CAPACITY BUILDING MODEL ON ENVIRONMENTAL AWARENESS
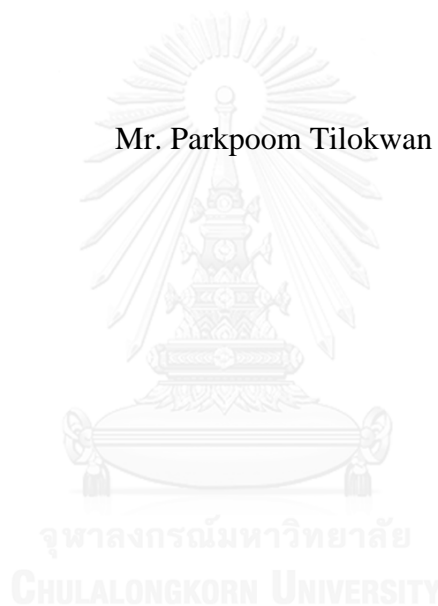## : CASE STUDY OF A PUBLIC LIMITED COMPANY IN THAILAND

Mr. Parkpoom Tilokwan

A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy Program in Environment Development and
Sustainability
(Interdisciplinary Program)
Graduate School
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โมเดลการเสริมสร้างสมรรถนะการตระหนักด้านสิ่งแวดล้อม
: กรณีศึกษา บริษัทจำกัดมหาชนในประเทศไทย

นายภาคภูมิ ติลกวรรณ

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรดุษฎีบัณฑิต
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Field of Study	Environment Development and Sustainability
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ภาคภูมิ ติลกวรรณ : โมเดลการเสริมสร้างสมรรถนะการตระหนักด้านสิ่งแวดล้อม: กรณีศึกษา บริษัทจำกัด มหาชนในประเทศไทย (CAPACITY BUILDING MODEL ON ENVIRONMENTAL AWARENESS : CASE STUDY OF A PUBLIC LIMITED COMPANY IN THAILAND) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: อ. ดร.แสงจันทร์ ลิ้มจิรกาล, 143 หน้า.

ปัญหาสิ่งแวดล้อมเป็นปัญหาที่ทุกประเทศทั่วโลกกำลังเผชิญ ซึ่งปัญหาเหล่านั้นล้วนเกิดจากการกระทำของ คนในสังคมโดยการใช้และบริโภคทรัพยากรที่มากเกินความจำเป็น ซึ่งทำให้เกิดความเสื่อมโทรมของสิ่งแวดล้อม ดังนั้น ความตระหนักด้านสิ่งแวดล้อมได้ถูกกล่าวถึง เพื่อใช้แก้ปัญหาเหล่านี้ ความตระหนักด้านสิ่งแวดล้อมได้ถูกกล่าวถึงอย่าง มากในรายงาน Agenda 21 เพื่อการพัฒนาอย่างยั่งยืน และได้ถูกนำมาปรับใช้ในองค์กรต่างๆทั่วโลก ความตระหนักด้าน สิ่งแวดล้อมในประเทศไทย เป็นหนึ่งในแผนระดับประเทศตามแผนพัฒนาเศรษฐกิจและสังคมแห่งชาติตั้งแต่ปี พ.ศ. 2540 และเป็นแผนขององค์กรธุรกิจเพื่อการพัฒนาอย่างยั่งยืน จุดประสงค์ในการศึกษาครั้งนี้คือ เพื่อศึกษาถึงปัจจัยที่เกี่ยวข้องกับ ความตระหนักด้านสิ่งแวดล้อมของบุคลากรในบริษัทฯ และเพื่อนำเสนอโมเดลการเสริมสร้างสมรรถนะการตระหนักด้าน สิ่งแวดล้อมที่สามารถนำไปใช้ประโยชน์ได้ภายในบริษัทฯ การศึกษานี้ใช้การสร้างแบบสอบถามและการสัมภาษณ์เชิงลึก เกี่ยวกับความคิดเห็นเกี่ยวกับการตระหนักด้านสิ่งแวดล้อมโดยมีพื้นฐานจากงานวิจัยต่างๆที่เกี่ยวข้อง โดยมีกลุ่มตัวอย่างคือ พนักงานระดับปฏิบัติการและระดับบริหารของบริษัทจำกัดมหาชนในประเทศไทย การวิเคราะห์ข้อมูลผ่านรูปแบบสถิติ เชิงพรรณนาและนำเสนอในเชิงร้อยละ

ผลการศึกษาพบว่า ปัจจัยภายในที่มีประสิทธิภาพ ได้แก่ การมีทัศนคติที่ดีต่อปัญหาสิ่งแวดล้อม, ความตั้งใจใน การเปลี่ยนพฤติกรรมให้เป็นมิตรต่อสิ่งแวดล้อม, การมีส่วนร่วมกับปัญหาสิ่งแวดล้อม, ลักษณะนิสัยส่วนบุคคล และ ความรู้ด้านสิ่งแวดล้อมที่เพียงพอ ปัจจัยเหล่านี้ได้จัดอยู่ในระดับบุคคล และสามารถพัฒนาผ่านการฝึกอบรม, การฝึกอบรม ในขณะปฏิบัติงาน, การแบ่งปันความรู้ด้านสิ่งแวดล้อม, การเข้าร่วมกิจกรรมที่เป็นมิตรต่อสิ่งแวดล้อม, การมีส่วนร่วมของ ภาคส่วนต่างๆในห่วงโซ่อุปทาน และหน้าที่และความรับผิดชอบที่ได้รับมอบหมาย ซึ่งสิ่งเหล่านี้สามารถทำให้พนักงานมี พฤติกรรมที่เป็นมิตรต่อสิ่งแวดล้อมมากขึ้นทั้งภายในและภายนอกบริษัท อีกหนึ่งข้อค้นพบคือ ปัจจัยภายนอกที่มี ประสิทธิภาพในระดับบริษัท และระดับสังคม ปัจจัยภายนอกระดับบริษัท ได้แก่ โครงสร้างพื้นฐาน, วัฒนธรรม, และ นโยบาย ซึ่งปัจจัยเหล่านี้สามารถพัฒนาผ่าน โครงสร้างพื้นฐานที่เป็นมิตรต่อสิ่งแวดล้อม, หน่วยงานที่รับผิดชอบด้าน สิ่งแวดล้อม, การสร้างความร่วมมือกับหน่วยงานภายนอก, การให้รางวัล, และการเปรียบเทียบกับบริษัทต่างๆ ซึ่งผลที่ได้ คือ นโยบายเกี่ยวข้องกับสิ่งแวดล้อมได้ถูกนำไปปฏิบัติโดยการสนับสนุนของผู้บริหาร ในส่วนปัจจัยภายนอกระดับสังคม ได้แก่ โครงสร้างพื้นฐานของสังคม, นโยบายของรัฐบาล,สภาพสังคม, วัฒนธรรม ด้วยกลไกที่มีประสิทธิภาพ เช่น การ บังคับใช้กฎหมายและการนำมาตรฐานระดับชาติและนานาชาติมาใช้ในบริษัท ซึ่งผลที่ได้คือ การพัฒนาธุรกิจอย่างต่อเนื่อง และตลอดเวลา ดังนั้น หากปัจจัยและเครื่องมือต่างๆทั้ง 3 ระดับ ได้ถูกนำมาปฏิบัติอย่างเหมาะสมแล้ว ผลที่ได้คือ การ ยกระดับการเสริมสร้างสมรรถนะการตระหนักด้านสิ่งแวดล้อมที่จะเห็นได้ชัดเจน สำหรับการศึกษาในอนาคต ควรให้ ความสำคัญ เรื่องการมีส่วนร่วมของประชาชนในสังคมในกระบวนการปฏิบัติ เพื่อที่จะเสริมสร้างสมรรถนะการตระหนัก ด้านสิ่งแวดล้อมให้มีประสิทธิภาพมากขึ้นในทุกระดับ

สาขาวิชา   สิ่งแวดล้อม การพัฒนา และความยั่งยืน   ลายมือชื่อนิสิต _____

ปีการศึกษา 2559   ลายมือชื่อ อ.ที่ปรึกษาหลัก _____

5587792620 : MAJOR ENVIRONMENT DEVELOPMENT AND SUSTAINABILITY
KEYWORDS: CAPACITY BUILDING / ENVIRONMENTAL AWARENESS / PUBLIC LIMITED COMPANY / THAILAND

PARKPOOM TILOKWAN: CAPACITY BUILDING MODEL ON ENVIRONMENTAL AWARENESS : CASE STUDY OF A PUBLIC LIMITED COMPANY IN THAILAND. ADVISOR: SANGCHAN LIMJIRAKAN, D.Tech.Sc, 143 pp.

Environmental problems have been globally concerned by all countries. Such problems have been originated from human activities by overconsumption and overuse of natural resources. With consequently occurring of environmental degradation. In order to solve such problems, the environmental awareness has been recognized. Environmental awareness has been pointed out in Agenda 21 to achieve sustainable development and be implemented in the global communities in all sectors. Environmental awareness in Thailand has been set up as the national policy according to the National Economic and Social Development Plan since 1997 and also at the Thailand Business Council for Sustainable Development. The objectives of the study are to study factors of the current level of environmental awareness of employees involvement in the public limited company, and to propose effectively the descriptive capacity building model on environmental awareness utilized in the public limited company. The questionnaire set and in-depth interview were developed based on the relevant research studies for primary data collection and were applied to the operational and managerial level of one public company in Thailand focusing on point of view on environmental awareness concerned. Descriptive statistics were used for data analysis which presented in terms of percentage.

The findings found that the effective internal factors are good attitudes towards environmental problems, intention to change behavior to be more environmental friendly, participation to the environmental issues, personal characteristics, and sufficient environmental knowledge. These factors are at the personal level which have the effective mechanisms including formal training, on-the-job training, knowledge sharing, environmental friendly activities, supply chain involvement, and roles and responsibilities assigned leading to the final output that employees would behave more on environmental friendly concerned both at workplace and his/her personal lifestyle. Another findings is the effective external factors in the company and society levels. At the company level, the effective external factors include company's infrastructure, company's culture, and company's policy. These factors would be enhanced by environmental friendly infrastructure, environmental concerned department, organization collaboration, reward and recognition provided by the company, and benchmarking with other companies. The final output at this level would be the environmental policy implementation which is fully supported by the management team. At the society level, the effective external factors are society's infrastructure, governmental policy, character of the society, culture with effective mechanisms including law enforcement, national and international environmental standard applied by the company. This lead to the final output of continuous business improvement at all times. Therefore, if these factors and mechanisms of all levels were well-function to be implemented, the effective descriptive capacity building on environmental awareness would be explicitly enhanced. This study further recommended that public participation should be highly considered to be involved in the implementation process to enhance the effective environmental awareness at all levels.

Field of Study:	Environment Development and Sustainability	Student's Signature	_____
		Advisor's Signature	_____
Academic Year:	2016		

ACKNOWLEDGEMENTS

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LIST OF ACRONYMS

3E	Efficiency, Energy, Environment
3R	Reduce, Reuse, Recycle
ANAB	American National Accreditation Board
CBSS	Capacity Building for Simulation Sustainability
CSR	Corporate Social Responsibility
DEQP	Department of Environmental Quality Promotion
DEWHA	Department of the Environment, Water, Heritage and the Arts
DJSI	Dow Jones Sustainability Index
EMS	Environment Management System
ECLAC	Economic Commission for Latin America and the Caribbean
EPA	Environmental Protection Agency
FAO	Food and Agricultural Organization
IAP2	International Association for Public Participation
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
ISSP	International Social Survey Programme
KPI	Key Performance Indicator
LED	Light-Emitting Diode
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
PEPH	Partnerships for Environmental Public Health

SCOPE	Strengthening Community Organizations to Promote Effectiveness
SET	Stock Exchange of Thailand
SHEE	Safety Health Environment and Energy
TBCSD	Thailand Business Council for Sustainable Development
TGO	Thailand Greenhouse Gas Management Organization
TQA	Thailand Quality Award
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UNITAR	United Nations Institute for Training and Research
WMO	World Meteorological Organization

CHAPTER I
INTRODUCTION

1.1 Importance of the study

Environmental problems have been globally concerned in every country. The issues concerned are, for examples, food, biodiversity, land, climate change, energy, technology and waste management (United Nations Environment Programme [UNEP], 2012). Such concerning issues have been originated from human activities. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) summarized that 95 percent of human activities have created the global warming to the world (IPCC, 2014). Those activities were expressed from the degree of people's awareness towards the environmental problems. The awareness related to the environment has been strongly pointed out in many parts in Agenda 21 (United Nations [UN], 1992) as one of tools to cope with the environmental issues which the environmental awareness is needed to be raised, and to be continuously implemented under the Sustainable Development Goal (SDG).

The environmental awareness could be increased through a channel of education by including more on the perspective of environment and reformulating the environmental education to increase the level of awareness to the targeted groups such as children, adults, communities (UNEP, 2007). Not only promoting the environmental awareness via the education system, but also promoting via the partners of UNEP Children and Youth (UNEP, 2004). For example, a company named 'Bayer' was the first partnership with the UNEP to stimulate children and young people to grow and

express concern to the environmental issues through the painting and photographing activities.

In addition, many public and private companies around the world have given more focuses on the effect on the environment by integrating the concept of Corporate Social Responsibility (CSR) to the business process. The CSR was defined as the integration processes between business itself and its operations impact on the society and environment as a whole (United Nations Institute for Training and Research [UNITAR], 2012). Most of CSR activities were initiated to motivate stakeholders especially employees to be aware more on the environmental issues. In other words, the CSR concept can be a tool to stimulate the environmental awareness inside people's mindset. For instance, Mitsui Company in Japan has set up an event called "Mitsui Environment Month" to raise the environmental awareness of their employees via activities such as a training or a seminar (Mitsui, 2015). The International Organization for Standardization (ISO), had also set a standard which related to environmental issues concerned under the ISO 26000. The ISO 26000 is aimed to shape ideas and actions for social responsibility of the company which a core subject is focused on environmental issue (ISO, 2013). In this regard, either the company's policy on CSR itself or the international standard compliance on environmental issue would be a tool to encourage employees in the company to have more environmental awareness mindset.

At the national level, the environmental awareness in Thailand has been set up as the country policy according to the National Economic and Social Development Plan since 1997 (National Economic and Social Development Board, 1997). In addition, Potar et al. (2001) stated that the environmental awareness would be achieved and established through education provided by integrating the environmental education into

both formal and informal educational process at primary and secondary school levels in Thailand under the "Rung Arun" project. Under the Department of Environmental Quality Promotion (DEQP) of Ministry of Natural Resources and Environment of Thailand, the environmental awareness is one of its mission to enhance the public involvement in environment according to the Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (DEQP, 2015).

For private sector in Thailand, environmental awareness has been promoted under the Thailand Business Council for Sustainable Development (TBCSD) since 1993 (TBCSD, 2014). The TBCSD has focused on sustainable movement, raising environmental awareness and capacity building on environmental management (TBCSD, 2014). The TBCSD has used "Learning Together" concept and training/seminar for building and enhancing the capacity on environmental awareness. However, the current environmental awareness in Thailand has been realized in some companies, because it is not a compulsory policy to the company to comply with. Therefore, a capacity building model on environmental awareness using factors relevant needed to be studied to increasing and enhancing effective environmental awareness at the company's level, as well as, to encouraging people to change their behavior to be more environmental friendly.

1.2 Objectives of the study

1.2.1 To study factors of the current level of environmental awareness of employees involvement in the public limited company.

1.2.2 To propose effectively the descriptive capacity building model on environmental awareness utilized in the public limited company.

1.3 Research questions

1.3.1 To what extent can the relevant factors be increasingly drive the level of environmental awareness of employees in the public limited company?

1.3.2 Can the descriptive capacity building model on environmental awareness be enhanced the environmental mindset of employees in the public limited company?

1.4 Scopes of the study

1.4.1 The study focused on one public limited company in the industrial sector in Thailand that utilizes natural resources and environment for its business.

1.4.2 The public limited company studied was selected based on the following criterion;

- A Thai nationality and listed in the Stock Exchange of Thailand (SET);

- Natural resources used as the primary source of the operational process;

- Recognized as the green business according to the awards and/or certificated received;

- Received an excellent Corporate Governance according to the Stock Exchange of Thailand which can refer to the well-management towards shareholders and other related stakeholders in both aspects of profit and non-profit management.

1.4.3 The questionnaire and in-depth interview were conducted to the respondents and key informants to address any relevant factors related to environmental awareness enhancement.

1.4.4 Descriptive statistics was used for data analysis.

1.4.5 The descriptive capacity building model on environmental awareness was proposed based on primary data obtained and literature reviewed.

1.5 Operational definitions

The following definitions will be referred in this study:

1.5.1 Environmental awareness referred to the internal willingness of people which needs to improve for a better environment and having the common consensus to take actions together. (ECLAC, 2000)

1.5.2 Environmental behavior referred to the behavior that people act which can be perceived as environmentally friendly impact to the environment. (Krajhanzl, 2010).

1.5.3 Capacity building referred to a development of skills, experience of people in the organization in form of training, technical assistance (OECD, 2002). Capacity building could also lead to the capacity development as a process of abilities development of individuals, group of people, companies, institutions and societies in order to show their abilities in dealing, solving and understanding the problems or objectives effectively. (OECD, 2006).

1.5.4 Public limited company referred to a kind of company established with the purpose to offer shares for sale to the public and the liability of the shareholders is limited to not exceeding the amount payable on the shares and said company has specified such objective in its Memorandum of Association. (Limited Public Company Act of Thailand B.E.2535, 1992)

1.6 Expected outcomes

1.6.1 The best practice of the company and its employees instills the environmental awareness mindset.

1.6.2 The factors of descriptive capacity building model on environmental awareness would be able to use and enhance the environmental awareness mindset in both business and personal lifestyle.

CHAPTER II
LITERATURE REVIEW

2.1 Linkage between environmental problems and human being

According to the primary assumption that most of the environmental issues originated from human being, this assumption was also referred in "70 Ways the UN Makes a Difference" (UN, 2015). This article summarized what United Nations has been dealt with global problems for the past 70 years and what the future actions that United Nations is going to take. However, UN achievements in the aspect of environmental issues were raised and the linkage between environmental problems and human being was also discussed as shown in following items;

- Climate change

  The Intergovernmental Panel on Climate Change (IPCC) reported in 2007 that human activities were a primary cause of climate change. Thus, climate change has been enhanced to be a global problem which needed to solve urgently by every related stakeholders. At the same time, United Nations Environment Programme (UNEP) and other UN agencies have become leaders in raising the environmental awareness to the people.

- Global Environmental Problems

  For the current global environmental problems, The United Nations has been working in international forum to build a consensus together to solve the global environmental problems which needed to be concerned and urgently solved. The main reason was because the environmental problems could create a

significant impact to the natural resources depletion which directly affected to human being in aspect of his survival in both social and economy.

- Ozone layer

The Montreal Protocol has been remarked as the mutual consensus to protect the ozone layer when the UN Environmental Programme (UNEP) and The World Meteorological Organization (WMO) have worked together to find the best solution of banning the chemicals that damaged the ozone layers which also originally caused by human activities.

- Safe drinking water

Clean and safe drinking water was mainly recognized as one element from nature that people were indispensable. Therefore, the accessibility of safe drinking water to the world's population by the cooperation of UN and the country itself has been developed increasingly from time to time. Although this issue was not clearly justify that it is a problem caused by human being, but by providing the safe drinking water was one way for human survival.

- Toxic chemicals

The Stockholm Convention on Persistent Organic Pollutants was aimed to get rid of the most dangerous chemicals that could be harmful to human being and biodiversity in many ways. The banned of using those toxic chemicals might cause from the insufficient knowledge of using them of the past generations. Thus, when the current generations enlightened that they were extremely dangerous to the human being, they have tried to find the way out to get rid of

and found other substitute material that was more environmental and human being friendly.

From the above samples, they could be concluded that the environmental problems have originally caused by the human being's activities rather than the unorganized structure. The structure of company or the special group would be set after the environmental problems have been concerned as global problems. Thus, if people could be called as the root cause of the environmental issues, the mindset of environmental awareness was an urgent matter to cope with by instilling the mindset into people before permitting them to take any actions that might be harmful to the environment.

In addition, the climate change has become a global concerned especially for the United Nations Framework Convention on Climate Change (UNFCCC) as shown in a recent Convention focusing on the article 6 (UNFCCC, 2012). Topic of education, training, public awareness, public participation, public access to information were discussed in this Convention for seeking the mutual agreement of dealing with climate change which caused by human activities.

- Education – knowledge of climate change was needed to provide to all levels both formal and informal especially for women and youth.
- Training – its approach was similar to education except the target groups whom were key players such as scientific, technical, teachers and community leaders.

- Public awareness – this could be raised by implementing the climate-friendly policy, using the popular media such as social media to motivate people in the society taking actions that related to the climate change.

- Public participation – climate change activities were needed to promote to the public to arouse in participation.

- Public access to information – all information that related to climate change was needed to provide to the public through an effective channel such as internet with no language barrier.

Regarding the ways to shape human being's attitude and behavior as a major cause of the environmental problems particular on climate change, the above solutions might be hard to be succeeded unless people in every society; both affected and unaffected, agreed, opened their minds, and realized that the climate change issue or any other global environmental issues were everyone's responsibility.

2.2 International Policy related to environmental problems and awareness

The Rio+20 outcome document, namely "The Future We Want" (UN, 2012) clearly mentioned that the environmental awareness was not only one person's responsibility but it was everyone's responsibility as the international commitment and mutual agreement. The role of the United Nations Environment Programme (UNEP) was needed to strengthen as the leading global environmental authority to set the global environmental agenda and promote the implementation of the environmental issues in the concept of sustainable development within the United Nations system. Moreover, the critical issues related to the environment were required to promote to the public as one of the channels to increase the level of environmental awareness to people in society.

The above statements were referred in the section of Institutional framework for sustainable development.

The environmental awareness was also obviously referred in the specific industry such as "Tourism". The environmental awareness was needed to promote in order to create the sustainable tourism industry under the concept of the sustainable development, according to the outcome of the Rio+20.

The environmental awareness was not only discussed in "The Future We Want" but also in the Agenda 21 as well. It was under the section of promoting education, public awareness and training. Human activities were acted without the awareness to the environment because of the lack of environmental information, technology and specialist provided especially in the developing countries. Hence, the country itself should implement its own motivation to create public awareness by setting up public forum on the issue such as environmental policies. The public awareness related to the environment could also be instilled in every educational level which would result in the change in behavior. In addition, the international organization such as the United Nations Children's Fund (UNICEF), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Development Programme (UNDP) could also help raising the environmental awareness by initiating and supporting the environmental programs to the target groups. Therefore, the public awareness in the aspect of environmental concerned should be strongly emphasized as a tool to make an environmental friendly society.

After the international policies were commonly declared, the national level would be able to comply them as its master policy and be able to design its own strategy to deal with the environmental issues at the country level. When each country had its

own strategy that corresponded to the international policy, the society and community would be able to apply and use it as a local strategy to increase their environmental awareness in the society and community, respectively. On the other hand, the environmental education of children and environmental knowledge of people in the society were very important to express the level of environmental awareness. Furthermore, other supporting factors such as the advance in technology and the cooperation of any stakeholders in the society were necessary to be accountable in order to fulfill the environmental education and knowledge, because the current environmental problems were not the responsibility of only one nation but all nations should be responsible for such issues for future generations.

2.3 Framework of environmental awareness

Being aware of things ahead could make people re-think for the actions whether they should proceed it or not. Dourish and Bellotti (1992) described a definition of awareness as activities proceeding by others that needed to be conceived, and it would be a part of individual activity. In other words, awareness was a pre-stage of thinking before taking actions that would be perceived from others' actions. Hence, the environmental awareness could be described as the issues of environmental concern by people from different perception such as individual direct experiences related to the impact from the environmental problems and indirect experiences like environmental issues raised by outsiders including community and society. Dunlap and Jones (2002) defined the environmental concern or environmental awareness as the degree of awareness that people concerned regarding to the environmental problems and showed their willingness and/or supports to deal with the problems.

Indeed, before performing the action from perceiving the awareness, there were steps between the awareness and the action of environmental behavior. Agnes (2008) studied on the gap between the environmental awareness and environmental behavior. This research explained the linkage transition behind the environmental awareness and behavior. The environmental awareness was required four steps to reach the environmental behavior. Those steps were described as follows:

- Knowledge; which referred to the environmental knowledge in terms of the real information and also its concepts. Knowledge could be a starting tool to help people changing their thoughts and eventually their behavior at the end.

- Values; which related to giving a consideration to the environment. However, values were hardly to estimate in terms of quantitative. It would be shown through people's thoughts and behaviors of the particular environmental concerned.

- Attitudes; which indicated by the viewpoint towards the environment. Similar to the values, attitudes were not easy to calculate in terms of quantitative. Attitudes in aspect of environment could be reflected from the individual's response towards the environmental issues.

- Willingness to do explicitly; which meant the need of commitment and action to deal with the environmental problems. There were tools needed to support on this issue such as incentives provided and a support from others.

- The real environmental behavior; which was only one visible indicator to illustrate the successful result of having environmental awareness whereas

knowledge, values, attitudes and willingness to do were quite hard to explicitly be seen as the visible indicators.

It also made a point that the environmental knowledge within the company was certainly not sufficient to the change of people's behavior as the environmental friendly company.

The environmental behavior or Pro-Environmental Behavior could be extracted into three terms: Behavior, Environmental Behavior, and Pro-Environmental Behavior. Their definitions were classified as follows:

- Behavior was defined as people's action which can be explicitly seen, evaluated and duplicated. (Bicard, S. C, Bicard, D. F., & the IRIS Center, 2012);

- Environmental behavior referred to the behavior that people act which can be perceived as environmentally friendly impact to the environment. (Krajhanzl, 2010); and

- Pro-Environmental Behavior was defined as the human being's behavior which act in the way to protect the environment (Krajhanzl, 2010). Science for Environment Policy: European Commission DG Environment News Alert Service (2012) also stated the Pro-Environment Behavior was an action that people do in daily life for creating a positive impact to the environment such as applying 3Rs (Reduce, Reuse, Recycle) in energy consumption.

Since people had an alternative to perform their controllable activities that would create the positive impact to the environment to be called as environmental behavior. Thus, there were ways to explore each person attitude whether it could lead

to create the positive impact to the environment or not by questions asked. For example, Melgar et al. (2013) mentioned about the International Social Survey Programme (ISSP) Environment III survey report. The survey was conducted in 2010 and it was a cross-national survey included over 38,000 samples in 29 countries from both developed and developing country. There was the list of question that could reveal people's attitudes and environmental behaviors. These environmental questions were asked in the survey to show the level of environmental behaviors including 1) How did you concern the issues related to the environment?, 2) How many times do you try to recycle stuff such as glass, tins, plastic or newspapers?, 3) How many times do you try to buy an organic fruit and vegetables?, 4) How many times do you avoid using car due to the environmental impact reason?, and 5) How many times do you use less energy or fuel in your household due to the environmental impact reason?

From the above mentioned questions, people's responses would lead to their tendency to act as environmental behaviors if they answered that they all concerned much of impact to the environment from each activity. These respondents tended to act as protective environmental behavior rather than the respondents which answered in the vice versa.

In addition, a framework for pro-environmental behaviors report written by the Department for Environment, Food and Rural Affairs, United Kingdom in 2008 mentioned that the pro-environmental behaviors could refer to 1) personal transport mode, 2) the use of energy-water in the house, 3) waste management in the house, and 4) the use of eco-products. These pro-environmental behaviors were samples of how people choose to perform in order to create the positive impact to the environment. For

instance, reusing the plastic bag rather than using the new one, taking a public transportation rather than driving own private vehicle.

In 2002, Kollmuss and Agyeman reported that the pro-environmental behaviors which could be related to the environmental awareness was "A behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world". Based on their definition, the pro-environmental behavior could take further analysis as a well-performance if people strongly had their own awareness on the environment. They proposed the pro-environmental behavior model as shown in Figure 2.1.
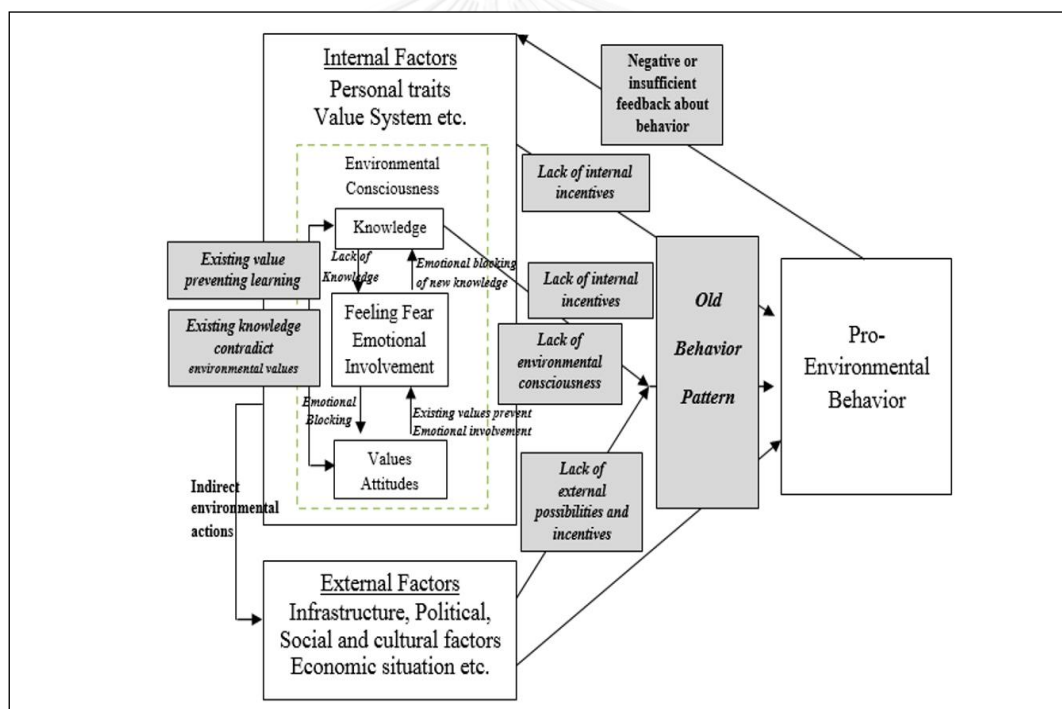
Figure 2.1 Pro-environmental behavior model

Source: Kollmuss and Agyeman (2002)

Kollmuss and Agyeman described that before acting as the pro-environmental behavior, it required the internal factors which were the factors inside human beings and the external factors which were the outside factors that could be either supported or not supported to the pro-environmental behavior. The internal factors act as "Personal Attribute" which meant the unique characteristic of each individual, "Value system" could refer to the personal belief. The "Environmental Consciousness" or "Environmental Awareness" was also defined under the internal factors. This composed of three important elements, namely knowledge related the environment, feelings-fear-emotional involvement in environmental issues and values and attitudes towards environment. Regarding the external factors, these were infrastructure, political, social and cultural and economic situation that could support the change in pro-environmental behavior. However, this model also had some barriers that would discourage the pro-environmental behavior.

For the internal factors, lacking of environmental knowledge, blockage the new environment knowledge from individual's emotion and perception and contradiction between current and new environmental knowledge could be barriers for individual to accept and be eager to learn new and updated environmental knowledge. For the external factors, lacking of incentives of both internal and external factors could be a barrier to change the behavior. Moreover, the hardest barrier that mentioned in this model was "Old Behavior Patterns" which meant that even though each individual has already changed the perception to accept new environmental knowledge, the attitudes and values towards environment plus having a good support from the external factors such as infrastructure, social norm. However, if the old behavior patterns were not

changed at the end of the process, the pro-environmental behavior would not be able to change as it should be.

Kollmuss and Agyeman concluded that the perception of the environmental knowledge is a significant fundamental to build the environmental awareness. In this regard, the efficient communication of the environmental knowledge could be another tool to support the receiver to gain the knowledge more and more.

In a study of the influence of environmental knowledge and concern on green purchase intention the role of attitude as a mediating variable. Aman et al. (2012) mentioned on environmental knowledge definitions including 1) people's knowledge related to the environment which leading to the impacts to the environment and the system as a whole to achieve sustainable development (Mostafa, 2007), 2) the knowledge related to ecological which each person obtained (Conraud-Koellner and Rivas-Tovar, 2009), and 3) the knowledge that each individual has regarding environmental issues (Chan and Lau, 2000).

In 2005, Kimble presented the pro-environmental behavior model which the environmental awareness was one of the internal factors. Such model was shown in Figure 2.2.
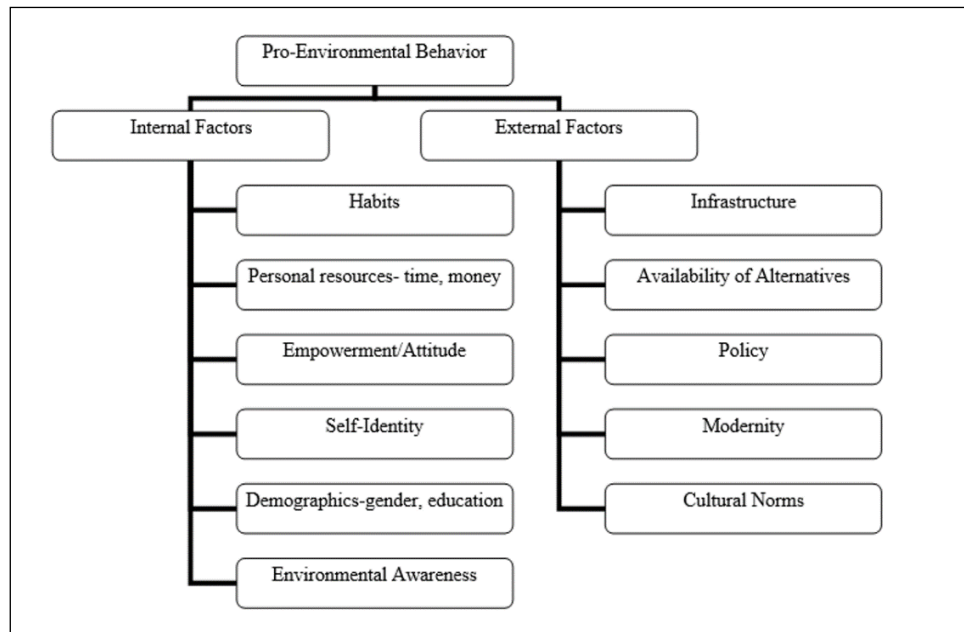
Figure 2.2 Factors of pro-environmental behavior model

Source: Kimble, 2005 (modified from Stern (2000), Kollmuss and Agyeman (2002)
and Thorgersen (2005))

Kimble pointed out factors influenced in both internal and external factors. These were habits, personal resources-time, money, empowerment, attitude, self-identity, demographics-gender, education, environmental awareness as the internal factors. The external factors were infrastructure, availability of alternatives, policy, modernity and cultural norms. Additionally, Kimble stated that having only the concern for the environment did not adequate for changing the behavior, it must have the awareness of environmental behavior as well to become more environmental behavior. On the other hand, self-habits and self-identity would be called as obstacles for becoming more environmental behavior unless each individual already had the environmental friendly habits. Demographic including educational level, income and gender and personal resources were also the internal factors that would influence to the environmental behavior.

Factor of gender also impacted to the level of environmental awareness reported by Hunter, et al. (2004). They emphasized on the linkage between gender and environmental awareness/behavior that the role of women would tend to support the environment and behave more environmental behavior due to the facts that women's roles are mostly interfaced with the environment. For example, women were more active in household-oriented such as recycling, buying organic food whereas the role of men were more active in household finance to the whole family.

For the external factors, Kimble mentioned a point of availability of alternatives. This meant that if there was unavailable matter that people could switch to use in order to change their behavior, the environmental behavior was hardly to succeed.

2.4 Internal factors towards increasing the environmental awareness

According to the environmental awareness models developed by Kollmuss and Agyeman (2002) and Kimble (2005), the two key elements, namely internal factor and external factor. The internal factor was mostly focused on what individual received and responded to the environmental knowledge and also different in demographics and experiences of each individual. More specifically in the company, there would have more sub-factors as the internal factor to increase the level of environmental awareness of people. Brennan, et al. (2011) studied on the environmental sustainability concept which was widely recognized by stakeholders in the business. They found that the motivation of environmental issue from the top management to the operational level was needed in order to change employees' environmental attitudes and behaviors in the future. However, they mentioned that the concept of sustainability in the aspect of environment might come after the main objective of doing business which satisfied a

customer and made profit. Therefore, the corporate social responsibility related to the environmental issue might not be the first priority to be concerned by employers. Moreover, the moral of doing business in terms of environmental issue was another factor that could help increasing the level of environmental awareness. They also revealed that most businesses did not regard that the environmental issue as a part of their strategies of becoming a successful company. One reason was that the employers thought on environmental problems were solvable and there was no need for them to be involved. In this regard, the number of activities related to environment were meager in the company unless every employee including the top management had their own self-environmental awareness on environmental issues. Agnes (2008) also stated the different aspects as internal factors to increase the environmental awareness and behavior, including a written environmental policy, internal and external environmental audits, environmental training programs for employees and environmental performance goals or indicators.

Remmen, et al.(2000) indicated that the internal factors on the environmental awareness was the employee participation in the environmental activities. The employee participation could become a starting and initiating point of changes in terms of environmental attitudes and behaviors. It was highlighted that the best way to get the most employee participation was the cooperation at a management level on solving the environmental problems. Only information provided by the environment teams was not sufficient to create the environmental activities, the discussion and brainstorming sessions that also required to create related activities. Learning-by-doing from each employee was also another point that should be focused on. Changing his/her attitude

and behavior from individual could be another factor that would affect the company to become more environmental friendly.

In 2012, Liu pointed out that there were four barriers of internal factor which would make the environmental awareness and behavior unsuccessful as follows:

a)   Company's structure which emphasized on the non-incentives provided for initiating more environmental friendly technology;

b)   Company's regulation which lacked of common understanding related to environmental knowledge among employees in each department;

c)   Company's context which referred to the company giving less importance to the environmental problems and seeing them as a short term effect; and

d)   Company's culture which indicated the company was afraid to take any risks or afraid of any changes

A common aspect of internal factor of the company raised by Brennan, et al. and Remmen, et al. was the cooperation and motivation of top management in participating in environmental activities and setting the environmental concern in the policy level. Agnes also argued that the environmental policy in the company was a common aspect of internal factor. Agnes also mentioned the setting up a particular department to respond to the environmental issues. For instance, an internal audit and external audit could be factors to increase the level of environmental awareness. Moreover, Liu found that the internal factors should provide a co-benefit between employees and the company. Such environmental based concept like "incentives" should be another internal sub-factor to increase the environmental awareness among employees. Meanwhile, the company itself would get benefit on being more

environmental friendly company and employees also received the incentive as their returns.

From the internal factors inside the company raised by all above authors, the most important factor to increase the level of environmental awareness was a characteristic of employer in terms of vision, mission and level of participation in environmental activities. Employers also had power to re-construct the company by setting up the new departments that were mainly responsible to the internal and external environmental issues. Moreover, employers had authority to set the environmental training program and provide incentives to encourage employees to act with environmental behavior as well.

In conclusion, there were at least two internal factors of each individual, namely environmental knowledge and environmental behavior. These two factors could disclose the level of environmental concerned of a person which would reflect to the pro-environmental behavior. In this regard, the environmental knowledge in the questionnaire could ask the respondents in general to see their perception and point of concern about current environmental problems that they have confronted. For example, global warming, climate change and natural disaster issues that have created the negative impacts to the respondents. In addition, the environmental behavior could be further inquired based on their environmental knowledge such as how they applied 3R concept to their daily lives. Other related internal factors that mentioned in the pro-environmental behavior model might be another consideration points. For instance, age, gender, level of education, lifestyle, and direct or indirect experience towards environmental issues.

2.5 External factors towards increasing the environmental awareness

      The internal factor in the company might not be sufficient to increase the level of environmental awareness of employee. Gadenne, et al. (2009) reported that the external factors of the environmental awareness that employers could receive as the indirect force to increase their environmental awareness were suppliers, customers and law. These factors could indirectly force them to change their operations to be more environmental friendly process. One result showed that the level of environmental awareness would increase if the employers believed that they were able to make profits by being more environmental business. However, the supporting fund from either outside environmental company or the government was also needed to motivate business or to push their strong attitudes of environmental awareness to become the actions in reality. The legislation was another important tool to increase the level of environmental awareness. In 2010, Abdul-Wahab reported on the level of environmental awareness between importers, end-users and the public. This study showed that the level of environmental awareness of creators, whom were importers and end-users, were higher comparing to the public. At the same time, the public environmental awareness motivation was also needed to be increased to motivate all stakeholders taking more concern on the environmental issue. One result from respondents showed that the major cause of environmental problems was "Lack of environmental awareness amongst some citizens". This study clearly showed that the public as the external factor could increase the environmental awareness among people within and outside the company.

      Wei (2011) pointed out the environmental awareness and behavior of particular business in China that the protection in natural environment was a significant tool for

the business growth. However, there was some issue concerned on being an environmental friendly company that would affect to the profit of changes in operational process. Fortunately, most of businesses have already implemented activities such as energy conservation, water conservation and waste management. These activities were according to the laws and regulations and the environmental policy and they were already involved in the business plan. Wei also noticed that most of businesses were aware of the environmental concern and tried to build more awareness and behavior. In addition, the environmental practices were needed to show clearly in the aspect of cost saving and cost benefit in the business. On the customer side, this also played an important role to stimulate the business by increasing the demand using the environmental friendly company. Eaganl, et al. (1997) reported that another success factor to increase the environmental awareness was from end-customer. In another word, there was a request from consumer to receive the environmental products. In this regard, what the producer would definitely do was applying more environmental friendly into the internal production process. This request could lead into further step of initiative to increase the level of environmental awareness to employees and also to provide a new competency to the employees for their career paths. Additionally, it was also noticeable that another key success factor was promptly support by the top management.

In 2012, Tsai, et al. indicated the perceptions of employees in Hong Kong towards corporate social responsibility (CSR) in particular industry. It found that the level of importance of CSR on environmental protection and its performance from employees' perspective was still low. However, the governmental laws and regulations might be able to solve this problem by arousing the level of environmental awareness

in the aspect of the CSR. It also suggested that the CSR initiating investment program in the company should help the company reducing cost of the company and also could simultaneously build a good relationship to the government. The most valuable asset of the company was employees who are the main factor to drive the company's performance including the CSR project related the environmental issue.

Referring to the external factors proposed by Kollmuss and Agyeman (2002) and Kimble (2005), there were three factors, namely 1) environmental infrastructure, 2) environmental policy, and 3) environmental social cultural and norms that should take an in-depth reviewed.

1) Environmental infrastructure could refer to the environmental friendly infrastructure or eco-friendly infrastructure that could enhance and support the pro-environmental behavior such as constructing a green building. In 2014, Environmental Protection Agency (EPA) in the United States defined the concept of green building as the practice of creating structures and using all processes under the concept of environmentally responsible and resources efficient. EPA mentioned ways to reduce the impact of the green building to the natural environment, including 1) the use of energy, water, and other resources efficiently, 2) occupant health protection and employee productivity improvement, and 3) waste, pollution and environmental degradation reduction.

In addition, EPA provided the sample of green building that related to the use of sustainable materials, for example, reused and recycled-content, renewable resources used, healthy indoor environments creation, and water usage reduction. Therefore, what EPA mentioned related to environmental infrastructure, they could be selected and asked in the questionnaire. For example, energy efficiency can be derived to a question

like "Does your company has policy to turn off computer during lunch hour?" or "Does your company install the equipment to save the water in the restroom?"

2) Environmental policy referred to both internal and external policy that concerned about the environment. Internal environmental policy could be the policy initiated by the management related to environmental impact from any operations. Such external policy included ISO 14000 which mainly focused on the environmental management system. This ISO standard would eventually implement to the real practice for people in the organization to align with. ISO 14001:2004 (ISO, 2014) provided the guidance to company or organization must follow and set up the effective environmental management system. As the company was certified by ISO 14001:2004, both internal stakeholders including management, employees, and external stakeholders including suppliers were monitored for the environmental impact from any company's operations.

According to the information from ISO in 2014, there were benefits to the company when it complied its operation with the ISO 14001:2004 such as waste management cost reduction, energy and materials consumption decreased, cost of distribution declined, and organization image improvement.

The Virginia Department of Environmental Quality (2001) summarized the questions that required to answer in order to meet the requirements of ISO 14001. For instance, "Is the company policy appropriate to its activities, products and/or services?", "Is there any commitment to pollution prevention and to the continuous improvement?", "Is there any commitment to comply with all environmental laws and regulations as

appropriate", and "Do all staff in the company know how their jobs relate to the environmental policy?"

Not only the ISO 14001 that company or organization should comply with, but also the ISO 26000 which focused on the social responsibility in seven core issues (ISO, 2014). One important issue was the environment that the organization needed to be responsible for. However, ISO 26000 mainly provided the guidance of being a social responsibility rather than the requirements which could help the company or organization to convert the written policy to the real actions that related to social responsibility.

3) Environmental social cultural and norms or environmental friendly culture referred practices or activities, which aimed to reduce the impact to the environment; taken place in particular place/community. This culture could be a tool for people's environmental awareness enhancement to become more protective environmental behavior. In 2011, Taipower, a power plant in Taiwan, has recently created the environmental friendly culture by executing the following activities to become a world class green energy. Such activities were 1) environmental declaration in order to meet all regulations by conserving the resources, preventing the pollution and improving the performance at all times, 2) environmental impact assessment engagement to assure the minimal impact to the environment to any related stakeholders, 3) energy resource management, including material flow management system, energy conservation, waste water reuse, and environmental accounting system., 4) waste treatment and resource reuse in order to reduce the waste generation and treat it properly to the natural environment, 5) air quality maintenance, including NO_x and SO_x emissions

management, 6) environmental personal training by providing environmental education training sessions to all employees through professional training agencies, 7) green purchasing including office supplies, computer and business facilities, 8) green buildings for energy conservations and low carbon emissions, and 9) environmental conservation and ecological diversity by taking into consideration fishery resources restoration, coral preservation.

From the above activities, they can be clearly seen that the environmental friendly culture must be initiated by the management by declaring a strong commitment and intention and cascade down from company's policy, implementation to employees' action afterwards. If the company itself did not declare any the environmental concerned statement, the list of activities would be difficult to take place. Finally, the environment friendly culture will be created as the normal practice when employees in the company clearly understand the company's intention of creating a green culture.

Additionally, Department for Environment, Food and Rural Affairs of the United Kingdom in 2008 studied on a framework for pro-environmental behaviors report. Its segmented the group of respondents into seven segments of behavior related to environmental concerned as follows:

1) Positive greens – this group of respondents had high level of willingness and ability to act in any environmental issues. They were most likely to try to influence people around.
2) Waste watchers – their behavior was to avoid unnecessary waste rather than finding ways to reduce the impact to environment.

3) Concerned consumers - they already had some concern for environmental problems and tried to reduce energy and water usage, but they were not yet ready to change their behavior.

4) Sideline supporters - they concerned about the environment but unlikely to change their behavior unless it matches to their current lifestyle.

5) Cautious participants – this group was concerned some of environmental issues and tended to concern more if others did.

6) Stalled starters - with less concern about the environmental problems and thought that they were too far to concern of due to the lack of environmental knowledge.

7) Honestly disengaged - who had no interest or concern for environmental problems.

From these seven group of respondents, the environmental friendly culture would quickly happen if there were numerous of first five groups inside the company, because they at least showed their concern in their mindset rather than the last two groups which had no interest and care about the environmental issues.

2.6 Environmental awareness towards human's demographic components

With regard to environmental awareness, not only the internal factors and external factors could increase the level of environmental awareness, the demographic components of individual itself such as 'Age' and 'Gender' also would affect on environmental awareness and environmental behavior as a result.

Ogunbode and Arnold (2012) studied on the environmental awareness related to human behavior. They reported that the demographic components such as 'age' of

people could play some significant role towards the environmental concerned. It was reflected that the elderly were concerning more in environment comparing to the younger. However, the level of knowledge on environment was also another important factor reflecting human behavior. Knowledge could shape and change people's attitudes on the environment behavior. Therefore, means to promote the environmental awareness are providing useful knowledge to people in the society and also providing positive attitudes and 'willingness to do' related to the environmental issues.

Wong and Wan (2008) pointed out factors of environmental awareness level of Hong Kong People that gender and level of people's education were two important factors to shape the environmental awareness and to affect the behavior afterwards. Gender which was more familiar to the environment would tend to have more environmental awareness. Hunter, et al. (2004) reported that the role of women would tend to support the environment and behave more environmental behavior due to the facts that women's roles as motherhood mentality were mostly interfaced with the environment. For example, women were more active in household-oriented such as recycling, buying organic food whereas the role of men were more active in household finance to the whole family.

2.7 Capacity building

Capacity building was a term that interpreted how things or human could build up or increase their capacity effectively and efficiently into the optimum level that could be utilized to the surrounding factors in society. Enemark (2003) mentioned that capacity building had dimensions which needed to be focused on, starting from micro level to macro, from individual, organization to society.

The international organizations defined capacity building in different perspectives. Such definitions were as follows:

- Capacity building or capacity development was a concept which gave a wider picture than companies or institutional development because it looked at the whole system, at its environment inside, at surrounding context and at interaction between individuals, companies and societies. (UNDP, 1998)

- Capacity building referred to a development of skills, experience of people in the organization in form of training, technical assistance (OECD, 2002). Capacity building could also lead to the capacity development as a process of abilities development of individuals, group of people, companies, institutions and societies in order to show their abilities in dealing, solving and understanding the problems or objectives effectively. (OECD, 2006)

- Capacity building was a combination set of people, institutions and practices that allowed countries to achieve their development goals and it was a type of investment in human capital, institutions and practices (World Bank, 1998)

According to the above definitions, capacity building had to begin with the smallest and the most powerful unit in the society which was human being. Human being could be either an effective or ineffective driver of a particular unit depending on their skills or abilities that they performed. Moreover, the bigger unit would be able to make either backward or forward movement of institutions or societies. All of these developments relied on the capacity that each individual had and his willingness to perform. Therefore, the capacity building was an essential factor to concern and study

since it could make positive or negative changes to the society and to the world community as the biggest society.

The United Nations Environment Programme (UNEP, 2006) recommended ways to increase the effectiveness of capacity building for sustainable development in the macro level as shown below;

- Finding the needs and building on current capacities, this referred to the assessment of needs and the assessment of current capacity to estimate what the new capacity could be built on.

- Being clear about the objectives, referred when the objectives of building capacity were clear, the effective activities, targets would be apparently more successful.

- Using variety of capacity building approaches, depended on the particular objective. For example, building human capacities for increasing level of awareness might use training workshop.

- Targeting the right people to build a critical mass, referred to a party which had ability to create a mass impact to the society such as researchers, associations, companies and unions.

- Using the training-of-trainers approach work, referred to passing the knowledge from the master trainer to a smaller group of professionals in order to cascade down the knowledge to people in the community.

- Institutionalizing capacity building programmes at regional and national level, referred to providing capacity building in the regional and national level in aspect of technical and financial support rather than centralize a center of capacity building in the international level.

At the micro level for the effectiveness of capacity building, Hawe et al. (2000) studied the capacity building in the organizational level, they raised at least three factors that the organization must take into account to build its capacity as follows:

- Commitment from organization itself, referred to an available resources in the organization such as policies, organization's mission, and number of parties involved.

- Skills, referred to ability of parties involvement such as problem solving during the process of building a capacity

- Structures, referred to the internal and external network in the organization, communication, alternatives for additional competencies, new work process.

The final report of capitalization study on capacity building support programmes for non state actors under the 9th European Development Fund prepared by Floridi et al. in 2009 mentioned about the elements of the capacity building according to Figure 2.3. There were elements needed in each dimension from individual to relational dimension. Starting from individual level in the organization which individual's attitudes, knowledge, interests, skills and strategic leadership skill were needed to build up the capacity inside each individual before developing to the organizational dimension. For organizational dimension, an organizational mission, vision, ethics and its efficient and effective management of resources/assets such as human resources, technological, financial were also significant for building up the capacity in the organizational level to support the readiness of individual level. For relational dimension, building up the capacity in this level was required for networking and partnership development with other related institution to perfectly support the organizational level.
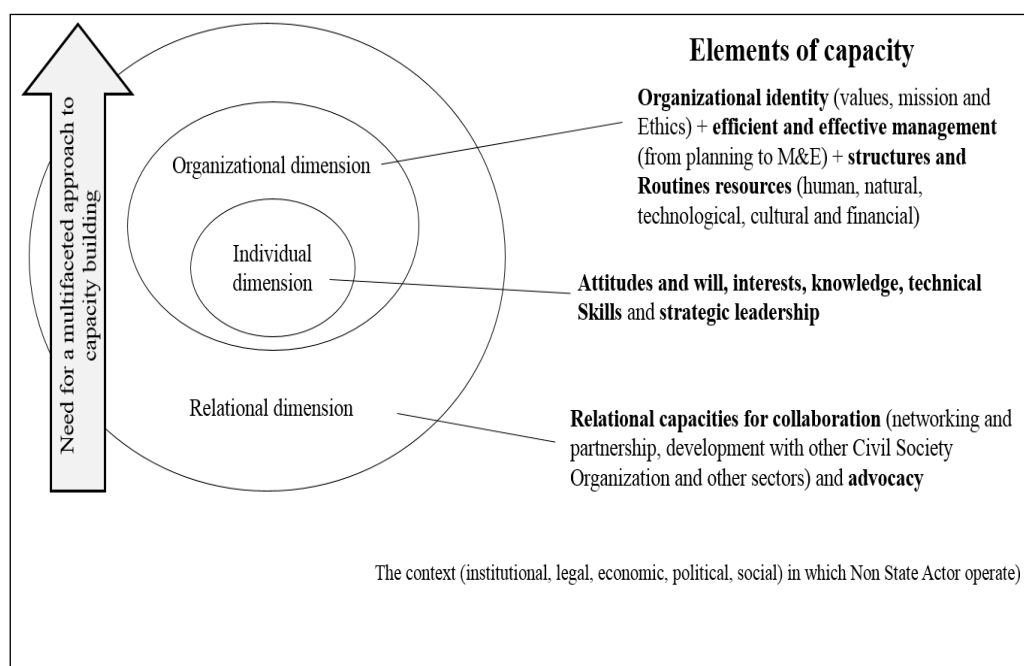
Figure 2.3 Elements of capacity

Source: Floridi et al. (2009)

This final report of capitalization study on capacity building support programmes for non state actors under the 9th European Development Fund also suggested the instruments of capacity building development of each dimension. Such example is shown in Table 2.1;

Table 2.1 The instruments of capacity building development

Capacity building dimension	Example of objectives	Examples of instruments and methods
Individual dimension	Leadership skill improvement	• Training • Discussion with an expert • Technical support

Organizational dimension	Management and administration improvement	• Discussion with an expert • Technical support • Financial assessments in context of organization and institution • Implementing systems in the organization
Relational and institutional dimension	Accessible of information improvement	• Setting up a regular discussion with relevant organizations • Making a website of all relevant organizations • Unifying all organizations into the network in the different levels; national, regional, and international.

Source: Floridi et al. (2009)

For an in-depth understanding of building the capacity effectively, reviewing the previous capacity building development were also important to see the effectiveness of capacity building from the real practices. Six capacity building are shown below;

1) A capacity building logic model

Partnerships for Environmental Public Health (PEPH, 2011) mentioned the capacity building as a part of their goal which was increasing the impact of environmental public health research at the local, regional, and national level. Team introduced the capacity building model called "A Capacity Building Logic Model". It was classified into three factors; potential activities, outputs and impacts for a

successful capacity building strategies. Activities were based on the existing inputs to build up capacity. Outputs came from the result of capacity building activities. Impacts were benefits or any changes took place from activities and outputs. A Capacity Building Logic Model Framework with examples of activities, outputs and impacts were shown in Figure 2.4.

From the activity 1, before accessing the capacity building, team had to firstly assess the current or existing resources including people, infrastructure, individual knowledge based on experience and educational level, and individual skills from training or experience. Several approaches could be used to assess resources, knowledge and skills such as round-table discussion, meetings, questionnaires or surveys provided, and focus group conducted. From the activity 2, build organizational capacity, approaches to build organizational capacity were such as expanding and supporting the workforce by hiring more employees and mentoring staff, defining the organizational structure by forming the organizational structure with the similar goal, creating communication lines, setting up an effective infrastructure such as writing ground rules, and conducting the effective meetings. From the activity 3, approaches to build physical infrastructure and communication infrastructure were meeting place, meeting equipment needed, computer, e-mail list, and website forums. From the activity 4, building knowledge and skills through approaches such as developing knowledge and skills from the experts or trainer.

After all activities were implemented, individual, organization and project itself would create an effective output and impact. For instance, after the first activity was implemented, the individual tended to be stronger in the aspect of skills and knowledge which would lead to the individual effectiveness in order to support the organization

and project afterwards. As the second activity, the output and impact were stronger organizations which would empower the partners as its impact. The result of the third activity would show as project itself was stronger. It could lead to the future changes in terms of policy and regulation. Finally, the fourth activity would show as a result of project sustainability by providing training class in order to ensure that the project was on the right pathway.
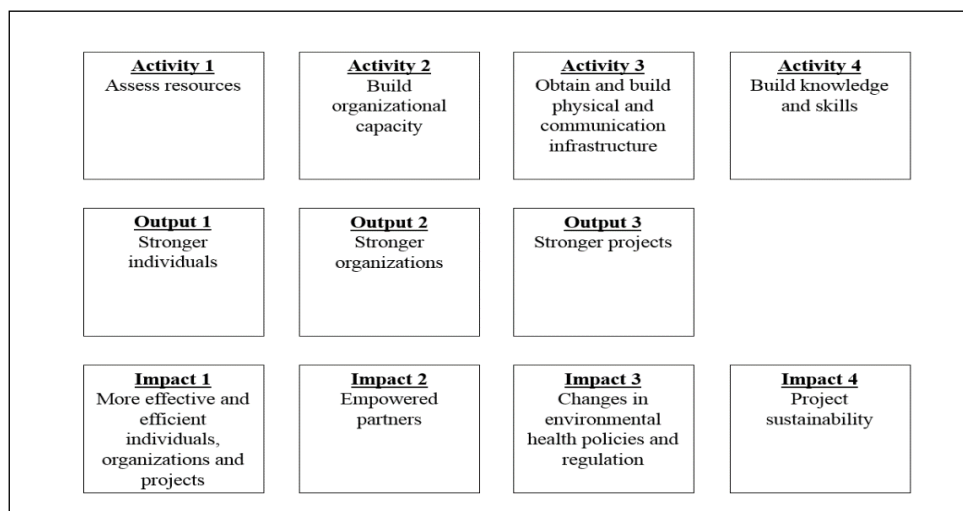
Figure 2.4 A capacity building logic model

Source: Partnerships for Environmental Public Health (PEPH, 2011)

From this example of capacity building model, it could be seen that there was needed to firstly assess the current resources to create an appropriate plan for building up the capacity. After the first assessment completed, the appropriate approaches would be selected to increase the individual's capacity. When individual was fulfilled with the appropriate method for building up the capacity, it would strengthen the organization. Follow-up process of capacity building was also an important process to ensure that the organization would have a potential individual for any future projects.

2) Strengthening Community Organizations to Promote Effectiveness

In 2007, Sobeck and Agius studied on building up the capacity through "Strengthening Community Organizations to Promote Effectiveness" or SCOPE project to strengthen the management capacities of the small organization. Its component was organizational assessment to see the current capacity of organization and also discovered the strength and weakness in order to seek for its gap for capacity development. Mentor was an important component to work closely with the executive director to enhance the leadership skills. Leader circle was a kind of monthly meeting to follow the progress and improvement of the organization. Workshop was a form of training the business knowledge to the management. Consultants would be used in case of management needed to assist in aspect of business development. The result showed that after the SCOPE project was launched to build up the management capacity of the executive directors. The executive directors gained much more knowledge in business management and also concerned more about the mechanisms that would support their efforts and their impact on the sustainability.

3) Capacity Building for Simulation Sustainability model

Pattillo et al. (2010) studied on Capacity Building for Simulation Sustainability (CBSS) model to assist nursing faculty in the development of simulation resources and activities. Figure 2.5 shows four steps to build up the capacity starting from input, throughput, output and evaluation back from related stakeholders. The process of input referred to the existing resources which needed to be built up for the capacity. They were technology, infrastructure and standards. Throughput meant how to build up the input through various approaches such as collaborative relationships, teaching

strategies, and organizational relationships. Eventually, faculty, student and community outcomes would be shown as the output. These outputs could be measured and evaluated the effectiveness of throughout approaches and also would be used as the development of input at the first step.
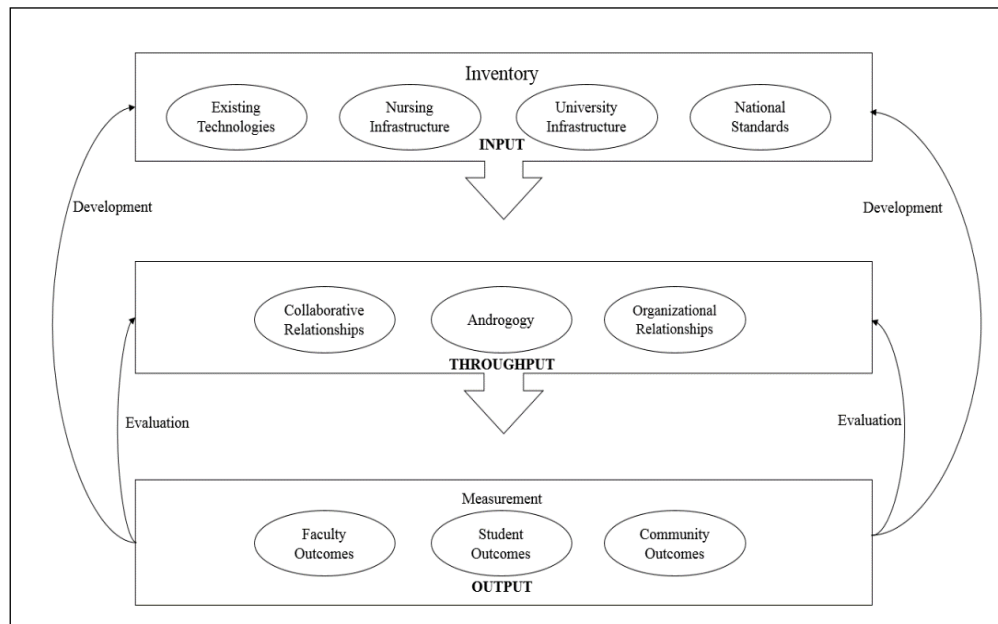
Figure 2.5 Capacity Building for Simulation Sustainability model

Source: Pattillo et al. (2010)

4) Conceptual framework on capacity building in development projects

In 2012, Merino and Carmenado presented the conceptual framework on capacity building in development projects as shown in Figure 2.6. It started with capacity characteristics which composed of individual and social. Individual characteristic was divided into two dimensions, namely technical and behavioral capacity. Technical capacity referred to the need that organization required for any business related activities such as financial skills, technology skills, political skills, planning, and management skills. Behavioral capacity referred to personal attitudes and

skills needed in the relationships between stakeholders such as leadership, entrepreneurship. Social capacity was needed to enhance the individual capacity for long term succession. Example of social capacity included commitment, trust, network building, entrepreneurship, norms, teamwork, group organizing, sense of community, shared values, negotiating, political skills, vision and strategy, legal, and financial skills or institution building.

After defining capacity characteristics, the next process was capacity functions and transformations by inputting methods and approaches to enhance the capacity. Then, capacity changes, sustainability increased and project success, all of these would be called as outcomes. Evaluation process was also important process to see whether the capacity building approach has been done on the right track or not.
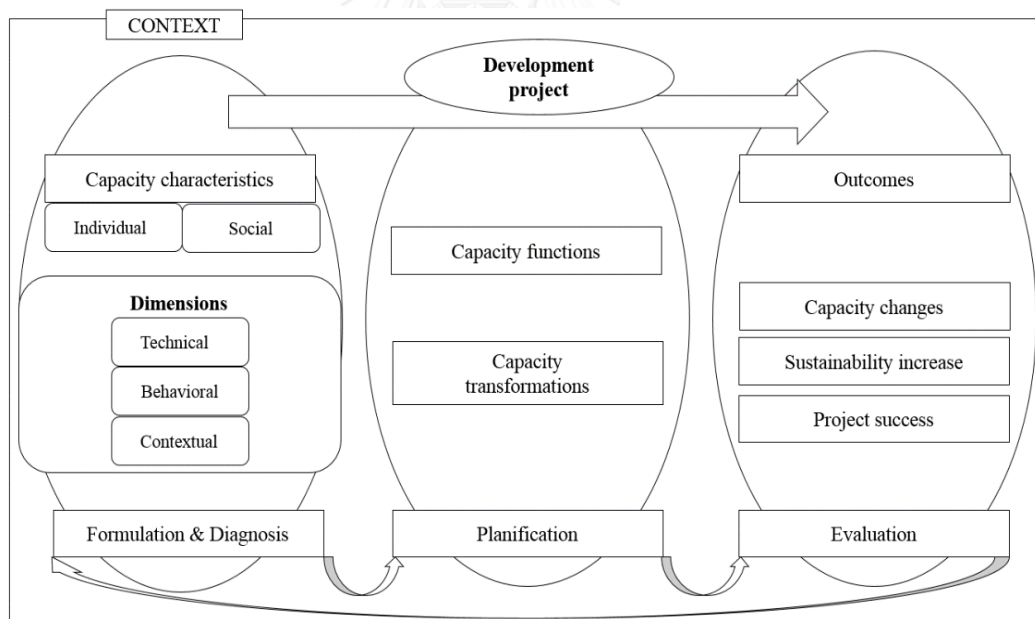
Figure 2.6 Conceptual framework on capacity building in development projects

Source: Merino and Carmenadoa (2012)

5) New South Wales Health Department capacity building framework

Laurence (2009) applied the capacity building framework of New South Wales Health Department in 2001 by developing an Australian Aboriginal and Torres Strait Islander nutrition workforce. The capacity building framework proposed as shown in Figure 2.7. In order to build up the capacity of indigenous workforce, it required five main essential drivers/strategies which were organizational development, workforce development, resource allocation, partnerships, and leadership. Organizational development referred to formal strategic plan needed to be set. Workforce development referred to annual professional development workshops and two-way learning to develop the workforce. Resource allocation referred to the allocation of fund to the efficient projects. Partnerships referred to expert advisory provided and multi-level partnerships including local community and the governmental level. Leadership referred to training, workshop and policy set up. These five key elements would increase the capacity of infrastructure, program sustainability and problem solving.
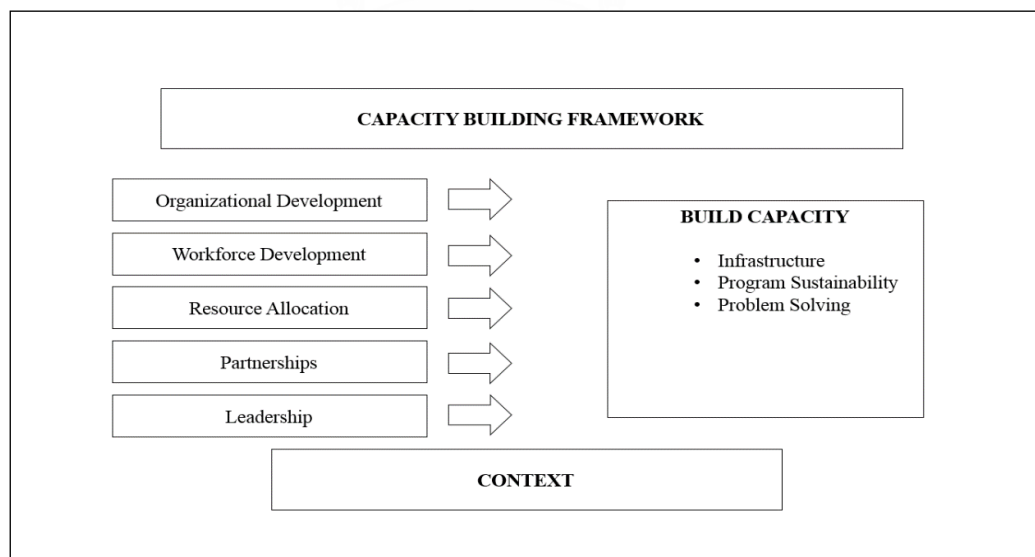
Figure 2.7 New South Wales Health Department capacity building framework

Source: NSW Health Department (2001) adopted by Laurence (2009)

6) Capacity building activities

In 2004, Food and Agricultural Organization of the United Nations (FAO) mentioned about the capacity building activities under Capacity Development in Irrigation and Drainage, Issues, Challenges and the way ahead as shown in Figure 2.8. They were classified into four steps; levels, activities, output and outcome. Levels were classified into three level; individual, organization and management environment. For individual level, it stated that the activities in this level were both formal and informal; education provided and training through workshops, seminar, on the job, and coaching. Output from education was knowledge gained after individual participated in such activities. Output from training was skills improvement and attitude changed. For organizational level, activities included human resource development, organization structure, and organization mission. After activities implemented, the output was changes in incentive structure from human resource/skills development. For management environment level, policies, legislation, regulations development were sample of activities. Outcome from individual after capacity increased was behavioral changes. Then, outcome from organization level was improvement in service delivery performance. Finally, outcome from management environment level was also improvement in sector performance.
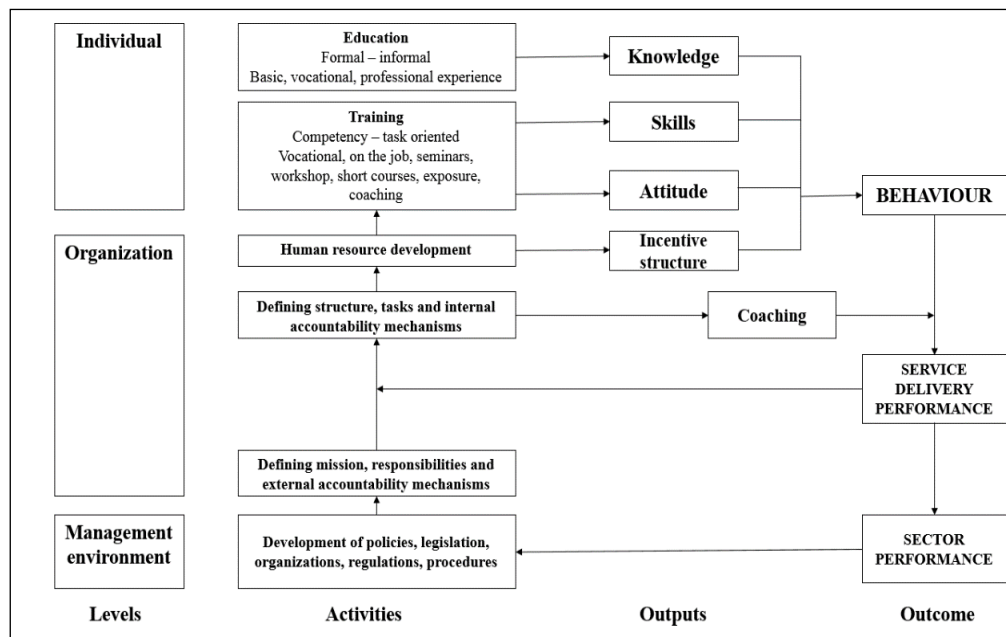
Figure 2.8 Capacity building activities

Source: Food and Agricultural Organization of the United Nations (2004)

From all the above studies related to the effectiveness of capacity building,

building. They could be summarized and proposed as building an effectiveness capacity

as shown in Figure 2.9;
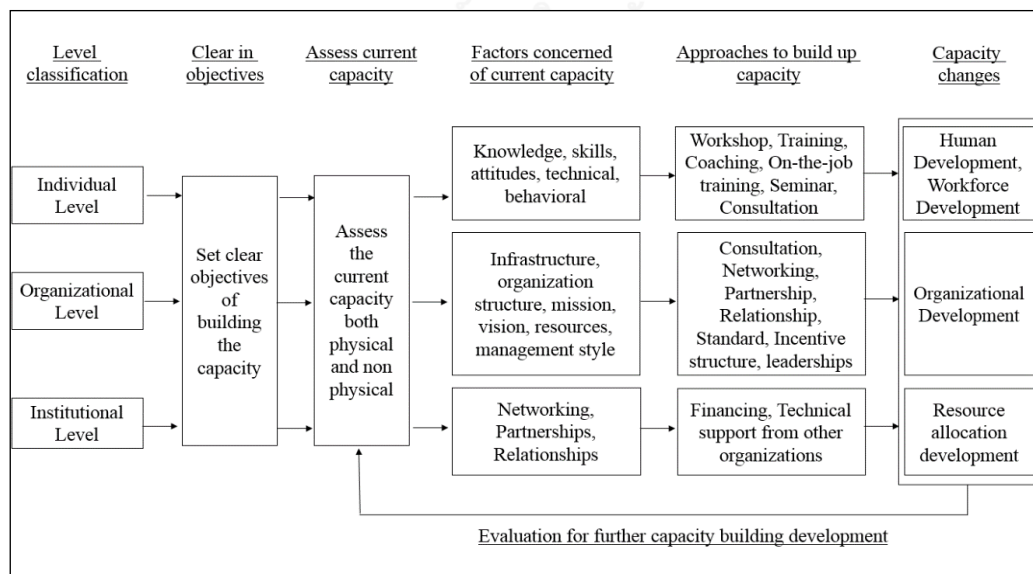
Figure 2.9 Summary of building an effectiveness capacity

2.8 Capacity building's entry points

In 2004, Dureau reported the multiple factors of capacity building's effectiveness which comprised of 4 entry points, namely skills and capabilities, forums for cooperation, roles and responsibilities, and policy and systems. Such entry points were shown in Figure 2.10.
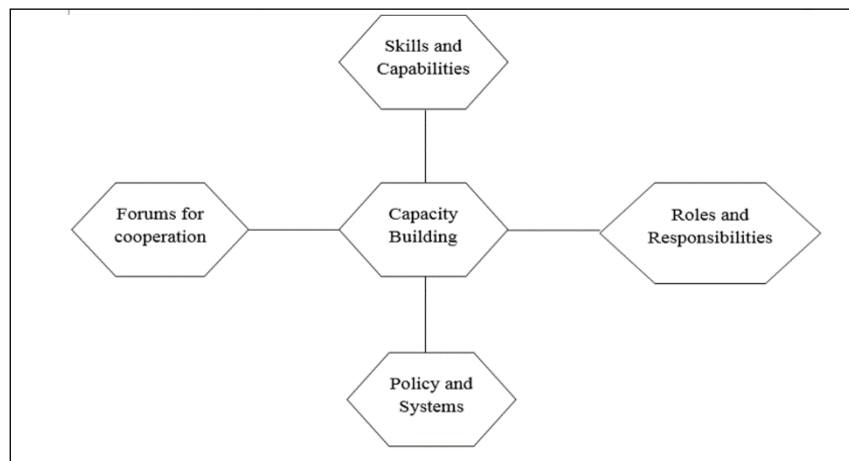
Figure 2.10 Entry points for capacity building

Source: Dureau (2004)

Factors in Figure 2.10 including skills and capabilities, forums for cooperation, roles and responsibilities, and policy and systems were needed to build the effectiveness of capacity. Fundamental skills and capabilities played a significant role whether how individual would like to express their skills or their own willingness to develop for a better outcome. Individual's role and responsibility was also needed to clearly state in order to know its limitation. Forums for cooperation was very important, because the effectiveness of capacity building could not be completed perfectly by only one person, it required a well-cooperation among individuals who foresee the similar goal. Policy and systems were external factors that could shape the direction of capacity building to become either successful or unsuccessful.

2.8.1 Environmental skills and capabilities

The environmental skills and capabilities referred to skills or capabilities that appropriate as well as support the level of environmental awareness enhancement to become more environmental friendly behavior. According to the real practice of environmental skills and capabilities required to enhance level of environmental awareness. Associated Training and Consultancy in United Kingdom (2015) suggested the environmental awareness skills should be taught through the topics including 1) a relationship between business and the environment, 2) waste management, 3) environmental law and environmental legislation, 4) pollution, 5) energy and water, 6) transport, and 7) environmental management. Its aim of providing such skills was the basic understanding of environmental management and how this matter could enhance the business value to the operational process.

2.8.2 Environmental roles and responsibilities

Roles and responsibilities in aspect of capacity building referred to roles and responsibilities that either direct or indirect related to the environment. Each job descriptions and scope of work should relate to environmental concerned in some certain degree. According to the Department of the Environment, Water, Heritage and the Arts (DEWHA), Australian Government (2010), it produced Environmental Management System (EMS) tool as a guideline for ISO14001 compliance. Table 2.2 shows a responsibility matrix of environmental management system in different position. From this table, it can be seen that all positions in the company were important in different levels in order to meet the ISO14001 requirements.

Table 2.2 Responsibility matrix for environmental management system

Position	Example of responsibilities
Director	- Management review participation - Setting environmental policy - Reviewing objectives and targets - Resource allocation
Environmental Manager	- Management review participation - Implementing environmental policy - Implementing activities to achieve the objectives and targets - Monitoring and measuring the environmental performance - Overall responsibility for the system implementation
Waste Management Coordinator	- Developing waste management strategy and implementation procedures - Monitoring and measurement
Environmental Management System committee members	- Policy and environmental management system awareness - Implementing activities to achieve the objectives and targets - Helping in Monitoring and measurement - Training staff in implementing the waste management strategy
Facility Manager	Facilities management, training of new staff, controlling plant's environmental performance
Procurement Manager	Purchasing raw materials that comply with internal environmental requirements

Operations Director	• Management review participation, setting policy, reviewing objectives and targets
Staff	• Policy and environmental management system awareness

Source: The Department of the Environment, Water, Heritage and the Arts (DEWHA),

 2010

2.8.3 Environmental forums for cooperation

Environmental forums for cooperation referred to the forum that related stakeholders. Such forums for cooperation was opening discussion to exchange ideas and experiences in the environmental issues. One example was SHARP (2007). It held the environmental forum by presenting the ideas behind the company's vision: "Becoming an Environmentally Advanced Company". Participants included national and municipal-level government officials, environmental specialists, and members of the press. Participants could exchange their opinions about the environmental concerned while SHARP were presenting the technologies, products, plants, recycling and management that could help the company of becoming an environmentally advanced company. From this example, it can be clearly seen that the forums for cooperation especially related to external stakeholders would expand much more benefits to the society. Not only for company and employees that could be a part to protect the environment, but also all related stakeholders including customers and communities nearby plants would also benefit as well.

Forums for cooperation in the environmental concerned must firstly create from company's vision and mission before cascading down to planning and implementation process. Environmental concerned statement must be declared in the company's mission and vision, because every employee could realize that all activities were needed the environmental impact consideration. Hence, the forums for cooperation could be held inside the company in form of town hall meeting and/or staff meeting. Such meetings should be two-way communication to allow both managerial and operational employees exchanged their point of views.

2.8.4 Environmental policy and systems

Environmental policy and system might be different from place to place since it depended on the degree of commitment of management to comply with the environmental policy and system. The environmental policy could be another driven tool to enhance the level of environmental awareness of employee in the company. By using Thailand as the example, the environmental policy and system (ISO14001:2004-Requirements with guidance for use) that the company had to comply with according to Environmental Management Systems, Pollution Control Department (2004) as already mentioned earlier.

The company also had to raise the environmental awareness of employee referred to part of competence, training and awareness in the implementation and operation requirements in ISO14001:2004. In the part of competence, training and awareness, it was summarized that the organization has to make sure that any staff in the company operate his or her work or on the behalf of organization which could impact to the environment. Those staff shall be provided environmental knowledge

through training or knowledge sharing. The organization shall assess the required training in relation to the environmental concerned and the environmental management system. The organization shall provide training or any other related activities in order to fulfill the requirements. The organization shall initiate and execute practices to assure that the staff will aware of 1) the significance of environmental policy and the environmental management system's requirements, 2) the environmental impacts and any other potential impacts which could cause by the operations, 3) roles and responsibilities according to the environmental management system's requirements, and 4) the possibility effect from any inappropriate practices.

2.9 Capacity building in the context of environmental awareness

Capacity building has become a major issue that countries needed to focus since the period of the Rio has occurred (UNDP, 2002). The international assistance and cooperation were also needed to emphasize on. The Organization for Economic Co-operation and Development (OECD, 1997) mentioned the relationship between the capacity building and the environment. Such relationship was that capacity building could be used to promote the environmental consideration or environmental awareness in other words. Additionally, capacity building could be a driven-tool to encourage the institutions in the society to emphasize much more on the environmental issues. The capacity building in perspective of environment was needed to be realized because an ineffective capacity building and the lack of concern and support from the public could lead to the natural resources' depletion. In this regard, ways and means to promote the environmental awareness included;

- "Awards related to environment at the community level and inside the organization provided;

- Environmental issues' conferences organized;

- A special event such as environment day or week established;

- Public participation in environmental activities strengthened;

- The specific contribution such as women, NGOs and local communities cooperated;

- Environmental policies at the company level implemented; and

- Environmental management and community-based resource management encouraged."

In 1999, Clark also concluded the major components to enhance an effective capacity building that related to environmental awareness including;

- "training and education;

- organizations and management;

- networking between organizations;

- public policy and institutional arrangements; and

- the realistic of social, economic and political culture."

2.10 Public Participation

According to Smith (1983), public participation was a process of a group of people designed to provide the information to the public by several ways such as consulting, informing and involving and to permit the affected people as a part of decision making by providing the input.

Public participation has also been raised and named in the international level, for example, the Agenda 21 (1992). The public participation and the activeness of related stakeholders of both governmental and non-governmental agencies were needed to encourage in order to create all implementation activities successful especially for sustainable development in Chapter 1 of Agenda 21. Not only the public participation was required on the earlier aspect, but also it was required in the decision making process which stated in Chapter 8 of Agenda 21. The decision making should not be made by one particular party or any beneficiaries, the public participation of related stakeholders should be called to be a part of the decision making particularly in the environmental issue that would impact on people in the society at the different levels.

In section of activities list of water and sustainable urban development of Chapter 18 of Agenda 21, it said that by promoting the public participation could be achieved by creating the public awareness campaigns to stimulate the public in the topic of water utilization. Hence, not only the public participation that would be aroused by the particular issue, other environmental issues would be automatically deemed by public participation and public awareness.

Rowe and Frewer (2000) summarized numbers of methods of public participation. The difference of each method depends on the characteristics of participants and the scale of issue concerned. Such methods can be grouped as follows:

a) Methods for large scale of participants and significant issue concerned

- "Referanda for a national scale of participants;

- Public hearings and inquiries for interested and specific group of participants like experts;

- Public opinion surveys for a large number of participants that can represent of the interested participants."

b) <u>Methods for small scale of participants and less significant issue concerned</u>

- "Negotiated rule making for a small number of stakeholders;

- Consensus conference for a general selected people which have no knowledge on the issue;

- Citizen's jury/panel for a selected public to represent the views of local population;

- Citizen/public advisory committee for a selected group of people to represent the views of communities;

- Focus group for a several selected groups and subgroups on the specific issues."

The different scale of public participation and issue concerned would use different approaches. However, the effectiveness of selecting the appropriate approach and its result of each method were much more important.

In 2007, the International Association for Public Participation (IAP2) introduced "Public Participation's Spectrum". Figure 2.11 shows the spectrum of public participation by increasing level of public impact which starting of inform, consult, involve, collaborate, and finally the level of empower.
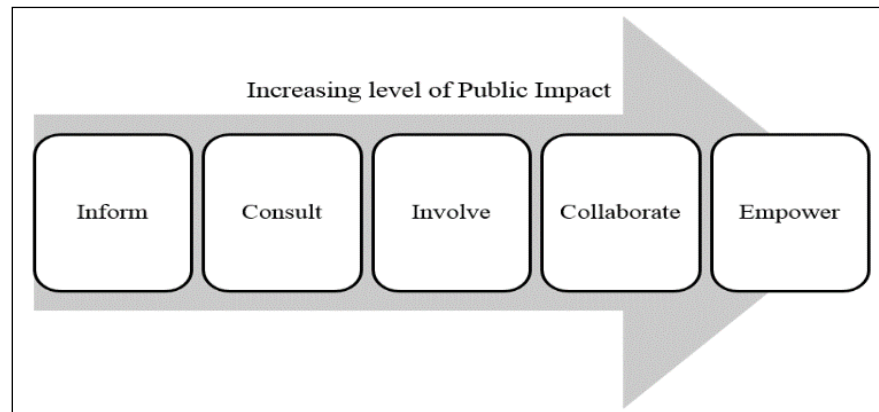
Figure 2.11 Public participation's spectrum

Source: IAP2 (2007)

Each level had different goals and techniques for public participation. The goal of "Inform" was to provide any useful information or knowledge to the public via the technique of using a fact sheet or web sites. The goal of "Consult" was to receive the public feedback or comments via the technique of involving in the focus group or survey. The goal of "Involve" was to deal and work directly and closely with the public through the process via the technique of conducting a workshop. The goal of "Collaborate" was to be a partner with the public for any decision making via the technique of building a consensus. Lastly, the goal of "Empower" was to establish the decision making on behalf of the public via the technique of citizen juries as the sample.

According to the public participation's spectrum, the informing information level to the public would be insufficient to receive the whole effective public participation. The empowerment of public participation might be an answer to receive the effective public participation by creating a sense of ownership of each particular issue to every person in the society. Therefore, the public participation would be another important tool for increasing the level of environmental awareness of people in the society to deal with the environmental problems.

2.11 Current environmental awareness situation in Thailand

The environmental awareness in Thailand has been promoted especially in the business sector. It can be clearly seen from a particular organization, entitle Thailand Business Council for Sustainable Development (TBCSD) which was established in 1993 (TBCSD, 2012). The TBCSD focuses mainly on three parts as follows:

1) Thailand's policy development: Low carbon and Green society;

2) Capacity building that is related to the business competitiveness and its practices; and

3) Increasing the public awareness in environmental and cultural concerned.

There were numbers of business sectors including domestic and multinational companies which cooperated with the TBCSD can be classified in Figure 2.12.
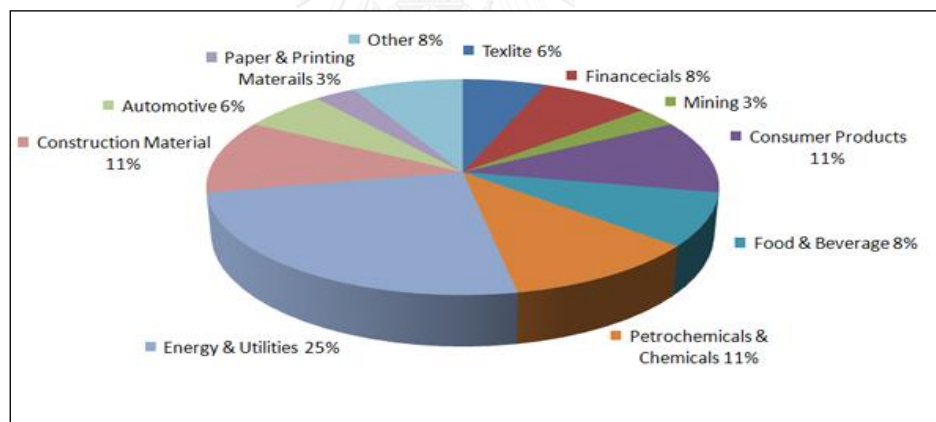
Figure 2.12 Number of the TBCSD classified by type of business

Source: TBCSD (2014)

This figure presents that energy and utilities business were the highest percentage number among other members involving in the TBCSD. The reason was because the primary source of energy and utilities was directly and purely from natural resources such as oil and gas. Hence, the energy and utilities business should pay more

attention to the source that it has been consumed, released and unleashed back to the environment at the end of the process.

Many Thai companies have shown their strong support to the use of low carbon of goods and services according to the latest joint meeting of council and associates of the TBCSD in March 2016. Not only goods and services that those companies have been trying to receive the recognition by given the carbon reduction label certificate, but also their environmental friendly workplace can be certified by the Carbon Reduction Certificate for Buildings. The TBCSD also held programme in the environmental issue under the sustainable movement concept that relates to the business such as "Alternative Energy Certification" and "Green Meetings" in order to build up their capacity building to enhance more environmental friendly in the aspect of business management. The TBCSD has also tried to increase the environmental awareness to the public through the magazine (Green Society), giving the award via the competition such as eco-friendly award, the young creative environment artist, and setting up the special event of the environment like "Global Warming and Health Fund".

The current environmental awareness in Thailand has been realized in the specific company. It was not compulsory policy that every single company in Thailand had to comply with. Moreover, when each company was recognized as a green company, it did not necessary mean that all stakeholder in the company including employee, supplier or customer even the society would behave as the environmental friendly action.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research Framework

This research aimed to propose the descriptive capacity building model on the environmental awareness in the public limited company by studying the factors that would enhance the level of environmental awareness. The driven factors relevant capacity building were considered to build the effective of environmental awareness. The selected industry was used as the study area focusing on the public limited company that consumes natural resources as its primary source of production. The research framework of the study proposed is shown in Figure 3.1.
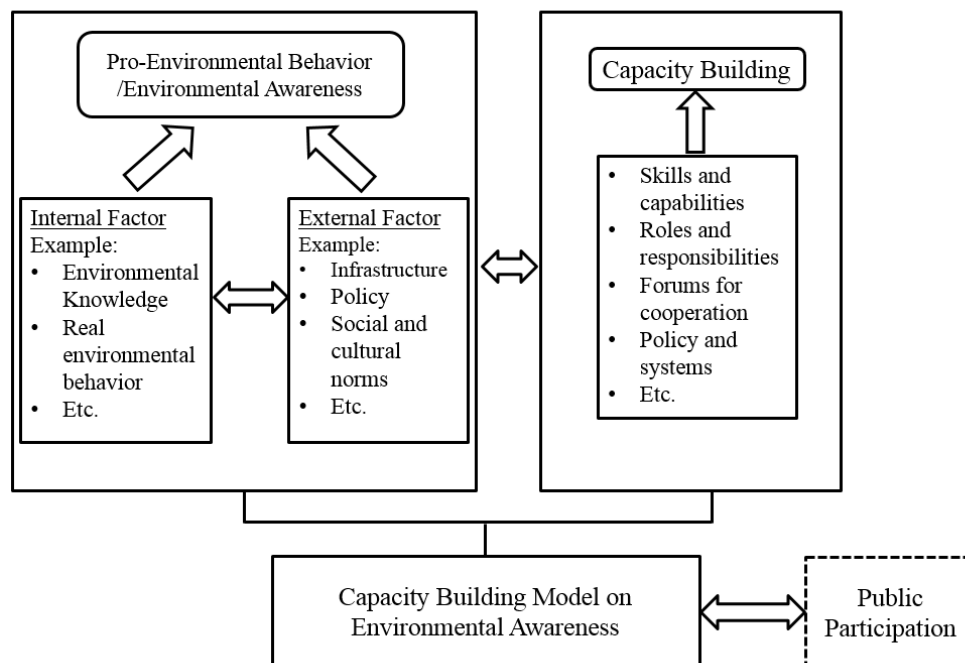
Figure 3.1 The research framework of study (modified from Kollumus and Agyeman (2002) and Kimble (2005))

3.2 The study area

The study area was selected at one public limited company in the industrial sector in Thailand that utilized natural resources and environment for its business. Such selected public limited company was based on the following criterion;

- A Thai nationality and listed in the Stock Exchange of Thailand (SET);

- Natural resources used as the primary source of the operational process;

- Recognized as the green business according to the awards and/or certificated received which can reflect the environmental concerned from its operations;

- Received an excellent Corporate Governance according to the Stock Exchange of Thailand which can refer to the well-management towards shareholders and other related stakeholders in both aspects of profit and non-profit management.

Thus, the potential company would be a national petroleum company.

3.3 Research design

3.3.1 Data collection methods

This research was used quantitative/qualitative research method and inductive/deductive research approach in the selected study area. A qualitative approach was used in this study that specifically focused on describing the company's situation towards environmental awareness policy from the managerial level's point of view while the method of qualitative research was inductive which specified on development of empirical generalizations and identified their relationships as the research result according to Neuman (2003). A quantitative approach was also used and focused on both managerial and operational level's point of view especially in aspect

of environmental awareness policy implementation. Deductive method was applied to the quantitative method to examine whether factors from previous studies are effective and well-functioned for real implementation at an organization level.

The instruments of data collection showed below;

1) Desk study

   Literatures were reviewed to explore and understand relevant information and factors that would enhance level of environmental awareness and increase the capacity building as the secondary data used for collecting primary data. Observation in the selected study area was also studied to understand the company's structure, culture and policy.

2) Questionnaire development

   Questionnaires were designed, developed and applied to collect data by interviewing process according to relevant data, factors from the desk study and observation data. Sample size of interview was used stratified sampling method under the purposive research approach. Stratified sampling is a sampling technique which the population is divided into groups and sampling was performed within each group. The advantages of using this technique was, for example, disproportionate sample may be applied in each group, and the sampling error reduction (Saifuddin, 2009). Purposive approach also used in the sample size, because the purposed sample in each group could be a good representative of the entire population (Black, 2010). Sample size was divided into two groups, namely managerial level and operational level with the mutual exclusive of the workplace, culture and

policy perceived whereas heterogeneous in position level between two groups (Saifuddin, 2009). The sample at the managerial level included middle management and top management positions including manager, senior manager, and the executive, whereas, the sample at the operational level positions including office employees and the operators in the refinery. In the process of questionnaire development, there were specific measurements used, namely

- 5-point rating scale ranging from Five means strongly agree, Four means agree, Three means neutral, Two means disagree, and One means strongly disagree to the question/statement provided in order to allow the respondents express their level of agreement;

- Open-ended type of question for respondents giving any related answer(s) to the question provided;

- Close-ended type of question and multiple choice in order to limit numbers of answers;

- Rank order type of question to understand the level of significance that respondent given to the provided statements.

Questions in the questionnaire which applied to both managerial and operational level were divided into six parts as follows:

1) Demographic of respondent which included gender, age, educational background, employee's position, employee's level, and years of work

experience. Multiple choice and open-ended type of question were applied in this part.

2) General environmental problems concerned, the expected output was respondents' knowledge and attitudes towards environmental problems in Thailand. Sample statements were "Environmental problems in Thailand must be urgently solved", "Climate change is caused by human activities", respondents would rate level their level of agreements by using 5-point rating scale. Open-ended type of question was used in the question, for example, provide two examples of environmental problems in Thailand. Multiple choice type of question was used in the question related to channels perceived the environmental problems.

3) Internal factors concerned related to the environmental awareness enhancement according to the study by Kollmuss and Agyeman (2002) and Kimble (2005). Ten factors provided including sufficient environmental knowledge, environmental skills and capabilities, roles and responsibilities, good attitude towards environmental problems and environmental management, participation/empathy to the environmental issues, personal characteristic to live in the better environment, age, educational background, time spent on the environmental problems, and intention to change behavior towards environmental friendly. Rank order type of question was applied in this part by ranking 10 means the most important concerned and 1 means the least important concerned. In addition, one open-ended question was also provided for respondents to raise another related internal factors concerned towards environmental awareness enhancement.

4) External factors concerned related to the environmental awareness enhancement according to the study by Kollmuss and Agyeman (2002) and Kimble (2005). Eight factors provided including company's environmental friendly infrastructure such as Green Building, society's infrastructure to support environmental friendly activities, governmental policy concerning the environmental problems solving, character of society that builds people's environmental awareness, culture that raises people's environmental responsibility, economic situation which supports people's environmental responsibility, alternative environmental problem solving approach for gathering people attention, and environmental concerned campaign to enhance public participation. Rank order type of question was applied in this part by ranking 8 means the most important concerned and 1 means the least important concerned. In addition, one open-ended question was also provided for respondents to raise another related external factors concerned towards environmental awareness enhancement.

5) Company's situation towards environmental friendly policy, the objective was to understand the perception of respondents regarding to the environmental friendly policy which executed by the management. Statements provided including, mission and vision of being an environmental friendly company, environmental friendly activities, employee's intention to participate the environmental friendly activities, company's sustainability report, and mechanisms to enhance environmental awareness. 5-point rating scale was applied in this part.

6) Company's implementation on environmental awareness policy, the objective was to see the real practices perceived by the respondents and also to verify how the company builds employees' capacity through skills and capabilities, roles and responsibilities, forums for cooperation, and policy and systems. There were three measurements in this part, namely multiple choice, close-ended question, and open-ended question. Those questions included 3R concept implementation, energy saving campaign, employees' roles and responsibilities towards environmental friendly, environmental knowledge provided in form of training, environmental policy communication, employees' participation in Corporate Social Responsibility (CSR) activities, employees' participation in current environmental friendly activities, employees' expectation for future environmental friendly activities, and effective environmental friendly activities.

The statements/questions related to building capacity in the context of environmental awareness enhancement which the respondents would able to express their level of agreements were as follows:

- Your environmental awareness will be enhanced, if the company provides more environmental knowledge in form of training;

- Your environmental awareness will be enhanced, if the company provides reward/recognition for employee whom explicitly perform environmental concerned behavior;

- Your environmental awareness will be enhanced, if the company complies with the international environmental standard such as ISO 14001:2004;

- Your environmental awareness will be enhanced, if you participate the environmental friendly field trip;

- Your environmental awareness will be enhanced, if the company collaborates with external organization by setting up seminar, meeting or field trip related to environmental concerned;

- Your environmental awareness will be enhanced, if the company provides incentive in form of money for employee whom explicitly perform environmental concerned behavior.

- Do the company have policy to apply 3R concept inside the company? If yes, please provide one example.

- Do the company have policy to promote energy saving inside the company? If yes, please provide one example.

- Do your role and responsibility related to environmental concerned? If yes, please provide one example.

- Do you think the environmental friendly policy communication from the company would enhance your environmental awareness?

- Do you think CSR activities participation would enhance your environmental awareness?

- Please provide three examples of company's environmental friendly acitivities.

3) In-depth interview

In-depth interview was used under the purposive research approach to the target respondents at the managerial level who are serving as a senior executive vice president and an executive vice president. Semi-structure questionnaire was conducted to this target to provide the opportunity for informants to completely explain and describe the answers based on their own experiences.

Questions in the in-depth interview which applied to the managerial level were divided into eleven parts as follows:

1) Demographic of informants which included gender, age, educational background, management level, responsibility department, and years of work experience. Multiple choice and open-ended type of question were applied in this part.

2) General environmental problems concerned, the expected output was to understand the management's vision in aspect of environmental problems and also their opinions towards stakeholders' involvement to the environmental issues.

3) Environmental knowledge provided by the company, the expected output was to know the approaches used in providing environmental knowledge to the employees in both current and future policy.

4) Environmental friendly behavior observed, the expected output was to know how the company motivate its employees to behave more environmental friendly in both current and future policy.

5) Other internal factors towards environmental awareness enhancement, the expected output was the informants raised other related internal factors to enhance environmental awareness.

6) Environmental friendly infrastructure, the objective was to understand the current and future company's environmental friendly infrastructure provided to employees.

7) Environmental friendly policy, the objective was to understand the company's environmental friendly concerned plan.

8) Environmental friendly culture, the objective was to understand the company's intention to create a green culture in the business.

9) Other external factors towards environmental awareness enhancement, the expected output was the informants raised other related external factors to enhance environmental awareness.

10) Capacity building on environmental awareness, the objective was to explore how the company build the capacity on environmental awareness related to skills and capabilities, roles and responsibilities, forums for cooperation, and policy and systems. Informants also requested to rate the level of environmental awareness of each employee's level, namely top

management, middle management, and operational level. In addition, the

barriers to prevent employee's performance towards environmental friendly

policy.

11) Other suggestions and recommendations, this part was opened to the

informants to provide any useful suggestions and recommendations on this

research.

3.3.2 Data analysis

According to the research framework, all primary and secondary data

were analyzed as follows:

1) Secondary data from reviewing literatures were analyzed in order to

   find the related factors that corresponded to the level of

   environmental awareness.

2) Primary data which came from both questionnaire and in-depth

   interview were analyzed and integrated by using descriptive

   statistics and content analysis and presented in the visualization

   technique such as graphic, diagram. Data was presented in terms of

   percentage scoring by the respondents classified by three main

   topics, internal factors concerned, external factors concerned, and

   capacity building towards environmental awareness enhancement.

3.3.3 Proposed descriptive capacity building model and its validation on environmental awareness

After the analyses of primary and secondary data, the capacity building

model on environmental awareness was developed in the form of descriptive

model and would be proposed as a prototype for environmental awareness

process. The public participation would be taken into account for more effective enhancement descriptive capacity building model on environmental awareness. This descriptive model was described on how relevant factors and mechanisms are well-functioned and effectively implemented at the personal, company, and society level. Such factors and mechanisms findings are whether consistent of the studies by Kollumuss and Agyeman (2002), Kimble (2005), and Dureau (2004). In addition, the national and international standards related to environmental concern also used to validate the effective of this model. Such standards were

1) Certification received from the Thailand Business Council for Sustainable Development (TBCSD) and the Thailand Environment Institute.

2) ISO 14001 which related to environmental management systems particularly in a part of competence, training and awareness in the implementation and operation requirements.

CHAPTER IV
RESEARCH FINDINGS AND DISCUSSIONS

4.1 The study area

The study area was selected based on the conceptual framework set in the chapter 3 to seek driven factors relevant capacity building that would enhance the level of environmental awareness and build up the effective enhancement descriptive capacity building model on environmental awareness. It is a public company established in 1984 located in Bangkok, Thailand and is listed in the Stock Exchange of Thailand (SET) since 1994. The company operates the energy business which mainly uses natural resources as its primary source for its operational process. It is recognized as a green business according to awards and certificates received (Company's annual report, 2015) as follows:

- ASEAN Best Practices Energy Management for Buildings and Industries Awards (Small and Medium Building Category) at the ASEAN Energy Awards 2015, Malaysia;

- Outstanding Energy Conservation Award 2015 (Non-designated Building) for buildings featuring advanced technology, for high-efficiency equipment in building management to promote the Green Building and Green Management approach, and for encouraging energy conservation awareness among the workforce, presented at the Thailand Energy Awards 2015, by the Ministry of Energy, Thailand; and

- Certificate on Greenhouse Gas Emission Reduction for Buildings, organized by the Thailand Business Council for Sustainable Development (TBCSD) and the Thailand Environment Institute.

In 2015, the company also received the excellent Corporate Governance Awards of the Stock Exchange of Thailand. Such awards are

- ASEAN Corporate Governance Awards (TOP 50 ASEAN PLCs), based on a Corporate Governance survey of Thai listed companies under the ASEAN CG Scorecard 2015 program; and

- SET Social Enterprise Investment Awards, conferred to listed companies whose business conduct or investment has supported social activities.

In addition, the company got a recognition of the Corporate Governance Asia magazine (Hong Kong-based) for 'Corporate Governance Asia Recognition Awards 2015 - THE BEST OF ASIA' as the Asia's Icon on Corporate Governance on outstanding performances and tenacity in developing corporate governance in the region, as well as, a two consecutive years' Platinum Award from 'The Asset Corporate Awards 2015' event, organized by The Asset magazine (Hong Kong-based) in recognition of company's overall outstanding performance (financial, management, corporate governance, social and environmental responsibility, and investor relations).

The company is a refinery industry which a capacity of petroleum production of a 120,000 barrels per day. The company is also run over a thousand gas stations nationwide. It is now under a development a new business on renewable energy. In 2015, the company had a revenue of about 150,000 million baht, with employees of

about a 1.1 thousand (Company's annual report, 2015). Its organizational structure is

shown in Figure 4.1.
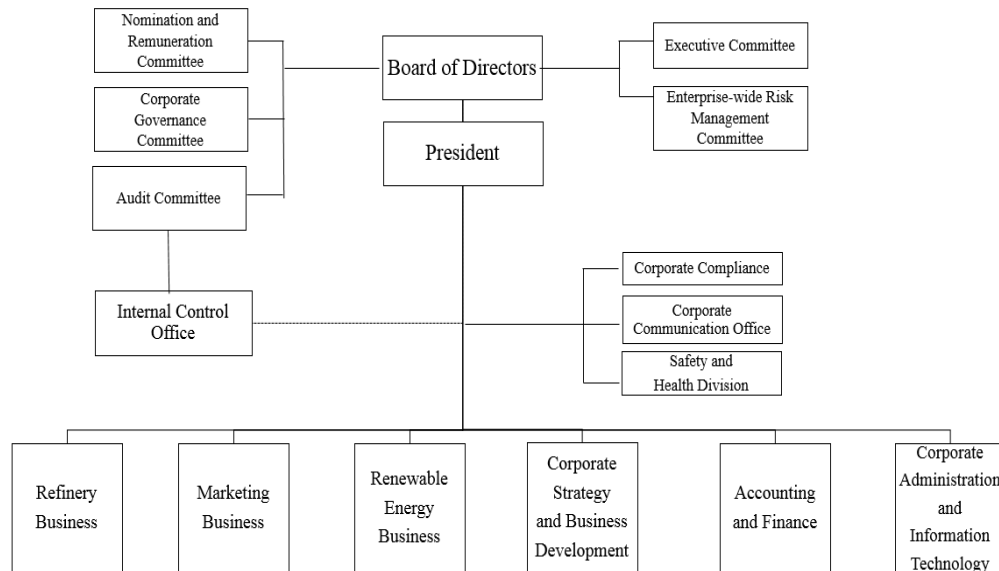
Figure 4.1 Organizational structure of the company studied

Source: The Company's annual report (2015)

The company's vision is "Creating a friendly environmental energy business

that is environmentally friendly for sustainable development" under the concept of

"Sustainable business development in harmony with the environment and society".

According to company's vision, several environmental policies has been

implemented to activities and they were recognized by award received. For example,

the Thailand Energy Award 2015 for energy conservation. The company received an

outstanding award based on building management using technology to maximize

appliance efficiency, with a focus on becoming a Green Building controlled by Green

Management. Moreover, the company has continued running several Corporate Social

Responsibility projects with an expectation of increasing more environmental

awareness. Those projects were, for instance, "Robe offering for forestation in

watershed", "Plant Saplings to Restore the Forest", and "Buying used vegetable oil for biodiesel project from communities around the refinery" (Company's sustainability report, 2015).

4.2 Respondents

There were a total of 162 respondents participated in the questionnaire session. The respondents were classified into two groups, namely managerial and operational level. Of these respondents, 28 are in the managerial level (17.28%) and 134 are in the operational level (82.72%). Table 4.1 summarizes respondents' data on gender, age, educational background, marriage status, years of work experience and employee's level. 82.72% of respondents are male and 17.28% of respondents are female. The majority of respondents' age are between 26-30 years old (30.86%), and 31-35 years old (22.22%). Respondents' educational background comes from the vocational school (48.15%). In terms of marriage status, 51.85% of them are single. For the years of work experience, 65 of 162 respondents (40.12%) have work experience more than ten years.

Table 4.1 Respondents' information

Element	Category	Frequency	Percentage
Gender	Male	134	82.72
	Female	28	17.28
	22-25	16	9.88
	26-30	50	30.86
	31-35	36	22.22
Age	36-40	22	13.58
	41-45	26	16.05
	46-50	10	6.17
	56 and above	2	1.23
Educational	Lower than Bachelor	78	48.15
background	Bachelor	58	35.80

	Higher than Bachelor	24	14.81
	No given information	2	1.23
Marriage Status	Single	84	51.85
	Married	73	45.06
	Divorced	5	3.09
Years of Work Experience	Less than 1 Year	6	3.70
	1 - 5 Years	38	23.46
	6 - 10 Years	53	32.72
	More than 10 Years	65	40.12
Employee's level	Managerial	28	17.28
	Operational	134	82.72

There were seven key informants participated in the in-depth interview session. They are top management with experiencing in the different departments, namely corporate administration and information technology, environmental and public relations, exploration and production, corporate strategy and business development, marketing and refinery business. Regarding the roles and responsibilities from the different departments of the key informants, it is a good opportunity to understand their perspectives in different points of views. The details of key informants are showed in Table 4.2.

Table 4.2 In-depth interview's key informants

Element	Category	Frequency	Percentage
Gender	Male	6	85.71
	Female	1	14.29
Age	46-50	1	14.29
	51-55	6	85.71
Educational	Master	6	85.71

background	Doctoral	1	14.29
Years of Work Experience	6 - 10 Years	1	14.29
	More than 10 Years	6	85.71

4.3 Research findings from a questionnaire set

A total of 162 respondents responded to a set of questionnaire (Appendix A) comprising 28 respondents from managerial level and 134 respondents from operational level. The questionnaire research was held between April and May 2015.

The research findings are presented and discussed in relation to the factors of the current level of environmental awareness. These findings include four sections as follows:

1) General environmental problems concerned;

2) Enhance level of environmental awareness by internal factors;

3) Enhance level of environmental awareness by external factors;

4) Company's situation towards environmental friendly policy; and

5) Company's implementation on environmental awareness policy.

4.3.1 General environmental problems concerned

Regarding general environmental problems concerned, the study focused on current environmental problem, the linkage between environmental problem and human being, the relationship between environmental knowledge and environmental awareness, and the relation between environmental awareness and environmental behavior. The study found that 97.50% of respondents noted that human activities are mainly caused current environmental problems. In addition, 94.38% of respondents

agreed on the approach to solve the environmental problems by focusing on the stakeholder's involvement. 91.88% of respondents realized that environmental knowledge was a fundamental factor to enhance level of environmental awareness. 95.63% of respondents agreed on the environmental awareness was a significant factor for behavioral adaptation to more environmental concerned.

Table 4.3 presents current environmental problems in Thailand raised by the respondents. The study found that air pollution is one of the main concerns of about 28.24%, solid waste of about 23.92%, water pollution of about 23.59%, and deforestation of about 11.63%.

The respondents perceived those environmental problems via various channels as shown in Table 4.4. 35.75% perceived from TV/Newspaper/Radio. 28.23% perceived from social network and 19.83% perceived from self-study. The rest responded that they have concerned via any account and direct experience.

Table 4.3 Current environmental problems in Thailand raised by the respondents

Current environmental problems concerned	Percentage
Air pollution	28.24
Solid waste	23.92
Water pollution	23.59
Deforestation	11.63
Flood	3.32
Global warming	2.99
Drought	2.33
Toxic chemical	1.66
Climate change	1.00
Greenhouse Gas	0.66
Forest Fire	0.33
Natural disaster	0.33

Table 4.4 Channels perceived the environmental problems raised by the respondents

Channel perceived the environmental problems	Percentage
TV/Newspaper/Radio	35.75
Social network	28.23
Self-study	19.89
Account	11.02
Direct experience	5.11

4.3.2 Enhance level of environmental awareness by internal factors

Questions relevant to increasing level of environmental awareness were asked the respondents for ranking important internal factors, including an open-ended question on other internal factors from their own view.

According to the study by Kollmuss and Agyeman (2002) and Kimble (2005), ten internal factors provided in the questionnaire were as follows:

1) Sufficient environmental knowledge;

2) Environmental management skills and capabilities;

3) Roles and responsibilities in environmental management;

4) Good attitude towards environmental problems and environmental

   management;

5) Participation/empathy to the environmental issues;

6) Personal characteristic to live in the better environment;

7) Age;

8) Educational background;

9) Time spent on the environmental problems; and

10) Intention to change behavior towards environmental friendly.

The study results are shown in Table 4.5 and Figure 4.2. The study presents 73.0% of respondents indicated that 'good attitude towards environmental problems and environmental management' is a major internal factor, while 'intention to change behavior towards environmental friendly' is considerable about 70.4%. In the meanwhile, 62.2%, 61.9% , and 60.4% of them ranked 'participation/empathy to the environmental issues', 'personal characteristic to live in the better environment', and 'sufficient environmental knowledge', respectively. 59.2% of respondents valued 'time spent on the environmental problems'; whereas, 'roles and responsibilities in environmental management' and 'environmental management skills and capabilities' were viewed of 57.0% and 49.7%, respectively. Internal factors on 'educational background' and 'age' were ranked by 31.3% and 24.8%, subsequently.

The internal factors including 'environmental knowledge', 'attitudes', 'habits', 'time', 'self-identity', and 'education' were reported by Kollmuss and Agyeman (2002) and Kimble (2005). Additionally, this study found that other important internal factors are 'intention to change behavior towards environmental friendly', 'participation/empathy to the environmental issues', 'roles and responsibilities in environmental management', 'environmental management skills and capabilities', and 'age'. These factors would enhance level of environmental awareness.

Table 4.5 Percentage of respondents on internal factors towards environmental awareness enhancement

Internal factors concerned	Percentage
1) Good attitude towards environmental problems and environmental management	73.0
2) Intention to change behavior towards	70.4

environmental friendly	
3) Participation/empathy to the environmental issues	62.2
4) Personal characteristic to live in the better environment	61.9
5) Sufficient environmental knowledge	60.4
6) Time spent on the environmental problems	59.2
7) Roles and responsibilities in environmental management	57.0
8) Environmental management skills and capabilities	49.7
9) Educational background	31.3
10) Age	24.8
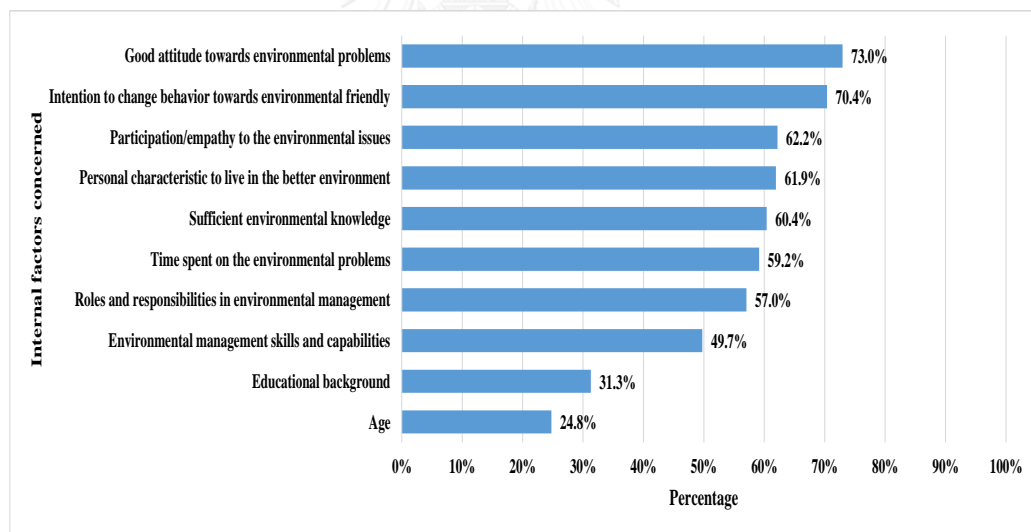
Figure 4.2 Percentage of respondents on internal factors towards environmental awareness enhancement

Respondents' own view on other internal factors on environmental awareness enhancement were self-consciousness (57.33%), self-impact from the environmental problems (18.0%), and family background (14.67%). While the rest of them (10%)

mentioned on time given to the environmental concerned, participation to environmental problems, and understanding the balance of nature.

They viewed that self-consciousness includes an intention, needs, a discipline, a responsibility of caring and concerning to the environment. In terms of self-impact, the respondents mentioned that the more experience facing on the environmental problems, the more level of environmental awareness would exist. About family background, respondents remarked that an environmental awareness would be increased if they usually do at home.

4.3.3 Enhance level of environmental awareness by external factors

Questions relevant to enhancing level of environmental awareness were asked the respondents for ranking important external factors, including an open-ended on other external factors from their own view.

According to the study by Kollmuss and Agyeman (2002) and Kimble (2005), eight external factors provided in the questionnaire were as follows:

1) Company's environmental friendly infrastructure such as Green Building;

2) Society's infrastructure to support environmental friendly activities;

3) Governmental policy concerning the environmental problems solving;

4) Character of society that builds people's environmental awareness;

5) Culture that raises people's environmental responsibility;

6) Economic situation which supports people's environmental responsibility;

7) Alternative environmental problem solving approach for gathering people attention; and

8) Environmental concerned campaign to enhance public participation.

The study results are shown in Table 4.6 and Figure 4.3. The study presents 79.30% of respondents indicated that 'culture that raises people's environmental responsibility' is a major external factor, while 'character of society that builds people's environmental awareness' is considerable about 67.38%. Following by 'governmental policy concerning the environmental problems solving' and 'society's infrastructure to support environmental friendly activities' were rated at 61.51% and 60.26%, respectively. 48.51% of respondents valued 'environmental concerned campaign to enhance public participation', while 'company's environmental friendly infrastructure such as Green Building' is taken into account of 47.76%. External factors on 'alternative environmental problem solving approach for gathering people attention' and 'economic situation which supports people's environmental responsibility' were scored at 46.44% and 41.31%, respectively.

Table 4.6 Percentage of respondents on external factors towards environmental awareness enhancement

External factors concerned	Percentage
1) Culture that raises people's environmental responsibility	79.30
2) Character of society that builds people's environmental awareness	67.38
3) Governmental policy concerning the environmental problems solving	61.51
4) Society's infrastructure to support environmental friendly activities	60.26
5) Environmental concerned campaign to enhance public participation	48.51

|	
6) Company's environmental friendly infrastructure such as Green Building	47.76
7) Alternative environmental problem solving approach for gathering people attention	46.44
8) Economic situation which supports people's environmental responsibility	41.31
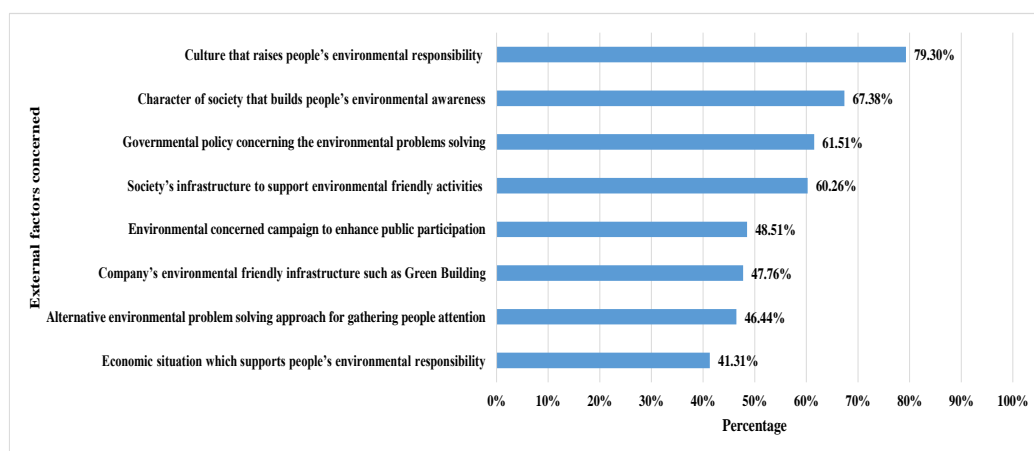
Figure 4.3 Percentage of respondents on external factors towards environmental awareness enhancement

The respondents' own view on other external factors on environmental awareness enhancement were impact from environmental problems (34.23%), law enforcement (21.62%), public concerned and participation (15.32%), livelihood of the future generations (11.71%), environmental friendly infrastructure in workplace and society, corporate social responsibility activities (9.91%), and clear in roles and responsibilities to deal with environmental problems, news accuracy related environmental problems provided via the public media (7.21%).

Respondents viewed that an impact of such environmental problems explicitly showed the more negative experience facing on the environmental problems, the more

environmental awareness level would enhance. In terms of law enforcement, they remarked on the serious penalty for violator and efficiency of environmental laws for business. These external factors would enhance level of environmental awareness.

4.3.4 Company's situation towards environmental friendly policy

Questions relevant to exploring the current environmental friendly policies of the company were asked the respondents for level of agreements. Those questions include five sections as follows:

1) Mission and vision of being an environmental friendly company;

2) Environmental friendly activities;

3) Employee's intention to participate the environmental friendly activities;

4) Company's sustainability report; and

5) Mechanisms to enhance employees' environmental awareness.

1) Mission and vision of being an environmental friendly company

From the study of company's mission and vision, the management effectiveness in deriving its mission and vision to the real practices, and the understanding of the respondents towards environmental friendly activities initiated by management, 89.81% of respondents viewed that they perceived and understood company's mission and vision, while 84.71% of them indicated that such management has conducted mission and vision based on the company's effective actions. Meanwhile, respondents (88.54%) understood the purpose of environmental friendly activities originated by management.

2) Environmental friendly activities

To understand the company's intention to organize the environmental friendly activities including company's monitoring, and evaluating process on those activities, the study revealed that 92.99% of respondents perceived that the company has initiated the environmental friendly activities continuously. In the meanwhile, about 82% of them seen that the company usually monitor, evaluate the result of environmental friendly activities, and communicate to employees afterwards. From the lower percentage of agreements on company's monitoring and evaluating process (82%). This would be implied that there would be some communication gaps exist between managerial and operational level that the management needs to take concern with.

3) Employee's intention to participate the environmental friendly activities

The study found that 94.27% of respondents noted that they voluntarily participated in the environmental friendly activity. In addition, 90.45% of them agreed to adapt what they perceived from participating in those activities at workplace to be more environmental friendly behavior in their personal lives.

4) Company's sustainability report

In consideration of sustainability report which related to economic, environmental and social impacts from company's daily activities published in 2015, the study surprisingly found that only 80.25% of respondents knew what this report is about. This finding would be confirmed that the company needs to pay more attention to the communication process of this report.

5) Mechanisms to enhance employees' environmental awareness

Respondents expressed their attitudes towards mechanisms for employees' environmental awareness enhancement, the study results were categorized as follows:

1) Employees' environmental awareness would enhance, if they were provided more environmental knowledge in form of training as suggested by Clark (1999). The study found that 85.99% of respondents agreed that if they were educated more on environmental knowledge, their level of environmental awareness would increase.

2) Employees' environmental awareness would enhance, if they participated in the environmental friendly field trip as described by OECD (1997). The number of respondents agreed with this statement was 89.81%. This would be implied that respondents would like to join more practical activities rather than the formal activity such as classroom training.

3) Employees' environmental awareness would enhance, if the company collaborated with external organization by setting up seminar, meeting, or environmental concerned field trip. The study found that 87.90% of respondents agreed to this statement as another effective tool to increase their level of environmental awareness.

4) Employees' environmental awareness would enhance, if the company complied with the international standard related to environmental concerned such as ISO14001:2004. The finding revealed that 81.53% of respondents agreed with this statement.

5) Employees' environmental awareness would enhance, if the company provided reward/recognition as described by OECD (1997) and an incentive in

form of money as suggested by Liu (2012) for the outstanding employees whom explicitly perform their environmental concerned behavior. The study found that 84.08% of respondents agreed on reward/recognition provided by the company would increase their level of environmental awareness. Additionally, the number of agreed respondents decreased to 73.25% for the financial incentive provided by the company, whilst 7.64% of them disagreed with this statement. This would be implied that the financial incentive provided by the company might not be an appropriate approach to arouse employees to increase their environmental awareness in the sustainable way.

In conclusion, effective mechanisms towards environmental awareness enhancement were found in this study. Such mechanisms included company's mission and vision as environmental friendly company, the management intention to initiate and develop environmental friendly activities continuously such as providing more environmental knowledge, collaborating with external institutes for organizing environmental friendly outing, presenting reward or recognition for the outstanding environmental friendly employees, and complying with the international standard related to environmental friendly considered.

4.3.5 Company's implementation on environmental awareness policy

The environmental awareness policy of company at the implementation level was also studied, the findings based on the following questions were categorized as follows:

1) 3R (Reduce, Reuse, Recycle) concept;

2) Energy saving campaign;

3) Employees' roles and responsibilities towards environmental friendly;

4) Environmental knowledge provided in form of training;

5) Environmental policy communication;

6) Employees' participation in Corporate Social Responsibility (CSR)

activities;

7) Employees' participation in current environmental friendly activities;

8) Employees' expectation for future environmental friendly activities; and

9) Effective environmental friendly activities.

1) 3R (Reduce, Reuse, Recycle) concept

The study revealed that 93.59% of respondents explicitly seen 3R concept implementing inside the company. Respondents were also requested to provide one sample of 3R concept. Table 4.7 presents 51.05% of respondents given their answers to 'Using 2-side of paper'. 'Separating solid waste' is considerable about 19.58%. The rest of answers included using environmental friendly products in workplace, reducing energy and water usage, recycling of waste or used resources, turning off air conditioner during lunch, and waste water treatment.

Table 4.7 3R concept raised by the respondents

3R concept responded	Percentage
1) Using 2-side of paper	51.05
2) Separating solid waste	19.58
3) Using self/bio-cup for coffee, tableware to buy food, employee card made by bio-plastic, reduce energy/water usage	11.89
4) Recycling of waste or used resources	6.99

5) Turning off air conditioner during lunch	5.59
6) Waste water treatment	4.90

2) Energy saving campaign

For the energy saving campaign, the study reflected that 96.82% of respondents explicitly seen energy saving campaign implementing inside the company. Respondents were also asked to illustrate one sample of energy saving campaign. Table 4.8 presents 36.52% of respondents illustrated on 'Turning off lights when not in use', while 19.65% of them mentioned on 'Using energy saving equipment in the office such as light bulb and reuse waste water'. Another 14.05% of them raised about 'Energy saving awareness campaign such as putting an energy saving sign on different places'. While other answers included turning off air-conditioner during lunch break, setting air-conditioner at 26 degree Celsius, shutting down unused/unnecessary machine, turning off computer after work, no tie no suit at work, and energy saving monthly report.

Table 4.8 Energy saving campaign raised by the respondents

Energy saving campaign responded	Percentage
1) Turning off lights when not in use	36.52
2) Using energy saving equipment in the office such as light bulb, reuse waste water	19.65
3) Energy saving awareness campaign such as putting an energy saving sign on places, specific electricity switch for each location	14.05
4) Turning off Air-Conditioner when unused	8.99
5) Setting Air-Conditioner temperature at 26 c	6.18

6) Shutting down unused/unnecessary machine	5.06
7) Turning off computer after work	3.93
8) No tie and suit at work	3.37
9) Energy saving monthly report	2.25

3) Employees' roles and responsibilities towards environmental friendly

Roles and responsibilities were described as one entry point of building capacity as suggested by Dureau (2004). Respondents were asked to express whether their roles and responsibilities support the environmental friendly concept of the company to a certain degree as well as they were requested to provide one sample of their supporting roles and responsibilities. The study revealed that 87.01% of respondents acknowledged that their roles and responsibilities partially support the company's environmental friendly concept. Table 4.9 presents 38.98% of respondents mentioned on 'Improving operational process for the least environmental impact'. Following by 'Effective waste management' was given at 38.14%. The rest answers included energy saving and using environmental friendly product.

Table 4.9 Employees' roles and responsibilities towards environmental friendly raised by the respondents

Roles and responsibilities responded	Percentage
1) Improving operational process for the least environmental impact. For example, no air pollution through flare, regularly maintenance equipment for its efficiency and safety, strictly follow instruction to reduce errors, and use natural gas instead of fuel oil	38.98

2) Effective waste management. For example, waste minimization (use 2-side of paper, paperless), waste separation, no discharge waste water into the river, reuse waste water, send industrial waste to external party for an effective management	38.14
3) Energy saving from air-conditioning, turn off computer when not in use	17.80
4) Using an environmental friendly product	5.08

4) Environmental knowledge provided in form of training

According to Kollmuss and Agyeman (2002) mentioned on environmental knowledge as one mechanism to build the environmental awareness. Once again, 93.59% of respondents agreed that environmental knowledge provided in form of training would help them enhancing their environmental awareness. In addition, the respondents were asked about frequency of environmental knowledge training participation. 29.79% of them answered that they participated in the semi-annually basis, while 22.70% and 12.06% of respondents participated in the monthly and quarterly basis, respectively. Some of respondents noted that the frequency of attending training class was upon their availability.

5) Environmental policy communication

Policy and system were described as one entry point of building capacity as suggested by Dureau (2004). The study reflected that 94% of respondents agreed that environmental policy communication from the company would help them enhancing their environmental awareness. Moreover, respondents were asked about the frequency of such policy has been communicated. 25% of them answered that they were

communicated in the quarterly basis, while 24.29% and 22.14% of respondents were communicated in the monthly and semi-annually basis, respectively.

6) Employees' participation in Corporate Social Responsibility (CSR) activities

The study revealed that 97.35% of respondents agreed that CSR activities participation would help them enhancing their environmental awareness. Additionally, the respondents were asked to the frequency of participation in those activities. 32.17% of them answered that they participated in the quarterly basis, while 24.48% and 20.28% of respondents participated in the monthly and semi-annually basis, respectively. Some of respondents noted that they were willing to participate as long as they were available from work.

7) Employees' participation in current environmental friendly activities

Respondents expressed their own views in aspect of current environmental friendly activities participation. Table 4.10 presents 21.83% of respondents mentioned on natural resources concerned activities; whereas, 20.30% of them clearly noted on 'buying used cooking oil for producing biodiesel'. 'Forestation' was also mentioned of about 19.80%. The rest responded include waste concerned, energy saving campaign, and social and community concerned.

Table 4.10 Environmental friendly activities raised by the respondents

Current environmental friendly activities responded	Percentage
1) Natural resources concerned: planting mangrove forest, trees, vetiver, artificial reef, building check dam, building firebreaks, making dry lick, and releasing animals	21.83
2) Buying used cooking oil as sources for producing biodiesel	20.30
3) Forestation	19.80
4) Waste concerned: solid waste separation, waste water treatment before discharge, waste exchange for reward, and collecting waste	15.23
5) Energy saving campaign: turn off lights, machine, computer when not in use	6.35
6) Social and community concerned: activity with nearby school such as teaching student, cleaning up surrounding communities, and donate second hand material to the disadvantaged such as used desktop calendar for the blind	5.58
7) Using public transportation to work, bike to work	4.34
8) Using 2-side of paper, cotton bag	3.54
9) 3R campaign, cleaning day	3.03

8) Employees' expectation for future environmental friendly activities

Respondents revealed their perspectives towards future environmental friendly activities of the company. Their provided answers were categorized below;

1) Process: Activity should be continuously improved for a better outcome;

2) Indicator: Employees should participate on voluntary basis, no impact on their work performance if they are unavailable to participate;

3) Existing activities: Current activities are still needed to continue such as forestation, energy saving campaign, waste management, buying used cooking oil for producing biodiesel, pollution minimization; and

4) Expected activities: Field trip to the affected areas caused by environmental problems, activities that employees can adapt to their daily lives such as reducing plastic bag usage, foam banned, waste separation in the household.

9) Effective environmental friendly activities

In aspect of the effective environmental friendly activities, the respondents provided answers as categorized below;

1) Employee perspective: Employee can freely participate to any activities based on their voluntary basis. Employee can initiate and share ideas for activities they would like to participate as well as employee's family member is welcome to accompany;

2) Type of activity: Activities that employees can see the benefit and impact when the problems are successfully solved and also activities related to work process improvement such as using paperless; and

3) Process: Activities should be operated based on entertaining basis such as collecting points for each activity and receiving some reward or recognition at the end of the year.

In summary, the company itself has successfully executed its policy to practices to a certain degree. Respondents were able to express the environmental friendly

activities, campaigns that they have seen in the company. Additionally, respondents also affirmed that gaining environmental knowledge, communicating environmental policy from the company and participating environmental friendly activity were significant factors to enhance their environmental awareness level. This can be concluded that well-written of environmental concerned policy would not be as important as when it is implemented to the real action plans.

4.4 Research Findings from in-depth interview questions

Seven key informants were interviewed according to a set of in-depth interview questions as shown in Appendix B. Those informants are in a top management level who have experienced from various departments. The in-depth interview were conducted between March and May 2015.

The research findings are presented and discussed in relation to the factors of the current level of environmental awareness. The findings based on the following questions were as follows:

1) General environmental problems concerned;

2) Environmental knowledge provided;

3) Environmental friendly behavior observed;

4) Other internal factors towards environmental awareness enhancement;

5) Environmental friendly infrastructure;

6) Environmental friendly policy;

7) Environmental friendly culture;

8) Other external factors towards environmental awareness enhancement;

9) Capacity building on environmental awareness; and

10) Other suggestions/recommendations.

1) General environmental problems concerned

The study focused on the environmental problems in Thailand including the existing problems, source of problems, and the impact from those environmental problems. Additionally, stakeholders' involvement in the society such as governmental sector, private sector, citizen and Non-Governmental Organization (NGO) towards environmental problems were also inquired from the informants.

The study found that solid waste is one of the main concerns of about 50%, air pollution of about 30%, and water pollution of about 20%. According to the source of the environmental problems, 100% of informants clearly mentioned on human being from various activities, namely overconsumption, overused of natural resource, and overpopulation. Regarding the impact from the environmental problems, natural resources depletion, natural disaster and health concerned were equally considerable about 29%, while another considered was unsafe living conditions. The informants also further mentioned on ways to solve the environmental problems by enhancing more environmental awareness rather than other external factors such as law enforcement and social integration.

In aspect of their opinions on the stakeholder's involvement towards environmental problems, the study reflected that 71% of informants strongly stated that the governmental plan and its implementation were inefficient. The government was required to improve the process systematically. 29% of them stated that the government itself must be a main driver for any environmental campaigns and legislates new laws and regulations for environmental problems solving. On the private sector and citizen, about 50% of informants indicated that their level of environmental awareness and

participation in environmental friendly activities are needed to enhance. However, informants stated that environmental awareness level of Non-Government Organization (NGO) was high especially in the area affected by the environmental problems. Two out of seven informants also noted that NGO's activities should associate with any sizes of organizations, not only with a large organization.

2) Environmental knowledge provided

Environmental knowledge was described as a starting tool to help people changing their thoughts and their behavior as suggested by Agnes (2008). The study revealed that 53% of informants stated that company usually provides environmental knowledge to employees. Such knowledge included utilizing natural resources efficiency and minimizing pollutants emission from the operational process. Whilst, 47% of them mentioned that the environmental knowledge was indirectly communicated through company's culture, employee's job description, on-the-job training, and in the meeting.

Furthermore, 89% of informants mentioned that current environmental knowledge was provided as a top-down policy through environmental friendly activities and work process improvement. For instance, energy saving campaign, waste separation project, and Safety Health Environment and Energy (SHEE) Day, and SHEE Talk which refers to participants sharing their environmental knowledge in the meeting. Another 11% of them mentioned about bottom-up policy by asking cooperation from employees to report any unusual activities found and communicate to other employees as environmental knowledge sharing. Additionally, half of the informants noted that 20-30% of knowledge provided by the company directly related to the environmental

issues; however, they also mentioned that environmental knowledge was still mentioned in other company's activities. Regarding the direct budget on providing environmental knowledge, respondents stated that there was no direct budget. It was already included in SHEE department's budget.

Future environmental knowledge policy were also explained by the informants, 62% of them mentioned that top-down policy was still an important tool. For instance, expanding the environmental knowledge to other related suppliers in the supply chain, establishing sustainable development department, and management needs to be a role model. While, 38% of them expressed about bottom-up policy. They indicated that more action-oriented was needed to be explicitly performed rather than a well-written policy with few actions taken.

Regarding the above results, it would be concluded that environmental knowledge is needed to provide in various approaches, namely formal training, on-the-job training, learning-by-doing, and environmental friendly activities. More importantly, management policy and their acting as a role model are still powerful as suggested by Eaganl, et al. (1997) and Remmen, et al. (2000). However, the company itself can enhance level of environmental awareness of its employees by expanding their environmental knowledge outwardly to other stakeholders in the supply chain rather than awaiting from end-customer requested as mentioned by Eaganl, et al. (1997).

3) Environmental friendly behavior observed

The study presented 55% of informants strongly stated that Safety Health Environment and Energy (SHEE) Promotion team was an important motivator to arouse employees in performing their environmental friendly behavior as suggested by Agnes

(2008). While, 45% of them noted that supervisor or middle management needed to encourage their subordinates to participate in environmental friendly activities by informing the positive results and outcomes from joining those activities.

Informants were also further explained more on future policy to motivate employees' environmental friendly behavior. 50% of informants equally mentioned on two factors, namely internal and external related. For internal considered, they mentioned that the company will focus more on the Knowledge Management (KM) concept such as using company's social network as a place for environmental knowledge sharing among employees and expanding their knowledge in form of teaching to nearby communities. For external organization related, they noted on supply chain involvement by setting up a guideline to supplier in the aspect of Environment, Social and Governance (ESG) concerned.

4) Other internal factors towards environmental awareness enhancement

Informants equitably indicated on employees' habit, educational background related to environmental concerned, practicing more on environmental friendly behavior, and instilling environmental friendly policy in the work process. These four internal factors can be applied in the proposed descriptive capacity building model on environmental awareness.

5) Environmental friendly infrastructure

Environmental friendly infrastructure was described as one external factor considered in the Pro-Environmental Behavior model as suggested by Kollmuss and Agyeman (2002) and Kimble (2005). The study revealed that 79% of informants

mentioned that company's infrastructure directly related to energy saving as mentioned by EPA (2014). For instance, replacing air-conditioning system, setting air-conditioner at 26 degree Celsius, using solar cell energy in the parking lot area, changing light bulb to LED, changing personal computer to laptop, replacing fuel oil in the operational process by natural gas, and installing efficient equipment for waste water treatment. The rest of informants expressed about human resources policy in order to align with changes of company's infrastructure. For example, wearing shirt with short sleeved instead of wearing suit and tie, requiring related suppliers to align with the company's environmental policy.

For the company's future policy related to environmental friendly infrastructure, 73% of informants strongly indicated on utilizing more renewable energy and replacing equipment with more energy saving efficiency. 27% of them mentioned on improving continuously as global environmental standard indicated.

6) Environmental friendly policy

Policy and systems were described as one entry point for capacity building as suggested by Dureau (2004). Table 4.11 presents the environmental friendly policy considered in the company that align with national and international policy such as ISO standard. 25% of informants explained on plant development such as build a biodiesel plant, solar farm. In the meanwhile, 17% of them equally mentioned on environmental friendly product development, a carbon neutral company by using decarbonized fuel, and cost-benefit analysis by concerning on economics and environmental aspect. The rest of answers included applying 3E (Efficiency, Energy, Environment) concerned, environmental cost accounting, and replacing equipment to energy saving efficiency.

Table 4.11 Environmental friendly policy raised by the informants

Environmental friendly policy concerned	Percentage
1) Plant development: building biodiesel plant, solar farm	25
2) Product development: creating more environmental friendly product which beyond the government's required	17
3) Carbon neutral company by using decarbonized fuel	17
4) Cost-benefit analysis by concerning economics and environmental aspect	17
5) 3E (Efficiency, Energy, Environment) concerned in all activities	8
6) Environmental cost accounting	8
7) Replacing equipment to energy saving efficiency	8

7) Environmental friendly culture

As environmental friendly culture was stated as one external factor in Pro-Environmental Behavior Model as suggested by Kollmuss and Agyeman (2002) and Kimble (2005). The study reflected that 70% of informants strongly disclosed that the company had a strong intention for environmental friendly culture originated by the founder. Its objective is to develop the business with social and environmental sustainability concerned at all times. In addition, 30% of respondents mentioned about employee's culture which is being a good and helpful people to others. Informants also further explained that they expected to see higher level of environmental awareness of any employees' level by encouraging more actions taken related to environmental

friendly and creating a green sustainability workplace as the ultimate goal. This would be concluded that most employees of the company are 'Positive Greens', 'Waste Watchers', and 'Concerned Consumers' according to Department for Environment, Food and Rural Affairs, United Kingdom (2008) mentioned on a different group of environmental friendly concerned.

8) Other external factors towards environmental awareness enhancement

The study found that 67% of informants stated that being a role model of management related to environmental friendly behavior was an important external factor for environmental awareness enhancement as described by Remmen, et al. (2000) and Brennan, et al. (2011). Informants also further mentioned about the corporate values that must consider to environmental friendly in all aspects. While 33% of them mentioned about the environmental law which need to be strictly enforced and penalized for the any violators as suggested by Tsai, et al. (2012).

9) Capacity building on environmental awareness

Approaches towards capacity building on environmental awareness were inquired the informants. Informants summarized such approaches into two aspects, namely people and policy aspect. The study revealed that 68% of informants considered on people aspect. Informants referred to all activities which created by Safety, Health, Environment and Energy (SHEE) department. For example, SHEE Talk during the meeting, energy saving campaigns and Corporate Social Responsibility (CSR) activities. Moreover, they also further explained on the employees' attitude that should consider of environmental friendly concept at a certain degree. Another 32% of

informants stated to policy aspect as suggested by the OECD (1997) as way to promote the environmental awareness. Mentioned policies included international standard or system such as ISO 14001, Dow Jones Sustainability Index (DJSI), Thailand Quality Award (TQA) focusing on standard requirements towards environmental concerned. Informants also further mentioned on the Key Performance Indicator (KPI) related to environmental friendly concept. It means that all employees' level would take concern about the environmental impact from any company's activities at all times.

Regarding the future policy related to capacity building on environmental awareness, 50% of informants expressed on supply chain involvement for environmental friendly concerned and employee involvement as the change agent. The rest of informants mentioned on a role model from management, work process improvement related to environmental friendly considered, and SHEE department as the motivator.

Informants were also asked to evaluate level of environmental awareness of each employee's level in numerical value. The study reflected that half of informants evaluated level of environmental awareness of top management was 90%, while the rest rated at 80% as they are environmental policy planner. For middle management, 60% of informants valued at 85%; whereas, the rest evaluated at 75% as they are environmental policy implementer. Lastly, 50% of informants rated at 50% for operational level. This would be concluded that the management needs to focus more on operational level related to their level of environmental awareness enhancement.

To explore any obstacles that would be barriers to level of environmental awareness enhancement of employees, the result showed that 75% of informants mentioned about individual factor such as lack of new environmental friendly initiative

ideas, no motivation towards environmental concerned. The rest of them mentioned about policy. For example, no follow-up process after policy implemented and no actions taken from management as suggested by Liu (2012) as a contextual barrier.

10) Other suggestions/recommendations

Informants suggested several approaches to enhance level of employee's environmental awareness. Such approaches included education, stakeholder integration for cooperation, and benchmarking to other companies for further improvement.

In conclusion, the management had strong intention and actions related to environmental policy implementation. They set up SHEE department as the key driver for policy implementation by providing environmental knowledge and motivating employees to perform the environmental friendly behavior through various activities such as SHEE talk, SHEE day, and CSR activities. The management also had policy to use energy saving equipment in the company's infrastructure. Furthermore, the cooperation from every employee is the most important factor for environmental friendly policy accomplishment.

4.5 Capacity building

To build an effective capacity building model on environmental awareness, entry points under capacity building which studied by Dureau (2004), namely 1) skills and capabilities, 2) roles and responsibilities, 3) forums for cooperation, and 4) policy and systems are important as well as the internal and external factors concerned.

4.5.1 Skills and capabilities

Skills and capabilities were raised as one of entry points of the building capacity by Dureau in 2004. The study explicitly found that 94.27% of the respondents expressed their skills and capabilities by participating voluntarily in the environmental friendly activities. Moreover, 90.45% of them agreed to adapt their skills and capabilities improvement from participating in such activities to be more environmental friendly behavior in their personal lifestyles. Respondents also expressed their skills and capabilities through environmental friendly behavior such as using 2-side of paper and separate solid waste for effective waste management and turning off light or equipment when not in use and using energy saving equipment in workplace.

Additionally, respondents' skills and capabilities can be improved through participation's frequency of environmental friendly activities, such as environmental knowledge training and environmental friendly activities. This study revealed that 29.79% of respondents attended environmental knowledge training in the semi-annually basis, while 22.70% and 12.06% of respondents participated every month and every quarter of a year, respectively. Some respondents noted that the frequency of attending training class were upon their time availability. On the other hand, 32.17% of respondents participated environmental friendly activities every quarter of a year, while 24.48% and 20.28% of respondents participated every month and every half year, respectively. Some of respondents noted that they were willing to participate as long as their time are available.

From the above findings, it would suggest that the environmental knowledge training and environmental friendly activities should be conducted regularly and

provided respondents' time availabilities to participate in order to enhance their skills and capabilities of environmental awareness.

4.5.2 Roles and responsibilities

As roles and responsibilities were described as an entry point of the building capacity by Dureau in 2004. Every roles and responsibilities in the aspect of environmental concerned should be involved either direct or indirect way. The Department of the Environment, Water, Heritage and the Arts (DEWHA), Australian Government in 2010 mentioned roles and responsibilities of each position that directly related to the environmental management system in order to comply with the ISO 14001. However, this research revealed that 87.01% of respondents acknowledged that their roles and responsibilities partially support the company's environmental friendly concept. According to Table 4.9 which is about employee's roles and responsibilities, 38.98% of respondents mentioned on 'Improving operational process for the least environmental impact'. Following by 'Effective waste management' was given at 38.14%. The rest answers included energy saving and using environmental friendly product.

In this regard, it would conclude that most of the respondents' roles and responsibilities (77.12%) directly concerned the environmental impact from their operations, while roles and responsibilities of the rest indirectly support the company's environmental friendly by saving energy used in the workplace and using the environmental friendly product.

4.5.3 Forums for cooperation

Forums for cooperation was another approach to build up capacity by allowing stakeholders' involvement such as in the mission and vision declaration by the leader through related activities implementation as reported by SHARP in 2007 by conducting the environmental forum and presenting the ideas behind the company's vision to the stakeholders. This study found that 89.81% of respondents perceived and understood company's mission and vision, while 84.71% of them indicated that the company's mission and vision has been effectively implemented in actions by the management team. Meanwhile, respondents (88.54%) understood the purpose of environmental friendly activities originated by management. This would imply that the mission and vision declaration of being an environmental friendly company was well-communicated by the management team.

According to Table 4.10 which is about environmental activities, 21.83% mentioned on natural resources concerned activities; whereas, 20.30% clearly noted on 'buying used cooking oil for producing biodiesel'. 'Forestation' was also mentioned of about 19.80%. The rest responded include waste concerned, energy saving campaign, and social and community concerned. In this regard, it would summarize that all activities that respondents cooperated with the company's plan are strongly related to the company's mission and vision as an environmental friendly concerned company.

4.5.4 Policy and systems

Policy and systems are useful to apply as a framework to capacity building. In the aspect of environmental awareness enhancement, company's policy, national policy and international policy such as ISO standard related to the environment impact from

the operations were important factors to be considered. The study found that the company set up and implemented policies on environmental awareness enhancement as follows:

1) Setting up environmental friendly activities including company's monitoring, and evaluating process on those activities;

2) Publishing a sustainability report as a formal document which related to economic, environmental and social impacts from company's daily activities;

3) Providing environmental knowledge to employees;

4) Applying 3R concept in its workplaces;

5) Promoting energy saving campaign continuously;

6) Complying with national environmental standard such as standard requirements to achieve the Thailand Quality Award (TQA); and

7) Complying with international environmental standard, namely ISO14001, Dow Jones Sustainability Index (DJSI).

4.5.5 Other factors for capacity building

Besides four mentioned factors as entry points for capacity building as suggested by Dureau (2004), this study found other two important factors for capacity building especially in aspect of environmental awareness enhancement. These are

1) Recognition provided to the employees, the study found that 84.08% of respondents mentioned on reward/recognition provided by the company. This would increase their level of environmental awareness; and

2) External organization collaboration, 87.90% of respondents viewed that a seminar, a meeting, or filed trip on environmental concerned by collaborating with external organizations would increase their level of environmental awareness.

4.6 Building the proposed descriptive capacity building model on environmental awareness

The proposed descriptive capacity building model on environmental awareness is developed based on the pro-environmental behavior model which generated by Kollmuss and Agyeman in 2002 and Kimble in 2005 and the entry points for capacity building which presented by Dureau in 2004. The pro-environmental behavior models are based on two main factors, namely internal factors and external factors. The internal factors include environmental knowledge, real environmental behavior, attitude, habits, personal resources, self-identity, and demographics. Whereas, the external factors include infrastructure, policy, social and cultural norms, political, economic, and availability of alternatives. For capacity building's entry points, Dureau proposed significant factors for capacity building on environmental awareness comprising skills and capabilities, roles and responsibilities, forums for cooperation, and policy and systems. Additionally, factors of capacity building as proposed by Floridi et al. (2009) are also applied to this model at individual, organizational and institutional levels. Each level composes of various mechanisms to build its capacity to eventually achieve effective capacity building model on environmental awareness.

Such factors mentioned above can be built and finally led to the effective descriptive capacity building model on environmental awareness.

The effective capacity building model composes of two main parts, namely effective factors and effective mechanisms. The effective internal factors considered can be categorized into individual level, whereas the effective external factors considered can be categorized into organizational and institutional level, respectively as presented in Table 4.12. Under the individual level, factors considered are environmental knowledge, environmental friendly behavior, good attitude, participation, time spent, roles and responsibilities, skills and capabilities, personal characteristic, self-consciousness, self-impact, self-habit, family background, educational background, and age. While, factors considered under organizational level are company's infrastructure, company's culture, company's policy, company's mission and vision, CSR activities, role model of management, and corporate values. Factors considered under the institutional level are society's infrastructure, governmental policy, character of society, culture, economic situation, alternative environmental problem solving approach, environmental concerned campaign for public participation, and law enforcement.

Table 4.12 Internal and external factors considered for environmental awareness enhancement

Internal and external factors considered		
Internal factors	External factors	
Individual	Organizational	Institutional
• Environmental knowledge • Environmental friendly behavior • Good attitude • Participation • Time spent • Roles and responsibilities	• Company's infrastructure • Company's culture • Company's policy • Company's mission and vision • CSR activities • Role model of management	• Society's infrastructure • Governmental policy • Character of society • Culture • Economic situation • Alternative environmental

• Skills and capabilities • Personal characteristic • Self-consciousness • Self-impact • Self-habit • Family background • Educational background • Age	• Corporate values	problem solving approach • Environmental concerned campaign for public participation • Law enforcement

Additionally, the subcategory of internal factors considered related to environmental awareness enhancement is found as shown in Table 4.13. Such internal factors proposed can be subcategorized into four groups, namely 'self', 'self-interest', 'organizational structure related' and 'both self-interest and organizational structure related' according to Kollmuss and Agyeman in 2002 and Kimble in 2005. Their definitions and details are as follows:

- 'Self' is defined as element of individual which difficult to change and/or by nature, including 'educational background', 'age', 'self-impact', 'self-consciousness', 'self-habit', 'family background', and 'personal characteristic to live in the better environment'.

- 'Self-interest' is defined as individual interest towards a specific issue, including 'good attitude towards environmental problems and environmental management' and 'intention to change behavior towards environmental friendly'.

- 'Organizational structure related' is defined as organization itself can manage and provide as it needs, including 'roles and responsibilities in

environmental management' and 'environmental management skills and capabilities'.

- 'Both self-interest and organizational structure related' is defined as an applicable element of both 'self-interest' and 'organizational structure related'. Such factors included 'sufficient environmental knowledge', 'time spent on the environmental problems, and 'participation/empathy to the environmental issues'.

Table 4.13 Subcategory of internal factors proposed related to environmental awareness enhancement

Subcategory of internal factors proposed			
Self	Self-interest	Organizational structure related	Both self-interest and organizational structure related
• Educational background • Age • Self-impact • Self-consciousness • Self-habit • Family background • Personal characteristic to live in the better environment	• Good attitude towards environmental problems and environmental management • Intention to change behavior towards environmental friendly	• Roles and responsibilities in environmental management • Environmental management skills and capabilities	• Sufficient environmental knowledge • Time spent on the environmental problems • Participation /empathy to the environmental issues

To achieve the effective descriptive capacity building model on environmental awareness, instruments (Floridi et. al., 2009), throughput (Pattillo et al., 2010), and activities (Food and Agricultural Organization of the United Nations, 2004) are

required to be involved in the model. These studies proposed have known in terms of 'Mechanism' as a tool to enhance capacity building regarding environmental awareness. There are four mechanisms found which are similar to the previous studies as described below:

1) Training and education/knowledge provided by the company (Floridi et al., (2009), Agnes (2008), Taipower (2011), and Clark (1999)),

2) Corporation and motivation of top management in participating in environmental activities and setting the environmental policy (Floridi et al. (2009), Brennan et al. (2011), Agnes (2008), Remmen et al. (2000)),

3) Setting environmental friendly activity such as an environment 'day' or 'event' (Clark, 1999), and

4) Setting up a particular department such as Safety, Health, and Environment department to mainly respond to any environmental issues related (Agnes, 2008).

Apart from the above mechanisms, the study found five mechanisms which would enhance the effective capacity building on environmental awareness. These mechanisms include

1) Presenting reward or recognition for the outstanding environmental friendly employees,

2) Expanding environmental friendly policy to related parties in supply chain or stakeholders,

3) Collaborating with external institutes related to environmental friendly activities,

4) Complying with national and international environmental standard, and

5) Benchmarking with other companies for further improvement.

Therefore, the effective mechanisms can be categorized into individual level, organizational level, and institutional level as presented in Table 4.14. The mechanisms under the individual level would be the activities that based on the voluntarily basis and employees are able to share their knowledge among colleagues. At the organizational level, the effective mechanisms are training, participating environmental friendly field trip, collaborating with external organization, improving work process, providing reward and recognition for the outstanding environmental friendly employees, setting up an environmental concerned department, and expanding knowledge or practices to other related parties in the supply chain. For institutional level, the effective mechanisms are complying with the national and international standards regarding the environmental concerned, and benchmarking with other companies for the work process improvement.

Table 4.14 Mechanisms findings related to environmental awareness enhancement

Mechanisms findings		
Individual	Organizational	Institutional
• Voluntarily participation • Ideas/Environmental knowledge sharing	• Classroom training • Environmental friendly field trip • External organization collaboration • Work process improvement • Reward/recognition • Specific team on environmental concerned activities • Supply chain/Stakeholder's involvement	• National standard complied • International standard complied • Benchmarking with other companies

Such factors and mechanisms mentioned above can be eventually led to build the effective descriptive capacity building model on environmental awareness as shown in Figure 4.4. The descriptive capacity building model on the environmental awareness can be divided into three levels, namely personal level, company level and society level. Each level composes of effective factors, effective mechanisms and the output. Those effective factors, mechanisms, and output of these three levels should be concerned for succeeded implementation in order to achieve the environmental awareness enhancement. These three levels are described in details as follows:

4.6.1 Personal level

Environmental awareness at the personal level would be enhanced by providing more environmentally knowledgeable activities through various approaches, for example, formal training, on-the-job training, and knowledge sharing among employees. These activities would enhance environmental knowledge and attitude towards environmental problems and environmental management. Environmental awareness would also be enhanced by performing environmental behavior. Such behaviors would be performed through environmental friendly participation, CSR activities, roles and responsibilities assigned, and on-the-job training. Such activities would develop skills and capabilities and expand environmental knowledge to related stakeholders in the supply chain such as supplier and customer. The final output at this level would be employees' behavior which become more environmental friendly concerned both at workplace and his/her personal lifestyle.

4.6.2 Company level

At the company level, the environmental awareness would be enhanced by company's infrastructure, company's policy and company's management team. Regarding the company's infrastructure, the company needs to provide environmental friendly infrastructure such as using energy saving efficiency equipment in the work process. Company's environmental friendly policy, culture, mission, and vision are also needed to be implemented in actions by the management. Specific team which is mainly responsible for environmental concerned would help the management for the process of implementation. In addition, being a role model of management team is also necessary for the operational employees to see the real actions taken from the management. At the same time, employees should be able to provide feedback to the management as two-way communication process for the work process improvement. The company would also collaborate with external organization by setting up environmental friendly field trip and provide reward/recognition to employees whom explicitly perform the environmental friendly behavior at workplace. The final output at this level would be the environmental policy implementation which is fully supported by the management team.

4.6.3 Society level

Environmental awareness would be enhanced at the society level by applying effective environmental law and national/international environmental standard. Although the effective environmental law is difficult to enforce by the company itself, but the company is able to improve its operational process by applying to national and international environmental standard, for example, standard requirements to achieve

the Thailand Quality Award (TQA), ISO standard, and Dow Jones Sustainability Index (DJSI). Benchmarking the work process with other companies in the similar industry for further improvement is also another effective mechanism. The final output at this level would be the continuous business improvement at all times.

Therefore, if these factors and mechanisms of all levels were well-function to be implemented, the effective descriptive capacity building model on environmental awareness would be explicitly enhanced. This descriptive capacity building model on environmental awareness would be more effective if it is externally motivated by the public participation.
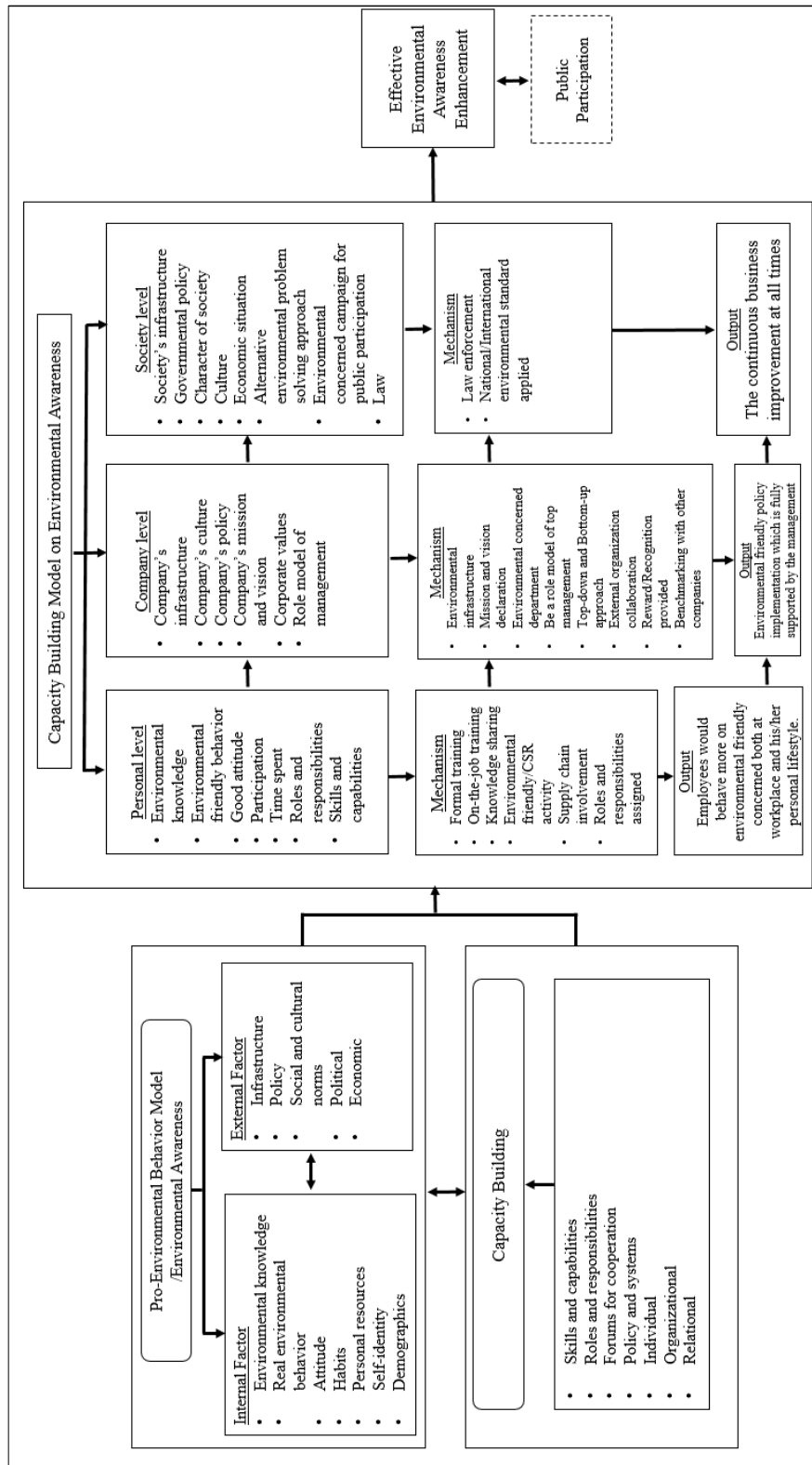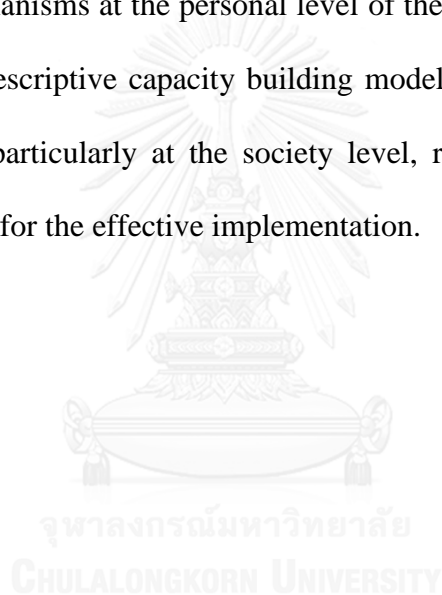
Figure 4.4 The proposed descriptive capacity building model on environmental awareness, partially modified from Kollmuss and Agyeman (2002), Kimble (2005), Dureau (2004), and Floridi et al. (2009)

4.7 Validation of the proposed descriptive capacity building model on environmental awareness

The proposed descriptive capacity building model on environmental awareness is validated its effectiveness by factors and mechanisms found from this study that are consistent with the previous research studies. In the model, the effective internal factors at the personal level are environmental knowledge, environmental behavior, good attitude, participation, time spent, roles and responsibilities, and skills and capacities. The effective external factors at the company level are company's infrastructure, company's culture, company's policy, company's mission and vision, corporate values, and role model of management. The effective external factors at the society level are society's infrastructure, governmental policy, character of society, culture, alternative environmental problem solving approach, environmental concerned campaign for public participation, and law. These internal and external factors are in line with the studies of Kollumuss and Agyeman (2002), and Kimble (2005).

In addition, the effective mechanisms found from the study including skills and capabilities, roles and responsibilities, forums for cooperation, and policy and system are also consistent with the study of Dureau (2004). Furthermore, the national and international standards related to environmental concern also used to validate the effective of this model. One of effective mechanisms found at the company level is an environmental infrastructure. This is consistent with the certification on Greenhouse Gas Emission Reduction for Buildings that the study area received from the Thailand Business Council for Sustainable Development (TBCSD) and the Thailand Environment Institute (Company's awards and certifications, 2015).

Regarding the mechanisms at the society level, the international standard, namely ISO 14001 can be used to validate such mechanisms. For example, in relation to environmental awareness enhancement, a training course on environmental issues and environmental management should be carried out. This is in line with the training provided as one of effective mechanisms at the personal level in this model. In terms of capacity building on environmental awareness in ISO 14001 that is roles and responsibilities of employees. This consists with roles and responsibilities assigned as one of effective mechanisms at the personal level of the model. Moreover, in order to build the proposed descriptive capacity building model on environmental awareness more effectiveness, particularly at the society level, relevant legislation should be enacted and enforced for the effective implementation.

CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the study

The objectives of this study were to study factors of the current level of environmental awareness of employees involvement in the public limited company and to propose effectively the descriptive capacity building model on environmental awareness utilized in the public limited company. A research framework was developed based on the pro-environmental behavior model generated by Kollmuss and Agyeman in 2002 and Kimble in 2005 and the entry points for capacity building effectiveness proposed by Dureau in 2004. Questionnaire set was developed and applied to the operational and managerial level of one public company focusing on point of view on environmental awareness concerned, namely general environmental problems, level of environmental awareness enhancement by internal and external factors, company's situation towards environmental friendly policy, and company's implementation on environmental awareness policy. The in-depth interview was used under the purposive research approach to the target informants at the managerial level focusing on environmental friendly concerned policy. Descriptive statistics were used for data analysis.

The key findings of the study are 1) the different level of importance of proposed internal and external factors, 2) the effective mechanisms related to environmental awareness enhancement, and 3) the company's implementation towards the environmental awareness policy. The target informants from an in-depth interview questions also affirmed how the company effectively executed the environmental

friendly policy to the real practice in various approaches, namely environmental knowledge provided, environmental behavior motivated through environmental friendly activities, company's environmental friendly infrastructure, policy and culture created. The results from the literature review and participation of the respondents and informants were developed to the proposed descriptive capacity building model on environmental awareness. The effective internal factors are environmental knowledge, environmental friendly behavior, good attitude, participation, time spent, roles and responsibilities, and skills and capabilities. These factors are at the personal level which have the effective mechanisms including formal training, on-the-job training, knowledge sharing, environmental friendly activities, supply chain involvement, and roles and responsibilities assigned leading to the final output that employees would behave more on environmental friendly concerned both at workplace and his/her personal lifestyle. The effective external factors can be divided into company level and society level. At the company level, the effective external factors include company's infrastructure, company's culture, company's policy, company's mission and vision, corporate value, and role model of management. These factors would be enhanced by environmental infrastructure, mission and vision declaration, environmental concerned department, be a role model of top management, top-down and bottom-up approach, external organization collaboration, reward and recognition provided by the company, and benchmarking with other companies. The final output at this level would be the environmental policy implementation which is fully supported by the management team. At the society level, the effective external factors are society's infrastructure, governmental policy, character of the society, culture, economic situation, alternative environmental problem solving approach, environmental concerned campaign for

public participation, and law with effective mechanisms including law enforcement, national and international environmental standard applied by the company. The final output at this level would be the continuous business improvement at all times. Thus, if these factors and mechanisms of all levels are well-function to be implemented, the effective environmental awareness would be explicitly enhanced. In addition, the proposed descriptive capacity building model on environmental awareness is validated its effectiveness by factors and mechanisms found from this study that are consistent with the previous research studies. Regarding the mechanisms at the society level, the international standard, namely ISO 14001 can be used to validate such mechanisms. For example, in relation to environmental awareness enhancement, a training course on environmental issues and environmental management should be carried out. This is in line with the training provided as one of effective mechanisms at the personal level in this model. In terms of capacity building on environmental awareness in ISO 14001 that is roles and responsibilities of employees. This consists with roles and responsibilities assigned as one of effective mechanisms at the personal level of the model. Moreover, in order to build the proposed descriptive capacity building model on environmental awareness more effectiveness, particularly at the society level, relevant legislation should be enacted and enforced for the effective implementation.

5.2 Gaps and barriers

Factor of public participation would relate to the environmental awareness enhancement. However, this is beyond company's authority to enforce and conduct the public participation activities by itself. Public participation also requires the stakeholders' involvements and processes in the society.

5.3 Recommendations

Regarding the proposed descriptive capacity building model on environmental awareness, it would recommend to

1) The proposed descriptive capacity building model on environmental awareness would become a good success when all levels are well-function to be implemented.

2) Public participation should be highly considered to be involved in the implementation process to enhance the effective environmental awareness at all levels.

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APPENDICES

APPENDIX A

QUESTIONNAIRE SET

Questionnaire No. _____

Subject: Capacity building model on environmental awareness: case study of a public
limited company in Thailand

<u>Remarks</u>

1. This interview is a part of the dissertation research of Mr. Parkpoom Tilokwan, a doctoral candidate in the Environment, Development and Sustainability Program at Chulalongkorn University.

2. The purpose of this interview is to survey employees' thoughts in the public limited company in Thailand related to environmental awareness aspect.

3. The interview consists of 6 sections, please answer all questions.

The results of the study will be used to analyze in this dissertation research only. All personal data provided will be strictly kept as confidential.

Your cooperation in this research is highly appreciated

Part 1: Demographic information

1. Gender

( ) Male ( ) Female

2. Age

( ) 22 – 25 ( ) 26 – 30 ( ) 31 – 35

( ) 36 – 40 ( ) 41 – 45 ( ) 46 – 50

( ) 51 – 55 ( ) 56 and above

3. Educational background

( ) Bachelor ( ) Master ( ) Doctoral

( ) Others, please specify…………………………………………

4. Marriage status

( ) Single ( ) Married

( ) Married but separated ( ) Divorced

( ) Others, please specify…………………………………………

5. Your current position is……………………………………………………..

Under department of………………………………………………………..

6. Your employee's level

( ) Operational/Officer ( ) Top Management

( ) Middle management ( ) Specialist

( ) Others, please specify…………………………………………

7. Years of work experience

( ) Less than 1 year ( ) 1 – 5 years ( ) 6 – 10 years

( ) More than 10 years

Part 2: General environmental problems concerned

2.1 Instruction: Rate your level of agreement on each provided statement.

If you strongly agree, please write "X" under box no. 5

If you agree, please write "X" under box no. 4

If you either agree or disagree, please write "X" under box no. 3

If you disagree, please write "X" under box no. 2

If you strongly disagree, please write "X" under box no. 1

Statement	5	4	3	2	1
1. Current environmental problems belong to everyone in the society.					
2. Environmental problems in Thailand must be urgently solved.					
3. Environmental problems need to be solved by every stakeholder in the society.					
4. Climate change is caused by human activities.					
5. Natural disaster is partially caused by human activities.					
6. Environmental knowledge is a fundamental to enhance level of environmental awareness.					
7. Environmental awareness is a fundamental for changes in people's behavior.					

2.2 Instruction: Please check "X" on your answer and provide short answer as required

        1) Provide two examples of environmental problems in Thailand

            1. ………………………………………….
            2. ………………………………………….

        2) Which channel do you perceive those environmental problems? (all check applied)

            ( ) Self-study   ( ) TV/Newspaper/Radio

            ( ) Social network   ( ) Word-of-mouth

            ( ) Others, please specify...

Part 3: Enhance level of environmental awareness by internal factors

3.1 Instruction: Rank 10 to 1 on the following internal factors for environmental awareness enhancement. Given "10" means the most important factor to "1" means the least important factor.

        _____ Sufficient environmental knowledge

_____ Environmental management skills and capabilities

_____ Roles and responsibilities in environmental management

_____Good attitude towards environmental problems and environmental management

_____ Participation/empathy to the environmental issues

_____ Personal characteristic to live in the better environment

_____ Age

_____ Educational background

_____ Time spent on the environmental problems

_____ Intention to change behavior towards environmental friendly

3.2 Instruction: Apart from the above provided internal factors, provide other internal factors considered for environmental awareness enhancement.

………………………………………………………………………………………………..

Part 4: Enhance level of environmental awareness by external factors

4.1 Instruction: Rank 8 to 1 on the following external factors for environmental awareness enhancement. Given "8" means the most important factor to "1" means the least important factor.

_____ Company's environmental friendly infrastructure such as Green Building

_____ Society's infrastructure to support environmental friendly activities

_____ Governmental policy concerning the environmental problems solving

_____ Character of society that builds people's environmental awareness

_____ Culture that raises people's environmental responsibility

_____ Economic situation which supports people's environmental responsibility

_____ Alternative environmental problem solving approach for gathering people attention

_____ Environmental concerned campaign to enhance public participation

4.2 Instruction: Apart from the above provided external factors, provide other external factors considered for environmental awareness enhancement.

……………………………………………………………………………………...

Part 5: Company's situation towards environmental friendly policy

5.1 Instruction: Rate your level of agreement on each provided statement.
 If you <u>strongly agree</u>, please write "X" under box no. 5
 If you <u>agree</u>, please write "X" under box no. 4
 If you <u>either agree or disagree</u>, please write "X" under box no. 3
 If you <u>disagree</u>, please write "X" under box no. 2
 If you <u>strongly disagree</u>, please write "X" under box no. 1

Statement	5	4	3	2	1
1. Company's mission and vision are clearly stated as an environmental friendly company.					
2. Management team can derive company's mission and vision to the real practice effectively.					
3. The objectives of environmental friendly activities initiated by the management are perfectly understood.					
4. You voluntarily participate in environmental friendly activities.					
5. Environmental friendly behavior in workplace can be adapted into your personal lifestyle.					
6. Company set up environmental friendly activities continuously.					
7. Company has a monitoring process on environmental friendly activities.					

8. Company has evaluating process on environmental friendly activities and regularly communicate the result to employees.					
9. Understanding the company's sustainability report					
10. Your environmental awareness will be enhanced, if company provides more environmental knowledge in form of training.					
11. Your environmental awareness will be enhanced, if company provides reward/recognition for outstanding employee whom explicitly performs environmental concerned behavior.					
12. Your environmental awareness will be enhanced, if company complies with the international environmental standard such as ISO14001:2004.					
13. Your environmental awareness will be enhanced, if you participate in the environmental friendly filed trip.					
14. Your environmental awareness will be enhanced, if company collaborates with external organization by setting up seminar, meeting or filed trip related to environmental concerned.					
15. Your environmental awareness will be enhanced, if company provides incentive in form of money for outstanding employee whom explicitly performs environmental concerned behavior.					

Part 6: Company's implementation on environmental awareness policy

Instruction: Please check "X" on your answer and provide short answer as required

1. Do the company apply 3R concept (Reduce, Reuse, and Recycle) in any operational process?

    ( ) Yes   **( )** No (Please continue No.3)

2. If yes, please provide one example...

3. Do the company promote energy saving (Electricity, Water) campaign?

    ( ) Yes   **( )** No (Please continue No.5)

4. If yes, please provide one example...

5. Do your role and responsibility related to environmental concerned?

    ( ) Yes   **( )** No (Please continue No.7)

6. If yes, please provide one example...

7. Frequency of your environmental knowledge training participation

    ( ) Weekly   ( ) Semi-monthly

    ( ) Monthly   ( ) Every 2 month

    ( ) Quarterly   ( ) Semi-annually

    ( ) Others, please specify…………………………………………………..

8. Do you think your environmental knowledge provided by the company would enhance your environmental awareness?

    ( ) Yes   ( ) No

9. Frequency of environmental friendly policy communicated

    ( ) Weekly   ( ) Semi-monthly

    ( ) Monthly   ( ) Every 2 month

    ( ) Quarterly   ( ) Semi-annually

    ( ) Others, please specify……………………………………………………

10. Do you think the environmental friendly policy communication from the company would enhance your environmental awareness?

( ) Yes   ( ) No

11. Frequency of Corporate Social Responsibility (CSR) activities participation

( ) Weekly   ( ) Semi-monthly

( ) Monthly   ( ) Every 2 month

( ) Quarterly   ( ) Semi-annually

( ) Others, please specify…………………………………………………

12. Do you think the CSR activities participation would enhance your environmental awareness?

( ) Yes   ( ) No

13. Provide 3 examples of company's environmental friendly activities

1. ....
2. ....
3. ....

14. What kind of environmental friendly activities that you expect to see in the future?

…………………………………………………………………………………

15. What kind of environmental friendly activities that you think is the most effective?

………………………………………………………………………………..

End of the questionnaire

APPENDIX B
IN-DEPTH INTERVIEW QUESTIONS

Questionnaire No. _____

Subject: Capacity building model on environmental awareness: case study of a public limited company in Thailand

<u>Remarks</u>

1. This interview is a part of the dissertation research of Mr. Parkpoom Tilokwan, a doctoral candidate in the Environment, Development and Sustainability Program at Chulalongkorn University.

2. The purpose of this interview is to survey management' thoughts towards environmental awareness in the public limited company in Thailand.

3. The interview consists of 2 sections

The results of the study will be used to analyze in this dissertation research only. All personal data provided will be strictly kept as confidential.

Your cooperation in this research is highly appreciated

Part 1: Demographic information

1. Gender
( ) Male   ( ) Female
2. Age
( ) 22 – 25   ( ) 26 – 30   ( ) 31 – 35
( ) 36 – 40   ( ) 41 – 45   ( ) 46 – 50
( ) 51 – 55   ( ) 56 and above
3. Educational background
( ) Bachelor   ( ) Master   ( ) Doctoral
( ) Others, please specify…………………………………………
4. Management level
( ) Middle management   ( ) Top management
( ) Others, please specify…………………………………………
Your responsible department is …………………………………………
5. Years of work experience
( ) Less than 1 year   ( ) 1 – 5 years
( ) 6 – 10 years   ( ) More than 10 years

Part 2: In-depth questions towards environmental awareness in the public limited company

2.1 General environmental problems concerned

1) What are current and future environmental problems? (For example: Source of problems, impact of problems)

2) What are environmental problems management in Thailand? (For example, in aspect of government, private sector, citizen, and non-governmental organization)

2.2 Environmental knowledge

1) What topics of environmental knowledge do company provide to the employees?

2) What is the company's policy towards environmental knowledge enhancement?

3) What is percentage of providing environmental knowledge compare to other knowledge provided by the company?

4) What will be the company's future policy towards environmental knowledge enhancement?

5) Do the company have a direct budget in providing environmental knowledge?

2.3 Environmental friendly behavior

1) What is the company's policy to motivate employee's environmental friendly behavior?

2) What will be the company's future policy to motivate employee's environmental friendly behavior?

2.4 Other internal factor towards environmental awareness enhancement

1) Apart from environmental knowledge and environmental friendly behavior, what is/are other internal factor(s) you think that would enhance level of environmental awareness of employees?

2.5 Environmental friendly infrastructure

1) What is the company's policy to support environmental friendly infrastructure?

2) What will be the company's future policy to support environmental friendly infrastructure?

2.6 Environmental friendly policy

1) What are the company's environmental friendly policies? (For example, Greenhouse gas reduction, air pollution controlled, waste water treatment, toxic treatment, and environmental friendly product development). Do they require a lot of investment? If yes, are they worth to be invested?

2.7 Environmental friendly culture

1) What are the company's objective and expectation from environmental friendly culture creation?

2.8 Other internal factor towards environmental awareness enhancement

1) Apart from environmental friendly infrastructure, policy, culture, what is/are other external factor(s) you think that would enhance level of environmental awareness of employees?

2.9 Capacity building towards environmental awareness

1) What are the company's policies towards capacity building on environmental awareness? (For example, skills and capabilities enhancement related to environmental friendly, clear in roles and responsibilities for more environmental friendly, forums for cooperation related to environmental friendly policy)

2) What will be the company's future policy towards capacity building on environmental awareness?

3) From the score of 100, how would you evaluate to each employee's level in aspect of their environmental awareness?

4) What would be the obstacles or problems to prevent employee's performance towards company's environmental friendly policy?

2.10 Other suggestions/recommendations

1) What are your suggestions and recommendations on this research?

_____
End of the questions

VITA

Mr. Parkpoom Tilokwan was born in Bangkok on 20 April 1984. In 2006, he obtained his Bachelor of Arts in Economics (International Program) with First class honors from Chulalongkorn University. Within the same year, Mr. Parkpoom worked as Human Resources Analyst at one of the world's largest oil company, Thailand based. In 2010, he completed is Master of Business Administration from University of International Business and Economics, Beijing, China with First class scholarship. After his Master completion, he joined one of the biggest asphalt manufacturer in Thailand as Human Resources Associate.

Since 2012, Mr. Parkpoom has been studying his doctoral degree in the Environment, Development and Sustainability (EDS) Program at Chulalongkorn University in Bangkok, Thailand. His main research interests focus on building capacity in aspect of environmental awareness, human capital and organizational development. During his study, he received a partial funding support as well as a funding for participating the oral presentation in the 5th International Congress on Interdisciplinary Behavior and Social Science 2016 from the Environment, Development and Sustainability Program and the Graduate School.