THE PATTERN OF HUMAN RESOURCE DEVELOPMENT IN ENVIRONMENTAL ASPECT OF THE MUNICIPALITY IN THAILAND

Wullop Yaiying

**A Dissertation Submitted in Partial
Fulfillment of the Requirements for the Degree of
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Wullop Yaiying
The Graduate School of Environmental Development Administration

.... Major Advisor
(Professor Tawadchai Suppadit, Ph.D.)

.... Co-Advisor
(Assistant Professor Karika Kunta, Dr.sc.ETH Zurich)

The Examining Committee Approved This Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy (Environmental Management).

.... Committee Chairperson
(Associate Professor Pakkapong Poungsuk, Ph.D.)

.... Committee
(Professor Tawadchai Suppadit, Ph.D.)

.... Committee
(Assistant Professor Karika Kunta, Dr.sc.ETH Zurich)

.... Dean
(Professor Wisakha Phoochinda, Ph.D.)

_____/_____/_____

ABSTRACT

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This study aimed to investigate the current development and ability of human resource in environmental aspect of the municipality, investigate the desired behavior of human resource development and system of human resource development in environmental aspect of the municipality, and recommend the pattern of human resource development in environmental aspect of the municipality in Thailand. The tools used to collect the data were questionnaire in order to assess the potential of human resource in environmental aspect of 345 municipalities at all levels in Thailand developed with current methods, in-depth interviews with 24 key informants who were administrators and operating officials of 12 municipalities in the north, northeast, central plains, and the south, 2 officials from Local Personnel Development Institution, Department of Local Administration, and 2 officials from Ministry of Natural Resources and Environment, as well as quantitative analysis using SPSS program to analyze figures and description using descriptive statistics and inferential statistics, and qualitative analysis by analyzing the content obtained from the study of documents and interviews.

The study results revealed that the pattern of human resource development in environmental aspect of the municipality in Thailand consisted of the following processes: 5 major processes namely 1) Analysis of needs 2) Planning 3) Design of methods 4) Implementation of plans and methods and 5) Assessment and information feedback; 2 supplementary processes namely 1) Search for the issues of human resource development and 2) Assessment of the process for improvement and continuous development; and 3 sustainable processes namely 1) Follow-up of the results of human resource development 2) Determination of municipal administrators' policy and 3) Formulation of the guideline of human resource development. The pattern could be used in the municipalities at all levels. But there were the issues of consideration of

subdistrict, town, and city municipalities that were different in 4 dimensions. Firstly, budget required for human resource development in environmental aspect. Secondly, needs for human resource development in environmental aspect. Thirdly, system of human resource development in environmental aspect of the municipality. Lastly, methods used for human resource development in environmental aspect.

However, the application of the pattern of human resource development in environmental aspect of the municipality in Thailand required the consideration of the differences in individual behavior according to the context of each region of the human resource in environmental aspect and the consideration of the context of the existing levels of municipalities in Thailand.

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CHAPTER 1

INTRODUCTION

1.1 Background and Significance of the Problem

The present situations of social, economic, and technological changes have resulted in serious environmental problems and interconnected complexities, both at micro and macro levels. Subsequently, environmental problems must be holistically solved. It is crucial to focus on the integration of all relevant sectors, people's participation, and network cooperation. Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment (Department of Environmental Quality Promotion, 2019, p. 16), has formulated the vision of " Promotion of good environmental quality based on knowledge and people's participation" and the mission relevant to the creation of cooperation network to serve as a concrete practical guideline as "Creation of cooperation network and promotion of participation of all sectors in environmental management." The success of the solutions to environmental problems in all regions nationwide depends on the personnel of the local government. The local government is close to people, situated across the country, and responsible for local environmental management as stipulated by law. The Constitution of the Kingdom of Thailand B.E. 2007 has stipulated the duties and responsibilities of the local government under Chapter 14 on the local administration under Section 290 stipulating that "A local government organization has the powers and duties to promote and conserve the quality of the environment as provided by law" (Office of the Council of State, 2007). As the law stipulates that the local government is charged with environmental management in responsible areas and consists of government agencies that are the closest to people, the local government is therefore important to the management of environmental quality.

The local government in Thailand consists of two major types namely general local administrative organizations such as municipalities, subdistrict administrative organizations, provincial administrative organizations, and special local administrative organizations with different management from the general type such as Bangkok and Pattaya (King Prajadhipok's Institute, 2020). All types of local government nationwide must solve people's environmental problems, including air, waste, and wastewater, and social problems impacting environment such as slums. These environmental problems occur both in urban and rural communal areas. But the environmental problems in urban communal areas are more serious than in rural communal areas. Most urban communal areas in Thailand are under the responsibilities of municipalities with the exception of Bangkok and Pattaya.

The Municipalities Act B.E. 1953 and the Municipalities Act (Amendment No. 14) B.E. 2019 stipulate that municipalities have three levels namely subdistrict, town, and city municipalities. Municipalities of all levels are also to be responsible for environment, including implementation and provision (Office of the Council of State, 2019). The administrative division based on the regulations of Ministry of Interior stipulates that the administrative duties of municipalities are to supervise, control, and monitor environmental-related missions namely public health and environment departments, divisions, or bureaus depending on the levels of the municipalities. A number of officials working on environmental management are under the supervision of department chiefs, division directors, or bureau directors. The officials need to be developed to gain knowledge and ability to keep abreast with environmental changes.

At present, personnel responsible for environment in municipalities are more or less developed, or continuously or discontinuously developed. Most depend on trainings from the central administration, depending on the attention of municipal administrators. Moreover, there is a shortage of analysis of the needs for actual development under the context of each municipality which is not quite in line with the municipality's development strategies to keep abreast with the rapid social and technological changes. Generally, the development of knowledge and ability of personnel responsible for environment can be appropriately designed to the position

and responsibilities of the personnel, and in line with the context of the municipality of each level.

The appropriate development of personnel responsible for environment in municipalities in line with actual needs, strategies of the municipalities' environmental development, and efficient development methods will impact environmental management, and solve more efficient and effective environmental problems in the areas where people are affected by the problems in all regions across the country.

1.2 Research Question

What should constitute the model of the development of personnel responsible for environment in municipalities in Thailand?

1.3 Objectives of Research

1) Study the methods, efficiency, and effectiveness of the present development of personnel responsible for environment in municipalities.

2) Study the behavior of self-development of personnel and the development system of personnel responsible for environment in municipalities.

3) Recommend the model of the development of personnel responsible for environment in municipalities to serve as the framework to develop the personnel responsible for environment in municipalities in Thailand.

1.4   Scope of Research

This research determined the scope of research as follows:

1.4.1 Scope of Content

1) Study the current development methods of personnel responsible for environment in municipalities of Local Personnel Development Institution and Local Personnel Management System Office, Department of Local Administration.

2) Indicator of the knowledge and competency of personnel responsible for environment who attended activities on the development of personnel responsible for environment with the current methods.

3) Environmental management policy of municipal administrators on the development system of personnel responsible for environment in municipalities in accordance with the strategies, in response to the municipalities' needs, efficiency of personnel development system, and effectiveness of personnel development.

1.4.2 Scope of Population

Compilation of information from municipalities' personnel at the executive and operation levels working on environment.

1.4.3 Scope of Area

Compilation of information from subdistrict, town, and city municipalities of all regions in Thailand, dividing the regions of Thailand based on the criteria of Ministry of Interior.

1.5   Definition Used in Research

1) Municipality means subdistrict, town, and city municipalities based on the regulations of the division of the levels of municipalities by Department of Local Administration, Ministry of Interior.

2) Personnel responsible for environment means staff and employees attached to public health and environment departments, or divisions, or bureaus of municipalities, or attached to the Office of the Municipal Clerk, with the duties and responsibilities of direct and indirect environmental management, including staff and employees of companies hired for environmental management.

3) Current development methods of personnel responsible for environment in municipalities means any methods that enhance knowledge, attitude, and skills in environmental operation of personnel responsible for environment.

4) Indicator of the competency of those who attended activities on the current development of personnel responsible for environment means indicator of the competency of municipal staff and employees who already attended the development procedures by any methods on environment, compared to the criteria of Office of the Public Sector Development Commission.

5) Environmental management policy of municipal administrators means guideline to use administrative resources consisting of budget, personnel, equipment, and management to foster development, improvement, solutions to problems, reduction of pollution, and preservation of environment.

6) Development system of personnel responsible for environment in municipalities means procedures, processes, and methods used to develop personnel responsible for environment in linkage with administrators' policies in line with the municipal strategies and in response to the municipal needs, problems, and development.

7) Accordance with strategies means development of personnel responsible for environment in municipalities that supports the municipalities' work to achieve objectives and goals on environment.

8) Response to the needs of municipalities means development of personnel responsible for environment in municipalities that responds to the municipalities' problems and development issues on environment.

9) Efficient personnel development system means quality of procedures, processes, and methods that allow the development of personnel responsible for environment to succeed and achieve the objectives.

10) Effective personnel development means output derived from development of personnel responsible for environment with increased knowledge, better attitude, and enhanced skills for performing work on environment.

1.6   Benefits

1) Municipal administrators of all levels in Thailand are in possession of the tools that will be used to develop personnel responsible for environment based on academic correctness, accuracy, and appropriate methods.

2) Relevant central and regional government agencies in cooperation with municipalities apply the research findings and recommendations to benefit the development of personnel responsible for environment in view of increased efficiency.

CHAPTER 2

RELEVANT CONCEPTS, THEORIES, AND RESEARCH WORKS

The relevant concepts, theories, and research works used to accompany the guideline to study and serve as the foundation of the research consisted of the following topics.

1) Concepts and theories of the development of personnel responsible for environment.

2) Concepts and theories of Knowledge, Attitude, and Practice (KAP).

3) Concepts and theories of public policy.

4) Policies and strategies of the development of personnel responsible for environment in municipalities.

5) Competencies of personnel responsible for environment based on the criteria of local government.

6) Municipalities' duties and responsibilities on environment.

7) Personnel responsible for environment in municipalities.

8) Current development system of personnel responsible for environment in municipalities.

9) Relevant research findings.

2.1 Concepts and Theories of the Development of Personnel Responsible for Environment

2.1.1 Theories of Human Resource Development

To accomplish successful human resource development, those responsible for the formulation of human resource development strategies or the experts on human resource development must understand the philosophy of the concepts and the theories impacting the procedures of human resource development in organizations and communities. The philosophy and theories can explain the knowledge derived from research, practice, through usage of long duration, as well as proofs from the set assumptions, and can be appropriately applied in various situations.

The concepts and the theories of human resource development cannot be explained by one theory only. The overall conceptual framework of human resource development is derived from the combination of three major theories namely Economic Theory, Systems Theory, and Psychological Theory (Arporn Puvitayaphan, 2008, pp. 95-120) as shown in Figure 2.1.
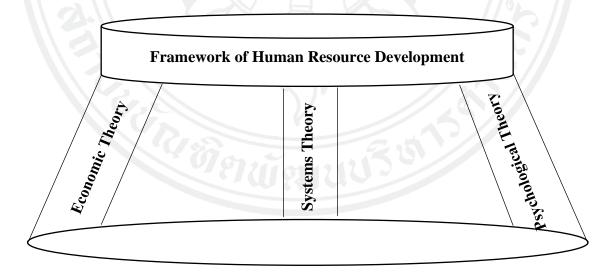
Figure 2.1 Framework of Human Resource Development Based on the Three Major
            Theories

Source: Swanson and Holton, 2001 as cited in Sirapatsorn Wongthongdee, 2013,
         p. 96.

Human resource development based on the three major theories will help explain, forge understanding, and foster success to the role and procedure of human resource development. The three major theories of human resource development resemble a 3-legged chair that supports Development Activity. Each leg is a component that needs integration to serve as a basis of the theory of human resource development as shown in Figure 2.1. Hammer and Champy (1993, p. 124) give an example to improve efficiency of an organization's operation by integrating the three theories in order to reduce costs as the basis of Economic Theory; analyze the processes of reduced working system as the basis of Systems Theory; and apply psychology to employees' behavior, being the integration of the three main theories of human resource development.

The Economic Theory focuses on the efficiency and effectiveness of the use of resources to achieve an organization's objectives by managing the Scarce Resource for the organization's maximum benefit. The investment in human resources will create value added to the organization. The three sub theories are used to describe the Economic Theory as follows:1) Scarce Resource Theory considers the management of the use of scarce resources including money, personnel, equipment, and methods for maximum return 2) Sustainable Resource Theory is similar to the Scarce Resource theory. The difference lies in the only one alternative that is important for long-term benefit (Swanson & Holton, 2001), for example, investment in technology will yield sustainable benefit and create long-term competitiveness for new business (Thurow, 1993, p. 65), and 3) Human Capital Theory explains the concept of G. S. Becker (1993, p. 96) who summarizes the differences for each organization which can be achieved through human resource development to create value for resources in all dimensions.

The Systems Theory deals with general concepts, rules, tools, solution to problems, supporting tools by connecting the model of various systems with the issues of human resource development. The Systems Theory consists of three sub theories namely 1) General Systems Theory deals with feeding input, procedure, output, and impact. The design of the good activities of human resource development should be open rather than closed system. Environment and impact will be considered to design the activities for human resource development 2) Chaos Theory argues that

some phenomena may not always follow rules and regulations, resulting in the inability to forecast phenomena in the future. Therefore, human resource development may not avoid uncertainty 3) Future Theory focuses on the attempt to forecast the future so human resource development requires design and plan to accommodate any potential future changes through appropriate design of activity programs.

The Psychological Theory relates to mental procedure impacting the expressed human behavior. Its interest lies in the relation between learning and behavior which explains learning, motivation, procedure of sending information and news, and movement of groups of people to improve work performance. The Psychological Theory consists of three sub theories namely 1) Gestalt Psychology where "Gestalt" is the German word for holistic. The theory believes that value derived from human behavior must be holistically studied. Study and analysis cannot be separately conducted. As human behavior is Integrated Behavior derived from the combination between different knowledge, thoughts, feelings, cognition, and experience of an individual, and not from any issue 2) Behavioral Psychology focuses on the development of behavior of human resource by considering the response of behavior such as motivation, promotion, support, penalty, and learning program 3) Cognitive Psychology integrates Gestalt Psychology and Behavioral Psychology to explain learning of each individual in relation to thoughts, understanding, cognition from motivation, and results from experience of each individual. Therefore, the design of the program of human resource development requires experience of cognition or motivation, leading to improvement of working process.

2.1.2 Adult Learning Theories

Malcolm S. Knowles summarizes the foundation of the Adult Learning Philosophy with the following: (Knowles, 1987 as cited in Suwat Watanawong, 2004, pp. 248 - 249).

1) Needs and Interests: Adults can learn well if the learning coincides with the needs and interests of their past experience. Then, they will be happy to learn. The activities organized for adult learning must also take into account the issue.

2) Life Situation: Adult learning will yield good result if life – centered learning is used. Therefore, appropriate learning arrangement for adult learning should mainly adhere to situations related to adult life, and not to academic content.

3) Analysis of Experience: Experience of everyone is the most valuable source of knowledge for adults. Therefore, the main principle of adult development is detailed analysis of the experience of each adult in order to use the part of experience for instruction.

4) Self – directing: The need that lies deep inside the adult is the feeling of ability to lead oneself. Therefore, the role of teacher or lecturer lies in the process to find common answers with the learning adults rather than the duty of transferring of knowledge.

5) Individual Difference: Differences will increase as an individual is advancing in age. Therefore, adult instruction must take into account the form of learning and teaching, time of teaching, place of teaching, and another important point, adult ability to learn at each level as it depends on the ability of each adult.

2.1.3 Concept of the Development of Human Resource Management System in the Public Sector

The main objective of the evaluation of human resource management system is to assist an organization to use human resources with efficiency, effectiveness, value for money, and assist the organization to achieve its set mission and goals. The guideline to evaluate the human resource management system that is widely used in both the public and private sectors is the evaluation of balanced human resource management based on the Human Capital Scorecard. It is used to evaluate the overall structure of personnel management system (Human Resource Architecture) that focuses on the connectivity between People, Strategy, and Performance of an organization. A group of academics including B. E. Becker, Huselid, and Ulrich (2001) Ulrich put forward the concept of HR Scorecard for the first time to serve as the practical guideline in the book entitled " The HR Scorecard: Linking People, Strategy and Performance" . It was developed from the concept of the model of balanced evaluation by Robert Kaplan and David Norton who pioneered the subject of Balanced Scorecard in 1992 (Surapong Malee, 2004, p. 32).

Office of the Civil Service Commission which is an agency of the central government responsible for human resource management in the public sector has studied and analyzed the Best Practices of the evaluation of human resource management system of the public and private organizations both in and outside the country. As for the guideline to apply it in the civil service in Thailand, on 5 February 2004, the Ad Hoc Subcommittee on Efficient Workforce Management in the Public Sector passed the resolution that approved the principles, components, and methods to evaluate the human resource management system of the public sector called " HR Scorecard" (Office of the Civil Service Commission, 2006, p. 3).

HR Scorecard is a tool to evaluate the success of an organization's human resource management, leading to the development and enhanced workforce competency of an organization for strength and in line with the organization's mission. Therefore, Office of the Civil Service Commission has defined the components of the evaluation of the success of human resource management in four parts as follows:

2.1.3.1 Standards for Success of Human Resource Management System means the results of human resource management in the public sector with the following five dimensions which are the ultimate goals that the public sector must achieve:

Dimension 1: Strategic accordance is the dimension that allows the public sector to know the guideline and methods of human resource management in accordance with the following standards:

1) Policies, plans, and measures on human resource management, whether or not in line and in support of the public sector to achieve the set mission, goals, and objectives.

2) Planning and workforce management both in quantity and quality, whether manpower has the size and competency in accordance with the achievement of mission and needs of the public sector both at present and in the future. Workforce Analysis is conducted to specify the gap of workforce demand and plan, whether or not to reduce the gap.

3) Policies, plans, projects, and measures on human resource management to attract, develop, and retain talented or highly competent officials or employees necessary to the existence and competitiveness of the public sector (Talent Management).

4) Plan to produce and develop executives at all levels, as well as plan to construct continuity in administration. Moreover, it includes conduct as good example and motivation to officials and employees both in performance and behavior at work.

Dimension 2: HR Operational Efficiency means HR Transactional Activities with the following characteristics:

1) Activities and processes of human resource management of the public sector such as selection, appointment, development, promotion, transfer, and other human resource management activities with accuracy and timeliness.

2) Database on correct, accurate, modern human resource management that can be actually used for decision-making and human resource management of the public sector.

3) Share of expenses of activities and processes of human resource management, whether or not it reflects appropriate public budget and HR Productivity as well as value for money.

4) Application of Information Technology in activities and processes of human resource management of the public sector, whether or not it is to improve management and service (HR Automation).

Dimension 3: HRM Program Effectiveness means policies, plans, projects, and measures on human resource management of the public sector that result in the following:

1) Policies, plans, projects, or measures to retain officials and employees necessary to achieve goals and mission of the government agencies.

2) Officials and employees are satisfied with policies, plans, projects, and measures on human resource management of the government agencies.

3) Policies, plans, projects, and measures to support continuous learning and development, as well as promotion of sharing and exchange of news, information, and knowledge (Development and Knowledge Management) for the development of officials and employees in order to acquire skills and competency necessary to achieve mission and goals of the government agencies.

4) Performance Management focuses on efficiency, effectiveness, and value for money, whether or not there is a system or methods of evaluating performance that can classify the differences and rank performance of officials and employees, or called by other names, with effectiveness. Moreover, officials and employees understand the linkage between individual performance and teamwork performance with success or performance of the government agencies.

Dimension 4: Responsibilities for human resource management means the government agencies must:

1) Be responsible for decision-making and results of decision-making of human resource management, as well as disciplinary actions, taking into account competency and performance, moral principles, rules of law, and civil right principles.

2) Be transparent in all human resource management processes by determining the readiness for accountability of human resource management to be inserted in all activities of human resource management of the government agencies.

Dimension 5: Quality of life and work-life balance means the government agencies have policies, plans, projects, and measures leading to the development of the quality of life of government officials and government employees as follows:

1) Government officials and employees are satisfied with working environment, working system, and working atmosphere, as well as use of Information Technology in public administration and services to the general public. They are encouraged to use their maximum potential without sacrificing their personal lives.

2) Provision of welfare and accommodation that are not enforced by law but with appropriateness and in accordance with the needs and conditions of the government agencies.

3) Promote good relation between executives of the public sector and government officials and employees, and between government officials and employees, and prepare workforce to be ready to drive the development of the public sector towards the desired vision.

The competency evaluation of human resource management in the five dimensions is the tool that assists the public sector to evaluate itself whether or not its policies, plans, projects, and measures of human resource management implementation are in line with the evaluation dimension based on efficiency and effectiveness. If there is no implementation based on the evaluation dimension or if there is so but at a low level, the public sector must develop human resource management system in accordance with the evaluation dimension to upgrade efficiency and quality in performing human resource management based on the criteria and framework of success standards of the five dimensions.

2.1.3.2 Critical Success Factors mean policies, plans, projects, measures, and operations on human resource management which will enable the public sector to achieve the success standards of the five dimensions.

2.1.3.3 Measures and Indicators mean factors or indicators if whether or not the public sector implements policies, plans, projects, and measures on human resource management in accordance with success standards of the set goals.

2.1.3.4 Performance means actual information served as a proof to evaluate if the public sector has implemented policies, plans, projects, and measures on human resource management in accordance with the success standards.

2.1.4 Technological Concept to Develop Personnel's Competency

The innovation that is widely used in human resource development for competency and efficiency in performing duties and accomplishing mission and goals of an organization is Human Performance Technology (HPT). Thomas F. Gilbert was applauded as the Father of Human Performance Technology. During 1961-1962, Gilbert published an article in a journal called "Human Competence", leading to the laying of foundation and widespread use of HPT. The concept explained the development of competency that must come from competency analysis, cause analysis, leading to the development of the model of Human Performance

Technology, focusing on training and development to enhance work competency of the business and industrial sectors (Prachyanun Nilsuk, 2006).

HPT is the process of designing the system to develop and enhance personnel competency through analysis of the gap or differences of the competencies that an organization needs and the actual conditions of the organization and personnel, leading to cause analysis and design to drive for changes and evaluation appropriate to the organization to achieve the vision and objectives of the organization based on efficiency and effectiveness. The model of HPT that is recognized in the human resource development circle includes the model of Van Tiem, Moseley and Designer called Human Performance Technology Model as shown in Figure 2.2.
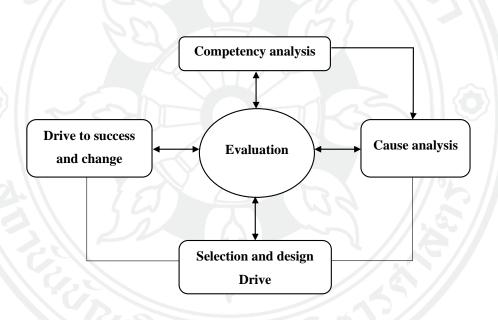
Figure 2.2 Human Performance Technology Model
Source: Thawat Chompoo, 2012, p. 30.

Based on Figure 2.2, the Human Performance Technology Model can be explained as follows: (Thawat Chompoo, 2012, p. 30).

Process 1: Performance Analysis is the process to analyze an organization and environment to know the actual competency of personnel as expected by the organization.

Process 2: Cause Analysis of the non-supporting environment such as news, and working tools to find the real reason as to why personnel do not like to seek knowledge nor accumulate knowledge such as whether or not they lack knowledge, skills, or motivation.

Process 3: Intervention, Selection, and Design are to bring the information from the first two Processes so as to find the methods to support competency, analysis of work to develop personnel, as well as all communications to fill in the communications within the organization, and then design and development of the organization.

Process 4: Intervention, Implementation, and Change apply the methods or model from the finished design to actual work in order to bring change within the organization. Various processes in personnel development require experts to provide counseling, communication, and coordination to connect and cover the organization.

Process 5: Evaluation is the process that needs to be conducted in every phase. It constitutes holistic evaluation, and follow-up on the improvement of the entire system from the beginning until the end.

2.1.5 Concept of Development of Personnel Responsible for Environment

The concept of the development of personnel responsible for environment must start with the development of the personnel's attitude for awareness of environment, good example of the general public, and then the development of knowledge and skills necessary for performing work. Based on the research on potentials of local administrative organizations in environmental management, there are issues related to personnel responsible for environment as follows:

Overall, personnel responsible for environment in local administrative organizations do not have qualifications related to environment. Most local administrative organizations arrange for personnel development trainings. But the topics of the trainings generally deal with familiar problems such as waste etc. However, as for the response to new problems such as hazardous waste or noise problem, there is no personnel development on the subject, with possible impact on the operation of the officials. The fact reveals that people have noise problem, but local administrative organizations do not pay attention to the importance of preparing personnel to respond to the problem (Soparatana Jarusombat, 2014, p. 11).

Thailand Environment Institute summarizes the issues of the development of personnel responsible for environment that should be conducted in Thailand into nine parts as follows: (Thailand Environment Institute Foundation, 2013, pp. 78-79).

Part 1: Promote ethics and develop rules and regulations on environmental governance as a practical guideline for personnel responsible for environment, especially profession of academic advisor.

Part 2: Develop courses, instruction media, and lecturers on Eco – Design as complementary occupation in agroforestry activities, profession of guide in ecology and adventures.

Part 3: Develop registration system of personnel responsible for environment for the following: 1) Business operating activities or processes with high risks of the use of natural resources and impact on ecosystem and environment, especially business causing serious pollution, using a lot of packaging, or using materials that are difficult to dispose 2) Business using ecosystem and services of ecosystem 3) Factories in industrial estates moving towards eco industrial estates, including social activities and 4) Business providing services of environment and pollution.

Part 4: Promote the knowledge of Green Supply Chain for the business sector and develop logistics system both at macro and micro levels to reduce impact derived from products and product cycle.

Part 5: Develop courses for local administrative organizations or local agencies to enhance potentials in the following fields: 1) Analysis and forecast of risks of natural disasters or impact from climate change that may occur in the responsible area 2) Preparation to handle events related to climate change 3) Evaluation of investment or activity necessary to reduce or prevent damage that may occur to economy, society, environment, and health and 4) Planning to implement work according to the plan.

Part 6: Promote and develop the potential of local personnel to acquire knowledge and understanding of nature's ecosystem and management of environmental basic infrastructure, including ability to develop the guideline and preserve local, valuable resources.

Part 7: Develop E – learning, E – library, and E – magazine in the fields of natural resources, environment, and ecosystem to enable the general public to gain access to basic knowledge and related information as much as possible.

Part 8: Accelerate the survey of readiness of the country's personnel responsible for environment at vocational, higher education levels, and local skills both in quantity and fields (Green Jobs) related to the development of various fields especially big projects and accelerate the development of courses and personnel in necessary fields that are still not sufficient to accommodate future jobs.

Part 9: Feasibility study to establish Local Skill Development Fund to provide training and skill development for the residents in the areas under the development and investment plans in various fields to acquire skills in response to the needs of project contractors in time for each process, by encouraging local vocational institutes and community colleges to organize trainings and skill development to promote economic growth and vocational education in various areas.

2.2   Concepts and Theories of Knowledge, Attitude, and Practice (**KAP**)

These concepts and theories place importance on three variables namely Knowledge, Attitude, and Practice of the message recipient with potential impact on society from the reception of the message. The three types of changes occur on a continuous basis. When the recipient receives a message, he/she will acquire knowledge. When knowledge occurs, attitude will ensue. And finally, it will entail practice (Suraphong Sothanasathian, 1990).

2.2.1 Concepts and Theories of Knowledge

Many academics have given the diverse definitions of knowledge. But the definition leading to practice in the development of personnel responsible for environment was given by the academic Benjamin S. Bloom. He classified the behavior of knowledge or behavior of cognitive domain related to cognition, fact classification, development of knowledge, ability, and skill in intelligence, judgement to accompany decision-making, consisting of competency at various levels from easy to more complicated levels, divided into six levels as follows: (Benjamin S. Bloom, 1967, as cited in Jutatip Sillabutra, Rajitphan Jantarach, Pranee Suthisukon, & Kriengsak Sueleurm, 2009, pp. 12-13).

Level 1 Knowledge: Ability to memorize or recall stories or experiences with three levels namely knowledge of story which is a fact, knowledge of methods of operation, and knowledge of concepts.

Level 2 Comprehension: Skill and ability in intellect to understand the acquired news, divided into three levels namely translation of meaning, interpretation, and explanation.

Level 3 Application: Ability to apply principles, and essences to actual situations.

Level 4 Analysis: Ability to divide complete story into minor parts or main components to find the relation of each part, divided into three levels namely analysis of components, analysis of relation, and analysis of operating principles.

Level 5 Synthesis: Ability to combine minor parts into the same story, by compiling and arranging to create novelty, divided into three levels namely synthesis to communicate, synthesis to plan or recommend operating project, and synthesis to coordinate relation of abstract objects.

Level 6 Evaluation: Decision on value of object or method both in quantity and quality requiring appropriate criteria to be used as evaluation standards. The criteria can be determined by oneself or by others, divided into two levels namely decision by using the criteria inside the situation and decision by using the criteria outside the situation.

In conclusion, knowledge means ability of intellect as expressed by an individual through memory, recall of facts, theories, rules and regulations, structure, and various methods. Knowledge is important to the creation of attitude towards the object after cognition from simple to complicated things and from concrete to abstract objects such as knowledge, understanding, application, analysis, synthesis, and evaluation.

2.2.2 Concepts and Theories of Attitude

Feeling is part of attitude. The study of the concept of attitude is therefore the study of psychological factor that attracts much interest of experts in human resource development. The main reason is because attitude determines position or inclination of self-development for more knowledge and ability. As for the meaning of attitude or impression, Royal Institute Dictionary (1982, p. 393) gives the definition of attitude as personal feeling of agreeing or disagreeing of any subject or any person. It is a compound word between the word "viewpoint" which means opinion and the word "principle" which means model or characteristic. The combined word means characteristic of opinion. Many meanings have been given as follows:

Attitude or as some textbooks call "impression" means position or feeling of an individual towards an object. Attitude is considered impression, overall feeling of an individual derived from readiness or inclination of mind or nerve expressed to respond to any stimulant, either by agreeing or disagreeing (Boontham Kijpreedaborisut, 1997, pp. 11-12).

Munn (1971, p. 77) argues that attitude means feeling and opinion that a person has on objects, people, situations, institutes, and any recommendations to accept or refuse, resulting in the person ready to react, or respond with the same behavior.

Allport (1968, p. 17) gives the definition of attitude as " mental and nerve conditions ready to react from experience which is a force that determines the direction or the result of changes in response of a person to things, people, or events."

Therefore, attitude means opinion that is stimulated by emotion enabling an individual to be ready to do anything with both positive or negative opinion, depending on the individual, situation, and environment at the time. Good or bad attitude depends on the components of knowledge, acquired feeling, and practice.

The components of attitude consist of three dimensions (Prasit Thongon, 1999, p. 29) namely Cognitive Component which is thoughts, knowledge, understanding, or belief that an individual must have experience, receive information, and create thoughts about the thing or condition; Affective Component is emotional condition consisting of feeling, satisfaction, dissatisfaction, liking, disliking, disdain, etc.; Behavioral Component is the inclination or position that an individual responds or reacts to things both by accepting and refusing. It is the direction to respond or act in a way which is the result of good or bad thoughts. Attitude expression can be divided into three types namely Positive Attitude is the good feeling towards environment, acceptance, and satisfaction; Negative Attitude is the expression or bad feeling towards environment, refusal, dissatisfaction; and Middle Attitude is non-expression or nonchalance of attitude possibly due to lack of knowledge or understanding of the subject.

In conclusion, the attitude of an individual can derive from the person's direct experience from conversation, familiarity, testing; and indirect experience, derived from hearing, listening, reading of the subject, communication and relation with other people or things in daily life, including a model to copy others. These things entail knowledge and constitute attitude. Attitude will change according to the change in demand with the passing time and the advancing age. Moreover, attitude depends on one's thoughts, personality, society, and environment. Attitude is useful to an

individual as it serves to protect and enhance one's identity in line with one's adherence.

2.2.3 Concepts and Theories of Practice

Behavior or Practice does not only include external objects but also what is in a person's mind which is not observable such as value which is the principle of evaluation, attitude towards objects, opinion, belief, taste, and mental state which are specific features of a person's personality and the major factors that determine behavior (Chuda Jitpitak, 1982, p. 2).

Behavior is an expression of a person based on the person's knowledge and attitude. The reason that people have different behavior is due to different knowledge and attitude. Difference in the translation of the message that a person receives creates different accumulated experience impacting the person's behavior (Surapongse Sotanasathien, 1990, p. 123). Before the person shows any behavior, there will always be a cause for behavior. The cause will serve as a stimulant to create demand. Demand will motivate the show of behavior in the end. It is the process or procedure called " process of behavior" with three similar characteristics namely Behavior is Caused, Behavior is Motivated, and Behavior is Goal – directed.

However, although the process of a person's behavior is similar, but the person's behavior patterns as expressed in various situations have different characteristics. This is due to many factors both internal factors of the person in terms of psychology and external factors such as environment related or attached to the person. These factors will impact the decision of people to express different behaviors.

2.2.4 Relation between Knowledge, Attitude, and Practice

Cornejo, Jerez, and Casanova, 1989, as cited inTaweesak Theppitak (2013, pp. 87-89), widely apply the KAP model in behavioral science by specifying that the understanding of the behavior principle under this model will determine the guideline and measures in the stimulation and control of behavior.
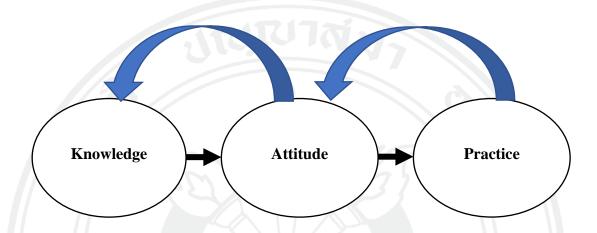
Figure 2.3 Relation between Variables in the KAP Model

Source: Cornejo, Jerez, and Casanova, 1989, as cited inTaweesak Theppitak, 2013, pp. 87-89.

Figure 2.3 shows the relation between various variables in the KAP model by which knowledge (K) results in attitude (A) and results further in practice (P). Attitude serves as the median between knowledge and practice. Attitude comes from existing knowledge and practice will be expressed according to the attitude. It can be summarized that knowledge, attitude, and practice are related in many ways both directly and indirectly. It is believed that good attitude will enable personnel responsible for environmental management to behave towards environmental preservation. It must follow the fact that the personnel responsible for environmental management are knowledgeable in environmental preservation. In other words, attitude impacts behavior and behavior results from attitude and all have foundation in knowledge.

2.3   Concepts and Theories of Public Policy

Activity or action that the government employs in operation to deliver public service in various forms such as economic, social, environmental to the public in order to achieve the set goals is called Public Policy. There must be planning, systematic operation, human resource management, operating budget, preparation of projects, operating process to fulfill the objectives of any subject with practical methods in line and appropriate to actual situation and in response to the needs of people in each subject and in each area. Therefore, public policy is an important tool for the government's administration.

There are many meanings of public policy as given by academics. For example, Sombat Thomrongthanyawong (2011, p. 42) gives the definition of public policy as an activity that the government chooses to do or not to do by focusing on attitude and common social benefit which is legal code. Kulathon Thanapongsathorn (1992, p. 9) gives the definition of public policy as a broad guideline that the government of a country sets up as project, plan, or program in advance to guide and bring about practice to reach the set goals or objectives. For the shortest and the most concise meaning of public policy, one has to look for the perspective of Thomas R. Dye. His political perspective argues that Public Policy is Whatever Governments Choose to Do or Not to Do. It is the consideration as to why the government must implement a particular policy and the difference that the particular policy can make. As the government has many duties, therefore public policy serves to control behavior, bureaucratic management, benefit distribution, or taxation, all of which must be done at the same time (Dye, 2005, pp. 1-5).

At least three main reasons constitute the interest to study public policy as follows: Dye (2005, pp. 5-6), First, Scientific Reasons: the study of public policy is the study of scientific reasons because the understanding of cause and effect of a policy decision-making can lead to the improvement of knowledge for society. Second, Professional Reasons: the study of public policy is the study based on professional reasons. The understanding of the cause of policy and effect from the implementation of the policy can be applied to solve social problems. Third, Political Purposes: Public policy can be studied as political purposes, whether or not the government has submitted policy recommendations, or whether or not the policy is successful, in order to improve on future policy recommendation and to ensure that the government has formulated correct policy, leading to correct goals.

Prawase Wasi (2011, p. 7) argues that good public policy means public policy that leads to integrity, fairness, and happiness of the public. Therefore, the formulation of any public policy requires Policy Analysis which explains the cause and impact of various policies and does not only depict what the government should do or what policy to formulate but also policy recommendation. Policy Advocacy requires skill, persuasion, management, organizational structure, and movement to ensure successful policy. The analysis and the drive of the policy will enhance the direction to appropriately solve social problems and respond to the public's needs. The analysis can be considered as arts or science. It requires in-depth understanding, creativity, and imagination to define social problems, explanation of social problems, and application of multi-disciplinary knowledge such as economics, political science, social science, humanities, law, statistics, and environment, etc.

The conceptual framework of public policy has political model contributing partly to construct the conceptual framework of public policy. Model means a simple representation partly of the actual world. The model may be physical representation of what actually happens. The model used in the study of policy is Conceptual Mode which is constructed to facilitate the easier and clearer thoughts of politics and public policy. It helps identify the characteristics of policy problems, convey meaning to others by focusing on main characteristics of political life, seek better understanding of public policy by focusing on what is important and what is not. It also helps explain public policy and forecast eventuality. There are many models used for the

study of public policy which will facilitate the understanding of political life namely Institutional Model, Process Model, Group Model, Elite Model, Rational Model, Incremental Model, Game theory Model, and Systems Model (Dye, 2005, pp. 20-45).

2.4 Policies and Strategies of the Development of Personnel Responsible for Environment in Municipalities

Personnel development policy is part of the administration policy which the Office of the Council of State (2003) stipulates in section 11 that "the public sector is responsible for developing knowledge in the public sector by receiving information and news, processing knowledge in different fields, and applying it to the administration with accuracy, speed, and suitability for situations, as well as promoting and developing knowledge and ability, creating vision, and changing attitude of attached government officials for their efficiency and joint learning in order to benefit the official duties in line with result-based administration according to the Royal Decree" (Office of the Council of State, 2003).

In the New Public Management, the public sector must develop sufficient knowledge and expertise for operation in accordance with social conditions and changing situations, directly or indirectly impacting Thailand. Public administration according to the Royal Decree requires the change in attitude, from the former concept of having to perform duties according to the set pattern without flexibility to the new concept that stresses creation of new ideas based on modern academic knowledge and efficient performance of duties all the time. The Royal Decree stipulates that the public sector must regularly develop knowledge with four practical guidelines. First: System must be set up that can widely receive news. Nowadays, technology can be efficiently used for the purpose. Second: Ability of data processing to apply to work based on accuracy, speed, and appropriateness to changing situations. Third: There must be promotion and development of knowledge and ability, creation of vision, and change of government officials' attitude, flexibility without adhering too much to bureaucratic procedures, allowing all government officials to be equipped with knowledge and ability in modern academic knowledge all the time, and

competency in performing public duties with maximum efficiency and effectiveness. Fourth: Creation of engagement among government officials to encourage exchange of knowledge, resulting in government agencies becoming learning organizations, leading to application of knowledge in their respective work for further efficiency.

2.4.1 Policy of Personnel Development of Local Government

Department of Local Administration has the policy for local administrative organizations to formulate strategic plan on human resource management according to the framework of the development of competency of human resource management or HR Scorecard which Office of the Civil Service Commission, through Bureau of Research and Development, has conducted study and development from foreign guidelines and design appropriate to Thai public administration. The procedure of the development of human resource management system consists of four processes as follows: (Department of Local Administration, 2004).

Process 1: Evaluation of the status of human resource management is a process of the overall study of the status of human resource management of the public sector to learn if the current human resource management has strengths, weaknesses, and actual basic information related to human resource management with numerous methods to evaluate the status.

Process 2: The planning of the human resource management strategy is the procedure of strategic planning on human resource management of the public sector. It uses the information from the analysis and evaluation of the status of the government sector's human resource management and analyzes it in conjunction with the goals of the strategy, vision of the organization, and policy of executives to formulate strategies, goals, and activities of the project on human resource management to accommodate the drive of the strategy.

Process 3: The implementation of the human resource management strategic plan assigns those responsible to conduct activities, plans, and projects according to the human resource management strategic plan and allocate resources necessary to organize activities in order to succeed according to the goal of the indicators and duration of time as stipulated in the human resource management strategic plan. The factors leading to the effectiveness of the implementation of the

human resource management strategic plan include communication to foster understanding of the goals, methods of operation, results benefitting government officials and the public sector, as well as the general public who are service recipients.

Process 4: Follow-up and report of the operation results. The process will ensure the public sector that activities on human resource management will be conducted as defined in the human resource management strategic plan with the achievement of the set goals. If there is any problem or obstacle, the operation can be solved or rectified on time. The follow-up on the progress of the operation is conducted on a regular basis such as monthly, every 3 months, etc. At the end of the year, evaluation and overall performance will be reported on the progress according to the plan.

2.4.2 Policies and Strategies of the Development of Personnel Responsible for Environment in Municipalities

Between 2012-2016, Ministry of Public Health and Ministry of Natural Resources and Environment cooperated to formulate the 2nd National Environmental Health Strategic Plan in order to develop the potential of personnel responsible for environment and health for officials in the government sector and local administrative organizations. Ministry of Public Health and Ministry of Natural Resources and Environment, as well as Ministry of Interior, improved the training courses for local personnel by adding the content on environmental health management as part of the courses (Ministry of Public Health and Ministry of Natural Resources and Environment, 2017, p. 21). The 3rd National Environmental Health Strategic Plan 2017-2021 has focused on the importance of personnel development by formulating the Strategy 4 : Promote the capability of general public, personnel, and networks on environmental health and provide them with the knowledge on environmental health impacting human health. The project was implemented to promote the potential of personnel responsible for environmental health to enhance the potential and the capability of personnel responsible for environmental health and occupational health at the central, regional, and local levels, for example, doctors and public health personnel on environmental medicines, local personnel, as well as promotion to produce personnel in environmental health, as well as preparation of courses and

trainings to develop operating officials in environmental health. The main agencies include Ministry of Education, Ministry of Public Health, and Ministry of Interior (Ministry of Public Health and Ministry of Natural Resources and Environment, 2017, p. 4).

Office of Policy and Planning, Ministry of Natural Resources and Environment has formulated the 5-Year Strategic Plan on Manpower Management and Human Resource Development (2017 – 2021) of Office of Natural Resources and Environmental Policy and Planning. It has focused on human resource development with the vision "Development of people for knowledge in parallel with morals, and happiness at work to achieve the organization's strategies" with the following objectives 1) Provide personnel with morals and ethics 2) Provide personnel with competency and ability to accommodate work to achieve organization's strategies 3) Provide personnel with quality of life, including working life, private life, social life, and economy to motivate and provide happiness in working. It consists of the following development strategies 1) Manpower management planning strategies for maximum benefit 2) Manpower development strategies and strategic preparation 3) Strategies to attract and retain talented manpower in the government sector (Environmental Fund, 2018).

2.5   Competencies of Personnel Responsible for Environment Based on the Criteria of Local Government

The concept of the competency took place at the beginning of 1970s by the academic David McClelland who conducted the research on why personnel in the same positions yielded different performances. The study findings revealed that the personnel with good performance had Competency (Chiraprapha Akaraborworn, 2006, p. 58). In 1973, (McClelland, 1973, pp. 1-14) wrote an article entitled "Testing for Competence rather than Intelligence" which was the beginning of the concept of competency to explain the personalities of people as the Iceberg in Figure 2.4.
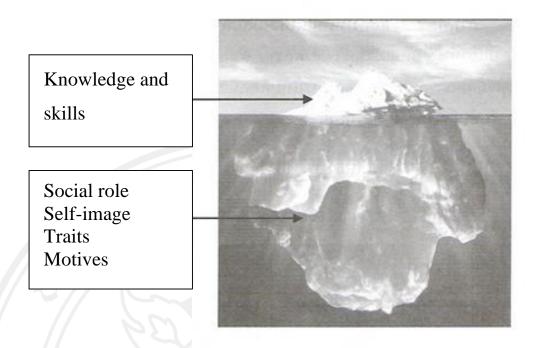
Figure 2.4   The Iceberg Model
Source: Chuchai Smithikrai, 2007, p. 29.

The competency of personnel responsible for environment of local government is determined by three essential groups' namely main competency, competency for executive, and competency by position. It is sub divided into general and academic types. The three groups of competency have different details as appropriate to the positions. All competencies will be determined as part of the standards to determine positions by Office of the Commission on Local Government Personnel Standards which is an agency responsible for supervision of central standards for local government personnel to allow all types of local government to formulate standards in order to define personnel's positions for efficiency and effectiveness of personnel management as in Figure 2.5.

Position category	Knowledge worker
Classification name	Knowledge operation
Classification title	Knowledge officer
Position level	Professional

1 Main duties and responsibilities

   Operation

      1. Main duties and responsibilities A

      2. Main duties and responsibilities B

   Planning

      1. Main duties and responsibilities C

      2. Main duties and responsibilities D

   Coordination

      1. Main duties and responsibilities E

      2. Main duties and responsibilities F

   Service

      1. Main duties and responsibilities G

      2. Main duties and responsibilities H

2. Specific qualifications for position

3. Knowledge, ability, skill, and competency necessary for position

   1. Necessary knowledge and ability to perform work in the position

   2. Necessary skill to perform work in the position

   3. Necessary competency to perform work in the position

Clearly specify work under responsibilities and details of main duties and responsibilities of level of work in each line of work.

Clearly specify the objectives of the responsibilities by defining output/outcome of the objectives of the responsibilities.

Clearly specify the necessary qualifications and experiences of level of work in each line of work.

Clearly specify necessary knowledge, skills, and competencies of level of work in each line of work.

Figure 2.5 Model of Standards of Determining Positions in Local Government
Source: Thailand Innovative Administration Consultancy Institute, 2010a, p. 221.

The position of Environmentalist, academic type is the only position in the field of environment. It consists of four levels namely Practitioner level, Professional level, Senior Professional level, and Expert level. This classification has general characteristics of work covering positions of academic work on environment. The type of work involves survey, collection of information, study, research, and recommendations to improve and maintain environment to be used to improve and formulate policy and plan on environment, as well as counseling, promotion, dissemination, protection, and preservation of environmental quality, as well as other duties as assigned.

2.6 Municipalities' Duties and Responsibilities on Environment

Municipalities are local government agencies established by the Municipal Act B.E. 1953 amended B.E. 2000. The municipalities' duties and authorities must benefit the people based on good governance, consideration of people's participation, and in accordance with laws, rules, regulations, and procedures as stipulated by Ministry of Interior.

2.6.1 Municipalities' Duties and Responsibilities According to the Law

Municipalities' duties and responsibilities are clearly determined by law (Office of the Council of State, 2019). They can be divided into two cases as follows:

2.6.1.1 Municipalities' Duties and Authorities as Stipulated by Law

The duties and authorities under this case can be divided into two parts. Part 1: Duties that enforce or need to implement will have the word "must implement"as defined in section 50 for subdistrict municipalities, section 53 for town municipalities, and section 5 6 for city municipalities. Part 2: Duties that can choose depending on the potential of each municipality and will have the word "may implement" as clearly specified in section 51 for subdistrict municipalities, section 54 for town municipalities, and section 57 for city municipalities.

Moreover, there are duties and authorities by law, section 57 bis, section 57 tier, and section 58 that stipulate that municipalities operate outside municipal areas, cooperate with others, and establish organizations called syndicates respectively.

2.6.1.2 Duties and Authorities as Stipulated by other Specific Laws

Apart from the authorities as stipulated by the Municipal Act B.E. 1953, there are also many other specific laws determining municipalities' duties and authorities as follows: (Office of the Official Information Commission, 2003).

1) Act of Prevention of Danger from Entertainment B.E. 1921

2) Building and Land Tax Act B.E. 1991

3) Public Health Act B.E. 1992

4) Act on Control of Use of Fecal Matter as Fertilizer B.E. 1947

5) Controlling Public Advertisement by Sound Amplifier Act B.E. 1948

6) Fire Prevention and Control Act B.E. 1952

7) Rabies Act B.E. 1992

8) Civil Registration Act B.E. 1991

9) Animal Slaughtering and Selling Meat Control Act B.E. 1992

10) Act on the Maintenance of the Cleanliness and Orderliness of the Country B.E. 1992

11) Determining Plans and Procedures in Decentralization to the Local Administrative Organization B.E. 1999 and 2nd amendment in B.E. 2006

12) Act on Maintenance of Order of Vehicle Parking in Municipal Areas B.E. 1960

13) Local Maintenance Act B.E. 1965

14) Signboard Tax Act B.E. 1967

15) Town Planning Act B.E. 1975

16) Food Control Act B.E. 1979

17) Communicable Disease Act B.E. 1980

18) Primary Education Act B.E. 1980

19) Canal Maintenance Act B.E. 1983

20) Cemeteries and Crematoriums Act B.E. 1985

21) Declaration of the Revolutionary Council No 44 dated 11 January B.E. 1959

22) Declaration of the Revolutionary Council No 68 dated 3 February B.E. 1972 (The Control of the Mooring of Vessels in Rivers and Canals Act)

23) Declaration of the Revolutionary Council No 295 dated 28 November B.E. 1972 (Highway Act)

24) Land Code (as assigned to supervise public domain which is wasteland according to the Order of Ministry of Interior No 890/2498)

2.6.2 Municipalities' Duties and Responsibilities on Environment according to the Law

Based on the duties and responsibilities as stipulated by law from the Municipal Act B.E. 1953 and other specific laws, it can be summarized as follows: municipalities' duties and responsibilities on environment have as mission to operate numerous environmental cases, including monitoring and protection of environment, and rehabilitation of environment (Office of the Council of State, 2019) as follows:

2.6.2.1 Direct Operation on Environment under the Responsibilities of Public Health and Environment Divisions or Bureaus of Municipalities as Follows:

1) Protect, supervise, and maintain natural resources and environment (section 67 (7))

2) Maintain cleanliness of roads, waterways, footpaths, and public places, including solid waste and sewage disposal (section 67 (2))

3) Environment and pollution management (section 17 (12))

2.6.2.2   Indirect Operation on Environment Which is Under the Responsibilities of Public Health and Environment Divisions or Bureaus, and Other Divisions or Bureaus Related to Municipal Mission as Follows:

1) Provision and maintenance of sea and land (section 67 (1))

2) Water for consumption and agriculture (section 68 (1))

3) Provision and maintenance of electricity or lights by other means (section 68(2))

4) Provision and maintenance of drains (section 68 (3))

5) Public utilities and other constructions (section 16 (4))

6) Public facilities (section 16 (5))

7) Disease prevention and communicable disease suppression (section 67 (3))

8) Provision and maintenance of meeting venues, sports, recreation, and parks (section 68 (4))

9) Slum community improvement and housing management (section 16(2))

10) Disaster prevention and mitigation (section 67 (4))

11) Control, supervision, and preservation of property which is of public domain (section 68 (8))

12) Town planning (section 68 (13))

13) Provision of parking lot (section 16 (3))

14) Maintenance of the Cleanliness and Orderliness of the Country (section 16 (17))

15) Control of buildings (section 16 (28))

16) Provision of markets (section 68 (10))

17) Tourism (section 68 (12))

18) Other duties on environment operated in the responsible areas of municipalities by the government agencies or private organizations.

2.7 Personnel Responsible for Environment in Municipalities

Personnel directly responsible for municipalities' environment are government officials and employees of municipalities attached to public health and environment divisions or bureaus, and staff of other juristic persons hired by the municipalities to do work on environment such as hired companies dealing in solid waste management, etc. Indirect mission related to municipalities' environment will be operated by other divisions or bureaus such as social welfare divisions or bureaus, public works divisions or bureaus, etc., as assigned by municipal administrators. Each municipality has different work assignment. This research focuses on the personnel attached to public health and environment divisions or bureaus as they are the personnel directly responsible for environment in municipalities.

2.7.1 Determination of the Positions of Personnel of Public Health and Environment Divisions or Bureaus

In the past, the positions of personnel of public health and environment divisions or bureaus of municipalities were determined by using the Position Classification System of local officials based on the old civil service system in the Civil Service Act B.E. 1975 (Amended in B.E. 1992) to divide the structure of positions based on median standards (Common Level) into 10 levels namely local officials or otherwise called municipal staff from level 1 to level 10.

The positions of personnel attached to public health and environment divisions or bureaus of municipalities and responsible for environment consist of the following:

2.7.1.1 Classification Name: Executive

There is only one position of Public Health Executive who serves as director of public health and environment division or bureau and holds the position of level 8 or 9.

2.7.1.2 Classification Names Start from Levels 3 and 4

They consist of the positions of Sanitation Technical Officer, Health Promotion Technical Officer, Registered Nurse, and Veterinarian.

2.7.1.3 Classification Names Start from Level 2

They consist of the positions of Sanitation Officer, Health Promotion Officer, Community Health Officer, Dental Assistant, Veterinary Officer, and Technical Nurse.

2.7.1.4 Classification Names Start from Level 1

They consist of the positions of Assistant Sanitation Officer, Assistant Health Promotion Officer, and Midwife.

It can be seen that, in the old system, for the determination of the positions of personnel in public health divisions or bureaus of municipalities who were responsible for environment, there were no positions of Assistant Environmental Officer, Environmental Officer, or Environmentalist in the position structure. These people must be responsible for environment in parallel with public health, especially Assistant Sanitation Officer, Sanitation Officer, and Sanitation Technical Officer.

2.7.2 Determination of the Positions of Personnel Directly Responsible for Environment

Nowadays, the determination of the position of personnel responsible for environment in municipalities uses the Single Classification Scheme according to the announcement of Office of the Commission on Local Government Personnel Standards on Determination of Central Standards for Local Government Personnel (No 4) dated 26 December 2014. It stipulated the use of the Single Classification Scheme effective 1 January 2015 as announced in the Government Gazette dated 13 February 2015. The positions are classified into four types namely Local executive position, Local managerial position, Knowledge worker position, and General position (Office of the Permanent Secretary for Interior, 2016, pp. 100-101).

For the determination of positions according to the new system, there is one position of official directly responsible for environment which is Environmentalist, a knowledge worker position working on environment. The job description consists of survey, compilation of information, study, research, and recommendations of the guideline to improve and preserve environment to be used in the consideration to improve and formulate policy and plans on environment, as well as advice, suggestions, promotion, and dissemination, prevention and preservation of environmental quality, and perform other duties related to environmental management.

The position of Environmentalist according to the announcement of Office of the Commission on Local Government Personnel Standards on Determination of Central Standards for Local Personnel Management consists of four levels namely Practitioner, Professional, Senior professional, and Expert levels. The details of each level are as follows: (Thailand Innovative Administration Consultancy Institute, 2010b, pp. 230-241).

2.7.2.1 Environmentalist, Practitioner Level

Main duties and responsibilities consist of performing work as officer of junior level who must use academic knowledge and ability to work, perform duties related to environment under the supervision, advice, investigation, and perform other duties as assigned with the following job description:

1) Operation

(1) Survey, compile information, study, analyze, conduct research, data processing, monitor and investigate environmental conditions to serve as the guideline to determine and improve policy, plans, standards, measures, guideline, criteria, rules, regulations, conditions, relevant laws, as well as communicate and transfer knowledge on environment, raise awareness and encourage public participation in environmental management.

(2) Monitor and investigate environmental quality, analyze and report environmental impact, make recommendations in line with the standards of environmental quality, and conduct initial diagnosis of facts on environmental problems.

(3) Jointly develop and transfer knowledge in environmental operation.

(4) Jointly study and coordinate participation of network and determine the standards of environmental quality such as water quality, air quality, etc. to serve as standards in the responsible areas.

(5) Study the problems of pollution, ecology, and environmental preservation to recommend solutions to problems, improve environmental quality, or promote environmental preservation in the responsible areas.

(6) Support and promote people, people network, volunteers, private organizations to engage in the care and promote local environmental quality to ensure that responsible local authorities have good environment in line with the set minimum standards.

(7) Conduct initial diagnosis of facts on environmental problems, including causes of troubles and nuisances from pollution in order to recommend solutions to problems and satisfy the victims.

(8) Study and follow new technology and knowledge, laws, and regulations relevant to environment in order to apply them in operation with maximum efficiency.

(9) Perform duties and support other work as assigned to support agencies and local administrative organizations in achieving the set mission.

2) Planning

Planning of work under responsibility, joint planning of work of agencies or projects to enable operation to achieve success.

3) Coordination

(1) Coordinate within and outside teamwork or between agencies to enhance cooperation and accomplishment.

(2) Explain and provide details of information and facts to related people or agencies to forge understanding or cooperation in operation as assigned.

4) Service

(1) Advise, explain, and answer problems on academic, environmental work to the public sector, the private sector, and the general public to acquire necessary knowledge and information.

(2) Collect initial data, prepare statistics, reports, or database on IT related to academic, environmental work to support mission of the public sector and assist in formulation and improvement of policy, plans, standards, measures, criteria, rules, regulations, conditions, and laws related to academic, environmental work.

2.7.2.2 Environmentalist, Professional Level

Main duties and responsibilities consist of serving as chief to supervise, advise, investigate the work performed by colleagues by using knowledge, experience, and high expertise in academic, environmental knowledge, perform work requiring decision or solve difficult problems, and perform other duties as assigned, or perform work as experienced operating official by using knowledge, ability, experience, and high expertise in academic, environmental knowledge, perform work requiring decision or solve difficult problems, and perform other duties as assigned. The job description is as follows:

1) Operation

(1) Perform duties on preparation and formulation of policy, main plans, standards, measures, guideline, criteria, rules, regulations, conditions, relevant laws, including development and transfer of knowledge on environment, raise awareness and encourage people's participation in environmental management to ensure that operation on environmental management reaches the set goals.

(2) Study and develop work on environmental management such as development of appropriate system, pattern, and methods, and apply it to develop the guideline of efficient development of environmental management which fits the country's environmental situations.

(3) Analyze problems and recommend the guideline on operation of environmental management, analyze impact on the environment, monitor and investigate environmental quality and complaint, give comments to ensure compliance with standards of environmental quality, laws, rules, regulations, and conditions as determined, as well as report the situations of environmental quality.

(4) Control, monitor, supervise, and investigate environmental quality, analyze report on environmental impact, and submit opinions to ensure compliance with standards, criteria, or conditions of environmental quality as defined in the area.

(5) Control, plan, study, coordinate participation of network, and determine standards of environmental quality such as water quality, air quality, etc. to serve as standards in responsible area.

(6) Control, monitor, supervise, and study pollution problems, ecology, and environmental preservation to recommend the solutions to problems, improve environmental quality, or promote environmental preservation in responsible area.

(7) Plan, support, and promote people, people network, volunteers, private organizations to engage in care and promotion of local environmental quality to enable responsible local authorities to have good environment in line with the minimum set standards.

(8) Diagnose facts on environmental problems, including investigate troubles and nuisances from pollution to recommend the solutions and provide satisfaction to the victims.

(9) Provide counseling and recommendations that benefit operation and solve problems of officials at the lower level in the command chain, colleagues, or relevant agencies to ensure smooth operation that meets the deadline.

(10) Study and follow new technology and knowledge, laws, and regulations related to environmental work in order to apply them to operation for maximum efficiency.

2) Planning

Planning or joint planning, operation according to action plan or project of agency at the bureau or division level, and solutions to problems at work to ensure that operation achieves the set goals.

3) Coordination

(1) Coordination of teamwork with the role of giving initial opinions and advice to team members or other agencies to ensure cooperation and accomplishment as determined.

(2) Give initial opinions or advice to team members, relevant people, or agencies to enhance understanding and cooperation in performing duties as assigned.

4) Service

(1) Provide advice, respond to questions, and explain the subject of environmental management under responsibility at the complicated level or administer training or transfer of knowledge to government agencies, the private sector, or the general public to ensure knowledge, and understanding of environmental management.

(2) Develop database or IT system related to environmental management in accordance with and support of the organization's mission, as well as formulation of policy, plans, criteria, and measures.

(3) Provide advice and recommendation of work on academic, environmental work to officials at a lower level for efficient operation.

2.7.2.3 Environmentalist, Senior Professional Level

Main duties and responsibilities as a supervisor who must supervise, advise, and investigate work performed by colleagues using knowledge, ability, experience, and very high expertise in academic, environmental knowledge, perform duties requiring decision or solutions to very difficult problems, and perform duties as assigned, or perform duties as experienced operating official with knowledge, ability, experience, and very high expertise in academic, environmental knowledge, perform duties requiring decision or solutions to very difficult problems, and other duties as assigned. The job description is as follows:

1) Operation

(1) Supervise operation of environmental management of the public sector such as formulation of policy, plans, standards, measures, guideline, criteria, rules, regulations, conditions, relevant laws, communication and transfer of knowledge on environment to raise awareness and promote people's participation in environmental management, performance evaluation, analysis and research on pollution and environmental problems, recommendation of practical guideline on environmental management , analysis of impact on environment, and monitor and investigate environmental quality and complaints, etc. to ensure that the public environmental management reaches the goals and in accordance with laws, rules, regulations, and set conditions.

(2) Lay down the guideline of education and development of environmental management in various fields such as development of appropriate system, format, methods, and application to develop the efficient guideline of environmental management in line with the country's environmental situations.

(3) Consider and give opinions on environmental management of local areas and environmental situations between local areas.

(4) Plan, control, supervise, and monitor the investigation of environmental quality, analysis of reports on environmental impact, and recommendations in accordance with standards, criteria, or conditions of environmental quality as defined in the local area.

(5) Forge the participation of network and determine the standards of environmental quality such as water quality, air quality, etc. to be used as standards in responsible area.

(6) Control, supervise, and monitor the study of the problems of pollution, ecology, and environmental preservations in order to recommend solutions to problems, improve environmental quality, or promotion of environmental preservation in responsible area.

(7) Plan, support, and encourage people, people network, volunteers, private organizations to participate in the care and promotion of local environmental quality so that the responsible local area has good environment according to the requirement of minimum standards.

（8） Plan, control, supervise, and follow up on the diagnosis of facts on environmental problems, as well as investigate troubles or nuisances from pollution in order to recommend solutions to problems and satisfy the victims.

（9） Prepare the handbook on environmental practice to serve as the guideline of correct practice and in the same direction in the entire organization, and in accordance with good internal control system.

（10） Investigate, evaluate, solve environmental problems, and perform other duties to ensure that the operation of the agency is in line with criteria, standards, and methods as stipulated by local administrative organizations for maximum benefit.

（11） Develop and improve working system on environment to ensure that the established working system can support other units with efficiency and in accordance with the needs of local administrative organizations and current situations.

（12） Coach, transfer of knowledge or training to officials at lower level, colleagues, or related agencies to foster learning, and transfer work principles in local administrative organizations and more efficient application to work.

（13） Provide counseling and recommendations that benefit operation and solve problems encountered by officials at the lower level in the command chain, colleagues, or related agencies for smooth operation that meets the deadline.

（14） Study and follow-up of technology, new knowledge, laws, and regulations related to environment, and apply to work for maximum benefit.

2) Planning

Planning or joint planning of projects of agencies at the division or bureau level, assignment, solutions to operation problems, and evaluation in order to achieve the set goals.

3) Coordination

(1) Coordinate with team members through the role of guiding, motivating the team or other agencies at the division or bureau level to foster cooperation and accomplish the set results.

(2) Explain and give opinions in committee or working group meetings that will be useful and foster cooperation.

4) Service

(1) Provide counseling, recommendations, answers to questions, and elaborate on the subject of environmental management under responsibility or administer training or transfer of knowledge to the public, private, or people sectors for knowledge, and understanding of environmental management.

(2) Devise the guideline to develop and set up database or IT system on environmental management for conformity, support the agency's mission, and used to accompany the consideration to determine policies, plans, criteria, standards, and measures.

(3) Provide counseling and recommendations on environmental management to officials at a lower level such as counseling, advice in operation, preparation of project, handbook or practical guideline, and direction of correct use of tools and equipment, etc. to transfer knowledge beneficial to operation based on standards and regulations.

2.7.2.4 Environmentalist, Expert Level

Main duties and responsibilities consist of performing work requiring expertise or, as operating officials, provide counseling to the public sector by using knowledge, ability, experience, and expertise in the academic field of environment, perform duties requiring decision-making or solve academic problems that are very difficult and complicated with wide impact, and other duties as assigned. The job description is as follows:

1) Operation

(1) Provide counseling and make suggestions based on academic, environmental knowledge, and recommend the guideline to solve problems in operation such as formulation of policies, plans, standards, measures, guideline, criteria, rules, regulations, conditions, relevant laws, as well as communication of knowledge on environment to raise awareness and promote people's participation in environmental management, evaluation, analysis of problems, recommendation of practical guideline on environmental management, analysis of impact on environment, monitoring and investigation of environmental quality and complaints, etc. in order to accompany the consideration to formulate an agency's policies, plans, and practical guideline.

(2) Develop and create innovation in study, research and development, technology of environmental management, and recommend the concept of the public environmental management based on efficiency and appropriateness to environmental situations both in and outside the country.

(3) Provide counseling, define guideline, control, supervise, and monitor the investigation of environmental quality, analysis of the report of environmental impact, and make suggestions in accordance with standards, criteria, or conditions of environmental quality as defined in the area.

(4) Encourage participation of network and determine standards of environmental quality such as water quality, air quality, etc. to be used as standards in responsible area.

(5) Provide counseling, devise guideline, control, supervise, and monitor the study of pollution problems, ecology, and environmental preservation to accompany the recommendation to solve problems, improve environmental quality, or promote environmental preservation in the responsible area.

(6) Research or academic works on environment to enable domestically and internationally recognized innovation.

(7) Apply the internationally recognized practical guideline (Best Practices) to formulate mechanism, process, or measures on environmental operation in the development of responsible local administrative organizations.

(8) Promote and develop potential of the subordinates to encourage continuous knowledge development and enable them to work in line with the organization's objectives with maximum efficiency.

(9) Lay down the framework to prepare academic documents, textbooks, examination questions on environment accompanying the related instruction.

2) Planning

Planning or joint planning by linking or integrating strategic plans, projects of government agencies at the department level, assignment of work dealing with solutions to problems, follow-up, and evaluation to achieve the set goals.

3) Coordination

(1) Coordinate operation of projects with other people, agencies, or organizations with the role of motivation and persuasion to forge cooperation and environmental accomplishment as defined.

(2) Provide comments and recommendations to agencies at the division or bureau level, as well as at domestic and international meetings to enhance benefit and cooperation in joint operation.

4) Service

(1) Provide counseling, recommendations, diagnosis, clarification, response to important problems on environmental management, and administer training or knowledge transfer to the public and the private sectors, or the general public for knowledge and understanding of environmental management.

(2) Monitor, promote, and support development and preparation of database or IT system on environmental management to be in compliance with and support of the mission of agencies and used to accompany the consideration to formulate policies, plans, criteria, standards, and measures.

(3) Training or transfer of knowledge or supervision of employees or officials in the agency, as well as dissemination of knowledge at the department level to enhance knowledge, understanding, and complete and efficient operation.

2.8 Current Development System of Personnel Responsible for Environment in Municipalities

Personnel development is a procedure that focuses on change, behavior improvement, working methods, knowledge and ability, skill, and attitude of personnel for betterment. The developed personnel will then be able to perform work in accordance with the objectives of the municipality with efficiency and effectiveness.

2.8.1 Development System of Municipal Personnel in Thailand

2.8.1.1 Development of Municipal Personnel by the Central

Government

The development of municipal personnel by the central government in Thailand is operated by Local Personnel Development Institution. It is a government agency with the same status as a division (level of bureau) attached to Department of Local Administration, Ministry of Interior. It is responsible for personnel development of local administrative organizations at all levels and at all positions both political and regular. It is situated at 80 - 81 Soi Pha Thai-Pha Muang (Khlong Luang 8), Phahon Yothin Road, Khlong Luang District, Pathum Thani. It focuses on personnel development through trainings, with no any other form of personnel development. Municipalities at all levels send their personnel to trainings as many as possible. Municipalities are responsible for the entire training costs by paying registration fees for the trainings.

2.8.1.2 Development of Municipal Personnel by Municipalities

Themselves

In the past, municipalities did not have clear personnel development plans. Later, Department of Local Administration formulated the policy to assign local administrative organizations to formulate the strategic plan of human resource management according to the framework of "Human Resource Management Competency Development" or "HR Scorecard" by taking the format from the Office of the Civil Service Commission which was studied and developed from international

guidelines with appropriate design for Thailand's bureaucratic system. The components of the evaluation of the success of human resource management are divided into 4 parts as follows:

Part 1: Standard for success of human resource management system means results of administration in human resource management which is the ultimate goal that the public sector must achieve in five dimensions.

Part 2: Critical success factors are policies, plans, projects, measures, and other operations on human resource management allowing the public sector to succeed in five dimensions.

Part 3: Measures and Indicators mean factors or indicators of whether or not the public sector implements the policy, plans, projects, and measures on human resource management in accordance with the success standards to achieve the set objectives.

Part 4: Work performance means actual information used as a proof to evaluate whether the public sector implements the policies, plans, projects, and measures on human resource management in line with the success standards.

2.8.2 International Development Systems of Municipal Personnel

2.8.2.1 Development System of Municipal Personnel in England

The overall development system of local personnel in England consists of decentralization to local administration through arranging system in the local areas by establishing a local council. It is a form of committee established to specifically supervise personnel development (Personnel Committee). Therefore, each local council has full independence in determining various conditions based on the defined central standards.

2.8.2.2 Development System of Municipal Personnel in USA

Similar to England, the overall decentralization to local administration in the US consists in personnel administration and personnel development in the local areas. Each local council has complete independence in determining various conditions.

2.8.2.3 Development System of Municipal Personnel in Japan

Each local administration determines the demand of personnel development. The National Personnel Authority (NPA) merely controls and supervises the overall system. Each agency will independently take its own consideration. It will adhere to the central government despite changes in accordance with each area to ensure the same system of standards in the public sector.

2.8.3 Development of Personnel Responsible for Environment in Municipalities by Local Personnel Development Institution

For the development of personnel responsible for environment in municipalities, there is yet no agency in Department of Local Administration which deals specifically with environment. There are only overall trainings provided by Local Personnel Development Institution. The courses are organized specifically on environment (Local Personnel Development Institution, 2011) as follows:

2.8.3.1 Courses for Public Health Executives

1) Objectives of the trainings

(1) Development of competency in public administration and management based on good governance, morals and ethics, awareness in performing official duties for common benefit and happiness.

(2) Focus on enabling the trainees to transfer and apply knowledge, understanding, skill, and experience derived from the trainings to public administration in order to respond to local people's needs with efficiency and effectiveness.

(3) Trainees have the opportunity to exchange academic knowledge and experience useful for further coordination.

2) Scope of the content of the courses

(1) Seminar on planning and formulation of public health policy of local administrative organizations.

(2) Guideline of disease control and communicable disease surveillance in communities.

(3) Livestock management.

(4) Guideline of hazardous waste and air pollution mana-gement.

(5) Seminar on the role of community public health and the drive of society.

(6) Management measures in time of crisis.

(7) Seminar on the guideline to prevent and suppress drugs of local administrative organizations.

(8) Seminar on the guideline to evaluate environmental impact related to community.

(9) Management of local environmental health and occupa-tional health.

(10) Sanitation facilities.

(11) Seminar on campaign for public health and promotion of community health.

(12) Seminar on the guideline of public health management of local administrative organizations according to the transfer mission.

(13) Seminar on the guideline to take care of overall community health.

(14) Study tours of successful public and private agencies.

2.8.3.2 Courses for Assistant Community Public Health Officers/

Community Public Health Officers

1) Objectives of the trainings

(1) Provide the opportunity for trainees to acquire basic knowledge in their responsible positions for efficiency and effectiveness.

(2) Provide the opportunity for trainees to acquire vision in decision-making to solve people's problems.

(3) Ability of effective resource management.

(4) Ability to respond to needs and solve people's diverse problems with timeliness, transparency, and fairness.

(5) Ability to analyze experience derived from training to find strengths, weaknesses of the organization and to modify into result-based strategy.

(6) Opportunity for trainees to acquire morals and ethics in their conduct, and at work to mainly benefit their organizations and general public.

(7) Ability to apply knowledge to work with efficiency and effectiveness.

2) Scope of the content of the courses:

(1) Learning of the King's legacy and Sufficiency Economy Philosophy.

(2) Roles and mission of local administrative organizations according to decentralization laws.

(3) Structure, authorities, duties of local administrative organizations as established by law.

(4) Democracy with the King as the head of state and awareness of nationhood.

(5) Morals and ethics of good governance.

(6) Principles and practical guideline based on the laws on administration and liability for wrongful act of officials.

(7) Knowledge on Official Information Act.

(8) Welfare and other benefits.

(9) Personnel management and disciplinary actions of local administrative organizations.

(10) Principles and practical guideline based on public health laws.

(11) Principles and practical guideline based on the Act on the Maintenance of the Cleanliness and Orderliness of the Country.

(12) Environmental laws and natural resource and environmental management.

(13) Guideline of public health management of local administrative organizations based on transfer mission.

(14) Livestock management.

(15) Sanitation facilities.

(16) Health promotion to communities.

(17) Community primary healthcare.

(18) Role of community public health and local social pro-
blems.

(19) Solid waste planning and management.

(20) Planning, follow-up, and supervision of public health
work.

(21) Personnel management of local administrative organi-
zations.

(22) Development of teamwork and good human relation at
work.

(23) Readiness to move towards AEC.

(24) Computer and Information Technology.

(25) Personality and socializing skill.

(26) Arts of rhetoric and presentation.

(27) Seminars on problems of performing work.

(28) Knowledge on management and preservation of natural
resources and environment.

(29) The Royal Project Foundation.

(30) Production, management, and marketing of OTOP.

(31) Promotion and development of tourist destinations.

(32) Solid waste disposal.

(33) Study of history and local culture.

(34) Development of communities and livable cities.

(35) Prevention and solution of problems of drugs/mafia.

(36) Management of successful private sector such as
Advanced Info Services Public Company Limited, Siam Cement Group, Charoen
Pokphand Group, etc.

(37) Study tours of successful public and private organi-
zations.

2.8.3.3 Courses for Assistant Sanitation Officers/Sanitation Officers

1) Objectives of the trainings:

(1) Provide the opportunity for trainees to acquire basic knowledge in order to efficiently and effectively perform their work.

(2) Provide the opportunity for trainees to acquire vision in decision-making to solve people's problems.

(3) Ability of effective resource management.

(4) Ability to respond to needs and solve people's diverse problems with timeliness, transparency, and fairness.

(5) Ability to analyze the experience derived from the trainings to find the strengths and weaknesses of work and organization and adapt them into result-based strategy.

(6) Provide the opportunity for trainees to acquire morals and ethics for their conduct and at work to mainly benefit organization and people.

(7) Ability to apply the knowledge to work with efficiency and effectiveness.

2) Scope of the content of the courses

(1) Learning of the King's legacy and Sufficiency Economy Philosophy.

(2) Roles and mission of local administrative organizations according to decentralization laws.

(3) Structure, authority, and duty of local administrative organizations as stipulated by law.

(4) Democracy with the King as the head of state and awareness of nationhood.

(5) Morals and ethics in relation to good governance.

(6) Principles and practical guideline based on the laws on administration and liability for wrongful act of officials.

(7) Knowledge on Official Information Act.

(8) Welfare and other benefits.

(9) Personnel management and disciplinary actions of local administrative organizations.

(10) Principles and practical guideline based on public health laws.

(11) Principles and practical guideline based on the Act on the Maintenance of the Cleanliness and Orderliness of the Country.

(12) Environmental laws and natural resource and environmental management.

(13) Livestock management.

(14) Sanitation facilities.

(15) Promotion of community's health.

(16) Community primary health care.

(17) Situations on environment, waste, pollution, wastewater and policy on management of waste, pollution, and wastewater.

(18) Roles and duties of local administrative organizations and relevant laws on management of environment, waste, pollution, and wastewater.

(19) Simple design of wastewater treatment system.

(20) People's participation in management of environment, waste, and pollution.

(21) Environmental quality management planning.

(22) Seminars on supply management for transparency and efficiency with the observations of the Office of the Auditor General of Thailand.

(23) Readiness towards AEC.

(24) Computer and Information Technology.

(25) Socializing personalities, arts of rhetoric, and technics of presentation.

(26) Development of teamwork and good human relation at work.

(27) Seminar on the problems of operation in local areas.

(28) Study tours of successful public and private organizations.

2.9   Relevant Research Findings

Based on the review of research works relevant to human resource development, the researchers on the subject included the following:

Kulchalee Puangpejara (2007) studied the strategies of human resource development in the insurance business in Thailand: case study of training with the following findings 1) Discrete variables influenced the policy of human resource development of insurance companies. 2) Discrete variables influenced the support of top executives of insurance companies. 3) Discrete variables influenced the budget for human resource development of insurance companies. 4) Variables of ownership, policy on human resource development, support of top executives, and budget for human resource development influenced the strategies of human resource development of insurance companies. 5) Results of the in-depth interviews with executives revealed that employees lacked motivation of training and refused novelty, companies experienced brain drain problems, management system did not facilitate development, and discontinuity of development, leading to ineffective human resource development of insurance companies.

Anuwat Krasung (2017, pp. 99-108) studied the human resource development in organization based on Buddhism under the consumerism trend namely 1) Human resource development on policy formulation. (1) For human resource development on policy formulation, it was found that human resource development in organization needed formulation of development policy or plan and various activity projects to supplement the system of teaching and training for more effectiveness. (2) For human resource development on providing opportunities, it was found that the youth did not receive coordination, cooperation, or correct opportunities. They were influenced by their environment to indulge themselves in the four basic human needs. (3) For human resource development on creating of value, it was found that exchange of experiences would entail learning from experience. 2) Child learning procedures started to change from the past. Media had become a new source of learning sources that could motivate recognition and greatly attract attention of children and the youth. Advanced technology created numerous new media especially internet with big data, stories of

interest to curious children, and opportunity provided to children to search freely. At the same time, traditional and easily accessible media including television, radio, newspapers, and magazines was developed in terms of interesting presentation with the objective of increased commercialization. And 3) Human resource development in organization based on Buddhism to solve the youth's consumerism problems, family institutions and society must change the standards of upbringing or establish the environment that would facilitate the correct and appropriate development of the youth's intelligence, and training organized to polish the youth with learning and understanding of the value of culture with the threefold principles namely. 1) Training: such as behavioral practice and development. 2) Education: such as spiritual practice and development. And 3) Development: such as development of intellect and moral principles. Creation of immunity was encouraged against consumerism trend such as wisdom based on noble truth focusing on the problems that need to be considered. It was also the causal concept by tracing the effect back to the cause and then solving the problems from the origin in order to solve all the problems. The processes consisted of three dimensions of common development namely as behavior, spirituality, and intellect which were interrelated in the development processes of an organization.

Somchai Sunprasert (2009) studied the strategies of human resource development of Tourist Police Division, Royal Thai Police. The study findings revealed the following: 1) Overall situations of human resource development of Tourist Police Division and in each dimension were at fair level. 2) Analysis of the necessities of the strategies of human resource development of Tourist Police Division. The reason was that some tourist police officers still could not perform work with effectiveness due to their lack of knowledge and understanding of work operation. 3) Strategies of human resource development of Tourist Police Division consisted of six strategic issues namely. (1) Support and opportunity provided for tourist police officers to assume role and participate in the development. (2) Develop the evaluation system of the development of tourist police officers for efficiency and concrete effectiveness. (3) Develop the motivation system to retain efficient personnel. (4) Develop network and promote cooperation between public and private sectors both in and outside the country in academic exchange and assistance to

develop tourist police officers. (5) Create the atmosphere of internal knowledge management. and (6) Develop the tourist police officers based on the expectations of Tourist Police Division.

Nawasanan Wongprasit (2014, pp. 2-12) studied the model of human resource development in private hospitals in Thailand. The study findings revealed that there were four processes in human resource development namely 1) Search of the necessity for human resource development. 2) Planning of human resource development. 3) Methods of human resource development. and 4) Evaluation of human resource development. The effective method of human resource development consisted of leadership as a Role Model. The problems and obstacles included lack of performance system, lack of correct principles of human resource development, inability to concretely measure human resource development, and inability to determine the relation between efficiency of training and performance results of the hospitals.

Moreover, according to the review of research related to human resource development of local administrative organizations, the researchers who conducted the study were as follows:

Pochana Wannasewee (2003) studied the demand of personnel development of officials in Tak Provincial Administrative Organization. The study of the overall demand level of development revealed that overall, the officials highly wanted the development in all dimensions. In considering each dimension, it was found that the demand of the development of Information Technology constituted the highest demand, followed by knowledge and skills specific to each position, general knowledge in performing work, English, management, personal qualifications, morals and ethics. The activity with the least demand was recreation. This might be because the current world was the age of information. The technological development was necessary in a modern organization. It was therefore necessary to develop technology as the first priority rather than knowledge and skills specific to each position as it was routine work based on the operation that was already developed at a certain level. Recreation constituted the least priority of demand due to relaxation activity from work without affecting career advancement. The comparison of the demand of

development with differences in gender, age, work experience, education, and type of work showed that there was no difference in the development needs.

Marut Lerknok (2017)) studied the guideline of human resource development of subdistrict administrative organization in Borabue district, Maha Sarakham, related to human resource development and found that assignment of employees to attend training courses lacked follow-up evaluation, resulting in employees' not developing knowledge and ability to a higher level. Moreover, there was no training or orientation before appointment of new personnel. There was no survey of personnel in the decision-making to participate in training. Moreover, some personnel did not perform the kind of work that was in accordance with their position. They lacked specific skills and knowledge. They also lacked real-life experience as well as tact to solve problems.

Jirawan Sangtanchai (2018) studied the guideline to develop personnel in local administrative organizations towards excellence with the case study of Loei Provincial Administrative Organization. The analysis of the situation of personnel development in Loei Provincial Administrative Organization revealed that it still lacked participation in management, opportunity for personnel to show leadership at work, use of English for personnel, as well as insufficient budget for personnel development, and irregular improvement of office equipment. Therefore, participation development plan should be formulated to create vision of leadership for personnel, modification towards more horizontal management, development of two language communication, project for personnel to foster power in themselves in order to use their potentials in operation and develop systematic working process.

Therdsak Buason (2019) studied the model of human resource development of employees in subdistrict municipality in Roi Et and found the following: 1) Factors impacting the human resource development of employees in sub district municipality in Roi Et with the statistical significance at the level of 0.05 included factor of management and factor of participation. 2) Model of human resource development of employees in sub district municipality in Roi Et consisted of the following: 1) Training to encourage every employee to have the feeling of organization ownership. 2) Training on the strategies to perform work in accordance with the human resource development plan within organization. 3) Training on the

participation in the planning of the human resource development within organization. 4) Training on the participation of activities related to personnel development in organization. and 5) Training on the benefit of the development through promotion or salary increase.

The concepts, theories, and research works related to the study of the model of the development of personnel responsible for environment in municipalities in Thailand led to the methodology in Chapter 3 to study the current methods of developing personnel responsible for environment in municipalities, the evaluation of competency of personnel responsible for environment according to the KAP theory, the study of the policy to develop personnel responsible for environment in Thailand, and the study of the policy and the development system of personnel responsible for environment in municipalities based on the research conceptual framework.

CHAPTER 3

METHODOLOGY

The study of the model of the development of personnel responsible for environment in municipalities in Thailand used Mixed Methods Research and Embedded Design by determining qualitative research as the primary method and quantitative research as the secondary method. The methodology consisted of the following topics:

1) Research conceptual framework
2) Population, sample, and key informants
3) Tools used to collect data
4) Methods to collect data
5) Quality inspection of research tools
6) Data analysis

3.1   Research Conceptual Framework

The study of the model of the development of personnel responsible for environment in municipalities in Thailand started with the study of the current methods to develop personnel responsible for environment in municipalities in order to learn the guideline, process, procedure, and methods to develop personnel under the framework of human resource development based on the three theories of Hammer and Champy (1994, as cited inPongsa Boonchaivatanachot, 2014, p. 159). The theories consisted of Economic Theory, Systems Theory, and Psychological Theory which were in accordance with the theory of adult learning of Knowles (1954, as cited in Office of the Non-Formal and Informal Education in the North, 2018). The concept of competency development of human resource management in

the public sector was used with the HR Scorecard as the tool of personnel development through the interviews with the key informants of Department of Local Administration, Ministry of Interior, and municipalities at all levels bestowed with environmental management awards at the national level. The study was conducted as to whether or not the municipalities currently used procedures and methods to develop personnel responsible for environment, and if there were results of the development in accordance with the personnel development principles. The Systems Theory was used as the guideline for interviews to acquire the ultimate results of the current personnel development. The interviews were based on Input, Process, and Result of personnel development consisting of Output, Outcome, and Ultimate Outcome.

Afterwards, the competency evaluation was conducted on the personnel responsible for environment. It consisted of knowledge, attitude, and practice based on the KAP theory with the methods currently used in municipalities at all levels in all regions in Thailand in order to know the systematic gap derived from the Gap Analysis of the development of personnel responsible for environment. The questionnaire was used for competency evaluation of the sample of population which were municipalities around Thailand, using the Probability Sampling, through Multi - stage Sampling, study of the methods to develop personnel responsible for environment in municipalities, and competency evaluation of personnel responsible for environment with current methods of the municipalities at all levels and in all regions in Thailand.

The study of the methods to develop personnel responsible for environment in municipalities and competency evaluation of personnel responsible for environment developed with the current methods led to Expected Learning Outcomes through interviews with key informants on the policy of the development of personnel responsible for environment. It was in response to the national environmental management of Office of Permanent Secretary for Natural Resources and Environment. It was based on the Rational Model of the theory of public policy focusing on the best interest of society, the policy of municipal environmental management, and the development system of personnel responsible for environment in municipalities at all levels and in all regions in Thailand. It was also based on the

concept of the development of competency of human resource management in the public sector using HR Scorecard as a tool.

Finally, all data would be analyzed based on academic principles by constructing the conclusion to answer the research problems and analyzing data through Content Analysis for qualitative data and SPSS computer program for quantitative data in order to determine the model of development of personnel responsible for environment in municipalities in Thailand under the inspection of experts based on the research conceptual framework of the model of the development of personnel responsible for environment in municipalities in Thailand as shown in Figure 3.1.

Figure 3.1 Research Conceptual Framework

3.2 Population, Sample, and Key Informants

3.2.1 Population and Sample

Population meant personnel responsible for environment in municipalities at all levels in Thailand consisting of subdistrict municipality, town municipality, and city municipality divided according to the criteria of Department of Local Administration, Ministry of Interior.

Sample meant personnel responsible for environment in municipalities through the researcher's selection or random sampling in order to study the entire population, the sample of municipalities were divided into three groups namely subdistrict municipality, town municipality, and city municipality.

3.2.2 Key Informants

The key informants included 34 persons with the important role of development of personnel responsible for environment from three agencies related to the development of personnel responsible for environment in municipalities as follows:

3.2.2.1 Municipality

Municipality consisted of those related to development of environmental personnel both at executive and operating levels as follows: Executive level namely one Mayor, or Vice mayor responsible for public health and environment division, or Municipal clerk; Operating level namely one Director of public health and environment division, or Chief responsible for environment in municipality, or person responsible for personnel development in municipality.

There were 15 municipalities selected at all levels and from all regions in Thailand. The 30 key informants of municipalities were divided into two parts. Firstly, there were 12 municipalities with 24 key informants selected from municipalities nationwide that had passed the evaluation procedures of environmentally sustainable cities at the area level with the excellent evaluation results in 2018 and 2019 of Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment, with the Permanent Secretary for

Natural Resources and Environment as the Chairman of the Steering Committee of Evaluation of Environmentally Sustainable Cities with the Sub-steering Committee of Evaluation of Environmentally Sustainable Cities at the area level with the coordination of 16 Regional Environment Offices across the country. The evaluation criteria of environmentally sustainable cities were divided into three types namely Excellent, Very good, and Good. Municipalities at all levels from the four regions were selected based on the evaluation results of the environmentally sustainable cities at the area level as shown in detail in Table 3.1.

Table 3.1 List of Municipalities Selected to Provide Key Information

Regions	Municipalities	Types of Evaluation Result
North	1. Lampang City Municipality	Excellent, 2018
	2. Lamphun Town Municipality	Excellent, 2018
	3. Nam Phrae Pattana Subdistrict Municipality, Chiang Mai	Excellent, 2019
Northeast	1. Ubon Ratchathani City Municipality	Excellent, 2018 Excellent, 2018
	2. Yasothon Town Municipality	Excellent, 2018
	3. Som Poi Subdistrict Municipality, Si Sa Ket	
Central plains	1. Nonthaburi City Municipality	Excellent, 2019
	2. Raikhing Town Municipality	Excellent, 2018
	3. Hua Wiang Subdistrict Municipality, Ayutthaya	Excellent, 2018
South	1. Songkhla City Municipality	Excellent, 2019
	2. Satun Town Municipality	Excellent, 2019
	3. Na Ta Luang Subdistrict Municipality, Trang	Excellent, 2019

Secondly, there were three municipalities with six key informants. They were the municipalities without the evaluation results of environmentally sustainable cities at the area level with the excellence level in 2018 and 2019. They consisted of municipalities of the three levels namely Samut Sakhon City Municipality, Amnat Charoen Town Municipality, and Na Thom Subdistrict Municipality, Phatthalung.

3.2.2.2 Department of Local Administration, Ministry of Interior

It included two informants including Director, Local Personnel Development Institution, or representative, and Director, Local Personnel System Development Division, or representative

3.2.2.3 Office of the Permanent Secretary for Natural Resources and Environment

It included two informants including Permanent Secretary for Natural Resources and Environment, or representative, and Director, DEQP Smart Training, or representative.

3.2.3 Sample Size

The sample size was used to collect quantitative data to evaluate the competency of personnel responsible for environment in municipalities. Due to the clear data of the sample number to find the sample size, the Taro Yamane formula (1976, as cited in Wisakha Poochinda, 2015, p. 99) was used and conducted as follows:

$$n = \frac{N}{1+Ne^2}$$

n = Number of samples

N = Number of populations

E = Deviation

The sample size was calculated from the number of population which included 2,442 municipalities at all levels nationwide as per the information on 24 June 2019 of Local Legal Affairs Division, Department of Local Administration (Department of Local Administration, 2019).

The calculation of the sample by using the Taro Yamane formula at the deviation of 0.05 yielded the number of samples as follows:

$$n = \frac{2442}{1+2442(0.05)^2}$$
$$= 343.70$$
$$= 344$$

The total number of sample or 344 municipalities when compared to the percentage of municipalities at each level yielded the number of samples classified by the levels of municipality as in Table 3.2.

Table 3.2 Number of the Sample Classified by the Levels of Municipality Compared with the Percentage of the Municipalities at All Levels

Levels of Municipality	Total Number (No of Municipalities)	Compared as Percentage (%)	Number of Samples (No of Municipalities)
Subdistrict municipality	2,24	91.4	315
Town municipality	179	7.30	25
City municipality	30	1.23	4
Total	2,45	100	344

3.2.4 Methods of Sampling

The selection of the sample based on Probability Sampling using the Multi - stage Sampling was conducted with the following processes:

Process 1: Divide the entire number of municipalities into regions in Thailand based on the classification of regions of Department of Provincial Administration, Ministry of Interior, namely north, northeast, central plains, and south.

Based on the information of Department of Local Administration as per 24 June 2019, each region had the number of municipalities classified by municipalities at different levels and compared in percentage of each region as in Table 3.3.

Table 3.3 Number of Municipalities and Comparison as Percentage of the Classification at Each Level and in Each Region

Levels of Municipality	North	Northeast	Central Plains	South	Total
Subdistrict municipality	531	847	552	303	2,233
	(23.8%)	(37.9%)	(24.7%)	(13.6%)	(100%)
Town municipality	28	40	75	36	179
	(15.6%)	(22.4%)	(41.9%)	(20.1%)	(100%)
City municipality	5	5	12	8	30
	(16.7%)	(16.7%)	(40.0%)	(26.7%)	(100%)
Total number of municipalities at each level and in each region					2,442

Process 2: Determine the number of samples of each level of municipalities nationwide from Table 3.3 as Quota Sampling of each region by comparing in percentage of each region and determine the number of sample of municipalities at each level in each region as quota by using the calculation formula as follows:

$$n = \frac{N \times B}{100}$$

When   n   = Number of the sample of municipalities at each level
and in each region.

N   = Percentage of population of municipalities at each
level and in each region.

B   = Number of the sample of municipalities at each level
Nationwide.

100   = 100% of the population of municipalities at each
level nationwide.

From the calculation formula, the sample replacing the calculation formula of municipalities at the subdistrict level in the north was as follows:

Number of the sample of municipalities at the subdistrict level in the north

$$(n) = \frac{23.78 \times 315}{100}$$
$$= 74.9 \ (75.0)$$

The calculation of the sample of municipalities at each level in each region yielded the details of sample as in Table 3.4.

Table 3.4 Percentage of the Sample and Number of the Sample of Municipalities at Each Level and in Each Region

Levels of Municipality	No of Sample Nationwide (No of Municipalities)	North (No of Municipalities)	Northeast (No of Municipalities)	Central Plains (No of Municipalities)	South (No of Municipalities)
Subdistrict municipality	315	74.91 (75)	119.48 (119)	77.87 (78)	42.75 (43)
Town municipality	25	3.93 (4)	5.62 (6)	10.39 (10)	5.06 (5)
City municipality	5	0.67 (1)	0.67 (1)	1.60 (2)*	1.06 (1)

Note: *In the case of city municipalities in the central plains, the calculation was at 1.60. The calculation principle must determine the number of two places. But the calculation to find the number of the sample using the Taro Yamane formula of municipalities nationwide yielded only four municipalities as the number of the sample. As this study wanted to acquire the sample that was a good representation of the population, the researcher added two municipalities as the sample of city municipalities in the central plains, totaling 345 municipalities as sample, by increasing from the calculation using the Taro Yamane formula with one more municipality.

Process 3: Conduct the Simple Random Sampling of the number of the sample of municipalities at each level through the Lottery Method, by choosing the municipalities from the list of the municipalities at each level in each region according to the number of the sample of each region.

3.3 Tools Used to Collect Data

3.3.1 Documentary Research

The researcher compiled data both from Primary Data and Secondary Data such as books, journals, articles, dissertations, reports, research works, minutes of meetings, and printed matters related to the development of personnel responsible for environment in municipalities in Thailand.

3.3.2 In-Depth Interviews

The researcher used the in-depth interviews as a tool to collect information from key informants by using unofficial Face to Face interviews. The researcher prepared in advance the interview questions for flexibility and continuity of questions, as well as for in-depth and smooth interviews. The researcher also prepared in advance general questions for positioning and interview issues with open-ended questions, without determining or ranking the question topics, but with natural conversation and without awkwardness for the interviewed persons. The research conceptual framework required four types of in-depth interviews as follows:

3.3.2.1 In-Depth Interviews to Study the Current Methods to Develop Personnel Responsible for Environment in Municipalities with the Interview Issues as Follows:

1) Types of widely developed personnel responsible for environment in Thailand.

2) Processes and methods of the overall development of personnel responsible for environment in municipalities in Thailand.

3) Results of the overall development of personnel responsible for environment in municipalities in Thailand.

4) Continuity of the overall development of personnel responsible for environment in municipalities in Thailand.

5) Recommendations on the overall development of personnel responsible for environment in Thailand.

3.3.2.2 In-Depth Interviews to Study the Policy of Development of
Personnel Responsible for Environment in Thailand with the
Following Interview Issues:

1) Needs or problems of the overall development of personnel responsible for environment in municipalities in Thailand.

2) Determination of the guideline and the decision-making of the guideline of the overall development of personnel responsible for environment in municipalities in Thailand.

3) Concrete and overall implementation of the guideline to deve-lop personnel responsible for environment in municipalities in Thailand.

4) Evaluation of the overall development of personnel responsible for environment in municipalities in Thailand.

5) Continuity in the overall development of personnel responsible for environment in municipalities in Thailand.

6) Recommendations on the overall development of personnel responsible for environment in municipalities in Thailand.

3.3.2.3 In-Depth Interviews to Study the Policy on Environmental
Management and Development System of Personnel
Responsible for Environment in Municipalities for
Executives with the Following Interview Issues:

1) Policy on environmental management of municipal administrators.

2) Compliance of the personnel development on environmental management with the strategies of municipalities.

3) Personnel development on environmental management in response to the needs of municipalities.

4) Efficiency of the development system of personnel responsible for environment in municipalities.

5) Effectiveness of the development of personnel responsible for environment in municipalities.

6) Recommendations on the development of personnel responsible for environment in municipalities.

3.3.2.4 In-Depth Interviews to Study the Development System of Personnel Responsible for Environmental Management in Municipalities for Operating Personnel with the Following Interview Issues:

1) Compliance of the personnel development on environmental management with the strategies of municipalities.

2) Personnel development on environmental management in response to the needs of municipalities.

3) Efficiency of the development system of personnel responsible for environmental management in municipalities.

4) Effectiveness of the development of personnel responsible for environmental management in municipalities.

5) Recommendations on the development of personnel responsible for environment in municipalities.

3.3.3 Questionnaire to Evaluate the Competency of Personnel Responsible for Environment Who Attended the Activities on the Development of Personnel Responsible for Environment

The evaluation was for the competency in three dimensions namely knowledge, attitude, and practice by using the questionnaire as a tool to collect data from personnel responsible for environment in municipalities. The questionnaire for the competency evaluation was constructed by adhering to the KAP (Knowledge, Attitude, Practice) theory related to environment.

The questionnaire to evaluate the competency of those who attended the activities on the development of personnel responsible for environment consisted of five parts as follows:

Part 1: Six questions on the background of the sample with close-ended questions consisting of three questions on demography namely gender, age, and education, and two questions on working experience namely position and period of employment.

Part 2: Evaluation of the knowledge on environmental management in municipalities with 20 questions. The questions had two choices namely correct and incorrect. Correct answer received one score while incorrect answer received 0 score. The total highest score was 20 and the lowest score was 0. The results of the scores from the determined criteria were translated by dividing the scores into three levels with the score criteria to rank the levels of knowledge into the following: High: higher than 80.0% or 16-20 scores, Fair: 60.0 - 79.0% or 6 - 15 scores, and Low: lower than 60.0% or 0 - 5 scores.

Part 3: Evaluation of the attitude on environmental management in municipalities with ten questions applying the Likert Scale (Suchart Prasitratsit, 2003, pp. 214-218) into four levels of scores namely Highly agree, Agree, Disagree, Highly disagree. The messages used to measure were positive and negative meanings with the total highest scores of 40 and the lowest scores of 10. The results of the scores were translated based on the determined criteria by dividing the scores into three levels with the criteria scores to rank the attitude as follows: High level: over 80.0% or 32 - 40 scores, Fair level: 60.0 - 79.0% or 24 - 31 scores, and Low level: lower than 60.0% or 0 - 23 scores.

Part 4: Evaluation of the practice of environmental management in municipalities with ten questions. The types of answers were the scale of seven levels of scores divided into the following: Yes every time, Yes many times, Yes but not many times, Yes, Yes but not very often, Yes but very little, and Never, with the total highest scores of 70 and the lowest scores of 10. The results of the scores were translated based on the determined criteria by dividing the scores into three levels with the criteria scores to rank the behavior of practice as follows: High level: higher

than 80.0% or 5 6 - 70 scores, Fair level: 60.0 - 79.0% or 4 2 - 55 scores, and Low level: lower than 60.0% or 0 - 41 scores.

Part 5: Comments on the development of personnel responsible for environment in municipalities with open-ended questions where the respondents could answer the questions freely.

3.4 Methods to Collect Data

The researcher divided the methods to collect data into two parts namely Literature Review and Field Data with the following details:

3.4.1 Literature Review

The researcher studied relevant documents, articles, and research works to determine the scope of the research and construct the research tools to cover the objectives of the research.

3.4.2 Field Data

3.4.2.1 Collection of Quantitative Data

The researcher collected data from the sample using the questionnaire to evaluate the competency of personnel responsible for environment in municipalities from the personnel responsible for environment who had already attended the activities of the personnel development in municipalities by any methods as sampling unit.

3.4.2.2 Collection of Qualitative Data

The researcher collected data from key informants through in-depth interviews with relevant executives and employees on the development of personnel responsible for environment of Department of Local Administration, Office of the Permanent Secretary for Natural Resources and Environment, and municipalities as sampling unit.

3.5   Quality Inspection of Research Tools

3.5.1 Quality Inspection of Quantitative Tools

After designing the tools which were used to collect data, the following processes must be conducted before actual use.

3.5.1.1 Validity Testing

The questionnaire was sent to five experts consisting of experts on environmental management and human resource development as follows:

1) Asst. Prof. Acting Sub Lt. Dr. Ekkasit Sanamthong, Vice Dean, Academics and Research, and Director, Graduate Studies, Faculty of Human Resource Development, Ramkhamhaeng University.

2) Dr. Amnat Wadjinda, Lecturer and Advisor on Human Resource Development, Managing Director of HRDMag Co., Ltd.

3) Dr. Sureerak Wongtip, Vice Dean, Public Relations and Student Affairs, and Lecturer, Program of Information Sciences for Communication, Faculty of Business Administration, Mahanakorn University of Technology.

4) Acting Maj. Dr. Tananchai Sunoppakhunsri, Manager, Mega Plaza Saphan Lek, Ph.D. in Environmental Management.

5) Pol. Maj. Dr. Noppawan Panya, Lecturer, (Level Sor Bor 2), Faculty of Social Science, Royal Police Cadet Academy.

The experts conducted the analysis of each question to consider the appropriateness of the Content and Construct Validity and evaluate the Index of Congruence (IOC) with the following calculation formula:

$$\textbf{IOC} = \sum \frac{R}{N}$$

When   IOC   means   Index of Item-Objective Congruence

R   means   the scores of the experts

N   means   the number of the experts

The evaluation criteria of the Index of Item-Objective Congruence (IOC) of the experts were as follows:

Score equals +1	means	Certain of correctness and in congruence with the objectives.
Score equals 0	means	Not certain with the congruence.
Score equals -1	means	Do not correct, incongruent, not relevant with the objectives.

In translating the results, the researcher selected the question with the IOC of over 0.500 which meant that the question was relevant to the context and could be used as the question for this research. For the question with additional comments from experts, the researcher used the comments and recommendations of the experts to improve and complete the questionnaire.

3.5.1.2 Reliability Testing

Trying out of the questionnaire with 30 employees attached to public health and environment divisions in the municipalities without random sampling for further operation as follows:

1) Find the Reliability of the questionnaire related to knowledge

The computer program software package was used to find the Mean and the Corrected Item-total Correlation of the tested sample, select the questions with the Mean between 0.200 - 0.800 and the Corrected Item - total Correlation from 0.200 upwards. Then, the Internal Consistency was sought by using the Kuder-Richardson Formula 20 (KR 20) (as cited in Boontham Kijpreedaborisut, 2010a, p. 146) as follows:

$$r_{tt} = \frac{k}{k-1}\frac{[1-\sum pq]}{S_x{}^2}$$

When r_{tt} means   Reliability Coefficient.

k   means   Number of questions in the questionnaire.

p   means   Share of those who gave correct answers for each question.

q   means   Share of those who gave incorrect answers for each question (q = 1-p).

$S_x{}^2$ means   Standard Deviation of the total scores.

2) Find the Reliability of the questionnaire related to attitude and practice.

The computer program software package was used to find the Mean and the Corrected Item-total Correlation of the tested sample to select the questions with the Corrected Item - total Correlation of over 0.200 upward, and find the Internal Consistency by using the Cronbach's Coefficient Alpha (as cited in Boontham Kijpreedaborisut, 2010b, p. 147) as follows:

$$r_{tt} = \frac{k}{k-1}\left[1 - \frac{\sum S_i{}^2}{S_t{}^2}\right]$$

When r_{tt} means   Reliability Coefficient.

k   means   Number of questions in the questionnaire.

$S_i{}^2$ means   Deviation of the score of each question.

$S_t{}^2$ means   Deviation of the total scores.

3.5.2 Quality Inspection of Qualitative Tools

The inspection of the Reliability of the interviews was conducted by translating the results of the interviews from the interviewed persons into the acquired scores and then distributed into the 2 way table between the interviewer and the interviewed persons, and then Variance Analysis was conducted and the Reliability of Hoyt's Analysis of Variance was conducted from Hoyt's formula (1941, as cited in Boontham Kijpreedaborisut, 2010a, p. 75) as follows:

$$r_{tt} \;=\; 1 - \frac{MS_e}{MS_P}$$

When r_{tt} means   Reliability coefficient

                MS_e means   Variance between errors

                MS_p means   Variance between samples

3.6 Data Analysis

The data analysis in this research consisted of quantitative data analysis and qualitative data analysis.

3.6.1 Quantitative Data Analysis

The SPSS was used to analyze the data consisting of figures and descriptions by using Descriptive Statistics and Inferential Statistics. As for the competency evaluation of personnel responsible for environmental management, the questionnaire to evaluate the competency of personnel responsible for environment in municipalities was used for data analysis as follows:

      1) Part 1 conducted Frequency Distribution found the number, Percentage, and answered each question.

      2) Parts 2, 3, 4 added up the scores, found the Mean, Percentage, Standard Deviation, and Coefficient of Variation.

3) Scores were given for Part 2: Evaluate the knowledge on environmental management in municipalities. The scores were translated, based on the determined criteria. The answers were divided into two choices namely correct and incorrect, correct with the score of 1 and incorrect with the score of 0.

4) Scores were given for Part 3: Evaluate the attitude on environmental management in municipalities by translation of the scores based on the criteria as follows: (Boontham Kijpreedaborisut, 2008, p. 324).

	Positive message	Negative message
Highly agree	4	1
Agree	3	2
Disagree	2	3
Highly disagree	1	4

5) Scores were given for Part 4: Evaluate the practice of environmental management in municipalities. The scores were translated, based on the determined criteria, as follows: Yes every time = 7, Yes many times = 6, Yes but not very often = 5, Yes = 4, Yes but not often = 3, Yes but very little = 2, and Never = 1

6) Divide the total scores of Parts 2, 3, 4 into 3 levels by using the criteria based on the guideline of Benjamin (Bloom, 1970 as cited in Boontham Kijpreedaborisut, 2010b, p. 208) namely High, Fair, and Low levels.

3.6.2 Qualitative Data Analysis

The qualitative data that was collected from interviews was concluded to answer the research questions and analyzed data through Content Analysis from Document Research. The focus was on the conclusions of the policy of environmental management of municipal administrators and the development system of personnel responsible for environment in municipalities that affected the model of the development of personnel responsible for environment in municipalities. This is due to the municipality's policy and human resource development system. It is a context that affects the success of human resource development, compliant with the Human Resource Management System (HR Scorecard) of the Department of Local

Administration, that used as a tool for assessing the success of human resource management of the local government.

CHAPTER 4

STUDY RESULTS

The study results of the model of the development of personnel responsible for environment in municipalities in Thailand consisted of the collection of qualitative data from relevant documents and the in-depth interviews of 34 key informants, and the collection of quantitative data from 345 personnel responsible for environment in municipalities at all levels in Thailand. The study results were presented as lecture and lecture accompanying tables in the following order:

1) Current development of personnel responsible for environment in municipalities.

2) Evaluation of ability of personnel responsible for environment with current methods.

3) Policy of development of personnel responsible for environment in Thailand.

4) Policy and development system of personnel responsible for environment in municipalities.

4.1 Current Development of Personnel Responsible for Environment in Municipalities

Based on the study of the documents relevant to development of personnel responsible for environment of Local Personnel Development Institution, Department of Local Administration, Ministry of Interior, an agency directly responsible for personnel development of local administration, consisting of Subdistrict Administrative Organization, Subdistrict municipality, Town municipality, City municipality, Provincial Administrative Organization, Bangkok, and Pattaya, the

issues related to the development of personnel responsible for environment in municipalities at all levels revealed the following:

1) Development of personnel responsible for environment in municipalities at all levels. The training focused on 90% of lectures in the training room and 10% of study tours for the duration of the training without other methods of development of local personnel.

2) Local Personnel Development Institution did not offer the training courses specifically on environment, but general courses divided by the types of local personnel. The content relevant to environment was as follows:

(1) Curriculum with little content on environment or approximately 10.0% of the duration of the training such as courses for Administrator of Local Administrative Organizations (Municipal clerk), courses for Public Health Administration Officer (Director of Bureau/Division of Public Health and Environment), courses for Assistant Community Health Care Officer/Community Health Care Officer.

(2) Curriculum with fair content on environment or approximately 40.0 - 60.0% of the duration of the training such as courses for Assistant Sanitation Officer/Sanitation Officer.

(3) Curriculum with no content on environment such as political courses, including Administration and Parliament.

3) Process and methods of development of personnel responsible for environment in municipalities focused on trainings which constituted methods of personnel development in classroom, by assigning 75.0% of personnel to attend the courses of Local Personnel Development Institution, 20.0% of personnel to attend training courses with other agencies such as Department of Health, Ministry of Public Health, Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment who provided knowledge on environment, and municipalities provided trainings for operating personnel at the level of municipal staff as appropriate or approximately 5.00% of the development plan of personnel responsible for environment in municipalities.

The interviews with key informants from Local Personnel Development Institution, Department of Local Administration, Ministry of Interior, revealed the results as in Figure 4.1.

Table 4.1 Interview Results of the Issues on the Current Development of Personnel Responsible for Environment in Municipalities

Interview Issues	Interview Results
1. Types of personnel responsible for environment in municipalities that were overall developed in Thailand.	- Municipal Clerk. - Director, Division/Bureau of Public Health and Environment. - Assistant Community Health Care Officer/Community Health Care Officer. - Assistant Sanitation Officer/Sanitation Officer. - No course offered for operating staff.
2. Overall process and methods of development of personnel responsible for environment in municipalities in Thailand.	- Municipalities at all levels nationwide would send personnel responsible for environment for trainings at Local Personnel Development Institution through registration for courses that were open class by class and costs to be borne by municipalities. - Assignment for personnel to attend trainings according to their responsibilities. - Personnel development by focusing on training in classroom with transfer of knowledge from internal and external lecturers with work experience, and field trips. - Clear criteria of evaluation, evaluation per course, evaluation of lecturers, evaluation of trainees, and evaluation of projects. - Long-term training courses covering 3 – 4 weeks, continuous trainings for the whole courses, divided into section, or subject.

Interview Issues	Interview Results
	- Trainings similarly to boarding school or training camp with overnight stay at the Institution.
3. Results of overall development of personnel responsible for environment in municipalities in Thailand.	- Personnel having met the training criteria would receive certificates from the Institution. - Personnel having attended the training could apply knowledge in real practice.
4. Continuity in overall development of personnel responsible for environment in municipalities in Thailand.	- Municipalities at all levels nationwide could continuously send personnel responsible for environment to trainings all the time.
5. Recommendations of overall development of personnel responsible for environment in municipalities in Thailand.	- Political authorities both the Administration and the Parliament did not have the content on environment. - No direct curriculum on environment but courses related to environment.

4.2 Evaluation of Ability of Personnel Responsible for Environment with Current Methods

The evaluation results of the ability of personnel responsible for environment who attended the personnel development training with the current methods in 315 subdistrict municipalities, 25 town municipalities, and 25 city municipalities, in total 345 municipalities nationwide revealed the following evaluation:

4.2.1 Evaluation Results of the Ability of Personnel Responsible for Environment in Subdistrict Municipalities

Part 1 Background of the Questionnaire Respondents

There were 315 questionnaire respondents, divided into 133 males or 42.2% and 182 females or 57.8%. Most questionnaire respondents or 107 respondents were aged between 40 - 50 years old or 34.0%, followed by 94 respondents aged between 30 - 40 years old or 29.8%, and least of them or 49 respondents aged between 20 - 30 years old or 15.6%. More than half of the questionnaire respondents received B.A. or 190 respondents or 60.3%, followed by 117 respondents who received M.A. or 37.1%, and least respondents or 2 respondents received Ph.D. or 0.600%. Most questionnaire respondents or 132 respondents were in the executive positions or 41.9%, followed by 103 respondents who were in the knowledge worker positions or 32.7%, and least questionnaire respondents or 4 staff or 1.30%. Most questionnaire respondents or 127 respondents had work experience between 1 - 5 years or 40.3%, followed by 116 respondents with work experience of over 10 years or 36.8%, and 12 respondents with least work experience of less than 1 year or 3.80%. The details are in Figure 4.2.

Table 4.2 Number and Percentage of the Background of the Questionnaire
Respondents in Subdistrict Municipalities

Details	Number	Percentage
Gender		
Male	133	42.2
Female	182	57.8
Total	315	100
Age (years)		
20 - 30	49	15.6
30 - 40	94	29.8
40 - 50	107	34.0
50 - 60	65	20.6
Total	315	100
Education		
Lower than B.A.	6	1.90
B.A.	190	60.3
M.A.	117	37.1
Ph.D.	2	0.60
Total	315	100
Position		
Administrators or acting	132	41.9
Officers/registered nurses or equivalent	103	32.7
Operating officers/assistant operating officers/operating staff	76	24.1
Company employees/staff hired by municipalities	4	1.30
Total	315	100
Work experience		
Less than 1 year	12	3.80
1 - 5 years	127	40.3
6 - 10 years	58	18.4
Over 10 years	118	37.5
Total	315	100

Part 2 Knowledge on Environmental Management

The respondents were most knowledgeable in environmental management namely Provision of parks and planting of many roadside trees in municipal areas would help solve municipalities' air pollution problems to a certain extent with the mean of 1.00, followed by Environment meant things that surrounded us, both living and not living, visible and not visible, tangible and not tangible with the mean of 0.990, and the least knowledgeable was In current situations, waste disposal by correct method of incineration would benefit environment the most with the mean of 0.350. The overall knowledge on environmental management was at a high level with the mean of 0.840. The details are in Figure 4.3.

Table 4.3 Number and Mean of the Knowledge on Environmental Management of Subdistrict Municipalities

Knowledge on Environmental Management	Yes	No	Mean
1. Environment meant things that surrounded us, both living and not living, visible and not visible, tangible, and not tangible.	313 (99.4)	2 (0.600)	0.990 (Much)
2. Natural resources came from nature, but environment was both man-made and natural, by which natural resources were part of the environment.	309 (98.1)	6 (1.90)	0.980 (Much)
3.Generally, the causes of environmental problems included increased population, economic growth, technological advancement, and natural disasters from seasonal variabilities.	304 (96.5)	11 (3.50)	0.960 (Much)
4. Environmental management meant systematic and efficient process of the use of environment through planning, follow-up, improvement, and rectification for better development.	305 (96.8)	10 (3.20)	0.970 (Much)
5. Major environmental problems found in municipal areas and nationwide included waste, wastewater, air pollution.	303 (96.2)	12 (3.80)	0.960 (Much)

Knowledge on Environmental Management	Yes	No	Mean
*6. In Thailand, most environmental problems in rural communities outside municipal areas were not different from those in urban communities inside municipal areas.	224 (71.1)	91 (28.9)	0.710 (Much)
7. In the current situations, waste disposal by correct method of incineration would benefit environment the most.	110 (34.9)	205 (65.1)	0.350 (Medium)
8. Household wastes in municipal areas consisted of general waste, recycled waste, and degradable waste.	178 (56.5)	137 (43.5)	0.560 (Medium)
*9. Infectious waste meant waste contaminated with blood, secretion, human parts from hospitals treating. people only.	80 (25.4)	235 (74.6)	0.750 (Much)
*10. Correct waste management and waste separation for appropriate disposal were the responsibilities of municipal waste collectors only.	12 (3.80)	303 (96.2)	0.960 (Much)
*11. Wastewater sources in municipal communities came from discharge of wastewater from washing of clothes, dishes, and food scraps from households, and bathing, with the exclusion of wastewater from establishments such as hotels or government offices.	42 (13.3)	273 (86.7)	0.870 (Much)
12. Wastewater problems in urban communities partly came from the problems of people's littering, both locals and non-locals entering urban communities.	273 (86.7)	42 (13.3)	0.870 (Much)
13. Municipalities' wastewater treatment had many treatment methods that they could choose as appropriate depending on the amount of wastewater, contaminants in wastewater, types of areas, and budget.	301 (95.6)	14 (4.40)	0.960 (Much)
14. Air pollution problems in municipal areas mostly came from traffic congestion, industrial plants, and garbage burning in households.	260 (82.5)	55 (17.5)	0.830 (Much)

Knowledge on Environmental Management	Yes	No	Mean
15. Provision of parks and planting of many roadside trees in municipal areas would help solve municipalities' air pollution problems to a certain extent.	315 (100)	-	1.00 (Much)
16. Municipalities were responsible for solving environmental problems such as waste management, wastewater management, etc. which were legal responsibilities.	301 (95.6)	14 (4.40)	0.960 (Much)
*17. In working to solve environmental problems, operation must be undertaken dimension after dimension and not all dimensions at the same time.	64 (20.3)	251 (79.7)	0.800 (Much)
*18. People could not sue if waste collectors did not follow orders or ignored their assigned duties.	41 (13.0)	274 (87.0)	0.870 (Much)
*19. Municipalities' responsibilities on environmental management belonged to Bureau or Division of Public Health and Environment.	170 (54.0)	145 (46.0)	0.460 (Medium)
20. Development guideline of personnel responsible for environment included knowledge transfer on environment, raising awareness, and promotion of the change of behavior as a role model on environment.	301 (95.6)	14 (4.40)	0.980 (Much)
Total			0.840 (Much)

Note: * Negative questions

      Mean score 0 - 0.330   =   Little knowledge

      Mean score 0.340 - 0.670   =   Medium knowledge

      Mean score 0.680 - 1.00   =   Much knowledge

Part 3 Attitudes on Environmental Management

The attitudes on environmental management revealed that the questionnaire respondents agreed most with the topic of Administrators and employees at all levels placed importance on the success of environmental management with the mean of 3.85, followed by the topic of Municipal officials must raise their own awareness first before raising the public's awareness with the mean of 3.84, and the least agreed topic was People could throw away garbage because they had already paid garbage collection fees to municipalities and it was the responsibility of employees to do the job with the mean of 1.08. The overall attitudes on environmental management was at a high level with the mean of 2.91. The details are in Figure 4.4.

Table 4.4 Number and Mean of Attitudes on Environmental Management of
              Subdistrict Municipalities

Attitudes on Environmental Management	Opinions				
	Highly Agree	Agree	Do not Agree	Highly Disagree	Mean
*1. Employees responsible for waste disposal were not interested in other field of environmental management not related to waste disposal.	6 (1.90)	10 (3.20)	89 (28.3)	210 (66.7)	1.40 (Least)
2. Environmental preservation should start at home.	18 (5.70)	297 (94.3)	-	-	3.05 (Much)
3. Electricity saving in municipalities was considered initial environmental preservation.	238 (75.6)	77 (24.4)	-	-	3.76 (Most)
4. Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestions.	232 (73.7)	83 (26.3)	-	-	3.74 (Most)
5. Municipal officials must raise their own awareness first before raising the public's awareness.	265 (84.1)	50 (15.9)	-	-	3.84 (Most)
*6. People could throw away garbage because they had already paid garbage collection fees to municipalities and it was the responsibility of employees to do the job.	2 (0.600)	2 (0.600)	14 (4.40)	297 (94.3)	1.08 (Least)
7. Administrators and employees at all levels placed importance on the success of environmental management.	273 (86.7)	40 (12.7)	-	2 (0.600)	3.85 (Most)
*8. Role and duties of environmental management in municipal areas	4 (1.30)	2 (0.600)	52 (16.5)	257 (81.6)	1.22 (Least)

Attitudes on Environmental Management	Opinions				
	Highly Agree	Agree	Do not Agree	Highly Disagree	Mean
belonged to mayors only and not employees.					
9. In order to work well on environment, it was necessary to be developed for knowledge and skills related to work.	193 (61.3)	106 (33.7)	12 (3.80)	4 (1.30)	3.55 (Most)
10. The continuous trainings for development of knowledge on environmental management would be useful.	196 (62.2)	109 (34.6)	6 (1.90)	4 (1.30)	3.58 (Most)
Total					2.91 (Much)

Note: *Negative questions

Mean score 1.00 – 1.75 = Least agree

Mean score 1.76 – 2.50 = Agree a little

Mean score 2.51 – 3.25 = Agree much

Mean score 3.26 – 4.00 = Most agree

Part 4 Behavior on Practice of Environmental Management

The behavior on practice of environmental management of the questionnaire respondents revealed that the behavior on practice of environmental management with the highest mean was Turning off lights or unplugging every time after use or before leaving home or office without being reminded at the level of Practice every time (mean = 6.58), followed by the topic With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later at the level of Practice every time (mean = 6.40), and the least topic was Donation, giving, and support in cash or in kind for public good related to environmental management with the level of Practice not often (mean = 4.72). The details are in Figure 4.5.

Table 4.5 Mean and Standard Deviation of the Behavior on Practice of Environmental Management in Subdistrict Municipalities

Behavior	Mean	Standard Deviation	Level of Practice
1. Picking up garbage on roadside or in public places while walking and disposing it in garbage bin or other appropriate places.	5.53	1.40	Practice a lot
2. Turning off lights or unplugging every time after use or before leaving home or office without being reminded.	6.58	0.860	Practice every time
3. Feeling of discontent upon seeing black smoke emission from cars or loud noise specifically from modified motorcycles, annoying residents and society.	6.20	1.17	Practice a lot
4. With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later.	6.40	1.37	Practice every time
5. Feeling of regret, sadness upon seeing or hearing news of big trees being torn down to make room for other purposes.	6.04	1.28	Practice a lot

Behavior	Mean	Standard Deviation	Level of Practice
6. Arrangement of houses, residences, and offices in accordance with and support of concept of environmental management such as opening up of rooms for ventilation, separation of waste before disposal, energy saving.	6.21	1.09	Practice every time
7. Participation in social activities involving environmental management in various occasions organized by government agencies or charity organizations.	5.74	1.27	Practice a lot
8. Donation, giving, support in cash or in kind for public good related to environmental management.	4.72	1.64	Practice not often
9. Teachings and suggestions to children, grandchildren, and close friends on good behavior concerning environment such as teaching of waste disposal.	6.17	1.16	Practice every time
10. Learning about environment by reading, listening, watching, and exchange of experience with other people.	5.87	1.22	Practice a lot

Note: Mean score 1.00 - 1.85   =   Do not practice

Mean score 1.86 - 2.71   =   Practice very little

Mean score 2.72 - 3.57   =   Practice little

Mean score 3.58 - 4.43   =   Practice sometimes

Mean score 4.44 - 5.29   =   Practice not often

Mean score 5.30 - 6.15   =   Practice a lot

Mean score 6.16 - 7.00   =   Practice every time

4.2.2 Evaluation Results of The Ability of Personnel Responsible for Environment in Town Municipalities

Part 1 Background of the questionnaire respondents

There were 25 questionnaire respondents, divided into 10 males or 40.0% and 15 females or 60.0%. More than half of the questionnaire respondents were aged between 20 - 30 years old or 15 respondents or 60.0%, followed by those aged between 50 - 60 years old or 4 respondents or 16.0%, and least of the questionnaire respondents or 3 respondents were aged between 30 - 40 years old and between 40 - 50 years old or 12.0% equally. Most questionnaire respondents or 18 respondents received B.A. or 72.0% and 7 respondents with M.A. or 28.0%. Most of the questionnaire respondents or 12 respondents were in the positions of operating officers/assistant operating officers or 48.0%, followed by 6 respondents in the knowledge worker positions or 24.0, and least of them or 3 respondents were in the executive positions or 12.0%. Most than half of the questionnaire respondents or 15 respondents had work experience between 1 - 5 years or 60.0%, followed by 7 respondents with work experience over 10 years or 28.0%, and 3 respondents with the least work experience of less than 1 year or 12.0%. The details are in Figure 4.6.

Table 4.6 Number and Percentage of the Background of the Questionnaire Respondents in Town Municipalities

Details	Number	Percentage
Gender		
Male	10	40.0
Female	15	60.0
Total	25	100
Age (years)		
20 – 30	15	60.0
30 – 40	3	12.0
40 – 50	3	12.0
50 – 60	4	16.0
Education		
B.A.	18	72.0
M.A.	7	28.0

Details	Number	Percentage
Total	25	100
Positions		
Administrators or acting	3	12.0
Officers/registered nurses or equivalent	6	24.0
Operating officers/Assistant operating officers/operating staff	12	48.0
Company employees/staff hired by municipalities	4	16.0
Total	25	100
Work experience		
Less than 1 year	3	12.0
1 - 5 years	15	60.0
Over 10 years	7	28.0
Total	25	100
40 - 50	3	12.0
50 - 60	4	16.0
Total	25	100
Education		
B.A.	18	72.0
M.A.	7	28.0
Total	25	100
Positions		
Administrators or acting	3	12.0
Officers/registered nurses or equivalent	6	24.0
Operating officers/Assistant operating officers/operating staff	12	48.0
Company employees/staff hired by municipalities	4	16.0
Total	25	100
Work experience		
Less than 1 year	3	12.0
1 - 5 years	15	60.0
Over 10 years	7	28.0
Total	25	100

Part 2 Knowledge on Environmental Management

The questionnaire respondents were most knowledgeable in environmental management namely 1) Environment meant things that surrounded us, both living and not living, visible and not visible, tangible and not tangible. 2) Generally, the causes of environmental problems included increased population, economic growth, technological advancement, and natural disasters from seasonal variabilities. 3) Major environmental problems found in municipal areas and nationwide included waste, wastewater, and air pollution. 4) In Thailand, most environmental problems in rural communities outside municipal areas were not different from those in urban communities inside municipal areas. 5) Correct waste management and waste separation for appropriate disposal were the responsibilities of municipal waste collectors only. 6) Municipalities' wastewater treatment had many treatment methods that they could choose as appropriate depending on amount of wastewater, contaminants in wastewater, types of areas, and budget. 7) Provision of parks and planting of many roadside trees in municipal areas would help solve municipalities' air pollution problems at a certain level. 8) In working to solve environmental problems, operation must be undertaken dimension after dimension and not in all dimensions at the same time. and 9) Development guideline of personnel responsible for environment included knowledge transfer on environment, raising awareness, and promotion of the change of behavior as a role model on environment with the mean of 1.00, followed by 1) Environmental management meant systematic and efficient process of the use of environment through planning, follow-up, improvement, and rectification for better development. 2) Wastewater sources in municipal communities came from discharge of wastewater from washing of clothes, dishes, and food scraps, bathing, with the exclusion of wastewater from establishments such as hotels or government offices. 3) Wastewater problems in urban communities partly came from the problems of people's littering, both locals and non-locals entering urban communities. 4) Air pollution problems in municipal areas mostly came from traffic congestion, industrial plants, and garbage burning in households. and 5) People could not sue if waste collectors did not follow orders or ignored their assigned duties with the mean of 0.880, and the least knowledgeable topic was Household wastes in municipal areas consisted of general waste, recycled waste, and degradable waste

with the mean of 0.240. The overall knowledge on environmental management was at a high level with the mean of 0.840. The details are in Figure 4.7.

Table 4.7 Number and Mean of the Knowledge on Environmental Management in Town Municipalities

Knowledge on Environmental Management	Yes	No	Mean
1. Environment meant things that surrounded us, both living and not living, visible and not visible, tangible, and not tangible.	25 (100)	-	1.00 (Much)
2. Natural resources came from nature, but environment was both man-made and natural, by which natural resources were part of the environment.	19 (76.0)	6 (24.0)	0.760 (Much)
3. Generally, the causes of environmental problems included increased population, economic growth, technological advancement, and natural disasters from seasonal variabilities.	25 (100)	-	1.00 (Much)
4. Environmental management meant systematic and efficient process of the use of environment through planning, follow-up, improvement, and rectification for better development.	22 (88.0)	3 (12.0)	0.880 (Much)
5. Major environmental problems found in municipal areas and nationwide included waste, wastewater, air pollution.	25 (100)	-	1.00 (Much)
*6. In Thailand, most environmental problems in rural communities outside municipal areas were not different from those in urban communities inside municipal areas.	-	25 (100)	1.00 (Much)
7. In current situations, waste disposal by correct method of incineration would benefit environment the most.	9 (36.0)	16 (64.0)	0.360 (Medium)
8. Household wastes in municipal areas consisted of general waste, recycled waste, and degradable waste.	6 (24.0)	19 (76.0)	0.240 (Medium)
*9. Infectious waste meant waste contaminated with blood, secretion, and human parts from hospitals treating people only.	9 (36.0)	16 (64.0)	0.640 (Much)
*10. Correct waste management and waste separation for appropriate disposal were the responsibilities of municipal waste collectors only.	-	25 (100)	1.00 (Much)
*11. Wastewater sources in municipal communities came from discharge of wastewater from washing of clothes, dishes, and food scraps, bathing, with the exclusion of wastewater from establishments such as hotels or government offices.	3 (12.0)	22 (88.0)	0.880 (Much)
12. Wastewater problems in urban communities partly came from the problems of people's littering, both locals and non-locals	22 (88.0)	3 (12.0)	0.880 (Much)

Knowledge on Environmental Management	Yes	No	Mean
entering urban communities.			
13. Municipalities' waste treatment had many treatment methods that they could choose as appropriate depending on amount of wastewater, contaminants in wastewater, types of areas, and budget.	25 (100)	-	1.00 (Much)
14. Air pollution problems in municipal areas mostly came from traffic congestion, industrial plants, and waste burning in households.	22 (88.0)	3 (12.0)	0.880 (Much)
15. Provision of parks and planting of many roadside trees in municipal areas would help solve municipalities' air pollution problems at a certain level.	25 (100)	-	1.00 (Much)
16. Municipalities were responsible for solving environmental problems such as waste management, wastewater management, etc. which were legal responsibilities.	6 (24.0)	19 (76.0)	0.760 (Much)
*17. In working to solve environmental problems, operation must be undertaken dimension after dimension and not in all dimensions at the same time.	-	25 (100)	1.00 (Much)
*18. People could not sue if waste collectors did not follow orders or ignored their assigned duties.	3 (12.0)	22 (88.0)	0.880 (Much)
*19. Municipalities' responsibilities on environmental management belonged to Bureau/Division of Public Health and Environment.	6 (24.0)	19 (76.0)	0.760 (Medium)
20. Development guideline of personnel responsible for environment included knowledge transfer on environment, raising awareness, and promotion of the change of behavior as a role model on environment.	25 (100)	-	1.00 (Much)
Total			0.840 (Much)

Note: *Negative questions

Mean score 0 – 0.330   =   Little knowledge

Mean score 0.340 – 0.670 =   Medium knowledge

Mean score 0.680 – 1.00   =   Much knowledge

Part 3 Attitudes on Environmental Management

The attitudes on environmental management revealed that the topic that the questionnaire respondents agreed the most was People could throw away garbage because they had already paid garbage collection fees to municipalities and it was the responsibility of employees to do the job and Role and duties of environmental management in municipal areas belonged to mayors only and not employees with the mean of 4.00, followed by 1) Employees responsible for waste disposal were not interested in other field of environmental management not related to waste disposal. 2) Environmental preservation should start at home. 3) Administrators and employees at all levels placed importance on the success of environmental management. and 4) In order to work well on environment, it was necessary to be developed for knowledge and skills related to work with the mean of 3.88, and the topic which the questionnaire respondents agreed the least was Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestion with the mean of 3.52. The overall attitudes on environmental management was at a high level with the mean of 3.82. The details are in Figure 4.8.

Table 4.8 Number and Mean of the Attitudes on Environmental Management in
Town Municipalities

Attitudes on Environmental Management	Opinions				Mean
	Highly Agree	Agree	Disagree	Highly Disagree	
*1. Employees responsible for waste disposal were not interested in other field of environmental management not related to waste disposal.	-	-	3 (12.0)	22 (88.0)	3.88 (Most)
2. Environmental preservation should start at home.	22 (88.0)	3 (12.0)	-	-	3.88 (Most)
3. Electricity saving in municipalities was considered initial environmental preservation.	16 (64.0)	9 (36.0)	-	-	3.64 (Most)
4. Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestions.	13 (52.0)	12 (48.0)	-	-	3.52 (Most)
5. Municipal officials must raise their own awareness first before raising the public's awareness.	19 (76.0)	6 (24.0)	-	-	3.76 (Most)
*6. People could throw away garbage because they had already paid garbage collection fees to municipalities and it was the responsibility of employees to do the job.	-	-	-	25 (100)	4.00 (Most)
7. Administrators and employees at all levels placed importance on the success of environmental	22 (88.0)	3 (12.0)	-	-	3.88 (Most)

Attitudes on Environmental Management	Opinions				
	Highly Agree	Agree	Disagree	Highly Disagree	Mean
management.					
*8. Role and duties of environmental management in municipal areas belonged to mayors only and not employees.	-	-	-	25 (100)	4.00 (Most)
9. In order to work well on environment, it was necessary to be developed for knowledge and skills related to work.	22 (88.0)	3 (12.0)	-	-	3.88 (Most)
10. Continuous trainings for development of knowledge on environmental management would be useful.	19 (76.0)	6 (24.0)	-	-	3.76 (Most)
Total					3.82 (Most)

Note: *Negative questions

Mean score 1.00 - 1.75 = Least agree

Mean score 1.76 - 2.50 = Agree a little

Mean score 2.51 - 3.25 = Agree much

Mean score 3.26 - 4.00 = Most agree

Part 4 Behavior on Practice of Environmental Management

Behavior on practice of environmental management of the questionnaire respondents revealed that behavior on practice of environmental management with the highest mean was With garbage in the car while travelling to other areas, the garbage would kept in the car before disposal in garbage bin later and Arrangement of houses, residences, and offices in accordance with and support of concept of environmental management such as opening up of rooms for ventilation, separation of waste before disposal, energy saving at the level of Practice every time (mean = 6.28), followed by 1) Turn off lights or unplugging every time after use or before leaving home or office without being reminded. 2) Feeling of discontent upon seeing cars emitting black smoke or motorcycles modified for loud noise, annoying residents and society. and 3) Teachings and suggestions to children, grandchildren, and close friends on good behavior concerning environment such as teaching of waste disposal at the level of Practice every time (mean = 6.16), and the least was Picking up garbage found on roadside or in public places while walking and disposing it in garbage bin or other appropriate places at the level of Practice not often (mean = 5.08). The details are in Figure 4.9.

Table 4.9 Mean and Standard Deviation of the Behavior on Practice of
Environmental Management in Town Municipalities

Behavior	Mean	Standard Deviation	Level of Practice
1. Picking up garbage found on roadside or in public places while walking and putting it in garbage bin or other appropriate places.	5.08	1.19	Practice not often
2. Turning off lights or unplugging every time after use or before leaving home or office without being reminded.	6.16	1.55	Practice every time
3. Feeling of discontent upon seeing black smoke emission from cars or loud noise from specifically modified motorcycles, annoying residents and society.	6.16	0.940	Practice every time
4. With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later.	6.28	0.980	Practice every time
5. Feeling of regret, sadness upon seeing or hearing news of big trees being torn down to make room for other purposes.	5.80	1.12	Practice often
6. Arrangement of houses, residences, and offices in accordance with and support of concept of environmental management such as opening up of rooms for ventilation, separation of waste before disposal, energy saving.	6.28	0.880	Practice every time
7. Participation in social activities involving environmental management in various occasions organized by government agencies or charity organizations.	5.84	1.07	Practice often
8. Donation, giving, and support in cash or in	5.52	0.870	Practice often

Behavior	Mean	Standard Deviation	Level of Practice
kind for public good related to environmental management.			
9. Teachings and suggestions to children, grandchildren, and close friends on good behavior concerning environment such as teaching of waste disposal.	6.16	1.28	Practice every time
10. Learning about environment by reading, listening, watching, and exchange of experience with other people.	6.16	0.940	Practice every time

Note: Mean score 1.00 - 1.85   =   Do not practice

         Mean score 1.86 - 2.71   =   Practice very little

         Mean score 2.72 - 3.57   =   Practice little

         Mean score 3.58 - 4.43   =   Practice from time to time

         Mean score 4.44 - 5.29   =   Practice not often

         Mean score 5.30 - 6.15   =   Practice often

         Mean score 6.16 - 7.00   =   Practice every time

4.2.3 Results of the Evaluation of the Ability of Personnel Responsible for Environment in City Municipalities

Part 1 Background of the Questionnaire Respondents

There were 5 questionnaire respondents, divided into 2 males or 40.0% and 3 females or 60.0%. More than half of the questionnaire respondents or 3 people were aged between 30 - 40 years old or 60.0%, followed by 2 respondents aged between 20 - 30 years old or 40.0%. Most questionnaire respondents or 4 respondents received B.A., or 80.0% and 1 respondent received M.A. or 20.0%. Most questionnaire respondents or 4 respondents worked in knowledge worker positions or 80.0% and 1 respondent in employee position or 20.0%. Most questionnaire respondents or 5 respondents had work experience between 1 - 5 years or 100%. The details are in Figure 4.10.

Table 4.10 Number and Percentage of the Background of the Questionnaire
Respondents of City Municipalities

Details	Number	Percentage
Gender		
Male	2	40.0
Female	3	60.0
Total	5	100
Age (years)		
20 - 30	2	40.0
30 - 40	3	60.0
Total	5	100
Education		
B.A.	4	80.0
M.A.	1	20.0
Total	5	100
Positions		
Officers/registered nurses or equivalent	4	80.0
Operating officers/assistant operating officers/operating staff	1	20.0
Total	5	100
Work experience		
1 - 5 years	5	100
Total	5	100

Part 2 Knowledge on Environmental Management

The questionnaire respondents had most knowledge in environmental management as follows: 1) Environment meant things that surrounded us, both living and not living, visible and not visible, tangible and not tangible. 2) Natural resources came from nature, but environment was both man-made and natural, by which natural resources were part of the environment. 3) Major environmental problems found in municipal areas and nationwide included waste, wastewater, and air pollution. 4) In current situations, waste disposal by correct method of incineration would benefit environment the most. 5) Infectious waste was waste contaminated with blood, secretion, human parts from hospitals treating people only. 6) Correct waste management and waste separation for appropriate disposal were the responsibilities of municipal waste collectors only. 7) Wastewater sources in municipal communities came from discharge of wastewater from washing of clothes, dishes, and food scraps, bathing, with the exclusion of establishments such as hotels or government offices. 8) Municipalities' wastewater treatment had many treatment methods that they could choose as appropriate depending on amount of wastewater, contaminants in wastewater, types of areas, and budget. 9) Air pollution problems in municipal areas mostly came from traffic congestion, industrial plants, and waste burning in households. 10) Provision of parks and planting of many roadside trees in municipal areas would help solve municipalities' air pollution problems at a certain level. 11) People could not sue if waste collectors did not follow orders or ignored their assigned duties. and 12) Development guideline of personnel responsible for environment included knowledge on environment, raising awareness, and promotion of the change of behavior as a role model on environment with the equal mean of 1.00, followed by 1) Generally, the causes of environmental problems included increased population, economic growth, technological advancement, and natural disasters from seasonal variabilities. 2) Environmental management meant systematic and efficient process of the use of environment through planning, follow-up, improvement, and rectification of better development. 3) In Thailand, most environmental problems in rural communities outside municipal areas were not different from those in urban communities inside municipal areas. 4) Wastewater problems in urban communities partly came from the problems of people's littering,

both locals and non-locals entering urban communities. 5) Municipalities were responsible for solving environmental problems such as waste management, wastewater management, etc. which were legal responsibilities. 6) In working to solve environmental problems, operation must be undertaken dimension after dimension and not in all dimensions at the same time with the equal mean of 0.800, and the least knowledge was the topic of Household wastes in municipal areas consisted of general waste, recycled waste, and degradable waste with the mean of 0.200. The overall knowledge on environmental management was at a high level with the mean of 0.880. The details are in Figure 4.11.

Table 4.11 Number and Mean of the Knowledge on Environmental Management of
City Municipalities

Knowledge on Environmental Management	Yes	No	Mean
1. Environment meant things that surrounded us, both living and not living, visible and not visible, tangible, and not tangible.	5 (100)	-	1.00 (Much)
2. Natural resources came from nature, but environment was both man-made and natural, by which natural resources were part of the environment.	5 (100)	-	1.00 (Much)
3.Generally, the causes of environmental problems included increased population, economic growth, technological advancement, and natural disasters from seasonal variabilities.	4 (80.0)	1 (20.0)	0.800 (Much)
4. Environmental management meant systematic and efficient process of the use of environment through planning, follow-up, improvement, and rectification for better development.	4 (80.0)	1 (20.0)	0.800 (Much)
5. Major environmental problems found in municipal areas and nationwide included waste, wastewater, air pollution.	5 (100)	-	1.00 (Much)
*6. In Thailand, most environmental problems in rural	4	1	0.800

Knowledge on Environmental Management	Yes	No	Mean
communities outside municipal areas were not different from those in urban communities inside municipal areas.	(80.0)	(20.0)	(Much)
7. In current situations, waste disposal by correct method of incineration would benefit environment the most.	-	5 (100)	1.00 (Much)
8. Household wastes in municipal areas consisted of general waste, recycled waste, and degradable waste.	1 (20.0)	4 (80.0)	0.200 (Little)
*9. Infectious waste was waste contaminated with blood, secretion, and human parts from hospitals treating people only.	-	5 (100)	1.00 (Much)
*10. Correct waste management and waste separation for appropriate disposal were the responsibilities of municipal waste collectors only.	-	5 (100)	1.00 (Much)
*11. Wastewater sources in municipal communities came from discharge of wastewater from washing of clothes, dishes, and food scraps, bathing, with the exclusion of wastewater from establishments such as hotels or government offices.	-	5 (100)	1.00 (Much)
12. Wastewater problems in urban communities partly came from the problems of people's littering, both locals and non-locals entering urban communities.	4 (80.0)	1 (20.0)	0.800 (Much)
13. Municipalities' wastewater treatment had many treatment methods that they could choose as appropriate depending on amount of wastewater, contaminants in wastewater, types of areas, and budget.	5 (100)	-	1.00 (Much)
14. Air pollution problems in municipal areas mostly came from traffic congestion, industrial plants, and garbage burning in households.	5 (100)	-	1.00 (Much)
15. Provision of parks and planting of many roadside	5	-	1.00

Knowledge on Environmental Management	Yes	No	Mean
trees in municipal areas would help solve municipalities' air pollution problems to a certain level.	(100)		(Much)
16. Municipalities were responsible for solving environmental problems such as waste management, wastewater management, etc. which were legal responsibilities.	4 (80.0)	1 (20.0)	0.800 (Much)
*17. In working to solve environmental problems, operation must be undertaken dimension after dimension and not all dimensions at the same time.	1 (20.0)	4 (80.0)	0.800 (Much)
*18. People could not sue if waste collectors did not follow orders or ignored their assigned duty.	-	5 (100)	1.00 (Much)
*19. Municipalities' responsibilities on environmental management belonged to Bureau/Division of Public Health and Environment.	2 (40.0)	3 (60.0)	0.600 (Medium)
20. Development guideline of personnel responsible for environment included knowledge transfer on environment, raising awareness, and promotion of the change of behavior as a role model on environment.	5 (100)	-	1.00 (Much)
Total			0.88 (Much)

Note: *Negative questions

Mean score 0 - 0.330 = Little knowledge

Mean score 0.340 - 0.670 = Medium knowledge

Mean score 0.680 - 1.00 = Much knowledge

Part 3 Attitudes on Environmental Management

The attitudes on environmental management revealed that the questionnaire respondents agreed most in 1) Environmental preservation should start at home 2) Municipal officials must raise their own awareness first before raising the public's awareness 3) Administrators and employees at all levels placed importance on the success of environmental management with the mean of 4.00, followed by 1) Electricity saving in municipalities was considered initial environmental preservation 2) Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestions with the mean of 3.80, and the least agree included Role and duties of environmental management in municipal areas belonged to mayors only and not employees with the mean of 1.00. The overall attitudes on environmental management was at a high level with the mean of 3.06. The details are in Figure 4.12.

Table 4.12 Number and Mean of the Attitudes on Environmental Management in City Municipalities

Attitudes on Environmental Management	Opinions				
	Highly Agree	Agree	Disagree	Highly Disagree	Mean
*1. Employees responsible for garbage disposal were not interested in other field of environmental management not related to garbage disposal.	-	-	4 (80.0)	1 (20.0)	1.80 (Little)
2. Environmental preservation should start at home.	5 (100)	-	-	-	4.00 (Most)
3. Electricity saving in municipalities was considered initial environmental preservation.	4 (80.0)	1 (20.0)	-	-	3.80 (Most)
4. Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestions.	4 (80.0)	1 (20.0)	-	-	3.80 (Most)
5. Municipal officials must raise their own awareness first before raising the public's awareness.	5 (100)	-	-	-	4.00 (Most)
*6. People could throw away garbage			3	2	1.60

Attitudes on Environmental	Opinions				
Management	Highly Agree	Agree	Disagree	Highly Disagree	Mean
because they had already paid garbage collection fees to municipalities and it was the responsibility of employees to do the job.	-	-	(60.0)	(40.0)	(Least)
7. Administrators and employees at all levels placed importance on the success of environmental management.	5 (100)	-	-	-	4.00 (Most)
*8. Role and duties of environmental management in municipal areas belonged to mayors only and not employees.	-	-	-	5 (100)	1.00 (Least)
9. In order to work well on environment, it was necessary to be developed for knowledge and skills related to work.	2 (40.0)	3 (60.0)	-	-	3.40 (Most)
10. Continuous trainings for development of knowledge on environmental management would be useful.	1 (20.0)	4 (80.0)	-	-	3.20 (Much)
Total					3.06 (Much)

Note: *Negative questions

Mean score 1.00 - 1.75 = Least agree

Mean score 1.76 - 2.50 = Agree a little

Mean score 2.51 - 3.25 = Agree much

Mean score 3.26 - 4.00 = Most agree

Part 4 Behavior on Practice of Environmental Management

Behavior on practice of environmental management of the questionnaire respondents revealed that the behavior on practice of environmental management with the highest mean was turning off lights or unplugging every time after use or before leaving home or office without being reminded at the level of Practice every time (mean = 6.80), followed by With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal later at the level of Practice every time (mean = 6.60), and the least was Picking up garbage found on roadside or in public places while walking and putting it in garbage bin or other appropriate places with the level of Practice not often (mean = 4.60). The details as shown in 4.13.

Table 4.13 Mean and Standard Deviation of the Practice Related to Environmental
Management in City Municipalities

Behavior	Mean	Standard Deviation	Operating Level
1. Picking up garbage found on roadside or in public places while walking and putting it in garbage bin or other appropriate places.	4.60	0.890	Practice not often
2. Turning off lights or unplugging every time after use or before leaving home or office without being reminded.	6.80	0.450	Practice every time
3. Feeling of frustration upon seeing black smoke emission from cars or loud noise specifically from modified motorcycles, annoying residents and society.	6.40	0.900	Practice every time
4. With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later.	6.60	0.550	Practice every time
5. Feeling of regret, sadness upon seeing or hearing news of big trees being torn down to make room for other purposes.	5.80	0.450	Practice often
6. Arrangement of houses, residences, and offices in accordance with and support of	6.00	0	Practice often

Behavior	Mean	Standard Deviation	Operating Level
concept of environmental management such as opening up of rooms for ventilation, separation of waste before disposal, energy saving.			
7. Participation in social activities involving environmental management in various occasions organized by government agencies or charity organizations.	6.00	1.41	Practice often
8. Donation, giving, or support in cash or in kind for public good related to environmental management.	4.80	0.450	Practice not often
9. Teachings and suggestions to children, grandchildren, and close friends on good behavior concerning environment such as teaching on garbage disposal.	6.20	0.450	Practice every time
10. Learning about environment by reading, listening, watching, and exchange of experience with other people.	5.40	1.34	Practice often

Note: Mean score 1.00 - 1.85 = Never practice

Mean score 1.86 - 2.71 = Practice very little

Mean score 2.72 - 3.57 = Practice little

Mean score 3.58 - 4.43 = Practice sometimes

Mean score 4.44 - 5.29 = Practice not often

Mean score 5.30 - 6.15 = Practice often

Mean score 6.16 - 7.00 = Practice every time

4.2.4 Evaluation Results of the Ability of Personnel Responsible for Environment in Municipalities Nationwide

Part 1 Background of the Questionnaire Respondents

There were 345 questionnaire respondents, divided into 145 males or 42.0% and 200 females or 58.0%. Most of the questionnaire respondents were aged between 40 - 50 years old constituting 110 respondents or 31.9%, followed by 100 respondents aged between 30 - 40 years old or 29.0%, and least of the questionnaire respondents aged between 20 - 30 years old constituting 66 respondents or 19.1. More than half of the questionnaire respondents with B.A. constituted 212 respondents or 61.4%, followed by 125 respondents with M.A. or 36.2%, and least of the respondents or 2 respondents with Ph.D. or 0.600%. Most of the questionnaire respondents held the positions of executives or 135 respondents or 39.1%, followed by knowledge worker positions or 113 respondents or 32.8%, and least of the questionnaire respondents were staff or 8 respondents or 2.30%. Most of the questionnaire respondents or 147 respondents had work experience between 1 - 5 years or 42.6%, followed by 125 respondents with work experience over 10 years or 36.2%, and least of them or 15 respondents with work experience of less than 1 year or 4.30%. The details are in Figure 4.14.

Table 4.14 Number and Percentage of the Background of the Questionnaire
Respondents in Municipalities

Details	Number	Percentage
Gender		
Male	145	42.0
Female	200	58.0
Total	345	100
Age (years)		
20 - 30	66	19.1
30 - 40	100	29.0
40 - 50	110	31.9
50 - 60	69	20.0
Total	345	100
Education		
Lower than B.A.	6	1.70
B.A.	212	61.4
M.A.	125	36.2
Ph.D.	2	0.600
Total	345	100
Positions		
Executives or acting.	135	39.1
Officers/registered nurses or equivalent.	113	32.8
Operating officers/Assistant operating officers/operating staff.	89	25.8
Company employees/staff hired by municipalities.	8	2.30
Total	345	100
Work experience		
Less than 1 year	15	4.30
1 - 5 years	147	42.6
6 - 10 years	58	16.8
Over 10 years	125	36.2
Total	345	100

Part 2 Knowledge on Environmental Management

The questionnaire respondents with most knowledge on environmental management included Provision of parks and planting of many roadside trees in municipal areas would solve municipalities' air pollution problems to a certain extent with the mean of 1.00, followed by Environment meant things that surrounded us, both living and not living, visible and not visible, tangible or not tangible with the mean of 0.990, and the topic with the least knowledge was In current situations, waste disposal through correct method of incineration would benefit environment the most with the mean of 0.340. The overall knowledge on environmental management was at a high level with the mean of 0.830. The details are in Figure 4.15.

Table 4.15 Number and Mean of Knowledge on Environmental Management in Municipalities

Knowledge on Environmental Management	Yes	No	Mean
1. Environment meant things that surrounded us, both living and not living, visible and not visible, tangible, or not tangible.	343 (99.4)	2 (0.600)	0.990 (Much)
2. Natural resources happened by nature, but environment was both man-made and natural, by which natural resources were part of the environment.	333 (96.5)	12 (3.50)	0.960 (Much)
3. Generally, the causes of environmental problems included increased population, economic growth, technological advancement, and natural disasters from seasonal variabilities.	333 (96.5)	12 (3.50)	0.96 (Much)
4. Environmental management meant systematic and efficient process of the use of environment through planning, follow-up, improvement, and rectification for better development.	331 (95.6)	14 (4.10)	0.950 (Much)
5. Important environmental problems found in municipal areas nationwide included waste, wastewater, air pollution.	333 (96.5)	12 (3.50)	0.960 (Much)
*6. In Thailand, most environmental problems in rural communities outside municipal areas were not different from those in urban communities inside municipal areas.	92 (26.7)	253 (73.3)	0.730 (Much)

Knowledge on Environmental Management	Yes	No	Mean
7. In current situations, waste disposal by correct method of incineration would benefit environment the most.	119 (34.5)	226 (65.5)	0.340 (Medium)
8. Household wastes in municipal areas consisted of general waste, recycled waste, and degradable waste.	185 (53.6)	160 (46.4)	0.540 (Medium)
*9. Infectious waste meant waste contaminated with blood, secretion, human parts from hospitals treating people only.	89 (25.8)	256 (74.2)	0.740 (Much)
*10. Correct waste management and waste separation for appropriate disposal were the responsibilities of municipal waste collectors only.	12 (3.50)	333 (96.5)	0.970 (Much)
*11. Wastewater sources in municipalities' communities came from discharge of wastewater from washing of clothes and dishes, food scraps from households, bathing, with the exclusion of wastewater from establishments such as hotels or government offices.	45 (13.0)	300 (87.0)	0.870 (Much)
12. Wastewater problems in urban communities partly came from the problems of people's littering, both locals and non-locals entering urban communities.	299 (86.7)	46 (13.3)	0.860 (Much)
13. Municipalities' wastewater treatment had many treatment methods that they could choose as appropriate depending on amount of wastewater, contaminants in wastewater, types of areas, and budget.	331 (95.9)	14 (4.10)	0.950 (Much)
14. Air pollution problems in municipal areas mostly came from traffic congestion, industrial plants, and garbage burning in households.	287 (83.2)	58 (16.8)	0.830 (Much)
15. Provision of parks and planting of many roadside trees in municipal areas would solve municipalities' air pollution problems to a certain extent.	345 (100)	-	1.00 (Much)
16. Municipalities had the duty of solving environmental problems such as waste management, wastewater management, etc. which were legal responsibilities.	324 (93.9)	19 (5.50)	0.940 (Much)
*17. In solving environmental problems, operation must be undertaken dimension after dimension and not all dimensions at the same time.	65 (18.8)	280 (81.2)	0.810 (Much)

Knowledge on Environmental Management	Yes	No	Mean
*18. The public could not sue if waste collectors did not follow orders or ignored their assigned duties.	44 (12.8)	301 (87.2)	0.870 (Much)
*19. Municipalities' environmental management were under the responsibilities of Bureau/Division of Public Health and Environment.	179 (51.9)	166 (48.1)	0.480 (Medium)
20. Development guideline of personnel responsible for environment included knowledge transfer on environment, raising awareness, and promotion of change of behavior as a role model on environment.	331 (0.960)	14 (4.10)	0.960 (Much)
Total			0.830 (Much)

Note: *Negative questions

Mean 0 - 0.33   =   Little knowledge

Mean 0.340 - 0.670   =   Medium knowledge

Mean 0.680 - 1.00   =   Much knowledge

Part 3 Attitudes on Environmental Management

The attitudes on environmental management revealed that the questionnaire respondents agreed with the topic of Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestions with the mean of 3.94, followed by Environmental preservation should start at home with the mean of 3.94, and the least agreed topic was In order to work well on environment, it was necessary to be developed for knowledge and skills related to work with the mean of 3.57. The overall attitude on environmental management was at the highest level with the mean of 3.78. The details of which are in Figure 4.16.

Table 4.16 Number and Mean of Attitudes on Environmental Management in
Municipalities

Attitudes on Environmental Management	Opinions				
	Highly Agree	Agree	Disagree	Highly Disagree	Mean
*1. Employees responsible for waste disposal were not interested in other field of environmental management not related to waste disposal.	6 (1.70)	10 (2.90)	96 (27.8)	233 (67.5)	3.61 (Most)
2. Environmental preservation should start at home.	324 (93.9)	21 (6.10)	-	-	3.93 (Most)
3. Electricity saving in municipalities was considered initial environmental preservation.	258 (74.8)	87 (25.2)	-	-	3.74 (Most)
4. Our good behavior such as collecting garbage on the ground served as a better example than our teachings or suggestions.	249 (0.720)	96 (27.8)	-	-	3.94 (Most)
5. Municipal officials must raise their own awareness first before raising the public's awareness.	289 (83.8)	56 (16.2)	-	-	3.83 (Most)
*6. People could throw away	2	2	17	324	3.92

Attitudes on Environmental	Opinions				
Management	Highly Agree	Agree	Disagree	Highly Disagree	Mean
garbage because they had already paid garbage collection fees to municipalities and it was the responsibility of employees to do the job.	(0.600)	(0.600)	(4.90)	(93.9)	(Most)
7. Administrators and employees at all levels placed importance on the success of environmental management.	298 (86.4)	43 (12.5)	-	2 (0.60)	3.85 (Most)
*8. Duty and authorities of environmental management in municipal areas were under the responsibilities of mayors only and not employees.	4 (1.20)	2 (0.600)	52 (15.1)	287 (83.2)	3.80 (Most)
9. In order to perform work on environment well, it is necessary to attend development sessions on knowledge and skills related to work.	217 (62.9)	112 (32.5)	12 (3.50)	4 (1.20)	3.57 (Most)
10. Continuous trainings on development and knowledge transfer on environmental management would be useful.	216 (62.6)	119 (34.5)	6 (1.70)	4 (1.20)	3.58 (Most)
Total					3.78 (Most)

Note: *Negative questions

Mean score 1.00 - 1.75   = Least agree

Mean score 1.76 - 2.50   = Agree a little

Mean score 2.51 - 3.25   = Agree much

Mean score 3.26 - 4.00   = Mostly agree

Part 4 Behavior on Practice of Environmental Management

Behavior on practice of environmental management of the questionnaire respondents revealed that the behavior on practice of environmental management with the highest mean was turning off lights or unplugging every time after use or before leaving home or office without being reminded and with the level of Practice every time (mean = 6.55), followed by With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal later with the level of Practice every time (mean = 6.38), and least of all was Picking up garbage found on roadside or in public places while walking and putting it in garbage bin or appropriate places with the level of Practice often (mean = 5.48). The details are in Figure 4.17.

Table 4.17 Mean and Standard Deviation of the Practice on Environmental
Management in Municipalities

Practices	Mean	Standard Deviation	Levels of Practice
1. Picking up garbage found on roadside or in public places while walking and putting it in garbage bin or other appropriate places.	5.48	1.38	Practice often
2. Turning off lights or unplugging every time after use or before leaving home or office without being reminded.	6.55	0.930	Practice every time
3. Feeling of discontent upon seeing black smoke emission from cars or loud noise from specifically modified motorcycles, annoying residents, and society.	6.20	1.15	Practice every time
4. With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later.	6.38	1.33	Practice every time
5. Feeling of regret and sadness upon seeing or hearing of the news of big trees being torn down to make room for other purposes.	6.02	1.26	Practice often
6. Arrangement of houses, residences, offices in accordance with and support of concept of environmental management such as opening up of	6.21	1.07	Practice every time

Practices	Mean	Standard Deviation	Levels of Practice
rooms for ventilation, separation of waste before disposal, energy saving.			
7. Participation in social activities on environmental management in various occasions organized by government agencies or charity organizations.	5.75	1.25	Practice often
8. Donation, giving, or support in cash or in kind for public good on environmental management.	4.78	1.60	Practice not often
9. Teachings and suggestions to children, grandchildren, and close friends on good behavior concerning environment such as teaching of waste disposal.	6.17	1.16	Practice every time
10. Leaning about environment by reading, listening, watching, and exchange of experience with other people.	5.88	1.21	Practice often

Note: Mean score   1.00 - 1.85   =   Do not practice

Mean score   1.86 - 2.71   =   Practice very rarely

Mean score   2.72 - 3.57   =   Practice rarely

Mean score   3.58 - 4.43   =   Practice sometimes

Mean score   4.44 - 5.29   =   Do not practice often

Mean score   5.30 - 6.15   =   Practice often

Mean score   6.16 - 7.00   =   Practice every time

4.3 Policy of Development of Personnel Responsible for Environment in Thailand

Based on the interviews of the key informants from Department of Environmental Quality Promotion and Office of the Permanent Secretary for Natural Resources and Environment, the interview results could be summarized in Table 4.18.

Table 4.18 Interview Results of the Policy Issues of the Development of Personnel
Responsible for Environment in Thailand

Interview Issues	Interview Results
1. Overall demand or problems of development of personnel responsible for environment in municipalities in Thailand.	- Development of personnel responsible for environment in municipalities was required to truly understand environmental problems and understand the guideline to solve environmental problems in the areas. - Development of specific knowledge relevant to environment such as water management, air management, etc. but not necessarily to develop experts in specific fields. - Development of knowledge on laws relevant to operation of personnel responsible for environment in municipalities. - Development of knowledge and skills in the use of modern environment-related scientific tools to keep abreast with new knowledge and to be able to use the tools. - Development of social skills such as systematic thinking, teamwork, communication allowing personnel responsible for environment to be able to work with others. - Development of skills in integrated work with other internal and external agencies. - Continuous and sustainable development of attitudes of service mind, seriousness and sincerity to solve

Interview Issues	Interview Results
	environmental problems in the areas.
2. Determination of guideline and decision to choose the guideline for overall development of personnel responsible for environment in municipalities in Thailand.	- Guideline and decision to choose the guideline should be determined to develop personnel responsible for environment in municipalities with process of participation from all stakeholders, including public, private, and people sectors.
	- Opportunity provided for community to participate in development, encourage acknowledgement of their rights of community and environment.
3. Concrete implementation of overall development guideline of personnel responsible for environment in municipalities in Thailand.	- Development should be undertaken of personnel responsible for environment based on the methods of actual work and implementation in parallel with knowledge transfer.
	- Municipal administrators should be stimulated to see the importance of environmental problems as the starting point of promotion of development of personnel responsible for environment.
	- Platform should be organized for exchange of knowledge on environmental management in order to exchange experience of area-based work.
	- Network should be forged of people working on environment in municipalities' responsible areas in order to perform duty of people sector's environmental management.
	- Criteria to develop personnel responsible for environment should be defined in linkage with career advancement or other benefits to stimulate continuous development such as middle managers responsible for environment were required to attend the curriculum before being eligible for appointment as Directors of divisions in municipalities, etc.
4. Evaluation of overall development of personnel	- In case of personnel development with training methods, behavior of changes after training should be

Interview Issues	Interview Results
responsible for environment in municipalities in Thailand.	evaluated. - The evaluation of the potential of those who attended development courses on environment should not be conducted only from training but also other aspects such as new activities, and new working methods after attending the development courses.
5. Continuity in overall development of personnel responsible for environment in municipalities in Thailand.	-Development of personnel responsible for environment in municipalities must be undertaken to keep abreast with changes impacting environment and covering all dimensions. - Personnel development must be continuously undertaken for community residents especially the issue of awareness of environmental preservation.
6. Recommendations of overall development of personnel responsible for environment in municipalities in Thailand.	- Specific curriculum on environment should be provided for administrators in Local Personnel Development Institution or assignment to Ministry of Natural Resources and Environment to develop personnel responsible for environment in local areas.

4.4 Policy and Development System of Personnel Responsible for Environment in Municipalities

The interviews of key informants including municipal administrators and operating officials in the north namely Lampang City Municipality, Lamphun Town Municipality, Nam Phrae Pattana Subdistrict Municipality; in the northeast namely Ubon Ratchathani City Municipality, Yasothon Town Municipality, Som Poi Subdistrict Municipality; in the central plains namely Nonthaburi City Municipality, Rai Khing Town Municipality, Hua Wiang Subdistrict Municipality; and in the south namely Songkhla City Municipality, Satun Town Municipality, and Na Ta Luang Subdistrict Municipality. The reasons for the need to interview important informants of the municipality are separated. This is because each level of municipalities has a different administrative and academic context. The interview results are summarized in Tables 4.19, 4.20, 4.21, and 4.22 respectively.

Table 4.19 Interview Results of the Policy Issues and Development System of Personnel Responsible for Environment in Municipalities
in the North

Interview Issues	Interview Results		
	Lampang City Municipality	Lamphun Town Municipality	Nam Phrae Pattana Subdistrict Municipality
1. Municipal administrator's policy on environmental management.	- Administrator's policy was clearly stated in the strategic plan. - According to the Municipal Act, there was no main agency directly responsible for environment.	- Administrator's policy was clearly stated in the strategic plan. - Strategy on environmental development as process in parallel with development in other fields.	- Environmental policy was clearly incorporated in the strategic plan by focusing on people's participation in the area and integration with other works in parallel.
2. Compliance of development of personnel responsible for environmental management with municipalities' strategies.	- Development of personnel responsible for environment in compliance with municipality's strategies but sometimes not keeping up with the problems.	- Development of personnel responsible for environment in compliance with municipality's strategies. - Connection and compliance with environment problems in the area.	- Development of personnel responsible for environment in compliance with municipality's strategies.

Interview Issues	Interview Results		
	Lampang City Municipality	**Lamphun Town Municipality**	**Nam Phrae Pattana Subdistrict Municipality**
3. Development of personnel responsible for environmental management in response to municipalities' needs.	- Response that did not cover all municipality's problems.	-Good response to municipality's demand.	- Good response to municipality's demand.
4. Efficiency of development system of personnel responsible for environmental management in municipalities.	- Development system of personnel responsible for environmental management in municipality was under the supervision of Personnel Department, Office of the Municipal Clerk. - Duration of training was used to determine personnel's indicators. - Supervisor's follow-up on the	- Personnel development system provided opportunity for personnel to choose training in the curriculum relevant to their work. - Follow-up process after training such as submitting report on training results to supervisor or presenting acquired knowledge in meeting. - Supervisor's follow-up on the application of knowledge acquired from training to work.	- Personnel development system that integrated municipality's work on environment with personnel development in other fields in parallel. - Mayor's concept of 3 cooperation and 4 construction was used as guideline of personnel development system that was cooperation, common thinking, common decision,

Interview Issues	Interview Results		
	Lampang City Municipality	**Lamphun Town Municipality**	**Nam Phrae Pattana Subdistrict Municipality**
	application of knowledge acquired from training to work.		happiness, life security, equality, and morals. - System of continuous personnel development.
5. Effectiveness of development of personnel responsible for environmental management in municipalities.	- Personnel could work according to their duty in each field of environment well. - Personnel acquired additional knowledge from training but skills needed additional training.	- Personnel who attended training could apply knowledge and ability to work very well.	- Personnel could well apply the concept of 3 cooperation and 4 construction to work on environment.
6. Recommendations on development of personnel responsible for environment in municipalities.	- Law should be amended with agencies and personnel directly responsible for environment.	- Knowledge on environment should be developed to enable people to understand problems and support officials' work.	- Analysis should be conducted on municipality's context prior to development of knowledge to personnel.

Table 4.20 Interview Results of the Policy Issues and Development System of Personnel Responsible for Environment in Municipalities
          in the Northeast

Interview Issues	Interview Results		
	Ubon Ratchathani City Municipality	Yosothon Town Municipality	Som Poi Subdistrict Municipality
1. Municipal administrator's policy on environmental management.	- Environmental policy clearly incorporated in the strategic plans by focusing on integration with other agencies.	- Environmental policy clearly incorporated in the strategic plans with municipal administrator placing high importance.	- Environmental policy clearly incorporated in the strategic plans.
2. Compliance of development of personnel responsible for environmental management with municipalities' strategies.	- Development of personnel responsible for environment in compliance with municipality's strategies but sometimes not keeping up with the problems.	- Development of personnel responsible for environment in compliance with municipality's strategies.	- Development of personnel responsible for environment in compliance with municipality's strategies, divided into 2 parts namely municipality's role and problems in the area.
3. Development of personnel responsible for environmental management in response to municipalities' needs.	- Response not covering all area-based problems of municipality.	- Development of personnel responsible for environment that was sometimes organized by other agencies and not by Local Personnel Development Institution would	- Response to the municipality's needs by focusing on municipality's area-based workshop.

Interview Issues	Interview Results		
	Ubon Ratchathani City Municipality	Yosothon Town Municipality	Som Poi Subdistrict Municipality
		respond to the demand of the organizing agencies more than the demand of municipality.	
4. Efficiency of development system of personnel responsible for environmental management in municipalities.	- Personnel development system rarely gave personnel the opportunity to attend training in the course related to their work. -Development system of personnel responsible for environmental management in municipality was under the supervision of Personnel Department, Office of the Municipal Clerk. - Supervisor's follow-up of application of knowledge acquired from training in work.	- Survey on demand of annual personnel training by Personnel Department, Office of the Municipal Clerk. -Analysis of demand to prioritize personnel development planning. - Development of personnel by sending them for training at Local Personnel Development Institution which offered compulsory curriculum for their career advancement or arrangement of own training using internal and external lecturers, with curriculum based on	- Personnel were allowed to choose training in the curriculum related to their work. - Annual training for review of work performance in order to prevent forgetfulness and stimulate working with quality. -Supervisor's follow-up on application of knowledge acquired from training in work. - Analysis of work performance after training.

Interview Issues	Interview Results		
	Ubon Ratchathani City Municipality	Yosothon Town Municipality	Som Poi Subdistrict Municipality
		problems as requested by the personnel.	
5. Effectiveness of development of personnel responsible for environmental management in municipalities.	- Personnel could perform work according to their duty in each field of environment at a certain level. - Personnel gained additional knowledge from the training but additional skill must be trained.	- Personnel could perform work very well according to their duty in each field of environment due to their own need. - Personnel had career advancement in the position of past training according to system.	- Personnel could perform work well according to their duty in each field of environment and if there was attention from administrator at the level of Deputy Municipal Clerk upward, work would yield very high effectiveness.
6. Recommendations of development of personnel responsible for environment in municipalities.	- Training should be organized for new personnel prior to regular work.	- Personnel responsible for environment should learn other issues related to work such as financial and fiscal issues etc.	-Efficient and effective development partly depended on attention given by administrator.

Table 4.21 Results of the Interviews on Policy Issues and Development System of Personnel Responsible for Environment in Municipalities in the Central Plains

Interview Issues	Interview Results		
	Nonthaburi City Municipality	**Rai Khing Town Municipality**	**Hua Wiang Subdistrict Municipality**
1. Municipal administrators' policy on environmental management.	- Policy on environmental management incorporated in the 5-year development plan (2018-2022).	- Clear policy on environmental management and environmental issues were used to determine municipality's vision.	- Clear policy on environmental management by focusing on development of residents in community.
2. Compliance of development of personnel responsible for environmental management with municipalities' strategies.	- Development of personnel responsible for environmental management in compliance with municipality's strategic plan.	- High compliance as environmental issues were used to determine municipality's vision and subdivided into mission on environmental management by which personnel development must be undertaken based on the mission.	- Development of personnel responsible for environmental management in compliance with development plan of community on environment in accordance with municipality's strategy.
3. Development of personnel responsible for environmental management in response to	- Training would be in compliance with municipality's mission but could not solve all problems. - Most personnel were sent to	- Personnel development according to mission of environmental management by focusing on training and study tour of real location.	- Personnel development based on mission of environmental management by focusing on training and study tour of actual

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Interview Issues	Interview Results		
	Nonthaburi City Municipality	**Rai Khing Town Municipality**	**Hua Wiang Subdistrict Municipality**
municipalities' needs.	external trainings organized by Ministry of Natural Resources and Environment.	- Development of personnel by sending them to internal and external trainings. - Personnel development based on municipality's problems and mission.	location. - Arrangement of study tour of successful actual location, then start of operation of project on environment.
4. Efficiency of development system of personnel responsible for environmental management in municipalities.	- Personnel development focusing on training and study tour. - Clear personnel development plan of Office of the Municipal Clerk. - After attending training, personnel must submit summarized report to supervisor.	-Clear personnel development goal by which at least 80.0% or personnel in each line of work must attend training. - Workforce development plan in compliance with mission and workload. - Duration of annual training was used to determine individual Key Performance Indicator (KPI). - No exclusion problem on personnel development.	- Clear guideline of personnel development namely order to appoint committee to supervise each field of environment. - Lessons learned from study tour prior to operation of project on environment. - Writing report of study tour and submit it to the meeting on a systematic basis.

Interview Issues	Interview Results		
	Nonthaburi City Municipality	**Rai Khing Town Municipality**	**Hua Wiang Subdistrict Municipality**
5. Effectiveness of the development of personnel responsible for environmental management in municipalities.	- Trained personnel could apply knowledge to their work to a certain extent.	- Personnel could perform duties in each field of environment very well due to development of personnel based on mission. - Training principles to provide personnel with morale to cope with problems and obstacles.	- Personnel could perform duties in each field of environment very well due to clear appointment order and clear specification of duty and responsibility with topics of training and study tour.
6. Recommendations of development of personnel responsible for environment in municipalities.	- Personnel development should be concretely evaluated.	- Context of municipality should be analyzed prior to personnel development.	- Concrete follow-up should be conducted on the result of study tour and implementation of real project in municipal area.

Table 4.22 Interview Results of the Policy Issues and System of Development of Personnel Responsible for Environment in
Municipalities in the South

Interview Issues	Interview Results		
	Songkhla City Municipality	Satun Town Municipality	Na Ta Luang Subdistrict Municipality
1. Municipal administrators' policy of environmental management.	- A lot of policies on environmental management and clear, concrete, and sustainable implementation.	- A lot of policies on environmental management and integrated implementation of all age groups.	- Clear policy on environmental management and focus on behavior as a role model for general public.
2. Compliance of development of personnel responsible for environmental management with municipalities' strategies.	- Compliance of development of personnel responsible for environment with municipality's strategic plans and projects on environmental management.	- Compliance of development of personnel responsible for environment with municipality's strategic plans and projects on environmental management.	- Compliance of development of personnel responsible for environment with municipality's strategic plans and projects on environmental management.
3. Development of personnel responsible for environmental management in response	- Development of personnel by sending them to attend external and internal trainings in line with municipality's missions and	- Development of personnel by sending them to attend external and internal trainings in line with municipality's missions and	- Development of personnel by sending them to attend external and internal trainings in line with municipality's missions and

Interview Issues	Interview Results		
	Songkhla City Municipality	**Satun Town Municipality**	**Na Ta Luang Subdistrict Municipality**
to municipalities' needs.	problems.	problems.	problems.
	- Development of personnel in response to community's environmental problems as necessary.	- Development of personnel in response to environmental problems based on integration of all divisions, age groups, plans, activities, and projects.	- Development of personnel in response to environmental problems based on integration of all activities and all projects.
4. Efficiency of the system of the development of personnel responsible for environmental management in municipalities.	- Process of lessons learned from sending personnel to trainings, acquiring knowledge from agencies relevant to environment. - Encourage people's participation in finding environmental problems to develop personnel to the point. - Personnel attending training or study tours must enhance on the	- Mayor's order assigning all departments in municipality to develop personnel responsible for environment in parallel with environmental activities. - Clear goal of personnel development namely personnel of each line of duty must be trained according to the criteria of evaluation of transfer of	- Clear goal of personnel development namely personnel of each line of duty must be trained according to the criteria of evaluation of transfer of indicators and goals to individuals. - Use of environmental problems in the area as a starting point for development of personnel responsible for environment by

Interview Issues	Interview Results		
	Songkhla City Municipality	**Satun Town Municipality**	**Na Ta Luang Subdistrict Municipality**
	knowledge and transfer it to other personnel.	indicators and goals to individuals.	focusing on behavior as a role model for general public.
5.Effectiveness of the development of personnel responsible for environmental management in municipalities.	- Personnel could perform duty well as a role model and efficiently transfer knowledge of environment in each dimension.	- Personnel could perform duty well in each dimension of environment and with appropriate integration with other missions.	- Personnel could perform duty well in each dimension of environment and behave as a role model.
6. Recommendations of the development of personnel responsible for environment in municipalities.	- Importance should be placed on the process of people's participation in the analysis of problems to develop personnel that would fit the real problems.	- The good result of development of personnel responsible for environment required focus on study tours as good example of real practice.	- There should be various methods for development of personnel responsible for environment and clear personnel development plans.

CHAPTER 5

CONCLUSIONS, DISCUSSIONS, AND RECOMMENDATIONS

The study results of the model of the development of personnel responsible for environment in municipalities in Thailand consisted of the collection of qualitative data from the study of relevant documents and in-depth interviews with 34 key informants, and the collection of quantitative data from 345 personnel responsible for environment in municipalities at all levels in Thailand. The study results were presented with lecture and lecture accompanying tables in the following order:

    1) Conclusions

        (1) Current development and ability of personnel responsible for environment in municipalities.

        (2) Development of personnel and development system of personnel responsible for environment in municipalities.

        (3) Model of development of personnel responsible for environment in municipalities in Thailand.

    2) Discussions

    3) Recommendations

        (1) Application of the study results.

        (2) Future study.

5.1   Conclusions

The conclusions of the study reached the objectives with the following:

1) Current development and ability of personnel responsible for environment in municipalities.

2) Development of personnel and development system of personnel responsible for environment in municipalities.

3) Model of development of personnel responsible for environment in municipalities in Thailand. The conclusions of the study consisted of the following:

5.1.1 Current Development and Ability of Personnel Responsible for Environment in Municipalities

Based on the study of the documents related to the development of personnel responsible for environment in municipalities and in-depth interviews with the key informants from Local Personnel Development Institution, Department of Local Administration, Ministry of Interior, it could be concluded that in the current development of personnel responsible for environment in municipalities, personnel whose knowledge and ability were developed in the environmental fields constituted personnel development according to the curriculum of Local Personnel Development Institution. The curriculum with little environmental context or approximately 10.0% of the training period included curriculum for administrators of local administrative organizations (Municipal clerk, curriculum for executives responsible for public health (Director, Division/Bureau of Public Health and Environment), curriculum for assistant community public health officers/community public health officers; curriculum with medium environmental context or approximately 40 - 60% of the training period included curriculum for assistant sanitation officers/sanitation officers; curriculum with no environmental context included political curriculum for both the Administration and the Parliament. Apart from the curriculum, municipalities at all levels would organize trainings with the curriculum for operating officials at junior level as appropriate to each municipality.

As for the process and methods of development of personnel responsible for environment, most municipalities would focus on training which was the method of personnel development in classroom, with approximately 75.0% were sent for training according to the curriculum of Local Personnel Development Institution, approximately 20.0% were sent for trainings with other agencies organized for knowledge transfer on environment, and approximately 5.0% municipalities organized training for operating officials at junior level as appropriate. The results of the development of personnel responsible for environment were in accordance with the evaluation results of the ability of personnel responsible for environment having attended the personnel development sessions with current methods which will be discussed later. The development of personnel responsible for environment in most municipalities lacked continuity, both in terms of policy of municipal administrators and the context of municipalities' operation.

The evaluation of the ability of personnel responsible for environment having passed the current methods of personnel development of subdistrict, town, and city municipalities, and the overall municipalities by using questionnaire could be summarized as follows:

5.1.1.1 Subdistrict Municipalities

1) The background of the questionnaire respondents could be summarized as follows: Most questionnaire respondents were females with 182 females or 57.8%, and 133 males or 42.2%. Most questionnaire respondents were aged between 40 - 50 years old or 107 respondents or 34.0%, followed by those aged between 30 - 40 years old or 94 respondents or 29.8%, and least of them aged between 20 - 30 years old or 49 respondents or 15.6%. More than half of the questionnaire respondents or 190 respondents received B.A. or 60.3%, followed by 117 respondents who received M.A. or 37.1%, and least of them or 2 respondents received Ph.D. or 0.600%. Most questionnaire respondents or 132 respondents held the position of executives or 41.9%, followed by 103 respondents who held the knowledge worker positions or 32.7%, and least of them or 4 respondents were staff or 1.30%. Most questionnaire respondents or 127 respondents had work experience between 1 - 5 years or 40.3%, followed by 116 respondents with work experience of

over 10 years or 36.8%, and least of them or 12 respondents had work experience of less than 1 year or 3.80%.

2) The knowledge on environmental management could be summarized as follows: The questionnaire respondents were most knowledgeable in environmental management in the topic of Provision of parks and planting of many roadside trees in municipal areas would solve municipalities' air pollution problems to a certain level with the mean of 1.00, followed by the topic of Environment meant things that surrounded us, both living and not living, visible and not visible, tangible and not tangible with the mean of 0.990, least knowledgeable in the topic of From the current situations, waste disposal by correct method of incineration would benefit environment the most with the mean of 0.350. The overall knowledge on environmental management was at a high level with the mean of 0.840.

3) The attitudes on environmental management could be summarized as follows: The questionnaire respondents mostly agreed with the topic of Administrators and employees at all levels placed importance on the success of environmental management with the mean of 3.85, followed by the topic Municipal officials must raise their own awareness first before raising the public's awareness with the mean of 3.84, and the least agreed topic was People could throw away garbage because they had already paid garbage collection fees to municipalities and it was the responsibility of employees to do the job with the mean of 1.08. The overall attitudes on environmental management was at a high level with the mean of 2.91.

4) The behavior on practice of environmental management could be summarized as follows: The questionnaire respondents conducted behavior on practice of environmental management with the highest mean which was Turning off lights or unplugging every time after use or before leaving home or office without being reminded with the level of Practice every time (mean = 6.58), followed by With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later with the level of Practice every time (mean = 6.40), and the least agreed topic was Donation, giving, support in cash or in kind for public good related to environmental management with the level of Practice not often (mean = 4.72).

5.1.1.2 Town Municipalities

1) The background of the questionnaire respondents could be summarized as follows: Most questionnaire respondents were females with 15 females or 60.0%, and 10 males or 40.0%. More than half of the questionnaire respondents were aged between 20 - 30 years old or 15 respondents or 60.0%, followed by 4 respondents aged between 50 – 60 years old or 6.0%, and least of them or 3 respondents aged between 30 - 40 years and 40 – 50 years old or equally 12.0%. Most questionnaire respondents or 18 respondents received B.A. or 72.0%, followed by 7 respondents who received M.A. or 28.0%. Most questionnaire respondents or 12 respondents held the position of operating officers or 48.0%, followed by 6 respondents who held the knowledge worker positions or 24.0%, and least of them or 3 respondents held the executive positions or 12.0%. More than half of questionnaire respondents or 15 respondents had work experience between 1 - 5 years or 60.0%, followed by 7 respondents with work experience of over 10 years or 28.0%, and least of them or 3 respondents had work experience of less than 1 year or 12.0%.

2) The knowledge on environmental management could be summarized as follows: The questionnaire respondents were most knowledgeable in environmental management namely 1) Environment meant things that surrounded us, both living and not living, visible and not visible, tangible and not tangible. 2) Generally, the causes of environmental problems included increased population, economic growth, technological advancement, and natural disasters from seasonal variabilities. 3) Major environmental problems found in municipal areas and nationwide included waste, wastewater, air pollution. 4) In Thailand, most environmental problems in rural communities outside municipal areas were not different from those in urban communities inside municipal areas. 5) Correct waste management and waste separation for appropriate disposal were the responsibilities of municipal waste collectors only. 6) Municipalities' wastewater treatment had many treatment methods that they could choose as appropriate depending on the amount of wastewater, contaminants in wastewater, types or areas, and budget. 7) Provision of parks and planting of many roadside trees in municipal areas would help solve municipalities' air pollution problems to a certain extent. 8) In working to solve environmental problems, operation must be undertaken dimension after dimension

and not all dimensions at the same time. and 9) Development guideline of personnel responsible for environment included knowledge transfer on environment, raising awareness, and promotion of the change of behavior as a role model on environment with the mean of 1.00, followed by 1) Environmental management meant systematic and efficient process of the use of environment through planning, follow-up, improvement, and rectification for better development. 2) Wastewater sources in municipal communities came from discharge of wastewater from washing of clothes, dishes, and food scraps from households, and bathing, with the exclusion of wastewater from establishments such as hotels or government offices. 3) Wastewater problems in urban communities partly came from the problems of people's littering, both locals and non-locals entering urban communities. 4) Problems of air pollution in municipal areas mostly came from traffic congestion, industrial plants, and garbage burning in households. and 5) The public could not sue if waste collectors did not follow orders or ignored their assigned duties with the mean of 0.880, and the least knowledgeable was the topic of Household wastes in municipal areas consisted of general waste, recycled waste, and degradable waste with the mean of 0 .240. The overall knowledge on environmental management was at a high level with the mean of 0.840.

3) Attitudes on environmental management could be summa- rized as follows: The questionnaire respondents mostly agreed on the topic People could throw away garbage because they had already paid garbage collection fees to municipalities and it was the responsibility of employees to do the job and Role and duties of environmental management in municipal areas belonged to mayors only and not employees with the mean of 4.00, followed by 1) Employees responsible for waste disposal were not interested in environmental management in other aspects not related to waste disposal. 2) Environmental preservation should start at home. 3) Administrators and employees at all levels placed importance on the success of environmental management. and 4) In order to work well on environment, it was necessary to be developed for knowledge and skills related to work with the mean of 3.88, and least agreed on the topic Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestions with the mean of

3.52. The overall attitudes on environmental management was at a high level with the mean of 3.82.

4) The behavior on practice of environmental management could be summarized as follows: The questionnaire respondents had the behavior on practice of environmental management with the highest mean as follows: With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later and Arrangement of houses, residences, and offices in accordance with and support of concept of environmental management such as opening up of rooms for ventilation, separation of waste before disposal, energy saving with the level of Practice every time (mean = 6.28), followed by 1) Turning off lights or unplugging every time after use or before leaving home or office without being reminded. 2) Feeling of discontent upon seeing black smoke emission from cars or loud noise from specifically modified motorcycles, annoying residents and society. and 3) Teachings and suggestions to children, grandchildren, and close friends on good behavior concerning environment such as teaching of waste disposal with the level of Practice every time (mean = 6.16), and the lowest mean was Picking up garbage found on roadside or in public places while walking and disposing it in garbage bin or other appropriate places with the level of Practice not often (mean = 5.08).

5.1.1.3 City Municipalities

1) The background of the questionnaire respondents could be summarized as follows: Most questionnaire respondents were females with 3 females or 60.0%, and 2 males or 40.0%. More than half of the questionnaire respondents were aged between 30 - 40 years old or 3 respondents or 60.0%, followed by 2 respondents aged between 20 - 30 years old or 40.0%. Most questionnaire respondents or 4 respondents received B.A. or 80.0%, followed by 1 respondent who received M.A. or 20.0%. Most questionnaire respondents or 4 respondents held the knowledge worker positions or 80.0%, followed by 1 respondent who was staff or 20.0%. All questionnaire respondents or 5 respondents had work experience between 1 - 5 years or 100%.

2) The knowledge on environmental management could be summarized as follows: The questionnaire respondents were most knowledgeable in environmental management namely 1) Environment mean things that surrounded us, both living and not living, visible and not visible, tangible and not tangible. 2) Natural resources came from nature, but environment was both man-made and natural by which natural resources were part of the environment. 3) Major environmental problems found in municipal areas and nationwide included waste, wastewater, air pollution. 4) In the current situations, waste disposal by correct method of incineration would benefit environment the most. 5) Infectious waste meant waste contaminated with blood, secretion, human parts from hospitals treating people only. 6) Correct waste management and waste separation for appropriate disposal were the responsibilities of municipal waste collectors only. 7) Wastewater sources in municipal communities came from discharge of wastewater from washing of clothes, dishes, and food scraps from households, and bathing, with the exclusion of wastewater from establishments such as hotels or government offices. 8) Municipalities' wastewater management had many treatment methods that they could choose as appropriate depending on the amount of wastewater, contaminants in wastewater, types of areas, and budget. 9) Air pollution problems in municipal areas mostly came from traffic congestion, industrial plants, and garbage burning in households. 10) Provision of parks and planting of many roadside trees in municipal areas would help solve municipalities' air pollution problems to a certain level. 11) People could not sue if waste collectors did not follow orders or ignored their assigned duties. 12) Development guideline of personnel responsible for environment included knowledge transfer on environment, raising awareness, and promotion of the change of behavior as a role model on environment with the equal mean of 1.00, followed by 1) Generally, the causes of environmental problems included increased population, economic growth, technological advancement, and natural disasters from seasonal variabilities. 2) Environmental management meant systematic and efficient process of the use of environment through planning, follow-up, improvement, and rectification for better development. 3) In Thailand, most environmental problems in rural communities outside municipal areas were not different from those in urban communities inside municipal areas. 4) Wastewater problems in urban communities

partly came from the problems of people's littering, both locals and non-locals entering urban communities. 5) Municipalities were responsible for solving environmental problems such as waste management, wastewater management, etc. which were legal responsibilities. and 6) In working to solve environmental problems, operation must be undertaken dimension after dimension and not all dimensions at the same time with the equal mean of 0.800, and least knowledge was Household wastes in municipal areas consisted of general waste, recycled waste, and degradable waste with the mean of 0.200. The overall knowledge on environmental management was at a high level with the mean of 0.880.

3) The attitudes on environmental management could be summarized as follows: The questionnaire respondents mostly agreed on the topics 1) Environmental preservation should start at home. 2) Municipal officials must raise their own awareness before raising the public's awareness. 3) Administrators and employees at all levels placed importance on the success of environmental management with the mean of 4.00, followed by 1) Electricity saving in municipalities was considered initial environmental preservation. 2) Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestions with the mean of 3.80, and least agreed on Role and duties of environmental management in municipal areas belonged to mayors only and not employees with the mean of 1.00. The overall attitudes on environmental management was at a high level with the mean of 3.06.

4) The behavior on practice of environmental management could be summarized as follows: The questionnaire respondents had the behavior on practice of environmental management with the highest mean of Turning off lights or unplugging every time after use or before leaving home or office without being reminded with the level of Practice of every time (mean = 6.80), followed by With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later with the level of Practice every time (mean = 6.60), and least agreed on Picking up garbage on roadside or in public places while walking and disposing it in garbage bin or other appropriate places at the level of Practice not often (mean = 4.60).

5.1.1.4 Overall Municipalities

1) The background of the questionnaire respondents could be summarized as follows: Most questionnaire respondents were females with 200 females or 58.0%, and 145 males or 42.0%. Most questionnaire respondents were aged between 40 - 50 years old or 110 respondents or 31.9%, followed by 100 respondents aged between 30 - 40 years old or 29.0%, and least of them or 66 respondents aged between 20 - 30 years or 19.1%. More than half of the questionnaire respondents or 212 respondents received B.A. or 61.4%, followed by 125 respondents who received M.A. or 36.2%, and least of them or 2 respondents received Ph.D. or 0.600%. Most questionnaire respondents or 135 respondents held the executive positions or 39.1%, followed 113 respondents who held the knowledge worker positions or 32.8%, and least of them or 8 respondents held the staff position or 2.30%. Most questionnaire respondents or 147 respondents had work experience between 1 - 5 years or 42.6%, followed by 125 respondents with work experience of over 10 years or 36.2%, and least of them or 15 respondents had work experience of less than 1 year or 4.30%.

2) The knowledge on environmental management could be summarized as follows: The questionnaire respondents were most knowledgeable in environmental management namely Provision of parks and planting of many roadside trees in municipal areas would help solve municipalities' air pollution problems to a certain level with the mean of 1.00, followed by Environment meant things that surrounded us, both living and not living, visible and not visible, tangible and not tangible with the mean of 0.990, and the least knowledgeable topic was From the current situations, waste disposal by correct method of incineration would benefit environment the most with the mean of 0.340. The overall knowledge on environmental management was at a high level with the mean of 0.830.

3) The attitudes on environmental management could be summarized as follows: The questionnaire respondents agreed with the topic Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestions with the mean of 3.94, followed by the topic Environmental preservation should start at home with the mean of 3.94, and the least agreed topic was In order to work well on environment, it was necessary to be developed for knowledge and skills related to work with the mean of 3.57. The overall attitudes on environmental management at the highest level with the mean of 3.78.

4) The behavior on practice of environmental management could be summarized as follows: The questionnaire respondents had behavior on practice of environmental management with the highest mean with the topic Turning off lights or unplugging every time after use or before leaving home or office without being reminded at the level of Practice every time (mean = 6.55), followed by the topic With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later with the level of Practice every time (mean = 6.38), and the least agreed topic Picking up garbage on roadside or in public places while walking and disposing it in garbage bin or other appropriate places at the level of Practice often (mean = 5.48).

5.1.2 Development of Personnel and Development System of Personnel Responsible for Environment in Municipalities

Based on the interviews with the key informants from Department of Environmental Quality Promotion and Office of the Permanent Secretary for Natural Resources and Environment, Ministry of Natural Resources and Environment, an agency charged with the country's overall environmental management, it was expected that personnel responsible for environment in all agencies would acquire knowledge and ability to drive the country's policy on environmental management towards success. The interview results in the issues relevant to the development of personnel responsible for environment in municipalities could be summarized as follows: the demand of policy development of personnel responsible for environment meant the demand of the development of personnel responsible for environment in municipalities who understood problems and guideline to truly solve problems in the

areas. Specific knowledge relevant to environment in all dimensions was developed and required to be applied to work but did not have to develop into specific experts. Social skills and service mind attitudes were continuously and sustainably developed to work together with others based on seriousness and sincerity in solving environmental problems in the areas. Personnel were also developed to keep abreast with changes that impacted environment in all dimensions. There was the guideline of the development of personnel responsible for environment in municipalities with the process of the participation of all stakeholders, including the public, private, and people sectors, by focusing on the personnel development with actual work and implementation in parallel with transfer of knowledge. Forum was organized for exchange of knowledge on environmental management and exchange of area-based experience. There was evaluation of the development of personnel responsible for environment focusing on the changes of behavior after development. Moreover, the criteria should be determined for the development of personnel responsible for environment with linkage to career advancement or other benefits to stimulate continuous development such as middle managers responsible for environment were required to attend the curriculum before being eligible for appointment as Directors of divisions in municipalities, etc.

Based on the interviews with the key informants both administrators and operating officials of subdistrict, town, and city municipalities in Thailand, the results of the interviews on the issues of development of personnel and development system of personnel responsible for environment in municipalities at each level could be summarized as follows:

1) Subdistrict Municipalities

The development of personnel and the development system of personnel responsible for environment in subdistrict municipalities in the north formulated the environmental policy that was clearly incorporated in the strategic plans by focusing on local people's participation and integration with other works. The development of personnel responsible for environment was in accordance with the municipalities' strategies and in good response to the municipalities' needs. Continuous system was put in place of personnel development and environmental integration of municipalities in parallel with personnel development in other fields based on the mayor's concept

of 3 cooperation and 4 construction namely cooperation, common thoughts, common decision, happiness, security in life, equality, and morals. The academic recommendation was put forward that there should be analysis of the municipalities' context before development of knowledge to the personnel.

The subdistrict municipalities in the northeast had environmental policy clearly incorporated in the strategic plans as well. There was development of personnel responsible for environment in accordance with the municipalities' strategies and in response to the municipalities' needs by focusing on the municipalities' area-based workshop organized to review the annual work and provide the opportunity for the personnel to choose trainings in the curriculum relevant to their work, follow-up, and supervisors' analysis of the results of applying the knowledge acquired from trainings to work. Administrative recommendation was put forward that efficiency and effectiveness of development should be part of importance placed by the administrators.

In the central plains, the subdistrict municipalities formulated clear policy on environmental management by focusing on the development of people in communities. As a result, the development of personnel responsible for environmental management was in line with the environmental community development plans and in accordance with the municipalities' strategies. There was clear guideline of personnel development. There was an order to appoint the committee on environment in each dimension by focusing trainings from study tours of successful organizations with lessons learned from the study before starting a project on environment. Report was written of the study tours and submitted to the meeting on a systematic basis. As a consequence, personnel could perform their duties well in each dimension of environment. Follow-up was recommended for the concrete results of study tours and operation of real projects in municipal areas.

Finally, the subdistrict municipalities in the south also had clear policy on environmental management. Personnel development had a clear goal and that was the criteria of evaluation of transfer of KPI and goals to the individual level. Personnel were assigned to attend external and internal trainings in line with plans and projects. The environmental problems in the areas were used as a starting point for development of personnel responsible for environment, focusing on their role model for the public. As a result, the personnel were able to perform their duties well in each dimension of environment and serve as good examples. There was additional recommendation that there should be various methods to develop personnel responsible for environment and clear personnel development plans.

2) Town Municipalities

In the north, the development of personnel and the development system of personnel responsible for environment in municipalities formulated the policy in accordance with the municipalities' strategies and incorporated into it. The strategies of development of personnel responsible for environment consisted of process and in parallel with development in other fields. There was a linkage with the local demands of problems. The development system allowed the personnel to choose their own methods of development. There was a process to follow the application of knowledge to work after attending the development curriculum such as making reports on the trainings and submitting them to their supervisors or presenting the knowledge acquired from the trainings in meetings. It would drive the trained personnel to be able to very well apply knowledge and ability in their work. The recommendation was that there should be development to transfer knowledge on environment to people to increase understanding of the problems and support work of the officials.

In the case of town municipalities in the northeast, they had environmental policy clearly incorporated in the strategic plans. The personnel were developed in accordance with the municipalities' strategies and needs. The analysis was conducted on the needs to set priorities. The annual personnel development plans were prepared. The personnel were developed through the curriculum organized by Local Personnel Development Institution. The compulsory curriculum was linked to the personnel's career advancement. Trainings were organized using both internal and external lecturers. As for the curriculum based on the problems that the personnel

wished to use, the developed personnel could perform duties very well in each dimension of environment due to their own needs. The recommendation was that personnel responsible for environment should learn about other topics related to their work such as finance, and procurement, etc.

As for town municipalities in the central plains, there was clear policy on environmental management. The environmental issue was used to formulate the municipalities' vision and divided into mission on environmental management to develop personnel according to the mission and problems. The personnel development was promoted through plans and goals of personnel development clearly determined with the individual Key Performance Indicators (KPI). The personnel were developed through internal and external trainings. The trainings focused on study tours in parallel. After the development, the personnel should have inspiration to cope with problems and obstacles and perform their duties in each dimension of environment very well. There was recommendation that there should be analysis of the municipalities' context before personnel development.

The town municipalities in the south had many policies on environmental management. The personnel development was in accordance with strategic plans and projects and in response to solve the problems of environmental management through integration with all divisions and all age groups and in all of the municipalities' plans, activities, and projects. The goals of personnel development were clear. The personnel in each line of work must attend training according to the criteria of the evaluation of the transfer of KPI and goals to the individual level. Personnel development was conducted by sending personnel to internal and external trainings. The developed personnel could perform their duties well in each dimension of environment and appropriately integrate with other missions. There was recommendation that the good result of the development of personnel responsible for environment was to focus on study tours to able to see the good example from actual practice.

3) City Municipalities

The personnel development and the development system of personnel responsible for environment of city municipalities in the north had environmental policy incorporated in the strategic plans. The personnel development was in line with the municipalities' strategies but did not cover all of the municipalities' needs. Nor did it keep up with the municipalities' problems. The personnel development system used the training duration to determine the KPI of the personnel and their supervisors conducted follow-op on the application of knowledge acquired from the trainings to their work. The developed personnel could perform their duties well in each aspect of environment. The personnel acquired additional knowledge, but their skills needed to be additionally developed. There was recommendation that law should be amended to have agencies and personnel directly responsible for environment.

As for city municipalities in the northeast, the environmental policy was incorporated in the strategic plans as well. The development of personnel responsible for environment was in accordance with the municipalities' strategies by focusing on integration in parallel with other agencies but sometimes it did not keep up with the problems and did not cover the municipalities' all area-based problems. The personnel development system did not provide the opportunity for the personnel to choose training in the curriculum of their own wishes because it was based on the needs as determined by the municipalities. Their supervisors conducted follow-up on the application of the knowledge acquired from the trainings to their work, focusing on development of additional skills at work. The personnel who attended the development curriculum could perform their duties in each field of environment to a certain level. The recommendation was to organize trainings for new employees prior to work for efficiency.

In the case of city municipalities in the central plains, policy on environmental management was formulated in the strategic plans. Personnel development was in compliance with the municipalities' strategic plans but could not respond to all municipalities' problems. There were clear personnel development plans focusing on trainings and study tours. Most personnel were sent to external trainings organized by Ministry of Natural Resources and Environment. The trained personnel must prepare summarized report to their supervisors and could apply the

acquired knowledge to work to a certain level. The recommendation was put forward that there should be concrete evaluation of personnel development, both efficiency and effectiveness of personnel development.

Finally, the city municipalities in the south formulated many clear, concrete, and sustainable policies on environmental management in their strategic plans. The personnel development was in compliance with strategic plans, and projects and in response to municipalities' environmental problems. Personnel were sent for both internal and external trainings for development. There was the process of lessons learned by sending personnel for trainings and study tours and from agencies related to environment. The knowledge learned would be enhanced and transferred to other personnel. The developed personnel would serve as good examples and efficiently transfer knowledge on each aspect of environment. The recommendation was that there should be focus on the process of people's participation in the analysis of the problems in order to develop personnel to solve the actual problems.

In conclusion, the personnel development and the development system of personnel responsible for environment in the municipalities at all levels had clear personnel development plans in line with the municipalities' strategic plans and needs with different efficiency and effectiveness depending on policy, methods, and the municipalities' personnel development system. As for the strategies of personnel development in subdistrict municipalities, they were specific based on the area context of each region which were different from the strategies of the town and city municipalities which were similar. In the case of city municipalities, they were different from town and subdistrict municipalities in terms of compliance with the strategic plans and demands based on the problems of municipalities that the personnel development did not keep up with environmental problems in the areas.

5.1.3 Model of Development of Personnel Responsible for Environment in Municipalities in Thailand

According to the study of documents relevant to the development of personnel responsible for environment in municipalities and the synthesis of the information from in-depth interviews of the key informants from the agencies controlling and supervising the country's environmental management namely two key informants from Office of the Permanent Secretary for Natural Resources and Environment, 24 key informants from units operating on environment in local areas namely city, town, and subdistrict municipalities. Then, the model of the development of personnel responsible for environment in municipalities in Thailand went through the critics and recommendations for improvement of the model from five experts with experience in the process of the development of personnel responsible for environment in municipalities in Thailand from the upstream to the downstream as follows:

1) Assistant Professor Acting Sub Lieutenant Dr. Ekkasit Sanamthong, Vice Dean, Academic and Research, and Director, Graduate Studies, Faculty of Human Resource Development, Ramkhamhaeng University.

2) Dr. Wijarn Simachaya, Director, Thailand Environment Institute, and President of the University Council, Sisaket Rajabhat University.

3) Assistant Professor Dr. Boonsong Kaiket, Chairman, Sub-committee on Environment, in Committee on Natural Resources and Environment, Senate.

4) Dr. Somsak Tantiseranee, Mayor, Songkhla City Municipality.

5) Mr. Somchai Siangyai, Chief, Local Promotion and Development Subdivision, Department of Local Administration, Samut Prakan.

It was found that the overall model of the development of personnel responsible for environment in municipalities in Thailand could be used as a tool to develop the personnel responsible for environment in municipalities at all levels. But the municipalities at each level must take into account many issues of the analysis and implementation of the development of personnel responsible for environment of each different process. Firstly, readiness of municipalities' management resources consisting of budget, personnel, tools, and management methods, of which city municipalities were ready the most, town municipalities were ready at fair level, and subdistrict municipalities were ready the least. Secondly, occasions for problems,

seriousness, and scope of municipalities' environmental problems impacting people's daily lives. City municipalities had more occasions for problems, seriousness, and scope of environmental problems than town and subdistrict municipalities. Thirdly, awareness of municipal administrators in environmental management which did not depend on the levels of the municipalities. Finally, the potential of the municipalities in the development of personnel responsible for environment that would affect the choice of the methods of efficient and effective personnel development.

The model of the development of personnel responsible for environment in municipalities in Thailand consisted of 3 main processes of operation namely major process supplementary process and sustainable process with 10 minor processes under the major process as follows:

1) Major process It was the process that municipalities at all levels needed to undertake every time in the development of personnel responsible for environment. It consisted of five minor processes as follows:

(1) Analysis of the needs of the development of personnel responsible for environment.

It was the study of the needs of the development of personnel responsible for environment by conducting analysis of the organization's context, analysis of operation, and analysis of personnel through Gap Analysis that must develop knowledge and ability of personnel responsible for environment by taking into account urgency, worth, and personnel development in accordance with municipalities' environmental policy and mission according to the municipalities' context and environmental problems.

(2) Planning of development of personnel responsible for environment.

It dealt with the use of the results of the analysis of the needs to plan development of personnel responsible for environment by which the planning focused on participation of stakeholders of all sectors in the areas in the form of plans, projects, and activities, determined targeted personnel groups that needed to be developed, objectives of the development, details of the budget by planning in accordance with the municipalities' strategic plans and the context of area-based environmental management.

(3) Design of the methods of development of personnel responsible for environment.

It was to determine the details of the guideline, methods, and activities of the development of personnel responsible for environment appropriate to personnel as targeted group, including the development methods of personnel in classroom, development methods of personnel outside classroom, the combined use of the two methods, taking into consideration gender, age, position, and assigned mission. As a result, the methods or activities of the development of personnel responsible for environment in municipalities reached the final goals, including concrete changes of personnel's behavior after attending methods or activities of development of personnel responsible for environment which in practice might need experts on human resource development.

(4) Implementation of plans and methods of the development of personnel responsible for environment.

It was the concrete, efficient, and effective implementation of plans and methods of the development of personnel responsible for environment by using the methods of personnel development in classroom, the methods of personnel development outside classroom, and the combined use of the two methods, reaching the objectives and the goals of the municipalities' strategic plans of development of personnel responsible for environment under limited management resources.

(5) Evaluation and feedback of the information on development of personnel responsible for environment.

The systematic evaluation of the development of personnel responsible for environment in municipalities in Thailand covered all processes, issues, and feedback of the evaluation in order to improve and develop each process of development of personnel responsible for environment in the future.

2) Supplementary Process It was the process that municipalities at all levels could undertake to increase efficiency of the model and consisted of two minor processes as follows:

(1) Search for the issues of development of personnel responsible for environment.

It was the study of the policy on environment of the agencies related to environmental management at the national, regional, and provincial levels in order to know the guideline of environmental development, the context and problems of environment in municipalities' responsible areas, the administrators' determination of the policy issues of development of personnel responsible for environment, and announcement as a part of the policy on environmental management of municipalities that should be done every year according to the context and the changing problems of environment.

(2) Process assessment for improvement and continuous development.

It was the assessment of all processes in order to improve the methods of implementation from the assessment results on a continuous basis, based on the concept of development of work to control quality of work for continuous development in all processes from analysis of the needs to develop personnel responsible for environment, planning of development of personnel responsible for environment, design of the methods of development of personnel responsible for environment, implementation of plans and methods of development of personnel responsible for environment, and assessment and information feedback of development of personnel responsible for environment.

3) Sustainable process It was the process that municipalities at all levels could undertake for continuous human resource development in environmental aspect and connect to the administrators' administrative power towards concrete practice. It was divided into 3 sub processes as follows:

(1) Follow-up of the performance of human resource develop-ment.

It was the follow-up of the performance of the human resource development in environmental aspect through the behavior after participating in projects or activities of human resource development by any method compared to the behavior of performing duties before participating in the projects or human resource development activities. It illustrated the development of the human resource in environmental aspect that could be knowledge or skills that the human resource would apply in the municipalities' work on environmental management for higher efficiency and effectiveness.

(2) Determination of the municipal administrators' policy.

The information and results obtained from the process of human resource development in environmental aspect, both major and supplementary processes, were analyzed of key success factors and negative factors causing problems and obstacles in the past and formulated into the municipal administrators' policy of human resource development in environmental aspect. The formulation of the policy must focus on the process of participation and integration of all sectors related to environment in the municipal and adjacent areas.

(3) Formulation of guideline of human resource development

It was the implementation of the municipal administrators' policy of human resource development in environmental aspect by formulation of the guideline of human resource development in environmental aspect which must be flexible, adaptive to potential environmental changes that might impact the people's livelihood in the responsible areas of the municipalities.

From the major process, supplementary process, sustainable process and minor process of the model of development of personnel responsible for environment in municipalities in Thailand, the major process is in the rounded square frame and the supplementary process is in the square frame as elaborated in Figure 5.1.
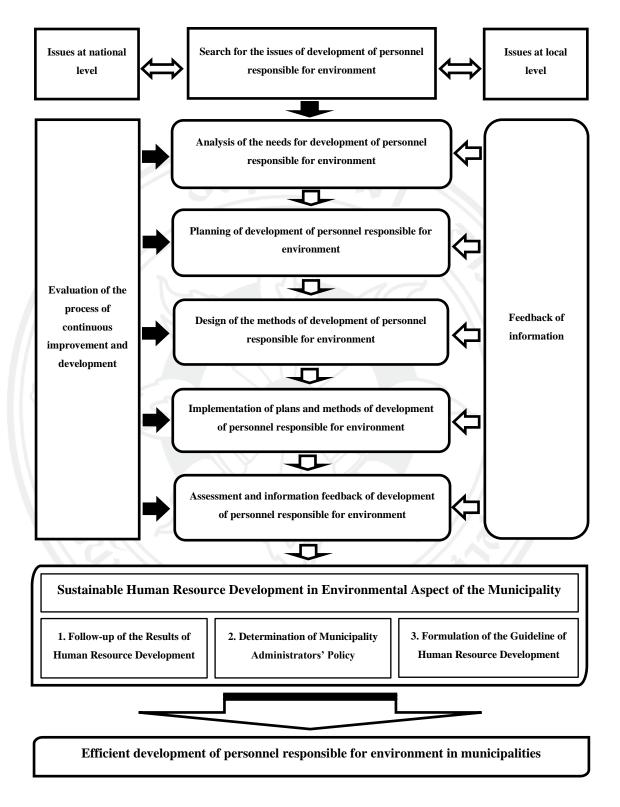
Figure 5.1 Model of Development of Personnel Responsible for Environment in
Municipalities in Thailand

The pattern of human resource development in environmental aspect of the municipality in Thailand can be used as a tool of human resource development in environmental aspect of the municipalities of all levels. But the issues requiring consideration in the analysis and operation is that it should be worthwhile and appropriate to the municipalities at each different level. The details of the levels of the municipalities are shown in Table 5.1.

Table 5.1 Issues Requiring Consideration of the Pattern of Human Resource
          Development in Environmental Aspect of the Municipality in
          Thailand for Subdistrict, Town, and City Municipalities

Issues Requiring Consideration	Subdistrict Municipalities	Town Municipalities	City Municipalities
Budget required for human resource development in environmental aspect.	- Cost benefit analysis. - Need to look for funding sources outside the municipalities for human resource development or seek cooperation with agencies responsible for human resource development without costs being borne by the municipalities.	- Cost benefit analysis. - Seek cooperation with agencies responsible for human resource development without costs being borne by the municipalities.	- Cost benefit analysis. - Allocation of budget for human resource development to cover environmental problems.
Needs for human resource development in	- Analysis of the needs for development that	- Analysis of the needs for development that	- Analysis of the needs for development that

Issues Requiring Consideration	Subdistrict Municipalities	Town Municipalities	City Municipalities
environmental aspect.	focus on internal factors.	focus on internal and external factors.	focus on external factors.
Human resource development system in environmental aspect of the municipality.	- Not very complicated and not quite clear system.	- Fairly complicated, not quite clear, and very flexible system.	- Very complicated, clear, not flexible system.
Methods used for human resource development in environmental aspect.	- Must use the methods of human resource development with low costs. Classroom type training as organized by the municipalities themselves not recommended due to small number of human resources. Training should be replaced by individual or group coaching.	- Must use the methods of human resource development with low or fair costs. Classroom type training as organized by the municipalities themselves not recommended due to small number of human resources. Training should be replaced by group coaching.	- Can choose the methods of human resource development with high costs and organize classroom type training by themselves in parallel with the use of strategy of human resource development through assignment.

5.2 Discussions

The study of the model of the development of personnel responsible for environment in municipalities in Thailand was to study the current development and ability of personnel responsible for environment in municipalities to investigate the desired behavior of personnel development and development system of personnel responsible for environment in municipalities and present the model of the development of personnel responsible for environment in municipalities in Thailand. The following issues were found:

1) The current development and ability of personnel responsible for environment in municipalities in Thailand revealed that the personnel responsible for environment had been little developed for knowledge and ability on environment from the training curriculum of Local Personnel Development Institution which was the curriculum organized according to the positions and duties of the personnel in connection with the appointment of the personnel. The curriculum offered little content of environment, with no specific environmental content, and with requirement of specific expertise (Local Personnel Development Institution, 2019). Subsequently, the personnel responsible for environment in municipalities were not sufficiently developed to perform duties on environment requiring specific expertise from the agencies directly responsible for personnel development in local administration. As for the case of development of personnel responsible for environment according to the area-based problems, it was necessary for the municipalities to use the methods of personnel development that was not limited to trainings. It would be difficult for the municipalities to organize internal trainings due to small number of personnel. Some municipalities had limited budget for personnel development. Some municipal administrators did not think personnel development was important. This was in line with the study of the strategies of the development of local government officials by Thailand Innovative Administration Consultancy Institute (Thailand Innovative Administration Consultancy Institute, 2012, p. 56). Moreover, some municipalities conducted personnel development that did not keep up with environmental problems especially city municipalities having environmental problems with the number, scope,

and intensity of problems more than town and subdistrict municipalities. In conclusion, the current development of personnel responsible for environment in municipalities in Thailand was not sufficient in performing work on environment because it required specific expertise. It was only sufficient for general operation on environment. There existed many factors that did not accommodate municipalities to hold internal trainings and develop personnel that did not keep up with municipalities' environmental problems.

As for the evaluation of the ability of personnel responsible for environment in municipalities in Thailand developed with current methods, the overall knowledge on environmental management was at a high level with the attitude of environmental management at the highest level which was considered knowledge with good attitudes. The behavior on practice of environmental management with the mean of Practice every time was considered at fair level. So, it could be seen that personnel responsible for environment possessed knowledge and good attitudes but with fair level of behavior of environmental management. Knowledge and attitudes could not differentiate if personnel responsible for environment with knowledge and attitudes would affect behavior of good environmental management if they lacked consciousness and awareness of environmental problems (Rungkit Booncharoen & Wisakha Phoochinda, 2012, pp. 30-36). In conclusion, the evaluation results of the ability of the personnel responsible for environment in municipalities in Thailand developed with current methods found that the personnel possessed knowledge and good attitudes, but their behavior of practice was fair.

2) Personnel development and development system of personnel responsible for environment in municipalities, and policy development of personnel responsible for environment meant the municipalities' demand of development of personnel responsible for environment to understand the problems and the guideline to truly solve environmental problems in the areas, development of knowledge specifically on environment in all dimensions required to perform work, development of social skills and attitudes to encourage service mind to be able to work with other personnel with seriousness and sincerity in solving environmental problems in the areas with continuity and sustainability, as well as personnel development to keep up with changes that impacted environment in all dimensions. The guideline of development

of personnel responsible for environment in municipalities consisted in the process of participation of all stakeholders, including the public, private, and people sectors, focus on personnel development with real work and implementation in parallel with transfer of knowledge, arrangement of forum for exchange of knowledge on environmental management as exchange of local-based experience, evaluation of development of personnel responsible for environment stressing the change of behavior after development. Moreover, criteria should be determined of the development of personnel responsible for environment for linkage with career advancement or other benefits to encourage continuous development. For example, middle managers were required to attend curriculum before being eligible for the appointment of Directors of divisions in municipalities, etc. The policy implementation of the development of personnel responsible for environment in the municipalities would be a major factor that impacted Thailand's environmental management. There should be decentralization of Ministry of Natural Resources and Environment to local administration in accordance with the Environmental Quality Management Plan 2017-2021 of Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment (Office of Natural Resources and Environmental Policy and Planning, 2017, pp. 26-29) with the decentralization to local administration for environmental management in the responsible areas.

The personnel development and the development system of personnel responsible for environment in municipalities in Thailand had both similarities and differences between subdistrict, town, and city municipalities. The similarities included the following: the municipalities at all levels clearly incorporated environmental policy in their strategic plans; the development of personnel responsible for environment was in compliance with the strategic plans and in response to the demands of municipalities' environmental problems to a certain extent; the translation of the development system of personnel responsible for environment into the personnel development plans in line with the criteria of the contest of municipalities on environment which specified Indicator 24: Formulation of vision and strategies ready to shift to concrete implementation and Indicator 25: Development of personnel's potentials for skill and expertise in their responsibilities

and under the Green City Project of Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment (Department of Environmental Quality Promotion, 2020, pp. 48-49). The developed personnel responsible for environment could apply their acquired knowledge and ability to perform their official duties to a certain extent.

There were different issues between subdistrict, town, and city municipalities. The municipalities at all levels in all regions had similar behaviors of the development of personnel responsible for environment, methods of development of personnel responsible for environment with integration in many dimensions, integration of development of personnel responsible for environment with personnel in other fields, integration of operation by assigning them to operate projects in collaboration with many divisions, or assigning personnel in other divisions to operate projects incorporating environmental activities. These measures supported teamwork, forged the atmosphere of unity in municipalities, and provided good relation among personnel in accordance with Somchat Kityanyong and Jeeracha Jaipiam who discussed the importance of teamwork. One benefit was to foster unity in agencies (Somchat Kityanyong & Jeeracha Jaipiam, 2009, p. 57). As for the city municipalities in particular, the additional difference included development of personnel responsible for environment that did not keep up with environmental changes. So, the personnel development plan must be improved for flexibility and for keeping abreast with environmental changes.

3) The model of the development of personnel responsible for environment in municipalities in Thailand could be used as a tool to develop personnel responsible for environment in municipalities at all levels. But the issues that the subdistrict, town, and city municipalities should consider were the analysis and implementation of development of personnel responsible for environment in all different processes according to the context of the particular municipalities. It was in line with the development of the competency of human resource management based on the HR Scorecard that Department of Local Administration used as a tool to evaluate the success of human resource management of local administration, leading to the development and increased competency to strengthen workforce and accomplish the mission of local administration according to the resolution of the Ad hoc sub-

committee on efficient workforce management in the public sector (Department of Local Administrate Recommendations

5.3   Recommendation

5.3.1 Application of the Study Results

1)   Department of Local Administration should drive the municipalities at all levels to place importance on development of personnel responsible for environment by applying the study results of the model of the development of personnel responsible for environment in municipalities in Thailand.

2)   The model of the development of personnel responsible for environment in municipalities in Thailand based on these study results can be applied to subdistrict administrative organizations (PSAO) and provincial administrative organizations (PAO).

3)   The model of the development of personnel responsible for environment in municipalities in Thailand can be applied to develop personnel in other fields in municipalities at all levels, subdistrict administrative organizations (PSAO), and provincial administrative organizations (PAO).

5.3.2 Future Study

1)   Research should be conducted on the development of specific curriculum on environment in develop personnel responsible for environment at all levels as the enhancement of this research.

2)   Research should be conducted on the guideline to develop personnel responsible for environment that is appropriate to all types of local administration with Local Personnel Development Institution, Department of Local Administration, co-hosting with Ministry of Natural Resources and Environment.

3) Study should be conducted on the appropriateness to determine organizational structure of Environmental Bureau or Division of city municipalities and provincial administrative organizations to acquire human resource directly in environmental aspect. It serves as motivation for human resource in environmental aspect to pursue

career advancement in the local administration, resulting in environmental management in the responsible areas of the local administration

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APPENDICES

APPENDIX A

**QUESTIONNAIRE EVALUATION OF KNOWLEDGE, ATTITUDES
AND BEHAVIOR OF ENVIRONMENTAL PERSONNEL THROUGH
THE DEVELOPMENT OF ENVIRONMENTAL PERSONNEL**

QUESTIONNAIRE

Evaluation of knowledge, attitudes and behavior of environmental personnel through the development of environmental personnel for the Pattern of the development of personnel responsible for environment in municipalities in Thailand

Explanation for Respondents

1. Respondents are Municipal environmental personnel refer to municipal employees, and all types of employees Working in environmental management Including employees of companies that provide environmental management for the municipality.

2. This questionnaire consists of 5 parts.

Part 1 Background of the questionnaire respondents

Part 2 Knowledge of municipal environmental management

Part 3 Attitudes on environmental management

Part 4 Behavior on practice of environmental management

Part 5 Other Comments on the Municipal Environmental Personnel
         Development

3. Please read the explanation for each section before answer questions.

4. The information obtained from this questionnaire will be kept confidential and the presentation of information will be made in the form of a research summary for the purpose of academic use only. The researcher asks you for your kindness to cooperate in answering surveys and giving suggestions, based on the opinion that is most accurate for the benefit of this research.

The researcher would like to thank everyone, that please take the time to cooperate in answering the questionnaire.

Staff only

Questionnaire number □□□□

Part 1 Background of the Questionnaire Respondents

Explanation please put a mark ✓ in □ the answer page you need.

1. Gender

    □ Male   □ Female

2. Age (years)

    □ 20 – 30   □ 30 – 40   □ 40 – 50 years

    □ 50 – 60   □ Over 60 years

3. Education

    □ Lower than B.A.   □ B.A.

    □ M.A.   □ Ph.D.

4. Your position in environmental Work

    □ Administrators or acting

    □ Officers/registered nurses or equivalent

    □ Operating officers/assistant operating officers/operating staff

    □ Company employees/staff hired by municipalities

5. How long have you been in municipal environmental work experience?

    □ Less than 1 year   □ 1 – 5 years

    □ 6 – 10 years   □ Over 10 years

Part 2 Knowledge of Municipal Environmental Management: 20 Items.

Explanation please put a mark ✓ In the right-hand column table, Yes or No.

Item	Knowledge on Environmental Management	Yes	No
6	Environment meant things that surrounded us, both living and not living, visible and not visible, tangible and not tangible.		
7	Natural resources came from nature, but environment was both man-made and natural, by which natural resources were part of the environment.		
8	Generally, the causes of environmental problems included increased population, economic growth, technological advancement, and natural disasters from seasonal variabilities.		
9	Environmental management meant systematic and efficient process of the use of environment through planning, follow-up, improvement, and rectification for better development.		
10	Major environmental problems found in municipal areas and nationwide included waste, wastewater, air pollution.		
11	In Thailand, most environmental problems in rural communities outside municipal areas were not different from those in urban communities inside municipal areas.		
12	In the current situations, waste disposal by correct method of incineration would benefit environment the most.		
13	Household wastes in municipal areas consisted of general waste, recycled waste, and degradable waste.		
14	Infectious waste meant waste contaminated with blood, secretion, human parts from hospitals treating people only.		
15	Correct waste management and waste separation for appropriate disposal were the responsibilities of municipal waste collectors only.		
16	Wastewater sources in municipal communities came from discharge of wastewater from washing of clothes, dishes, and food scraps from households, and bathing, with the exclusion of wastewater from establishments such as hotels or government offices.		

Item	Knowledge on Environmental Management	Yes	No
17	Wastewater problems in urban communities partly came from the problems of people's littering, both locals and non-locals entering urban communities.		
18	Municipalities' wastewater treatment had many treatment methods that they could choose as appropriate depending on the amount of wastewater, contaminants in wastewater, types of areas, and budget.		
19	Air pollution problems in municipal areas mostly came from traffic congestion, industrial plants, and garbage burning in households.		
20	Provision of parks and planting of many roadside trees in municipal areas would help solve municipalities' air pollution problems to a certain extent.		
21	Municipalities were responsible for solving environmental problems such as waste management, wastewater management, etc. which were legal responsibilities.		
22	In working to solve environmental problems, operation must be undertaken dimension after dimension and not all dimensions at the same time.		
23	People could not sue if waste collectors did not follow orders or ignored their assigned duties.		
24	Municipalities' responsibilities on environmental management belonged to Bureau or Division of Public Health and Environment.		
25	Development guideline of personnel responsible for environment included knowledge transfer on environment, raising awareness, and promotion of the change of behavior as a role model on environment.		

Part 3 Attitudes on Environmental Management: 10 Items.

Explanation please put a mark ✓ In the table on the right as you want.

Item	Attitudes on Environmental Management	Highly Agree	Agree	Do Not Agree	Highly Disagree
		Opinions			
26	Employees responsible for waste disposal were not interested in other field of environmental management not related to waste disposal.				
27	Environmental preservation should start at home.				
28	Electricity saving in municipalities was considered initial environmental preservation.				
29	Our good behavior such as picking up garbage on the ground was a better example than our teachings or suggestions.				
30	Municipal officials must raise their own awareness first before raising the public's awareness.				
31	People could throw away garbage because they had already paid garbage collection fees to municipalities and it was the responsibility of employees to do the job.				
32	Administrators and employees at all levels placed importance on the success				

Item	Attitudes on Environmental Management	Opinions			
		Highly Agree	Agree	Do Not Agree	Highly Disagree
	of environmental management.				
33	Role and duties of environmental management in municipal areas belonged to mayors only and not employees.				
34	In order to work well on environment, it was necessary to be developed for knowledge and skills related to work.				
35	The continuous trainings for development of knowledge on environmental management would be useful.				

Part 4 Behavior on Practice of Environmental Management: 10 items.

Explanation Please put a mark ✓ in ☐ Right channel table as you want, by considering that How much they have behaved in each item.

Item	Behavior	Frequency of Practice
36	Picking up garbage on roadside or in public places while walking and disposing it in garbage bin or other appropriate places.	Never ☐ ☐ ☐ ☐ ☐ ☐ Every time
37	Turning off lights or unplugging every time after use or before leaving home or office without being reminded.	Never ☐ ☐ ☐ ☐ ☐ ☐ Every time
38	Feeling of discontent upon seeing black smoke emission from cars or loud noise specifically from modified motorcycles, annoying residents and society.	Never ☐ ☐ ☐ ☐ ☐ ☐ Every time
39	With garbage in the car while travelling to other areas, the garbage would be kept in the car before disposal in garbage bin later.	Never ☐ ☐ ☐ ☐ ☐ ☐ Every time
40	Feeling of regret, sadness upon seeing or hearing news of big trees being torn down to make room for other purposes.	Never ☐ ☐ ☐ ☐ ☐ ☐ Every time
41	Arrangement of houses, residences, and offices in accordance with and support of concept of environmental management such as opening up of rooms for ventilation, separation of waste before disposal, energy saving.	Never ☐ ☐ ☐ ☐ ☐ ☐ Every time
42	Participation in social activities involving environmental management in various occasions organized by government agencies or charity organizations.	Never ☐ ☐ ☐ ☐ ☐ ☐ Every time

Item	Behavior	Frequency of Practice
43	Donation, giving, support in cash or in kind for public good related to environmental management.	Never □ □ □ □ □ □ Every time
44	Teachings and suggestions to children, grandchildren, and close friends on good behavior concerning environment such as teaching of waste disposal.	Never □ □ □ □ □ □ Every time
45	Learning about environment by reading, listening, watching, and exchange of experience with other people.	Never □ □ □ □ □ □ Every time

Part 5 Other Comments on the Municipal Environmental Workforce Development

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APPENDIX B

INTERVIEW FORM THE PATTERN OF HUMAN RESOURCE DEVELOPMENT IN ENVIRONMENTAL ASPECT OF THE MUNICIPALITY IN THAILAND

INTERVIEW FORM 1

Current development of personnel responsible for environment in municipalities for the Pattern of the development of personnel responsible for environment in municipalities in Thailand.

Part 1 General Information

Interviewee
……………………………………………………………………………………….
Interviewer Student
Interview Date ………………………………………………………………….
The Place………………………………………………………………………….

Part 2 Interview Question Issues

1) Types of personnel responsible for environment in municipalities that were overall developed in Thailand.

2) Overall process and methods of development of personnel responsible for environment in municipalities in Thailand.

3) Results of overall development of personnel responsible for environment in municipalities in Thailand.

4) Continuity in overall development of personnel responsible for environment in municipalities in Thailand.

5) Recommendations of overall development of personnel responsible for environment in municipalities in Thailand.

Thank you all

Please take the time to interview this time.

INTERVIEW FORM 2

Policy of development of personnel responsible for environment in Thailand for the Pattern of the development of personnel responsible for environment in municipalities in Thailand.

Part 1 General Information

Interviewee

…………………………………………………………………………………….

Interviewer Student

Interview date……………………………………………………………………….

The place …………………………………………………………………………….

Part 2 Interview Question Issues

1) Overall demand or problems of development of personnel responsible for environment in municipalities in Thailand.

2) Determination of guideline and decision to choose the guideline for overall development of personnel responsible for environment in municipalities in Thailand.

3) Concrete implementation of overall development guideline of personnel responsible for environment in municipalities in Thailand.

4) Evaluation of overall development of personnel responsible for environment in municipalities in Thailand.

5) Continuity in overall development of personnel responsible for environment in municipalities in Thailand.

6) Recommendations of overall development of personnel responsible for environment in municipalities in Thailand.

Thank you all

Please take the time to interview this time.

INTERVIEW FORM 3

Environmental management policy of municipal administrators and the municipal environmental management personnel development system. (For executives) The Pattern of the development of personnel responsible for environment in municipalities in Thailand.

Part 1 General Information

Interviewee

…………………………………………………………………………………………….

Interviewer Student

Interview date……………………………….………………………………….

The place …………………………………………………………………….

Part 2 Interview Question Issues

1) Municipal administrator's policy on environmental management.

2) Compliance of development of personnel responsible for environmental management with municipalities' strategies.

3) Development of personnel responsible for environmental management in response to municipalities' needs.

4) Efficiency of development system of personnel responsible for environmental management in municipalities.

5) Effectiveness of development of personnel responsible for environmental management in municipalities.

6) Recommendations on development of personnel responsible for environment in municipalities.

Thank you all

Please take the time to interview this time.

INTERVIEW FORM 4

Municipal Environmental Management Personnel Development System. (For practitioners) The Pattern of the development of personnel responsible for environment in municipalities in Thailand.

Part 1 General Information

Interviewee
……………………………………………………………………………………………….
Interviewer Student
Interview date………………………………………………………………….……
The place ……………………………………………………………………………

Part 2 Interview Question Issues

1) Correspondence of environmental management personnel development with municipal strategy.

2) Development of personnel responsible for environmental management in response to municipalities' needs.

3) Efficiency of development system of personnel responsible for environmental management in municipalities.

4) Effectiveness of development of personnel responsible for environmental management in municipalities.

5) Recommendations on development of personnel responsible for environment in municipalities.

Thank you all

Please take the time to interview this time.

BIOGRAPHY

NAME   Wullop Yaiying
ACADEMIC   Bachelor's Degree with major in Public Administration from
BACKGROUND   Sukhothai Thammathirat Open University, Bangkok,
                                  Thailand in 1988

                                  Bachelor's Degree with major in Public
                                  Health from Sukhothai Thammathirat Open
                                  University, Bangkok, Thailand in 1990

                                  Master's Degree with major in Administration Technology
                                  from National Institute of Development Administration
                                  (NIDA), Bangkok, Thailand in 2007

EXPERIENCES   1986 - 2011
                                  Government Official,
                                  Position of Community Health Officer and Public Health
                                  Academician, Amphur Pranburi Public Health Office
                                  and Hua Hin Hospital, Prachuap Khiri Khan Province

                                  2011 - Current
                                  Chairman and Managing Director, Trainer and Consultant in
                                  Human Resource Development and Organization, HRDI
                                  Company Limited, Hua Hin District,
                                  Prachuap Khiri Khan Province