



**WOMEN AND ENVIRONMENTAL CONSERVATION IN URBAN
AREAS: A COMPARATIVE STUDY OF COMPREHENSION AND
ROLES OF WOMEN IN BUDDHISM AND CHRISTIANITY IN
BANGKOK METROPOLIS**

RASITA VAJRODAYA

With compliments
of
บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล

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The objectives of this research were: (1) to study the status of the environment and the problems which occur in urban areas; (2) to study the religious doctrines and the application of religious doctrines to environmental conservation; (3) to study the comprehension of women in environmental conservation in urban areas; (4) to study the roles of women in direct ways in environmental conservation; (5) to compare the comprehension and roles of women in Buddhism and Christianity in environmental conservation in urban areas. The sample groups of this study were 400 people: 200 Buddhists and 200 Christians. The samples were chosen by the Stratified Random Sampling method. The data were analyzed using frequency, Percentage, Mean, Standard Deviation, Analysis of Variance and the Correlation for research analysis. The findings were as follows:

1. It was found that most Buddhists in the study were 24-31 years old, most Buddhists are studying and/or graduated in a Bachelor Degree, most Buddhists who work are private employees and most Buddhists have an income of between 5,000-10,000 Baht. And most Christians in the study were 32-39 years old, most Christians are studying and/or have graduated in a Bachelor Degree, most Christians are private employees and most Christians have an income of between 10,001-15,000 Baht.

2. It was also found that women in Buddhism and Christianity understand the application of religious doctrines to environmental conservation, are aware of environmental conservation, and have satisfying roles in environmental conservation. It implies that religious doctrines could apply to environmental conservation well and that religious doctrines affect the attitude to environmental conservation.

3. The correlation between the independent variables and dependent variables are often related to each other: for Buddhists, age influenced their awareness and the roles of women in environmental conservation. Occupation influenced their comprehension about the application of religious doctrines to environmental conservation and their comprehension about environmental conservation in urban areas. The level of income influenced their comprehension about the application of religious doctrines to environmental conservation and their awareness. Education did not have any influence. For Christians, age influenced the roles of women in environmental conservation. Occupation influenced their comprehension about the application of religious doctrines to environmental conservation and their awareness. Both education and the level of income did not have any influence on the factor of economic and social activities.

4. The researcher would like to recommend that the government should support and encourage people to have knowledge, awareness and roles in environmental conservation, especially women. Women should have more rights and more roles in environmental conservation. Also, the government should encourage religion to have a larger role in encouraging their followers to love and respect the environment sincerely.

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รลิตา วัชรโรทัย : สตรีกับการอนุรักษ์สิ่งแวดล้อมในเขตเมือง ศึกษาเปรียบเทียบความรู้ความเข้าใจ และบทบาทของสตรีในพระพุทธศาสนาและคริสตศาสนาในเขตกรุงเทพมหานคร
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งานวิจัยนี้มีวัตถุประสงค์เพื่อ (1) ศึกษาสถานการณ์สิ่งแวดล้อม และปัญหาต่างๆที่เกิดขึ้นในเขตเมือง (2) ศึกษาหลักคำสอนทางศาสนา และประยุกต์คำสอนในพระพุทธศาสนาและคริสตศาสนาให้สอดคล้องกับการอนุรักษ์สิ่งแวดล้อม (3) ศึกษาความรู้ความเข้าใจของผู้หญิงในการอนุรักษ์สิ่งแวดล้อมในเขตเมือง (4) ศึกษาบทบาทโดยตรงของผู้หญิงในพระพุทธศาสนาและคริสตศาสนาในการอนุรักษ์สิ่งแวดล้อม (5) ศึกษาเปรียบเทียบความรู้ความเข้าใจและบทบาทของผู้หญิงในพระพุทธศาสนาในการอนุรักษ์สิ่งแวดล้อมในเขตเมือง ผู้วิจัยได้ทำการสุ่มกลุ่มตัวอย่างในการวิจัยครั้งนี้จำนวน 400 คน กล่าวคือ สตรีที่นับถือพระพุทธศาสนาจำนวน 200 คน และ สตรีที่นับถือคริสตศาสนา (โรมันคาทอลิก) จำนวน 200 คน โดยผู้วิจัยได้ทำการสุ่มตัวอย่างจากผู้หญิงที่อาศัยอยู่ในเขตต่างๆทั่วกรุงเทพมหานครจำนวน 50 เขต ผลจากการวิจัยนำเสนอในรูปแบบของการแจกแจงความถี่, ร้อยละ, มัชฌิม และส่วนเบี่ยงเบนมาตรฐาน นอกจากนี้ผู้วิจัยได้ทำการศึกษาคอบคลุมไปถึงการวิเคราะห์ความแปรปรวนของตัวแปร และค่าสหสัมพันธ์ระหว่างตัวแปรสำหรับการวิเคราะห์การวิจัยในครั้งนี้ ผลการวิจัยพบว่า

1. กลุ่มตัวอย่างที่เป็นสตรีที่นับถือพระพุทธศาสนาส่วนใหญ่ อยู่ในช่วงอายุ 24-31 ปี กำลังศึกษาและจบการศึกษาในระดับปริญญาตรี ส่วนใหญ่ประกอบอาชีพพนักงานบริษัทเอกชน และมีระดับรายได้อยู่ในช่วง 5,000-10,000 บาท ส่วนสตรีที่นับถือคริสตศาสนาส่วนใหญ่ อยู่ในช่วงอายุ 32-39 ปี กำลังศึกษาและจบการศึกษาในระดับปริญญาตรี ส่วนใหญ่ประกอบอาชีพพนักงานบริษัทเอกชนและมีระดับรายได้อยู่ในช่วง 10,001-15,000 บาท

2. กลุ่มตัวอย่างซึ่งเป็นพุทธศาสนิกชน และคริสตศาสนิกชน มีความรู้ความเข้าใจในการประยุกต์คำสอนในศาสนาของตนเพื่อการอนุรักษ์สิ่งแวดล้อม, ความรู้ความเข้าใจในการอนุรักษ์สิ่งแวดล้อมในเขตเมือง จิตสำนึก และบทบาทในการอนุรักษ์สิ่งแวดล้อมในระดับที่น่าพึงพอใจ ซึ่งเป็นข้อบ่งชี้ว่า คำสอนทางศาสนาสามารถนำมาประยุกต์ในการอนุรักษ์สิ่งแวดล้อมได้เป็นอย่างดี อีกทั้งคำสอนทางศาสนายังส่งผลต่อเจตคติของศาสนิกชนในการอนุรักษ์สิ่งแวดล้อม

3. ค่าสหสัมพันธ์ระหว่างตัวแปรต้นและตัวแปรตาม ซึ่งผู้วิจัยได้กำหนดตัวแปรต้นคือ อายุ, การศึกษา, อาชีพ และระดับรายได้ ส่วนตัวแปรตามคือ ความรู้ความเข้าใจเกี่ยวกับการประยุกต์คำสอนทางศาสนากับการอนุรักษ์สิ่งแวดล้อม, ความรู้ความเข้าใจในการอนุรักษ์สิ่งแวดล้อม, จิตสำนึก และบทบาทในการอนุรักษ์สิ่งแวดล้อม ผลการศึกษาแบ่งออกเป็น 2 ส่วน คือส่วนของพุทธศาสนิกชน และคริสตศาสนิกชน ผลการศึกษาพบว่าตัวแปรต้นและตัวแปรตามนั้นค่อนข้างมีความสัมพันธ์กัน

4. หลังจากทำการศึกษาวิจัยในครั้งนี้แล้ว ผู้วิจัยขอเสนอแนะว่า ภาครัฐควรส่งเสริมและปลูกฝังให้ประชาชนมีความรู้ความเข้าใจ จิตสำนึก และบทบาทในการอนุรักษ์สิ่งแวดล้อม โดยเฉพาะอย่างยิ่งผู้หญิง ควรจะมีสิทธิและบทบาทมากขึ้นในการร่วมกันแก้ไขปัญหาสิ่งแวดล้อม รวมไปถึงภาครัฐควรส่งเสริมให้ศาสนาเข้ามามีบทบาทมากขึ้นในการขัดเกลาจิตใจของคนในสังคมให้มีความรัก และเคารพต่อธรรมชาติด้วยจริงใจ

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CHAPTER 1

INTRODUCTION

1.1 THE SIGNIFICANT OF THE PROBLEM

The environmental problem is the principal problem that all countries in the world including Thailand have to pay attention to. Because we have the tendency to develop the country from an agricultural to an industrial country, we have ignored the environment surrounding us until the point where it has declined and affected human beings in both direct and indirect ways. Therefore, humans have started paying attention to the environment and have begun to conserve the environment as well.

Today, we can see the environmental crisis in problem such as the El Nino effect and the Greenhouse Effect. First, the El Nino effect occurs when the temperature in the ocean changes: the effect of the warm stream in the Pacific Ocean every 4-7 years, is that it makes the world's temperature higher, heavy rain in some areas and alters the rainy seasons. Furthermore, the El Nino effect makes the level of water in the ocean higher, thus flooding the land that is connected with the sea or the ocean. The result has decreased the agricultural areas. Also, when a population grows beyond its quantity of food resources, a famine follows. Second, the greenhouse effect occurs from a collection of carbon dioxide, nitrous oxide, chlorofluorocarbons (CFC) and methane, which are produced by human activities. The collection of gases acts

like the panes of glass on a greenhouse, trapping heat that would otherwise escape back out to space or into the atmosphere. Most scientists predict that the world's temperature will rise from 1.5 to 4 degrees centigrade in the next hundred years due to our car exhausts and factory emissions and deforestation. Because of these increased activities we can see an imbalance in nature or in the total ecological system.

In urban areas, the conditions for the problems may be different from those of rural areas. The reason for this is that the big city is often crowded with people which had migrated from other parts of Thailand; such as from the north, the south and the north – east for many purposes. For example, they would like to find a better job or employment, to educate, to seek for an improved opportunity of life. They had given the difference of religion, language, culture and belief. We can see that there are also variations of people in urban areas, in Bangkok. When we have considered the problems of the environment in urban areas, we find that Bangkok is a city which is full of pollution; garbage, air pollution, noise, decayed canals, traffic jams and over-consumption of energy. Consequently, we must try to solve the environment problems which exist in our city of Bangkok with the aim of making it a more habitable city.

We are capable of taking the religious disciplines found in Buddhism and Christianity and adapting them for the purpose of solving the environmental crisis. For example in Buddhism, there is the teaching of Patichsamuppada or Dependent Origination, which is the Dharma or the doctrine concerned with reason or conditional rules. The happening occupied by each other which may happen from ignorance appears in Buddhist Scripture (Samyuttanikaya vol.2 p.1) Thus if humans have no certain knowledge that humans had consumed the environment awkwardly. The

environment and natural resources have slowly destroyed. The main theme of this doctrine is “when something happens, the result of it must happen”. Beside, we can take the doctrine of the Four Noble Truths, which the Lord Buddha had given the first five disciples after he reached enlightenment by himself. The essence of the Four Noble Truth is everything must be linked with four factors. This is suffering, the cause of suffering, the cessation of suffering and the path. Moreover, Buddhism is the religion which concentrates on the “Middle Way”: meaning not too strict and not too lazy. Included in this doctrine is how we ought to consume the environment properly. At the present time, we are running up against the crisis of environmental degradation that happens from using the environment improperly.

Likewise, we can take the teachings in Christianity, and apply them to the case of the environment and how to conserve the environment. Christianity believes that God is the Creator, thus God created both humans and the environment. After God created humans in the last act of Genesis in the creation story, God had given humans dominion over nature. Dominion means to some, that humans are exaggerated in their stewardship. Thus, it preferred to see humans as having stewardship to other creatures, i.e. plants, animals, minerals and growing things. Stewardship means humans have the responsibility to God for stewarding the earth correctly. According to Genesis

“And God said, let us make man in our image, after our likeness: and let them dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creeping upon the earth”

(Genesis 1:26)

Christianity also presents the doctrine of Agape or Universal Love, which teaches us to make benevolent acts of or have equal concerns with others sincerely. In the same way, humans ought to love the environment heartily. Because one main reason is the environment and natural resources are necessary for habitation dwelling for humans and other living things. If the environment declined, humans and others will not continue living on this planet. Thus, we can apply these disciplines in Buddhism and Christianity into the field of the environment perfectly and understand the environmental crisis more clearly. The result of such application is that we preserve the environment and natural resources for the long term.

Because the role of women is just as important as men in the population, women ought to have responsibility for the environment. Not merely men, women must participate in environmental conservation. Especially, nowadays we claim for human rights and equality between men and women. In Thai Society, the status of women has improved in privilege and liberty. Women are now able to work outside their home. After women's organizations were established, the roles of women became more obvious. The purpose of these organizations were in order to solve the problems such as sexual abuse, social inequality and the environmental problem through an assembly representing the vitality of women. And while we have compared the roles of women in Buddhism and Christianity, we found that most women often have roles through these religious organizations. For example, in Buddhism, the Lord Buddha who confessed and paid respect to the environment and natural resources, had ordained the Buddhist Law to Buddhist priests and priestesses and he had taught that humans were a part of nature, human would not have existed if they didn't have

nature. But at the present time, most women still practice the Buddhist disciplines which may have changed from the past. Women play their roles in a form of forestation to fertilize the ecological system. In an ancient time, humans were afraid of the power of the environment. Most of them believed that the environment was sacred by itself and humans in that period were frightened of the environment. If someone had done wrong, that person would have received punishment from nature. These rituals still exist in present society, but the form of rituals may differ from the beginning. Currently women might show their roles by tree ordination or making merit and making rivers become holy. Despite, these beliefs seem to be nonsense to some people, they are useful for environmental conservation. In Christianity, religious extension is close to people in other regions and is necessary for the learning environment in that area, so Sisters finally have comprehended the environment and nature.

In the past, most women had to work at home, so they had knowledge and were familiar with the environment and knew the problems of a feeble environment. For this reason, in present society, women have the roles and duties in solving the environmental problems. If we consider the roles of women, we could say that women have two roles, these are direct roles and indirect roles. The direct role is that women have stepped into participate in solving environment problems by themselves and the indirect role is women have the role of teaching their children and generation in making ethical choices in environmental consumption. Consequently, establishing NGO (Non-Governmental Organization) which are independent organizations cooperating with the United Nations and International Convention that solve the

problems such as human rights problems and environmental problems. For Thailand, we had the Environmental Act in 1975. And this was the first environmental law in Thailand; that developed the policy on the environment. Hence, we can say that the environmental problems are problems which everyone can be interested in.

The Roles of women in urban areas may differ from rural areas, because the circumstances of society are not alike. Bangkok is crowded with tall buildings, and only a few agricultural areas. The current problems of the environment come from the extension of urban areas which cause pollution; garbage, air pollution, noise, decayed canals, traffic jams and over consumption of energy. Therefore, the roles of women in urban areas may vary due to factors such as religious beliefs and impact to attitudes, comprehension and roles. The researcher found that it's extremely significant to study the environment and the problems of the environment that are happening in urban areas. And, we can take the views and the discipline of Buddhism and Christianity to solve the problems of environmental conservation. It is also very interesting to do research on a comparative study of the comprehension and the roles of women in Buddhism and Christianity in environmental conservation.

1.2 OBJECTIVES OF THE STUDY

This research is a comparative study of the comprehension and the roles of women in Buddhism and Christianity. The objectives of the study is follows:

1.2.1 To study the status of the environment and the problems which occur in urban areas.

1.2.2 To study the religious doctrines of Buddhism and Christianity and the application of religion doctrines to environmental conservation.

1.2.3 To study the comprehension of women in environmental conservation in urban areas.

1.2.4 To study the roles of women in direct ways in environmental conservation in urban areas.

1.2.5 To compare the comprehension and the roles of women in Buddhism and Christianity in environmental conservation in urban area.

1.3 SCOPE OF THE STUDY

1. The research concentrated on the analysis of the roles that women play in a direct way in environmental conservation in Bangkok Metropolis by researching groups of women in Buddhism (Theravada) and Christianity (Roman Catholic) spread in all districts in Bangkok Metropolis (50 districts) in order to receive information correctly.

2. The researcher separated women into 4 groups such as student group, state enterprise employee group, government officer group and private employee group. These women must have located in Bangkok. In this research, a sample of Buddhists and Christians totalled 400 persons (Buddhist women 200 persons and Christian women 200 persons) in order to find out the views and attitudes of participants in environmental conservation of women in Buddhism and Christianity.

1.4 RESEARCH METHODOLOGY

This study will be both a qualitative and quantitative research separated into 2 parts as follows:

1.4.1 Documentary research: Information that was acquired from the following sources:

1.4.1.1 Primary source materials: studying of precepts, principles, and so on from the Vinaya – Pitaka, the Atthakatha, and the Holy Bible

1.4.1.2 Secondary source materials: studying Theses, research papers, Intellectual documents.

1.4.2 Survey research: the study from collecting information from sample groups:

1.4.2.1 Population and Sample Groups: women have located in Bangkok Metropolis in Buddhism (Theravada) and Christianity (Roman Catholic). From the exploration, we found that in Bangkok Metropolis the population in 1999 was; Men 2,759,879 persons, Women 2,902,620 persons, total 5,662499 persons as follows in Table 1:

Table 1: Statistics of Population in Bangkok Metropolis: 1992-1999

Year	Number of population			Rate of Population Growth	Density per Sq.km.
	Total	Male	Female		
1992	5,562,141	2,766,101	2,796,040	1.04	3,553.63
1993	5,572,712	2,760,101	2,812,232	0.19	3,360.38
1994	5,584,226	2,760,480	2,824,201	0.21	3,567.74
1995	5,570,743	2,745,431	2,828,312	0.24	3,559.13

Years	Number of Population			Rate of Population Growth	Density per Sq.km.
	Total	Male	Female		
1996	5,584,226	2,746,352	2,838,611	0.26	3,568.21
1997	5,604,772	2,749,947	2,854,825	0.35	3,580.87
1998	5,647,799	2,762,252	2,885,547	0.77	3,608.36
1999	5,662,499	2,759,879	2,902,620	0.26	3,617.75

Source : Department of Local Administration, Ministry of Interior

Compiled by : Statistical Data Bank and Information Dissemination Division, National Statistical Office

And from the exploration of Buddhists and Christians in the whole country and Bangkok Metropolis is as follows in Table 2:

Table 2: Amount of Buddhist and Christian in the whole country and Bangkok Metropolis in 1999

Details	Buddhist	Christian	Total in every religions
The whole country	57,357,862	1,012,871	61,466,178
Bangkok Metropolis	5,195,977	56,487	5,647,799

1.4.2.2 Sample Group: women who have located in Bangkok Metropolis in Buddhism (Theravada) and Christianity (Roman Catholic); the research will study Buddhist women 200 persons and Christian women 200 persons by the methods of Quota Sampling. The total of the sample group is 400 and that is divided into two groups and spread into 50 district areas in Bangkok Metropolis. The whole quantities come from the mathematical formula.

$$n = \frac{N}{1+N(0.05)^2}$$

This sampling takes into consideration the probability of details from the exploration of sample groups separated into sections of ages and the occupations of

the sample group; Women were separated into 4 groups such as student group, state enterprise employee group, government officer group and private employee group.

The researchers used the method of Stratified Random Sampling in order to reduce any bias towards a particular group and spread into 50 district areas in Bangkok

Metropolis as follows in Table 3:



**Table 3: Total population and number of female in Bangkok Metropolis
and Buddhist and Christian Sample Group (Cont.)**

Province / Districts	Total	Female	Sample Group (female)	
			Buddhist	Christian
Phasicharoen District	142,174	73,215	5	5
Nongkhem District	109,320	57,122	4	4
Rad Burana District	94,620	48,463	3	3
Bangplad District	123,035	63,928	4	4
Din Daeng District	166,187	86,451	6	6
Bung Klum District	136,617	72,132	5	5
Sathorn District	110,491	56,399	4	4
Bangsue District	161,393	82,996	6	6
Chatujak District	170,408	87,690	6	6
Bangkhoraem District	120,388	61,105	4	4
Prawet District	118,330	61,234	4	4
Klongtoey District	142,029	72,516	5	5
Suanluang District	111,047	58,342	4	4
Jomthong District	174,611	89,633	6	6
Don Mueng District	143,737	71,550	5	5
Rajthwee District	106,728	54,326	4	4
Lad Prao District	107,372	57,108	4	4
Watthana District	80,930	42,164	3	3
Bangkhae District	172,026	89,719	6	6
Laksi District	117,644	58,829	4	4
Sai Mai District	141,713	72,980	5	5
Khannayao District	76,535	40,135	3	3
Sapan Soong District	71,629	37,988	3	3

**Table 3: Total population and number of female in Bangkok Metropolis
and Buddhist and Christian Sample Group (Cont.)**

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Don Mueng District	143,737	71,550	5	5
Rajthwee District	106,728	54,326	4	4
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Watthana District	80,930	42,164	3	3
Bangkhae District	172,026	89,719	6	6
Laksi District	117,644	58,829	4	4
Sai Mai District	141,713	72,980	5	5
Khannayao District	76,535	40,135	3	3
Sapan Soong District	71,629	37,988	3	3

Table 3: Total population and number of female in Bangkok Metropolis and Buddhist and Christian Sample Group. (Cont.)

Province / Districts	Total	Female	Sample Group (female)	
			Buddhist	Christian
Sapan Soong District	71,629	37,988	3	3
Wang Thong Lang District	106,563	56,564	4	4
Klong Sam Wa District	88,957	45,823	3	3
Bang Na District	100,201	51,685	4	4
Thaweewatthana District	52,099	27,292	2	2
Toong Klu District	87,609	45,716	3	3
Bang Bon District	72,726	37,301	2	2
Total 50 Districts	5,662,499	2,902,620	200	200

Source: Department of Local Administration, Ministry of Interior

Compiled by: Statistical Data Bank and Information Dissemination Division, National Statistical

1.4.2.3 The variables of survey research:

1.4.2.3.1 Independent variables: religion, age, education, income, occupation

1.4.2.3.2 Dependent variables: comprehension, roles, awareness in environmental conservation

1.4.2.4 Questionnaires and unstructured interviews are the tools for data collection in survey research. Both are constructed on the basis of documentary research results.

1.4.3 Data Analysis: 400 questionnaires were analyzed and compared in the comprehension and the roles of women in Buddhism and Christianity by the method

point sources of pollution or naturally occur in the environment that have or are likely to have impacts on environmental quality or to cause condition poisonous or harmful to the health and hygiene of the public and shall mean to include radiation, heat, light, noise, odor, vibration or other nuisances emanated or discharged from point sources of pollution. (Enhancement And Conservation of National Environment Quality Act. BE.2535)

1.6.6 Pollution: the state or environment that has been affected, changed or contaminated by pollutants, resulting in deterioration of environmental quality such as water pollution, air pollution, soil pollution. (Enhancement And Conservation of National Environment Quality Act. BE.2535)

1.6.7 Theravada Buddhism: fundamental sect of the Buddha's Teachings and traditions that have become dominates in Sri Lanka, Burma, Thailand, Cambodia and Laos.

CHAPTER 2

THE CRISIS OF ENVIRONMENT AND ITS EFFECTS

Today, we are facing an environmental crisis caused by extravagant human consumption. Human beings often seek to meet needs by an increasing use of technology. Human beings consume the environment in order to create other technologies, thus they have effectively wasted precious natural resources. With this negative, human beings have started to see the value of taking care of their environment.

When we look into the past, we found that the very first human beings benefited from the environment for survival. For the first people, nature was very sacred and thus, they established the belief of Animism. In the Animist system, human beings were afraid of the power of the environment and they received punishment if someone dishonored the natural world. Later, human beings developed their knowledge and ability, including using the environment surrounding them. In fact, human beings tried to hold dominion over nature and use it to make life more convenient. During such economic and social development, the environment and natural resources are merely materials or factors in production with the sole purpose of meeting the requirement of humans' activities. In the period of Colonialism, the powerful countries were seeking natural resources from other regions, because some countries had resources and others did not. Undeveloped countries were simply treated, as resources of materials and these countries still do not have the ability to manage the environment. The powerful

countries had brought the advantage of natural resources to their countries in order to produce goods and services. By the end of Colonialism, the environment was in a major decline. At the present time, the scientific and technological progressive period, the environment and natural resources are very important for creating any “progress”. Therefore, humans are not able to deny the importance and value of the environment. But because human beings were used to consuming the environment inappropriately for so long, the environment and natural resources have been rapidly exhausted. Especially in urban areas where we are facing the crisis of a troubled environment in a different way from the rural areas. Most problems occurred from the development of economics and social systems with the progression of modern technology. The form of society is full of impatient people with the purpose of making profit for their business. Although we may see that the environment is merely a supplied resource, the hard truth is that the environment is more valuable than being merely a resource. Therefore, we must study the importance and relation between the environment and human beings on many sides. As well, we ought to know the problems of the environment that are happening in our city in order to seek a methodology for conservation of our urban areas.

2.1 Definitions and Importance of The Environment

2.1.1 Definition of Environment

The word “environment” is derived from “environ” (to surround; encircle) and “ment” which means

1. a surrounding or being surrounded
2. something that surrounds; surroundings

3. all the conditions, circumstances, and influences surrounding, and affecting the development of, an organism or group of organisms

(Webster's New World Dictionary & Thesaurus, Macmillan Publishers, 1977)

The term "environment" broadly indicates the surroundings of an individual organism or a community of organisms, ranging on up to the entire BIOSPHERE, the zone of the Earth that is able to sustain life. Surroundings meant all the nonliving and living materials that play any role in an organism's existence, from soil and air to what the organism feeds on and the organisms that may be fed on it. Any other factors acting on the organism, such as heat, light and gravitation, make up its environment as well. In the case of human beings, cultural factors may also be included in the term.

(Encyclopedia of knowledge, Grolier, American Vol.7)

Ass.Prof. Pudth Suchamnong (2533: 1) defined the meaning of "environment" as: everything, which surrounds us so that we cannot avoid having a relationship with it. We can divide the environment into 2 types;

1. Natural environment
2. Man-made environment

Kasem Chankeaw (2540: 1) states that the word "environment" means: the things that have physical and biological characteristics and the society that surrounds us. Occurring in nature and invented by humans.

Therefore, one summarizes the definition of environment as: everything which is surrounding us. They are both natural resources and man-made resources. The truth we have to come to terms with is: we have to depend on the environment for survival. Although humans have modern technology, humans still need a complete environment.

2.1.2 Importance of Environment

Our finite natural environment represents not only living space and resources for humans and their animal needs but, because people are cultural animals, it must also provide for our developing cultural needs. As our cultural complexity, social organization and technological capacity have increased through time; we have made progressively greater demands on the environment. (White, I.D., Mottershead D.N. and Harrison S.J. 1993:8)

Nowadays, we are interested in the environment that surrounds us because if the environment declines, we are coming to realize that human beings will not exist on the earth. Therefore, we started a trend to study the environment and natural resources as a science that we have to understand. This science is called “ecology”.

Ecology is the subfield of biology that strives to explain the relationship of people and other living things to their natural environment. Only through an understanding of how a natural environment works can we understand the impact of policies designed to regulate that environment. An ecosystem is any group of plants, animals, and nonliving things interacting within their external environment. (Smith, Zacheary A. 1994:1)

2.2 Specific Attribute and Dimension of The Environment

2.2.1 Specific Attribute of The Environment

Generally, the environment usually has its characteristics, and may differ depending on the kind of environment. We can divide the environment into 2 sorts: natural environment and man-made environment. When we considered the environment as a whole, we found that both the environments depend on each other. We can explain the specific qualities of the environment and natural resources as:

1. The environment and natural resources have individual qualities and are unique themselves. Besides, we can classify these environments as a natural environment or a man-made environment. Yet, both environments must harmonize each other.
2. Each environment must depend on the other and it has a systematic relationship in its duties and activities. One cannot survive alone.
3. If any part of the environment is destroyed, it impacts upon other environments in the system. Each environment has a relation to each other in both direct and indirect ways.
4. Each environment has a difference in endurance and mildness. But it can also adjust to the surroundings.
5. The environment is impermanent, and is able to change its form in both quantity and quality.

Charles Darwin was English and as a naturalist presented “the origin of Species by Means of Natural Selection” and “the theory of Evolution”. The researcher summarize these theories as:

1. All living things, including plants and animals, succeed from the previous generation. And may change from its predecessors.

2. The survival of living things selected by themselves. And nature is the great one selector.

Descartes (1596-1650), one of the originators of modern philosophy, had presented that nature has dynamical rules and everything can be explained in the form of systematic categories. Descartes believed that humans had power to manage nature completely and that humans are the masters of nature.

Barry Commoner, in his book *The Closing Circle*, identifies “Laws of ecology” that are based on accepted norms in the science of ecology. These laws are useful in understanding how ecosystems function and the limits to mankind’s ability to manipulate them.

The first law of ecology is that everything is connected to everything else. “An ecosystem consists of multiple interconnective parts, which act on one another”

The second law of ecology is that everything must go somewhere.

The third law of ecology is that nature knows best. Throughout most of human history, at least in the West, there has been an assumption that humans can, or perhaps should, conquer nature. (Barry Commoner 1971:33)

Besides, we can classify subsets of the environment;

1. Natural environment: the environment happening by itself i.e., forests, mountains, minerals, rivers, etc. It can be divided into two subsets;

1.1 Biological Environment: the biotic environment i.e., plants, forests, wildlife, humans, etc

1.2 Physical Environment: the abiotic environment i.e., mountains, rivers, soil, weather, temperature, etc.

2. Man-made Environment: the environment created by humans in order to fabricate factors or customs that respond to the needs in our life. Man-made environment can be divided into two subsets;

2.1 Physical-Feature Environment: houses, roads, vehicles, etc.

2.2 Abstract Environment: traditions, customs, society, politics, culture, economic systems, etc.

2.2.2 Environmental Dimension

The definition of the environmental dimension is to evaluate these many factors abstractly thus; it is the clue to manage the environment.

Kasem Chankeaw (2540) has presented the conception of the environmental dimension for managing the environment in four distinct sectors;

1. Resources Dimension: humans have to use the environment and natural resources for our existence. This dimension can be separated into three groups;

1.1 Natural Resources: it can be classified by uses, and it has 3 subgroups;

1.1.1 Non-Exhausting Natural Resources: water, air, sun energy

1.1.2 Renewable Natural Resources: plants, animals, soil

1.1.3 Exhausting Natural Resources: minerals, fuel, oil, etc.

1.2 Man-made Resources: humans learned the methods to control nature and how to use it for the purposes of convenience and comfort.

1.3 Practical Environment: we know that the environment is not permanent thus; humans are seeking for ways and methods to manage the environment and its natural resources. This dimension has 4 subgroups;

1.3.1 Physical Resources: the fundamental environments that are necessary for our lives i.e., water, air, minerals, etc.

1.3.2 Biological Resources: the group of living beings critical to the quality of the surrounding area.

1.3.3 Human-use Values: the dimension of adaptation or adjustment in order to manage physical resources and biological resources to enable uses in many purposes such as agriculture, industry, communication, etc.

1.3.4 Life Quality Values: the dimension of evaluation for managing natural resources and emphasizing the value of its impact on the quality of life i.e., health, social conditions, education, economics, etc.

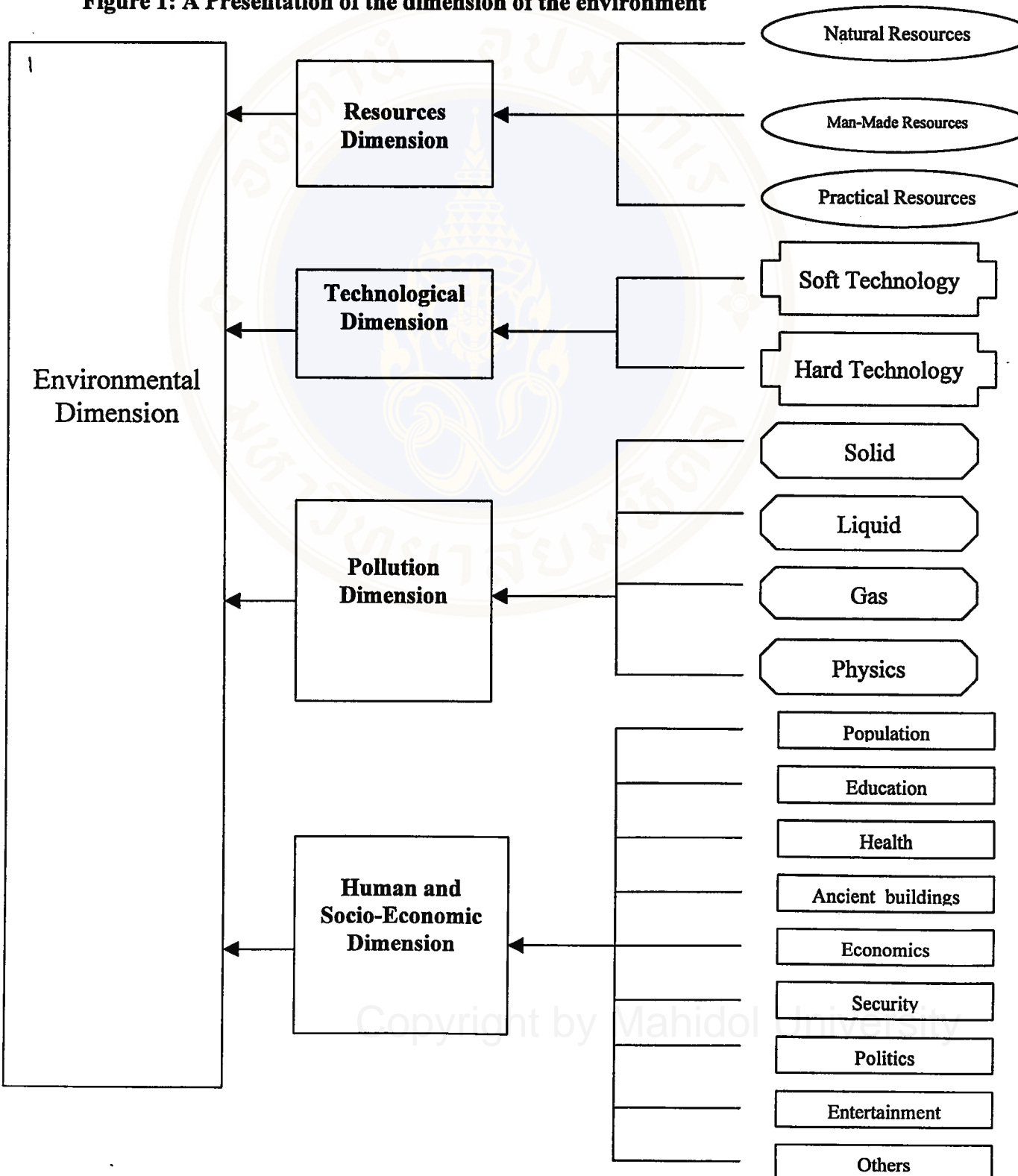
2. Technological Dimension: Technology is the process used to modify the scientific knowledge in form of conception, theory and facts. It is namely “software” and the invention of “hardware”. Apparently, software and hardware have to be used together. Technology has had a major impact on humans. Modern technology has helped the progress of all human beings.

3. Pollution Dimension: presented the result of human beings using the environment imperfectly. Although, all the environment may not pollute at once, it will gradually.

4. Human Dimension and Socio-Economic Dimension: presented the evaluation of human behavior in environmental management i.e., the factors of population, education, health, economic conditions, politics, culture, arts, etc.

The dimensions of the environment are summarized in figure2.1:

Figure 1: A Presentation of the dimension of the environment



2.3 The Systematical Relationship between Humans and the Environment.

We are studying the environment in order to understand the interaction between human society and the physical environment. Human beings exploit the physical environment; most people consume the environment extravagantly for the purposes of creating human progress in terms of science, technology and medicine. We cannot deny the importance of the environment. Although, we can invent many things not requiring its resources, we still demand the complete environment for our survival. This “whole” environment we study under the term “ecosystem”.

The term “ecosystem” is a contraction of the phrase “ecological system”, which derives from the study of ecology. The latter phrase was defined by a German zoologist, Ernst Haeckel, in 1896 as “the entire science of the relations of the organisms to the surrounding exterior world. (A.M. Mannion and S.R. Bowlby: 1992 p. 7)

2.4 Perspective of Environmental Conservation

The environment is important for our race to survive; hence, we ought to study how to consume the environment properly. Human beings tried to seek the participation of all to conserve it and made the concepts into intellectual campaigns. Before the year 1970, all environmental issues were considered under the theme of ecology or conservation. After 1970, the term of “environmentalism” (previously used to identify a theoretical position within psychology) had become commonly used. This movement has developed ideals of environmental conservation, for instance:

2.4.1 Attitude to environment

Environmental imperialism: To many in developed societies, whether in mid-nineteenth century Britain or in the USA of Ronald Reagan's era (1980-1988), the environment existed primarily as a resource. The main aim of society was to exploit resources for profit. In this view, demand for environmental resources would give them economic value, to the extent that if resources had value they would be conserved in the sense of being rationed in use.

Utilitarianism or hedonism: Born as a challenge to *laissez-faire*, this view argues that the fundamental criterion for preferring one course of action to another is that it should maximize pleasure and minimize pain. While the principle seems clear and democratic, the calculation of pleasure and pain has always been contentious – not least in the modern form of cost-benefit analysis. In practice, pleasure has tended to be replaced by demand and economic calculation has become central.

Stewardship: While environmentalists have often seen the Judeo-Christian tradition as encouraging humanity to multiply and to have dominion over Nature, it also produced the concept of stewardship. Here, current occupiers are seen not as owning land or resources but as managing them on behalf of the creator. So they have to manage them responsibly and with an expectation of being held accountable. A more modern western version of stewardship sees responsibility to future generations rather than to God.

Romanticism: Feelings very like those of Wordsworth are still current among people taking to the countryside for recreation. A modern variant on the pantheism of Romanticism is the idea of Gaia. However, Gaia is a more vengeful

goddess than the “Oversoul” of Emerson, and threatens to eliminate the human species unless it mends its ways.

Radical environmentalism: In some ways this appears the most coherent position, evident for example in the “Green Peace” view that all species have equal rights to survive or in the Green Party critique of industrial society. But in practice, there has to be some compromise between people’s need for even minimal supplies of food and clothes, and the interests of the natural environment replaced by agriculture. There is also a problem of how to react to non-green people: is it sufficient to drop out of the mainstream and adopt the basic lifestyle of philosopher Arne Naess or should radical environmentalists actively oppose development activities, as do members of “Earth First”? (Philip Sarre & Paul Smith with Eleanor Morris:1991 p.34)

2.5 Situation of the Environment in Thai Society

The very existence and the growth of cities in Thailand, as elsewhere, in turn sets into operation forces that create problems both within the city and in the environment at large. In general terms, the environmental consequences of urbanism involve the following issues:

1. Increase of per capita demand for water and energy through migration of rural people to urban areas.
2. Loss of land through the paving over of agricultural areas and ecosystems by urban infrastructure, such as roads, bridges, houses, shops, office buildings, industrial plants, etc.

3. Cities produce enormous amounts of air pollutants and liquid and solid waste, which can be detrimental to the environment and human health when they exceed the absorptive capacity of the surrounding terrestrial and aquatic ecosystem.

4. An excessive concentration of sources of air pollution and heat energy leads to changes in regional and global atmospheric systems.

5. The sustainability of urban systems as suitable human habitats is vulnerable in terms of their ecological and support systems.

6. Urban communities are liable to succumb to shortages of clean air, safe drinking water, and high-quality, safe food, and to suffer health hazards, the spread of disease and epidemics.

7. Cities are exposed to health risks from toxic substances discharged (or resulting) from some industrial activities.

8. The life style and job opportunities in cities swells due to a massive influx of urban migrants, thus giving rise to increasing three-dimensional pressures in terms of the source function, sink function, and the habitat function of the environment. The result being the impoverishment of the quality of urban life.

Thailand's policies and planning for natural resources and the environment was first specified in the Sixth National and Social Development Plan (NESDP) (1987-1991). The Seventh NESDP has carried on the commitment to natural resources and environmental policies and planning and was written in accordance with the 1992 National Environment Quality Enhancement and Protection Act (NEQA) (B.E. 2535)

At present, the Policy and Prospective Plan for National Environment quality Enhancement and Protection (1997-2016) and the Environmental Quality Management Plan (1992-2006) have been completed and adopted. The former is a framework for the conservation of the environment and incorporates environment quality management plans, which cover various sectors of the economy as specified in Article 36 of NEQA. The Environment Quality Management Plan (1999-2006) outlines the working plans for government agencies, state enterprises, and the relevant parts of the private sector, as well as indicating the implementation methods for environmental conservation at provincial levels. (Mingsarn Kaosa-ard and Pornpen Wijukprasert: 2000 p.6)

2.6 Problems of the Environment in Bangkok

Bangkok, located on the Chao Phraya River, has always provided a focus for economic activity. As industrialization has continued, the economic relations of the country have become progressively oriented towards the city, to the extent that, over 75 percent of Thailand's factories dealing with hazardous chemicals are now located within Bangkok's hinterland. The growth of private transport has been equally phenomenal and the city is fast becoming choked with traffic. For example during the "rush hour" the average speed is two miles per hour and the rush hour lasts all day! (Philip Sarre & Paul Smith with Eleanor Morris: 1991 p.79)

Furthermore, Bangkok is still a city of multiple cultures that has occurred because of migration from other regions to Bangkok. The numerous reasons for migration are to find a better job or employment, education, to seek a fortune and to

improve the opportunity of life. Bangkok is a city that is a center of progress for many fields, for instance, medical, science, industry, commercial and others. The inhabitants are familiar with the rush of arranging their business. The urban environment is the result of human actions and is based on developing social and cultural changes. Bangkok has received the influence of western culture and is trying to develop modern technology to be equivalent to other developed countries. Before 1990, Bangkok was the center of industrialization and manufacturing factories. After that, the government made policies to spread the industrial factories to suburban areas by building industrial sectors. The policies were enacted to decrease the congestion of the urban areas.

In theory, an urban environment also changes from (1) unplanned, independent actions of private citizens taken together over time, (2) actions of the administrative authorities managing the city, and (3) planned development by the national government. Obviously, it can also be changed by extraordinary or external forces such as natural disasters or enemy action in time of war, etc. (Patya Saihoo: 1993 p. 104)

Although Bangkok is a city full of beautiful scenery and replete with great arts and cultures, it also has a diversity of environmental problems. The environmental problems have resulted from a combination of rapid industrialization and population growth. Any citizen can see that there is an environmental crisis, Bangkok is facing problems that are coming from the extension of the urban center which causes the most amount of pollution; that is, garbage, air pollution, noise, water pollution, traffic jams and over consumption of energy. We have to pay close attention to solving these

problems in order to make our city inhabitable. Hence, we should study and understand the reality of the environmental problems and seek to solve these problems practically. The urban environmental problem in Bangkok can be described as follows:

Environmental problem in Bangkok

2.6.1 Garbage

Garbage has become a major problem, especially in Bangkok where the economy grows rapidly. The quantity of garbage has multiplied because of the rising population, and the major causes of the increasing garbage are:

- 1) The rapid increase in the number of people adopting the use of new technologies in daily life and using resources extravagantly, with little effort to re-use or recycle thereby discarding an enormous amount of garbage.
- 2) Limited budgets and inadequate personnel prevent the investment and improvements required to establish an efficient garbage collection and disposal system, which results in a large portion of waste remaining uncollected. The present, and rather improper, garbage elimination methods create many environmental impacts such as air pollution, water contamination, vector breeding, and disease transmission.
- 3) The lack of long-term planning for garbage management and disposal sites currently leads to improper methods of eliminating wastes.

The amount of garbage has been increasing every year. In 2000, Bangkok had approximately 8,990 tons per day, an increase from the year 1999 of about 490 tons per day. Although, the amount of garbage has increased, the technological progress for garbage management has developed too. The increasing generation rate of

municipal garbage each year leads to many problems. The problem in Bangkok Metropolitan and the surrounding areas is the unsuitable garbage disposal methods and finding sites in the future. If the garbage is disposed improperly, it will have an impact on the environment and will affect human health.

In practice, we have methods to manage the garbage by ourselves before bringing it to the public bins. Reduction and reuse of garbage are the methods that are used nowadays. We should separate the garbage into many kinds; that is, paper, plastics, glass, aluminum, iron, toxic and others. With this method, it is easy to destroy the garbage correctly. At present, in Bangkok we have advised people to bring their garbage to public bins from 6.00 pm– 3.00 am, in order to collect it easily and Bangkok will have nicer scenery without any garbage to offend the eyes.

However, we have to solve the problem of garbage urgently, because the lack of an appropriate plan for an efficient collection and disposal system might lead to more complex problems in the future, particularly in terms of public health. The following measures are recommended in order to deal with garbage management issues:

- (1) Initiate a campaign to encourage waste separation at the source. This campaign should be carried out residentially, as well as industrially and agriculturally.
- (2) Encourage recycling and reuse practices.
- (3) Improve the current waste collection and disposal system. This might be achieved by the privatization of current government run waste services. (Anchana NaRanong, Jiraporn Plangpraphan and Shelley Grasty: 2000 p.204)

2.6.2 Air pollution

Air pollution is one of the most obvious and important environmental problems of the Bangkok Metropolis Area, regional cities and large urban communities which are currently developing and expanding by industrialization and transportation. Air pollution has resulted from mass transportation, traffic congestion, construction and economic activities. Bangkok is also a major transportation and communication center. Moreover, air pollution problems are the effect from developing the country and most problems have concentrated in traffic congestion areas. Bangkok has many air pollution problems. The major causes include black smoke, particularly from diesel-powered vehicles, dust from the construction and modification of roads, tollways, electric trains, the transportation of construction materials by trucks, and building construction.

We can summarize the types of air pollutants, their principal sources and the resulting effects on human health and the environment as follows in Table 2.1:

Table 4: Air Pollutants, principal Sources and Impacts

Pollutant	Principal Sources	Impacts
Carbon monoxide (CO)	Incomplete combustion of fuels, particularly in vehicles using benzene	Health: reduced oxygen intake, dizziness, loss of consciousness, death at high levels.
Sulfur dioxide (SO ₂)	Combustion of sulfur-containing fossil fuels such as diesel, fuel oil residue, and coal, in vehicle and in industrial processes.	Health: irritation of respiratory tract; Other: formation of acid rain, which affects the health of forests and aquatic life.



Table 4: Air Pollutants, principal Sources and Impacts (Cont.)

Pollutants	Principal Sources	Impacts
Nitrogen dioxide (NO ₂)	High-temperature combustion of fuels in vehicles and industrial processes.	Health: irritation of respiratory tract; bronchitis, pneumonia; Other: formation of acid rain, which damages the life cycle of plants and other life forms.
Dust particles	Incomplete combustion of fuels in vehicles (black smoke from diesel engines), industrial processes, construction activities, transportation of earth and construction materials, rock mining and quarrying, and other production processes.	Health: irritation of respiratory tract; bronchitis, and some lung diseases possibly developing into cancer.
Ozone (O ₃)	Atmosphere reactions between nitrous oxide and hydrocarbons intensified with solar radiation.	Health: irritation of respiratory tract and eyes, asthma, emphysema, pneumonia.
Lead (Pb)	Combustion of lead-containing benzene in vehicles, the manufacture of lead products e.g. batteries	Health: accumulation in body organs, stomach discomfort, central nervous system and bone marrow damage, anemia, especially in children.
Mercury (Hg), Cadmium (Cd) and Other heavy metals	Metal smelting and processing.	Health: brain and nervous system damage.

Source: Office of Environment Policy and Planning, 1995

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According to, data collected on the Total Suspended Particulate Matter (TSP) (2000) revealed that air pollution was becoming worse. From the survey of TSP, the daily particulate concentrations were monitored along heavy traffic roadways in Bangkok. The result of the survey of TSP, it was found as follows:

Table 5: The data of Bangkok Air Quality at Curbside and roadways, 2000

Measuring Station	Period of Inspection	Result	Pollutants				
			Total of Dust (TSP) (mg./m ³) 24 hours	Dust particles (PM10) (mg./m ³) 24 hours	Lead (mg./m ³) 24 hours	Carbon monoxide	
						1 hr.	8 hr.
1. On-nuch Police Booth	6-23 Jan.	Average	0.39	211	0.13	5.22	5.20
2. Khlong Toei Police Booth	24 Jan.-8 Feb.	Average	0.36	214	0.09	3.14	3.14
3. Sri Yan Police Booth	9-27 Feb.	Average	0.23	145	0.12	3.05	3.04
4. Rama IX Police Booth	29 Feb.-14 Mar.	Average	0.18	119	0.13	3.07	3.07
5. Bang Kapi Police Booth	15 Mar.-9 Apr.	Average	0.24	135	0.05	3.09	3.09
6. Satu Pradit Police Booth	21 Apr.-7 May	Average	0.20	106	0.07	1.80	1.71
7. Pratunam Police Booth	9-28 May	Average	0.30	172	0.19	3.98	3.97
8. Yao warat Police Booth	29 May-30 Jun.	Average	0.20	128	0.08	2.15	2.17
9. Lan Luang Police Booth	13 -27 Jun.	Average	0.24	166	0.16	2.11	2.10
10. Man Sri Police Booth	29 Jun.-12 Jul.	Average	-*	160	-*	2.06	2.06

Table 5: The data of Bangkok Air Quality at Curbside and roadways, 2000 (Cont.)

Measuring Station	Period of Inspection	Result	Pollutants				
			Total of Dust (TSP) (mg./m ³) 24 hours	Dust particles (PM10) (mg./m ³) 24 hours	Lead (mg./m ³) 24 hours	Carbon monoxide	
						1 hr	8 hrs
11. Bang Lumpoo Police Booth	20 Jul.-1 Aug.	Average	0.15	100	0.11	1.92	1.91
12. Sri Phraya Police Booth	2-16 Aug.	Average	0.18	110	0.15	2.40	2.40
14. Wong Sawang Police Booth	5-21 Sep.	Average	0.23	124	0.09	2.55	2.53
15. Thanon Tok Police Booth	22 Sep.-8 Oct.	Average	0.22	128	0.24	4.13	4.17
16. Bangkok Christian Hospital	9-24 Oct.	Average	0.13	86	0.09	2.27	2.26
17. Ma Boon Krong Police Booth	24 Oct.-9 Nov.	Average	0.23	136	0.09	5.50	5.48
18. Ram Kham Heang Police Booth	10-26 Nov.	Average	0.21	-*	0.07	5.22	5.23
19. Department of Landscape Development	27 Nov.-12 Dec.	Average	0.12	103	0.04	2.98	2.97
20. Monument Victory Police Booth	15 Dec.-3 Jan.	Average	0.21	115	0.07	3.13	3.12
Standard			0.33	120	1.5	30	9

Note: -* No monitoring conducted

Source: Pollution Control Department, 2000

In 2000, the Pollution Control Apartment had experimented with air quality covering 20 measuring stations around Bangkok. The result of this inspection revealed that the area that collected the maximum rate of Total Dust was the area of On-nuch police booth and Klong Toei was the area of highest level of Dust particles. Thanon Tok was the area which had the highest concentration of Lead. The quantity of Carbon monoxide is at its highest level in the Mah Boon Khrong area.

Air quality in Bangkok indicated that ozone concentration and particulate matter less than the 10-micron (PM-10) level remain higher than the Ambient Air Standards of Thailand allow. In addition, the concentration of carbon monoxide in some areas under the skytrain stations was also above the standard during rush-hour periods.

Table 6: The data of Bangkok Air Quality and Pollutants, 2000

Pollutants	Rate	Average	Standard
TSP (Total of Dust) mg./m ³	0.02-0.37	0.10	0.33
PM10 (Dust Particles) mg./m ³	16.1-202.0	60.6	120
Carbon monoxide (1hour) ppm	0.00-27.40	1.25	30
Carbon monoxide (8hour) ppm	0.00-27.29	1.27	9
Lead (Pb) (24 hour) mg./m ³	0.00-0.60	0.09	-
Lead (Pb) (1 month) mg./m ³	0.02-0.37	0.10	1.5
Ozone (O ₃) ppb	0.00-157.0	13.9	100
Sulfur dioxide (SO ₂) ppb	0.00-135.0	4.8	300
Sulfur dioxide (SO ₂) ppb	0.00-59.0	4.9	120
Nitrogen dioxide (NO ₂) ppb	0.00-158.0	22.8	170

Source: Pollution Control Department, 2001

In order to solve the problem of air pollution, we have to deal with air quality problems, the following are recommended potential solutions:

(1) To cope with the increasingly serious air pollution problems, improve and revise air quality standards to internationally acceptable levels, taking into account the current air quality which has resulted from the present standards and the impacts on communities living near industrial areas.

(2) To reduce pollution emissions from various sources such as vehicles, industry, construction and other air polluting activities, control and monitor these activities on a continual basis.

(3) When establishing industrial estates, determine the capacity of surrounding areas (air shed and watershed) to absorb pollution, taking into account the expected total emissions, location, wind direction, and calculate the buffer zones required between nearby communities and the industrial estate.

(4) Require regular reporting by factories on the performance of equipment or systems used for controlling emissions.

(5) Inform the public regularly on the status of air quality and air pollution to encourage public awareness of the problems.

(6) Provide the public with information on air pollution problems, air pollution control and how they can participate in maintaining good air quality.

(Anchana NaRanong, Jiraporn Plangpraphan and Shelley Grasty: 2000 p.190-191)

2.6.3 Noise Pollution

Noise Pollution is one of the pollution problems existing in urban areas nowadays, and most of the problem comes from transportation or road vehicles. Noise

pollution also arises from industrial parts. Human health can be damaged both mentally and physically from noise. The Pollution Control Department has been monitoring noise levels in the community in Bangkok. Monitoring stations have been established in four areas; firstly, at Chulalongkorn Hospital, secondly, in front of the Ministry of Science, Technology, and Environment Building. Thirdly, at the Morchit Bus Terminal (Department of Land Transport) and fourthly, at the Odean roundabout.

Normally, the standard for noise levels that would not have a harmful impact on human health is set not to exceed 70 dB, the energy equivalent steady noise level measured in a 24-hour period. This is the same standard that has been adopted by the U.S. EPA as the threshold for human hearing. For the year 2000, results from 4 permanent air quality and noise monitoring stations adjacent to the roads indicated, that the maximum 24-hour equivalent sound level (L_{eq})¹ of various months was between 78.2-84.6 dB(A) (Table 2.4), which exceeded the U.S. EPA limit at every point, particularly at the Aroon Amarin police booth where the noise level was the highest. See the following table:

Table 7: Noise Levels (L_{eq}) at Curbsides in Bangkok, 1995-2000

No.	Monitoring Site	Maximum Record Noise Level (24 Hours) (dB)					
		1995	1996	1997	1998	1999	2000
1	Yaowaraj police booth	71.8	79.1	82.5	79.9	80.8	78.3
2	Pratunam police booth	83.5	84.0	83.5	81.9	81.0	*
3	National Statistical Office	83.0	80.7	80.7	79.0	-	-
4	Mansri police booth	78.4	79.5	79.2	82.5	81.0	84.1

¹ (L_{eq}): Equivalent Continuous Sound Level is the average level of continuous sound energy in 24-hours.

Table 7: Noise Levels (L_{eq}) at Curbsides in Bangkok, 1995-2000 (Cont.)

No.	Monitoring Site	Maximum Record Noise Level (24 Hours) (dB)					
		1995	1996	1997	1998	1999	2000
5	Office of Atomic Energy for Peace	76.2	76.9	74.3	75.0	74.1	79.3
6	Victory Monument (Rajavithi)	85.6	75.1	71.0	74.2	74.0	S
7	Mahaisawan Intersection	75.4	83.8	80.6	79.2	83.4	S
8	Rajabhat Ban Somdet Institute	79.7	79.8	79.5	80.4	80.5	80.0
9	Bangkok Christian Hospital	75.1	74.5	74.8	74.1	-	-
10	National Police Office	77.8	77.4	71.5	72.4	75.4	82.5
11	Department of Land Development	75.6	72.6	77.2	71.4	72.4	S
12	Suksawat-Pracha u-thit intersection	x	79.6	-	79.9	81.2	79.8
13	Aroon Ammarin police booth	x	76.4	77.4	79.3	79.1	84.6
14	Department of Livestock	x	74.3	78.1	76.0	76.4	80.4
15	Phra Khanong police station	x	81.2	81.9	80.0	82.7	80.1
16	Rama IX police booth	x	x	x	76.1	78.1	79.4
17	Ram Kham Heang police booth	x	x	x	x	77.6	78.2

Note: standard 70 dB not to be exceed

X No monitoring conducted

- No Data

* Cancel monitoring site

Source: Pollution Control Department, 1997

2.6.4 Water Pollution

Bangkok is a center of progress: in economical growth, commerce, transportation, art and culture. In addition, most of the population has concentrated on the economic and monetary activities thereby ignoring the deteriorating environment. Water pollution becomes an environmental problem when the standard of water in rivers and canals is lower than the acceptable standard, and it has degraded the ecological system of the urban area.

The results of water quality examinations of Thailand's Rivers in 1999 showed that the main rivers in the central part of Thailand are all highly polluted. For example, the Chao Phraya River (especially, in the lower part that passes through Bangkok and Samut Prakan Province) and the lower part of the Thachin River. The water quality of these rivers is reduced when they pass through urban areas and are highly contaminated with coliform bacteria, which is a cause of enteritis. The main causes of the deteriorating water quality were municipal wastewater, industrial and agricultural wastewater, respectively.

Harvey Lieber, in his book "*Environment: Reading for teachers*" Water pollution is at the root of an endless list of problems-varied complex and not easily given to simple or uniform solutions. And at the turn of century, water pollution was primarily a public health problem. And the two basic problems featured in any discussion of water pollution are population growth and accelerating industrialization. And he summarized the types of pollutants and effects as follows:

Types of Pollutants and Effects

Present-day problems can be classified under the following categories of pollutants entering our waters:

Organic or oxygen demanding waste: domestic sewage and industrial waste of plant and animal origin, which remove oxygen from water through decomposition processes, contribute to this waste. Since fish and other aquatic life depend on oxygen for life, these wastes must be controlled or the aquatic life forms die.

Infectious agents: These include bacteria and viruses, which may transmit diseases from domestic and animal waste and from tanning and meat-packing plants. Viruses resist disinfection and can grow in non-living systems and so are even greater dangers than bacteria.

Plant nutrients: Nitrogen and phosphorus are the two main nutrients that promote nuisance growths of algae and waterweeds that may interfere with treatment processes and cause unpleasant taste and odor problems. They may also upset the ecological balance of a body of water.

Synthetic organic chemicals: Detergents, pesticides and other synthetic industrial chemicals may be toxic to fish and aquatic life as well as harmful to humans. The synergistic effects of reaction with other substances in water are largely unknown. Some are highly poisonous at very low concentrations and others have unforeseeable long-term effects.

Inorganic chemicals and mineral substances: This category includes metal salts, acids and solid matter reaching water from mining and manufacturing processes, oil-field operations and agricultural practices. Besides interfering with natural stream purification, these substances may destroy aquatic life, harden water supplies, corrode

treatment equipment and vessels, make water useless for irrigation and shorten animal (including human) life.

Sediment: As a result of land erosion, often from construction projects and poor agricultural practices, stream channels are filled by silt and so harm aquatic life, erode hydroelectric power equipment and increase treatment costs.

Heat: Temperature increases, often of 10 to 20 degrees, result from the use of water for cooling purposes by power plants and industries. This thermal pollution reduces the capacity of water to absorb oxygen, accelerates all chemical reactions and invariably affects aquatic life.

For Thailand, we have a governmental unit to monitoring the quality of water; the Pollution Control Department under the authority of the Ministry of Science, Technology and Environment (MOSTE) established in 1983. Data is collected during periods of low water levels for a number of quality parameters such as dissolved oxygen (DO), biochemical oxygen demand (BOD) and total coliform bacteria (TCB) as shown in Table 2.5:

Table 8: Water Quality Standard for Surface Water, Exclusive of Ocean Waters

Water Category	Water Use Suitability	Standards		
		Dissolved Oxygen (DO)	Biochemical Oxygen Demand (BOD)	Total Coliform Bacteria (TCB)
2	Protection for fisheries, swimming, water sport	No less than 6.0 mg/l	No more than 1.5 mg/l	No more than 5,000 MPN/100 ml.
3	Agriculture, domestic uses after being treated to kill diseases and improve the general water quality	No less than 4.0 mg/l	No more than 2.0 mg/l	No more than 20,000MPN/100ml.
4	Manufacturing, domestic uses after being treated to kill diseases and improve the general water quality	No less than 2.0 mg/l	No more than 4.0 mg/l	-

Note: Surface water sources exclusive of ocean waters classified into 5 categories but water quality standards in term of DO, BOD, and TCB are defined only for three categories: 2, 3, and 4 .

Category 1 is a natural water body unpolluted by any kind of wastewater from activity.

Category 1 is a watercourse that can be used for transport and communication but no water quality standards have been established for it.

Source: Department of Environment Quality Promotion, Ministry of Science, Technology and Environment

Note:

DO (unit: mg/l): In natural watercourses, there is a level of dissolved oxygen required for life forms to survive. The DO level can be an indicator of water quality. If

a body of water has a DO content equal to or exceeding the standard, then the water is regarded as good quality, suitable for fish and other aquatic animals to survive and acceptable for use as intake for public water supply. A DO value lower than the standard indicates low water quality.

BOD (unit: mg/l): When organic waste enter a water body they are attacked and broken down by certain bacteria. However, this decomposition process consumes oxygen. Therefore, the BOD value indicates the oxygen demand that the bacteria place on the water when breaking down a particular load of organic waste. The higher the BOD level, the greater the degree of water contamination because more organic waste will demand more dissolved oxygen for decomposition.

TCB (unit: mg/l): Coliform bacteria are infectious organisms living in human and animal excreta. TCB measures the level of this organism in the watercourses. The higher the TCB value, the greater will be the risk of the disease being contracted.

For instance, in 1997, the Pollution Control Department had experimented with water covering 48 rivers including the Chao Phraya River, Bangkok. The results revealed that the most polluted water bodies were found to be in the Central region, specifically, the Chao Phraya River region and the lower reaches of the Thachin River where there are a high concentration of houses and factories along the water courses. The TCB levels were the highest in these areas. This indicated the great extent to which toxics and pollutants were being released from food waste, and as a result, could subsequently harm aquatic life.

Table 9: BOD Loadings by Source in the Chao Phraya River**(Greater Bangkok, Nonthaburi, Pathum Thani, and Samut Prakan), 1997**

Source	1997	
	Kg/day	%
Domestic	367,547	72.6
Industry	105,370	20.8
Agriculture	23,928	4.7
Commerce and Service	9,547	1.9
Total	506,420	100.0

Source: Project on Water Quality Management and Water Basin Action Plans for the Central Region, Pollution Control Department, 1997

2.6.5 Traffic Jam

Traffic congestion is a problem common to many large cities, including Bangkok. The basic causes of traffic congestion are the increasing level of population vehicle ownership and combined with limited transportation, it is very difficult to solve this problem. Hence, to manage traffic flow has difficulties. Furthermore, a part of the traffic congestion comes from uncontrolled vehicles and inefficient transportation plans.

Although, we have the policies to manage the traffic congestion by extending the governmental offices to suburb areas and using modern technology in transportation such as skyways, BTS (The Bangkok Mass Transit System), express ways and toll ways. The record of the Department of Land Transport shows that in the year 2000 the number of registered vehicles in Bangkok totaled 4,496,618.

We summarized that the traffic congestion is a problem that occurs with of large cities, including Bangkok. The main causes of this problem were most people tended to use the most economical way in a rush, crowded population, uncontrolled vehicles and inefficient transportation plans.

2.6.6 Energy Problem

The energy problem is the result of development because human beings have to consume energy to survive, for communication, for commerce, transportation and economic expansion. Especially in Bangkok, we are facing an energy crisis when we consume it without assessment. Bangkok looks like a big oven. Everyday we burn energy for developing the country and sometimes consume it inappropriately. The quantity of energy that we consume enormous. Although, our country cannot produce it adequately, we have to import it from other countries and we have to spend a large amount of money to buy it.

While we consider the roots of this problem, it was found that we have wasted a large amount of energy ineffectually. For example, our city wastes oil, including diesel and gasoline, from traffic congestion. In the past Thailand has had four key policies regarding energy development (*Manager 15/5/97*):

- (1) To increase energy in line with economic expansion
- (2) Not to invest in any large-scale hydroelectric projects
- (3) To use clean fuel
- (4) To preserve the current energy investment

If a large amount of energy burns everyday, it will affect the ecosphere with water pollution, noise and air pollution. We ought to have an excellent management system to reduce pollution that occurs in our city. The Committee for Energy Conservation Promotion Fund headed by Supachai Panichapak, the deputy prime minister, decided that 1998 and 1999 should be declared energy conservation years after various promotional activities were organized between 7 May 1998- 7 May 1999 (*Krungthep turakit 28/3/98*).

2.7 LITERATURE REVIEW

2.7.1 Charoen Chaikaew. (1999). Ethical Approaches To Environment: A Comparative Study of Western Theories and Theravada Buddhism. M.A. (Ethical Studies), Mahidol University. The importance of the environment has been realized since primitive times. Whenever an environmental crisis happens, human beings, as an environmental component, are inevitably affected. Thus, human beings are to ask and answer a wide variety of questions on the environment, and this leads to critically ethical issues which evoke new approaches about the environment. The researcher presented three western theories; anthropocentrism, biocentrism and deep ecology with comparison to Buddhist environmental ethics. In this research, it shows that anthropocentrism differs from Buddhist environmental ethics in three points. Firstly, anthropocentrism holds that man is the most important being in the world but Buddhist Environmental Ethics holds that both man and the environment have an ethical value. Secondly, in consideration of the outlook to the environment, anthropocentrism is merciless but Buddhist Ethics are friendly to the environment. Thirdly, anthropocentrism is concerned only about the usefulness of some practical purposes to

man but Buddhist Environmental Ethics is concerned that the preservation has to be organized in order to maintain or encourage environmental sustainability. Finally, it is also found that both biocentrism and deep ecology are, to some extent, similar to Buddhist Environmental Ethics.

2.7.2 Marisa Sutjaritjit. (1996). Christianity and Participation in Environmental Conservation: A Case Study of The Bangkok Members of The Church of Christ in Thailand. MA.(Environment), Mahidol University. The researcher studied the intensity and type of participation of Bangkok members of the Church of Christ in Thailand in environmental conservation and the factors that are related to the participation. The researcher also included a study of the institutional participation of the Church of Christ in Thailand, as well as of the church's leaders, in activities related to environmental conservation. The researcher suggested that in order to accelerate the intensity of participation in environmental conservation The Church of Christ in Thailand should support the Church's leaders to strengthen their understanding of environmental policy and environmental conservation methods so that the Church's leaders can more effectively teach Christian ethics about environmental conservation and lead Church members to conserve the environment. Government officials who are related to and have contact with religious institutions should support these institutions in every way possible in efforts to conserve the environment. They should also support the members of these institutions to establish a conservation group.

2.7.3 Patya Saihoo. (1993). Thai Culture and lifestyle in The Changing Urban Environment. The research of Department of Sociology and Anthropology. Faculty of Political Science, Chulalongkorn University. The urban environment in Thailand today is created and changed continually by (1) the independent actions of private citizens in the pursuit of personal livelihood, income, profit and happiness, (2) the official actions of public authorities in charge of urban administration and common well-being, such as the municipal and other local authorities and (3) development planning activities, especially of the provincial and national authorities. These different categories of people have different ideas and methods for their work with the urban environment. Urban environments can be found in Thai society from its early history, so that urban dwellers have displayed a different culture and lifestyle from their rural counterparts in several important aspects, like daily occupation, manner of work and recreation, income level, social status, norms, values, worldviews and material artifacts, despite the sharing of some common characteristics of the overall Thai culture. But this culture of pre-industrial city was greatly changed by the modernization of the country at the turn of the century, which introduced foreign elements, especially of the European colonial powers and the overseas Chinese immigrants, that later become integrates with the indigenous Thai element to form the modern urban culture. The latest economic development efforts have attracted rural immigrants in search of an urban livelihood, who add a new dimension to contemporary urban culture with their rural and regional culture elements.

2.7.4 Prida Wibulswad. (1993). Energy and Environmental Implications With Emphasis on Urban Issues. The research of School of Energy and Materials. King

Mongkut Institute of Technology, Thonburi. The combustion of imported and indigenous fuels in Thailand is now causing serious air pollution problems. Without a compulsory emission standard, a rapid growth in lignite utilization in the country will increase sulphur dioxide emission from about 0.27 M tons in 1987 to 1.52 M tons in the year 2000. High percentages of sulphur dioxide emission in Thai fuel oil and diesel oil contributed about 0.24 M tons of sulphur dioxide in 1987 and 1.39 M tons in 1990. The content of tetraethyl lead in Thai gasoline is about 0.401 g/litre which is quite high in comparison to 0.15 g/litre in Singapore and Malaysia.

2.7.5 Kasemsan Suwarnrat. (Dr.-ing).(1993). Water Resource Problems and Water Pollution in Bangkok. The Research of Policy and Planning Department, Bangkok Metropolitan Administration. Bangkok's three natural water resources and the roles of the Metropolitan Water Works are discussed. The effects of land subsidence are shown along with the rate of flooding and the various flood control plans-gates, dikes, pumps, polders and river diversions of master plans described. Statistics for the current implementation of control plans are given as well as tables on the natural assimilation capacity of canals in Bangkok, which may provide a natural treatment method for sewage.

2.7.6 Prawase Wasi, M.D. (1993). Urban Living Condition. Amarin Printing and Publishing Public Company Limited. Urban living is relatively very new in the history of humanity. Urbanization in developed and developing countries differs. While in the former it has evolved over the span of two hundred years, in the latter it occurred rather suddenly without time for adjustments. Bangkok is a good example. It used to

be a small rural community. When the capital was moved here over two hundred years ago it became an “Angel City.” However, it remained a small city full of trees, canals and temples for most of its life as a capital. Beginning thirty years ago, when the government adopted a policy of rapid economic development, drastic changes have occurred. The population has swollen to ten million. Trees have been cut down and canals have been filled in to make room for buildings and streets. Living places are congested and heterogeneous, from big houses and high-rise buildings to ruined places or slums. The traffic is almost immobile and the air is very polluted. The Chao Phraya River and its remaining canals are so decayed that it is predicted that shortly they will be biologically dead. The fact that birds are scarce in Bangkok should be a good indicator of this urban ecosystem.

CHAPTER 3

THE PERSPECTIVE AND DOCTRINES CONCERNING ENVIRONMENT IN BUDDHISM AND CHRISTIANITY

In the last chapter, the researcher has presented the definition, specific attribution and dimension of the environment, the ecological system, the perspective of environmental conservation, the situations and the environmental problems, which occur in Bangkok Metropolis. Now, the researcher would like to take the religious doctrines that we could apply to solve the environmental crisis. Before the religions happened on the earth, humans were familiar with the environment. The views about the environment were full of the sacredness and the potent concept that include views of revenge on mankind for their misdeeds and sacrilege. We found that the primitive religions that occurred in every region of the world had the environmental rituals for paying respect to the nature surrounding them. For this study, the researcher has searched the theme of doctrines, concerning the environmental conservation in Buddhism and Christianity.

Religion is commonly looked at as an abstract and is difficult to understand by common people, and religion is one of the sciences and is the reality of human life. Although, other sciences could respond to individual need humans trends in religion are the ultimate ones.

3.1 The Environment and Environmental Conservation in Buddhist Perspective

Buddhism is one of the world religions, and it originated in India, Asia over 2 centuries. The Lord Buddha who established this religion with the purpose of cessation or extinction of suffering. He described every life, including human beings and animals in having individual suffering which is inherent in all existence. Everybody cannot avoid the three common characteristics: *Tilakkhana* which is the doctrine of the status of life, that is, *Aniccata* or impermanence, *Dukkata* or state of suffering and *Anattata* or soullessness. Both human beings and animals are under the natural laws together; hence humans should treat the environment carefully and consciously.

When we look at the history of the Lord Buddha, we found that he was born in the king dynasty but he chose to wander to search for the reality of life. He began to search at the age of 29 years old; he attained Enlightenment 6 years later. He chose the location for practices, near a bank of the Anoma River and he enlightened near a bank of the Neranchara River so the environment influenced his enlightenment.

In Buddhist history, the Lord Buddha paid attention to the nature that had appeared in the Buddhist Scripture. The Lord Buddha saw that humans are able to survive in this world if the environment is complete. Nevertheless, he never refused the material progress, but that these progresses must go together with the completed environment.

The word “nature” means everything in the world which is not organized and constructed by man. The Pali equivalents which come closest to “nature” are *loka* and *yathabhuta*. The former is usually translated as “world” while the latter literally means “things as they really are.” The words *dhammata* and *niyama* are used in the Pali Canon to mean “natural law or way”¹

According to the Buddhist teaching, everything can change and nothing remains static including nature, thus we can say that nature is dynamic and changes all the time, especially with the actions of human beings. Furthermore, Buddhism believed that humans and the environment are mutual interactions. The systematic theory of Buddhism described that the environment proceeds to the five natural laws, namely *utuniyama* (physical laws), *bijaniyama* (biological laws), *cittaiyama* (psychological laws), *kammaniyama* (moral laws), *dhammaniyama* (general law of cause and effect).² Humans, animals and everything are under the natural law; hence humans should treat the environment properly and be educated to understand the limited environment.

Buddhism looks at everything, including humans, animals and plants, survival through the laws of nature. If humans destroy the completion of nature, how do we live under this planet? Most environmental crises are the reflections from human acts such as humans’ greed. Hence, the researcher has presented and applied the doctrines to environmental conservation.

¹ Ed. K. Sandell. *The Buddhist Attitude Towards Nature*. Buddhist Publication Society, Sri Lanka, 1987 (Reprint)

² P.A. Payutto. *Dictionary of Buddhism*. Maha Chulalongkorn Rajvitthayalai Publishing, 2000 p.194

3.2 The Doctrines Concerning The Environment in Buddhism

3.2.1 The Behavior of The Lord Buddha in Environmental Conservation in Buddhist Scripture.

The researcher had searched the Buddhist Scripture in the part of *Vinayapitaka* or the Discipline Basket; the researcher found that Buddhism had paid attention to the environment for a long time since the period of the Lord Buddha. He had regulated the rules for the Buddhist monks in order to survive and conserve the sphere of the environment.

In the Buddhist Scripture the origin of the world is described as thus:

“Hence, in the case of the world, the Agganna Sutta explains thus: there comes a time, when, sooner or later, after the lapse of a long, long period, this world passes away. And when this happens, beings have mostly been reborn in the World of Radiance; and there they dwell, made of mind, feeding on rapture, self-luminous, traversing the air, continuing in glory; and thus they remain for a long time, long period of time. There comes also a time when sooner and later this world begin to re-evolve. When this happens beings who had deceased from the World of Radiance, usually come to life as humans. And they become mad of mind, feeding on rapture ... and remain thus for a long, long period of time.”³

Beside that, it is interesting to notice that virtues, moral and immoral have affected the completed environment. The Lord Buddha described that:

“At such time, monks, as rajahs (kings), are unrighteous; the ministers of rajahs also are unrighteous. When ministers are unrighteous, Brahmins and householders are also unrighteous. Thus townsfolk and villagers are unrighteous. This being so the moon and sun go wrong in their course. This being, constellations and stars do likewise; days and nights; months and fortnights, season and years are out of joint; the winds blow wrong, out of season. Thus the devas (gods) are annoyed. This being so, the sky-deva bestows not sufficient rain. Rains not falling seasonably, the crops ripens in wrong season, men who live on such crops are short-lived, ill favored, weak and sickly⁴”.

From analytical interpretation, it is interesting to notice that whenever humans try to be the owners of the environment or treat the environment cruelly, the effect of human actions will affect the environment rapidly and the perfection of nature disappears. The natural phenomenon alters rains, monsoons, winds, climates and others. At the present time, we perceived that most of the environmental crisis comes from the actions of humans beings for reasons of progressive development. When humans cannot solve these problems, humans usually depend on the supernatural to ask for their help.

For the Buddhist Ethic, the Lord Buddha taught about the importance of the environment. Moreover, he spent almost all activities of his life amidst the natural

³ T.W. Rhys Davids (translated) *Digha Nikaya*, Vol. III (London: P.T.S. 1965), pp. 81-82

⁴ F.L. Woodward (translated) *Anguttara Nikaya*, Vol. II (London: P.T.S. 1965), pp. 84-85

surroundings. He was born, enlightened and died amongst the completed environment. Buddhism has respect to nature and views those humans as part of nature.

In consuming fruit and grains, the monks must be careful to eat it. The Lord Buddha had regulated that as to fruit, five kinds of fruit are allowed:

1. *Fruit that has already been burnt by fire.*
2. *Fruit that has already been marked by weapons.*
3. *Fruit that carries fingernail marks.*
4. *Seedless fruit.*
5. *Fruit from which the seed has been removed.*⁵

And he ruled that the Buddhist monks should not destroy the growth of a fruit by consuming it. Fruits that have fallen from the trees are allowed to be eaten; humans should eat and consume food with respect, not for exploitation.

For survival, mankind has to depend on nature for his food, clothing, shelter, medicine and other requisites. Humans have to understand the nature and live harmoniously by studying the processes and workings of nature. After that, humans must study how to conserve it. For example, on our planet we have limited water resources. We should conserve it by irrigation, controlling the water pollution and remedying it.

3.2.2 Four Noble Truth and Analytical Interpretation

After the Lord Buddha attained Enlightenment, he preached the first sermon the “Four Noble Truth” to his first five disciples. The Four Noble Truth is the essence of Buddhism; the researcher has linked and interpreted this discipline to the topic of the environment and environmental conservation.

The Four Noble Truth or *Ariyasacca* is the reality which proceeds to the Ultimate;

The First Noble Truth is suffering or *Dukkha*. Buddhism recognizes that the suffering of body and mind are undeniable and unavoidable since humans are born to die. Everyone has attachment with individual suffering. When applying the First Noble Truth to the ecological crisis, we must have consciousness and awareness. Because we are facing a crisis of environment, we notice that our planet is changing and the world’s temperature is higher. It has affected humans and all living things, and the biosphere surrounding us has declined. And after we recognized that the environment is not as completed as the past, we should accompany others to solve it. Both humans and all living things have their own suffering, Buddhism described that suffering or *Dukkha* is a state of suffering or being subject to suffering; conflict; unsatisfactoriness. And divided the suffering into three⁶:

1. *Dukkha-dukkhata* or painfulness as suffering
2. *Viparinama-dukkhata* or suffering is change

⁵ Thai Tripitaka Vol. VII, p.8

⁶ Dighanikaya Vol.III.pp.216; Samyuttanikaya. Vol.IV.pp.259

3. *Sankhara-dukkhata* or suffering due to formations; inherent liability to suffering.

The Second Noble Truth is the cause of suffering or *Samudaya*. All Suffering has to have an origin for it; there is nothing that happens without cause. Buddhism has divided the origin of suffering into three⁷:

1. *Kama-tanha* or craving for sensual pleasure; sensual craving
2. *Bhava-tanha* or craving for existence
3. *Vibhava-tanha* or craving for non-existence; craving for self-annihilation

To link it into the ecological crisis, it has to search the deep root of the problem. Although, we recognized that humans must depend on nature to survive, the environmental consumption should not feed their greed. The natural resources of the world are limited, so we should consume it without exploitation. Normally, humans usually consume it for their satisfaction; hence natural resources run out rapidly. The reason is the population and its economic development that includes ignorance. In order to conserve nature by taking ecological ethics to solve the environmental crisis we must try to understand our ignorance and nourish our virtuous mentality with the task of saving the environment.

The Third Noble Truth is the cessation or extinction of suffering or *Nirodha*. This is the result which comes, after humans have considered the methods to solve it.

In environmental problem solving, humans must consider the cause of the problems and try to solve them. If humans solve the environmental problem, they will approach a sustainable society, where humans and nature live together in balance and harmony. Besides that, humans should love and treat nature as an equal to himself or herself.

The Fourth Noble Truth is the path leading to the cessation of suffering or *Magga*. Buddhism teaches that all existence is full of suffering, and Buddhism presents means to conquer it. The Lord Buddha suggested the conception to overcome the suffering by an Eightfold Path. The details of *Magga* or an Eightfold Path, is presented in *Majjhima patipada*.

3.2.3 *Paticcasamuppada* or Dependent Origination and Analytical Interpretation

According P.A. Payutto (1999) explains that *Paticcasamuppada* or Dependent Origination is one of the most profound and intellectually intriguing of all the Buddha's teachings. And it is also one of Buddhism's most important and unique teachings. It was described by the Buddha as a natural law, a fundamental truth which exists independently of the arising of enlightened being.

While we considered *Paticcasamuppada* or Dependent Origination, we found that it was discovered in the principle of natural order, and everything could not avoid the truth of Dependent Origination. The natural law is the reality that applies to everything including the natural environment and human society. These systems of

⁷ Anguttaranikaya Vol.III.pp445; Vibhanga (Abhidhamma) pp.365

causal relationship are part of the one nature truth. Human happiness depends on having some knowledge of this causal system and practicing correctly within it, through addressing problems on the individual, social and environmental levels. All things are interrelated and all affects each other.

The principle of Dependent Origination can be divided into two main categories. Firstly, it was described as the general principle and secondly, it was specified as twelve constituent factors linked together in a chain.

1) The general principle: is known as *idappaccayata* or the principle of conditionality.

A. *When there is this, that is*

With the arising of this, that arises.

B. *When this is not, neither is that.*

With the cessation of this, that ceases.⁸

2) The principle in effect:

With Ignorance as a condition, there are Volitional Impulses.

With Volitional Impulses as a condition, Consciousness.

With Consciousness as a condition, Body and Mind.

With Body and Mind as a condition, the Six Senses Bases.

With the Six Sense Bases as a condition, (sense) Contact.

With Contacts as a condition, Feeling.

With Feeling as a condition, Craving.

With Craving as a condition, Clinging.

With Clinging as a condition, Becoming.

With Becoming as a condition, Birth.

With Birth as a condition, Aging and Death,

Sorrow, Lamentation, Pain, Grief and Despair.

Thus is the arising of this whole mass of suffering.⁹

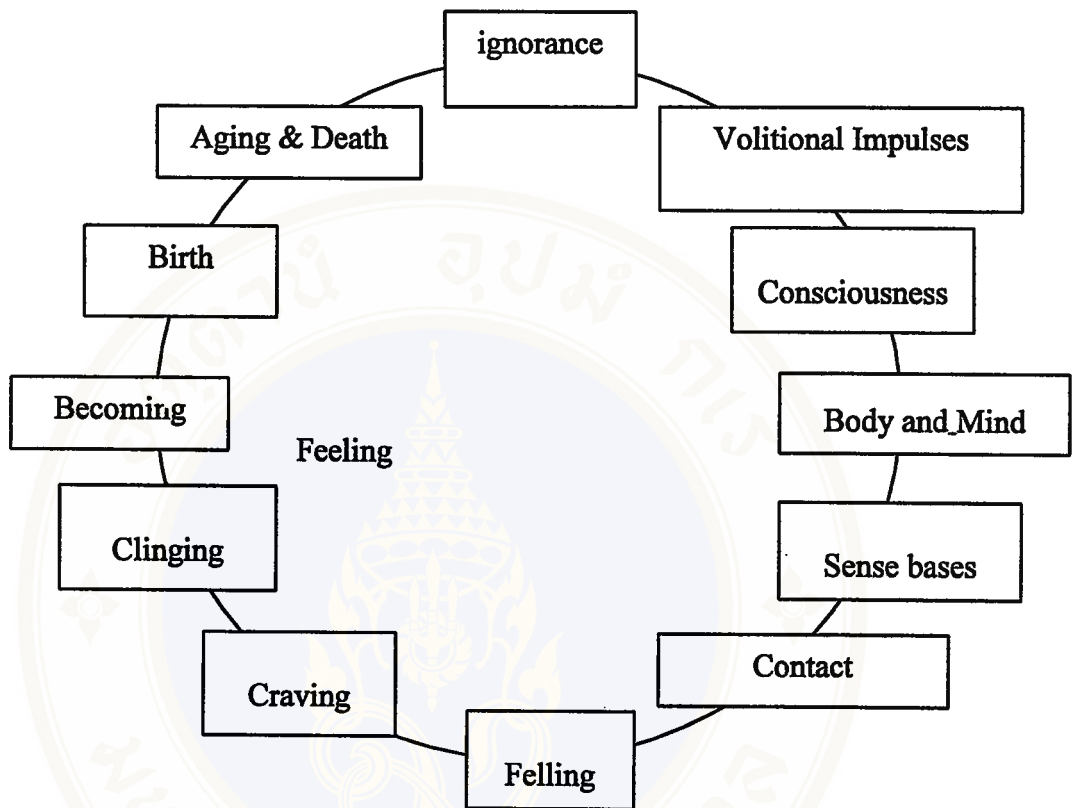
The extensive form given above contains twelve factors, interdependently linked in the form of a cycle. Ignorance is put as the first cause of circle of Dependent Origination but it doesn't mean that Ignorance is the beginning of the First Cause. Every twelve factors can be the First Cause. But the researcher presented Ignorance as the first one in the cycle of Dependent Origination as follows in Figure 1.

⁸ Samyuttanikaya Vol. II 28, 65

⁹ Vinaya Pitaka Vol. I, 1-3



Figure 2: A Presentation of The Circle of Dependent Origination or *Paticcasamuppada*



1. *Avija* (Ignorance) = Unknowing of *Dukkha*, its cause, its cessation and the way leading to its cessation. Ignorance of the truth, or things as they are; being deluded by nominal realities; the ignorance behind beliefs; lack of wisdom; failure to understand the cause and effect.

2. *Sankara* (Volitional Impulses) = mental activities, willful intent, intention and decision, and their generation of action; the organization of the thinking process in accordance with accumulated habits, abilities, preferences, and belief; the conditioning of the mind and the thinking process.

3. *Vinnana* (Consciousness) = the awareness of sensation, namely: seeing, hearing, smelling, tasting, touching and cognizing; the basic climate of the mind from moment to moment.

4. *Namarupa* (Body & Mind) = the presence of corporeality and mentality within awareness; the state of co-ordination between the body and the mind to function in line with the stream of consciousness; the bodily and mental changes as a result of mental state.

5. *Salayatana* (Sense base) = the functioning of the sense bases.

6. *Phassa* (Contact) = the point of Contact between awareness and the outside world through six sensations; eye contact, ear contact, nose contact, tongue contact, body contact and mind contact.

7. *Vedana* (Feelings) = arising from impingement on the eye, ear, nose, tongue, body and mind.

8. *Tanha* (Craving) = the desire to seek pleasurable sense objects and to escape the unpleasant. Craving is of three kinds: wanting to have and enjoy, wanting to be and wanting to destroy or be rid of.

9. *Upadana* (Clinging) = attachment and grasping to either pleasant or unpleasant feelings, to the conditions of life which precipitate such feelings, and the evaluation of and attitudes toward those things in terms of their potential to satisfy desires.

10. *Bhava* (Becoming) = the entire process of behavior to serve craving and clinging.

11. *Jati* (Birth) = clear recognition of emergence in a state of existence; identification with states of life or modes of conduct and the resulting sense of one who enjoys, occupies or experiences them.

12. *Jaramarana* (Aging and death) = the awareness of separation, or deprivation of the self from a state of existence or identity; the feeling or threat of annihilation or separation from such states of being; from there, the resulting experience of sorrow, lamentation, pain, grief and despair.

The principle of Dependent Origination shows its causes and effects, and applies to the environmental ethic or ecology ethic, that is to live with wisdom, in harmony with nature and liberated from clinging to oneself. To live with wisdom means to live with clear awareness of the way things are and to know how to benefit from nature; to benefit from nature means to live in harmony with nature; to live in harmony is to live freely; to live freely is to be free of the power of craving and clinging; to live without clinging means to live with wisdom, to know and relate to things through an understanding of the process of cause and effect.

3.2.4 *Majjhima patipada* or The Middle Path

Majjhima patipada or The Middle Path means avoiding the extreme of indulgence in pleasure of the senses and the extreme of self-mortification.

The Lord Buddha recommends an Eightfold Path;

1. Right View or *Sammaditthi*. Humans can apply Right View to eco-ethics to see that everyone must have the right knowledge to manage the environment in the right way.

2. Right Thought or *Sammāsankappa*. Humans must determine the root of the environmental crisis and take the method to solve it without ignorance and greed.

3. Right Speech or *Sammavaca*. Humans must apply Right Speech to campaign for environmental conservation and the people who authorize environmental

management should describe the status of environmental problems to the public sincerely. And Right Speech consists of both warning against the exploitation of nature on the one hand, and giving constructive advice on how each of us can help save nature on the other. Right Speech includes providing reasons for people to come to the right understanding and realize the seriousness of the ecological crisis.

4. Right Action or *Sammakammanta*. Humans must treat the environment with love and friendliness. Right Action may be also seen on various levels. For example, deforestation is one type of killing that kills the equilibrium of nature. When forests and trees are destroyed by humans' greed, nature has a lack of fertility.

5. Right Livelihood or *Samma-ajiva*. Humans should avoid the occupations that harm to the environment such as occupations involving chemical products or being an accessory to deforestation or killing.

6. Right Effort or *Samma-vayama*. Environmental conservation is very difficult at present because humans ignore the duties to conserve it. For example, deforestation makes an income from it, thus humans should have endurance for their greed.

7. Right Mindfulness or *Sammasati*. Humans must consume by using wisdom and considering the correct practice to the environment.

8. Right Concentration or *Sammasamadhi*. Humans must consider the value and importance of the environment. Pay attention to solve the crisis and conserve it in the correct ways.

In summary, The Eightfold Path in Buddhism may be applied step by step as a means to rectify the ecological crisis, the world is now facing. Buddhism explains the

suffering and prescribes a method to remove that suffering by behavior, mentality and wisdom, and humans should have the correct thoughts about the environment and how to conserve it.

3.2.5 *Bhojane mattannuta* or Moderation in eating

*Bhojane mattannuta*¹⁰ or Moderation in eating means recognizing the importance of the environment not only for eating but also consuming it. Mankind has to depend on nature for his or her food, clothing, medicine, accommodation and other requirements. The benefits of nature allow humans to learn to utilize the natural resources and live harmoniously with nature. Besides, humans still have the skill to apply nature to their lives, for example in the rainy season; humans know methods to conserve water by irrigation. Hence, if humans recognize the importance of the environment and learn how to consume it in the long term, the completed environment will stay together with humans.

Buddhism acknowledges intrinsic values of everything, including the environment and humans are a part of nature. And humans cannot survive without (completed) nature. Besides, Buddhism still denies the greed because humans' greed is endless. Each person said that greed stems from material development, but his or her greed is the one cause of destruction. Deforestation and killing is the one result of greed or it expresses that humans do not have moderation in consuming.

3.2.6 *Tilakkhana* or Three Common Characteristics

Tilakkhana or Three Common Characteristics is the doctrine of the nature of life or the status of life. All things have the property of changing incessantly.

*Tilakkhana*¹¹ or Three Common Characteristics comprises of:

1. *Aniccata* or impermanence and able to change the factor(s) below.
2. *Dukkata* or state of suffering
3. *Anattata* or soullessness.

To link *Tilakkhana* or Three Common Characteristics into the eco-ethic, all things themselves have change and impermanence. For example, trees grow from seeds and need the climate, water, mineral, soil and time. Soon, these trees become big trees and will have many branches, leaves, fruits and big roots. If one day there is monsoon rain and floods the trees will try to survive otherwise humans will cut them for consumption and those trees will die. If the number of trees is reduced, humans may receive the effect of this through such as floods, a warmer climate, a lack of food resource and others. Humans survive with suffering. If we notice the crisis of the Greenhouse effect¹², this theory states that the atmosphere gases that hover over the earth keep our planet warm in a manner analogous to the glass panes of a house. In a greenhouse the sun's rays are allowed in through the glass, but the heat that is then generated is trapped by the glass. The same phenomenon occurs when you keep your

¹⁰ Anguttaranikaya Vol.I.pp113

¹¹ P.A. Payutto. Dictionary of Buddhism. Maha Chulalongkorn Rajvitthayalai Publishing, 2000 p.104

¹² Louise P. Pojman. Environmental Ethics. Jones and Bartlett Publisher, London. P.370

car windows closed on a sunny day. The heat is trapped inside, so that it is warmer in the car than outside. (Louise P. Pojman, 1994: 370)

3.3 The Views and Perspective of The Environment and Environmental Conservation in Christianity

According to Christian teaching, God created the universe from nothing or the emptiness. After that, humans, animals and everything born on this world as mentioned in the Genesis:

“And the LORD God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.”¹³ (Genesis 2:7)

Within the belief of the origin and the beginning of humans it maintains that humans are the creatures of God and God created humans from his or her image (Image of God) and among all creatures “humans are the crown of all creatures.” God had allowed humans to reign over nature as mentioned in Genesis:

“And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. So God created man in his own image, in the image of God created he him; male and female created he them.”
(Genesis 1: 26-27)

¹³Excerpted from *The Complete Multimedia Bible based on the King James Version*. Copyright (c) 1994 Compton's NewMedia, Inc.

Within this belief, humans were awed from the power of God and summarized the creature of God into 6;

1. Brightness
2. Sky and atmosphere
3. Landscape, sea and plants
4. Stars, sun and moon
5. Birds and fishes
6. Land reptiles and humans

Hence, this doctrine had a contradiction about the relation of humans and nature and they have 2 concepts of it. Firstly, the doctrine of Christianity in the one part promotes humans to destroy nature because they are masters over nature thus they have the right to manage it. Secondly, this doctrine will promote humans to take care of nature because both humans and nature are a creature of God. Humans have the image of God. They have self-consciousness, the ability to think, manage and utilize nature in the correct way.

Lynn White, Jr. argues in the article "The Historical Roots of Our Crisis" (Science, March 10, 1967) that the root of the entire problem lies in the Christianity maxim that nature has no reason for existence but to serve man. And White set forth the thesis that the roots of our ecological crisis lie in our Judeo-Christian idea that humanity is to dominate nature. By seeing nature as alien and as a mere resource to be exploited, we have wreaked havoc on the Earth and are reaping the consequences. He

suggests that the Italian medieval saint St. Francis of Assisi (1182-1226) as a proper example of a suitable attitude towards nature.

David R. Kinsley argues in the article "Christianity as Ecological Harmful" (Ecology and religion: ecological spirituality in cross-cultural perspective p.103) that the critique of the Bible and Christianity as constituting primarily negative influences in the advent and development of contemporary ecological crisis usually and makes three general arguments to support his point of view. First, in the Bible and Christianity nature is stripped of its gods, goddesses and spirits and ceases to be regarded as divine. Second, the Bible and Christianity are strongly anthropocentric and teach that humans are divinely ordained to rule over and dominate all other species and nature generally. Third, many Christian writings, and much Christian theology, relegate nature and matter generally to a low status relative to the divine, which is equated with spirit alone.

The western philosophy of the environment presented the theory of environmental concepts: anthropocentrism, biocentrism and deep ecology.

To name a few, the basic of Anthropocentrism is the concept showing that man is the center of the universe and can be separated apart from nature. Their motto was "Man is the measure of all things"

Biocentrism is the ethical theory that views all life as possessing intrinsic value. In an early version of biocentrism that began with Albert Schweitzer (1875-1965), he presented the concept of "Reverence for life" in which he claimed that all living things

have an intrinsic value, a value that commands our awe and reverence. Paul Taylor presented the concept of the biocentric outlook on nature that comprised 4 functions:

1. Humans as Members of the Earth's community of life.
2. The Nature World as an Organic System.
3. Individual Organism as Teleological center of life.
4. The Denial of Humans Superiority.

The term of Deep Ecology was coined by Arne Naess in his article "The Shallow and the Deep, Long-Range Ecology Movement" and in 1975 he developed the philosophical implications of Deep Ecology, which he calls "Ecosophy". He called his version of ecosophy "Ecosophy T." Naess developed his theory of wider self-realization through identifying one's self with individuals, ecosystems and landscape. In summary, Deep Ecology is the concept that natural diversity has its intrinsic value and its pure spirit.

3.4 The Doctrines Concerning Environmental Conservation in Christianity

3.4.1 Universal Love or Agape

The teaching of Universal Love or Agape is the high ideal of love. The researcher decided that love has two main kinds of love, that is, conditional love and unconditional love. Conditional love is the love that appears in the inner body such as *libido* (sexual love), *eros* (erotic love) and *philia* (friendship). Unconditional love is Agape and that love is not an emotion or a feeling, like those involved in erotic love or in friendship.

The characteristics of Agape

1. Agape Love that goes beyond shades of difference such as cases of sex, of class, of linguistic, of nationality and culture.
2. Love that it is disinterested.
3. Love that is indiscriminate and inclusive. Agape is personal, sensitive to the distinct uniqueness of the individual.
4. Agape is the supreme moral norm of Christian ethics that is indiscriminate as to whom it loves and knows how it loves. (Waldo Beach, 1988: 14)

Besides, agape love can be divided into 2, that is, love of God and love of thy neighbor.

"The distinctive quality of Agape is derived from the "center of value" by which a person is treated, or the "middle term" between self and another. In Christian love, that center of value is nothing finite or limited.... Christian agape is of a heart that loves the other in God. God is the middle term between self and others. It is regard for the other person simply as a precious creation of God, on the common ground of creatureliness. ... In short, agape is theocentric neighbor-love." (Waldo Beach, 1988:34)

Christianity is one of the religions that concentrate on the topic of Love. Love is able to be distinguished into 3: Love from humans-to-God, humans-to-humans and humans-to- nature.

In the Bible great love has 2 kinds: firstly, love God and secondly, love thy neighbor as mentioned in Matthew:

“Master, which is the great commandment in the law? Jesus said unto him, Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind. This is the first and great commandment. And the second is like unto it, Thou shalt love thy neighbors as thyself. On these two commandments hang all the law and the prophets.”(Matthew 22:36-40)

The good example about the story of Agape is the story of the Samaritan who has the real love and disinterested love that is Agape as mentioned in Luke:

“And, behold, a certain lawyer stood up, and tempted him, saying, Master, what shall I do to inherit eternal life? He said unto him, What is written in the law? how readest thou? And he answering said, Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy strength, and with all thy mind; and thy neighbour as thyself. And he said unto him, Thou hast answered right: this do, and thou shalt live. But he, willing to justify himself, said unto Jesus, And who is my neighbour? And Jesus answering said, A certain man went down from Jerusalem to Jericho, and fell among thieves, which stripped him of his raiment, and wounded him, and departed, leaving him half dead. And by chance there came down a certain priest that way: and when he saw him, he passed by on the other side. And likewise a Levite, when he was at the place, came and looked on him, and passed by on the other side. But a certain Samaritan, as he journeyed, came where he was: and when he saw him, he had compassion on him, And went to him, and bound up his wounds, pouring in oil

and wine, and set him on his own beast, and brought him to an inn, and took care of him. And on the morrow when he departed, he took out two pence, and gave them to the host, and said unto him, Take care of him; and whatsoever thou spendest more, when I come again, I will repay thee. Which now of these three, thinkest thou, was neighbour unto him that fell among the thieves? And he said, He that shewed mercy on him. Then said Jesus unto him, Go, and do thou likewise."¹⁴(Luke 10:25-37)

From this verse, it tells about the story of Agape that appears from the Samaritan. And Jesus looks at him as the example of Agape. The researcher has presented the definition of Agape in the former, and after considering this verse, it found that Agape is the ideal love that hardly meets in our society because we have some biases, which may be hidden in ourselves. These biases such as sex, class, nationality, language and culture that make Agape difficult to appear in our society.

Although humans are the creatures of God and God permits humans to reign over nature, humans still manage it with consciousness and not of one's own free will. Especially today we are facing an ecological crisis, where problems come from managing nature without discretion and sincere love. Hence, humans must reign nature with love and try to solve the ecological crisis with sincerity. Humankind and nature will survive on this planet for a long time. The doctrine of Agape helps to promote human virtues: unselfishness, responsibility, and lavish all of body, mind and intelligent to help our neighbors and the environment.

¹⁴Excerpted from *The Complete Multimedia Bible based on the King James Version*. Copyright (c)

3.4.2 Stewardship

Stewardship is the way of understanding man's responsibilities for nature in Judaism and Christianity. The stewardship is a caretaker of what he or she does not own. The caretaker is responsible to God who is the "owner" or the giver of all that is. (Man and nature: A cross-culture perspective, Chulalongkorn University Press, excerpts from p.23)

Karl Barth illustrated that all life is a loan to humankind and this loan must be returned in good condition the same as when humankind received it. Or we can describe it in other way: life is the ultimate gift from God and humans ought to be thankful for it.

Besides, humans are agents of God who practice in accordance with God's purpose and God has given to humankind, authority to exercise dominion over all other living things: we may will them for food; but we exploit them for our greed or inflict unnecessary pain upon them.

Humans must have a responsibility with nature because we can say that humans have a partnership with God. It shows that humans have a covenant with God and humans must have sustainable development: humans should consume natural resources but still retain their useful to the next generation so as it doesn't affect them.

The Belief of Stewardship makes us understand that all things such as our lives, prosperity, intelligence, ability and power belongs to God as mentioned in the book of Roman:

"I beseech you therefore, brethren, by the mercies of God, that ye present your bodies a living sacrifice, holy, acceptable unto God, which is your reasonable service." (Roman 12:1)

However, humans because they are creatures of God should have a duty and a responsibility to manage all things including the environment below the purpose of God. And stewardship still includes the Ten Commandments that Christianity should treat below god as mentioned in Exodus:

"Thou shalt have no other gods before me. Thou shalt not make unto thee any graven image, or any likeness of any thing that is in heaven above, or that is in the earth beneath, or that is in the water under the earth: Thou shalt not bow down thyself to them, nor serve them: for I the LORD thy God am a jealous God, visiting the iniquity of the fathers upon the children unto the third and fourth generation of them that hate me; And shewing mercy unto thousands of them that love me, and keep my commandments. Thou shalt not take the name of the LORD thy God in vain; for the LORD will not hold him guiltless that taketh his name in vain. Remember the sabbath day, to keep it holy. Six days shalt thou labour, and do all thy work: But the seventh day is the sabbath of the LORD thy God: in it thou shalt not do any work, thou, nor thy son, nor thy daughter, thy manservant, nor thy maidservant, nor thy cattle, nor thy stranger that is within thy gates: For in six days the LORD made heaven and earth, the sea, and all that in them is,

*and rested the seventh day: wherefore the LORD blessed the sabbath day, and hallowed it. Honour thy father and thy mother: that thy days may be long upon the land which the LORD thy God giveth thee. Thou shalt not kill. Thou shalt not commit adultery. Thou shalt not steal. Thou shalt not bear false witness against thy neighbour. Thou shalt not covet thy neighbour's house, thou shalt not covet thy neighbour's wife, nor his manservant, nor his maidservant, nor his ox, nor his ass, nor any thing that is thy neighbour's.*¹⁵ (Exodus 20:3-17)

In principle, the Bible describes that God gave The Ten Commandments to the Israelites and they are the symbol of covenant between God and humans. The Ten Commandments are the abstract principles to practice in their lives and they may be divided into 2 relations; these are the relation between God-to-human and human-to-human. The Ten Commandments teaches us to respect, love and honor each other and including environment. Because everything in this world is the creature of God, humans should have stewardship towards them. Besides, The Ten Commandments still promotes Christianity and to have a good attitude about environmental conservation.

3.4.3 The doctrine of The Landscape and A Sabbath

The doctrine of The Landscape reflects the relationship between human morals and the landscape as mentioned in Leviticus:

"The land shall not be sold for ever: for the land is mine; for ye are strangers and sojourners with me." (Leviticus 25:23)

¹⁵Excerpted from *The Complete Multimedia Bible based on the King James Version*. Copyright (c)

From this verse, God said that God is the owner of the land and God allowed humans to administrate it for benefit and God will want humans to conserve it. God stated in Leviticus about the principle of the land as follows:

“ Six years thou shalt sow thy field, and six years thou shalt prune thy vineyard, and gather in the fruit thereof; But in the seventh year shall be a sabbath of rest unto the land, a sabbath for the LORD: thou shalt neither sow thy field, nor prune thy vineyard. That which groweth of its own accord of thy harvest thou shalt not reap, neither gather the grapes of thy vine undressed: for it is a year of rest unto the land. And the sabbath of the land shall be meat for you; for thee, and for thy servant, and for thy maid, and for thy hired servant, and for thy stranger that sojourneth with thee, And for thy cattle, and for the beast that are in thy land, shall all the increase thereof be meat. ” (Leviticus 25:3-7)

From this verse, it maintains that God has seen the importance of the Land because humans utilize the land for agriculture especially, in the pre-history period, humans depended on the land for planting and livestock. Hence, the land is needed to survive. Someone may doubt that the plants that appear in this verse have only two kinds, that is rice and grape. The researcher has hypothesized that rice and grape may be the major plant and perhaps it also had other plants. Nearby, God has seen that if humans planted the same vegetation for a long time, the soil's humidity, substance, fertility, etc. may be destroyed. God ruled that, so as to give fertility to the land and humans could harvest the complete plants for their food. God assigned that the seventh

year is the year of the Sabbath which His or Her disciples should avoid planting in. The researcher has hypothesized that the main reason God wants the land, is for rest and for travelers, wild animals or cattle to eat from it as their food.

Besides, God said that after the forty-ninth year, there would be the year of Liberation which was recalled "The Jubilee Year" and the landowner must release the locators, who are mostly Jews, to be free from slavery and the landowner could buy or sell the land to one another with justice as mentioned in Leviticus:

"And thou shalt number seven sabbaths of years unto thee, seven times seven years; and the space of the seven sabbaths of years shall be unto thee forty and nine years. Then shalt thou cause the trumpet of the jubile to sound on the tenth day of the seventh month, in the day of atonement shall ye make the trumpet sound throughout all your land. And ye shall hallow the fiftieth year, and proclaim liberty throughout all the land unto all the inhabitants thereof: it shall be a jubile unto you; and ye shall return every man unto his possession, and ye shall return every man unto his family. A jubile shall that fiftieth year be unto you: ye shall not sow, neither reap that which groweth of itself in it, nor gather the grapes in it of thy vine undressed. For it is the jubile; it shall be holy unto you: ye shall eat the increase thereof out of the field. In the year of this jubile ye shall return every man unto his possession. And if thou sell ought unto thy neighbour, or buyest ought of thy neighbour's hand, ye shall not oppress one another: According to the number of years after the jubile thou shalt buy of thy neighbour, and according unto the number of years of the fruits he shall sell unto

thee: According to the multitude of years thou shalt increase the price thereof, and according to the fewness of years thou shalt diminish the price of it: for according to the number of the years of the fruits doth he sell unto thee. Ye shall not therefore oppress one another; but thou shalt fear thy God: for I am the LORD your God." (Leviticus 8-17)

After considering the Law in Leviticus about the Sabbath, the researcher found that the year of the Jubilee had good results to the environment because the planting area will restore and assimilate the new nutrition, which would be useful for planting a new round. The doctrine of the Sabbath teaches us how to utilize the land and how to conserve it. This doctrine is the best example of conservation in which God has seen the importance of the land because the land will decline if humans use the land without rest. And this doctrine still supports Christianity in having a good consciousness in taking care of the environment.

3.4.4 The Example of Activities of Jesus in Environmental Conservation

Christianity believes that Jesus Christ was the Son of God and He has two statuses, True Man and True God. Christianity still believes that Jesus Christ was Messiah (Savior). He spent all his life preaching to villagers, and he usually taught people by with telling allegories, extending metaphors and parables. Most of Jesus's characteristic method of teaching was through parables. His two most famous parables are the parable of the lost son (Luke 15:11-32) and the parable of the Good Samaritan (Luke 10:25-37). And the researcher notices his method of teaching was as follows: it found that Jesus often told the parables by comparing a truth that he wanted to teach

with nature such as fruits, animals and others. It illustrated that Jesus paid attention to nature and the characteristics of nature and that it would make us understand the truth.

The example of his teaching that revealed a truth by using metaphors about nature is the following parables:

The bread of life	John 6:26-51
The sheepfold and shepherd	John 10
The vine	John 15:1-7
The Wheat and the Tares	Matt.13:24-30
The Growing Seed	Mark 4:26-29
The Lost Sheep	Matt.18:10-14, Luke 15:15:1-7
The Sower and the Seed	Matt.13:3-23,Mark 4:30-32, Luke 8:4-15
The Mustard Seed	Matt.13:31-32,Mark4:30-32,Luke13:18-19
The Fig Tree	Matt.24:32-35,Mark13:28-31,Luke21:29-33

For example, in the parable of the Wheat and the Tares (Matt.13:24-30), Jesus taught about the land of God by the metaphor that the land of God was like wheat seed:

“Another parable put he forth unto them, saying, The kingdom of heaven is likened unto a man which sowed good seed in his field: But while men slept, his enemy came and sowed tares among the wheat, and went his way. But when the blade was sprung up, and brought forth fruit, then appeared the tares also. So the servants of the householder came and said unto him, Sir, didst not thou sow good seed in thy field? from whence then hath it tares? He said unto them, An

enemy hath done this. The servants said unto him, Wilt thou then that we go and gather them up? But he said, Nay; lest while ye gather up the tares, ye root up also the wheat with them. Let both grow together until the harvest: and in the time of harvest I will say to the reapers, Gather ye together first the tares, and bind them in bundles to burn them: but gather the wheat into my barn. ”¹⁶
(Matt.13:24-30)

For this verse, Jesus wanted to teach his disciples about the Kingdom of God by comparing the wheat seed which is planted in fields as the kingdom of God. Normally, human minds often have two sides that are good and evil. We may have an evil when we are careless so he personified an evil as the tares in the field.

In this chapter, the researcher has presented about the application of the religious doctrines in Buddhism and Christianity into the environment. The researcher would like to sum up that most religions occurred among the completed environment and environment may also have the influence toward religions. Human beings are close relationship with religion, hence the researcher hopes that the religious doctrines will be useful for encouraging the disciples in every religion love and take care of nature more.

CHAPTER 4

THE ROLES OF WOMEN IN BUDDHISM AND CHRISTIANITY IN ENVIRONMENTAL CONSERVATION

We now know that, the environment has deteriorated through the actions of human beings. The environmental crisis has occurred from the accumulation of problems that have happened over several decades. Especially in urban areas, the problems have arisen due to the progress in science and technology in developing the country.

For environmental conservation, human beings should cooperate in solving the problems. Not merely men, but also women need to treat the environment with sincere love. Hence, women have participated in healing the environment more. The roles of women have been integrated into the theory of environmental conservation with the term of “ecofeminism”. The purpose of this chapter is for the researcher to draw attention to the present roles and the potential of women in world healing and in developing the environment for all beings to live harmoniously.

4.1 The Relationship of Women and the Environment

After humans survived in the form of communities, they shared their work for their family. Men were entrusted with gathering and traveling for commerce, but women were delegated for planting, farming, doing housework, food processing,

making clothes and also nurturing. Most authorities depended on men; women were usually oppressed for a long time because of their physical weakness or other reasons. Hence, women were acquainted with the change of the environment because women worked at home and spent their time being close with nature. Sometimes, women may have more knowledge about the environment than men.

The relationship of women and the environment has integrated with the term ecofeminism being used to describe this; which is based on the theoretical foundations of feminism and environmentalism. Ecofeminism was first conceived by Françoise d'Eaubonne in 1974, and it was the step of social movement that regards the oppression of women and nature. This is the link between the domination of women and the domination of nature.

Ecofeminism is the theory that sees connections between feminism and ecology below the theme of dominance operating in the relationships of men over women and humanity over nature.

Karen J. Warren, the author of several works on feminism and environmental ethics, outlines a way in which feminists would remove inappropriate hierarchical, racial, and sexist thinking from environmental concerns as:

“Ecological Feminism is the position that there are important connection-historical, symbolic, theoretical- between the domination of women and the domination of nonhuman nature. I argue that because the conceptual

connections between the dual dominations of women and nature are located in an oppressive patriarchal conceptual framework characterized by a logic of domination, (1) the logic of traditional feminism require the expansion of feminism to include ecological feminism and (2) ecological feminism provides a framework for developing a distinctly feminist environmental ethic. I conclude that any feminist theory and any environmental ethic which fails to take seriously the interconnected domination of women and nature is simply inadequate.”¹

As Val Plumwood sums it up, this linkage results from the striking parallels which exist between the treatment of earth and the treatment of women. Both are viewed in terms of having usefulness rather than having intrinsic worth themselves. Ecofeminism also perceives these parallels on the conceptual level- the level of world-view, myth, symbol, idea and image.

Carolyn Merchant signifies “Women’s potential for bringing about an ecological resolution to ensure human survival on the planet”. She sums up that there are three strands of these journeys by feminists that have been identified: firstly, throughout the study of political theory and cultural history. Secondly, throughout exposure to nature-based religion which specifically honors the female and focuses on immanence rather than transcendence. Thirdly, there is the involvement by feminists in environmental issues such as “Green Politics”

¹ Karen J. Warren. Environmental Ethics Vol.12 (Summer 1990)

Fox Keller asserts that men feel inferior to women because of women's natural connection with nature, and attempts to overcome such inferiority through science. Also Francis Bacon asserted that women should be associated with nature, while men should be associated with science. (<http://coweb.cc.gatech.edu/Icc3308/252>)

Donna Haraway suggests that men and women should be grouped together and viewed as mankind, not men and women. Nature can be seen as being connected to mankind, including both men and women. Environmental decisions should be considered on the basis of mankind versus nature, not women versus men versus nature. (<http://coweb.cc.gatech.edu/Icc3308/252>)

From this article, the researcher sums up that human beings both men and women, should separate for work. Men have more skills in some sciences; they could therefore develop their knowledge to the highest point more, if separated and by not allowing women to do it. For environmental conservation, we should help together to prevent it from being destroyed.

By 1975, international organizations, prompted by the UN Decade for Women, had begun to look at the role and position of women in development. A World Conference on the International Women's Year was held in Mexico in 1975, and they adopted a World Action Plan to implement the objectives of the year and proclaim the period 1976-1985 as the UN Decade for Women. On environmental concerns, these organizations focused on the relationship between women and the environment and the problems environmental degradation poses for them.

After that in 1985, the World Conference was held in Nairobi to Review and Appraise the Achievements of the UN Decade for Women. It dealt with a range of issues: equality, development (including agriculture, science, science and technology, housing energy, environment, education, employment, health, industry, trade and commercial services, communication and social services), and peace. The relevant sections, adopted by consensus, are:

- Deprivation of traditional means of livelihood is most often a result of environmental degradation resulting from such natural and man-made disasters as droughts, floods, hurricanes, erosion, desertification, deforestation and inappropriate land use. Such conditions have already pushed great numbers of poor women into marginal environments where critically low levels of water supplies, shortages of fuel, over-utilization of grazing and arable lands and population density have deprived them of their livelihood. Most seriously affected are the women in drought-afflicted arid and semi-arid areas and in urban slums and squatter settlements. These women need options for alternative means of livelihood. Women must have the same opportunity as men to participate in the wage-earning labor force in such programs as irrigation and tree planting and in other programs needed to upgrade urban and rural environments. Urgent steps need to be taken to strengthen the machinery for international economic cooperation in exploration of water resources and the control of desertification and other environmental disasters (paragraph 224).

- Efforts to improve sanitary conditions, including drinking water supplies, in all communities should be strengthened, especially in urban slums and squatter settlements and in rural areas, with due regard to relevant environmental factors. These efforts should be extended to include improvements of the home and the

work environment and should be effected with the participation of women at all levels in the planning and implementation process (paragraph 225).

- Awareness by individual women and all types of women organizations of environmental issues and the capacity of women and men to manage their environment and sustain productive resources should be mobilized to increase the self-help potential of women in conserving and improving their environment. National and international emphasis on ecosystem management and the control of environmental degradation should be strengthened and women should be recognized as active and equal participants in this process (paragraph 226).

- The environmental impact of policies, programs and projects on women's health and activities, including their sources of employment and income, should be assessed and the negative effects eliminated (paragraph 227).

4.2 Thai Women and the Relationship between Women and the Environment

For Thailand, we don't have an abstract theory about ecofeminism. But we pay close attention to the natures' decay. From the history of Thailand, we found that our country had a complete environment.

In the Sukhothai Period, Ramkhamhaeng was a great king who governed with justice and magnanimity to his own people as well as people of other nationalities who lived in his kingdom. He also showed considerable interest in the moral education of the people. He persuaded them to observe the simple Buddhist precepts to make merit,

give alms and to attend sermons regularly. Normally a Thai good Buddhist is expected to observe the five moral precepts:

1. Do not destroy life.
2. Do not steal.
3. Do not commit adultery.
4. Do not tell a lie.
5. Do not take intoxicants.

In short, Ramkhamhaeng's rule of Sukhothai had the characteristics of a paternal government and his people were happy, according to the stone inscription. Most of them engaged in agriculture and cultivated rice chiefly, while others carried on trade, which was greatly facilitated because no rate or tax was collected from those who engaged in it. In fact, he allowed free trade to spread throughout the land. (Rong Syamnanda, 1986: 24)

One of the most important achievements of King Ramkhamhaeng was the invention of the Thai alphabet, adapted from the Khmer script, which in turn came from the Devanagiri letters of India. That showed that Thais could boast in having a writing system for 700 years. Prosperity and freedom prevailed in Sukhothai, according to the inscriptions of King Ramkhamhaeng:

" This land of Sukhothai is good. In the water there is fish; in the fields there is rice.... The ruler does not exact tolls on the highways. People lead their cows to sell, ride their horses to trade. Whosoever wishes to trade in elephants trades in elephants: whosoever wishes to trade in horses trade in horses.

Whosoever wishes to trade in silver and gold trades in silver and gold. The citizens have bright faces...

On the (palace) gate is hung a bell. When a citizen of the town has trouble or complaint to make, he shall not mention the King's name in vain, but may go to ring the bell. When the King hears the call, he will come out to inquire about the matter, then give his judgement directly in all fairness. People therefore praise him.

In the middle of the city there is a large lake with clear, potable water... The citizens of Sukhothai are generous; they give offerings to the temple, and they observe the precepts of the Lord Buddha... ”

The inscription stone of Ramkhamhaeng, it identifies that the condition of the environment in that period was fertile, that is, there was a large amount of rice from the fields and there were many fish in the river. These fertilities reflect the condition of the environment, all people were happy from living, both physically and mentally. The environmental problems may have been only a few and not too much such as present. Furthermore, we notice that Thailand is an agricultural country: planting depended on weather, trade was a barter system and perhaps there were mining activities. People had a close relationship with nature. The status of the family was specialization between men and women. Most men had the occupation of gathering, mining and trading but women had the duties of house working, food processing, planting and nurturing. The important factors of this society were the low population and the environmental problems were not terrible due to a lack of technology and the agriculture depended on weather. Besides, on the inscription stone of Ramkhamhaeng,

it showed that there were simple irrigation canals around the city to support the agricultural areas. After considering the roles of women in this society, we could say that women are more closely identified with nature than men because women often stayed at home and comprehended the problem of the environment whereas men had to travel for trade or mining. While women stayed at home and there was the problem about the decaying environment such as soil pollution and water pollution. The status of women and men were not equal, women were classified into classes depending on their marital status while men could have more than one wife but women could have only one husband. This status was allowed under the Law of Sukhothai.

Bunyong Kethet (1989) states that historical development of the Thai Family pattern and social structure since the Sukhothai period have been systematically documented. Both of them went through traditional documents including stone inscriptions believed to have been engraved during the Sukhothai period and later disputed to be otherwise, the matter still has not been settled; Triphumpruang or tribhumai-gata, the description of cosmology available at the time of King Ramkhamhaeng of the Sukhothai Period; and Tamrap Thao Srichularat or Nang Noppamat which was supposed to have been documented by the wife of King Lithai of the Sukhothai Period and later was disputed as unlikely as women were not supposed to read and write during that time. Bunyong feels that the documents of the Sukhothai period indicates that both men and women of that period had the opportunity to learn, read and write. (Bunyong, 1989: 12)



In the Ayutthaya period, our country got the influence of Hinduism or Brahman from the Burmese and Cambodian Traditions. Thus, the culture had a mixture between Hinduism or Brahmanism and Buddhism. They viewed the status of men and women as not being equal, especially the concept of patriarchy. Available documents indicated that polygamy was practiced during that time.

In this period, they have categorized the status of wives. During King Uthong, three classes of wives were defined as (1) *mia klang muang* or the wife given away by her parents (*mia luang*), (2) *mia klang nok* or the wife brought in by the husband as *mia noi*, (3) *mia klang thasi* or wife bought by the husband to free her from her debt to other persons. In addition there was another category of wife, *mia nang*, which was superior in status to the previously mentioned three because they were given by the king as reward for outstanding performance. (Virada and Sally 1997: 8)

During this period was that women still were under authority of men. Men had their duties in politics and they had to join any wars because in the Ayutthaya period there were many wars between neighboring countries for extend dominion. Women did not merely stay at home; they had to take care of their home and children by planting, making clothes, feeding animals. The close relationship between women and nature were useful, such as if the problems about the environment occurred while women stayed at home and men were not there, they could solve it appropriately with their experience from this close relationship.

In the present day, the women's movement here is considered to be a social movement encompassing a wide variety of activities in contrast to the feminist movement whose main objective is to demand for equal rights. The environmental movement of feminism is one of the movements that women are trying to participate in, such as environmental conservation. Many projects have happened under the responsibility and the struggle of women in order to serve society as one part of it.

The researcher summarized the relationship between women and the environment, especially in the third world including Thailand with 4 summaries:

1) Roles in survival for the family: women have the duty as a food provider for their family and they also have the duty for gathering, planting and preservation. These are the major roles in their family.

2) Roles in housework: these roles are the basic roles that all women must do. Women have to do things like water seeking, clothes washing and cleaning their homes. Perhaps women have to seek the fuel for making light and cooking. In the maternity status, they must nurture their children.

3) Roles in seeking the income for their family: women do not merely stay at home and do housework, perhaps they also have to seek the income for their family because some families are not sufficient if men work only.

4) Roles in being the leader: perhaps women must be in the status of leader in case men do not have the capacity in leadership or have died or men who have to travel to other regions for trade or other purposes. Women have stepped into the leadership role of their family.

Although, the overall status of women status looks like they are being oppressed by men, Thai society is full of Buddhist values. Our society has hesitatingly opened up for women. Education, work and other activities are useful in our society. Women have the opportunity in higher education and could work as men work in some careers. Or we could say that Thailand is the first country which has taken the equal rights between men and women with the Act of 1932.

4.3 An Analysis of the Result of Study in Comprehension and Roles of Women in Environmental Conservation in Bangkok Metropolis

4.3.1 The result of Study in Comprehension and Roles of Women in Environmental Conservation in Bangkok Metropolis

For this study, the researcher collected the data from the research survey by sampling the sample group. From the exploration, we found that in Bangkok Metropolis the population in 1999 was 5,662,499 persons, from this population there were 2,902,620 women. The researcher chooses to study only women who are Buddhists (Theravada) and Christians (Roman Catholic). After that, the researcher explored the number of Buddhists and Christians in Bangkok Metropolis. It found that the number of Buddhists was 5,195,977 people and Christians was 56,487 people.

The sample group is women who have located in Bangkok Metropolis. The sampling technique used was the method of Stratified Random Sampling, where the whole quantities come from the mathematical formula, that is

$$n = \frac{N}{1 + N(0.05)^2}$$

The Sample group is, after calculating with the mathematical formula, 400 people divided into two groups; Buddhists 200 persons and Christians 200 persons. The sample group spreads into 50 district areas of Bangkok Metropolis below the number of population. Besides, the researcher separated the sample group into section of ages, occupation, the level of education and the level of income.

The researcher defines the variables of this survey research as Independent variables and Dependent Variables. Independent Variables are religion, age, and the level of education, occupation and the level of income. Dependent variables are comprehension, awareness and roles in environmental conservation.

The questionnaire was divided into 5 parts as follows:

Part 1: Containing the personal backgrounds of sample group encompassing the district areas, age, the level of education, the occupation and the level of income.

Part 2: Questions concerning the comprehension concerning the application of the religious doctrines to environmental conservation.

Part 3: Questions concerning the comprehension concerning the environmental conservation in urban areas.

Part 4: Questions concerning the awareness in the environmental conservation.

Part 5: Question concerning the roles of women in environmental conservation.

To test the instrument of the study, the experimental try-out had been conducted with a sample group of approximately 50 people: 25 Buddhists and 25 Christians.

Cronbach's alpha coefficient of reliability was computed to be 0.6845 by SPSS for Win.

After the experimental try-out was done, the researcher collected the data by 400 sets of questionnaires: 200 Buddhists and 200 Christians. They were all examined for their validation and decoding had been made in the Coding Sheet for a further key in the analyses is as follows:

1) Frequencies, Percentage, Mean (\bar{X}) and Standard Deviation (S.D.) were described to analyze the Personal information of the sample group.

2) The Mean (\bar{X}) and Standard Deviation (S.D.) were described to analyze the comprehension of applying the religious doctrines to the environmental conservation, the comprehension of the environmental conservation in urban areas, the awareness and the roles of women in the environmental conservation.

3) Analyze the correlation of dependent variables and independent variables with the method of Coefficient of Pearson Product Moment Correlation.

The results of 400 sets of Questionnaire separated into 4 parts:

Part 1: Analysis on Personal Information

Table 10: Illustration on Frequencies, Percentage, Mean (\bar{X}) and Standard Deviation of the Women Sample, Distributed by Personal Information

Personal informations		Frequencies	Percentage
Religion			
Buddhists		200	50.0
Christians		200	50.0
Total		400	100.0
Age			
Buddhists	16-23 years old	42	21.0
	24-31 years old	67	33.5
	32-39 years old	34	17.0

Table 10: Illustration on Frequencies, Percentage, Mean (\bar{X}) and Standard Deviation of the Women Sample Distributed by Personal information (Cont.)

Personal information	Frequencies	Percentage
40-47 years old	19	9.5
48-55 years old	33	16.5
over 55 years old	5	2.5
Total	200	100.0
X = 2.7450, S.D. = 1.4493		
Christianity		
16-23 years old	18	9.0
24-31 years old	46	23.0
32-39 years old	57	28.5
40-47 years old	13	6.5
48-55 years old	53	26.0
over 55 years old	14	7.0
Total	200	100.0
X = 3.3850, S.D. = 1.47909		
Level of education		
Buddhists		
Secondary School	9	4.5
High School/ Vocational School	30	15.0
Diploma/High Vocational School	22	11.0
Bachelor Degree	126	63.0
Beyond Bachelor Degree	13	6.5
Total	200	100.0
X = 3.5200, S.D. = 0.97692		
Christians		
Secondary School	13	6.5
High School/ Vocational School	31	15.5
Diploma/High Vocational School	40	20.0
Bachelor Degree	104	52.0
Beyond Bachelor Degree	11	5.5
Others	1	0.5
Total	200	100.0
X = 3.3600, S.D. = 1.03720		
Occupation		
Buddhists		
Student	40	20.0
Government officer	52	26.0
State Enterprise employee	31	15.5

Table 10: Illustration on Frequencies, Percentage, Mean (X) and Standard Deviation of the Women Sample, Distributed by Personal information.
(Cont.)

Personal information		Frequencies	Percentage
	Private employee	77	38.5
	Total	200	100.0
	X = 2.7250, S.D. = 1.17314		
Christians	Student	16	8.0
	Government officer	56	28.0
	State Enterprise employee	48	24.0
	Private employee	80	40.0
	Total	200	100.0
	X = 2.9600, S.D. = 1.00171		
Level of Income			
Buddhists	5,000-10,000 Baht	85	42.5
	10,001-15,000 Baht	37	18.5
	15,001-20,000 Baht	24	12.0
	20,001-25,000 Baht	35	17.5
	25,001-30,000 Baht	12	6.0
	over 30,000 Baht	7	3.5
	Total	200	100.0
	X = 2.3650, S.D.= 1.49094		
Christians	5,000-10,000 Baht	39	19.5
	10,001-15,000 Baht	44	22.0
	15,001-20,000 Baht	33	16.5
	20,001-25,000 Baht	42	21.0
	25,001-30,000 Baht	5	2.5
	over 30,000 Baht	37	18.5
	Total	200	100.0
	X = 3.2050, S.D. = 1.71689		

From the details in Table 10, it indicated that the number of respondents is 400 people separated into 2 groups, 200 Buddhists and 200 Christians. The age of the sample group was divided into 6 groups; for Buddhists the most participants were

those aged between 24-31 years old of (33.5 %). The second most are the 16-23 years old group (21.0%). Other results are 32-39 years old (17.0%), 48-55 years old (16.5%), 40-47 years old (9.5 %) and over 55 years old (2.5%) respectively. And for Christians the most participants are between 32-39 years old (28.5%). The second most are 48-55 years old (26.0%). Other results are 24-31 years old (23.0%), 16-23 years old (9.0%), over 55 years old (7.0%) and 40-47 years old respectively.

Regarding the Level of Education: For Buddhists most participants have got a Bachelor Degree (63.0%), the second most are those who reached High school or Vocational school (15.0%), others are Diploma or High Vocational School (11.0%), Beyond Bachelor Degree (6.5%) and Secondary School (4.5%) respectively. For Christians most participants have got a Bachelor Degree (52.0%), others are Diploma or High Vocational School (20.0%), High School or Vocational School (15.5%), Secondary School (6.5%), Beyond Bachelor Degree (5.5%) and others (0.5%) respectively.

Regarding occupation: for Buddhists most participants are Private employees (38.5%), the second most are Government officers (26.0%), others are Students (20.0%) and State Enterprise employees (38.5%) respectively. And for Christians most participants are Private Employees (40.0%), the second most are Government officers (28.0%), State Enterprise employees (24.0%) and State Enterprise Employees (24.0%) respectively.

Regarding the Level of Income: for Buddhists the highest level is 5,000-10,000 Baht (42.5%), the second highest is 10,001-15,000 Baht (18.5%), 20,001-25,000 Baht (17.5%), 15,001-20,000 Baht (12.0%), 25,001-30,000 Baht (6.0%) and over 30,000 Baht (3.5%) respectively. For Christians the highest level is 10,001-15,000 Baht (22.0%), the second highest level is 20,001-25,000 Baht (21.0%), others are 5,000-10,000 Baht (19.5%), over 30,000 Baht (18.5%), 15,001-20,000 Baht (16.5%) and 25,001-30,000 Baht respectively.

Part 2: The comprehension concerning the application of the religious doctrines to environmental conservation.

Table 11: Illustration on Frequency, Percentage, Mean (X) and Standard Deviation (S.D.) of concerning the application of the religious doctrines to the Environmental conservation.

The comprehension about applying the religious doctrines to the environmental conservation	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
1. Do you think that the religious doctrines could apply to environmental conservation?			2.9300	0.27473			2.8885	0.43902
Yes	187	93.5			186	93.0		
Uncertain	12	6.0			5	2.5		
No	1	0.5			9	4.5		
Total	200	100.0			200	100		
2. Do you think that the "doctrine of Love" supports environmental conservation?			2.880	0.39545			2.9450	0.8703
Yes	181	90.5			192	96.0		
Uncertain	14	7.0			5	2.5		
No	5	2.5			3	1.5		
Total	200	100.0			200	100.0		

Table 11: Illustration on Frequency, Percentage, Mean (X) and Standard Deviation (S.D.) of concerning the application of the religious doctrines to the Environmental conservation.(Cont.)

The comprehension about applying the religious doctrines to the environmental conservation	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
3. Do you think that the “doctrines of Everything interdependent and relates of things” make us pay attention to environmental conservation?			2.785	0.46891			2.8850	0.40322
Yes	162	81.0			183	91.5		
Uncertain	33	16.5			11	5.5		
No	5	2.5			6	3.0		
Total	200	100.0			200	100.0		
4. Do you think that the “doctrine of Responsibility” supports us to conserve the environment?			2.800	0.44834			2.6000	0.65309
Yes	164	82.0			152	76.0		
Uncertain	32	16.0			28	14.0		
No	4	2.0			20	10.0		
Total	200	100.0			200	100.0		
5. Do you think that the “doctrine of Everything may change” affects to our attitude of environmental conservation?			2.6400	0.65001			2.6650	0.65951
Yes	147	73.5			154	77.0		
Uncertain	34	17.0			25	12.5		
No	19	9.5			21	10.5		
Total	200	100.0			200	100.0		
6. Do you think that human beings have a right over nature and therefore have the right to manage it as they please?			2.3450	0.84828			1.9400	0.88335
Yes	49	24.5			84	42.0		
Uncertain	33	16.5			44	9.0		
No	118	59.0			72	48.5		
Total	200	100.0			200	100.0		

Table 11: Illustration on Frequency, Percentage, Mean (X) and Standard Deviation (S.D.) of concerning the application of the religious doctrines to the environmental conservation. (Cont.)

The comprehension about applying the religious doctrines to the environmental conservation	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
7. Have you ever joined any religious rituals that support to environmental conservation?			1.5850	0.89823			1.9400	0.95444
Yes	56	28.0			85	42.5		
Uncertain	5	2.5			18	9.0		
No	139	69.5			97	48.5		
Total	200	100.0			200	100.0		
8. Do you think that the doctrines in your religion support sustainable development?			2.5800	0.61276			2.7450	0.57588
Yes	129	64.5			163	81.5		
Uncertain	58	29.0			23	23		
No	13	6.5			14	14		
Total	200	100.0			200	100.0		
9. Do you think that cooperation in environmental conservation follow the morals in your religion?			2.6900	0.61301			2.7450	0.53984
Yes	154	77.0			159	79.5		
Uncertain	30	15.0			31	15.5		
No	16	8.0			10	5.0		
Total	200	100.0			200	100.0		
10. Do you think that women are able to have important roles in environmental conservation more than any other person in society?			2.0700	0.88828			2.3950	0.76281
Yes	86	43.0			113	56.5		
Uncertain	42	21.0			53	26.5		
No	72	36.0			34	17.0		
Total	200	100.0			200	100.0		

From Table 11, it shows that the comprehension concerning the application of the religious doctrines to environmental conservation can be explained as follows:

1. Most of the Sample Group thought that the religious doctrines could apply to the environmental conservation with Buddhists (93.5%) and Christians (93.0%) answering Yes. Buddhists who were uncertain are (6.0%) and those participants who don't think that religious doctrines could apply to the environmental conservation are (1%). For Christians those who don't think the religious doctrines could apply to the environmental conservation are (4.5%) and those who were uncertain are (2.5%).

2. Most participants thought that the "doctrine of Love" supports environmental conservation with Buddhists (90.5%) and Christians (96%). The second, highest response thought that they were uncertain the "doctrines of Love" supports environmental conservation both Buddhists (7.0%) and Christians (2.5%). And lastly, respondents who thought that the "doctrines of Love" do not support the environmental conservation were Buddhists (2.5%) and Christians (1.5%).

3. Most respondents thought that the "doctrines about Everything relates to each other" and makes them pay attention to environmental conservation with Buddhists (81.0%) and Christians (91.5%). The second highest response are Buddhists (16.5%) and Christians (5.5%) who were uncertain that the "doctrine about Everything relates to each other" and makes them pay attention to environmental conservation. Lastly, Buddhists (2.5%) and Christians (3.0%) don't think that the "doctrine of everything relates to each other" and makes them pay attention to environmental conservation.

4. Most respondents thought that the “doctrine of Responsibility” enables them to conserve the environment with Buddhists (82.0%) and Christians (76.0%). The second highest response are Buddhists (16.0%) and Christians (14.0%) who were uncertain the “doctrine of Responsibility” enables them to conserve the environment. Lastly, Buddhists (2.0%) and Christian (10.0%) don’t think that the “doctrine of Responsibility” enables them to conserve the environment.

5. Most respondents thought that the “doctrine about everything might always change” affects our attitude to environmental conservation with Buddhists (73.5%) and Christians (77.0%). The second highest response are Buddhists (17.0%) and Christian (12.5%) who were uncertain that the “doctrine about everything might always change” affects our attitude to environmental conservation. Lastly, Buddhists (9.5%) and Christians (10.5%) thought that the “doctrine of everything might always change” does not affect their attitude to environmental conservation.

6. Most Buddhists (59.0%) thought that human beings do not have a right over nature and therefore they have the right to manage it as they please. The second highest are Buddhists (24.5%) who thought that human beings have a right over nature and lastly, Buddhists (16.5%) thought they were uncertain. For Christians, most Christians (42.0%) thought that human beings have a right over nature. The second highest are Christians (22.0%) who thought that they were uncertain. And lastly, Christians (36.0%) thought that human beings do not have any right over nature.

The researcher assumed that the religious doctrines might be the cause that affect to their attitude about having a right over nature especially Christian doctrines. The literature interpretation of Bible scripture makes us understand that human beings

could manage environment as they please and these influenced their attitude about environment.

7. Most Buddhists (69.5%) and Christians (48.5%) thought that they would never join any religious rituals that support environmental conservation. The second highest are Buddhists (28.0%) and Christians (42.5%) who have ever joined the religious rituals that support environmental conservation. Lastly, Buddhists (2.5%) and Christians (9.0%) were uncertain.

The researcher assumed that the factors of economic and social activities might affect on joining the religious rituals. But the result of study indicated that most Buddhists hardly ever joined any religious doctrines, its cause may be derived from the lack of group joining. Whereas, most Christians usually join together and have the mutual activities.

8. Most Buddhists (64.5%) and Christians (81.5%) thought that their religious doctrines support sustainable development. The second highest are Buddhists (29.0%) and Christians (11.5%) who were uncertain. Lastly, Buddhists (6.5%) and Christians (7.0%) thought that their religious doctrines do not support sustainable development.

9. Most Buddhists (77%) and Christians (79.5%) thought that cooperation in environmental conservation follows the morals in their religions and the second highest are Buddhists (15.0%) and Christians (15.5%) who thought they were uncertain. Lastly, Buddhists (8.0) and Christians (5.0) did not think that cooperation in environmental conservation follows the moral in their religions.

10. Most Buddhists (43.0%) and Christians (56.5%) thought that women were able to have more roles in environmental conservation and more than any other people

in society. The second highest are Buddhists (36.0%) who do not think that women should have more roles in environmental conservation and more than any other people in society and Buddhists (21.0%) were uncertain that women should have more roles in environmental conservation and more than any other people. Secondly, Christians (26.5%) who thought they were uncertain and lastly, Christians (17.0%) who do not think that women are able to have more roles in environmental conservation more than any other people.

The researcher assumed that the different attitude between Buddhists and Christians may be derived from the factor of promotion the concept of human right and equality between women and men and theory of ecofeminism these theories point that the environment are oppressed by human beings and women are oppressed by men. These may affect on their attitude.

Part 3: The Comprehension about environmental conservation in urban areas.

Table 12: Illustration on Frequencies, Percentage, Mean (X) and Standard Deviation of their comprehension about environmental conservation in urban areas.

The comprehension about environmental conservation in urban areas.	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
1. The problem of garbage is a huge problem that must be solved immediately			2.9850	0.1578			2.9900	0.9975
Agree	198	99.0			198	99.0		
Uncertain	1	0.5			2	1.0		
Disagree	1	0.5			0	0		
Total								
2. The policy of the government of Bangkok Metropolis for regulating the time for collecting the garbage is hard to practice and useless.			2.2400	0.77809			2.4700	0.64121
Agree	42	21.0			16	8.0		
Uncertain	68	34.0			74	37.0		
Disagree	90	45.0			110	55.0		
Total								
3. We should separate the garbage before taking it to the public bin? (Example: wet garbage, dry garbage, toxic garbage)			2.9600	0.26219			2.8250	0.39389

Table 12: Illustration on Frequencies, Percentage, Mean (X) and Standard Deviation of their comprehension about environmental conservation in urban areas. (Cont.)

The comprehension about environmental conservation in urban areas.	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
Agree	195	97.5			166	83.5		
Uncertain	2	1.0			33	16.5		
Disagree	3	1.5			1	0.5		
Total	200	100.0			200	100.0		
4. Dust and smoke created from the vehicles and industrial factories are a huge problem now.			2.9800	0.14035			2.8800	0.38253
Agree	196	98.0			180	90.0		
Uncertain	4	2.0			16	8.0		
Disagree	0	0			4	2.0		
Total	200	100.0			200	100.0		
5. The amount of air pollutants affects your physical and mental health.			2.9900	0.09975			2.9350	0.28492
Agree	198	99.0			189	94.5		
Uncertain	2	1.0			9	4.5		
Disagree	0	0			2	1.0		
Total	200	100.0			200	100.0		
6. The relevant authorities in Bangkok Metropolis should inspect and								

Table 12: Illustration on Frequencies, Percentage, Mean (\bar{X}) and Standard Deviation of their comprehension about the environmental conservation in urban areas. (Cont.)

The comprehension about environmental conservation in urban areas	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
penalize the cars which breaks the law or creates too much noise.		1	2.9250	0.33155			2.9350	0.2824
Agree	189	94.5			186	93.0		
Uncertain	7	3.5			13	6.5		
Disagree	4	2.0			1	0.5		
Total	200.0	100.0			200	100.0		
7. Every community should have a system in cleaning water before it goes into our public canals or rivers.			2.9750	0.15652			2.8650	0.43326
Agree	195	97.5			180	90.0		
Uncertain	5	2.5			13	6.5		
Disagree	0	0			7	3.5		
Total	200	100.0			200	100.0		
8. The relevant authorities of Bangkok Metropolis should have stricter laws for inspecting the quality of wastewater.			2.9600	0.19645			2.8700	0.41710

Table 12: Illustration on Frequencies, Percentage, Mean (X) and Standard Deviation of their comprehension about environmental conservation in urban areas. (Cont.)

The comprehension about environmental conservation in urban areas	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
Agree	192	96.0			180	90.0		
Uncertain	8	4.0			15	7.0		
Disagree	0	0			5	3.0		
Total	200	100.0			200	100.0		
9. The problem of traffic congestion in Bangkok occurs from the over capacity of roads and too many cars.			2.8750	0.1964			2.875	0.4022
Agree	180	90.0			180	90.0		
Uncertain	15	7.5			15	7.5		
Disagree	5	2.5			5	2.5		
Total	200	100.0			200	100.0		
10. The problem of traffic congestion should be solved by expanding government offices into suburban areas.			2.7510	0.5375			2.8950	0.3529
Agree	160	80.0			182	91.0		
Uncertain	30	15.0			15	7.5		
Disagree	10	5.0			3	1.5		
Total	200	100.0			200	100.0		
11. The government should train the traffic police to enable them to have more skill and efficiency in their duties.			2.8550	0.4527			2.8800	0.35529

Table 12: Illustration on Frequencies, Percentage, Mean (\bar{X}) and Standard Deviation of their comprehension about environmental conservation in urban areas. (Cont.)

The comprehension about environmental conservation in urban areas	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
Agree	179	89.5			178	89.0		
Uncertain	13	6.5			20	10.0		
Disagree	8	4.0			2	1.0		
Total	200	100.0			200	100.0		
12. The project of energy saving is a useful project in environmental conservation.			2.8650	0.40941			2.9350	0.2471
Agree	178	89.0			187	93.5		
Uncertain	17	8.5			13	6.5		
Disagree	5	2.5			0	0		
Total	200	100.0			200	100.0		
13. We should support projects which are useful for environmental conservation.			2.9600	0.26219				
Agree	195	97.5			189	94.5		
Uncertain	2	1.0			10	5.0		
Disagree	3	1.5			1	0.5	2.9400	0.2583
Total	200	100.0			200	100.0		

From Table 12, it shows the comprehension about environmental conservation in urban areas can be explained as follows:

1. Most Buddhists (99.0%) and Christians (99.0%) agreed that the problem of garbage is a huge problem that must be solved immediately. Buddhists (1%) and Christians (2%) were uncertain that the problem of Garbage is a huge problem. And Buddhists (1%) disagreed that the problem of garbage is a huge problem that must be solved immediately.

2. Most Buddhists (45.0%) and Christians (55.0%) did not agree that the policy of the government of Bangkok Metropolis for regulating the time for taking the garbage is hard to practice and useless. Secondly, Buddhists (34.0%) and Christians (37.0%) were uncertain about that. Lastly, Buddhists (21.0%) and Christians (8.0%) agreed that the policy of the government of Bangkok Metropolis for regulating the time for taking the garbage is hard to practice and useless.

3. Most Buddhists (97.5%) and Christians (83.0%) agreed that we should separate the garbage before taking it to the public bin. Buddhists (1.5%) disagreed that we should separate the garbage before taking it to the public bin and Buddhists (1.0%) were uncertain about this. But for Christians (16.5%) were uncertain about it and Christians (0.5%) disagreed about separating the garbage before taking it to the public bin.

4. Most Buddhists (98.0%) and Christians (90%) agreed that dust and smoke emitted from the vehicles and industrial factories are a huge problem now. Secondly, Buddhists (2.0%) and Christians (8.0%) were uncertain about this and Christians (2.0%) disagreed.

5. Most Buddhists (99.0%) and Christians (94.5%) agreed that the amount of air pollutants affect their physical and mental health. Secondly, Buddhists (1.0%) and Christians (4.5%) were uncertain about this. And lastly, Christians (1.0%) disagreed.

6. Most Buddhists (94.5%) and Christians (93.0%) agreed that the relevant authorities of Bangkok Metropolis should inspect and penalize cars which breaks the law with noise pollution from their engines and annoy others. Secondly, Buddhists (3.5%) and Christians (6.5%) were uncertain and lastly, Buddhists (2.0%) and Christians (0.5%) disagreed.

7. Most Buddhists (97.5%) and Christians (90%) agreed that every community should have a system of cleaning water before it goes into our public canals or rivers. Secondly, Buddhists (2.5%) and Christians (6.5%) were uncertain about this. Lastly, Christians (3.5%) disagreed.

8. Most Buddhists (96.0%) and Christians (90%) agreed that the relevant authorities of Bangkok Metropolis should have stricter laws for the quality of water. And Buddhists (4.0%) and Christians (7.0%) were uncertain. Lastly, Christians (3.0%) disagreed.

9. Most Buddhists (90.0%) and Christians (90.0%) agreed that the problem of traffic congestion in Bangkok Metropolis occurs from the over capacity of roads and too many cars. Secondly, Buddhists (7.5%) and Christians (7.5%) were uncertain about this problem. Lastly, Buddhists (2.5%) and Christians (2.5%) disagreed.

10. Most Buddhists (80.0%) and Christians (91.0%) agreed that the problem of traffic congestion should be solved by expanding government offices into suburban areas. Secondly, Buddhists (15.0%) and Christians (7.5%) were uncertain that expanding government offices should be solved the problem of traffic congestion. And Buddhists (5.0%) and Christians (1.5%) disagreed.

11. Most Buddhists (89.5%) and Christians (88.5%) agreed that the government should train the traffic police to enable them to have more skill and efficiency in their duties. And Buddhists (6.5%) and Christians (10.0%) were uncertain about this. Buddhists (4.0%) and Christians (1.0%) disagreed.

12. Most Buddhists (89.0%) and Christians (93.5%) agreed that the project of saving energy is a useful project in environmental conservation. And Buddhists (8.5%) and Christians (6.5%) were uncertain about this. Lastly, Buddhists (2.5%) disagreed.

13. Most Buddhists (97.5%) and Christians (94.5%) agreed that we should support projects which are useful for environmental conservation. And Buddhists (1.0%) and Christians (5.0%) were uncertain. Lastly, Buddhists (1.5%) and Christians (0.5%) disagreed.

Part 4: Awareness in environmental conservation.

Table 13: Illustration on Frequencies, Percentage, Mean (X) and Standard Deviation (S.D.) of the awareness in environmental conservation.

Awareness in environmental conservation	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
1. Have you ever sold used newspapers or used glassed-bottles?			3.1450	1.2046			3.6000	0.78298
Most	29	14.5			16	8.0		
Much	50	25.0			106	53.5		
Sometimes	66	33.0			63	31.5		
Little	31	15.5			12	6.0		
Never	24	12.0			3	1.5		
2. Have you ever been careful when turning on and off the lights, air-conditioning or waterpipe?			4.2100	0.8057			3.3500	0.82517
Most	85	42.5			14	7.0		
Much	77	38.5			70	35.0		
Sometimes	33	16.5			91	45.5		
Little	5	2.5			22	11.0		
Never	0	0			3	1.5		

Table 13: Illustration on Frequencies, Percentage, Mean (\bar{X}) and Standard Deviation of the awareness in environmental conservation (Cont.)

Awareness in environmental conservation	Buddhists				Christians			
	N	%	\bar{X}	S.D.	N	%	\bar{X}	S.D.
3. Have you ever separated the garbage before taking it to the public bin?			3.0350	1.0721			3.3700	0.84064
Most	19	9.5			7	3.5		
Much	44	22.0			91	45.5		
Sometimes	79	39.5			80	40.0		
Little	44	20.5			13	6.5		
Never	17	8.0			9	4.5		
4. Have you ever recycled some water from washing clothes to water the plants, polish the floor?			3.3850	1.2786			3.3550	0.88991
Most	50	25.0			8	4.0		
Much	45	22.5			83	41.5		
Sometimes	58	29.0			89	44.5		
Little	26	13.0			12	6.0		
Never	21	10.5			8	4.0		
5. Have you ever bought goods that were made of recycled material?			3.3450	1.0529			3.2950	0.8899
Most	31	15.5			10	5.0		
Much	55	27.5			78	39.0		
Sometimes	75	37.5			82	41.0		
Little	20	15.0			21	10.5		
Never	9	4.5			9	4.5		

From Table 13, it shows the awareness in the environmental conservation can be explained as follows:

1. Most Buddhists (33.0%) have often sold used newspapers and used glassed-bottles, secondly Buddhists (25.0%) have usually sold these items. Thirdly, Buddhists (15.5%) have occasionally sold, Buddhists (14.5%) have always sold and Buddhists (12.0%) have never sold these items before. Christians (53.0%) have usually sold used newspapers and used glassed-bottles in the highest level. Christians (31.5%) have often sold them, Christians (8.0%) have always sold these, the lowest at Christians (6.0%) have occasionally and Christians (1.5%) have never sold these before.

The researcher assumed that most Christians have usually sold used newspapers and used glassed-bottled more than Buddhists may involve with the condition of income and economic status.

2. Most Buddhists (45.5%) are always been careful when turning on and off the lights, electronic facility machines and water pipe. Secondly, Buddhists (38.5%) have usually do this. Thirdly, Buddhists (16.5%) have often done this and the lowest, Buddhists (2.5%) who have seldom been careful to done this. For Christians (45.5%) have often been careful to turn on and off the lights, electronic machines. Secondly, Buddhists (35.0%) have usually done this, Christians (11.0%) have often done and the lowest, Christians (7.0%) who have always been careful to do these and Christians (1.5%) have never been careful when turning on and off the lights and electronic facility machines or water pipe before.

3. Most Buddhists (39.5%) have often separated the garbage before taking it to the public bin, the second highest is 22.0% have usually separated these before. Thirdly, Buddhists (20.5%) have occasionally separated, Buddhists (9.5%) have

always separated and 8.5% never separated these before. For Christians (45.5%) have usually separated the garbage before taking it to the public bin is the highest. Secondly, Christians (40.0%) have often separated these. Thirdly, Christians (6.5%) have seldom separated, fourthly at Christians (4.5%) those who have never separated before and the lowest is Christians (3.5%) are those who have always separated these.

4. Most Buddhists (29.0%) have often recycled some water from washing clothes to other activities, secondly is Buddhists (25.0%) who have always recycled some water. Thirdly, Buddhists (22.5%) are those who have usually recycled some water, fourthly, Buddhists (13.0%) are those who have occasionally recycled and Christians (10.5%) have never recycled some water before. For Christians (44.5%) have often recycled some water is the highest. Secondly, Christians (41.5%) are those who have usually recycled some water. Thirdly, Christians (6.0%) are those who have occasionally recycled some water and the lowest are Christians (4.0%) and Christians (4.0%) are those who have always and never recycled some water respectively.

The researcher assumed that most Buddhists have often recycled some water may occur from the convenience of accommodation more than Christians.

5. Most Buddhists (37.5%) have often bought the goods that were made of recycled materials is the highest, secondly, Buddhists (27.5%) have usually bought these. Thirdly, Buddhists (15.5%) have always bought. Fourthly, Buddhists (15.0%) have occasionally bought these and 4.5% have never bought the recycled goods. For Christians (41.0%) have often bought recycled goods. Secondly, Christians (39.0%) who have usually bought these. Fourthly, Christians (10.5%) have occasionally bought recycled goods and Christians (4.5%) have never bought the recycled good before.

Part 5: Questions concerning the roles of women in environmental conservation

Table 14: Illustration on Frequencies, Percentage, Mean (X) and Standard Deviation of the roles of women in environmental conservation

The roles in environmental conservation	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
1. Have you ever joined a project that featured environmental conservation?			2.5750	1.3126			3.2450	0.9323
Most	18	9.0			6	3.0		
Much	33	16.5			85	42.5		
Sometime	55	27.5			75	37.5		
Little	34	17.0			20	10.0		
Never	60	30.0			14	7.0		
2. Have you ever suggested to your relatives about the need for environmental conservation? (Example: taking the garbage to the public bin and separating the garbage before taking it)			3.6150	0.9908			3.5550	0.8369
Most	41	20.5			23	11.5		
Much	71	35.5			84	42.0		
Sometime	61	30.5			77	38.5		
Little	24	12.0			13	6.5		
Never	3	1.5			3	1.5		
3. Have you ever planned your route before traveling?			3.9200	0.90426			3.5700	0.6612
Most	56	28.0			12	6.0		
Much	87	43.5			97	48.5		
Sometime	45	22.5			84	42.0		
Little	9	4.5			7	3.5		
Never	3	1.5			0	0		

Table 14: Illustration on Frequencies, Percentage, Mean (X) and Standard Deviation of the roles of women in environmental conservation (Cont.)

The roles in environmental conservation	Buddhists				Christians			
	N	%	X	S.D.	N	%	X	S.D.
4. Have you ever bought second-hand goods in order to conserve the environment?			3.1500	1.1061			3.2950	0.8007
Most	24	12.0			9	4.5		
Much	49	24.5			70	35.0		
Sometime	78	39.0			97	48.5		
Little	31	15.5			19	9.5		
Never	18	9.0			5	2.5		
5. Have you ever been part of a project that encourages people to practice environmental conservation?			3.9750	0.9638			3.2100	0.8716
Most	64	32.0			12	6.0		
Much	87	43.5			61	30.5		
Sometime	35	17.5			88	44.0		
Little	8	4.0			35	17.5		
Never	6	3.0			4	2.0		
6. Have you ever worried that the building of irrigation canals may destroy the ecosystem?			1.6950	1.1656			2.2000	1.0562
Most	9	4.5			3			
Much	13	6.5			18			
Sometime	21	10.5			63			
Little	22	11.0			48			
Never	135	67.5			68			

From Table 14, it shows the roles in environmental conservation, which can be explained as follows:

1. Most Buddhists (30.0%) have never joined a project that featured environmental conservation and Buddhists (27.5%) have often joined, thirdly at 17.0% those who have seldom joined, 16.5% have usually joined and the lowest at 9.0 % are those who have always joined. Most Christians (42.5%) have usually joined a project that featured environmental conservation and 37.5% have often joined, thirdly at 10.0% are those who have occasionally joined, and the lowest are 7.0% for those who have never joined and 3.0% for those who have always joined.
2. Most Buddhists (35.5%) and Christians (42.0%) have usually suggested to their relatives about the need for environmental conservation. Buddhists (30.5%) and Christians (38.5%) have often suggested, Buddhists (20.5%) and Christians (11.5%) have always suggested, Buddhists (12.0%) and Christians (6.5%) have occasionally suggested and Buddhists (1.5%) and Christians (1.5%) have never suggested to their relatives about the need for environmental conservation.
3. Most Buddhists (43.5%) and Christians (48.5%) have usually planned their routes before traveling, Buddhists (28.0%) have always planned, Buddhists (22.5%) have often planned, Buddhists (4.5%) have seldom planned and Buddhists (1.5%) have never planned their routes. For Christians (42.0%) have often planned their routes before traveling, 6.0% have always planned and 3.5% have occasionally planned.
4. Most Buddhists (39.0%) and Christians (48.5%) have often bought second-hand goods in order to conserve the environment. Buddhists (24.5%) and Christians (35.0%) have usually bought these, moderate level at Buddhists (15.5%) and

Christians (9.5%) have seldom bought, low level at Buddhists (12.0%) and Christians (4.5%) have always bought these and Buddhists (9.0%) and Christians (2.5%) have never bought these.

5. Most Buddhists (43.5%) have usually been parts of a project that encourages people to practice environmental conservation. Buddhists (32.0%) have always been a part, 17.5% have often been a part, 4.0% have seldom been a part and 3.0% have never been a part. Christians (44.0%) have often been parts of a project that encourages people to practice environmental conservation, 30.5% have usually been a part, 17.5% have seldom been a part, 6.0% have always been a part and 2.0% have never been parts of any project.

6. Most Buddhists (67.5%) and Christians (34.0%) have never worried that the building of irrigation canals may destroy the ecosystem, Buddhists (11.0%) and Christians (24.0%) have occasionally worried, Buddhists (10.5%) and Christians (31.5%) have often worried, Buddhists (6.5%) and Christians (9.0%) have usually been worried and Buddhists (4.5%) and Christians (1.5%) have always worried that the building of irrigation canals may destroy the ecosystem.

4.3.2 The result of analysis of the correlation of dependent variables and independent variables.

The researcher has analyzed the correlation of dependent variables and independent variables with the method of Coefficient of Pearson Product Moment Correlation in order to know whether that dependent variables influence the independent variables or not. If yes, what are the variables that have influenced the independent variables.

For this case the researcher assigned the following Independent variables: age, the level of education, and the level of Income. Dependent variables are comprehension concerning the application of religious doctrines to environmental conservation, comprehension about environmental conservation in urban areas, awareness and roles in environmental conservation which were explored from all sample groups: there are 200 women Buddhists and 200 women Christians, a total of 400 women. These sample groups lived in all the 50 districts around Bangkok Metropolis.

From exploring the data from the sample group and analyzing the correlation between their comprehension of the application of the religious doctrines to environmental conservation, comprehension of environmental conservation in urban areas, the awareness and the roles of women in Buddhism in environmental conservation, the following results were found:

Table 15: Analysis of The Coefficient of Pearson Product Moment Correlations of Buddhists.

The Correlation (r) between	Comp. Doc.	Comp. Env.	Awareness	Roles
Comp. Doc.		.064	.141*	.353**
Comp. Env.	.064		.035	.049
Awareness	.141*	.035		.412**
Roles	.353**	.049	.412**	

Notes:

Comp. Doc.: their comprehension concerning the religious doctrines and environmental conservation.

Comp. Env.: their comprehension of environmental conservation in urban areas

Awareness: their awareness in environmental conservation

Roles: their roles in environmental conservation

***** Correlation is significant at the 0.05 level

****** Correlation is significant at the 0.01 level

Explanation: the meaning of the correlation (r)

.80 - 1.00	highest level
.60 - .79	high level
.40 - .59	moderate level
.20 - .39	low level
.01 - .19	lowest level (Supab Wadkhen, 2525: 59)

From Table 15, it shows the correlation of comprehension of the application of the religious doctrines to environmental conservation, comprehension of environmental conservation in urban areas, the awareness and the roles of women in Buddhism in environmental conservation, can be explained as follows:

The correlation of variables that is significant at the 0.01 level: the correlation of their comprehension of the application of the religious doctrines and their roles in environmental conservation, the correlation of their awareness of environmental

conservation and roles in environmental conservation has a correlation in the moderate level.

The correlation of variables that is significant at the 0.05 level: the correlation of their comprehension of the application of the religious doctrines and their awareness in environmental conservation has a correlation in the low level.

Table 16: Analysis of The Coefficient of Pearson Product Moment Correlations of Christians.

The Correlation (r) between	Comp. Doc.	Comp. Env.	Awareness	Roles
Comp. Doc.		.056	.068	.023
Comp. Env.	.056		.138	.061
Awareness	.068	.138		.410**
Roles	.023	.061	.410**	

Note:

Comp. Doc.: their comprehension concerning the religious doctrines and environmental conservation.

Comp. Env.: their comprehension of environmental conservation in urban areas

Awareness: their awareness in environmental conservation

Roles: their roles in environmental conservation

** Correlation is significant at the 0.01 level

Explanation: the meaning of the correlation (r)

.80 - 1.00 highest level

.60 - .79 high level

.40 - .59 moderate level

.20 - .39 low level

.01 - .19 lowest level (Supab Wadkhen, 2525: 59)

From Table 7, it shows the correlation of their comprehension of the application of the religious doctrines to environmental conservation, their comprehension of environmental conservation in urban areas, their awareness and the roles of women in Christianity in environmental conservation, can be explained as follows:

The correlation of variables that is significant at the 0.01 level: the correlation of their roles in environmental conservation and the correlation of their awareness of environmental conservation has a correlation in the moderate level.

From exploring the data from the sample group and analyzing the correlation between the independent variables and the dependent variables, the researcher has presented the results in 2 parts: Buddhists and Christians, the results are follows:

Part 1: Analysis of Buddhists in Environmental Conservation

Table 17: Analysis of variance of the correlation of their comprehension, their awareness and their roles of women by Age.

Dependent Variables		SS	df	MS	F	Sig.
Comp. Doc.	Between Group	36.015	5	7.203	1.456	.206
	Within Group	959.852	194	4.948		
Comp. Env.	Between Group	12.224	5	2.445	1.133	.344
	Within Group	418.534	194	2.157		
Awareness	Between Group	175.575	5	35.115	3.761*	.003
	Within Group	1811.158	194	9.336		
Roles	Between Group	137.575	5	27.573	2.568*	.028
	Within Group	2082.714	194	10.736		

Note:

Comp. Doc.:	their comprehension concerning the religious doctrines and environmental conservation.
Comp. Env.:	their comprehension of environmental conservation in urban areas
Awareness:	their awareness in environmental conservation
Roles:	their roles in environmental conservation
SS:	Sum of Square
df:	degree of freedom
MS	Mean Square
F.:	F-test
Sig.	Significant (2-tailed)
*	Correlation is significant at the 0.05 level

From Table 17, it showed that the variance of age and their awareness of environmental conservation, the variance of Age and their roles in environmental conservation are significant at the 0.05 level. The researcher separated the age of the sample group into 6 Groups: 16-23 years old, 24-31 years old, 32-39 years old, 40-47 years old, 48-55 years old and over 55 years old. ($X = 2.7450$)

Table 18: Analysis of variance of the correlation of their comprehension, their awareness and the roles of women in Buddhism in environmental conservation by Education.

Dependent Variables		SS	df	MS	F	Sig.
Comp. Doc.	Between Group	42.579	4	10.645	2.177	.073
	Within Group	953.289	195	4.889		
Comp. Env.	Between Group	9.887	4	2.472	1.145	.337
	Within Group	420	195	2.158		
Awareness	Between Group	87.359	4	21.840	2.242	.066
	Within Group	450.871	195	9.740		
Roles	Between Group	66.157	4	16.539	1.497	.205
	Within Group	2154.420	195	11.048		

Note:

Comp. Doc.: their comprehension concerning the religious doctrines and environmental conservation.

Comp. Env.: their comprehension of environmental conservation in urban areas

Awareness: their awareness in environmental conservation

Roles: their roles in environmental conservation

SS: Sum of Square

df: degree of freedom

MS: Mean Square

F.: F-test

Sig.: Significant (2-tailed)

* Correlation is significant at the 0.05 level

From Table 18, it showed that the variance of education and their comprehension of the application of the religious doctrines to environmental conservation, their comprehension of environmental conservation in urban areas, the awareness and the roles of women in Buddhism is not significant at the 0.05 level.

Table 19: Analysis of variance of the correlation of their comprehension, the awareness and the roles of women in Buddhism in the environmental conservation by Occupation.

Dependent Variables		SS	df	MS	F	Sig.
Comp. Doc.	Between Group	57.222	3	19.074	3.983*	.009
	Within Group	938.645	196	4.789		
Comp. Env.	Between Group	21.883	3	7.278	3.488*	.017
	Within Group	408.925	196	2.086		
Awareness	Between Group	77.289	3	25.763	2.644	.050
	Within Group	1909.444	196	9.742		
Roles	Between Group	68.731	3	22.910	2.087	.103
	Within Group	2151.847	196	10.979		

Note:

Comp. Doc.: their comprehension concerning the religious doctrines and environmental conservation.

Comp. Env.: their comprehension of environmental conservation in urban areas

Awareness: their awareness in environmental conservation

Roles: their roles in environmental conservation

SS: Sum of Square

df: degree of freedom

MS Mean Square

F.: F-test

Sig. Significant (2-tailed)

* Correlation is significant at the 0.05 level

From Table 19, it showed that the variance of education and their comprehension concerning the religious doctrines to environmental conservation, the variance of education of their comprehension about environmental conservation in urban areas are significant at the 0.05 level. The researcher separated their education into 6 groups: Secondary School, High School/ Vocational School, Diploma/High Vocational School, Bachelor Degree, and beyond Bachelor Degree. ($X = 3.5200$)

Table 20: Analysis of variance of the correlation of their comprehension, their awareness and the roles of women in Buddhism in environmental conservation by Level of Income.

Dependent Variables		SS	df	MS	F	Sig.
Comp. Doc.	Between Group	78.350	5	15.670	3.313*	.007
	Within Group	917.517	194	4.729		
Comp. Env.	Between Group	9.190	5	1.838	.846	.519
	Within Group	421.568	194	2.173		
Awareness	Between Group	159.393	5	31.879	3.384*	.006
	Within Group	1827.340	194	9.419		
Roles	Between Group	334.847	5	66.969	6.890	.000
	Within Group	1885.340	194	9.720		

Note:

Comp. Doc.:	their comprehension concerning the religious doctrines and environmental conservation.
Comp. Env.:	their comprehension of environmental conservation in urban areas
Awareness:	their awareness in environmental conservation
Roles:	their roles in environmental conservation
SS:	Sum of Square
df:	degree of freedom
MS	Mean Square
F.:	F-test
Sig.	Significant (2-tailed)
*	Correlation is significant at the 0.05 level

From Table 20, it showed that the variance of income and their comprehension concerning the religious doctrines to environmental conservation, the variance of income and their awareness of environmental conservation are significant at the 0.05 level. The researcher separated income into 6 groups: 5,000-10,000 Baht, 10,001-15,000 Baht, 15,001-20,000 Baht, 20,001-25,000 Baht, 25,001-30,000 Baht and over 30,000 Baht. ($X = 2.3650$)

Part 2: An analysis for Christians in environmental Conservation

Table 21: Analysis of variance of the correlation of their comprehension, their awareness and their roles of women by Age.

Dependent Variables		SS	df	MS	F	Sig.
Comp. Doc.	Between Group	42.000	5	8.4000	.904	.480
	Within Group	1802.990	194	9.2940		
Comp. Env.	Between Group	87.067	5	17.413	1.474	.200
	Within Group	2291.689	194	11.813		
Awareness	Between Group	39.475	5	7.895	1.643	.150
	Within Group	931.974	194	4.804		
Roles	Between Group	70.599	5	14.120	2.738*	.020
	Within Group	1000.442	194	5.157		

Note:

Comp. Doc.: their comprehension concerning the religious doctrines and environmental conservation.

Comp. Env.: their comprehension of environmental conservation in urban areas

Awareness: their awareness in environmental conservation

Roles: their roles in environmental conservation

SS: Sum of Square

df: degree of freedom

MS: Mean Square

F.: F-test

Sig.: Significant (2-tailed)



* Correlation is significant at the 0.05 level

From Table 21, it showed that the variance of age and the roles of women in environmental conservation are significant at the 0.05 level. The researcher separated the age of the sample group into 6 Groups: 16-23 years old, 24-31 years old, 32-39 years old, 40-47 years old, 48-55 years old and over 55 years old. ($X = 3.3850$)

Table 22: Analysis of variance of the correlation of their comprehension, the awareness and the roles of women in Christianity in environmental conservation by Education.

Dependent Variables		SS	df	MS	F	Sig.
Comp. Doc.	Between Group	61.553	4	12.311	1.339	.249
	Within Group	1783.437	195	9.193		
Comp. Env.	Between Group	118.928	4	23.786	2.042	.074
	Within Group	2259.828	195	11.649		
Awareness	Between Group	12.657	4	2.531	.512	.767
	Within Group	958.792	195	4.942		
Roles	Between Group	45.108	4	9.022	1.706	.135
	Within Group	1025.934	195	5.288		

Note:

Comp. Doc.: their comprehension concerning the religious doctrines and environmental conservation.

Comp. Env.: their comprehension of environmental conservation in urban areas

Awareness: their awareness in environmental conservation

Roles: their roles in environmental conservation

SS: Sum of Square
 df: degree of freedom
 MS Mean Square
 F.: F-test
 Sig. Significant (2-tailed)

* Correlation is significant at the 0.05 level

From Table 22, it showed that the variance of education and their comprehension of the application of the religious doctrines to environmental conservation, their comprehension of environmental conservation in urban areas, the awareness and the roles of women in Buddhism is not significant at the 0.05 level

Table 23: Analysis of variance of the correlation of their comprehension, the awareness and the roles of Christian women in environmental conservation by Occupation.

Dependent Variables		SS	df	MS	F	Sig.
Comp. Doc.	Between Group	75.504	3	25.168	2.788*	.042
	Within Group	1769.486	196	9.028		
Comp. Env.	Between Group	49.107	3	16.369	1.377	.251
	Within Group	2329.650	196	11.886		
Awareness	Between Group	50.852	3	16.951	3.609*	.014
	Within Group	920.597	196	4.697		
Roles	Between Group	33.562	3	11.187	2.114	.100
	Within Group	1037.479	196	5.293		

Note:

Comp. Doc.:	their comprehension concerning the religious doctrines and environmental conservation.
Comp. Env.:	their comprehension of environmental conservation in urban areas
Awareness:	their awareness in environmental conservation
Roles:	their roles in environmental conservation
SS:	Sum of Square
df:	degree of freedom
MS	Mean Square
F.:	F-test
Sig.	Significant (2-tailed)
*	Correlation is significant at the 0.05 level

From Table 23, it showed that the variance of education and their awareness of environmental conservation is significant at the 0.05 level. The researcher separated education into 6 groups: Secondary School, High School/ Vocational School, Diploma/High Vocational School, Bachelor Degree, and Beyond Bachelor Degree.

($X = 3.3600$)

Table 24: Analysis of variance of the correlation of comprehension, the awareness and the roles of women in Christianity in the environmental conservation by Income.

Dependent Variables		SS	df	MS	F	Sig.
Comp. Doc.	Between Group	12.619	5	2.524	.267	.931
	Within Group	1832.371	194	12.048		
Comp. Env.	Between Group	41.461	5	8.292	.688	.633
	Within Group	2337.295	194	12.048		
Awareness	Between Group	45.534	5	9.107	1.908	.095
	Within Group	925.915	194	4.773		
Roles	Between Group	53.856	5	10.771	2.054	.073
	Within Group	1017.186	194	5.243		

Note:

Comp. Doc.: their comprehension concerning the religious doctrines and environmental conservation.

Comp. Env.: their comprehension of environmental conservation in urban areas

Awareness: their awareness in environmental conservation

Roles: their roles in environmental conservation

SS: Sum of Square

df: degree of freedom

MS: Mean Square

F.: F-test

Sig.: Significant (2-tailed)

* Correlation is significant at the 0.05 level

From Table 24, it showed that the variance of Income and their comprehension of the application of the religious doctrines to environmental conservation, their comprehension of environmental conservation in urban areas, the awareness and the roles of women in Buddhism is not significant at the 0.05 level.

CHAPTER 5

CONCLUSION, DISCUSSION AND SUGGESTION

The environmental crisis now is increasing its affect on our survival. Human beings have unconsciously consumed the environment for their economical and social activities for a long time. The decaying environment has caused the environmental crisis. After humans have been affected, humans have tried to find out the way to conserve it as best as they can, but it may be too late to preserve the environment in a good condition as the past.

Humans are trying to solve the environmental problems that happen in our society, especially in urban areas which are the center of human progress. The condition of the problems may differ from rural areas, most problems occur from the over population and lack of serious management. Bangkok Metropolis is a big city which has an environmental problem the same as other big cities. The particular problems of big cities are overcrowding, pollution, high crime rates, traffic congestion, garbage, decaying canals, etc. Every person should have a responsibility to nature. Consequently, we must try to solve the environmental problems which still exist in our city of Bangkok Metropolis with the aim of making it a more habitable city.

5.1 Conclusion

The objective of this research: Women and Environmental Conservation in Urban Areas: A Comparative Study of Comprehension and Roles of Women in Buddhism and Christianity in Bangkok Metropolis are as follows:

1. To study the status of the environment and the problems which occur in urban areas.
2. To study the religious doctrines of Buddhism and Christianity and the application of religious doctrines to environmental conservation
3. To study the comprehension of women in environmental conservation.
4. To study the roles of women in direct ways in environmental conservation.
5. To compare the comprehension and the roles of women in Buddhism and Christianity in environmental conservation.

The researcher has explored the data from the sample group which is women who are Buddhists and Christians that live in Bangkok Metropolis. From this sample group, 200 Buddhists and 200 Christians, totaling 400 people let the researcher know what their thoughts about environmental problems, their comprehension about the application of the religious doctrines to environmental conservation, their comprehension about environmental conservation in urban areas, the awareness and the roles of women in environmental conservation.

From this research, Most Buddhists are 24-31 years old (33.5%) and Most Christians are 32-39 years old (28.5%). Most Buddhists (63.0%) and Most Christians (52%) are studying and/or graduated in a Bachelor Degree. For occupation, most

Buddhists (38.5%) are private employees and most Christians (40%) are private employees. For level of income, most Buddhists (42.5%) have an income at the level of 5,000-10,000 baht and most Christians (22.0%) have an income at the level of 10,001-15,000 baht.

From the results of this study, the researcher found that:

1. Most Buddhists and Christians have a comprehension about the application of doctrines to the environment at a high level. Most women understand the religious doctrines and know how to apply them. From this study, it was found that most Buddhists (93.5%) and Christians (93%) thought that the religious doctrines could apply to environmental conservation.

2. Most Buddhists and Christians have a comprehension about environmental conservation in urban areas at a high level. Most women understand about the environmental problems and want the government to pay more attention in solving these problems.

3. Most Buddhists and Christians are aware of environmental conservation at a high level.

4. Most Buddhists and Christians have roles in environmental conservation at a moderate level such as having participate in environmental conservation, suggest their relatives about the importance of environment, planned their routes before traveling, bought the second hand goods.

The correlation between the independent variables: age, education, occupation and the level of income and the dependent variables: comprehension, awareness and

roles of women in environmental conservation in urban areas. This research separated the analysis into 2 parts: women in Buddhism and women in Christianity.

For the sample group of Buddhists, the details show that Age influenced awareness of women and roles in environmental conservation. Education does not influence environmental conservation. Occupation influenced their comprehension of the application of the religious doctrines to environmental conservation and their comprehension about the environmental conservation in urban areas. The level of income influenced their comprehension of the application of the religious doctrines to environmental conservation and their awareness.

For the sample group in Christianity, the details show that Age influenced their roles in environmental conservation. Occupation influenced their comprehension of the application of the religious doctrines to environmental conservation and their awareness in environmental conservation. Education and the level of income do not influence environmental conservation. In this case, the researcher assumed that education does not influence environmental conservation because sometimes education may not increase their consciousness and change their habit.

5.2 Discussion

The environmental problems which happen now occur from the accumulation of the problems over a long period of time. The disaster from these problems are increasing at a terrible rate, such as from the increasing temperature. Our earth is slightly warmer from the effect of human activities.

Sustainable development is a choice we should pay attention to. The UN Commission on the Environment and Development explained the definition of sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. From this definition, humans should consume the environment with more consciousness. Humans have to develop the country by exhausting natural resources in order to create economical progress. Sustainable development is development which allows economical progress under the condition of environmental conservation. The characteristic of sustainable development is integrated in a holistic approach. It means that human activities should harmonize with natural law.

Science and Technology have been accused of being the main causes of the deterioration of nature. Hence, the new direction of Science and Technology should be improved, that is humans should utilize the knowledge of science for preventing and solving the environmental problems. Technology should have a new direction that reduces the destruction of nature. The economic activities of humans must not destroy natural resources too much and therefore try to consume natural resources modestly.

The environmental ethics are a new choice in environmental conservation. These ethics are derived from religious doctrines which could apply to environmental management. In the present, humans have begun to see the importance of ethics from religious doctrines and have used them to solve many problems that are happening in our lives and also environmental problems. The deteriorated environment define that

problems originated from a lack of ethics. We have to renew our ethics at both as individual level and a nation level, because humans have a lack of ethics, thus many problems will occur below follow this. In this study, the researcher has shown how to apply the religious doctrines in Buddhism and Christianity to environmental conservation. Buddhism acknowledges intrinsic values for everything, including the environment. Humans are a part of nature, both human and nature are under natural laws. Thus, humans should love and respect nature as humans are in a debt of gratitude for nature. Environmental consumption without greed is the best way to conserve the environment. Christianity emphasizes the theme of love: humans should love God, themselves, others and the environment in a position of both humans and the environment being a creature of God. Moreover, humans should have stewardship and responsibility to other creatures in order to express their love and respect to God.

However, Thai society is a society that is based on Buddhist principles and most of the population are Buddhists. Christianity is a religion which has also affected Thai society. Thailand administrates the policy of developing the country with a western concept or materialism, by exhausting natural resources rapidly. If we considered the theme of Buddhism, it found that the principle of Buddhism emphasizes living harmoniously with nature and not trying to conquer nature. We could apply the religious doctrines to social and economical development and also environmental conservation in order to make the status of the environment better.

Women are in the population as well as men; women ought to have a responsibility for the environment. Not merely men, but women must participate in

environmental conservation. Especially, now we claim for human rights and equality: women must have more rights and not be oppressed like the past. These rights are including the rights for participation in environmental conservation.

From this research it has found that, most women in the sample group in Buddhists and Christians understand the religious doctrines at a satisfactory level and have admitted that our Bangkok Metropolis has many pollution problems which they would like to solve so that the city is more habitable. The awareness and roles of women happen to follow their comprehension in environmental conservation which we all must have. Our society should encourage the values and awareness for the environmental to the next generation and make them love and live in harmony with nature. We must reduce our consumption for exhausting natural resources, especially energy which has a limited amount. The roles of women that may happen in a direct way: women consume the environment carefully, practice to follow the policy of the projects which support environmental conservation and suggest to their family and relatives to participate in environmental conservation. Actually, women who are mothers can influence everybody in their family because normally mothers have a close relationship with children since they were born and mothers have duties in teaching. Mothers usually have the influence over the thoughts of children. If women comprehend the environment and know how to apply the religious doctrines to environmental conservation, it will affect the thoughts of the next generation.

5.3 Suggestion

After the results of the study were obtained, the researcher would like to recommend the following:

1. The government should pay more attention to solve the environmental problems and encourage religions play more roles in environmental conservation. For example, the government should promote people to have new direction in joining the religious rituals with decreasing of consuming natural resources i.e. in the funeral rite, we should avoid using flowers as wreath because after finishing the funeral rite these flowers will become garbage and it's useless. We should promote people to bring the small plants to the temple, these plants will help clean atmosphere and it will be an alternative of making merit at present.
2. Religion should cultivate good values, good attitudes and awareness about the environment to their disciples and support them in having a new vision in environmental consumption.
3. Religion should clarify their roles for participation in environmental conservation, it will reflect that the religious ethics influence conservation of the environment. Religion should promote the more religious activities which are useful for environmental conservation such as tree ordination and making merit and making rivers become holy.
4. The government should support women to have more roles in environmental conservation which may establish an association concerning environmental conservation which can be administrated by women.

5. The government and the relevant authorities should promote people to know about the importance of the environment and encourage to people have an opportunity of participation in environmental conservation.

5.4 Recommendation for further study

1. The study should be made on sustainable development for environmental conservation by applying the religious doctrines and ethics.

2. We should study how religions influenced their disciples to conserve the environment such as the religious doctrines which promote their disciples love the environment more.

3. We should make a study on the participation of people in environmental solving using religious doctrines and environmental ethics.



**QUESTIONNAIRE
OF
WOMEN AND ENVIRONMENTAL
CONSERVATION IN URBAN AREAS:
A COMPARATIVE STUDY OF THE COMPREHENSION
AND ROLES OF WOMEN IN BUDDHISM AND
CHRISTIANITY IN BANGKOK METROPOLIS**

Data from these questionnaires will be used to help academics. There will be no reference to the respondents by name and I would therefore ask you to be as honest as you can with your answers.

There are 5 parts to the questionnaires:

- Part I* Personal Information**
- Part II* Data of the comprehension concerning the application of the religious doctrines to environmental conservation.**
- Part III* Data of the comprehension concerning environmental conservation in urban areas.**
- Part IV* Data of awareness in environmental conservation.**
- Part V* Data of role in environmental conservation.**

Questionnaire

Part 1 Personal Information

Explanation Please answer the following questions by either writing the answer or by ticking (/)the relevant box.

1. You live in Bangkok Metropolis, District of _____ (Please specify)
2. Religion Buddhism (Theravada) Christianity (Roman Catholic)
3. Age
 - 16 – 23 Years old 24 – 31 Years old 32 – 39 Years old
 - 40 –47 Years old 48 – 55 Years old over 55 Years old
4. Level of Education
 - Secondary School High School/ Vocational School
 - Diploma/High Vocational School Bachelor Degree
 - Beyond Bachelor Degree Others (Please specify)
5. Occupation
 - Student Government Officer
 - State Enterprise Employee Private Employee
6. Level of Income
 - 5,000 – 10,000 Baht 10,001 – 15,000 Baht
 - 15,001 – 20,000 Baht 20,001 – 25,000 Baht
 - 25,001 – 30,000 Baht over 30,000 Baht

Part II Data of the comprehension concerning the application of the religious doctrines to environmental conservation.

Explanation Please tick (/) on the relevant boxes.

1. Do you think that your religious doctrines help environmental conservation?
 Yes No Uncertain
2. Do you think that the “doctrine of Love” supports environmental conservation?
 Yes No Uncertain
3. Do you think that the “doctrine of Everything being related to each other” makes us pay attention to environmental conservation?
 Yes No Uncertain
4. Do you think that the “doctrines of responsibility” enables us to conserve the environment?
 Yes No Uncertain
5. Do you think that the “doctrine of everything may always change” affects our attitude to environmental conservation?
 Yes No Uncertain
6. Do you think that human beings have a right over nature and therefore have the right to mangle it as they please?
 Yes No Uncertain
7. Have you ever joined any religious rituals that support environmental conservation?
 Yes No Uncertain
8. Do you think that the doctrines in your religion support sustainable development?
 Yes No Uncertain
9. Do you think that cooperation in environmental conservation follow the morals in your religion?
 Yes No Uncertain

10. Do you think that women are able to have important roles in environmental conservation more than any other person in society?

Yes

No

Uncertain



Part III Data of the comprehension concerning environmental conservation in urban areas

Explanation Please tick (/)the relevant space in the table below:

The article	Agree	Uncertain	Disagree
1. Do you think that the problem of garbage is a huge problem that must be solved immediately?			
2. Do you think that the policy of the government of Bangkok Metropolis for regulating the time for collecting the garbage is hard to practice and useless?			
3. Do you think that we should separate the garbage before taking it to the public bin? (Example: wet garbage, dry garbage, toxic garbage)			
4. Do you think that dust and smoke created from vehicles and industrial factories are a huge problem now?			
5. Do you think that the amount of pollutants in the air affect your health?			
6. Do you think that relevant authorities in Bangkok Metropolis should inspect and penalize any car which breaks the law or creates too much noise?			
7. Do you think that every community should have a system of cleaning water before goes into our public canals or rivers?			
8. Do you think that the relevant authorities of Bangkok Metropolis should have stricter laws for the quality of wastewater?			

The Article	Agree	Uncertain	Disagree
9. Do you think that the problem of traffic congestion occurs from the over capacity of roads and too many cars?			
10. Do you think that the problem of traffic congestion should be solved by expanding government officers into suburb areas?			
11. Do you think that the government should train the traffic police to enable them to have more skill and efficiency their duties?			
12. Do you think that we should support the projects which are useful for environmental conservation?			
13. Do you think that we should support the projects which are useful for environmental conservation?			

Part IV Data of awareness in environmental conservation.

Explanation Please tick (/) the relevant space in the table below:

The Article	Most	Much	Average	Little	Never
1. Have you ever sold the used newspapers, the used bottles?					
2. Have you ever been careful when turning on and off the light, air-conditioning or water pipe?		/			
3. Have you ever separated the, garbage before taking it to the public bin?					
4. Have you ever recycled water from washing clothes to water the plants or polish the floor?					
5. Have you ever bought goods that were made of recycled material?					

Part V Data of roles in environmental conservation.

Explanation Please tick (/) the relevant space in the table below:

The Article	Most	Much	Moderate	Little	Never
1. Have you ever joined a project that featured environmental conservation?					
2. Have you ever suggested to your relatives about the need for environmental conservation? (Example: taking the garbage to the public bin and separating the garbage before taking it)					
3. Have you ever planned your route before traveling?					
4. Have you ever bought the second-hand goods in order to conserve the environment?					
5. Have you ever been part of a project that encourages people to practice environmental conservation?					
6. Have you ever worried that the building of irrigation canals may destroy the ecosystem?					

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