methods: lacking of information and knowledge is labeled for the community as a whole. As a result, band-roles and posters are displayed in public locations where everyone can see, reminding people of actions to do. Leaflets are usually distributed directly to individuals or households to as guidelines to for proper actions. All these visual devices play the role of “prompt”⁸, a terminology defined by Doug McKenzie in his famous book, *Community based social marketing*. However, using proper prompt requires initial inspection and survey, seeking to understand the problem itself as well as people’s concerns, social-cultural conditions and other related issues, which has never been done carefully in the context of projects I have been exposed to. “Prompt” is used as intended from the governmental officials, environmental specialists subjectively, without any references to how they would catch people’s attention and in what way they would create impact on public behaviors. It is very ironic that there are a lot motorcycles parking next to a NO PARKING sign, or lots of nylon bags, cigarette ends around the garbage bin.

2.1.5 *Radio, loud speakers*

Radio is a highly appreciated communication tool in the sparsely populated, rural areas and particularly in the capital city but it is almost ignored in urban communication strategies. Dr Truong Tien Hai, one of the informants who experience many different projects, thinks that early morning programs on radio attracts many households in the countryside, where farmers usually get up early for working in the field. They drink tea or coffee while listening to their favorite “Today in Rural” (broadcasting on VOH⁹ channel) radio program.

⁸ A prompt is a visual or auditory aid which reminds us to carry out an activity that we might otherwise forget. The purpose of a prompt is not to change attitudes or increase motivation, but simply to remind us to engage in an action that we are already predisposed to do. (McKenzie, 2007)

⁹ VOH: Voice of Ho Chi Minh City

Loud speakers have been used for decades in Vietnam. Originally, it is for local authority to inform new policies, governmental announcements and broadcasting songs and messages for political purposes. Eventually, with the socio-economic development, public loud speakers were integrated with a new function: broadcasting popular radio programs (such as Today in Rural). From my own experience, every time I am back to visit my grandparents, I know exactly when it comes to 05:00 hours in the morning as the radio program will start on the nearby loud speaker system. In some places, the local authorities also make their own program, broadcasting local news and events taking place within their management region. Loud speakers have proved its effectiveness in providing information, policies or gathering people for public campaigns, e.i. gathering a large numbers of people in the same day, collecting rubbish Thanh Duc commune, Vinh Long Province. (Thanh, Vinacontrol).

2.1.6 Television channel

This is the contradicting point between more and less experienced informants. The more experienced informants show that most of the rural and urban residents consider television as the most important environmental communication channel in provision of information. As such, a plan for producing information/education program on the project benefit on local television is needed. While younger interviewees express doubtful attitude toward television programs as people, in their own perception, are fascinated to entertainment shows mostly, and not many choose to spend time on environmentally oriented program. It is too costly to produce a television program while its performance cannot be compared with other channels.

2.1.7 Daily Newspapers

Access to this information source is variable. Urban inhabitants have more advantage than their rural counterparts. However, interviewees did not mention the ways in which this communication tool influences the interactions between people to people or people to nature. They showed their concerns on building up relationship with newspapers, which would facilitate their work process, as a smart step to avoid possible conflict with journalists and reporters. It is a fact that in Vietnam, news agencies are both politically controlled while remain financially self sufficient. This sometimes makes it

hard for them to clearly distinguish the border between paid article and truth. Entrepreneurs can pay for their articles with unverified information to be published. News papers are affected by both political party and financial power. The case of Vedan Company's discharge of monosodium glutamate is a typical example. The company polluted Thi Vai River for 12 years, destroying biodiversity, killing all living creatures. Unpleasant smell can be detected from many kilometers away. Livelihood and health conditions of more than 3,000 households living along the river were influenced. Fishermen and farmers could not make their living in the traditional ways. Thanh An island village is the most typical example. Of approximately 1,000 inhabitants, 70% villagers earn their living by fishing. The island itself used to be an important source of fishes and other aquarium species for Ho Chi Minh City. Now, more than 50% quitted their fishing and growing aquarium species and more than 250 complaining letters have been sent to the authorities recently¹⁰.

2.1.8 Women association

The local level of women's association has always been active in most projects. They are comprised of women living within the same community (village, commune, work groups ...). Association heads are those who are reliable and nominated to represent other women. As a result, they are trusted by people in the community as voice of the insiders. In a project sponsored by Australian government to develop the home hygienic system for households in the Mekong Delta, in which, half of the total fund should be shared from the beneficiary community. The task of convincing local households to contribute was delegated to the local women association. Surprisingly, total fund in the end was even greater than the required cost.

2.2 Additional communication channels and approaches used by foreign inputs.

There are several communication strategies used in projects with foreign funding or consultants, which are slightly different from projects of similar nature using

¹⁰ Quy, Đ., 2008. Nợ ngập đầu vì sông Thị Vải (In-debt because of Thi Vai River). Issued on Friday, Oct 17th, 2008. Available at: <http://dantri.com.vn/c20/s20-255681/no-ngap-dau-vi-song-thi-vai-o-nhiem.htm> [Accessed: May 18, 2009].

national resources. Foreign consultants from “western schools” also develop different perspectives upon examining element hindering communication process.

2.2.1 *Collaboration and participatory approach*

The community education program in HCMC Environmental Sanitation project proposes using a participatory approach in public consultation, convincing city citizens to believe in bright future prospects once completed and somehow, alter people’s behaviors for a more sustainable use of project outcomes. Even though, participation did not take place since the beginning, it reflects a different view from the project consultant: to involve people in deciding what will impact their lives. The project prepares resources with communication capacity to directly visit and invite people to public meetings. The main aims of the visit and meetings are not only to provide information, but also to consult householders on their specific situations, listening to their concerns and expectations make necessary changes accordingly.

Projects using these communication methods are among the very exceptional cases where there are foreign components: foreign investment and resources, foreign consultants, foreign advisors, etc. Let’s compare the above mentioned Australian Government funded, the women association in coordination with communication experts implemented participatory approach, involved impacted people from the very beginning stages, listened to their concerns, feedback, delivering information, and let people make choice for their own interest and benefits. High contribution rate and latter an awareness to protect the public road, hygienic constructions developed by the project reflects differences compared other public properties developed from involuntarily basis. An inspection team came to check project area not so long after completion; they witnessed a very interesting story. While talking to some local people, they witnessed a neighboring father asking his son to pick up the banana skin as soon as the son threw it down the road. When asked, he said *“the new road is so nice, we can’t make it dirty, it’s our properties...”*

2.2.2 *Strong focus on problem perception*

A very common feature in environmental communication strategies I have been exposed to, is that, communication program is always prepared after some problems have taken place. Public hearing, consultation and meetings

are organized to make people feel involved and respected after many complaints have been received. There has been no planning to foresee potential problems and possible solutions mentioned by local project interviewees. However, as said, things are different in those with foreign components. Danang city is now known as the cleanest city and beach in Vietnam, which is the result of the project taken places 5 years ago. The project is was aiming at keeping the city and beach clean, encouraging people to discharge wastes at appropriate places. And it has made a great success. Key to their success, said Don Audet, project Team Leader at that time *“before you actually ask people to keep it clean, let them see the clean environment”*. *“People are, by nature, influenced by many wrong perceptions. They think that leaving garbage in recycle bin for collection takes more time, prove to them that it is not a time consuming task, but gaining more benefits”*.

“Differing perceptions will lead to differing opinions as to what should be done, how it should be done and what will it cost”. (Nitsch, 1999)

If we perceive that the problem were deep-rooted in old technology or outdated awareness, then we would obviously consider investing in modern technology and inviting teachers for educational goals. Inappropriate perception exists from both public awareness and governmental officials. Hard economic burdens and high population rate make it harder for people to make living, resulting lacking of adequate concern for environment. From the other side, governmental officials, conventional governmental governance approaches, encouraging information protection in the country, explains they prefer proving censored information to the public in the form of environmental education.

CHAPTER 3 - OBSTACLES

3.1 Limited knowledge

Of four presentations in Van Lang University I have listened to, three groups concluded that environmental problems were caused by lack of knowledge, significantly in ordinary people. Other informants also share the similar view when talking about obstacles in dealing with environmental issues. *“People do not know how harmful their behaviors are”, “Money is more important than anything else”. “They are too illiterate to understand the complicated environmental problems”. “Environment requires technical background to understand”. “Maybe, when they are rich, they will consider environmental issues”...* (Notes from informants). These are among the very popular statements heard when they talk about difficulties that hindered the project success. People’s knowledge in relation to environmental sanitation and natural resource management such as clean water, underground water, wastewater and solid wastes is at a very limited level.

“Recent experience demonstrated that people could not describe clearly the danger to their health caused by the bad environmental conditions. Risks mentioned by them were just diarrhoea and bellyache” (IEC report, 2008)¹¹

If the public have as much information as experts and the authority have, they will not automatically be against the ongoing efforts. Looking at the most commonly used communication methods, we can see that public education, which is more like teaching children at school, therefore, information leaflets, banners, posters are really appreciated. The HCMC Environmental sanitation project is planning to use 50,000 leaflets and 1,000 posters merely for the project impacted areas, as an example (*See appendix 1*).

However, Professor Phong in the University of Technology suggests a different way to look at the problem, lacking if knowledge from the management plays the more important role, significantly when ordinary people are often ignored from the project initiation. Usually, feasibility, inception reports do not take into

¹¹ Information, Education and Communication Report, Ho Chi Minh City Environmental Sanitation Project, Package 3 – Institution Strengthening (2008)

account people's concerns and opinions. Their voice are actually heard when there should be something violating their normal life occurs. The earlier public participation takes place, the fewer problems are likely to occur. The authorities develop their policy - too much on their own evaluation about community's capacity to contribute and knowledge. There is a significantly low level of trust from the authority to ordinary people and vice versa. On the same track, Mr. Cuong from Saigon Water Corporation also stressed as a confirmation for Phong's view "*many people blamed ordinary citizens for low awareness and knowledge, but for me, capacity and knowledge of the management is a much more critical issue*".

This practice reveals some similarities with classical communication model of Ulrich Nitsch, the communication process relies too much on the message sender, in the hope to achieve a specific effect through some content and medium. The final effect of this communication process will be monitored by some forms of feedback (Nitsch, 1999). The communication strategies used in the mentioned projects are deeply influenced and biased by the over assumption that people are in general lack of knowledge. In this view, it brought the message sender to another mistake, choosing the inappropriate communication channels, tools and methods. As result, problems have taken place in most projects which gradually decrease trust levels in the interactions between ordinary people and the authority. Why can Danang city be successful in encouraging people to keep the city and beaches clean? How can rural people in the Mekong Delta project agree to contribute more than expected? How can they voluntarily keep their local road clean but people in District 6 keep throwing rubbish into the canal?

The major different lies in level of participation they have in those projects. In those projects where people's capacity to contribute are appreciated, that they can participate from the initiation, the outcomes will become sustainable.

"Commitment to environmental issues motivates people to learn more about those issues, which results in further commitment. And the opposite is equally true in that a lack of commitment fosters ignorance which, in turn, encourages us to remained uncommitted" (Nitsch, 1999)

3.2 *Bureaucracy:*

In my own experience, it takes at least three months for a document to be approved. There is an interesting story illustrating how complicated it is to issue a correspondence. There should be five people to issue a correspondence: one to draft the content with pencil; one to key in to computer and print out; one to sign on it; one to stamp and another one to deliver. Each of them needs time to carefully consider the document in a way that they will not bare any responsibility if there is any mistake. In this type of governmental structure, Dr. Hai shared with me his secrets in gaining good progress with project work: to involve relevant people. The relevance concept is quite significant, in a sense that different level of the authority are always willing to participate, to know what is going on, to feel reported as a way to avoid possible responsibility. In his experience with the project to improve awareness about the importance of using proper home hygienic system in the Mekong Delta that has educational component, the project achieved significantly good progress compared to others of similar nature because they involved many people of different levels and fields in the government into the so-called “steering committee”. They can be representatives from provincial, district, local authorities; from provincial department of education and training; from women’s association; local policeman etc. In fact, these people did not influence the project goals, objectives or make no change in the decision content once they were considered as insiders. Alternatively, we can say, once they are “involved”. Their participation does not include all meetings or day-to-day activities; they are invited to major review meeting to update project progress, information, knowing what is going on within their responsible area. Positively, this is a good demonstration of their goodwill to contribute in the country’s development. Their participation, more or less, diversifies perspectives on approaching an issue, opening more angles for discussion and consideration. However, on the other hand, advantages are always attached to unexpected problems:

- Delay in decision approval progress: a document has to go through all relevant agencies for acknowledgement and consideration before final approval is made at the highest level. Lower levels are responsible for

advising its direct reporting level as a basis for making decision. The decision making level bases their thought on formally official advices from all relevant agencies to make final signature and stamp. Usually, a simple document would go through three different levels for approval.

- Additional allowance funding required: a small amount of allowance should be in plan as incentive for the participation of the above mentioned relevant people. This allowance is not bribery, just enough for transportation to and from the meetings, however, it will facilitate the overall progress as it makes people feel included and appreciated for their participation.

3.3 *Decrease in government's reliability*

The long history of heavily bureaucracy political system leads to the continual delay in implementing promises. Interactions between the general community and governmental official are gradually fading. Communication is therefore more difficult to environmental communicators. There was a case, a communicator came to a public hearing meeting, he started the conversation by introducing himself in a most friendly and appropriate manner, and he was criticized with anger because he was considered as an intellectual man, but working for the authority (Kim Oanh, informant). The ongoing environmental sanitation project provides a clear illustration of a decrease in trust level from the public toward the authority. The project scope of work requires street excavation for re-installing new drainage pipes, which directly impact households doing their life business along the project street areas. Tax reduction or exemption policies have been announced since the inception of project, delayed through many stages. Impacted households have recently reported to seek for alternative livelihood after a long time waiting in vain for these policies to be valid.

3.4 *Increasing distrust in media:*

On one hand, media are politically controlled for the development of the leading party; while on the other hand, it has to be financially self sufficient. It is not so much a trouble if an entrepreneur wants to publish a self advertising article on a daily. Information they provide might be true, and might not be true, as well as long as they pay for it. Usually, payment is made directly to journalist in charge of that session, nobody knows if such payment will serve himself individually or the

whole organization collectively. This information misguides part of the public and the authorities in a way to decrease public trust to management capacity of relevant authorities. Recently, the fascinating case of the Taiwanese monosodium glutamate company polluted the Thi Vai River has been uncovered by the press¹²; public attitude at that time was a combination of anger and frustration. Two months later, one of the daily with most readers published an article declaring the river's magical revival. More and more aquarium species found living in the river, fishermen photographed with big smile, satisfactorily. Disagreeing with this article, another different largest newspaper invited environmental scientists examining the water quality, spending two days catching fishes with local people and listen to their opinions. The latter newspaper concluded that water quality was still too much contaminated for any creature to live on; fishermen still earned their living by alternative livelihood. It shows clearly how media are influenced by businesses.

The interaction between media and the government also hinders its communication role, as well. It was not so long ago, when the world oil crisis took place, oil price kept increasing unpredictably, which created the "alarmed psychology" in people; the government almost lost control of market price of necessities. One of the actions at that time was the Prime Minister announced unchanged oil price policy until the end of the year, that means, with subsidy from the government, oil price would be stabilized in at least seven months. A sudden increase in oil price was made five hours after the news. The Government uses media as a tool to perform its political purposes; media are directed to publish news as they wish, thus, lower the media reliability in certain groups of the community who understand this fact.

3.5 *Weak law enforcement*

Laws and regulations are always the first choice to enforce new policies, to change people's behaviors or interactions in relation to a sustainable environment. From very young informants like third year students to consultants with more than five years of experience, the overall policy considered to be most effective is to use law and regulations. Other strategies, policies will, no doubt, fail if there is no

¹² See above for details

support from the legal base. To stop discharging rubbish to canal by laws; to make people wear helmet: laws; to reduce the use of nylon bags: laws; etc. Various different laws regulating public behaviors are applied, which require adequate resources to monitor the law enforcement. Environmental police team are set up to monitor households living along the canal to bill their improper behaviors; street police spent more time driving in street to make sure everyone has a helmet when they are on motorcycles. Lacking of budget and human resources for law enforcement is blamed for the ineffectiveness of these resources and their tasks. People continue to discharge rubbish to canal when there is no environmental police around or when the campaign finishes, things come back to its normal status; fewer people use helmets when street police decrease their checking frequency.

A sudden application of law to force people change a habit, behavior existing through many years and generations do not lead to a happy ending with sustainable behaviors. *“I admit that people’s behavior could not be changed after a short time of being forced to change, in our project, even though we provide free recycle bins and plastic bags to all households, not many of them leave it for collection, they prefer the canal”*, shared by Ms Oanh, a consultant (informant).

3.6 *Poor infrastructures*

Underdeveloped infrastructure system is not a direct obstacle preventing communication effort; however, it hinders these efforts somehow. Newspapers, circulars, governmental decisions... need longer time to reach remote areas or end up in somewhere unexpectedly. Non-preferable transportation conditions, switching from many different means of transport to reach the destination eventually discourage the most enthusiastic people. Additionally, with environmental and social development projects in those areas, recruiting qualified resources, skilled communicators are huge problems to project management. On-site resources in these areas, for example, local supporters, cannot be found as easily as in places with better infrastructures.

3.7 *Lack of skilled resources:*

Lacking of skilled or trained resource in environmental communication and public relations is the overall status of most projects. Even at environmental training

institutes like University of Technology and Van Lang University¹³, professors and educators are from Chemistry or Biography and Geography background (Dr. Phong, informant). Recently, they have the participation of some graduates majoring in Environment and none of them from environmental communication. However, they assumed communication tasks based on their observations from previous experiences of others. Thus leads to the uncontrollable use of laws and regulations in public issues, borrowing methods applied in other field, i.e. apply experience from the helmet case to stop people discharging rubbish to canal.

3.8 *Society impacts individual's behavioral patterns.*

In the process of interviewing and observation to collect data for this thesis, I observe that people tend to behave differently in different contexts, depending on how people surrounding them are behaving. At noon time, while there are not many people in the street, drivers tend not to stop at red light, and for those who are ready to stop, they have no other choice but continue to move, or else, they will get hit. One interviewee shares with me about the cleanliness of Singapore he experienced in his trip there, where throwing a cigarette end down the street would bring him a fine. And right after the interview, he threw a cigarette end down the floor of the coffee place, where there have been many other cigarette ends lying. In both cases, those people are aware that such actions are not recommended, but, for some reasons, they chose to behave as others. This could be cultural reason, originating from the traditional value of modesty or strong sense of community, simply understood as not to be so much different from others. Once a child, I was made to believe that asking a lot of questions in class while my friends are silent was a way of showing off knowledge. *“When one horse gets ill, all others of the same herd refrain themselves from grazing”*¹⁴ is another saying that all Vietnamese was taught to remember, illustrating the strong community sense, which, to some extent, prevent pioneers to have different behaviors compared to others.

¹³ First two educational institutes in Southern Vietnam offering environmental training.

¹⁴ Vietnamese proverb, “một con ngựa đau, cả tàu bỏ cỏ” in native language, appreciating the solidarity of Vietnamese people as a unique system.

CHAPTER 4 – CONCLUDING NOTES

- The environmental and natural resource problems are very commonly experienced during the development progress. Environmental pollution, wastewater treatment, waste discharge, composting, substitution of polyethylene bag, hygienic problems, etc. have largely been used by Western authors writing about environmental communications.
- Communicators and environmental workers tend to apply the classical communication model, which comprises of six main components: sender, message, channel, audience, effect and feedback (Nitsch, 1999), while they express no idea about the model they are using. They also admit that these communication tools and methods are not really effective in many ways, however, fail to provide any explanation rather than blaming for the lack of knowledge in the population. One of the disadvantages of the classical communication model is the high dependency on message sender, in which, the sender decides the message content, what he or she wants to inform, and the communication channels he wants the message to go through. Ironically, message senders are usually people whose backgrounds are from Biology, Chemistry, Governmental Administration, Environmental Engineer, or Business Administration. In another way, we can say, that there is a shortage of environmental communication resource and management level is not updated with the diversity of trends and communication models in solving environmental issues. The two major institutes providing trained resource in environment in the area stick their focus on natural sciences background, offering program in environmental technology and modeling, which creates imbalance when considering issues of social sciences, communication is an example. Management level, is therefore, more confident to approve budget proposals with technical specifications that are very clear in figures and quantity while is doubtful of “vague” outcomes from communication. As a result, public communication modules receive little or no budget at all compared to other modules in the same project. They have no other choice other than using available resources, technical consultants or those who have spare time for this module.
- Low public commitment: distrust in public’s ability to contribute, that illegitimizes public participation in initiatives directly impacting their life, leading to unexpected objections from the public side is the most critical truth. Projects

looking at communication with foreign perspectives have proven the downsides of the assumption. Project outcomes will be more sustainable if the management invites and appreciates public participation from the beginning. *“People have the capacity for independent thought based on their individual values and experiences”* (Nitsch, 1999). It is obvious that public commitment to solve environmental problems is more sustainable once they have opportunity to participate in making decision relating to their life. Active involvement helps increase commitment. The content and communication channel should turn from one-way information transmission to motivate people’s interests in changing behavior. Motivation will increase commitment, rather than increasing commitment by laws and regulations.

- Time consuming for participatory approaches is not a good reason, as we have to solve problems emerging during the course of project implementation if there is no public involvement from the starting point.
- There is a common trend to attach environmental issues with low education, the poor, low living standard, stupidity and limited receptive capacity. However, environmental communication practices shared by the interviewees have proved things differently. Education facilitates public understanding of the problem and policies, but it has limited influence on people’s behaviors as a stand-alone strategy. The combination with legal based approaches also makes no different in reaching a sustainable goal in environmental communication.
- Management perception is the core success indicator in environmental communication initiatives in this specific context where the authorities and ordinary people do not trust each other in how one side can contribute to the benefits of the other. The absence of Internet channel is an example reflecting this trend of thought. No informants suggest the use of Internet as a communication channel though recently, it has been proved to be quite effective. Internet facilitates the interaction between government and ordinary people. Recent environmental problems, projects and decisions published on Internet received many feedbacks from the public and opens opportunities for Governmental officials to response quickly, though online conference. Representatives of this online conference are the Thi Vai River and the Bauxite cases that have been

opened for public discussion in more than two months¹⁵. Admittedly, these online interactions are only seen in strong news agencies whose headquarters base in big cities, there is no sign of public discussion in provincial level news websites. We can assume that, Internet is another effective choice of communication channel for urban population.

- The conventional channels and approaches, as mentioned, have their own advantages in this specific context. Women Association comprises of women living in the same are with others, therefore, they have established good relationship and are able to get their voice heard. Radio, loud speaker illegitimate themselves in big cities because they violate daily routines of people there, however, in rural areas, they prove to be reliable. Other channels are really effective if used appropriately. In other words, elements that hinder communication in this area are not limited tools, channels or public intellectual standards but qualified resources managing communication initiatives.

¹⁵ Available at: www.tuoiitre.com.vn; www.thanhvien.com.vn; www.vietnamnet.vn, www.vnexpress.net [Accessed May 2nd, 2009].

REFERENCES

Cox R., 2006. *Environmental Communication and the Public Sphere*. Sage Publications, Inc.

Cox, R., 2007. Nature's Crisis Disciplines: Does Environmental Communication Have an Ethical Duty? *Environmental Communication: A Journal of Nature and Culture*, p.1.

Hai, T., 2007. Preliminary proposals for IEC program for Behavior change. Colenco Power Engineer.

McKenzie, D., 2007. *Fostering sustainable behavior: An Introduction to community-based social marketing*. Gabriola Island, B.C.: New Society

Nitsch, U., 1999. *The art of environmental communication*. In: Lundgren L-J (ed) *Knowing and doing: on knowledge and action in environmental protection*. Swedish Environmental Protection Agency, Stockholm, pp 193 - 225.

Appendix 1 – Cost estimate for IEC program for first phase

| HCMC Environmental Sanitation Project (Nhieu Loc - Thi Nghe Basin) | | | | | |
|--|-----------------|----------|-----------------|----------------|--|
| COST ESTIMATES FOR IEC PROGRAM FOR FIRST PHASE Fast-track Program - Project Focused | | | | | |
| Items | Unit | Quantity | Rate USD | Total USD | |
| I. Personnel Cost | | | | | |
| Local IEC Expert | <i>Manmonth</i> | 10 | 2,000 | 20,000 | |
| Community Liaison Officer | <i>Manmonth</i> | 10 | 1,500 | 15,000 | |
| II. Baseline and Final KAP Surveys | <i>Form</i> | 2,000 | 1 | 2,000 | |
| III. Volunteers Network | | | | | |
| Establishment and Operation | <i>District</i> | 10 | 1,000 | 10,000 | |
| Training for Volunteer Network | <i>Course</i> | 10 | 1,000 | 10,000 | |
| IV. Production of IEC Materials | | | | | |
| Leaflets | <i>Sheet</i> | 50,000 | 0.1 | 5,000 | |
| Poster | <i>Sheet</i> | 1,000 | 2 | 2,000 | |
| V. IEC on Mass Media: | | | | | |
| Articles on National Gazettes | <i>Issue</i> | 5 | 400 | 2,000 | |
| Documentary Films on TV | <i>Film</i> | 2 | 2,000 | 4,000 | |
| VI. Direct IEC to targeted groups | | | | | |
| People Participatory Meeting: | <i>Meeting</i> | 100 | 100 | 10,000 | |
| VII. IEC capacity Building for DWD | | | | 5,000 | |
| | | | | 85,000 | |
| VIII. Administrative cost | | | | 12,750 | |
| | | | Subtotal | 97,750 | |
| IX. Contingency | | | | 9,775 | |
| Grand Total | | | | 107,525 | |

Appendix 2: Statistics of public opinions on options for the future of polyethylene bags

16

| | CÓ | KHÔNG |
|----------------------------------|------------|------------|
| <i>Hạn chế sử dụng</i> | 86% | 14% |
| <i>Sử dụng túi thân thiện</i> | 88% | 12% |
| <i>Trả thuế 500 → 1000 đ/túi</i> | 33% | 67% |
| <i>Cấm sử dụng</i> | 59% | 41% |

| | YES | NO |
|--------------------------------------|------------|------------|
| <i>Limit the use of nylon bags</i> | 86% | 14% |
| <i>Use environment friendly bags</i> | 88% | 12% |
| <i>Charge 500 – 1000 vnd/bag</i> | 33% | 67% |
| <i>Ban nylon bag use</i> | 59% | 41% |

¹⁶ English version translated from original Vietnamese language by me, review translation by original author.

Source: student research project. Environment and Public Health Course. Van Lang University. Ho Chi Minh City, Vietnam (April, 2009)