

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT  
KINGDOM OF THAILAND

# THE STUDY ON SUPPORTING SYSTEM FOR LOCAL ADMINISTRATIONS ON NATURAL RESOURCES AND ENVIRONMENTAL MANAGEMENT IN THE KINGDOM OF THAILAND

**Main Report  
Final Report**



**August 2008**

**Kokusai Kogyo Co., Ltd.  
EX Corporation**

**THE STUDY ON  
SUPPORTING SYSTEM FOR LOCAL ADMINISTRATIONS ON  
NATURAL RESOURCES AND ENVIRONMENTAL  
MANAGEMENT  
IN THE KINGDOM OF THAILAND**

List of Volumes

Volume I	Summary
Volume II	Main Report
Volume III	Supporting Report
Volume IV	Data Book

***This is the Main Report.***

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## **PREFACE**

In response to a request from the Government of Thailand, the Government of Japan decided to conduct “The Study on Supporting System for Local Administrations on Natural Resources and Environmental Management in the Kingdom of Thailand” and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Susumu Shimura of KOKUSAI KOGYO Co., LTD. between June 2007 and July 2008.

In addition, JICA set up an advisory committee headed by Mr. Masami Mizuguchi a Senior Advisor of Institute of International Cooperation, which examined the study from specialist and technical points of view.

The team held discussions with the officials concerned of the Government of Thailand and conducted field surveys in the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the implementation of this plan and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Thailand for their close cooperation extended to the study.

August 2008

Ariyuki Matsumoto  
Vice President  
Japan International Cooperation Agency

August 2008

Mr. Ariyuki MATSUMOTO  
Vice President  
Japan International Cooperation Agency

### **Letter of Transmittal**

Dear Mr. Matsumoto

We are pleased to submit the report of the Study on Supporting System for Local Administrations on Natural Resources and Environmental Management in the Kingdom of Thailand.

This Study was conducted to *strengthen the capacity* of agencies responsible for Natural Resources and Environmental Management (NREM) in central, provincial, and local administrations, and at the same time *strengthen the linkage* between the administrative levels, through the formulation of a Provincial Environmental Quality Management Plan (PEQMP) following the National Environmental Quality Management Plan (National EQMP) of 2007-2011 in two model provinces, Phra Nakhon Si Ayutthaya Province (AYP) and Samut Songkhram Province (SKP).

The ultimate objective of the Study is to strengthen capacities of all involved in NREM (including the individual, organization, system, and even society), and therefore the Study carefully stayed within the role of supporting the initiative led by the Thai side. The emphasis of the Study was placed on the process of producing reports or manuals. Therefore, reports, seminar handouts, etc. were all thoroughly discussed with the Thai side beforehand, and only the points agreed upon by the Thai side were included in the final version. Thus, the Study Team placed high importance on discussions held at biweekly meetings, which were held 36 times in total, once a week alternatively in the two Model Provinces.

The PEQMP of the Model Provinces were formulated based on the PEQMP-KPI that those in the Model Provinces themselves formulated and submitted, and are essentially revised and improved editions of the Thai sides' effort. Desired improvements and supplements to the PEQMP-KPI Formulation Manual were noted in the PEQMP revision process, and were similarly collected as a list of suggested revisions.

After the issues and measures to be taken were examined through this process of formulating PEQMP, the Study Team proposed measures in the form of supporting plan for the improvement of administration capacity of organizations and agencies related to NREM in central/provincial/local administrations to strengthen linkages between organizations related to NREM in central/provincial/local administration, raise awareness among local administrations and residents, establish an NREM administration structure at the provincial level, and utilize the NREM GIS database in NREM.

We would like to take this opportunity to express our sincere gratitude to your Agency, the Advisory Committee, the Ministry of Foreign Affairs, and the Ministry of Environment of Japan. We would also like to extend our deep appreciation to the Government of Thailand, The Embassy of Japan and the JICA Thailand office for their vital cooperation during the implementation of the study in Thailand.

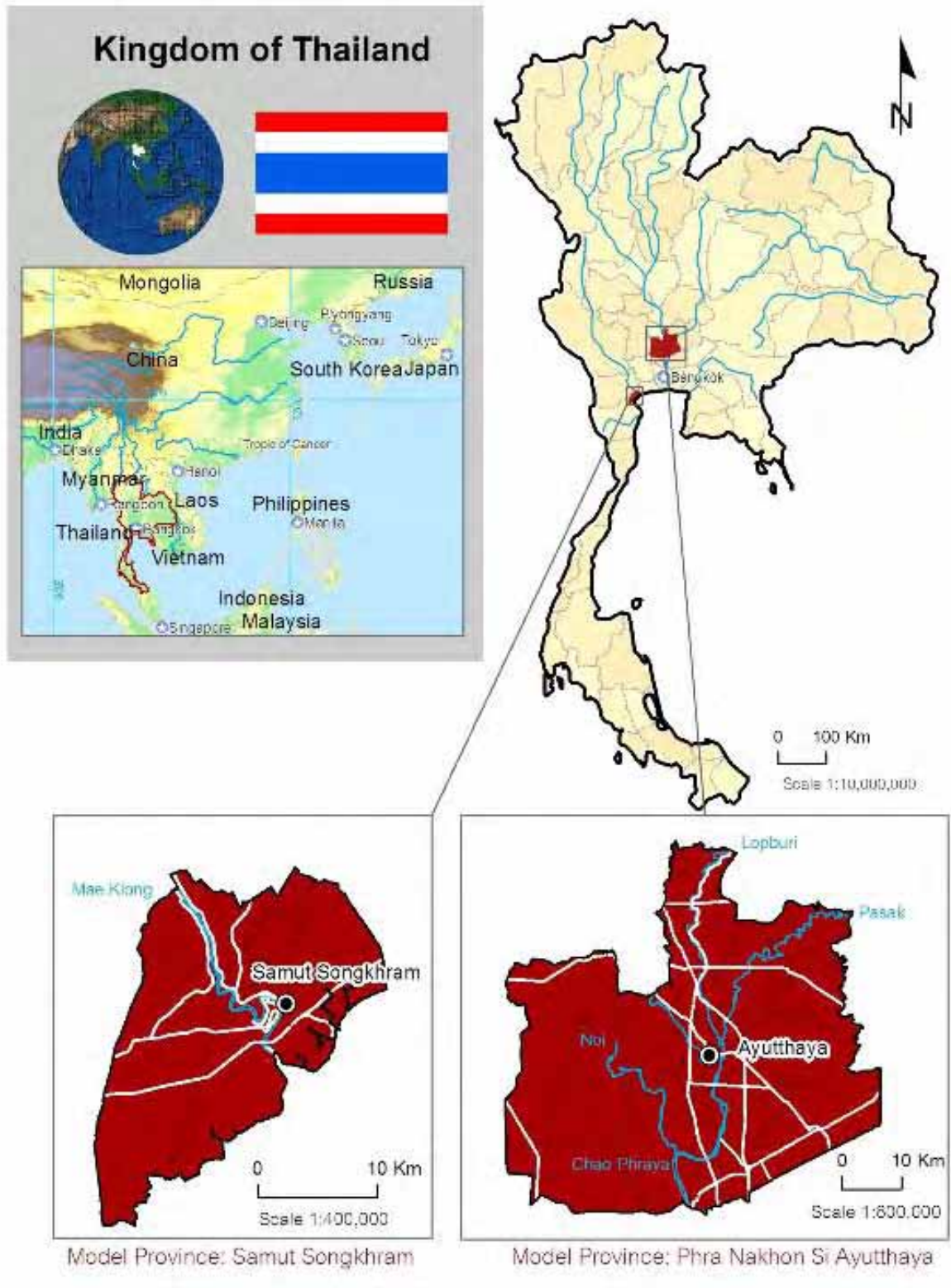
Last but not least, we hope that the output of the study presented here will contribute not only to the improvement of NREM, but also to the sustainable development of the whole country.

Respectfully,

Susumu SHIMURA

Team Leader

The Study on the Study on Supporting System for Local Administrations on Natural Resources and Environmental Management in the Kingdom of Thailand..



**Location Map: The Study on Supporting System for Local Administrations on Natural Resources and Environmental Management in the Kingdom of Thailand**



Cultural heritage coexists with residents and modern urban facilities in the Historic City of Ayutthaya, a World Heritage Site since 1991.



The only bird sanctuary in AYP (approx. 16 ha) includes temple grounds at its center. Bats hang from a tree just outside the bird sanctuary.



The voluminous Chao Phraya River is essential as a transportation route and also as a drinking/ irrigation water source to local residents, but can also be a source of flooding.



The largest solid waste disposal site in AYP, located to the west of Ayutthaya City, is filled to capacity. Construction of a new site is a priority for AYP.



Oxidization wastewater treatment facility operated by Ayutthaya City, located by the Lopburi River in AYP.



The river ports on the Chao Phraya River in AYP (with moorings for coal- and cement-carrying barges) are sources of public complaints about noise and dust.

Plate 1: The Current Situation of NREM in AYP



A floating market on a canal connecting to the Mae Klong River; a famous tourist spot in SKP.



Don Hoi Lot Wetlands, protected by RAMSAR convention, abounds in aquatic and marine resources and is a jewel among SKP coastal sites.



SKP is famous for the Hoi Lot clam, a type of razor clam, from the RAMSCAR-protected Don Hoi Lot Wetlands.



Coconuts piled up at a coconut processing factory, and its wastewater oxidation pond.



Privately owned mangrove forests are exploited as raw material for charcoal. Mangrove forests on public lands are strictly protected in SKP.



Currently, SKP only has a transfer site (above) for solid waste. Waste is transported to final disposal sites in neighboring provinces. Construction of a final disposal site is a priority for SKP.





Office entrance, REO8, in Ratchaburi Province. REO8 oversees SKP.



REO8 has an information section equipped with GIS software and X-Y plotters.



Orbortor office building, SKP.



Tessaban Nakhon Office, AYP.



Orbortor office building, AYP.



Waste collection vehicles parked at the Orbortor office. Waste collection is an important function of Local Administrations.

Plate 3: Provincial Agencies of Central Administration Organizations relating to NREM and Offices of Local Administration (LA)



Sampling at the Mae Klong River mouth, SKP.



Water quality analysis on the bank of Mae Klong River, SKP. A fixed point observation site used by PCD was selected for data comparison purposes.



Sampling at the wastewater treatment center outlet of Suan Autasahakham Rojana Industrial Zone, AYP.



Wastewater treatment pond of Suan Autasahakham Rojana Industrial Zone, AYP. The water quality of treated wastewater met PCD standards.



Interview with the Chief Executive of Orborjor of AYP. The Chief Executive is elected into office.



Opinion survey with the head of an NGO, 'We Love Mae Klong'.

Plate 4: Supplement Studies in the Model Provinces



Biweekly meetings in AYP. Meetings were held in the PEO chief's office due to lack of facilities. 18 meetings were held in one year.



Biweekly meetings in SKP. Around 4-5 staff from ONEP, a Central Government organization, attended each biweekly meeting.



The 1<sup>st</sup> Seminar at SKP. The content of PEQMP was explained to the public, and their comments were reflected onto the next draft.



Participants of the 1<sup>st</sup> Seminar at AYP held on December 27<sup>th</sup>, 2007.



The PEQMP Trainers Training Workshop (TTW) was held in June 2008. Participants learned uses for GIS in creating area-based information for PEQMP.



Around 20 REO and PEO staff participated in TTW, discussed problems they encountered during PEQMP-KPI formulation and suggested improvements to the formulation process.

Plate 5: Biweekly Meetings, Seminars and Workshops

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## Abbreviations

AMP	Administrative Management Plan (4 Year Plan)
Amphoe	District
AP	Action Plan
AYP	Phra Nakhon Si Ayutthaya Province
BE	Business Establishment
CA	Central Administration
CD	Capacity Development
Changwat	Province
Chum chon	Community
CITC	Center for Information Technology and Communication
CPEQMPF	Committee for Provincial EQMP Formulation
C/P	Counterpart
DBIS	Database & Information System Section, ONEP
DDPM	Department of Disaster Prevention and Mitigation
DEQP	Department of Environmental Quality Promotion, MNRE
DF/R	Draft Final Report
DGR	Department of Groundwater Resources, MNRE
DIW	Department of Industrial Works, MOIND
DLA	Department of Local Administration, MOI
DMCR	Department of Marine and Coastal Resources, MNRE
DMR	Department of Mineral Resources, MNRE
DNP	Department of National Park, Wildlife and Plant Conservation, MNRE
DOPA	Department of Provincial Administration, MOI
DWR	Department of Water Resources, MNRE
EQM	Environmental Quality Management
EQMP	Environmental Quality Management Plan
GIS	Geographical Information System
GOJ	Government of Japan
GOT	Government of Thailand
IC/R	Inception Report
IPO	Irrigation Project Office
IT/R	Interim Report
JICA	Japan International Cooperation Agency
KPI	Key Performance Indicator
LA	Local Administration
MNRE	Ministry of Natural Resources and Environment
MOAC	Ministry of Agriculture and Cooperatives
MOC	Ministry of Culture
MOCm	Ministry of Commerce
MOD	Ministry of Defense
MOE	Ministry of Education
MOF	Ministry of Finance
MOPH	Ministry of Public Health
MOIND	Ministry of Industry

MOI	Ministry of Interior
MOIT	Ministry of Information Technology and Communication
MOJ	Ministry of Justice
MOLS	Ministry of Labor and Social Securities
MOSD	Ministry of Social Development and Human Settlement
MOSTE	Ministry of Science, Technology and Environment
MOT	Ministry of Transport
MOTS	Ministry of Tourism and Sports
Mooban	Village
MS	Meteorological Station
National EQMP	Environmental Quality Management Plan
NESDB	National Economic and Social Development Board, Prime Minister's Office
NGO	Non-Governmental Organization
NREM	Natural Resources and Environmental Management
NREM GIS Database	Natural Resources and Environmental Management GIS Database
ODP	Local Administration Development Plan (Orborjor Development Plan)
ODPM	Office of Disaster Prevention and Mitigation
OJT	On the Job Training
ONEB	Office of National Environment Board, ONEP
ONEP	Office of Natural Resources and Environmental Policy and Planning, MNRE
OP-BE-AYP (SKP)	Opinion Survey to Business Establishments in Ayutthaya Province (Samut Songkhram Province)
OP-LA-AYP (SKP)	Opinion Survey to Local Administration in Ayutthaya Province (Samut Songkhram Province)
OP-LP-AYP (SKP)	Opinion Survey to Local People in Ayutthaya Province (Samut Songkhram Province)
OP-NGO-AYP (SKP)	Opinion Survey to NGO in Ayutthaya Province (Samut Songkhram Province)
OPDC	Office of Public Sector Development Commission, Prime Minister's Office
OPS	Office of Permanent Secretary, MNRE
Orborjor	PAO (Provincial Administrative Organization)
Orbortor	TAO (Tambon Administrative Organization)
PA (Changwat)	Provincial Administration
PAO	Provincial Administrative Organization
PAgO	Provincial Agricultural Office
PA + LA	Provincial Administration and Local Administration
PCD	Pollution Control Department, MNRE
PDP	Provincial Development Plan
PEO	Provincial Environmental Office
PEQMP	Provincial Environmental Quality Management Plan
PEQMP-KPI (Provincial APNREM)	Provincial Environmental Quality Management Plan for Key Performance Indicator

PFO	Provincial Fishery Office
PHO	Provincial Public Health Office
PLO	Provincial Livestock Office
PMO	Prime Minister's Office
P/R	Progress Report
Provincial APEQM	Provincial Action Plan for Environmental Quality Management
PWA	Provincial Water Authority
PWO	Public Works and City Planning Office
REO	Regional Environmental Office
Regional EQMP	Regional Environmental Quality Management Plan
RFD	Royal Forest Department, MNRE
RID	Royal Irrigation Department, MOAC
St/C	Steering Committee
SKP	Samut Songkhram Province
SPDP	Strategic Provincial Development Plan (Governor's Budget)
Tambon	Sub-district
TAO	Tambon Administrative Organization
Tessaban (Municipality)	There are three type of Tessaban as follows ➤ Tessaban Nakorn (City Municipality) ➤ Tessaban Mueang (Town Municipality) ➤ Tessaban Tambon (Sub-district Municipality)
Tessaban Nakorn	City municipality
Tessaban Mueang	Town Municipality
Tessaban Tambon	Sub-district Municipality
TOR	Terms of Reference
TWC	Technical Working Committee
WBS	Well Being Strategy

# 1. Outline of the Study

# **1 Outline of the Study**

## **1.1 Background and Objectives**

### **1.1.1 Background**

Thailand's rapid economic development over the last several decades has put considerable stress on its natural resources and environment. Natural resources and environmental performance assessments from several studies confirm a general deterioration of both natural resources and environmental quality and quantity. The analysis of natural resource deterioration and environmental degradation in various sectors indicated that many natural resources and environmental problems tend to be localized, involve multiple stakeholders and thus involve multiple and often conflicting objectives.

Although the government of Thailand has been promoting decentralization and has already transferred administrative powers over natural resources and environment management (NREM) to Local Administrations (hereafter LA; includes Orborjor, Tessaban and Orbortor), LAs remain limited in their administrative capacity for NREM. Furthermore, support systems along the central government line (ONEP, REO and PEO) that accompany decentralization have not been adequately strengthened.

The government of Thailand has formulated the Environmental Quality Management Plan (National EQMP) 2007-2011 as a national environmental quality management policy to provinces and local administrations, and published it in the Government Gazette Vol. 124, Special section 24 Ngor, on 1<sup>st</sup> March 2007. The Ministry of Natural Resources and Environment (MNRE) requested that provincial and local administrations formulate an environmental quality management plan at the provincial level as an open opportunity to all sectors to take part in the formulation and cooperation for implementation in the future. It is, therefore, indispensable to strengthen the capability of provinces and local administrations on NREM since they shall take responsibility for NREM.

Hence, the Thai Government requested the government of Japan to conduct "the Study on Supporting System for Local Administrations on Natural Resources and Environmental Management in the Kingdom of Thailand" (hereafter "the Study"). The Study aims to strengthen capacities of central government, provincial administration and local administration through the formulation of a Provincial Environmental Quality Management Plan (PEQMP) for two model provinces, Phra Nakhon Si Ayutthaya and Samut Songkhram.

### **1.1.2 Objective**

The study aims to strengthen capacities of agencies responsible for NREM in both central government and local administrations, and at the same time strengthen the linkage between the two levels, through the formulation of a Provincial Environmental Quality Management Plan (PEQMP) that takes into account the National EQMP in two model provinces, Phra Nakhon Si Ayutthaya Province (AYP) and Samut Songkhram Province (SKP).

### **1.1.3 Study Area**

Provincial EQMPs were formulated for two model provinces, Ayutthaya and Samut Songkhram. Enhancement of central and local administrative capacity for EQMP is applied to the whole of Thailand

- Ayutthaya Province
- Samut Songkhram Province

## **1.2 Provincial Environmental Quality Management Plan (PEQMP)**

### **1.2.1 Natural Resources and Environmental Management Plan in Thailand**

The following plans concerned with Natural Resources and Environmental Management (NREM) exist in Thailand. The plans and their proponents are shown in the table below.

Table 1-1: Natural Resources and Environmental Management Plan in Thailand

Short Form	Thai	English	Proponent	Period	Remark
1. National EQMP	แผนจัดการคุณภาพสิ่งแวดล้อม	Environmental Quality Management Plan	Ministry of Natural Resources and Environment (MNRE)	5 Year Plan (2007-2011)	Published in the Royal Gazette Vol. 124 Special section 24 Ngor on 1 <sup>st</sup> March 2007
2. Regional EQMP	แผนจัดการคุณภาพสิ่งแวดล้อมภาค	Regional Environmental Quality Management Plan	Regional Environmental Office (REO), MNRE	5 Year Plan (2007-2011)	This Plan was formulated to disseminate the National EQMP to provinces and local administrations. AYP belongs to Region 6 and SKP to Region 8. A plan for natural resources has not been included in Regional EQMP formulated by Region 6.
3. PEQMP-KPI (Provincial APNREM)	แผนปฏิบัติการเพื่อการจัดการทรัพยากรธรรมชาติและสิ่งแวดล้อมในระดับจังหวัด	Provincial Action Plan for Natural Resources and Environmental Management for KPI	Changwat (Province) and Provincial Environmental Office (PEO), MNRE	4 Year Plan (2008-2011)	This Plan serves as a KPI for administrative evaluation for both ONEP and provinces, according to the Memorandum of Understandings signed between OPSDC of the Prime Minister's Office and MNRE in 2006.
4. Provincial APEQM	แผนปฏิบัติการเพื่อการจัดการคุณภาพสิ่งแวดล้อมในระดับจังหวัด	Provincial Action Plan for Environmental Quality Management	Changwat (Province) and Provincial Environmental Office (PEO), MNRE	1 Year Plan for 2008	Provinces with areas designated for pollution control and/or environmental conservation are obligated to formulate this plan based on Article 37 of the Enhancement and Conservation of National Environmental Quality Act. Provinces without such areas prepare this plan to acquire project budgets. These plans usually concentrate on wastewater treatment, solid waste management, air pollution control and green area conservation.

## **1.2.2 Provincial Environmental Quality Management Plan (PEQMP)**

### **a. Provincial Action Plan for Natural Resources and Environmental Management for Key Performance Indicator (PEQMP-KPI) and PEQMP**

The plans to be formulated in the two model provinces during this Study are equivalent to their PEQMP-KPI (Provincial APNREM) as shown in the Table above. To avoid confusion, a differentiation shall be made by referring to the plans already formulated and submitted by the two model provinces prior to October 2007 as PEQMP-KPI, and the new plans formulated by the two model provinces under assistance of the Study Team referred to as PEQMP.

### **b. Background of PEQMP-KPI**

Act of Administration Policy, Issue 5 (2002), Strategic Plan of Thai Administration Development (2003-2007) and Royal Decree on Good Governance in 2003 directed both central and local administrations to assess yearly activities by using the Key Performance Indicator (KPI) to measure the efficiency of the action taken.

To emphasize the importance of NREM in long-term development under the “Sufficiency Economy” philosophy, the Office of the Public Sector Development Commission of the Prime Minister’s Office increased the weight of NREM-related KPI in the FY2007 performance assessment, as compared to FY2006. Specifically, OPDC added “the formulation of PEQMP-KPI” as a FY2007 performance indicator at the provincial level. At the same time, “assistance for the formulation of PEQMP-KPI” became a FY2007 performance indicator for the Ministry of Natural Resources and Environment (MNRE).

The PEQMP-KPI thus formulated will be the master plan for NREM in the province for the next 4 years (2008-2011). The PEQMP-KPI should reflect the current conditions of natural resources and environment in each province, and should aim to provide appropriate and specific guidelines for preserving and rehabilitating the natural resources and environment under conditions specific to each province.

The formulation of PEQMP-KPI will be grounded in an area-based approach in order to reflect the needs and concerns of the local people, and to properly align the direction taken by the PEQMP-KPI to economic and social development plans of the province. The formulation of PEQMP-KPI will necessitate the unification of natural resources and environment information, as well as the sharing of ownership of such information. The PEQMP-KPI will lay out a 4-year budget plan where central government agencies, provincial administrations, local administrations and residents each have a role and responsibility to fulfill in order to achieve various objectives.

The PEQMP-KPI relates to other NREM-related plans at various administrative levels and other NREM-related agencies, as shown in the figure below:



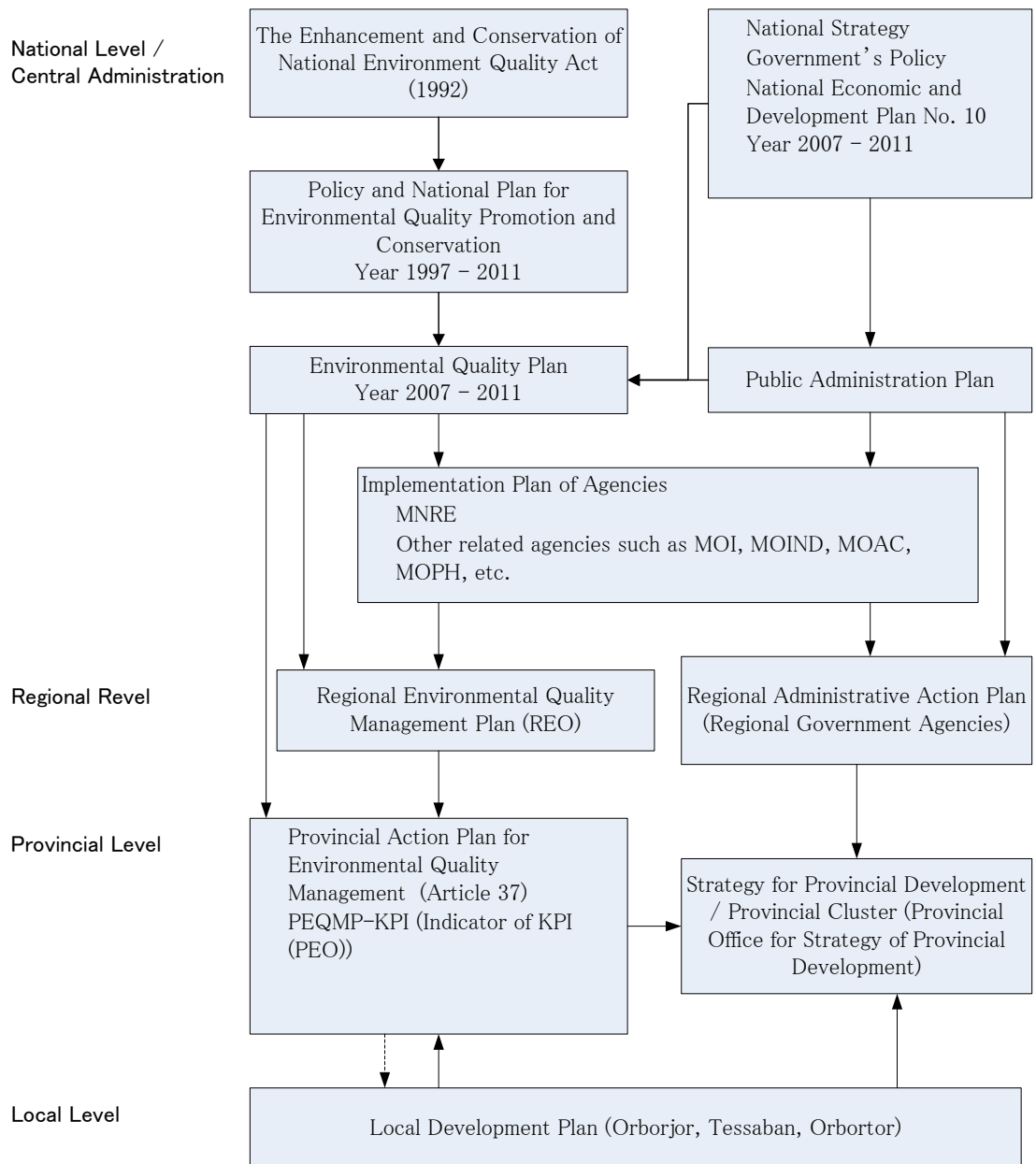


Figure 1-1: Relationship of Plans and Related Agencies for Natural Resources and Environment at all Government Levels

**c. Issues with existing PEQMP-KPI**

All 75 Provinces submitted their PEQMP-KPI between 1<sup>st</sup> October 2007 and 31<sup>st</sup> December 2007. The submitted PEQMP-KPIs were evaluated by the PEQMP-KPI Evaluation Committee headed by the Deputy Permanent Secretary of MNRE. According to the Evaluation Committee, submitted PEQMP-KPIs showed the following general inadequacies:

1. Although current conditions described in the PEQMP-KPIs present all NREM sectors covered under MNRE, descriptions are general and do not provide specific problems existing in specific and localized areas due to lack of spatial information (area-based

information<sup>1</sup>). This lack of area-based information hinders the clear understanding of plans outlined in the PEQMP-KPIs.

2. Although the importance of giving open opportunity to all stakeholders in the formulation process was stressed in the National EQMP, the PEQMP-KPIs did not include sufficient opportunities nor procedures for stakeholder participation.
3. A PEQMP-KPI differs from a single-year Provincial Action Plan (APEQM) in its multi-year scope and the necessity to have its long-term plans aligned to policies laid out in the National EQMP. The MNRE/ONEP prepared a Handbook (Manual) to address these differences but the submitted PEQMP-KPIs greatly differ from the intended result. Specifically, the submitted PEQMP-KPIs dealt only with problems solvable within a single LA instead of addressing provincial-level issues, and there were no coordination between individual plans. As a result of the former, the submitted budget proposals were limited by LA-level budget constraints, although proposals that comprehensively utilize LA, provincial, and national-level assets were actually sought out.

Comments specific to PEQMP-KPIs submitted by Ayutthaya Province (AYP) and Samut Songkhram Province (SKP) are shown below:

Table 1-2: Comments by the Evaluation Committee on the PEQMP-KPI submitted by Ayutthaya Province (AYP) and Samut Songkhram Province (SKP)

Part	Comments of the Committee for PEQMP-KPI Improvement
Part 1 Introduction	(no comment)
Part 2 Situation and Issues in NREM	<ul style="list-style-type: none"> <li>- Describe the current condition of NREM and its problem areas. Clearly describe the linkage between the problem, its current situation, and its impacts on the local residents.</li> <li>- Clearly describe the decision process and procedures in forming preventive measures. Describe how the SWOT analysis results affected the formation process of preventive measures.</li> </ul>
Part 3 Details of PEQMP-KPI	<ul style="list-style-type: none"> <li>- Clearly describe the connection between a problem and plan/project, and the interrelationship between various plans and projects.</li> <li>- Create an operational time table in which each plan/project finishes within the allotted timeframe.</li> <li>- Clearly state the source budgets and/or subsidies for each plan/project.</li> <li>- PEOs must clearly identify plan/projects in which budget allocations and/or subsidies from the province or MNRE are requested.</li> <li>- Define the support structure needed for actual implementation of plan/projects, and include plan/projects in the Provincial Development Strategy.</li> <li>- Provide guidelines on how the plan/project could be followed up and evaluated.</li> </ul>
Part 4 Annex	

<sup>1</sup> The Evaluation Committee decreed that the MNRE should assist the provinces in their preparation and maintenance of NREM GIS databases, so that the provinces can obtain and utilize area-based information.

Others	
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## 1.3 Outline of the Study

### 1.3.1 Policy of the Study

The objective of this Study is “to strengthen capacities of agencies responsible for NREM in central, provincial, and local administrations and at the same time strengthen the linkage between the levels through the formulation of PEQMP in two model provinces”. To rephrase, the stronger emphasis of the Study is on the capacity enhancement of Thai counterparts and other related personnel, rather than the formulation of the end product, the PEQMP. To accomplish the objective under such understanding of Study priorities, the Study Team will follow these Basic Policies:

Basic Policy 1: Contribute to the capacity enhancement of personnel and organizations involved in NREM in central, provincial, and local administration.

Basic Policy 2: Assist the formulation of a PEQMP that establishes a sustainable NREM.

#### **Basic Policy 1: Contribute to the capacity enhancement of personnel and organizations involved in NREM in central, provincial, and local administration.**

Local administrative structures in Thailand are currently in a transitional phase as a result of the nation’s decision to decentralize, with central government (central and provincial administration) lines and the local self-governing line interrelating to each other in an intricate pattern. In terms of NREM, the administrative capacities of the local self-governing line, i.e. Local Administration (Orborjor, Tessaban and Orbortor), who are directly responsible for the preservation, management, and improvement of environmental quality are extremely weak, yet the support systems along the central government lines (ONEP, REO and PEO) that accompany decentralization have not been adequately strengthened. As a result, activities which are under the responsibility of the local self-governing line such as solid waste management, domestic wastewater treatment, and natural resource preservation have not progressed, despite the establishment of financial assistance systems such as environmental funds.

The simple formulation of a PEQMP by the Study Team will not accomplish the objective of constructing a sustainable system of NREM nor the strengthening of administrative capacities of NREM-related agencies within central, provincial, and local administrations. Therefore, the Study’s First Basic Policy is to contribute to the capacity enhancement of, and the strengthening of the linkage between, various personnel and organizations in central, provincial, and local agencies. Such capacity enhancement and strengthening of linkage shall be encouraged through joint Study activities such as the survey and confirmation of stakeholder views and needs, formulation of a PEQMP, formulation and dissemination of the PEQMP Formation Manual and NREM GIS Database Utilization Manual, and seminars and workshops.

Specifically, the active participation of central, provincial, and local administrations involved in NREM shall be encouraged in order to strengthen practical administrative cooperation

between different administrative levels while upholding the independent environmental policy decisions made by each administrative level. Thai counterparts (C/P) shall form the core among various NREM-related personnel and the Thai side shall itself formulate the PEQMP, assisted by the Study Team. The Study Team will also assist the Thai side in actively disseminating and publicizing both the methodology of PEQMP formulation and PEQMP contents to relevant parties.

**Basic Policy 2: Assist the formulation of a PEQMP that establishes a sustainable NREM.**

The formulation of PEQMP will be led by Provincial Administration (Changwat) and its PEO, and the actual implementation of its various plans/projects will be lead by LAs. However, the LAs (Orborjor, Tessaban and Orbortor) that are directly responsible for the preservation, management, and improvement of environmental quality are extremely weak in their administrative capacities, especially in the management of natural resources and environment, as NREM is not considered a high priority issue by LAs. Currently, as the process of decentralization is still undergoing, both PA (Changwat) and Orborjor have not been fully equipped with the administrative structure necessary for the formulation of NREM-related individual sector plans. As a result, the support and assistance of central administration agencies becomes necessary even for the formulation of an improvement plan in each sector of NREM.

Under these existing conditions, the PEQMP must first encourage the development of sustainable NREM in each province and LA. Thus the second Basic Policy for this study is to assist the formulation of a PEQMP that establishes sustainable NREM at the provincial and local level.

An establishment of sustainable NREM at the provincial and local level is not, judging from current conditions, achievable within a short time frame. A step-by-step approach must be taken, beginning with plan/projects that are well within the present capabilities of the LAs. It is extremely difficult for the Study Team to grasp the NREM capabilities of all 159 LAs in Ayutthaya Province and 36 LAs in Samut Songkhram Province, gauge the pertinent issues related to natural resources and environment, and formulate an achievable plan for each issue and LA within the 1-year study period. Thus a Thai-led effort to establish a sustainable NREM, with assistance given where necessary by the Study Team, has become the basic operational mode for this Study as a whole and the PEQMP formulation process in particular. The Study Team centered their attention on improving the understanding of the current situation based on area-based information through the utilization of the NREM GIS database, which has already been disseminated nationwide by the MNRE, the updating and improvement of the already submitted PEQMP-KPI for the two model provinces, and the updating and improvement of the PEQMP-KPI Formulation Handbook.

### **1.3.2 Study Schedule**

The study commenced in June 2007 and is scheduled to finish in August 2008. The study schedule was decided as shown in the following figure, based on the result of the IC/R (Inception Report) meeting held in June 2007.

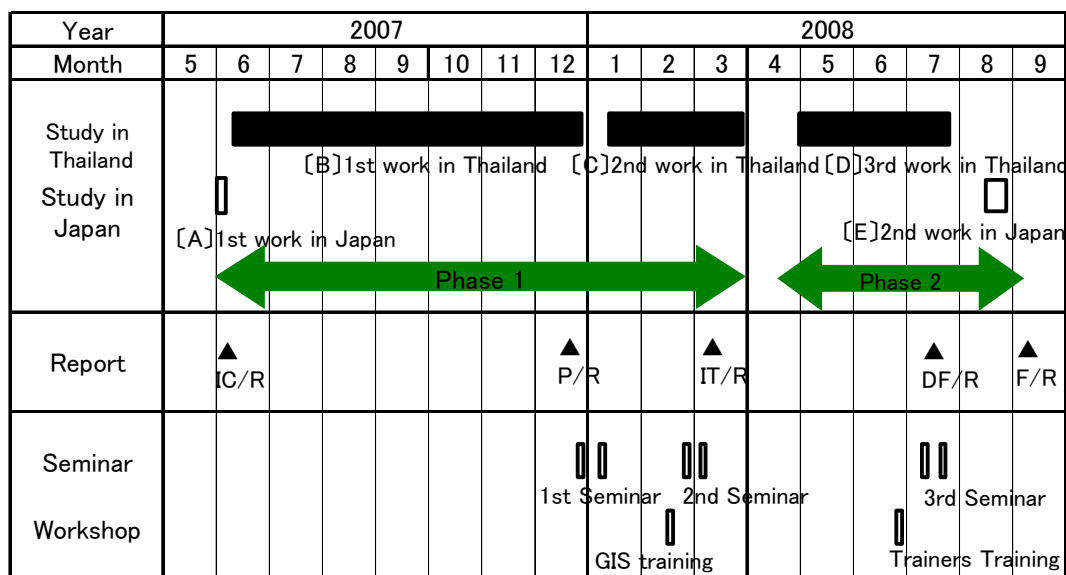
As a result, the Study consists of two phases as follows:

Phase 1: June 2007 - March 2008

Formulation of Draft Provincial Environmental Quality Management Plan (PEQMP) and Proposal of Supporting Plan for the Improvement of Administrative Capacities of Central/ Provincial/ Local Administrations Relating to Natural Resources and Environmental Management.

Phase 2: April 2008 – August 2008

Formulation of PEQMP and Implementation of Supporting Plan for the Improvement of Administrative Capacities of Central/ Provincial/ Local Administrations Relating to Natural Resources and Environmental Management.



Note: IC/R: Inception Report IT/R: Interim Report P/R: Progress Report  
DF/R: Draft Final Repo F/R: Final Report

Figure 1-2: Study Schedule

### 1.3.3 Overview of the Study

#### a. Capacity Development

As mentioned in the Study Policy, this Study aims to strengthen the capacities of all involved in NREM (including the individual, organization, system, and even society), and therefore the Study carefully stayed within the role of supporting the initiative led by the Thai side:

- The emphasis of the Study was placed on the *process* of making a report or manual, instead of the final product.
- Therefore, reports, seminar handouts, etc. were all thoroughly discussed with the Thai side beforehand, and only the points agreed upon by the Thai side was put in the final version. Thus the PEQMP of the Model Provinces are based on the PEQMP-KPI that those in the Model Provinces themselves formulated and submitted, and are essentially revised and improved editions of the Thai sides' effort. Desired improvements to the PEQMP-KPI Formulation Manual were written down in the PEQMP revision process, and were similarly collected as a revision suggestion list. In short, the Study Team merely provided the supporting documents to assist the efforts led by the Thai side.

- Thus the Study Team placed high importance on discussions held at biweekly meetings, which were held alternately in one or the other of the two Model Provinces. The biweekly meetings were attended by the Thai counterpart team and the staff members who initially formulated the PEQMP-KPI in the Model Provinces. Each meeting lasted over 2 hours and sometimes lasted over 6 hours.
- In addition to biweekly meetings, additional meetings were scheduled as necessary with NREM-related personnel in various departments within MNRE, REO, and LAs. Such activities clarified the issues that have to be solved to establish a sustainable form of NREM and initiated the process of looking for solutions together with those involved.
- These Study activities led to the formulation, by both the Study Team and Thai counterparts, of plans to strengthen capacities of agencies responsible for NREM in central/local government lines.

The main capacity development activities of this Study are summarized in the table below:

Table 1-3: Main Capacity Development Activities Conducted in the Study

Activity	Period	Activity Summary
1. Biweekly meeting	Late June 2007 to early July 2008. Total of 36 meetings held (18 in each Model Province).	Discussions on PEQMP contents and NREM issues in each Model Province.
2. PEQMP Seminar in Model Provinces	Late December 2007 to early July 2008. Total of 6 meetings held (3 in each Model Province).	The Seminar aimed to explain the contents of PEQMP in each Model Province to as many stakeholders as possible, get their opinions, and reflect such opinions in the next draft of the PEQMP. All explanations and Seminar procedure direction were conducted by Thai counterparts.
3. C/P training in Japan	October 2007. 12 days, 10 C/P.	Training on the following topics was conducted: <ul style="list-style-type: none"> <li>• Local administration on environmental management in Japan,</li> <li>• Public participation examples in environmental management, and</li> <li>• Methods of PEQMP implementation.</li> </ul>
4. Public Opinion Survey	September 2007, in two Model Provinces.	Stakeholders were divided into four groups: local administrations, NGO, residents, and business establishments. Thai counterparts were central in creating the questionnaire for each. A total of 534 stakeholders were interviewed.
5. GIS Database Manager and User Training Workshop	March 3-4 <sup>th</sup> 2008. 2 days, total of 16 managers/users.	Training in data updating, data creation, and the use of area-based information in PEQMP. Two separate sessions were held for managers and users of the NREM GIS Database.
6. Trainers' Training Workshop for the dissemination of the revised PEQMP Formulation	June 18-20 <sup>th</sup> 2008. 3 days, PEO staff members under REO6 and REO8, and staff members from REO6 and REO8.	The Workshop intended to explain the suggestions for the revision of the PEQMP Formulation Manual to participants experienced in PEQMP-KPI formulation, get their opinions, and to reflect such opinions in the revised suggestion list for the PEQMP

Manual		Formulation Manual.
7. Seminar for the dissemination of the revised PEQMP Formulation Manual	To be conducted by ONEP after August 2008, to staff in charge of PEQMP revision in each Province.	The revised PEQMP Formulation Manual (completed through Activity 6) will be disseminated to staff members in charge of PEQMP revision in all other provinces in Thailand, by Seminars held by those trainers trained in Activity 6.

### **a.1 Biweekly Meeting**

Biweekly meetings were held in once a week in one or other of the two Model Provinces and each topic of the meetings in both AYP and SKP are as summarised as follows.

Table 1-4: Topics of Biweekly Meetings in AYP

No	Date	Topics
1	5th Jul 2007	<ul style="list-style-type: none"> <li>• Confirmation of Present Environmental Monitoring Activities</li> <li>• Schedule of PEQMP being prepared by C/P</li> <li>• Contents of supplement survey</li> <li>• Current and future land use map of the A/Y province</li> </ul>
2	23rd Jul 2007	<ul style="list-style-type: none"> <li>• Conclusion of the 1st meeting of committee for planning and assessing EQM of Ayutthaya Province</li> <li>• Contents of opinion survey for stakeholders</li> <li>• City development plans in AYP</li> <li>• Improvement of GIS database for PEQMP planning</li> </ul>
3	3rd Aug 2007	<ul style="list-style-type: none"> <li>• Works to be conducted by the Local consultant for the improvement of GIS database for PEQMP planning</li> </ul>
4	17th Aug 2007	<ul style="list-style-type: none"> <li>• Arrangement of water quality analysis and opinion survey for stakeholders</li> <li>• Equipment for the study</li> <li>• Arrangement for visit to bird sanctuary</li> <li>• Training schedule in Japan</li> </ul>
5	21st Sep 2007	<ul style="list-style-type: none"> <li>• Number of Local Administration</li> <li>• Land use</li> <li>• Solid Waste Management</li> <li>• Water Quality in AYP</li> </ul>
6	5th Oct 2007	<ul style="list-style-type: none"> <li>• Number of Local Administration</li> <li>• Confirmation of Source of Budget for the Proposed Project</li> <li>• Comparison of PEQMP for KPI and PEQM Action Plan</li> <li>• Framework of PEQMP</li> </ul>
7	19th Oct 2007	<ul style="list-style-type: none"> <li>• Confirmation of sanitary landfill operation at the existing disposal sites</li> <li>• GNI per capita</li> <li>• Confirmation of meeting with Vice Governor</li> <li>• Framework of PEQMP</li> <li>• Schedule of next biweekly meeting and the first seminar</li> </ul>
8	16th Nov 2007	<ul style="list-style-type: none"> <li>• Water quality analysis at discharge point of Industrial Estate</li> </ul>

		<ul style="list-style-type: none"> <li>• Surface Water Quality Analysis</li> <li>• Land Use Map</li> <li>• Current Situations, Issues and Measures for Natural Resources and Environmental Management in AYP</li> <li>• Schedule of next biweekly meeting and the first seminar</li> </ul>
9	30th Nov 2007	<ul style="list-style-type: none"> <li>• Surface Water Quality in AYP</li> <li>• Information Available for Zoning</li> <li>• Current Situations, Issues and Measures for Natural Resources and Environmental Management in AYP</li> <li>• Schedule of next biweekly meeting and the first seminar</li> </ul>
10	13th Dec 2007	<ul style="list-style-type: none"> <li>• GIS layer for explaining current situations and issues in AYP</li> <li>• Most Serious Problem in AYP</li> <li>• Current Situations, Issues and Measures for NREM in AYP</li> <li>• How to reflect Public Opinion Survey</li> <li>• Schedule of next biweekly meeting and the first seminar</li> </ul>
11	29th Jan 2008	<ul style="list-style-type: none"> <li>• Priority Projects: Sector Improvement</li> <li>• Priority Projects: Strengthening of NREM</li> <li>• Utilization of GIS database</li> <li>• Schedule of next biweekly meeting and the second seminar</li> </ul>
12	7th Feb 2008	<ul style="list-style-type: none"> <li>• Priority Issue</li> <li>• Priority Projects</li> <li>• Utilization of GIS database</li> <li>• Schedule of next biweekly meeting and the second seminar</li> </ul>
13	20th Feb 2008	<ul style="list-style-type: none"> <li>• Organization of Provincial Government</li> <li>• Priority Projects</li> <li>• GIS Training</li> <li>• Schedule of next biweekly meeting and the second seminar</li> </ul>
14	6th Mar 2008	<ul style="list-style-type: none"> <li>• Presentation of second seminar</li> </ul>
15	2nd May 2008	<ul style="list-style-type: none"> <li>• Phase 2 Study Schedule</li> <li>• Procedure for Examination, Discussion and Revision of PEQMP (2nd Draft)</li> <li>• Trainer's Training Workshop for Dissemination of Revised PEQMP-KPI Manual</li> </ul>
16	16th May 2008	<ul style="list-style-type: none"> <li>• Phase 2 Study Schedule</li> <li>• Trainer's Training Workshop Program and Draft Presentations for Session 1, 2 and 3</li> </ul>
17	30th May 2008	<ul style="list-style-type: none"> <li>• Phase 2 Study Schedule</li> <li>• Priority Program and Projects</li> </ul>
18	3rd Jul 2008	<ul style="list-style-type: none"> <li>• Contents of Third Seminar</li> <li>• Comment on Conclusions and Recommendations of the Study.</li> </ul>



Table 1-5: Topics of Biweekly Meetings in SKP

No	Date	Topics
1	21st Jun 2007	<ul style="list-style-type: none"> <li>• Current environmental conditions of Samut Songkhram by Mr. Manop</li> <li>• Schedule, contents and progress of PEQMP being prepared by C/P</li> <li>• Contents of supplement survey</li> <li>• Information required for Framework of PEQMP</li> <li>• Office space required</li> </ul>
2	12th Jul 2007	<ul style="list-style-type: none"> <li>• Confirmation of Present Environmental Monitoring Activities</li> <li>• Schedule of PEQMP being prepared by C/P</li> <li>• Contents of supplement survey</li> <li>• City development plans in SKP</li> </ul>
3	26th Jul 2007	<ul style="list-style-type: none"> <li>• Confirmation of some topics discussed at the 2nd Biweekly meeting</li> <li>• Questionnaire of opinion survey for stakeholders</li> <li>• Improvement of GIS database for PEQMP planning</li> </ul>
4	9th Aug 2007	<ul style="list-style-type: none"> <li>• Sampling points and test items for water quality analysis</li> <li>• Works to be conducted by the Local consultant for the improvement of GIS database for PEQMP planning</li> </ul>
5	16th Aug 2007	<ul style="list-style-type: none"> <li>• Previous landfill site in Samut Songkhram Province</li> </ul>
6	27th Sep 2007	<ul style="list-style-type: none"> <li>• Question about PEQMP for KPI</li> <li>• Framework of PEQMP</li> <li>• Water Quality</li> </ul>
7	11th Oct 2007	<ul style="list-style-type: none"> <li>• Framework of PEQMP; GPP forecast</li> <li>• Formulation of PEQMP</li> </ul>
8	26th Oct 2007	<ul style="list-style-type: none"> <li>• Review of GPP forecast</li> <li>• Implementation of Priority Projects to be identified in PEQMP</li> <li>• Draft Results of Opinion Survey for Stakeholders</li> </ul>
9	26th Nov 2007	<ul style="list-style-type: none"> <li>• Land use Map</li> <li>• Current Situations, Issues and Measures for Natural Resources and Environmental Management in SKP</li> <li>• Confirmation of Information for Zoning</li> </ul>
10	4th Dec 2007	<ul style="list-style-type: none"> <li>• Decreasing Population (Number of Births and Deaths)</li> <li>• Current Situations, Issues and Measures for Natural Resources and Environmental Management in SKP</li> <li>• Confirmation of Information for Zoning</li> <li>• Next Meeting and Seminar</li> </ul>
11	14th Dec 2007	<ul style="list-style-type: none"> <li>• GIS layers for explanation of current situation and issues</li> <li>• Current Situations, Issues and Measures for Natural Resources and Environmental Management in SKP</li> <li>• How to reflect Public Opinion to PEQMP</li> <li>• Next Meeting and Seminar</li> </ul>
12	31st Jan 2008	<ul style="list-style-type: none"> <li>• Priority Projects: Sector Improvement</li> </ul>

		<ul style="list-style-type: none"> <li>• Priority Projects: Strengthening of NREM</li> <li>• Schedule of next biweekly meeting and the second seminar</li> </ul>
13	14th Feb 2008	<ul style="list-style-type: none"> <li>• Priority Projects: Sector Improvement</li> <li>• Request on PEQMP-KPI Manual</li> <li>• Opinion on Vision, Goal and Strategy</li> <li>• GIS Training</li> <li>• Schedule of next biweekly meeting and the second seminar</li> </ul>
14	28th Feb 2008	<ul style="list-style-type: none"> <li>• Priority Projects: Sector Improvement</li> <li>• Priority Projects: Supporting Plan for Improvement of Administration Capacity</li> <li>• Schedule of next biweekly meeting and the second seminar</li> </ul>
15	6th May 2008	<ul style="list-style-type: none"> <li>• Phase 2 Study Schedule</li> <li>• Procedure for Examination, Discussion and Revision of PEQMP (2nd Draft)</li> <li>• Trainer's Training Workshop for Dissemination of Revised PEQMP-KPI Manual</li> </ul>
16	26th May 2008	<ul style="list-style-type: none"> <li>• Phase 2 Study Schedule</li> <li>• Trainer's Training Workshop Program and Draft Presentations for Session 1, 2, 3, 4 and 5</li> </ul>
17	9th Jun 2008	<ul style="list-style-type: none"> <li>• Confirmation of Schedule</li> <li>• Additional topic to session 5: POS</li> <li>• Project Details</li> <li>• Site selection by GIS</li> </ul>
18	30th Jun 2008	<ul style="list-style-type: none"> <li>• Contents of Third Seminar</li> <li>• Comment on Conclusions and Recommendations of the Study.</li> </ul>

## **a.2 PEQMP seminar in Model Provinces**

The PEQMP Seminars was a method of public participation; their purpose was to explain the contents of PEQMP in each Model Province to as many stakeholders as possible, get their opinions, and reflect such opinions onto the next draft of the PEQMP.

In this Study, the Study Team first conducted an opinion survey among stakeholders; then formulated the PEQMP (1st draft) based on the results of the survey; then conducted the 1<sup>st</sup> PEQMP Seminar and asked for stakeholder opinions; then the opinions and requests voiced at the 1<sup>st</sup> PEQMP Seminar was worked into the PEQMP (2<sup>nd</sup> draft); then the process was repeated to the 3<sup>rd</sup> PEQMP Seminar before finalizing the PEQMP.

The 1<sup>st</sup> PEQMP Seminar, held in AYP (late December 2007) and SKP (mid-January, 2008), discussed the PEQMP 1<sup>st</sup> draft, the main contents of which were the current situation and issues of NREM in each Model Province. The 2<sup>nd</sup> PEQMP Seminar was conducted in both Model Provinces in early March 2008, and discussed the PEQMP 2<sup>nd</sup> draft, which consisted of a revised 1<sup>st</sup> draft -- revised in reflection of the PEQMP-KPI Evaluation Committee's evaluations as well as the opinions/ requests from stakeholders voiced at the 1<sup>st</sup> PEQMP Seminar – and additionally, Provincial-level Priority Programs determined through discussion with Thai counterparts of this Study.

The 3<sup>rd</sup> Seminar was held in July 2008 in both Model Provinces, discussed the 3<sup>rd</sup> draft, main contents of which are the project details of the Priority Program, and the PEQMP was finalized upon reflecting the comments received on the 3<sup>rd</sup> seminars..

Details of each seminar and power point handouts are presented in Data book 4 of the DATABOOK.

### a.3 C/P Training in Japan

C/P training was held in Japan in September 2007. Contents of the C/P training are shown as follows.

Table 1-6: C/P training in Japan

MM	DD	week	time	term	Item	Contents	Venue	Lecturer
9	1	SAT			Lv. Bang Kok			
	2	SUN			Arr. Narita→TIC			
	3	MON	AM		Orientation		TIC	
			PM	Environment Management Plan	●Local Environment Management Plan	○Introduction of Basic Environmental Plan and Environment Management Plan (EMP) ○Actual Situation and Challenge of EMP ○Development of EMP and its Enforcement	TIC	Yokohama City
	4	TUE	AM		●Supporting Measures for enforcement (budget, technology, information ...)	○Applying Supporting Measures ○Regulation Management ○Feature and Effective Approach of Supporting Measures	TIC	Yokohama City
			PM		●Non-point Source Measures	○Development of Non-point Source Measures and its Effective Enforcement	TIC	Foundation of river and watershed environment management
	5	WED	AM		●Land use plan and zoning	○Land use plan and environment management ○Ozoning technique ○Case study	TIC	Prof. Nakamura, Shiga Univ
			PM	Environment Management in Entity	●Incentive measures	○Incentive policy and administration measures for enterprises ○Guidance of environmental management for enterprises ○Incentive environment management in ASEAN case (Philippines, Indonesia...)	TIC	Mr. Tearao, JETRO/IDE
	6	THU	AM	water pollution measures and practice	●Monitoring work and its reflection to the administration	○Purposes and results of comprehensive water quality survey ○Implication of environment data and environmental situation ○Interpretation of environment data and its utilization	TIC	Ms. Kotani, MoEJ
			PM		●Effluent measures of SME	○Regional effluent management ○Coordination mechanism of SMEs	Inspection tou	Visit to Metal Coating Industry Cooperative Association Centre
	7	FRI	AM	Case study	●Public involvement	○Kamakura city ordinance (community development)	Inspection tou	Kamakura City
			PM			○Amenity development promotion	Inspection tou	Kamakura landscape management
	8	SAT			leave Bang Kok			
	9	SUN			Arr. Narita→TIC			
	10	MON	AM	Environmental Administration	◎ Environmental administration (past, present, future) -Japanese pollution experiences-	○ History of Environmental administration in Japan ○ Review Japanese experience of pollution and lesson learnt ○ Socio-economic development and environment	TIC	Dr. Hashimoto, OECC
			PM	Waste management	◎ Waste management policy and system	○ Framework of waste management ○ Waste management policy, regulation, and measures ○ 3R practice ○ Future task and global measures	TIC	Mr. Wada, The Institute for Environmental Planning Inc.
			evening		Cocktails hosted by JICA			
	11	TUE		Case study	◎ Non-point source measures and coordination of related governmental and municipal section.	Learn effective implementation through introducing actual cases of drafting non-point measures and coordination of various stakeholders..	Inspection tou	Tega-numa, Chiba prefecture
	12	WED	early m	Move	Haneda - Kita-Kyusyu (Air)			
			AM	Environmental Administration in local government	Environmental Management in Kitakyusyu City		lecture	
			PM		3Rs and Waste Management		lecture	
	13	THU	early m	(Move)	Kitakyusyu-Saga (Bus)			
			AM	Environmental Administration in local government	Environmental Management in Saga Prefecture		lecture	
			PM				lecture	
	14	FRI	AM	(Move)	Saga-Kitakyusyu			
			PM		Evaluation session and closing ceremony		JICA Kitakyusyu	
	15	SAT	AM		Lv. Kitakyusyu	Kitakyushu-via Fukuoka-Bang Kok		
			PM					

#### **a.4 Public Opinion Survey**

Public opinion survey was conducted in September 2007 in two Model Provinces. Contents of questionnaire sheets were discussed and examined by the C/P for a month and, based on the finalized questionnaire sheets, interview survey to each stakeholders was conducted with cooperation from PEOs of each Model Province.

Summary of opinion survey to the stakeholders is presented in Ch3.4 of Main Report and raw data of the public opinion survey is presented in Data book 2 of DATABOOK.

#### **a.5 GIS database manager and user training workshop**

GIS database manager and user training workshop was held on 3<sup>rd</sup> and 4<sup>th</sup> of March 2007. Total of 16 staff from REO8 and 6, PEO in AYP and SKP, Provincial Administration in AYP and SKP, and ONEP were attended for the 2 days workshop.

The objective of the workshop is to provide training to the two target groups (listed below) in order to fulfill their tasks (also listed below):

Target groups:

- GIS database manager: e.g. staff in IT section of REO who operate GIS software
- GIS database user: e.g. ONEP, REO, PEO, LA staff who use GIS output

Tasks of the two target groups:

Target	Target Organization	Tasks
GIS database manager	IT section of REO	<ul style="list-style-type: none"> <li>• GIS managers should have basic knowledge of GIS software as they are operating GIS software in their work.</li> <li>• GIS managers should maintain and update their GIS database, and distribute necessary information in hard copies or files to the GIS users upon request.</li> <li>• GIS managers should be able to create necessary maps indicating the current situation, relevant issues, all the while considering local conditions.</li> </ul>
GIS database user	ONEP, PEO, LAs	<ul style="list-style-type: none"> <li>• GIS users do not need to know the details of GIS software but should be able to utilize the out put (both in hard copy and file) of GIS database in their work.</li> <li>• GIS users should know how to use simple software such as Arc Reader or Acrobat Reader to efficiently present the current situation and relevant issues on NRE, in their local area.</li> <li>• GIS users should know what kind of data is in the GIS database, and how they can utilize them.</li> </ul>

Program of two days workshop was as follows.

**Day 1: March 3, 2008**

Time	Session title	Lecturer	Summary of contents	Handout
8.00-8.45	Registration			
8.45-9.00	Welcome session		Introductory remarks by Ms. Nareerat (ONEP) Self-introduction of participants	
9.00-9.30	What is GIS/ ArcGIS introduction	Mr. Chaiyuth Jaroenphol	<ul style="list-style-type: none"> <li>- Overview of GIS and its advantages, using GIS software examples</li> <li>- Intro to ESRI software</li> </ul>	PowerPoint notes - GIS introduction - What is ArcGIS
9.30-10.00	Structure of GIS database	Mr. Porameth Wattaya	<ul style="list-style-type: none"> <li>- Overview of each layer, including data structure</li> </ul>	PowerPoint notes
10.00-10.45	How to use GIS for EQ management	Mr. Chaiyuth Jaroenphol	<ul style="list-style-type: none"> <li>- Brief overview of customized functions of the GIS database, in lecture format</li> <li>- Participant practice</li> </ul>	PowerPoint notes - GIS application provided by the Project - Sector/layer table
Coffee break				
11.00-12.00	Workshop 1: Customizing ArcMap	Mr. Chaiyuth Jaroenphol	<ul style="list-style-type: none"> <li>- Introduction to customization using normal ArcGIS map document</li> <li>- Practice changing 'look' and language of drop-down menu bars and buttons</li> <li>- How to rename, add notes/explanation for new toolbar created by user</li> </ul>	Word document (step-by-step instruction) - Customize ArcMap
Lunch				
13.00-14.00	Workshop 1: Customizing ArcMap	Mr. Chaiyuth Jaroenphol	<ul style="list-style-type: none"> <li>- Demonstrate ArcGlobe, ArcScene, ArcToolbox, ArcCatalog</li> <li>- Use customized GIS database, practice changing VB behind button, making pop-up message boxes</li> </ul>	Word document (step-by-step instruction); GIS manual - Customize GIS Application
14.00-14.30	How to make map by using ArcMap	Mr. Chaiyuth Jaroenphol	<ul style="list-style-type: none"> <li>- Lecture with voluntary practice about VB programming</li> <li>- Lecture overview of VB</li> <li>- Practice making a 'welcome screen' in ArcMap</li> <li>- Further VB examples (optional during break)</li> </ul>	Word document (step-by-step instruction); PowerPoint notes - Visual Basic introduction - Programming ArcGIS with VBA

Time	Session title	Lecturer	Summary of contents	Handout
14.45-16.45	Workshop 2a: Create and improve data and map	Mr. Porameth Wattaya	<ul style="list-style-type: none"> <li>- Converting Excel files to usable format (dbf)</li> <li>- Creating an event layer from XY data, importing XY with coordinate, converting XY to shape file, grouping data by Arc Catalog, define coordinate system to shape file</li> <li>- Editing data in attribute tables</li> </ul>	PowerPoint notes - How to Create and edit data by ArcMap
		Mr. Porameth Wattaya	<ul style="list-style-type: none"> <li>- Adding/deleting data to ArcMap</li> <li>- Adding targeted layers (for example water quality, province, amphoe, transportation, etc.)</li> <li>- Rename layers into Thai</li> <li>- Join and Relate. difference and function</li> <li>- Selectively displaying data, using Definition Query</li> <li>- Further display techniques (symbolology)</li> <li>- Create hyperlinks</li> </ul>	PowerPoint notes - How to process data and map
	Workshop 2c: Print map	Mr. Porameth Wattaya	<ul style="list-style-type: none"> <li>- Adding necessary map elements to Layout View, and how to edit each element</li> <li>- Setting Page and Print setup</li> <li>- Insert map component (title, North arrow, scale bar, scale text, frame, etc.)</li> <li>- Insert reference grids, legend, pictures/logos, text</li> <li>- Export map to graphic (PDF, BMP, JPEG, etc.)</li> <li>- Printing options</li> </ul>	PowerPoint notes - How to view and print map
16.45-17.00	Workshop 2d: Convert ArcMap to ArcReader	Mr. Porameth Wattaya	<ul style="list-style-type: none"> <li>- Using ArcPublisher to publish map</li> <li>- Relative file paths</li> </ul>	PowerPoint notes - How to create Published Map Documents to be viewed by ArcReader

**a.6 Trainers Training Workshop for the dissemination of the revised PEQMP formulation manuals**

Trainers training workshop was held on 18 – 20<sup>th</sup> June 2008. PEO staff members under REO 6 and REO8, and staff members from REO6 and REO8 were attended.

The objectives of the trainer’s training workshop are:

- To train the trainers for dissemination of the revised manual, with the purpose to facilitate revision work of submitted PEQMP-KPI in all provinces in Thailand; and
- To exchange opinions to complete the above tools as a revised PEQMP-KPI Manual for the revision of submitted PEQMP-KPI.

Upon consideration of the objective of the workshop, the participants were invited from the following organizations:

REO or PEO or Others	Name of Province	Nos
REO 6	Nonthaburi	2
PEO under REO 6	Ayutthaya	2
	Nonthaburi	1
	Singburi	1
	Ang Thong	1
	Puthum Thani	1
	Samut Prakarn	1
<b>Sub-total</b>		<b>9</b>
REO 8	Ratchaburi	2
PEO under REO 8	Samut Songkhram	2
	Ratchaburi	1
	Phetchaburi	1
	Karnchanaburi	1
	Prachuab Kiri Khan	1
<b>Sub-total</b>		<b>8</b>
ONEP		<b>3</b>
Others		<b>5</b>
<b>Total</b>		<b>25</b>

The workshop program is shown in the table below.

Table 1-7: Program of the Trainers Training Workshop

Session No	Time	Session Title	Lecturer or Speaker	Summary of Contents	Handouts (Responsible Person)
<b>Day 1: June 18, 2008</b>					
	9:00 – 9:45	Registration			
	9:45 – 10:00	Opening speech	MNRE & JICA		(MNRE & JICA)
1.	10:00 – 10:15	Background, Objectives and Procedure	ONEP	<ul style="list-style-type: none"> <li>Background of the revision of submitted PEQMP-KPI</li> <li>Background, objectives and procedure of the workshop</li> </ul>	<ul style="list-style-type: none"> <li>Power Point Session 1 (Shimura &amp; ONEP)</li> </ul>
2.	10:15 – 10:45	Summary of suggestion for improvement of PEQMP-KPI Manual	ONEP	<ul style="list-style-type: none"> <li>Contents of the PEQMP-KPI Manual</li> <li>Summary of suggestion for improvement of PEQMP-KPI Manual</li> </ul>	<ul style="list-style-type: none"> <li>IT/R Annex 1</li> <li>Power Point Session 2 (Shimura &amp; ONEP)</li> </ul>
	10:45-11:00	Coffee Break			
3.	11:00 – 12:00	Details of suggestion for improvement of PEQMP-KPI Manual (1)	PEO of AYP	<ul style="list-style-type: none"> <li>Summary of suggestion</li> <li>Part 2 1) Basic Data of the Province</li> <li>Part 2 2) Situation of NRE of Province</li> </ul>	<ul style="list-style-type: none"> <li>IT/R Annex 1</li> <li>Power Point Session 3 (Shimura, PEO of AYP &amp; REO 6)</li> </ul>
	12:00 – 13:00	Lunch			
4.	13:00 – 15:00	Details of suggestion for improvement of PEQMP-KPI Manual (2)	PEO of SKP	<ul style="list-style-type: none"> <li>Summary of suggestion</li> <li>Part 2 3) Analysis of Current Issues and Impacts from Socio-economic Development</li> <li>Part 2 4) Priority Setting of Issues</li> <li>Part 2 6) Preventive Measures and Solution for Issues</li> <li>Part 3 Details of the PEQMP</li> <li>Part 3 Details of Important Projects</li> </ul>	<ul style="list-style-type: none"> <li>IT/R Annex 1</li> <li>Power Point Session 4 (Shimura &amp; PEO)</li> </ul>



Session No	Time	Session Title	Lecturer or Speaker	Summary of Contents	Handouts (Responsible Person)
	15:00 – 15:15	Coffee Break			
5.	15:15 – 16:30	Suggestions for selecting suitable public participation methods for NREM	REO 8	<ul style="list-style-type: none"> <li>• Important notice</li> <li>• Needs and pre-conditions for public participation</li> <li>• Method of public participation</li> <li>• Reflecting stakeholders opinion onto PEQMP</li> </ul>	<ul style="list-style-type: none"> <li>• IT/R Annex 3</li> <li>• Power Point Session 5 (Shimura &amp; REO 8)</li> </ul>
<b>Day 2: June 19, 2008 : How to provide area-based information by using NREM GIS database (Annex 2)</b>					
6.	9:00-9:05	Background, Objectives, and Procedure of Day 2 Workshop	ONEP	<ul style="list-style-type: none"> <li>• Background, Objectives, and Procedure of Day 2 workshop</li> </ul>	<ul style="list-style-type: none"> <li>• Power Point Notes No 6 (Kono and ONEP)</li> </ul>
7.	9:05-9:20	What is GIS / ArcGIS introduction	Local Consultant	<ul style="list-style-type: none"> <li>• Overview of GIS and its advantages, using web examples (Google Maps)</li> </ul>	<ul style="list-style-type: none"> <li>• PowerPoint No 7 <ul style="list-style-type: none"> <li>- GIS Introduction</li> <li>- What is Arc GIS (Kono and Local Consultant)</li> </ul> </li> </ul>
8.	9:20-10:00	How to use GIS for Natural Resources and Environmental Quality management (NREM)	ONEP Local Consultant	<ul style="list-style-type: none"> <li>• Advantage and disadvantage of using GIS for NREM (ONEP)</li> <li>• Brief overview of customized functions of the NREM GIS database, in lecture format</li> </ul>	<ul style="list-style-type: none"> <li>• IT/R Annex 2</li> <li>• Power Point No 8-1,2 <ul style="list-style-type: none"> <li>- Advantage and disadvantage of GIS</li> <li>- GIS application provided by the Project</li> <li>- Sector Layer table (Kono and Local Consultant)</li> </ul> </li> </ul>
9.	10:00-10:30	How to use GIS in sector planning: Case study: Site Selection for Potential Disposal Sites in SKP	PEO of SKP	<ul style="list-style-type: none"> <li>• Use of GIS in final disposal site selection in SKP</li> </ul>	<ul style="list-style-type: none"> <li>• Power Point Notes No 9 <ul style="list-style-type: none"> <li>- Site Selection for Potential Disposal Site in SKP</li> </ul> </li> </ul>

Session No	Time	Session Title	Lecturer or Speaker	Summary of Contents	Handouts (Responsible Person)
	10:30 – 10:50	Coffee Break			(Abe and PEO of SKP)
10.	10:50 – 12:00	Workshop 1-1: Introduction to GIS functions and data (Lecture and Workshop using ArcReader)	Local Consultant	<ul style="list-style-type: none"> <li>• Introduction to ArcReader (lecture)</li> <li>• Short demonstration without participation.</li> <li>• Demonstration with participation, of major functions of ArcReader - table of contents, data view, magnifier window, identify data, my place, go to XY, distance measure, hyperlinks, layer effects tool bars, markup toolbars...</li> <li>• Look at all layers and the information it provides.</li> </ul>	<ul style="list-style-type: none"> <li>• Power Point Notes No 10 (Abe and Local Consultant)</li> </ul>
	12:00 – 13:00	Lunch			
11.	13:00 – 15:00	Workshop 1-2: How to provide area-based information on PEQMP (1) (Workshop using ArcMap)	Local Consultant	<ul style="list-style-type: none"> <li>• Short demonstration of this workshop</li> <li>• Step-by-step instruction with participation on making AYP 'water quality' map (display layers, query → demonstrate use of Data Dictionary, change symbols,</li> <li>• Export map, export zoom-in section</li> </ul>	<ul style="list-style-type: none"> <li>• IT/R Annex 2</li> <li>• Power Point Notes No 11</li> <li>• Step-by-step handout <ul style="list-style-type: none"> <li>- Sample map: AYP water quality</li> </ul> </li> </ul> (Abe and Local Consultant)
	15:00-15:15	Coffee Break			
12.	15:15 – 16:00	How to provide area-based information on PEQMP (2) (Lecture)		<ul style="list-style-type: none"> <li>• Lecture/demonstration on the relationship between ArcMap and ArcReader</li> <li>• Examples of ArcReader content preparation using ArcMap (short demonstration)</li> <li>• What can you do if you only have ArcReader?</li> </ul>	<ul style="list-style-type: none"> <li>• Power Point Notes No 11 (Abe and Local Consultant)</li> </ul>

Session No	Time	Session Title	Lecturer or Speaker	Summary of Contents	Handouts (Responsible Person)
<b>Day 3: June 20, 2008 :How to improve the revised PEQMP-KPI manual for the revision of submitted PEQMP-KPI</b>					
13.	9:00 – 9:10	Background, Objectives and Procedure of Day 3 Workshop	ONEP	<ul style="list-style-type: none"> <li>Background, Objectives and Procedure of Day 3 workshop</li> </ul>	<ul style="list-style-type: none"> <li>PowerPoint No 13 (Shimura and ONEP)</li> </ul>
14	9:10 – 9:40	How REO support PEO for formulating PEQMP-KPI	REO6		<ul style="list-style-type: none"> <li>PowerPoint No 14 (REO6)</li> </ul>
15.	9:40 – 10:30	Workshop 2-1: Discussion on how to use NREM GIS Database for PEQMP-KPI	ONEP	Discussion: 3 groups to be organized <ul style="list-style-type: none"> <li>Unclear parts of how to use NREM GIS Database for PEQMP-KPI</li> <li>Issues and suggestions to facilitate use of NREM GIS Database for PEQMP-KPI</li> </ul>	IT/R Annex 2 <ul style="list-style-type: none"> <li>PowerPoint No 15</li> </ul>
10:30 – 10:45 Coffee Break					
16.	10:45 – 12:00	Workshop 2-2: Discussion on suggestions for improvement of PEQMP-KPI Manual and selecting suitable public participation methods for NREM	ONEP	<ul style="list-style-type: none"> <li>Unclear parts of suggestions for improvement of PEQMP-KPI Manual and selecting suitable public participation methods for NREM</li> <li>Issues and recommendations to complete the suggestions for improvement of PEQMP-KPI Manual and selecting suitable public participation methods for NREM</li> </ul>	<ul style="list-style-type: none"> <li>IT/R Annex 1 &amp; 3</li> <li>PowerPoint No 16</li> </ul>
12:00 – 13:00 Lunch					
17.	13:00 – 14:00	Workshop 2-3: Presentation of conclusion of the discussion	ONEP	Presentation of conclusion of the discussion <ul style="list-style-type: none"> <li>Presentation by each group representative</li> </ul>	<ul style="list-style-type: none"> <li>IT/R Annex 1, 2 &amp; 3</li> </ul>
	14:00 – 14:30	Closing Ceremony	MNRE & JICA		(MNRE & JICA)

## **b. Overview of the Study**

The overview of this Study is as follows:

### **b.1 Phase 1: Early June 2007 to late March 2008**

First, the Study Team strove to understand the current situation of NREM by comprehending the complicated system of local administration and NREM administration in Thailand and by collecting existing data in the field of natural resources and environment. The existing data was analyzed and the NREM situation in the two Model Provinces grasped. The following additional supplementary studies were conducted, and supplementary data obtained, to formulate the PEQMP in the two Model Provinces:

1. Existing water quality data from the two Model Provinces were supplemented by water quality field surveys at 4 locations in AYP (discharge from industrial estates) and 5 locations in SKP (Mae Klong River water quality).
2. To grasp the changes in land use patterns over the past 20 years, LANDSAT5 TM satellite imagery (resolution 30m x 30m) were used to conduct a land use study. Additionally, analysis of high-resolution (5m x 5m) SPOT 5 satellite imagery was conducted to grasp the current patterns of land use.
3. The existing NREM GIS Database was updated, and improved by creating additional GIS layers where necessary, in order to make it possible to use the NREM GIS Database as a tool for PEQMP formulation, and to also unify the environmental information in each Model Province.
4. For the purpose of formulating a PEQMP that reflects as wide a range of stakeholder opinions as possible, a public opinion survey was conducted among local administrations, NGO, residents, and business establishments to collect a wide range of opinions on NREM topics, including what kinds of issues need to be resolved and priority ranking among issues.

While the Study Team conducted the above supplementary studies and grasped the current situation and issues of NREM in the Model Provinces, both Model Provinces formulated their PEQMP-KPI, and submitted them to MNRE in October 2007. From October 2007, the Study Team and Thai counterparts started the revision of the PEQMP-KPI based on the analysis of existing data, and data from the supplementary studies. The PEQMP 1<sup>st</sup> draft – the main contents of which were the current situation and issues of NREM in each Model Province – was disseminated among stakeholders through the 1<sup>st</sup> PEQMP Seminar, held in AYP (late December 2007) and SKP (mid-January, 2008), in order to obtain stakeholder opinion on its contents. The 1<sup>st</sup> Seminar in both Model Provinces was attended by over 100 participants, and a several dozen opinions and requests were voiced by stakeholders in each Model Province.

The evaluation of the submitted PEQMP-KPI was given by the PEQMP-KPI Evaluation Committee in January 2008. The PEQMP 2<sup>nd</sup> draft consisted of a revised 1<sup>st</sup> draft -- revised in reflection of the Evaluation Committee's evaluations as well as the opinions/requests from stakeholders voiced at the 1<sup>st</sup> Seminar – and additionally, Provincial-level Priority Programs determined through discussion with Thai counterparts. To obtain a wide range of stakeholder opinion on the PEQMP 2<sup>nd</sup> draft, the 2<sup>nd</sup> PEQMP Seminar was conducted in both Model Provinces in early March 2008. Over 100 participants attended and several dozen opinions were aired at the 2<sup>nd</sup> Seminar in each Model Province.

As a result of the above revision processes, and the experience and knowledge gained by the Study Team, the following manuals were put in as annexes to the Interim Report (IT/R), which together are intended to supplement and improve the PEQMP-KPI Formulation Manual:

Annex 1: Suggestions for Improvement of PEQMP-KPI Manual,

Annex 2: Utilization Plan for Natural Resources and Environmental Management GIS Database (NREM GIS DB), and

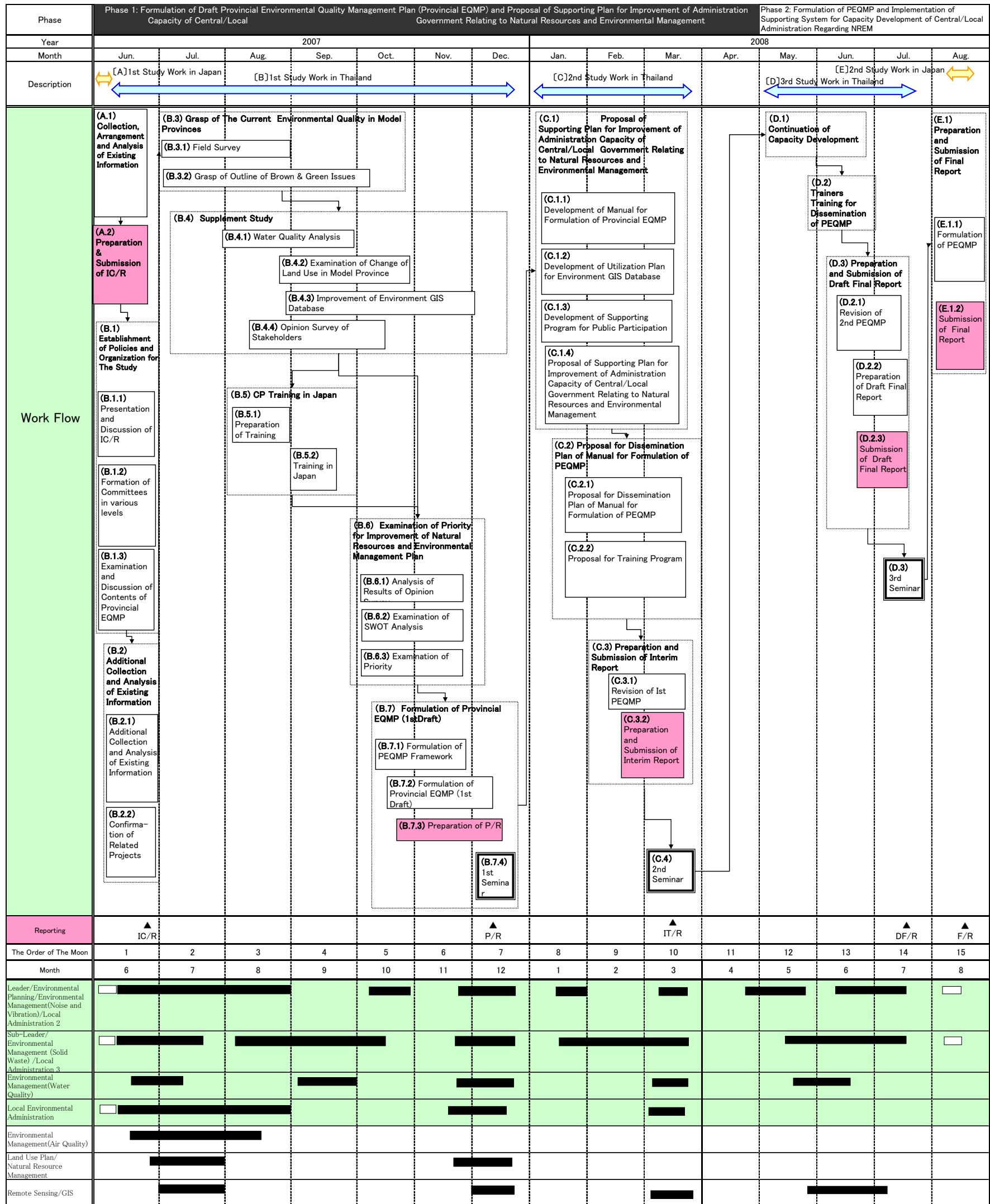
Annex 3: Suggestions for Selecting Suitable Public Participation Methods for NREM.

## **b.2 Phase 2: Late April 2008 to late August 2008**

First, the detailed contents of the Priority Projects, included in the Priority Programs, were decided through extensive discussion between the Study Team and Thai counterparts. The PEQMP 2<sup>nd</sup> draft was revised through the reflection of opinions/ requests voiced at the 2<sup>nd</sup> PEQMP Seminar, and detailed contents of Priority Projects were added to form the PEQMP 3<sup>rd</sup> draft. To obtain a wide range of stakeholder opinion on the PEQMP 3<sup>rd</sup> draft, the 3<sup>rd</sup> PEQMP Seminar was conducted in each Model Province in early July 2008.

In addition, the suggested revisions to the PEQMP-KPI Formulation Manual (submitted as annexes of the IT/R) was deliberated and finalized, and a Trainers Training Workshop for the dissemination of the revised Manual to the 75 Provinces of Thailand was held for three days from June 18<sup>th</sup> 2008. The Trainers Training Workshop was attended by staff members from REO6, REO8, and PEO under those two REO, all of whom had experience in formulating PEQMP-KPI. ONEP will finalize the suggested revisions by reflecting the opinions aired at the workshop, and instruct the revision of the PEQMP-KPI in all provinces based on the finalized suggestions.

The Final Report (FR) will reflect the opinions/requests voiced at the 3<sup>rd</sup> PEQMP Seminar, as well as the comments at the Steering Committee Meeting on July 14<sup>th</sup> 2008, and will be submitted in late August 2008.



Abbreviation  Study in Thailand  
 Study in Japan

Figure 1-3 : Plan of Operation

## 1.4 Organization of the Study

### 1.4.1 Organization Structure of the Study

The figure below is the organization structure of the study. Members of the counterpart consist of ONEP/MNRE, REO 6 and 8, PEO of SKP and AYP as shown below.

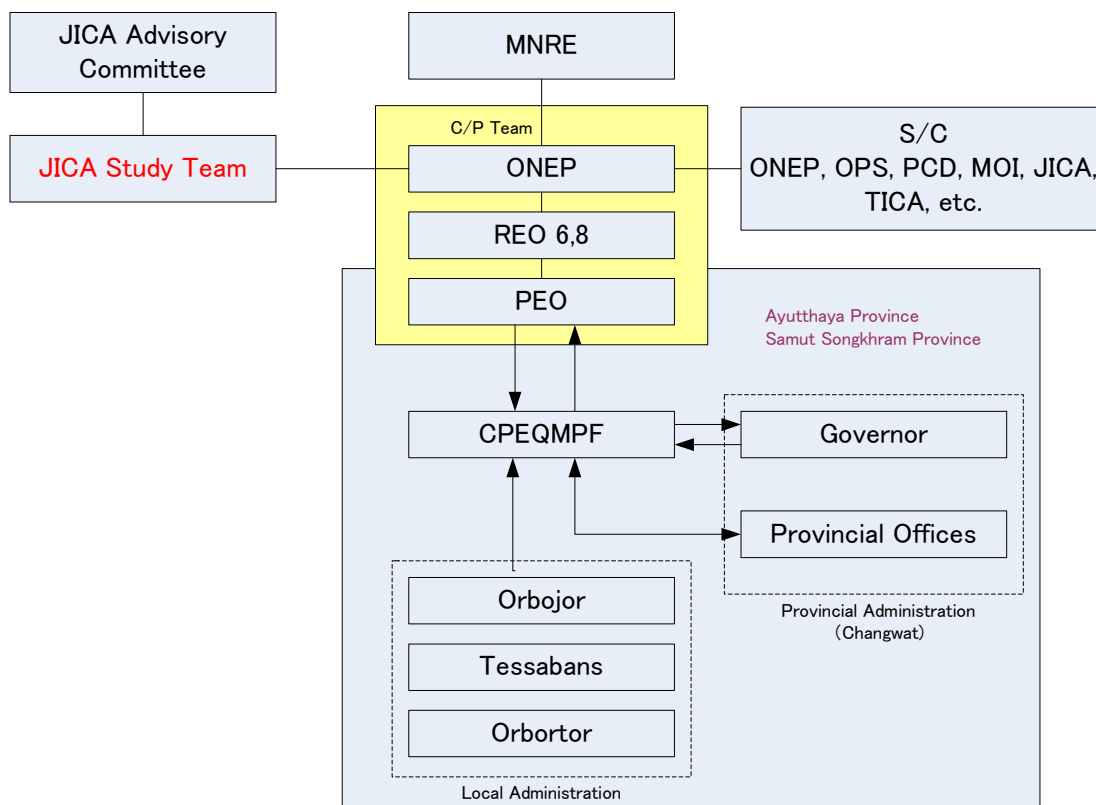


Figure 1-4: Study Organizations

### 1.4.2 Members of the JICA Advisory Committee

Members of the JICA advisory committee are as follows.

Table 1-8: Member of JICA Advisory Committee

No	Name	Position and Organization
1	Mr. Masami MIZUGUCHI	Chief Committee : Senior advisor of Institute of International Cooperation
2	Mr. Senro IMAI	Committee member: Senior advisor of Institute of International Cooperation
3	Mr. Masami KANEKO	Professor of Department of Biosphere and Environmental Sciences at RAKUNO GAKUEN University

### 1.4.3 Members of the Study Team

Members of the study team are as follows.

Field in Charge	Name	Nationality
Leader / Environmental Planning / Environmental Management (Noise and Vibration) / Local Environmental Administration 2	Mr. Susumu SHIMURA	Japan
Sub-Leader / Environmental Management (Solid Waste) / Local Environmental Administration 3	Mr. Ichiro KONO	Japan
Environmental Management (Water Quality)	Mr. Hiroshi KATO	Japan
Local Environmental Administration	Mr. Shinya KAWADA	Japan
Environmental Management (Air Quality)	Mr. Tamotsu SUZUKI	Japan
Land Use Plan/Natural Resource Management	Mr. Toshiro HAMADA	Japan
Remote Sensing/GIS 1	Mr. Masahiro IDO	Japan
Remote Sensing/GIS 2	Mr. Kazunori MASUDA	Japan
Remote Sensing/GIS 3	Ms. Yoshiko ABE	Japan

### 1.4.4 Members of the Counterpart

Members of the counterpart are as follows.

No	Name	Position and Organization
1.	Mr. Kasemsun Chinnavaso	Secretary-General, ONEP, MNRE
2.	Ms. Nisanart Satirakul	Deputy Secretary-General, ONEP, MNRE
3.	Ms. Prasertsuk Chamornmarn	Director of Office of National Environment Board, ONEP, MNRE
4.	Ms. Raweewan Bhuridej	Director of Policy and Planning Section, ONEP, MNRE
5.	Mr. Tawat Paosuwan	Environmental Officer, ONEP, MNRE
6.	Ms. Nareerat Panmanee	Environmental Officer, ONEP, MNRE
7.	Mr. Chatchai Intatha	Environmental Officer, ONEP, MNRE
8.	Ms. Yingprattana Keoplung	Environmental Officer, ONEP, MNRE
9.	Mr. Theerapong Laopongpich	Environmental Officer, ONEP, MNRE
10.	Ms. Waraporn Sanviset	Environmental Officer, REO 6 (Nonthaburi)
11.	Ms. Yaowanart Plaimart	Environmental Officer, REO 8 (Ratchaburi)
12.	Mr. Wittaya Hadnil	Environmental Section Chief, PEO, Ayutthaya Province
13.	Mr. Manop Yarnpisitkul	Environmental Section Chief, PEO, Samut Songkhram Province



## 1.5 Report

The following reports were prepared, presented, discussed and submitted to the Thai side;

Table 1-9: Number of Report to be submitted

Report	Type	Number of Submission	
		English	Thai
Inception Report <IC/R>	Main	20	20
	CD-R	5	5
Progress Report <P/R>	Summary	30	30
	Main	30	-
	CD-R	5	5
Interim Report <IT/R>	Summary	30	30
	Main	30	-
	CD-R	5	5
Draft Final Report <DF/R>	Summary	30	30
	Main	30	30
	Supporting Report	30	30
	Data book	30	30
	CD-R	5	5
Final Report <F/R>	Summary	50	50
	Main	50	50
	Supporting Report	50	50
	Data book	50	50
	CD-R	20	20

## 2. Current Natural Resources and Environmental Management (NREM) in Thailand

## 2 Current Natural Resources and Environmental Management (NREM) in Thailand

### 2.1 Provincial Administration (PA) and Local Administration (LA)

#### 2.1.1 Central Government Organizations Pertaining to PA and LA

Figure 2-1 shows the relationship of central government organizations pertaining to local administrations. The Kingdom of Thailand is made up of 75 Provinces (Changwat), with the exception of greater Bangkok. The administration of local government bodies in Thailand is organized into three lines or layers, and they are interrelated in a very complicated manner.

The central government line is locally represented by 49 offices in Ayutthaya Province (AYP) and 37 in Samut Songkhram Province (SKP); even in SKP, one of the smallest provinces in Thailand, there are 1,892 permanent employees or a total of 2,410 employees including temporary workers<sup>1</sup>.

The provincial administration (Changwat) line, which is headed by the governor who is at the same time a Ministry of Interior (MOI) official, employs 3,323 permanent or 4,095 total employees including temporary workers in AYP, and 1,339 permanent or a total of 1,974 in SKP<sup>2</sup>.

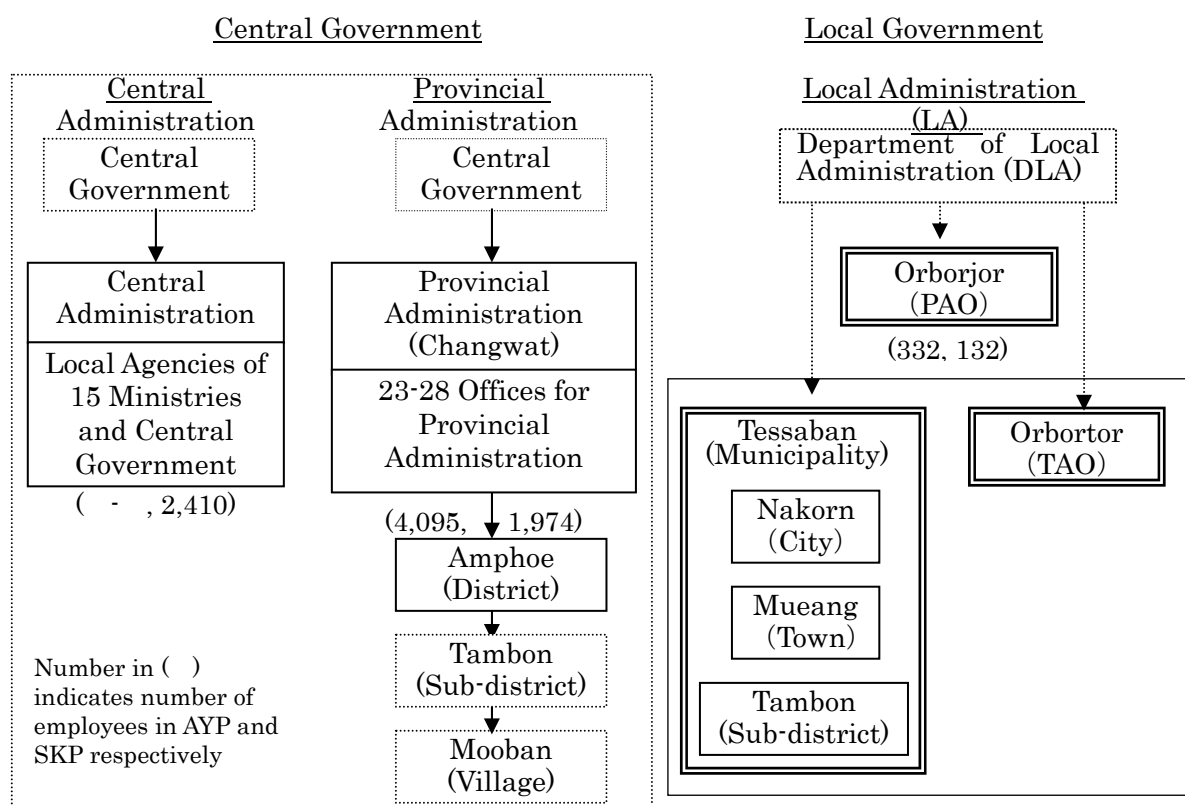


Figure 2-1: Central/Provincial/Local Administration in a Province

The payroll costs for both central government and provincial administration employees are

<sup>1</sup> Source: Provincial Office records (AYP), website (SKP)

<sup>2</sup> Source: same as above

covered by the central government, and it is difficult to pinpoint differences in authority between the two lines. It can be roughly stated that the former operates under the direction of the central government, and the latter operates under the direction of the governor. The indistinctness of the two lines is illustrated by the fact that the PEO (Provincial Environmental Office) falls under the MNRE (Ministry of Natural Resources and Environment) in the central government line in SKP, but is part of provincial administration in AYP<sup>3</sup>.

The administrative layer below the province is the Amphoe (District), the head of which is also a functionary in the Ministry of Interior. Within the Amphoe are the Tambon (Sub-district) and Mooban (Village), and although both of these layers had been losing any conventional administrative function, only serving as mailboxes and acting as a communication line for command, they became more important for implementation of Provincial Well Being Strategy Plan based on the statement on the economic and social policy to the legislation on 3<sup>rd</sup> November 2006. The reallocation of it was agreed upon by the Cabinet on 13<sup>th</sup> March 2007.

On the other hand, in the Local Administration (LA) line, there are three types of organizations, Orborjor (Provincial Administrative Organization; PAO), Tessaban (Tessaban Nakorn; City municipality, Tessaban Mueang; Town municipality and Tessaban Tambon; Sub-district municipality) and Orbortor (Tambon Administrative Organization; TAO). The Orborjor, whose main function is administration on a province-wide scale, only employs 106 permanent employees (or 322 total including temporary workers) in AYP and 55 (or 132) in SKP. Legally this makes sense; the number of employees in Orborjor is low because the decentralization process devolved administrative powers directly to Tessaban and Orbortor. However, it is also true that administrative action from a province-wide point of view is necessary for certain enterprises. It is clear from current employee numbers that the Orborjor are not in the condition to exercise their authority to the necessary degree.

Orborjor is required to get approval for budgetary requests from the Changwat in order to carry out urgent projects, whereas Tessaban and Orbortor are required to get approval from the Amphoe. Furthermore, the autonomous authority of local administrations is unified under the DLA (Department of Local Administration), which is also an organization under the jurisdiction of the Ministry of Interior.

### **2.1.2 Structure of Local Administrations**

As seen in the previous section, there are three types of local administrative organizations. The position of each organization within the structure is shown in Figure 2-2. Orborjor is shown in a higher position than other local administrative organizations; however its status is roughly equivalent to that of the others. The Orborjor has authority over coordination, as well as assistance and guidance, of other local administrative organizations, but is prohibited from controlling them.

Tessaban and Orbortor are the smallest bodies of local administrative government in Thailand. Local people can petition the Tessaban and Orbortor with demands, such as for environmental amelioration. Then, the system allows the Tessaban and Orbortor to directly petition the Decentralization Committee, which gives them equal rights with an Orborjor.

When the local administrative organization advocates urgent projects and wishes to receive

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<sup>3</sup> Source: Provincial Office records (AYP), website (SKP)

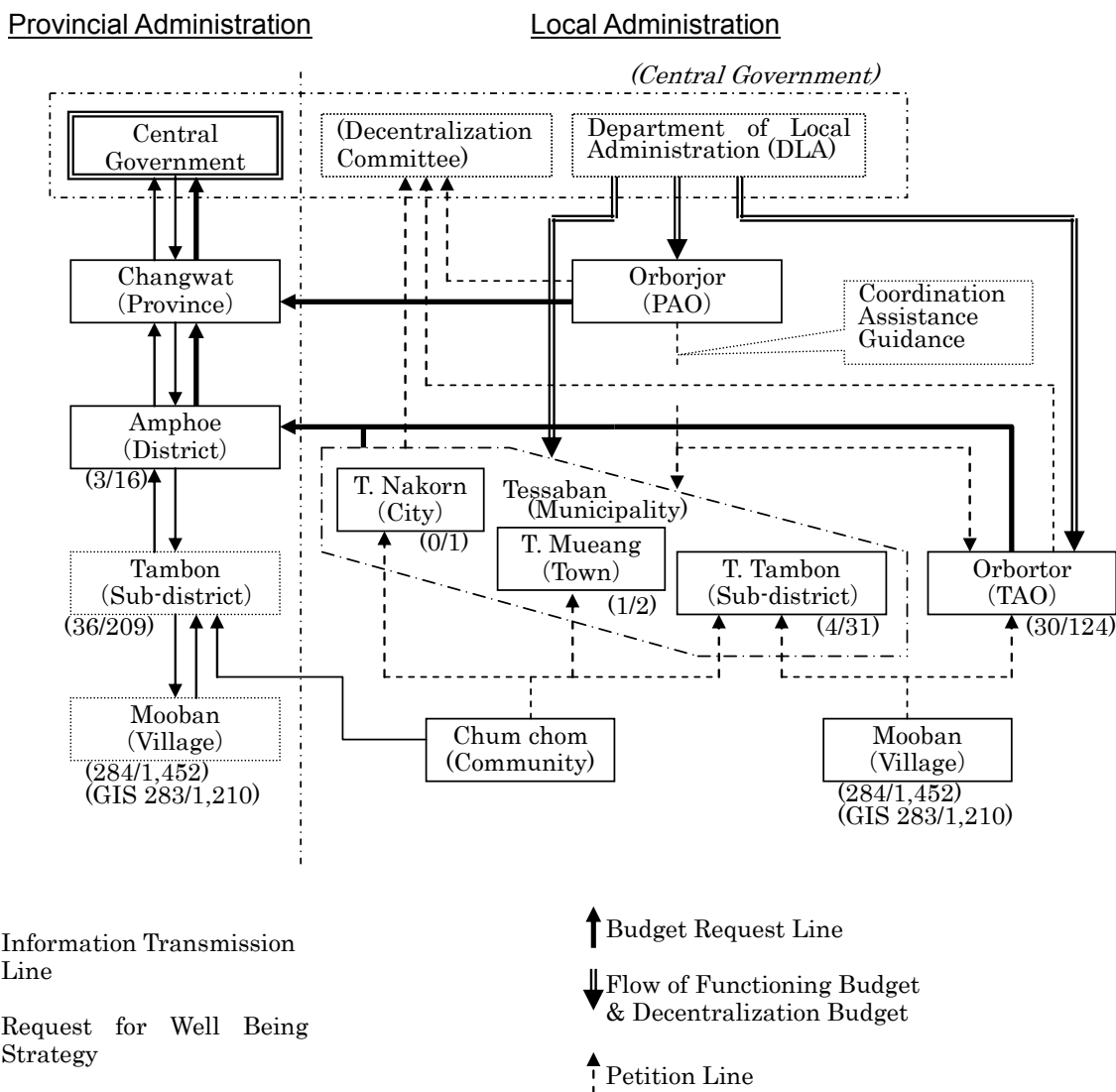
permission and budget allocations from the central government, they will first need to apply to the Amphoe. After passing the Amphoe, the project proposal is given to the Changwat (Province) for approval from the Governor. In the case of an Orborjor, they will approach the Changwat instead of Amphoe.

Funds allocated by the central government are distributed entirely by the DLA, Ministry of Interior, to the local administrative organizations. There are two types of budget allocations, the Decentralization Budget and Functioning Budget, the latter of which is being allotted to local administrative organizations by each Ministry.

The composition of the local administrative organizations of the model provinces for this study, Samut Songkhram Province and Ayutthaya Province, are shown below.

Table 2-1: Number of Local Administrations in Model Provinces

Changwat (Province)	Amphoe (District)	Tessaban (Municipality)			Orbortor (TAO))	
		Orborjor (PAO)	Tessaban Nakorn	Tessaban Mueang		Tessaban Tambon
Samut Songkhram	3	1	0	1	4	30
Ayutthaya	16	1	1	2	31	124



Ex. (3/16) shows the number in SKP / AYP respectively.

Figure 2-2: Structure of Local Administrative Organization

### 2.1.3 Economy and Finance of Local Administrations

#### a. The Budget of Local Administrations

The decentralization of Thai government began full-scale with the new constitution in 1997, followed by the promulgation of the Decentralization Act in 1999. The Decentralization Act requests that the expenditure of local government should increase from 20% (in 2001) to 35% (in 2006) of the total expenditure of the Thai Government. However, the record of performance was 24.1% in 2006 as shown in the following table. Therefore, the Thai government submitted the Decentralization Act No.2 to the National Parliament and in this Act postponed the target date for the local budget increase to 35%. The target of 25% for 2007 was published in the Royal Gazette on 8<sup>th</sup> January 2007. The target year for the 35% achievement is not stated (source: Thailand Economic Monitor, April 2007; World Bank Office, Bangkok; Country Director: Ian C. Porter).

Table 2-2: The Budget of Local Administration Compared with National Budget

Unit (Mil. Baht)			
Year	Local Expenditure	National Expenditure	%
2001	156,531	772,574	20.57
2002	176,155	803,651	21.99
2003	184,066	829,496	22.19
2004	241,947	1,063,600	22.75
2005	282,000	1,200,000	23.50
2006	327,113	1,360,000	24.10
2007	-	1,520,000	(25.0)

Source2: Thai Local Government p75, Department of Local Administration, Bureau of Local Administrative, Division of Technical Services and Foreign Affairs

There are several budget sources which local administrations can use for their development projects:

1. Provincial budget,
2. Budgets distributed by the central government,
3. Budget from tax collected by local government.

A budget left to a governor's discretion, called CEO budget, was originated by the Thaksin administration. This budget was given to newly appointed governors directly from the central government in October 2003. The budget was intended for urgent projects at the discretion of a governor, and for this purpose, 3% of the national budget was distributed to all governors of the whole country (source: website), but at present this scheme is no longer practiced.

Apart from this, a budget necessary for drafting a Strategic Development Plan is allocated to each province every year. It is called the Governor's Budget, which is to be used specifically for crucial and urgent projects in a province. Currently, approximately 90 million Baht is allocated in Samut Songkhram province (source: PEO information).

Funds allocated by the central government to local governments, i.e. Orborjor, Tessaban, and Orbortor, is to be used according to the guideline of DLOC (Decentralization to Local Government Organization Committee) within the Office of Permanent Secretary, attached to the Office of Prime Minister. The funds should be used for residents of a province, and the funds are divided into two separate categories: one is to be used only for the projects which are approved by DLOC; the other is the so-called "Decentralization Budget" the use of which is left to the discretion of the local government. In 2004, the funds allocated by the central government to local governments amounted to 91,438.0 million Baht (8.60% of that National budget of 1,063,500.0 million Baht), and in 2005, 110,610.7 million Baht (9.22% of National budget). Independent budget sources of local governments are VAT, consumption tax, property tax, vehicle tax, and alcohol tax, etc. which can be raised within each province and in principal used in accordance with the guideline of DLOC.

The size of the total budget, including the abovementioned special budgets, was planned to achieve the target set by the central government, but it reached only 24.1% in 2006, and is projected to be 25% in 2007.

Although the governors basically do not have the authority to obtain project budgets, starting next fiscal year, governors in 42 out of 75 Changwat including AYP will be able to obtain project funds (SKP starts the following year) from the central government, and the Changwat will be proposing competent projects to the central government for budgetary approval. As

the preservation of natural resources and environment is listed as one of the most important issues in upper-level plans of Thailand, competent projects would necessarily mean development projects which have paid due attentions to issues of natural resources and environment conservation.

**b. Finance of each local government in AYP**

The budget of each local government is small in scale. The budget of Orborjor is 840 million Baht, while the average budget of Tessaban is 52 million Baht, and the average budget of Orbortor is 15 million Baht. Among Tessaban, Tessaban Nakorn is the capital city of the province, has the largest budget amounting to a rather large 467 million Baht, 56% of the total Orborjor budget.

In general, budgets allocated for environmental concerns are very small amounting to only 0.2% of the total budget in Orborjor, 4.3% in Tessaban, and 4.8% in Orbortor. The portion of local governments with environmental budgets less than 1 million Baht is 53% among Tessaban and 89% among Orbortor.



Table 2-3: Total Budget and Environment Related Budget of Local Government in AYP

LA	N O	Name	Unit of budget: Baht								
			2004			2005			2006		
			Total	Environ	%	Total	Environ	%	Total	Environ	%
PAO		PAO Phra Nakhon Sri Ayutthaya	1,017,795,479	7,668,000	0.8	626,289,000	668,000	0.1	840,024,000	1,668,000	0.2
		1 T Chao Jet	49,987,500	40,000	0.1	49,833,380	70,000	0.1	48,778,050	55,000	0.1
		2 T Chieng Rak Noi	36,735,126	640,000	1.7	45,027,568	640,000	1.4	34,000,000	640,000	1.9
		3 T Rong Chang	8,338,200	133,355	1.6	20,429,700	358,922	1.8	23,996,700	224,009	0.9
		4 T Tha Ruoa	40,723,580	2,755,000	6.8	41,135,480	1,353,000	3.3	49,228,670	2,700,000	5.5
		5 T Tha Luang	32,255,839	750,000	2.3	50,609,819	1,112,360	2.2	49,232,473	1,530,000	3.1
		6 T Nakhon Luang	27,752,303	1,754,600	6.3	36,751,600	740,000	2.0	37,021,200	990,000	2.7
		7 T Bang Sai	44,992,715		0.0	50,508,540	420,700	0.8	43,000,000	1,920,700	4.5
		8 T Bang Kra San	20,150,000	420,000	2.1	44,415,000	3,680,000	8.3	40,000,000	2,480,000	6.2
		9 T Bang Shai Nai	15,043,100	206,000	1.4	30,000,000	206,000	0.7	32,600,000	206,000	0.6
		10 T Bang Nom Ko	18,000,000	824,000	4.6	21,000,000	824,000	3.9	31,000,000	824,000	2.7
		11 T Bang Ban	27,670,870	300,000	1.1	36,881,250	564,000	1.5	41,716,850	564,000	1.4
		12 T Bang Pahan	30,714,724	1,281,000	4.2	29,917,369	1,281,000	4.3	39,591,800	1,281,000	3.2
		13 T Ban Laen	45,856,263	60,000	0.1	49,486,226	34,000,000	68.7	44,703,621	45,000	0.1
		14 T Ban Prek	20,834,845	1,297,480	6.2	23,104,535	1,357,560	5.9	22,255,231	1,369,760	6.2
		15 T Khlong Jik	20,022,800	290,000	1.4	28,400,000	350,000	1.2	44,500,000	750,000	1.7
		16 T Ban Sang	2,500,000	370,000	14.8	2,570,552	370,000	14.4	3,904,380	370,000	9.5
		17 T Prasart Thong	32,302,300	100,000	0.3	41,490,000	100,000	0.2	47,000,000	370,000	0.8
		18 T Phak Hai	44,366,231	588,000	1.3	55,255,581	588,000	1.1	43,205,000	588,000	1.4
TES		19 T Phra Intharacha	37,453,915	10,736,000	28.7	49,275,905	10,736,000	21.8	55,727,188	10,736,000	19.3
		20 T Phachi	33,284,651	300,000	0.9	37,869,174	400,000	1.1	39,000,000	400,000	1.0
		21 T Maha Pram	32,327,031	-	0.0	33,840,000	210,000	0.6	40,230,000	210,000	0.5
		22 T Maharaj	16,148,461	872,620	5.4	15,549,067	1,236,900	8.0	27,000,000	2,444,460	9.1
		23 T Ratchakram				32,076,800	935,000	2.9	38,813,800	3,485,000	9.0
		24 T Lat Cha Do	24,949,403	1,485,500	6.0	28,650,700	1,792,180	6.3	28,650,700	2,445,540	8.5
		25 T Lat Bua Luang	23,780,000	3,500,000	14.7	20,236,000	1,500,000	7.4	54,000,000	400,000	0.7
		26 T Lam Ta Sao	68,594,195	1,920,000	2.8	71,254,350	2,884,400	4.0	71,883,460	730,000	1.0
		27 T Sam Mueang	12,490,777	165,000	1.3	18,548,850	126,800	0.7	20,000,000	1,037,000	5.2
		28 T Sam Ko	11,500,000	105,000	0.9	12,000,000	855,000	7.1	12,000,000	1,055,000	8.8
		29 T Hua Wieng	26,443,260	13,727,132	51.9	43,700,060	11,269,210	25.8	43,554,390	12,500,900	28.7
		30 T Aran Yik	25,156,468	345,000	1.4	43,253,967	90,000	0.2	40,555,000	195,000	0.5
		31 T Uthai	764,240	245,000	32.1	1,655,662	850,000	51.3	1,672,080	690,000	41.3
		32 N Nakhon Sri Ayutthaya	371,351,264	-	0.0	427,052,933	30,000	0.0	466,966,415	13,623,993	2.9
		33 M Sena	56,374,521	779,000	1.4	42,587,601	7,655,440	18.0	62,875,884	5,680,140	9.0
		34 M Ayothaya				81,300,000	3,160,000	3.9	85,000,000	3,690,000	4.3
		Average	39,339,518	1,483,538	3.8	47,519,637	2,698,426	5.7	51,872,438	2,242,074	4.3
		1 Mae La	18,000,000	105,000	0.6	20,000,000	230,000	1.2	22,000,000	140,000	0.6
		2 Po Taeng	8,582,875	-	0.0	8,530,326	-	0.0	8,022,592	95,900	1.2
		3 Khlong Sakae	4,696,400	-	0.0	5,950,000	390,000	6.6	9,500,000	250,000	2.6
		4 Cha Map	16,450,099	-	0.0	21,431,956	543,000	2.5	20,337,742	1,076,800	5.3
		5 Don Ya Nang	8,578,805	-	0.0	7,665,470	-	0.0	9,696,830	655,590	6.8
		6 Nam Tao	6,839,109	173,000	2.5	17,496,440	1,330,280	7.6	15,376,211	626,700	4.1
		7 Bo Pong	9,262,520	-	0.0	8,775,825	1,030,000	11.7	8,924,180	126,600	1.4
		8 Bang Yee To	20,394,729	-	0.0	24,172,060	640,000	2.6	28,493,368	919,000	3.2
		9 Ban Na	3,603,810	150,000	4.2	9,236,418	150,000	1.6	9,436,839	150,000	1.6
		10 Ban Pom	6,490,000	2,856,000	44.0	16,965,155	7,834,955	46.2	14,697,949	6,797,334	46.2
		11 Pak Kran	8,715,528	-	0.0	11,870,109	276,000	2.3	13,964,914	276,000	2.0
		12 Pak Jan	5,904,263	-	0.0	8,330,547	234,000	2.8	11,000,000	234,000	2.1
		13 Phra Kao	8,955,624	78,140	0.9	12,665,633	96,420	0.8	11,095,500	95,000	0.9
		14 Lat Nam Kem	9,388,352	-	0.0	13,973,948	94,500	0.7	13,741,974	-	0.0
		15 Lat Bua Luang	15,167,400	100,000	0.7	17,081,732	190,000	1.1	19,029,180	160,000	0.8
		16 Lam Sai	22,863,209	579,793	2.5	29,800,000	579,793	1.9	31,200,000	579,793	1.9
		17 Lum Plee		300,000			1,065,000		13,321,712	514,000	3.9
		18 Salalay	4,988,500	-	0.0	7,066,570	7,156,570		7,526,600	7,196,570	95.6
		19 Sam Pa Nieng	13,916,446	300,000	2.2	19,522,083	300,000	1.5	20,000,000	300,000	1.5
		Average	10,710,982	331,567	3.1	14,474,126	1,302,383	9.0	15,124,505	1,121,849	7.4

Source: OP-LA-AYP

### c. Finance of Each Local Government in SKP

The budget of each local government is small in scale. The budget of Orborjor is 191million Baht, while the average budget for Tessaban is 65 million Baht, and the average budget for Orbortor is 12 million Baht. Among all Tessaban, Tessaban Mueang, the capital city of the province, has the largest amounting to 229 million Baht, which equals 120% of the total Orborjor budget.

In regard to environment budgets, only 1% of the total budget in Orborjor, 4.5% in Tessaban, and 9.5% in Orbortor were allocated for environmental purposes. The portion of local governments with annual environmental budgets less than 1 million Baht is 60% (or 3 out of 5) among Tessaban, and 63% among Orbortor.

Table 2-4: Total Budget and Environment Related Budget of Local Government in SKP

Unit of budget: Baht

LA	No	Name	2005			2006			2007		
			Total	Environ.	%	Total	Environ.	%	Total	Environ.	%
PAO		PAO Samut Songkhram	160,521,629	160,000	0.1	152,174,515	160,000	0.1	191,703,423	160,000	0.1
TES	1	M Samut Songkhram	213,418,942	10,038,700	4.7	209,558,515	11,410,000	5.4	229,282,430	10,015,000	4.4
	2	T Kra Dang Nga	19,415,896	522,700	2.7	21,684,820	522,700	2.4	21,440,660	587,200	2.7
	3	T Bang Nok Kaewg	18,805,643	504,000	2.7	20,069,470	914,000	4.6	23,437,700	741,000	3.2
	4	T Amphawa	24,351,212	413,000	1.7	26,008,220	695,000	2.7	26,519,240	890,000	3.4
	5	T Mueang Mai	22,124,128	2,990,000	13.5	23,717,305	320,000	1.3	22,207,800	2,260,000	10.2
		Average	59,623,164	2,893,680	4.9	60,207,666	2,772,340	4.6	64,577,566	2,898,640	4.5
TAO	1	Lhlong Kern	9,825,136	350,000	3.6	12,440,023	365,000	2.9	15,790,000	770,000	4.9
	2	Khlong Khon	11,380,336	1,000,000	8.8	12,421,074	1,600,000	12.9	13,000,000	2,500,000	19.2
	3	Tai Had	10,633,733	1,000,000	9.4	5,883,400	1,000,000	17.0	9,378,782	1,000,000	10.7
	4	Nang Ta Kien	13,139,075	370,000	2.8	15,790,927	420,000	2.7	17,332,898	360,000	2.1
	5	Bang Kaew	21,584,691	998,085	4.6	28,763,306	943,241	3.3	23,530,059	2,842,517	12.1
	6	Bang Kan Taek	12,557,179	800,763	6.4	15,867,445	429,003	2.7	15,000,000	1,454,003	9.7
	7	Bang Ja Kreng	7,454,000	1,839,900	24.7	7,984,000	2,211,000	27.7	11,008,700	2,720,000	24.7
	8	Ban Prok	14,152,660	2,566,000	18.1	14,252,167	1,891,300	13.3	15,512,661	831,000	5.4
	9	Lat Yai	18,445,225	479,001	2.6	17,040,983	1,050,001	6.2	18,445,225	1,900,001	10.3
	10	Laem Yai	9,752,162	1,500,000	15.4	18,253,940	1,500,000	8.2	15,000,000	1,730,000	11.5
	11	Kra Dang Nga	6,500,000	286,900	4.4	10,000,000	3,658,000	36.6	10,000,000	1,545,000	15.5
	12	Jom Pruak	7,939,064	104,000	1.3	11,435,442	308,001	2.7	12,000,000	1,028,500	8.6
	13	Don Manora	11,497,999	360,000	3.1	13,887,792	360,000	2.6	12,000,000	460,000	3.8
	14	Bang Kra Bue	8,134,472	120,000	1.5	8,290,774	115,000	1.4	7,704,934	115,000	1.5
	15	Bang Khon Tee	12,706,064	1,260,000	9.9	12,010,214	1,260,000	10.5	9,719,000	1,260,000	13.0
	16	Bang Prom	8,261,437	85,000	1.0	9,758,640	205,000	2.1	9,964,961	428,000	4.3
	17	Bang Yee Rong	10,351,293	175,000	1.7	5,020,000	421,600	8.4	8,590,000	786,800	9.2
	18	Bang Sakae	11,856,376	6,324,923	53.3	11,129,070	8,570,140	77.0	10,731,385	9,464,223	88.2
	19	Rong Heeb	8,512,400	30,000	0.4	10,938,000	193,200	1.8	15,733,900	460,000	2.9
	20	Kaew Aom	7,483,416	240,000	3.2	8,168,929	240,000	2.9	10,611,933	240,000	2.3
	21	Tha Kha	10,984,504	400,000	3.6	15,588,856	400,000	2.6	15,640,845	444,000	2.8
	22	Bang Kae	6,000,000	240,000	4.0	4,500,000	240,000	5.3	9,470,000	260,000	2.7
	23	Bang Chang	14,565,481	600,000	4.1	14,276,851	750,000	5.3	13,320,807	865,000	6.5
	24	Bang Nang Lee	7,308,624		0.0	6,882,978	520,000	7.6	7,546,500	770,000	10.2
	25	Plai Pong Pang	8,079,600	10,001	0.1	10,207,600	10,501	0.1	13,203,600	10,001	0.1
	26	Praek Nam Daeng	7,925,591	80,000	1.0	10,954,356	100,000	0.9	12,849,763	100,000	0.8
	27	Yee Sarn	4,763,500	470,000	9.9	5,672,000	405,000	7.1	7,596,000	450,000	5.9
	28	Wat Pradoo	9,972,046	40,000	0.4	8,765,532	40,000	0.5	10,585,435	40,000	0.4
	29	Suan Luang	6,708,596	240,000	3.6	9,979,080	280,000	2.8	12,431,237	280,000	2.3
	30	Mueang Mai	6,419,762	60,000	0.9	9,892,400	30,000	0.3	9,800,000	300,000	3.1
		Average	10,163,147	759,640	7.5	11,535,193	983,866	8.5	12,449,954	1,180,468	9.5

Source: OP-LA-SKP

## 2.1.4 Land Use Regulation

In Thailand it is the duty of local governments to draft zoning (land use plans) for their administration areas at present. This system originated by the decentralization policy of 1997 constitution, and this system has been embodied by the following three legal acts:

- Plan and Procedure of Decentralization of Local Government Act (1999)
- Plan of Decentralization of Local Government (2000)
- Action Plan of Determining Procedures of Decentralization of Local Government (2003)

This is a result of the reshuffling of administrative authorities between the central government and local governments, and a result of reforms within local governments. However, it had been necessary for the central government to support local governments' capacity. Accordingly a guideline for preparing the Local Plan (Provincial Plan and Tassaban Plan) was made. 75 provinces and Bangkok are obliged to draft their own Local Plans for designated areas within each province and Tassaban. Some of them have already been drafted, while some of them are still in being processed.

Development control is covered by the following four regulations;

- 1) Zoning (Land Use Plan),
- 2) Building Control,

- 3) Construction Control,
- 4) Environmental Act.

**a. Local Plan**

There are two kinds of local plans.

1. A provincial plan covering the whole area of a province.

This is applied to 75 provinces of the country and Bangkok. A provincial plan is prepared by a corresponding provincial department of public works and town/country planning in consideration of comprehensive town planning of Tassaban within the province.

2. A Tassaban plan covering mainly a Tassaban area and its vicinity.

This is applied to Tassaban designated by Department of Public Works and Town and Country Planning under the Ministry of Interior. A Tassaban plan is prepared by a corresponding Tassaban, but sometimes a Tassaban is not capable to do so. In such a case a provincial department will assist in preparing the Tassaban plan.

Both plans are based on “the Imposition of Plans and Steps for Distribution of Power to Local Administration Organizations Act, 1999”. This act stipulates the procedures, steps, and contents for preparing the local plans.

In Ayutthaya province there are one provincial and four Tassaban plans. These four are:

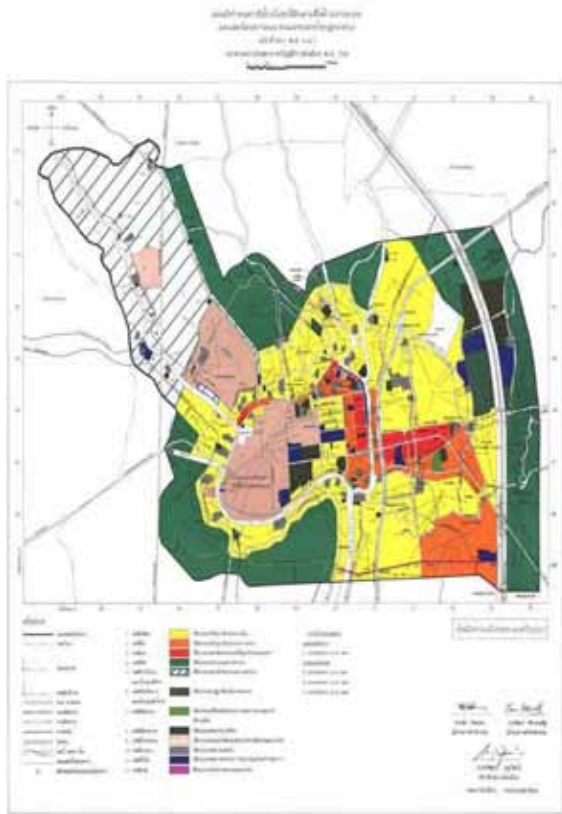
- (1) Tassaban Phra Nakhon Si Ayutthaya,
- (2) Tassaban Tambon Tha Ruea,
- (3) Tassaban Tambon Sena,
- (4) Tassaban Ban Phreak-Rong Chang-Maharaj.

These comprehensive town planning documents of Tassaban consist of 3 charts (Map of planning area, Land use map, and Communication and Transportation plan) together with land use classification, regulation, and explanation, etc. Among them the land use maps of each comprehensive town plan are shown below. The provincial plan of Ayutthaya is currently in progress, and it is now in its final step.

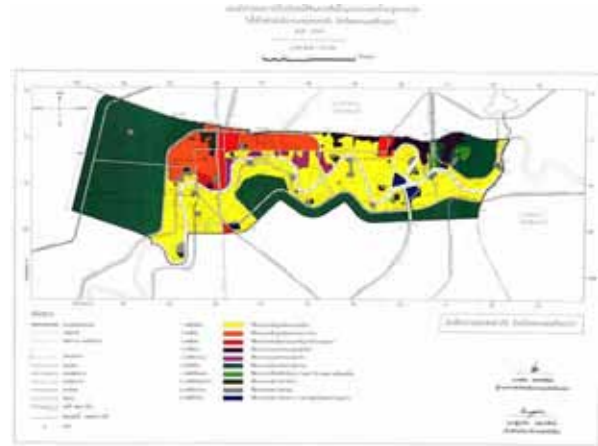
In Samut Songkhram, provincial plan is pending for the final decision by the governor. 2 Tassaban have submitted their comprehensive town planning, These Tassaban are:

- (1) Tassaban Mueang Samut Songkhram,
- (2) Tassaban Amphawa.

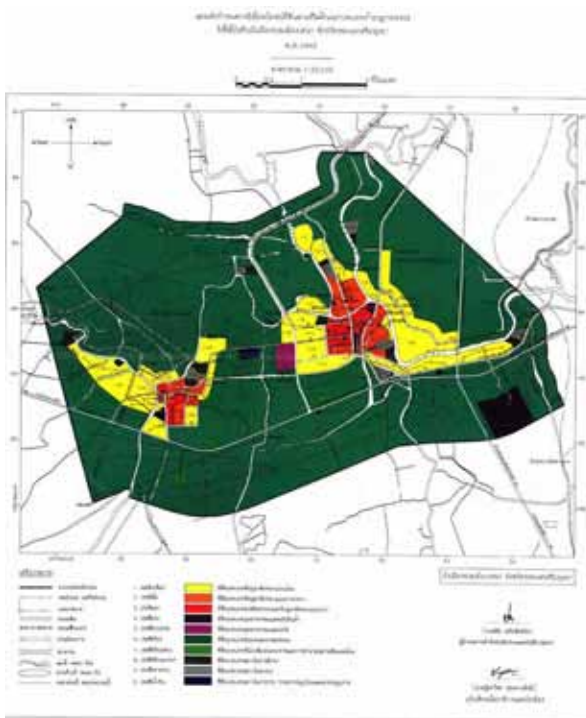
The land use maps of these Tassaban are shown below.



Tessaban Phra Nakhon Si Ayuttaya,



Tessaban Tambon Tha Ruea

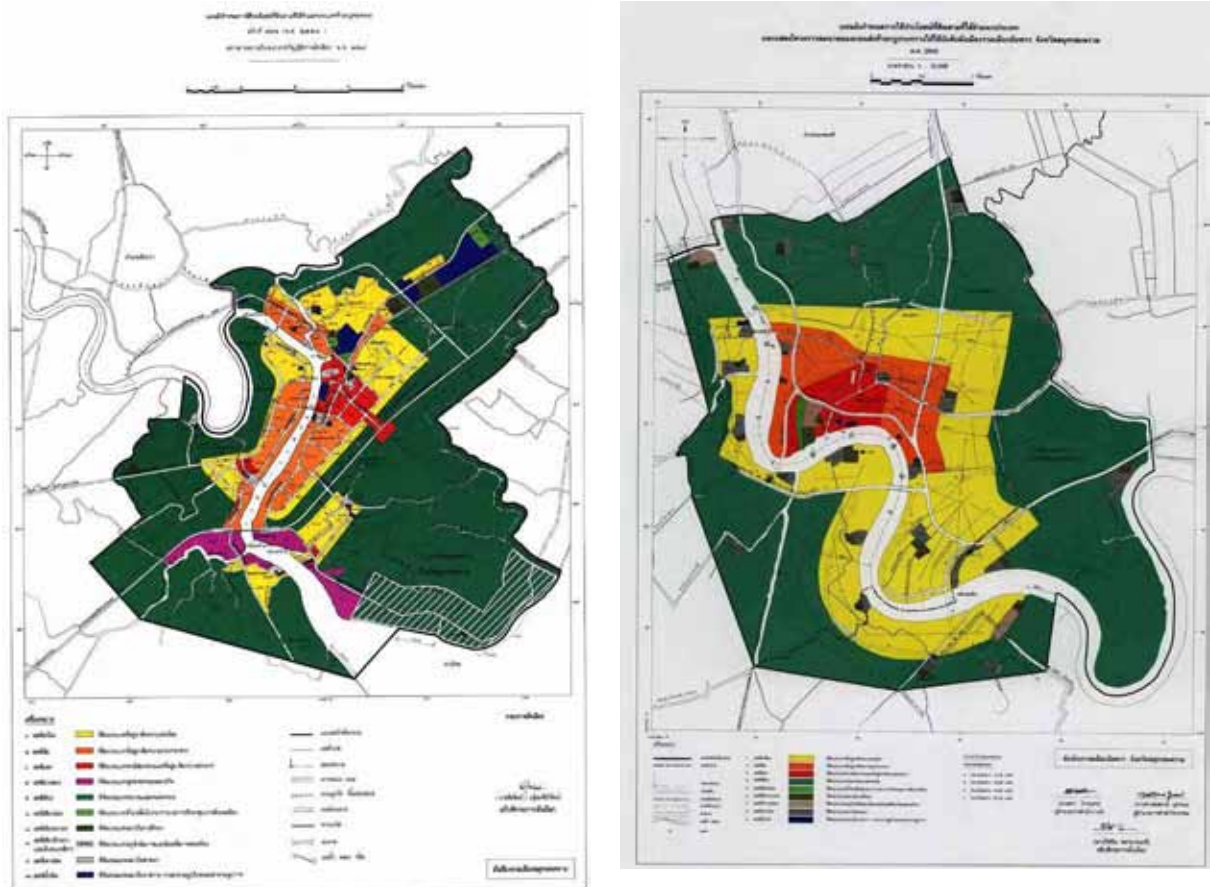


Tessaban Tambon Sena

Under preparation

Tessaban Ban Phreak-Rong Chang-Maharaj

Figure 2-3: Land use map of Tessabans in AYP



Tessaban Mueang Samut Songkhram

Tessaban Amphawa

Figure 2-4: Land use Map of Tessaban in SKP

Apart from the zoning, it may be useful for the purpose of environmental quality management to prepare, say a zoning for environment sensitive spot zone, for instance water sensitive environment spot zone, residential environment zone, pollution sensitive spot zone, and flood sensitive environment zone, etc. Based on GIS analysis, by over laying respective layers, these environmentally sensitive spot zones will be analyzed.

1. Water sensitive environment spot zone
  - spot zone around water intake for drinking water,
  - spot zone around shallow wells,
  - zone along rivers.
2. Flood sensitive environment spot zone
  - spot zone sensitive for flood.
3. Erosion sensitive environment spot zone
  - spot zone sensitive for erosion.
4. Pollution source spot zone
  - zone reserved for industry,
  - zone along highways,
  - spot for river port.
5. Residential environment zone
  - environment zone protected and developed for living activities
  - urban infrastructure to be developed with priority
6. Agriculture sensitive environment zone

- zone for sensitive agriculture activities e.g. paddy field in flood sensitive spot zone
- zone for agricultural activities

Areas in No4. overlaying with areas in either layers Nos 1,2,3,5 or 6 will be especially environmentally sensitive.

**b. Steps, Procedures and Validity of Local Plans**

Steps, procedures and validity of local plans are;

Table 2-5: Steps, Procedures and Validity of local plans

	Provincial Plan	City Plan
Steps	18 steps	18 steps
Final decision	Governor endorsed by Ministry. of Interior	Governor endorsed by Ministry of Interior
Validity	5 years	5 years

There are 18 steps for the preparation of a provincial plan. The last step is publication in a gazette.

The final decision of the Local Plan, both provincial plan and Tassaban plan, is in the hand of the governor, and it is valid for 5 years,

The procedures of issuing comprehensive town planning is as follows according to the town planning act 1975:

1. Issuing decree on determining boundary (if necessary),
2. Informing the province to appoint Comprehensive Town Planning Advisory Committee,
3. Advertising in daily newspaper and radio for a period of not less than 7 days,
4. Posting map, chart and regulations for a period of not less than 15 days,
5. Comprehensive Town Planning Advisory Committee conference,
6. Public conference and hearing within 30days of announcement posting date,
7. Coordinating and making Comprehensive Town Planning subcommittee conference,
8. Town planning committee conference for consensus,
9. Posting chart, regulations and inviting petition for land use plan amendment or cancellation within 90 days from announcement posting date,
10. Town planning subcommittee conference on petition for land use plan amendment or cancellation,
11. Informing Town Planning Committee on the resolution of petition or forwarding the petition of which has not yet reached resolution,
12. Drafting Comprehensive Town Planning,
13. Proposal to Billing Committee, Ministry of Interior for consensus,
14. Proposal to Ministry of Interior Committee for consensus,
15. Proposal to the Cabinet for consideration,
16. Office of the Council of State examination and consensus,
17. The Minister of Interior signing the ministerial regulations,
18. Publication in gazette.

Ministerial regulation (MOI) states the following for the enforcement of Town Planning:

- Town Planning regulations are to be used as a guideline to develop and maintain towns, their related area, and rural area in terms of asset, communication and transportation, public utilities, public services, and environment in concerned area. The regulations are to go along with the National Economic and Social Development Act,
- Town Planning regulations aim to improve the management of land utilization, structure of public communication and transportation. The regulations are to go along with future community expansion and economic development

### **2.1.5 Issues of Local Administrations**

(Source for this following section: *Thailand's Decentralization: Progress and Prospects*, Dana Weist, Senior Public Sector Specialist, the World Bank)

The Decentralization Act defines six functions to be transferred to local administrative organizations:

- (i) Infrastructure
- (ii) Promotion of quality of life
- (iii) Maintenance of social order and peace
- (iv) Planning and investment promotion, commerce and tourism
- (v) Management and conservation of natural resources and the environment
- (vi) Arts, culture, tradition, and local wisdom.

Based on the Master Plan to decentralize administrative power to local administrations, the first stage, from 2001 through 2004, focused on transferring functions for planning and sequencing decentralization; improving the administrative system within local and regional administrations; eliminating overlapping functions between central and local administrations; and strengthening local capacity to effectively manage transferred functions, personnel, revenue and assets.

After the tenth year -- 2011 and beyond -- local citizens are expected to have a better quality of life and better access to public services and facilities, and local communities are expected to play a greater role in decision-making, overseeing, and supporting local administrations. Local administrations are expected to be more self-reliant and autonomous.

At present the plan is in its second stage. During this "transitional" stage, from 2005 through 2010, the roles of regional and local administrations and civil society have to be adjusted based on lessons learned in the previous period.

#### **a. Financial issues**

(Source for this section: *Fiscal Decentralization, The Case of Thailand*, Sutapa Amornvivat, Ministry of Finance, Thailand)

- Local governments have limited authority to set priorities and make expenditure allocation decisions. Local budgets must still be approved by the provincial governor (or district council), and central agencies monitor the spending budget financed by general and specific subsidies. Most of the transfers from the central government are tied to specific functions/programs, thereby restricting local government autonomy.
- National laws and regulations still set ceilings on user fees, thereby restricting local governments' ability to recover costs associated with certain services.

- Heavy reliance on shared taxes (or centrally collected revenue) and grants reduce local accountability and also the predictability of revenue flows. Shared taxes do not provide local governments with autonomy unless they have some ability to adjust the tax rate/base. Shared tax revenue is typically easier to predict than grants from the central government.
- The local government has absolutely no control over grants and can control less than a quarter of its total revenues.
- Although it was intended to increase the share of local government in two prominent share taxes, value-added tax, excise taxes, mineral resource tax, land registration fees, gambling tax and groundwater fees, etc., it is still necessary to further increase local revenue.
- The performance of local government has not been monitored with regards to outcomes and very little outcome data is currently collected.

#### **b. Organizational issues**

Although local council members are elected, provincial administration is essentially an extension of the central government as the governor is appointed by the Ministry of Interior. Each local administration must report to the provincial governor or Amphoe chief.

The relation among Orborjor, Tessaban and Orbortor is not clear. Orborjors were established in 1955 to accelerate the development of local administrations in the rural areas outside of Tessabans (and sanitary districts) by constructing and maintaining local roads, providing water and other limited services to residents. The creation of Orbortors in 1994 substantially diminished Orborjor responsibilities. In early 1999, legislation was approved to enhance Orborjors' role in planning, investment, and service provision in each province, as well as coordinating functions delegated to lower-level governments.

Of the countries that have successfully decentralized, few have done so to over 7,000 local administrations as in the case of Thailand. Orbortors were established in 1994 to serve areas outside of Tessabans (and sanitary districts). They are designed to provide basic services and facilities, predominantly in rural Mooban areas. Most Orbortors are too small and fragmented to be efficient, viable or accountable units of local government -- in terms of meeting their responsibilities for infrastructure, environment, human resource development and health care; in raising revenues; and in effectively supporting participatory governance. Many are too small to even support a primary school. The numerous Orbortors within ecological regions (e.g., watersheds and river basins, airsheds, etc.) impede coordinated environmental or natural resources planning and management. Thus, local authorities should have collective actions in a number of service provisions. Another alternative is to enforce amalgamation among small local jurisdictions.

The government should consider that responsibility and resources are devolved first to larger places with stronger capacity and resources while effort is directed to strengthening the smaller and weaker local administrations.

#### **c. Public participation issues**

Increasing public participation is a major aim of decentralization. Public hearings are becoming increasingly common to collect public opinions and feedback on specific projects. Public participation in local resource allocation (i.e. annual budgets), however, is still limited.



## **2.2 Organizations that Undertake Natural Resources and Environmental Management (NREM)**

### **2.2.1 Sphere of Environmental Administration**

In Thailand, environmental administration covers a large field; e.g. the conservation of natural environment, living environment, and anti-pollution. It additionally covers natural resources, e.g. mineral resources, earth resources (e.g. soil degradation, damage from salt), groundwater resources, water resources, wildlife resources, marine life resources, fishery, etc. In some cases, environmental administration has even reached out to include flood control and measures for water shortages. Thus the sphere of environmental administration can be roughly defined as the following:

#### **Natural Resources**

- Land and Soil Resources
- Forestry Resources
- Wildlife Resources
- Water Resources
- Mineral Resources
- Marine and Coastal Resources
- Biodiversity

#### **Environment Management Plan**

- Water Quality
- Solid Waste
- Air Quality
- Noise/Vibration
- Toxic and Hazardous Substances
- Urban Environment (e.g. amenities)
- Natural and Cultural Assets
- Global Warming

### **2.2.2 Ministry of Natural Resources and Environment (MNRE)**

#### **General organization of MNRE**

The Ministry of Natural Resources and Environment (MNRE), previously part of MOSTE (Ministry of Science, Technology and Environment), was established 2<sup>nd</sup> October 2002 and is an organization that integrates the Ministry of Agriculture and Ministry of Industry among others. It is notable that the phrase “natural resources” was introduced in its name. The Kingdom of Thailand was a nation abundant in natural resources, however rapid economic development has advanced the consumption of these resources and caused concern over the impact on the environment. For example, forest cover in 1961 accounted for 53% of national land, but by 1993 this had been drastically reduced to 26.3%. In order to counteract these conditions, the Government of Thailand decided to strengthen the Ministry of Natural Resources and Environment with the aim to preserve and sustainably use natural resources, and to maintain a favourable living environment.

The structure of this Ministry, in the vertically divided government of Thailand, covers a surprising number of fields, even when compared to Japan; land use regulations, solid waste management, and even sewage management. The political structure differs from that of Japan in that privatized sectors are also controlled by government directives, and if steady achievements can be made, in the future we can expect Thailand to exhibit its great

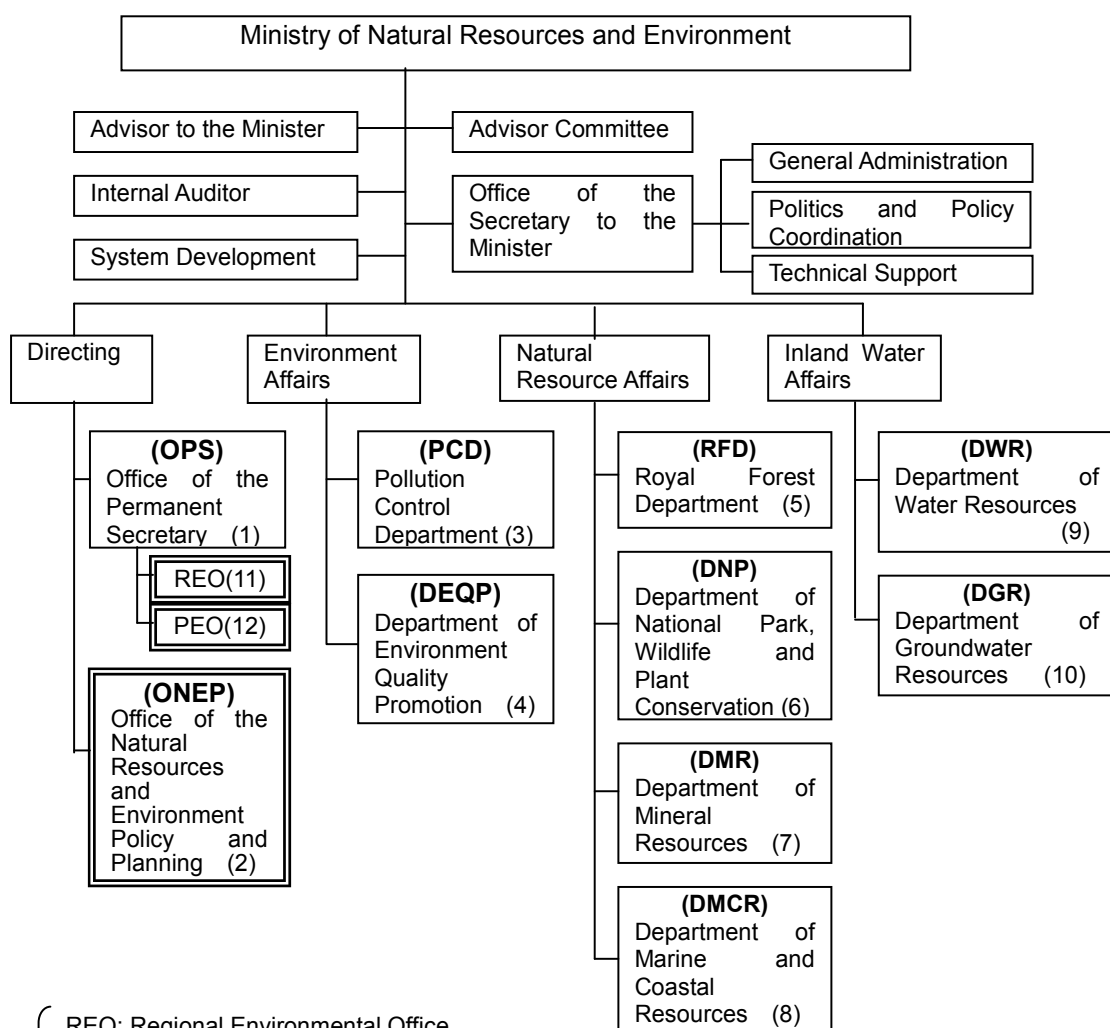
strength.

The organizational chart of the Ministry of Natural Resources and Environment (MNRE) is shown in the figure below. It consists of ten organizations including Offices and Departments.

MNRE has distributed Regional Environmental Offices (REO) in 16 areas throughout the country, with each office overseeing environmental management in multiple provinces. The REO were previously Public Health offices with relatively sophisticated laboratories where they are able to conduct chemical analysis, the scale of each office is 20 to 30 staff. Furthermore, there are 75 Provincial Environmental Offices (PEO), which act as a subordinate organization to REO, distributed in each province where they hold jurisdiction over natural resources and environment problems. The PEO was previously Royal Forestry, and has a staff of 2 to 3 people in each office.

In the current study, we work as a Study Team with Counterparts to jointly carry out the work. The counterparts are ONEP (Office of Natural Resources and Environment Policy and Planning), PEO (Provincial Environmental Office) and REO (Regional Environmental Office).

The total number of staff for various offices and departments in MNRE is more than 42,000, because in 2002 a lot of staff members were integrated into MNRE from other organizations, especially more than 30,000 staff members from the Royal Forest Department in the Ministry of Agriculture.



REO: Regional Environmental Office  
 PEO: Provincial Environmental Office  
 The boxes show counterpart organizations for the Study.  
 The number in the parenthesis ( ) corresponds to NO. in Table 2-6 which shows the number of the staffs in each office and department of MNRE.

Figure 2-5: Organization Chart of MNRE

Table 2-6: Manpower of MNRE

NO	Sector	Government Officer	Full-time Employee	Government Employee	Other (Contract Employee)	Total	Remarks
1	Office of the Permanent Secretary of MNRE (OPS)	813	103	362	-	1,278	Including staff of REO & PEO
2	Office of Natural Resources and Environment Policy and Planning (ONEP)	228	28	127	48	431	Succeeding from MOSTE
3	Pollution Control Department (PCD)	278	63	41	206	588	Succeeding from MOSTE
4	Department of Environment Quality Promotion (DEQP)	161	44	219	42	466	Succeeding from MOSTE
5	Royal Forest Department (RFD)	2,308	1,368	1,736	5,080	10,492	Separated from Ministry of Agriculture
6	Department of National Park, Wildlife and Plant Conservation (DNP)	4,352	5,407	12,791	-	22,550	Shifted from Royal Forest Department
7	Department of Mineral Resources (DMR)	394	205	118	67	784	Separated from Ministry of Industry
8	Department of Marine and Coastal Resources (DMCR)	385	253	1,147	-	1,785	Shifted from Royal Forest Department
9	Department of Water Resources (DWR)	1,580	865	35	186	2,666	Shifted from Royal Irrigation Department
10	Department of Groundwater Resources (DGR)	526	1,194	24	-	1,744	Shifted from Department of Mineral Resources
Total		11,025	9,530	16,600	5,629	42,784	

① Government Officer : Formal staff who passed examination

② Full-Time Employee : Supporting staff in the lifelong employment (no examination)

③ Government Employee : Supporting staff in three-years employment

④ Contract Employee : Supporting staff for a project in the terminable employment

## a. Functions and Duties of each Office and Department of MNRE

### a.1 The Office of the Permanent Secretary (OPS)

The Office of the Permanent Secretary (OPS) is the center of administration of MNRE, in terms of strategy development and also in directing policy changes to implement resource management with the aim to achieve certain targets, and acts as the administration center of MNRE. OPS controls the activities of REO and PEO.

OPS has powers and duties as follows:

- 1) To study, analyze and prepare data to propose to the minister in order to set up policy and target of the ministry,
- 2) To develop administrative strategy of the ministry,
- 3) To change policy to implement plans,
- 4) To manage and administer resources of the ministry to be used economically and effectively,
- 5) To coordinate implementation including control, acceleration, monitoring and evaluation of all agencies in MNRE,
- 6) To set up policy and guideline for cooperation with foreign countries and international organizations in terms of NREM,
- 7) To develop information technology for administration and service to all agencies in the ministry,
- 8) To coordinate and support provincial administration and local administration in the

- field of NREM,
- 9) To coordinate and support monitoring and evaluation of natural resource usage situation and monitoring environmental quality in regional level,
  - 10) To act to prevent illegal intrusion to state owned land, and
  - 11) To implement other assignments by law that are mentioned as duties of the permanent secretary or as designated by the minister or cabinet.

### **a.2 The Office of the Natural Resources and Environmental Policy and Planning (ONEP)**

The responsibility of ONEP, as specified in the Ministerial Regulation "Ministerial Subordinates of the Office" of the Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment in B.E. 2545 (2002), are as follows:

- 1) To formulate policy and plans for natural resources and environmental conservation and administrative management,
- 2) To coordinate the formulation of natural resources and environmental management plan in accordance with the Enhancement and Conservation of National Environmental Quality Act of 1992 and other related laws, as well as coordinating practical implementation,
- 3) To study, analyze, coordinate and formulate measures for the issuance of ministerial regulation for environmentally protected areas,
- 4) To monitor, audit, and evaluate performance of implementation of policy, plans and measures and to formulate the State of the Environment Report,
- 5) To appraise Environmental Impact Assessment (EIA) reports on projects which tend to cause significant impacts on environmental quality and the projects to be assessed include both those of government and private sector,
- 6) To efficiently administer Environmental Fund to support policies, plans and management of the natural resources and environment at all levels,
- 7) To propose recommendations for policy and guideline development on land management, possession, preservation and development for public allocation, as well as public land preservation and prohibition,
- 8) To cooperate with foreign countries and international organizations in the implementation of natural resources and environmental conservation and administrative management policies and plans, and
- 9) To perform any functions provided under the laws, which authorize the Office of Natural Resources and Environmental Policy and Planning, or as designated by the ministry or the cabinet.

### **a.3 The Pollution Control Department (PCD)**

The Pollution Control Department (PCD) was established on June 4, 1992 under the Royal Decree on the Organizational Division of Pollution Control Department, Ministry of Science, Technology and Environment B.E. 2535 (1992), as a result of the Enhancement and Conservation of the National Environment Quality Act B.E. 2535 (1992). The vision for the PCD is to be an organization in which the society trusts and has confidence in their management of pollution for a better environment and a better quality of life.

Its duties are:

- 1) To submit opinions for the formulation of national policy and plans for the promotion

- and conservation of environmental quality with respect to pollution control,
- 2) To make recommendations for the establishment of environmental quality standards and emission/effluent standards,
  - 3) To develop environmental quality management plans and measures to control, prevent, and mitigate environmental pollution,
  - 4) To monitor environmental quality and prepare an annual report on the state of pollution,
  - 5) To develop appropriate systems, methodologies and technologies for the application in the management of solid waste, hazardous substances, water quality, air quality, noise level and vibration,
  - 6) To coordinate and implement measures to rehabilitate and remedy damages caused by pollution in the contaminated area and environmental damage appraisals,
  - 7) To provide assistance and advice on environmental management,
  - 8) To cooperate with other countries and international organizations on environmental management,
  - 9) To investigate public complaints about pollution,
  - 10) To perform other functions on pollution control as specified by the Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992) and other related laws, and
  - 11) To perform other functions designated either by law to be the responsibilities of the department by the Ministry of Natural Resources and Environment, or by the Cabinet.

#### **a.4 The Department of Environment Quality Promotion (DEQP)**

In 2002, Department of Environment Quality Promotion was transferred to be under Ministry of Natural resources and Environment due to the government restructuring and has responsibilities as follows:

- 1) To promote and disseminate the environmental data and information
- 2) To compile, develop and promote the use of environmental databases and act as the national environmental information centre.
- 3) To support public participation in environmental protection and balanced utilization of biological variety and environmental natural resources.
- 4) To coordinate and formulate plan and measure in order to promote and disseminate the protection of national resources and environment.
- 5) To study, research, develop and support environmental management and technology including act as clean technology centre or environmental reference operation centre.
- 6) To carry out other functions of Department of Environmental Quality Promotion assigned by the law or the ministry or the cabinet.

#### **a.5 The Royal Forest Department (RFD)**

The Cabinet Resolution on 3<sup>rd</sup> December 1985 made the duties of Royal Forest Department (RFD) clear. The Cabinet Resolution stated:

To achieve a long term and coordinated national forest administration and development, and for better understanding between state and private sectors, it is declared as a national forestry policy that:

- 1) Long term guidelines for forest management and development shall be established to

- maximize national social/economic benefits and national security, with sufficient measures provided for environmental protection. Emphasis shall be placed and harmonized utilization of forest resources and other natural resources.
- 2) Role and responsibility sharing among various government agencies and the private sector in forest management and development shall be promoted.
  - 3) National forest administration shall be reorganized in line with the changing quality and quantity of forest resources and environment.
  - 4) Forty percent of the country area shall be kept as forests. The forest area shall be divided as follows:
    - Protected forest: 25% of the country area shall be kept as protection forests for nature conservation, recreation and environmental quality protection.
    - Production forest: 15% of the country area shall be designated as production forest to produce timber and other forest products.
  - 5) Public and private sectors together shall develop and manage the forest to achieve the objective of providing perpetual direct and indirect benefits to the country.
  - 6) Science and technology to increase the efficiency of agricultural production shall be enhanced to reduce the risk of the forest being destroyed to increase agricultural land.
  - 7) The State shall establish a forest development plan as part of the natural resources development plan in the National Social and Economic Development Plan to harmonize a mutual utilization action between forest resources and other natural resources.
  - 8) Efficiency in timber production shall be increased through appropriate forest management techniques using both selection and clear cutting system. In the clear cutting system, the cleared area shall be replanted immediately.
  - 9) To conserve and protect natural environment, the State shall accelerate the city planning process and designate specific area for forest, residential, rural and agricultural areas in each province to prevent forest land encroachment.
  - 10) National Forest Policy Committee shall be established under the Forest Acts for policy formulation, supervision and management of national forest resources.
  - 11) The State shall undertake extension programs to create public awareness, instill positive attitude, and proper skills on the wise use, as opposed to the negative effects of forest destruction and wasteful use, of forest resources.
  - 12) The State shall promote reforestation by the public and private sectors for domestic industrial consumption. Export of wood and wood products shall be encouraged. Community forestry such as reforestation on public land by private sector, tree planting on marginal agricultural land and establishment of forest woodlot for household consumption shall also be promoted.
  - 13) The State shall encourage integrated wood using and pulp and paper industries to realize the whole-tree utilization concept.
  - 14) Amendment of forest acts shall be made to support efficient forest resources conservation and utilization.
  - 15) Instead of establishing a National Forestry Research Center, Royal Forest Department should seek collaboration with universities and higher educational institutes.
  - 16) Wood energy as a substitute of fossil energy shall be promoted through energy plantations.
  - 17) Any land with the slope of 35% or more on an average shall be designated as forest land. No title deed, or land use certificate under the Land Acts shall be issued for the land of this category.
  - 18) Explicit guidelines shall be established to deal with various forest degradation problems e.g. shifting agriculture, forest fires, forest clearing by the hill tribe

minorities, etc. Measures on enforcement of law and penalty codes shall be specified and respective due processes shall be established. Regional Forestry Law Enforcement Centers shall be established. Measures shall also be devised to penalize corrupted government official and influential person.

- 19) Incentive systems shall be established to promote reforestation by the private sector.
- 20) Human resources and rural settlement planning must be in conformity with national natural resources management and conservation plans.

#### **a.6 The Department of National Park, Wildlife and Plant Conservation (DNP)**

The responsibilities of Department of National Park, Wildlife and Plant Conservation (DNP) are as follows:

- 1) To conserve, protect, looking after forest resources, wildlife and plants in a sustainable way using of natural resources with highest efficiency,
- 2) To rehabilitate, solve decayed natural resources and environment. To protect against forest fire and natural disaster which causing damage to ecosystem in the forest area.
- 3) To control and protect trespassing and destroying the forest and breaking the law of the National Reserved Forest, the National Park law, Wildlife Reservation and Protection law and related laws.
- 4) To study, research and develop conservation approach, management and benefit use of forest resources and wildlife.
- 5) To specify measures and standards on conservation, management and benefit use of forest resources and environment.
- 6) To provide information database and transfer forest technology.
- 7) To perform other functions as specified by the related laws to be the functional authorities of the department, or by the assignment of the ministry or the cabinet.

#### **a.7 The Department of Mineral Resources (DMR)**

The responsibilities of Department of Mineral Resources (DMR) are as follows:

- 1) To submit opinions for the designation of areas, to formulate policies and plans for preservation, conservation and rehabilitation of geological resources and to manage geological resources and geology-related activities,
- 2) To perform functions as specified by the related sections of the Mineral Law,
- 3) To submit opinions for the formulation or amendment of laws, regulations and measures of preservation, conservation and rehabilitation of geological resources, and the management of geological resources and geology-related activities, as well as to perform monitoring, evaluating and regulating in compliance with the laws, regulations and measures,
- 4) To perform surveys, inspections, studies, research, knowledge development, data providing, knowledge dissemination, on technical service and cooperate internationally on geology and geological resources,
- 5) To set the geological and mineral standards, collect and preserve the geological and mineral samples for the national reference, and
- 6) To perform other functions as specified by the related laws to be the functional authorities of the Department, or by the assignment of the ministry or the cabinet.



#### **a.8 The Department of Marine and Coastal Resources (DMCR)**

The Department of Marine and Coastal Resources has a duty to conserve, rehabilitate, and administer marine and coastal resources including mangrove forests for balance and sustainability of Thailand's seas in order to support social and economic security of the country. The DMCR has powers and duties as follows:

- 1) To propose opinion to set up policy and plan for management, conservation and rehabilitation of marine and coastal resources,
- 2) To propose to improve and modify laws, regulations and measures to conserve, rehabilitate and use marine and coastal resources sustainably,
- 3) To control, monitor and evaluate marine and coastal resources according to laws, regulations and measures
- 4) To study and research conservation development and rehabilitation of marine and coastal resources including plants and sea animals which are endangered,
- 5) To propose areas for conservation, for protection, control of marine and coastal resources,
- 6) To create and promote understanding and public participation to conserve and rehabilitate marine and coastal resources,
- 7) To be data center for marine and coastal resources of the country,
- 8) To coordinate with international organization and foreign countries in terms of marine and coastal resources, and
- 9) To act as mentioned in the law specified to be powers and duties of DMCR or assigned by Minister or Cabinet.

#### **a.9 The Department of Water Resources (DWR)**

The duties of Department of Water Resources (DWR) are as follows:

- 1) To prepare suggestions, policy, plans, regulations and measures to manage water resources integrally under public participation of all sectors in river basins in order to develop the country sustainably,
- 2) To administer, manage, develop, conserve and rehabilitate water sources all over the country in order to respond to the needs of people together with sustainable management to prevent, mitigate and solve water problems, and
- 3) To promote and support to strengthen capacity of stakeholders, people, local administration and water management network by public relations, giving knowledge and technology transfer for sustainable management of water resources.

#### **a.10 The Department of Groundwater Resources (DGR)**

The duties of Department of Groundwater Resources (DGR) are as follows:

- 1) To formulate policy, plans and measure related to groundwater resources,
- 2) To survey, administer, manage, develop, conserve and rehabilitate groundwater resources including controlling, supervising, coordinating, monitoring and solving problems of groundwater resources, and
- 3) To set up standard and technology transfer in the field of groundwater resources.

#### **a.11 REO (Regional Environmental Office)**

The duties of Regional Environmental Office (REO), according to ministerial regulations

about government office resection (MNRE 2002, Book No. 119, Part 103k), are as follows:

- 1) To formulate regional environmental management plan,
- 2) To coordinate, implement, follow up and evaluate environmental management plans and measures at regional level,
- 3) To propose a report on regional environment situation,
- 4) To create and develop a regional environment information database system,
- 5) To give academic advice and suggestions on environmental measures, and also support and strengthen capacity in environmental management,
- 6) To follow up, investigate and control environmental quality,
- 7) To promote citizen participation and environmental network building, including implement public relations activities concerning the environment,
- 8) To develop a template of environmental management which is based on local wisdom and local conditions or to develop environmental technologies that are suitable for the area,
- 9) To act as secretary for regional environmental administrative committee, and
- 10) To cooperate with or support other related organizations.

#### **a.12 PEO (Provincial Environmental Office)**

The duties of Provincial Environmental Office (PEO), according to ministerial regulations about government office resection (MNRE 2002, Book No. 119, Part 103k), are as follows:

- 1) To formulate provincial environmental plans and strategic plan to manage environmental quality in provincial levels and also follow up, evaluate and investigate the provincial environmental situation,
- 2) To perform as provided by the Law of Conservation and Protection and other natural resources and environment related laws,
- 3) To guard, investigate, control, promote, publicize and maintain early-warning system and quality of water resource at provincial level; and also to coordinate the formulation of an action plan, follow up and evaluate implementation results of related organization,
- 4) To control and administer the usage of underground water, according to the law of Underground Water and Irrigation Concession Administration, declared in the revolutionary council declaration No.58 (on January 26,1972),
- 5) To promote, publicize and support citizen participation in preserving, conserving and rehabilitating natural resources and the environment in the province, and
- 6) To cooperate with or support other related organizations.

The manpower of PEO in AYP and SKP is as shown in Table 2-7.

Table 2-7: Manpower of PEO

Section	AYP		SKP	
	Officer	Assistant	Officer	Assistant
Administrative Section	4	1	3	2
Natural Resources and Environment Section	1	1	2	2
Water Resources Section	4	5	4	3
Royal Forest Section	7	-	5	3

## b. Budget of MNRE

The budget of offices and departments in MNRE is shown in Table 2-8.

MNRE's budget is 16,150 million Baht, which is 13% of the national budget. Our counterpart in this Study, ONEP, receives 13.8% of total budget of MNRE.

Table 2-8: Budget of MNRE

NO	Office & Department of MNRE	Unit of budget: mil. Baht			
		2004		2005	
		Budget	%	Budget	%
1	Office of the Permanent Secretary (OPS)	449.6	3.0	390.5	2.4
2	Office of the Natural Resources and Environmental Policy and Planning (ONEP)	1,983.3	13.3	2,229.3	13.8
3	Pollution Control Department (PCD)	380.7	2.6	471.1	2.9
4	Department of Environment Quality Promotion (DEQP)	516.5	3.5	442.2	2.7
5	Royal Forest Department (RFD)	0.0	0.0	961.5	6.0
6	Department of National Park, Wildlife and Plant Conservation (DNP)	7,794.7	52.4	7,939.1	49.2
7	Department of Mineral Resources (DMR)	380.2	2.6	409.0	2.5
8	Department of Marine and Coastal Resources (DMCR)	800.6	5.4	749.9	4.6
9	Department of Water Resources (DWR)	1,452.7	9.8	1,449.6	9.0
10	Department of Groundwater Resources (DGR)	1,124.9	7.6	1,108.0	6.9
	Total	14,883.2	100.0	16,150.2	100.0

## c. Details of organization and functions of ONEP

The structural chart of ONEP is shown in Figure 2-6. It consists of ten organizations called Offices and Divisions. The authority of a Division is the same as that of an Office. The jurisdiction of ONEP is primarily to make policy decisions related to natural resources and environment, and additionally to act as the executive office of the National Environment Board, and to conduct EIA evaluations, environmental monitoring, biodiversity preservation, protection of cultural assets, management of municipal greenery, managing environmental funds, and more. Among these organizations, this Study is carried out jointly with the staff of the Policy and Planning Section within the Office of the National Environmental Board.

### c.1 The Office of Secretary

The Office of the Secretary has powers and duties as follows:

- To act for documentation of ONEP
- To act to assist management and secretary work of ONEP
- To act for finance, accounting, budgeting, equipment, buildings and vehicles of ONEP
- To manage working system and human resource management of ONEP
- To act for public relations, activity dissemination, knowledge, progress and work progress of ONEP
- To coordinate and compile all activities of agencies under the jurisdiction of and prepare on implementation plan for ONEP in accordance with the policy and master plan of the ministry,
- To cooperate with or support other agencies operation which are related or assigned

The Office of National Environmental Board has powers and duties as follows:

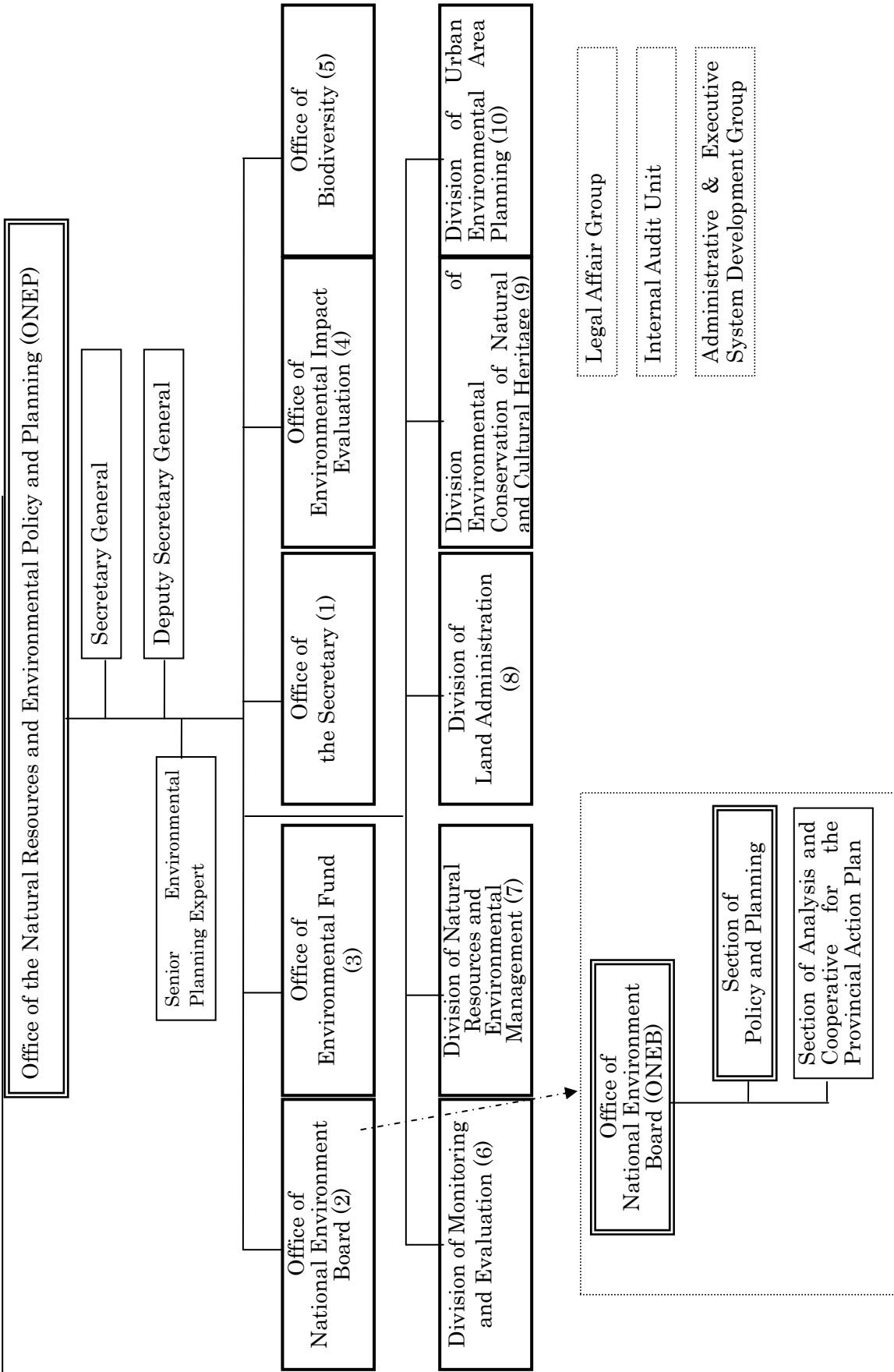


Figure 2-6: Organization Chart of ONEP

- To Prepare and develop policy and plan for conservation and management of natural resources and environment throughout the country
- To analyze and coordinate for formulation of action plans for conservation and natural resources and environmental management at national level in order to bring policy to implementation
- To analyze and consider action plan for environmental quality management at the provincial level
- To propose policy and international environmental plans in accordance with policy and plans for the country
- To analyze and propose guidelines for resources management for natural resources and environmental management of the country
- To analyze and propose laws, economic measures, social measures and other measures in order to lobby for support to bring policy to implementation
- To prepare and develop mechanisms and coordination systems in the field of conservation and natural resources and environmental management in order to increase efficiency of natural resources and environmental management
- To act as secretary for National Environmental Board
- To cooperate with or support other agencies which are related or were assigned

## **c.2 The Office of Environment Fund**

The Office of Environmental Fund has powers and duties as follows:

- To propose policy, develop strategy, and manage funds
- To consider and formulate plans for raising funds and project loan management
- To propose regulations, conditions and specifications for environmental fund management
- To set up the process of consideration, and selection of fund managers and prepare memorandum among fund managers and environmental fund office
- To analyze and evaluate feasibility of projects in technical and financial terms which requested financial support from the environmental fund
- To manage money withdrawals from the environmental fund according to the approval by the Environmental Fund Committee and prepare a report about income-expenses of the environmental fund
- To monitor, check and evaluate project and management of environmental fund in order to prepare a report to Fund Committee and National Environmental Board
- To manage all works related to the secretary office of Fund Committee and sub-committees that appointed by the Fund Committee
- To cooperate with or support other agencies which are related or were assigned

Environmental Funds includes grant aids and loans. The target organizations of grant aid are local governments like Tassaban and Orbtor, and NGOs. In case of NGOs, the maximum amount for one project is 5 million Baht; there is no ceiling for local governments. However, grant aids do not cover the entire cost of a project. Previously the requirement was for 50% to be borne by the enterprise, but recently the limit was lowered to 20%~30%.

Target organizations of loans are mainly private enterprises, but local governments are also eligible. The MLR, or Minimum Loan Rate, is 1.5-3.5%. The loan has been previously given for sewage treatment plant or waste treatment facility projects, but they were in fact repaid in only a few cases.

Services provided by each department and section within the Office of Environmental Fund are shown in Figure 2-7.

### **c.3 The Office of Environmental Impact Assessment**

The Office of Environmental Impact Assessment has powers and duties as follows:

- To set up the type and size of project or establishment of a government agency, state or private enterprise which needs to prepare environmental impact assessment reports and set up regulation, method, process and guidelines for the preparation of EIA report including all related documents
- To study, analyze and consider EIA report of project or establishment of government agencies, state and private enterprise which needs to prepare environmental impact assessment including EIA reports after project implementation
- To study, analyze and coordinate to analyze environmental impact assessment in each field and area in order to set up policy, master plan or development plan which may have environmental impact
- To study, analyze and support decentralization to consider EIA report, analyze certain environmental impacts, size and initial environmental impact report to provincial and local agencies
- To give advice in the field of technical of environmental impact assessment, develop capacity of agencies that underwent decentralization to consider report including control and evaluate environmental impact assessment of all related agencies to be standardized
- To act for issuance, extension or cancellation of permission as experts in environmental impact assessment or person who monitors the works according to prevention measures and environmental impact solutions
- To control, monitor, evaluate and support the work of a project or activity in terms of prevention measure and environmental impact solutions including development of system, form and suitable method for environmental impact reduction including monitor, check and evaluate environmental impact from development project
- To prepare data center for environmental impact assessment and data for environmental impact monitoring
- To support public participation in environmental impact analyzing process by set form, method, process and working guideline including coordinate and evaluate the working results
- To give opinion or advice in terms of environmental technique and propose environmental management, prevention measure and solving environmental impact that may occur from the project to concerned agencies
- To act as secretary of expert committee and sub-committee in field of environmental impact assessment
- To act together or support implementation of other agencies which are related or assigned.

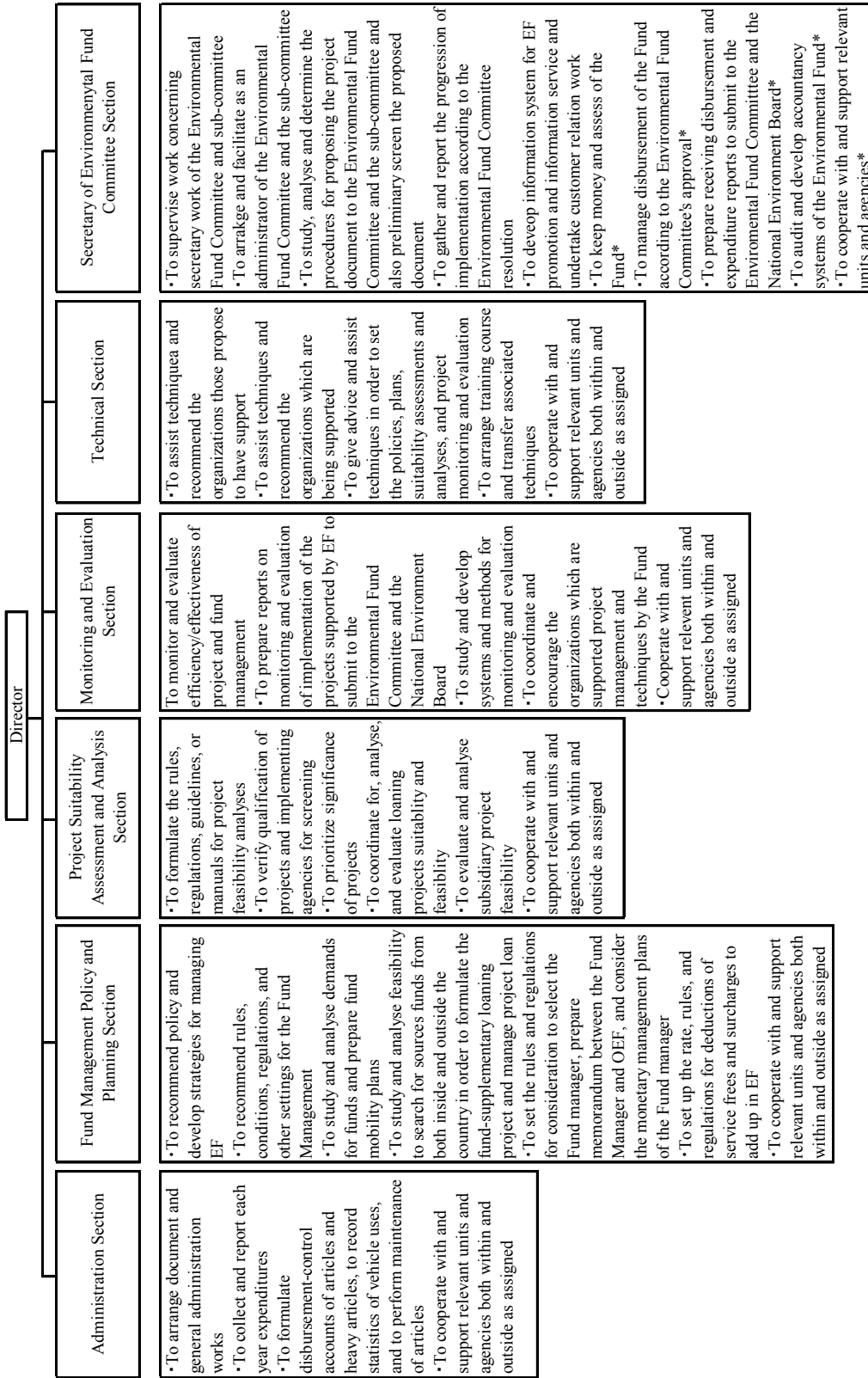


Figure 2-7: Responsibility of Section in the Office of Environmental Fund

#### **c.4 The Office of Biodiversity**

The Office of Biodiversity is a technical operating group for the coordination among domestic agencies in setting their policy and conservation plans, and for work related to the sustainable use of biodiversity, such as conducting work according to international agreements related to bio-resources. It is directed by the secretary of ONEP and has the following duties:

- To coordinate with international organizations related to biodiversity treaties, wetland treaties and other natural resources international treaties
- To coordinate with planning formulation, implementation of the plan, monitoring and evaluation in accordance with the Conservation Plan and benefit from biodiversity
- To propose the development of data system and network of biodiversity and preparing the report of national biodiversity conditions
- To promote and support development of mechanism and public participation in order to conserve and use biodiversity including proposals of related research and finding allocation of sources
- To announce protected areas and measures for conservation of areas that are important in terms of biodiversity
- To act as secretary of the committee and other related sub-committees
- To operate or support the operation of other agencies which are related or assigned

#### **c.5 The Division of Monitoring and Evaluation**

The Division of Monitoring and Evaluation has powers and duties as follows:

- To monitor and evaluate environmental quality conditions and prepare report on the state of the national environment
- To monitor and evaluate the operation according to policy, plan and measures in terms of conservation and management of natural resources and environment which is acknowledged from National Environment Board
- To prepare and develop a system and mechanism to evaluate implementation of policy, plan in whole picture and each field in particular,
- To develop a database system and information technology for the field of natural resources and environment, including exchange and service of data,
- To cooperate with or support the operation of other agencies which are related or assigned

#### **c.6 The Division of Natural Resources and Environmental Management**

The division of Natural Resources and Environmental Management has power and duties as follows;

- To coordinate activities in NREM according to policy and plan for environmental quality promotion, national economic and social development plan and environmental quality management plan
- To prepare guidelines, measures and natural resources and environment plans in terms of area integration
- To reserve areas and set up measures for environmental protection



- To compile and formulate basic data for NREM
- To act as secretary of related committees and sub-committees
- To cooperate with or support the operation of the agencies which are related or assigned

#### **c.7 The Division of Land Administration**

The Division of Land Administration has powers and duties as follows;

- To propose measures to conserve and develop land in order for the benefit of people
- To propose measures to conserve state land for people to use
- To consider and monitor land management of political ministry
- To analyze situation in field of land administration in accordance with above proposal
- To act together or support operation of other agencies which are related or assigned

#### **c.8 The Division of Environmental Conservation of Natural and Cultural Heritage**

The Division of Environmental Conservation of Natural and Cultural Heritage has powers and duties as follows:

- To propose policies and plans for the conservation of natural and cultural environment including the formulation of a master plan, management plan and implementation plan which concern to effective conservation and appropriate use of the environment
- To propose measures to administer, control, prevent and solve problems of developments which impact to cultural heritage and nature, including measures to motivate people to participate in conservation and rehabilitation
- To study, analyze, and evaluate environmental quality of natural and cultural places, cultural heritage and nature including setting priority to register and announcement of protection area of natural places, cultural place and old city area
- To act in accordance with treaties to protect cultural and natural world heritage
- To promote and support their capacity building of Locals to conserve natural environment, cultural environment and cultural and natural heritage
- To coordinate, monitor, check and evaluate results of working in according to policy, measures and implementation plan for conservation
- To act as secretary of committees and sub-committees related
- To act together or support implementation of other agencies which are related or assigned

#### **c.9 The Division of Urban Environmental Area Planning**

The Division of Urban Environment and Area Planning has powers and duties as follows:

- To propose a policy and Urban and Rural Environmental Management Plan for green area management, environmental protection area and potential areas for economic and industrial development at both national and regional levels
- To give opinions and suggestions to projects or activities in the public and private sector which effects urban environment, green area and recreation, environmental protection area and potential area for economic and industrial development including

propose administration body and urban environment at both national and regional levels

- To coordinate for monitoring and evaluation of environmental quality in urban and environmental protection area and green area management including environmental protection measures
- To act as secretary of related committees and sub-committees
- To act together or support implementation of other agencies which are related or assigned

### **2.2.3 NREM by Other Ministries**

NREM by local administrative organizations, such as Tessaban, Orbortor, and Orborjor are deeply affected by land use regulation plans that control development plans. The formulation of land use regulation plans are under the jurisdiction of the Department of Public Works and Town & Country Planning (DPWTCP) in the Ministry of Interior (MOI).

Each province and Tessaban is required to form a land use regulation plan. The provincial land use regulation plan covers the areas not covered by the Tessaban's urban area plan. In AYP, four land use categories are used in the provincial land use plan: rural and agricultural area; recreation and environmental control area for rivers and canals; industrial area; and conservation area for rural and agricultural use. The four land use categories in SKP are: rural and agricultural area; recreation and environmental control area for rivers and canals; conservation area for rural and agricultural use; and open space for environmental control and fishery.

The provincial land use regulation plans are already in the last stages of formulation; most are awaiting approval by the governor. If an area is designated as a rural and agricultural area, housing developments cannot be constructed, although the construction of individual homes will be allowed. The type and scale of factories that can be built within a rural and agricultural area are also defined within land use regulations.

The Tessaban land use plan utilizes a more detailed categorization of ten areas as shown below:

1. Low density residential area
2. Medium density residential area
3. High density residential and commercial area
4. Specific industrial area
5. Rural and agricultural area
6. Recreational and nature reservation area
7. Educational institution area
8. Thai cultural conservation area
9. Religious institution area
10. Government institution, public utility and assistance area.

The formulation of the provincial land use regulation plan is the responsibility of the abovementioned DPWTCP, and the formulation of the Tessaban land use plan is the responsibility of each Tessaban, but if the Tessaban lacks the capacity to undertake the task, the latter can be formulated by the DPWTCP of the province in which the Tessaban belongs.

Thus, land use regulations that will affect the PEQMP are firmly under MOI jurisdiction.

However, as these regulations are revised every five years, it is possible to reflect the PEQMP upon these land use regulations at the time of their revision.

It should also be noted that most Orbortor have sections in charge of development, according to the opinion survey. Some Orbortor (26% in AYP, 31% in SKP) have already formulated their own land use regulation plans, and are already regulating development and instructing business enterprises and developers according to such plans.

#### **2.2.4 Role and Function of Provincial Administration (Provincial Environmental Administration, Problems and Issues)**

Changwat (Province) and Amphoe (District) are national institutions, not local government organizations. Tambon (Sub-district) or Mooban (Village) are administrative units compulsorily divided by MOI; they are also not local government organizations. The heads of Tambon and Mooban are elected directly by local residents. Those heads are in a position to implement directions of the provincial government. In reality they are under control of the provincial government. A governor is the most responsible person in the provincial administration. The role of the provincial administration is to guide, manage, and supervise matters related to local developments at the provincial government level, and to promote employment and the improvement of public health, etc. Field officers of central government agencies stay in the provincial office.

Routine budget allocation for local administrations is done by the central government and DLOC. However, the governor is the one who makes final decisions on special/urgent development projects and/or environmental conservation projects requested by Tessaban and Orbortor. According to consultations with PEO, the amount of budget left to the discretion of the SKP governor is 90 million Baht. Tessaban/Orbortor applies for the abovementioned special/urgent budgets through the head of Amphoe. The head of Amphoe applies to the governor for these project budgets after clearing the project within the Amphoe.

One of the important tasks of the provincial administration is to draft a variety of development plans. How the environmental management plans are made in those development plans are crucial for NREM; they shall thus be discussed further in the next section.

##### **a. Provincial Development Plan (4-year plan)**

The provincial development plan (2005-2008) is currently being carried out in AYP and in SKP. These plans have been formulated under the direction of the Governor's Office, and all responsible agencies for plan implementation are offices within Provincial Administration under the governor.

Environmental planning in the AYP Provincial Development Plan is limited to the allocation of 115,514,800 Baht over 4 years "to create a pleasant urban area and community with good quality environment" in 1,176 villages. It is unclear from where, and what kind of, budget shall be obtained. And although the following measures are listed, the contents of the plan are still unclear and unspecific:

- To encourage a clean town with good quality of environment and security in livings and assets
- To encourage a knowledge-based society

- To encourage people to be healthy
- To improve/ standardize service facilities
- To encourage people to have morality and ethics

The provincial development plan in SKP includes the 4 environmental strategies shown below. There are 13 dam construction projects for river and canal bank protection proposed under the 2<sup>nd</sup> strategy (total 152,800,000 Baht), and 8 dike constructions proposed under the 3<sup>rd</sup> strategy (total 90,900,000 Baht). The 2<sup>nd</sup> strategy also includes mangrove forest rejuvenation (832,000 Baht) and workshops for NREM (93,000 Baht) by PEO, and the 3<sup>rd</sup> strategy also includes a project to expand the area of water supply services (418,000,000 Baht). Thus, approximately 670 million Baht is to be expended for NREM related activities in SKP according to their Provincial Development Plan. However, as was the case in AYP, it is unclear from where, and what kind of, funds shall be obtained.

Strategy 1: To develop and support the province to be a city with safe seafood and fruits

Strategy 2: To develop the province to be a center of recreation and eco-tourism based on canals

Strategy 3: To create awareness among people to value their home town and conserve environment and culture

Strategy 4: To maintain a city with a three-water ecosystem

## **b. Provincial Well Being Strategy**

The second article of Thailand's economic policy, issued as a statement by the government to the legislature on 3<sup>rd</sup> November 2006, aims to improve the roles of governor and regional administrative units by developing proper interrelationships between regions, areas, communities, and societies, in order to take care of disadvantaged residents and to *maintain and protect natural resources and environment efficiently and effectively*. To assure quality outcome, the cabinet, on 6<sup>th</sup> February 2007, agreed on the Provincial Well Being Strategy that aims to promote self-reliance among people and families by encouraging the community to lead, and the central government to follow. Under the Well Being Strategy, provinces will be able to reflect the needs of the community and then pass them onto relevant ministries. The emphasis of the Well Being Strategy is on activities and projects that allow communities, local areas and all segments of society to participate; and the goals of the Well Being Strategy is that such communities plan and decide on projects themselves. The National Committee is to act only as project administrator.

Projects under the Provincial Well Being Strategy must be in sync with five other development plans, i.e. the sufficiency economic plan, community development and opportunity building plan, community fertility rehabilitation plan, disadvantaged and elderly people aid plan, and primary public service plan.

Amphoe/Tambon level Driving Committee members are appointed by chief or deputy chief of Amphoe; the chief/deputy chief also acts as the chairman of the Committee. The heads of Orborjor, Tessaban, and Orboror are not selected as members for this Driving committee, despite the necessity for local administration staff to be involved deeply in projects conducted in their areas.

## **2.2.5 Role and Function of Local Administration in Local Environmental Administration**

As described above, local administration is classified into three types, i.e. Orborjor (Provincial Administrative Organization; PAO), Tessaban (Municipality), and Orbortor (Tambon Administrative Organization; TAO)

In this section we present the history, powers and duties, and organizational structure of each local administrative organization.

### **a. Function and duties of Orborjor**

#### **a.1 History of Orborjor**

A governor of a province is a high-level functionary appointed by the central government by the Ministry of Interior. There is a governor for each Province, and s/he is supported locally by Provincial Councils, which were established in 1933. Initially, the Provincial Council was not elected by local citizens and was no more than a board made up of those with relatively high social status from within the Province. Because of this, it did not function as a local autonomous body, and the provincial administration was regarded as no more than an arm of the central government.

In 1955, the Orborjor Law was introduced in order to improve the role of the Provincial Council and increase public participation in politics with the creation of the autonomous administration unit, Orborjor. The Orborjor was not a “provincial organization”, but rather a “local administrative organization”. The Orborjor controlled all local administration units except the existing autonomous structure already in place within the province at that time.

At this stage, although the Orborjor was a local administrative organization, its chief was not elected by residents' or council's votes. The Orborjor chief was, in fact, a position held as an additional post by the provincial governor, a contradiction to the idea of autonomy that was hard to ignore.

The new Orborjor Law came into effect in 1997 and the Chief Executive of the Orborjor was to be elected by vote, greatly strengthening its autonomy. Following this law, the Orborjor was distanced from the rule of the provincial governor and developed independent capabilities.

#### **a.2 Powers and duties of Orborjor**

The powers of Orborjor, as shown below, apply to all areas within the province. However, Orborjor cannot accomplish all of these powers and duties on its own, and must rely on other local administrative organizations like Tessaban and Orbortor to implement them (in other words, an Orborjor has equal but not greater status compared to such fellow local administrative organizations).

Table 2-9: Powers and Duties of Orborjor

NO	Powers and Duties
1.	To issue local ordinances without prejudice to laws
2.	To formulate development plan and integrate it into provincial development plan

3.	To support sub-district councils and other local authorities regarding local development
4.	To coordinate and cooperate with sub-district councils and other local authorities
5.	To provide grants as authorized by laws to sub-district councils and other local authorities
6.	To exercise Orborjor powers over sub-district council areas in pursuant to the Orborjor Act 1995
7.	To preserve and maintain the environment and natural resources
8.	To preserve local arts, customs, local wisdoms and local cultures
9.	To exercise powers and duties of other local authorities in Orborjor jurisdiction and those powers and duties should be collectively undertaken by other local authorities or implemented by Orborjor itself as provided in ministerial regulations
10.	To implement other duties as provided by the Orborjor Act or other related laws that specify Orborjor duties

Source: *Thai Local Government*, Department of Local Administration

### **a.3 Council of Orborjor**

Council members of Orborjor are elected directly by residents' vote and serve for a term of four years. SKP has a population of nearly 195,000, and thus has 18 elected members, whereas AYP has a population of 747,000 and 30 elected members. Council members must not receive benefits for their Orborjor duties, and can be forced to resign given the consent of 3/4 of the voting community. Council members must select one chairperson and two vice-chairpersons that will direct council proceedings. It is the duty of the council to issue Orborjor ordinances, and approve those that pass through the council. The Orborjor ordinances apply to regions outside Tessaban or Orbortor.

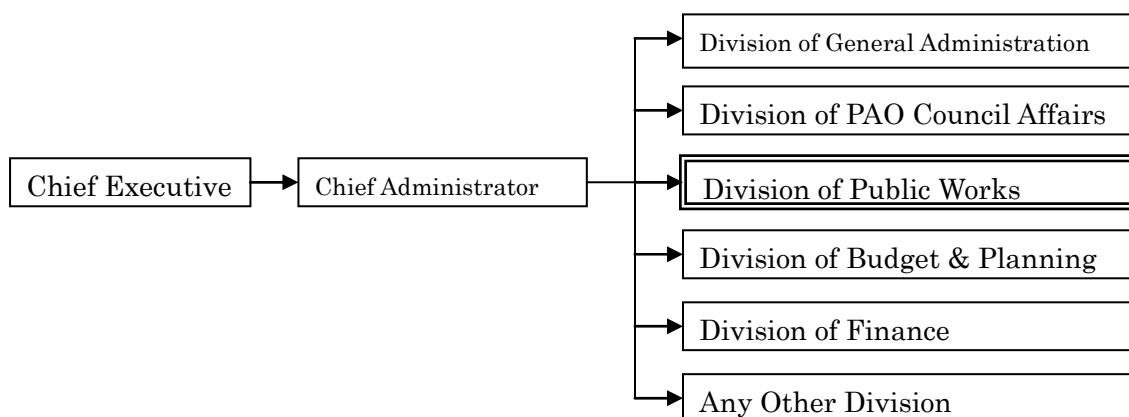
### **a.4 Chief Executive of Orborjor**

The Chief Executive of Orborjor is elected directly by the constituents. The preconditions for candidacy are: 1) at least 30 years of age, 2) university graduate, and 3) no past resignation from the council due to fraud or accepting bribes. The office is held until the end of the fourth year, or may be held up to 8 years with a second term. The Chief Executive may appoint a Vice Executive but not from among council members. Should the number of council members be large, i.e. between 24 and 30, two Vice Executives may be designated in addition to up to 5 other executive staff, such as secretaries and consultants.

### **a.5 Organizational structure of Orborjor**

The organization chart of Orborjor is shown as in the figure below.

The Division of Public Works is the division that drives actual projects forward; the field of Natural Resources and Environment is also overseen by the Division of Public Works.



Source: Thai Local Government, Department of Local Administration

Figure 2-8: Organization Chart of Orborjor

#### a.6 Sphere of NREM in Orborjor

The Division of Public Works is responsible for NREM in both AYP and SKP. Some Orborjor have a specialized section on environmental issues; the Orborjor of AYP has a Section of City Planning and Environment in Engineering (Public Works) Division, although the number of the officers is only 4. In SKP, there is no specific environmental section and even the Public Works Division consists of only 2 officers.

Table 2-10: Average Number of Staff for NRE in Orborjor

Orborjor	Total Staff	Government Officer	Permanent Staff	Temporary & Daily Staff
AY	159	20	28	111
SK	6	2	4	0

Source: OP-LA-AYP and OP-LA- SKP

#### a.7 Plan for NREM in 3-Year Development Plan by Orborjor

Each Orborjor is required to formulate a 3-Year Development Plan for its area of jurisdiction. The target periods of the current plan in the two model provinces are 2008-2010 (AYP) and 2007 -2009 (SKP).

In AYP, projects and budgets are listed according to three themes as shown below. Projects included in Theme 1 are training seminars, NREM-related literature purchases, one-tree-per-person afforestation scheme for the rainy season, disaster mitigation, and projects related to the prevention of global warming. In Theme 2 are budgets for improvement to cremation facilities, construction of dams, landscape and scenery improvement projects; in Theme 3 are the budgets for land purchase for a solid waste disposal site, the purchase of boats for water hyacinth and other weed removal, and the purchase of an incinerator. However, all projects are listed as being under “Engineering (*or* Public Works) Division” and the details of how each project would be moved forward is unclear.

Table 2-11: Project and Budget Related to NREM in AYP

Unit of budget: Bt

NO	Themes	Year	2008	2009	2010
1	To establish awareness of NREM	Number of projects	10	1	1
		Budget	9,071,000	3,000,000	4,000,000
2	To monitor and protect NRE	Number of projects	20	11	9
		Budget	56,980,000	81,000,000	26,900,000
3	To rehabilitate NRE	Number of projects	4	-	-
		Budget	53,000,000	-	-

In SKP, projects and budgets are also listed according to three themes, as shown in the table below. Projects included in Theme 1 are training for volunteers, educational campaigns regarding NREM, and the construction of an air-pollution-free crematorium. In Theme 2 is a wastewater treatment system project; in Theme 3 are the budgets for the purchase of 500 garbage cans, for the construction of a solid waste disposal center including a budget for land purchase, for construction of an incinerator, and for water hyacinth and weed removal campaigns. However, all projects are listed as being under “Engineering (or Public Works) Division” and the details of how each project would be moved forward is unclear.

Table 2-12: Project and Budget Related NREM in SKP

Unit of budget: Baht

NO	Themes	Year	2007	2008	2009
1	To establish awareness of MREM	Number of projects	4	4	4
		Budget	2,390,000	2,390,000	2,390,000
2	Wastewater treatment system	Number of projects	2	2	0
		Budget	3,500,000	3,500,000	0
3	Solid waste management	Number of projects	5	5	1
		Budget	101,360,000	251,360,000	150,000,000

## b. Functions and duties of Tessaban

### b.1 History of Tessaban

The first Tessaban was established in 1933, and since then their number has gradually increased. The 1953 Tessaban Law divided Tessaban into 3 categories, Tessaban Nakorn (City Municipality), Tessaban Mueang (Town Municipality), and Tessaban Tambon (Sub-district Municipality) according to population, the amount of economic growth indicated by Tessaban revenue, and other standards. These standards were applied



nationwide; however, provincial capitals proved to be exceptions to the rule and were either designated as a Tessaban Nakorn or Tessaban Mueang.

In 1999, when Sanitary Districts were changed to Tessaban, the number of Tessaban rose from 149 to 1,130. At present, this number remains largely unchanged (approx. 1,158), as most Tessaban are aspiring to rise to a higher ranking among Tessabans, rather than increase in number.

Table 2-13: Standards for Tessaban Designation

	Population	Revenue	Other
Tessaban Nakorn (City Municipality)	>50,000	Sufficient revenue to achieve the duties provided in the Tessaban Law	High potential for meaningful economic and social development.
Tessaban Mueang (Town Municipality)	>10,000	Same as above	—
Tessaban Tambon (Sub-district Municipality)	>7,000	Not less than 12 million Baht/ year	—

Source: Thai Local Government, Department of Local Administration

Due to revisions to the Tessaban Law in 2000, the Tessaban Mayor is selected either directly by voters, or by council vote.

## **b.2 Powers and duties of Tessabans**

The powers of the Tessabans are given below. In order for Tessaban to exercise these powers, they may enact ordinances and may impose fines, although they may not impose imprisonment. Tessaban must conform to the demands set out by the DLA (Department of Local Administration). Tessaban may execute powers outside of their jurisdiction with approval from the councils of the relevant local administrative organization and the approval from the provincial governor.

Table 2-14: Duties of City Tessaban Nakorn

No.	Duties must be taken
1	Maintain peace and orderliness
2	Provide and maintain roads and water ways
3	Maintain cleanliness of roads or sidewalks and public lands including sewage and waste management
4	Prevent and control communicable disease
5	Provide fire extinguishers and equipments
6	Provide education
7	Promote women group, youth, the elderly and the handicapped
8	Preserve local arts, customs, and cultures
9	Other duties subject to the laws
10	Provide clean water and safe drinking water
11	Provide slaughterhouses
12	Provide and maintain infirmaries
13	Provide and maintain drainage channel

14	Provide and maintain public toilets
15	Provide and maintain electricity
16	Provide pawnshop or local loan bank
17	Provide social welfare for children and mothers
18	Undertake necessary health activities
19	Control sanitation and public health standards in restaurants, theaters, and other entertainments
20	Housing and improve dilapidated town
21	Provide and control markets, ports, piers, and parking lots
22	Undertake urban planning and control building construction
23	Promote tourism
No.	Duties may be taken
1	Provide markets, ports, and piers
2	Provide cemeteries and crematories
3	Provide and promote careers for local people
4	Provide social welfare for children and mothers
5	Provide and maintain hospitals
6	Provide public facilities
7	Undertake necessary health activities
8	Establish and subsidize vocational schools
9	Provide and maintain public places for sport activities
10	Provide and maintain parks, zoos, and recreational places
11	Improve dilapidated towns and maintain cleanliness
12	Provide municipalities' enterprise

Source: Thai Local Government, Department of Local Administration

Table 2-15: Duties of Town Tassaban Mueang

No.	Duties must be taken
1	Maintain peace and orderliness
2	Provide and maintain roads and water ways
3	Maintain cleanliness of roads or sidewalks and public areas including sewage and waste management
4	Prevent and control communicable disease
5	Provide fire extinguishers and equipments
6	Provide education
7	Promote women group, youth, the elderly and the handicapped
8	Preserve local arts, customs, and cultures
9	Other duties subject to the laws
10	Provide clean water and safe drinking water
11	Provide slaughterhouses
12	Provide and maintain infirmaries
13	Provide and maintain drainage channel
14	Provide and maintain public toilets

15	Provide and maintain electricity
16	Provide pawnshop or local loan bank
No.	Duties may be taken
1	Provide markets, ports, and piers
2	Provide cemeteries and crematories
3	Provide and promote careers for local people
4	Provide social welfare for children and mothers
5	Provide and maintain hospitals
6	Provide public facilities
7	Undertake necessary health activities
8	Establish and subsidize vocational schools
9	Provide and maintain public places for sport activities
10	Provide and maintain parks, zoos, and recreational places
11	Improve dilapidated towns and maintain cleanliness
12	Provide municipalities' enterprise

Source: Thai Local Government, Department of Local Administration

Table 2-16: Duties of Sub-District Tassaban Tambon

No.	Duties must be taken
1	Maintain peace and orderliness
2	Provide and maintain roads and water ways
3	Maintain cleanliness of roads or sidewalks and public lands including sewage and waste management
4	Prevent and control communicable disease
5	Provide fire extinguishers and equipments
6	Provide education
7	Promote women group, youth, the elderly and the handicapped
8	Preserve local arts, customs, and cultures
9	Other duties subject to the laws
No.	Duties may be taken
1	Provide clean water and safe drinking water
2	Provide slaughterhouses
3	Provide markets, ports, and piers
4	Provide cemeteries and crematories
5	Provide and promote careers for local people
6	Provide and maintain infirmaries
7	Provide and maintain electricity
8	Provide and maintain water ways
9	Provide municipalities' enterprise

Source: Thai Local Government, Department of Local Administration

### **b.3 Council of Tassaban**

The Tassaban council members are elected directly by their constituents to a term of 4 years.

The number of seats in the council is as shown below. The council approves a chairperson and vice-chairperson designated by the provincial governor to direct the council.

Table 2-17: Council Seat of Tessaban

Tessaban	Council seats
Tessaban Nakorn (City Municipality)	24
Tessaban Mueang (Town Municipality)	18
Tessaban Tambon (Sub-district Municipality)	12

Source: Thai Local Government, Department of Local Administration

**b.4 Mayor of Tessaban**

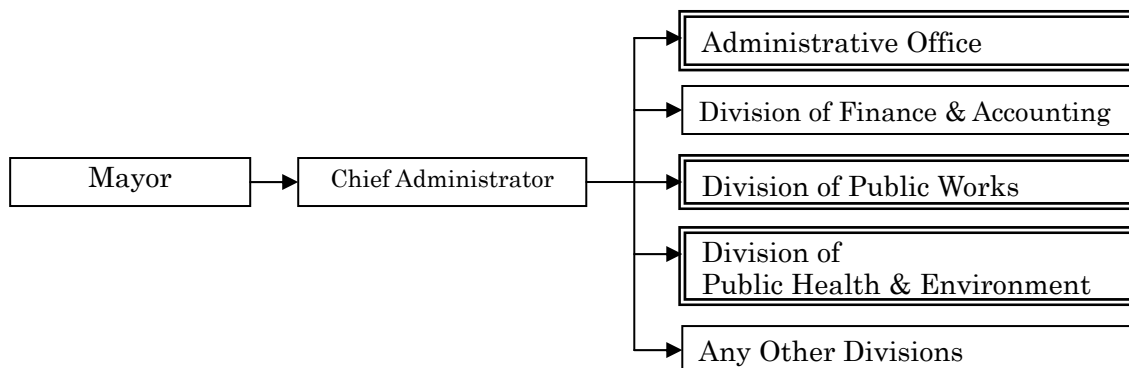
The Mayor is directly elected by the residents. The preconditions for candidacy are 1) to be at least 30 years of age, 2) possess a bachelor degree or equivalent, or have prior experience as an elected official, 3) have never been removed from office, and 4) have never lost one’s position due to illegal conduct. The term is for 4 years, with a maximum of 2 terms up to 8 years. The Mayor may appoint non-council members as deputies; in a Tessaban Nakorn, no more than four may be appointed; a Tessaban Mueang allows no more than 3; and a Tessaban Tambon no more than two Deputy Mayors may be appointed.

The Chief Administrator, as a government official appointed by the Local Human Resources Council of the province, holds jurisdiction for all duties of the Tessaban under the Mayor.

**b.5 Organizational Structure of Tessaban**

The organization chart of Tessaban is shown below.

While the Division of Public Health and Environment is established as the division to oversee NREM in Tessaban, the Division of Public Works and Administrative Office are also responsible for NREM in some Tessaban.



Source: Thai Local Government, Department of Local Administration

Figure 2-9: Organization Chart of Tessaban

## b.6 Sphere of NREM in Tessaban

The Division of Public Health and Environment is responsible for NREM in 17 Tessaban in AYP, and Divisions of both Public Health and Environment and Civil Works are responsible for NREM in 13 other Tessaban in AYP. In SKP, the Division of Public Health and Environment is responsible for NREM in 5 Tessaban.

Table 2-18: Organization Responsible for Natural Resources and Environmental Management in AYP

	No. of LA	Organization	Average Total Staff	Average Government Officer	Average Permanent Staff	Average Temporary & Daily Staff
PAO	1	1. Civil Works Dep.	159	20	28	111
Municipality	17	1. Public Health and Environment Dep.	20	2	3	15
	13	1. Public Health and Environment Dep.	43	4	4	35
		2. Civil Works Dep.	28	6	3	19
	1	1. Public Health and Environment Dep.	32	1	1	30
		2. Education Dep.	4	2	0	2
	2	1. Clerk Office	23	8	2	13
		2. Civil Works Dep.	10	4	1	5
1	1. Clerk Office	10	1	0	9	
TAO	7	1. Clerk Office	10	4	1	5
		2. Public Works Sec.	6	2	1	3
	11	1. Clerk Office	11	4	1	6

Table 2-19: Organization Responsible for Natural Resources and Environmental Management in SKP

	Organization	No. of LA	Average Total Staff	Average Government Officer	Average Permanent Staff	Average Temporary & Daily Staff
PAO	Civil Works Department	1	6	2	4	0
Municipality	Public Health and Environment Department	5	18	4	4	9
	Sanitary Department	1	5	1	0	4
TAO	Clerk Office	26	8	3	1	4
	Public Works Section	9	3	1	1	1
	Public Health and Environment Section	1	13	4	0	9
	Education Religion and Culture Section	1	1	1	0	0

Source: OP-LA-AYP and OP-LA-SKP

## **c. Functions and Duties of Orbortor**

### **c.1 History of Orbortor**

The Orbortor is the smallest unit of local government. The Tambon Council and Orbortor Law was enacted in 1994, and each Tambon was required to establish a council. Then, by decree of the Ministry of Interior, a Tambon would be promoted to Orbortor status if the annual revenue of a Tambon could be steadily maintained for at least 3 years and had also surpassed 1.5 million Baht. However, in actuality, instead of Tambon expanding in financial scale to become an Orbortor, multiple Tambon would simply combine and reach Orbortor status.

According to the same law, an Orbortor is made up of a Council, an Executive Board, and a Chief Executive.

### **c.2 Powers and Duties of Orbortor**

The powers and duties of an Orbortor are shown below. These powers are guaranteed by law, and in order for Orbortor to exercise these powers, they may enact Orbortor “regulations” and may impose punishment or payment of fines, although they may not impose imprisonment.

Table 2-20: Duties of Orbortor

NO	Required duties
1	To provide and maintain roads and water ways
2	To maintain cleanliness of roads, waterway, sidewalks and public land as well as eliminate sewage and wastes
3	To prevent and contain communicable disease
4	To prevent and relieve disaster
5	To promote education, religions and culture
6	To promote women group, youth, the elderly and the handicapped
7	To protect and conserve natural resources and the environment
8	To preserve local arts, custom, wisdom and culture
9	To perform other designated duties in accordance with government instructions by appropriating budget
NO	Optional duties that may taken upon
1	To provide safe drinking water and water source for agriculture
2	To provide and maintain electricity
3	To provide and maintain drainage system
4	To provide and maintain meeting forum, athletic activities, recreation and public park
5	To provide and promote agricultural cooperatives
6	To promote household industry
7	To maintain and promote local career
8	To protect and maintain public asset and property
9	To take benefit from public asset and property

10	To provide markets, ports and piers
11	To promote commerce
12	To promote tourism
13	Town planning

Source: Thai Local Government Department of Local Administration

### **c.3 Council of Orbortor**

The Orbortor Council members are selected by villagers. The number of seats differs according to the number of villages associated within an Orbortor, with 2 representatives selected from each village, regardless of population, to serve on the council. An exception is when only two villages are associated within an Orbortor; then it is possible for 3 council members to be selected from each village (for a total of six). The powers of the Council include ratification of the Orbortor development plan introduced by the Chief Executive, and the power to introduce and ratify Orbortor “regulations”. The qualifications for Council membership include non- affiliation with a political party, living in the Orbortor area for at least one year, possession of strong ethics, and no record of prior offence. The Council is managed by the Chairperson and Vice-Chairperson.

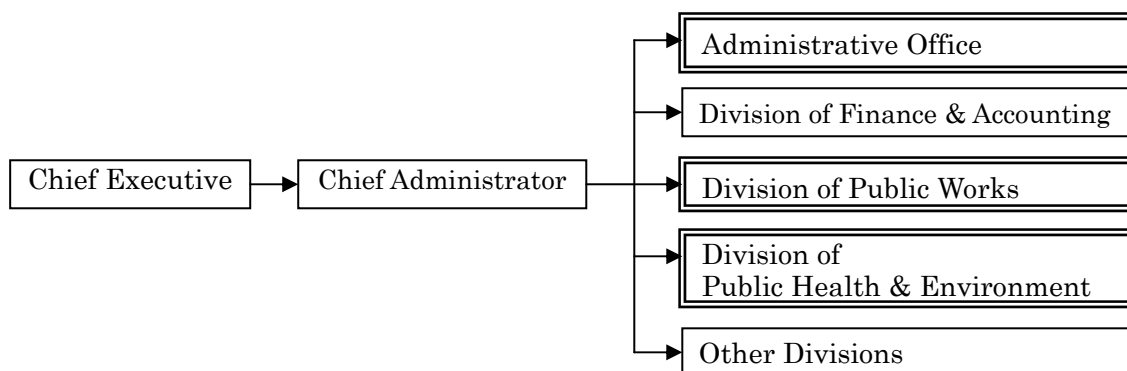
Council sessions are held at least twice per year, with one session lasting no more than 15 days. This period cannot be extended without approval from the Amphoe Chief Officer; if for some reason a council is deemed necessary, the Chief Executive or a majority of councillors must petition the Amphoe Chief Officer for a special session period.

### **c.4 Chief Executive of Orbortor**

The Orbortor Chief Executive is elected directly by villagers. The powers of the Chief Executive include enforcement of the law, proposal of a development plan for the area, execution of the duties of the Orbortor, and supervision of Orbortor employees.

### **c.5 Organizational Structure of Orbortor**

The administrative organization of the Orbortor is made up of an Administrative Office, Division of Finance and Accounting, Division of Public Works, Division of Public Health and Environment, and Other Divisions. NREM is relegated not only to the Division of Public Health and Environment but also to the Administrative Office and Division of Public Works, according to the Opinion Survey.



Source: Thai Local Government, Department of Local Administration  
Figure 2-10: Organization Chart of Orbortor

### c.6 Sphere of NREM in Orbortor

The Administrative Office or the Division of Public Works in AYP, and the Administrative Office in SKP, is responsible for NREM.

Table 2-21: Organization for NREM in Orbortor

Prov	Responsible organization for NREM	No. of LA	Average No. of Total Staff	Average No. of Total Government Officer	Average No. of Total Permanent Staff	Average No. of Total Temporary & Daily Staff
AY	Administrative Office	11	11	4	1	6
	Administrative Office	7	10	4	1	5
	Public Works Div.		6	2	1	3
SK	Administrative Office	26	8	3	1	4
	Public Works Div.	9	3	1	1	1
	Public Health and Environment Div.	1	13	4	0	9
	Education Religion and Culture Div.	1	1	1	0	0

Source: OP-LA-AYP and OP-LA-SKP

## 2.2.6 Issues of Local NREM Administration

### a. Organization of Local Administrations

The budget of each local government is small in scale. Annual budgets in AYP are 840 mil. Baht for Orbortor, 52 million Baht on average for Tassaban, and 15 million Baht on average for Orbortor; in SKP the annual budgets are 191million Baht, 65million Baht on average, and 12 million Baht on average respectively. At this scale of budget, it is difficult for local administrations to handle problems and issues of infrastructure development, social well-being, medical service, and educational matters. The sizes of the present organizations



are shown in the table below. Figures in ( ) show the number of residents per staff including temporary staff. In the case of Orbortor, the number of residents served per staff member is 2,362 in AYP, 1,478 in SKP. In comparison, the number of population served by one staff member for MNRE is 1,481 (total population 63.35 million / 42,784 staff = 1,481), which shows how difficult it is for local governments to offer good administration services to residents. The following table also shows that Tessaban is comparatively more fortunate than Orbortor.

Table 2-22: Average Number of Staff in Local Administration

Local Administration		Total Staff	Government Officer	Permanent Staff	Temporary & Daily Staff
AYP	Orborjor	322(2,362)	106	40	176
	Tessaban	105(84)	31	11	63
	Orbortor	23(195)	8	2	12
SKP	Orborjor	132(1,478)	55	25	52
	Tessaban	84(103)	34	15	35
	Orbortor	17(299)	8	2	8

Source: OP-LA-AYP and OP-LA-SKP

#### **b. Number of Administration Staff in Orbortor**

The number of administration staff is extremely small, especially in Orbortor. There are only two Orbortor which has more than 10 permanent staff. The average number of staff in administrative service is 8 in both provinces. In case of SKP, the number of residents served by one administration staff is approximately 300, a number that demonstrates the difficulty in providing sufficient management and administration guidance. The service fields to be covered by administration range from general matters, to financial matters, to health and medical services, education, civil works, and environment issue, etc.; clearly the range is very wide for such a limited number of staff. The field of NREM is also covered by staff members who hold other responsibilities concurrently. Therefore, it is difficult for staff to specialize in the field of waste management or sewerage treatment.

#### **c. Collaboration among Tessaban / Orbortor / Orborjor**

The major players in local administration are the Tessaban and Orbortor. Tessaban in particular plays the leading role in decentralization. On the other hand is the Orborjor, who supports weak Orbortors and coordinates among Orbortors for issues beyond their individual capacity. However, Orbortors do not welcome an intervention of Orborjor (PEO information). And therefore Orborjor cannot act efficiently. It is necessary to improve the relationship between Orborjor and Orbortor in order to have smooth coordination among Orbortor.

#### **d. Budget for Environmental Administration**

The percentage of environmental budget in local administration budgets is 0.2% in Orborjor, 4.3% in Tessaban, and 7.4% in Orbortor for AYP; and 1% in Orborjor, 4.5% in Tessaban, and 9.5% in Orbortor for SKP. In all cases the percentage is very small. To compound the problem, the percentage of local administrations with an annual budget of less than 1million Baht is 53% of Tessaban and 89% of Orbortor in AYP, and 3% Tessaban and 63% of Orbortor in SKP. The total budget for environmental administration thus comes to 91 million Baht in AYP and 50 million Baht in SKP. The necessity for the central government to actively financially support local governments in the field of NREM is thus clear. It is also

essential for local administrations to devise measures to jointly use environment budgets, in order to make budgets more effective.

**e. Problems and Issues of PEO**

PEO is the representative office of MNRE in each province. PEO performs daily service in accordance with the governor's directives, but generally speaking its major task is NREM and guidance of local governments regarding environmental issues. In reality, however, there are only 2-3 staff in a PEO office, which makes it extremely difficult for them to provide services covering a wide range of fields as is found in NREM. In order to implement NREM, it is essential for PEO to instigate good cooperation between Orborjor, Tessaban, and Orbortor, and to provide good guidance to these local governments. For this purpose it is necessary to strengthen PEO as an organization and to increase the number of PEO staff.

## 2.3 National EQMP

### 2.3.1 National Economic and Social Development Plan

The 10<sup>th</sup> National Economic and Social Development Plan (2007-2011) has been formulated in Thailand to demonstrate the direction of national development. Within this national plan, the following analysis and harsh reflection on NREM was made:

*In previous times, natural resources and environment were mainly used for economic development. About 67,000,000 Rai of forested areas were destroyed in a 40 year period. Now the remaining forest area is only 33% of whole country area and problems of flood, drought and natural disaster have been brought more often and more seriously. Marine and coastal resources deteriorated. Mangrove was reduced from 2,000,000 Rai to 1,500,000 Rai. The rate of aquatic animal catch has been reduced to 1/3. Coral reef and sea grass deteriorated. Biodiversity has also deteriorated rapidly due to human activities which damaged the habitat of species and the ecological system. The increase of endangered species and the deterioration of environmental quality are mainly due to population increase and an inappropriate way of living. The number of pollution problems has been increasing while quality of air and water is poor. Amount of solid waste and hazardous waste is increasing beyond disposal capacity. The import of toxic substances for production processes is increasing due to lack of a management mechanism for the control of such production processes and toxic substance storage and transport. Furthermore, the use of economic tools and related laws [for natural resources and environment management] are limited due to their complicated nature, and also due to the lack of enforcement.*

From 4.4 Situation of biodiversity, natural resources and environment, 10<sup>th</sup> National Economic and Social Development Plan (2007-2011)

Additionally, the following strategies were indicated in the national plan as strategies for development based on sustainable biodiversity, natural resources, and environment:

- Strategy 1: Maintain resources and ecosystems
- Strategy 2: Create a good environment, improve the quality of life, and conduct sustainable development
- Strategy 3: Increase the value of biodiversity and local wisdom

#### a. Strategy 1: Maintain resources and ecosystems

Keep the balance between conservation and exploitation by developing databases, providing knowledge, supporting community rights and encouraging participation in term of resources management. Additionally a system for environmental conservation and rehabilitation should be developed, especially for monitoring major resources such as soil, water, forest, marine and coastal and mineral resources. Conflict settlement and disaster prevention should also be provided.

#### b. Strategy 2: Create a good environment, improve the quality of life, and conduct sustainable development

In order to reduce the impact on natural resources and environment, production and consumption behavior should be adapted/changed to a more sustainable form, by employing economic mechanisms including financing, providing markets, and services to new sustainable forms which are more friendly to the environment. Administrative efficiency should be developed in order to reduce pollution and to monitor activities that might have an effect on the quality of life, and the capacity of local administrations should be increased in terms of pollution management, specifically to the point where management reaches a level that satisfies international obligation and agreements.

**c. Strategy 3: Increase the value of biodiversity and local wisdom**

This strategy is based on long term biodiversity development. Following the ‘Sufficiency Economy’ philosophy, activities under this strategy include knowledge management, biodiversity exploitation for the economic sustainability of local communities, capacity improvement, and innovative, creative use of national bio-resources.

## 2.3.2 National EQMP

### a. Background to policy of the Environmental Quality Management Plan

The Environmental Quality Management Plan (EQMP) was established as a successor to a substantial number of plans in the past, and is designed to coordinate with each related plan.

A summary of relationships is given in the figure below:

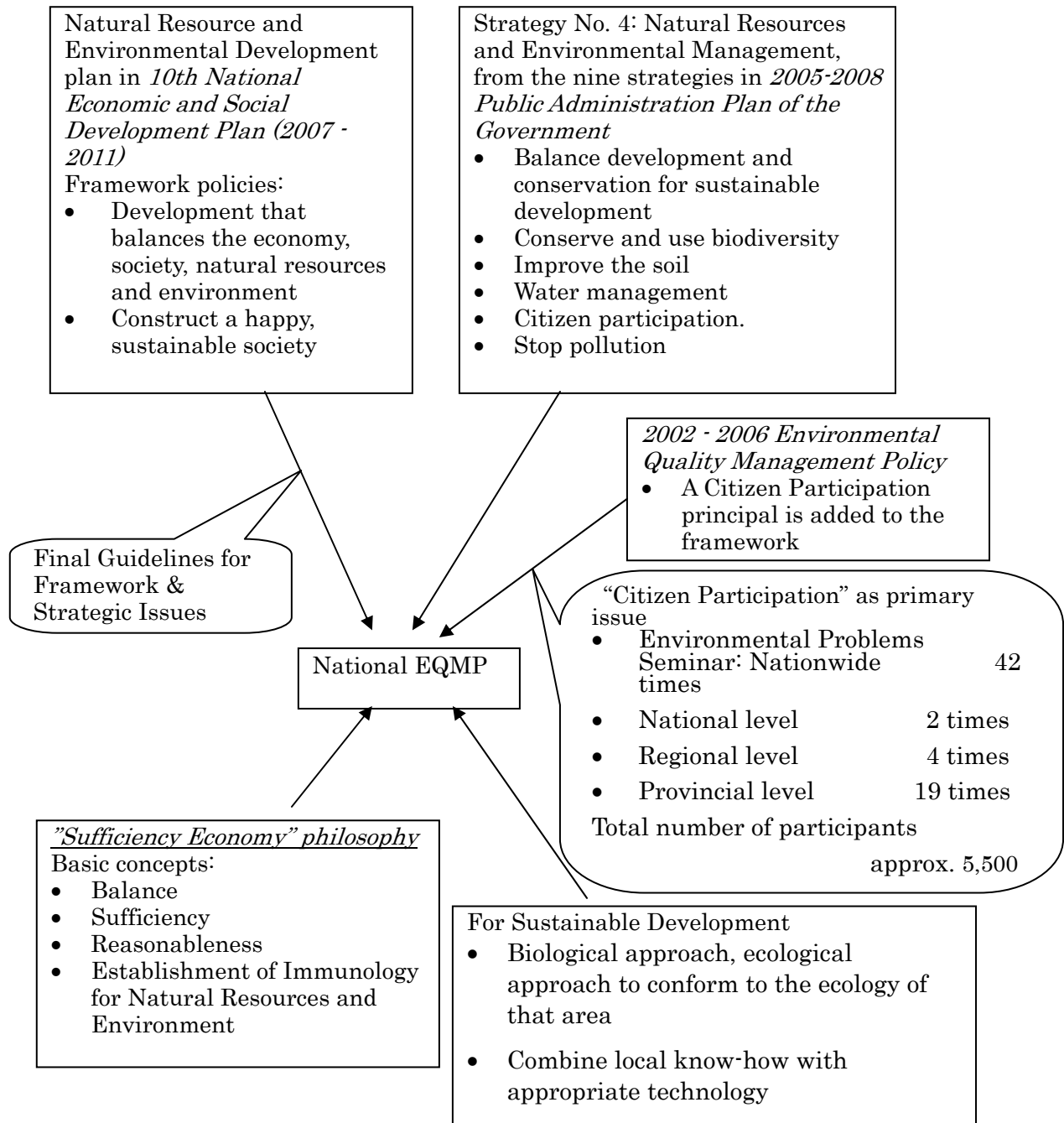


Figure 2-11: National Environmental Quality Management Plan and its Relationship to Relevant Plans

## **b. Evaluation of the Environmental Quality Management Plan (2002 – 2006)**

The evaluation of the framework for the previous Environmental Quality Management Plan (2002 – 2006), prior to the implementation of the current plan, was suitably harsh. A summary of evaluation results is given below. The new plan was implemented based on these reflections:

- The plan has not been actualized
- The regional organization that will implement the plans does not participate in the decision stage, and is thus top-down in its approach
- The procedure of [Policy/Objective]→[Plan/Decide Project] is turned around so that [Own task or responsibility]→[Policy/Decide Objective]
- Citizen participation has not been realized. Have not diffused obscurity in the participation process. The selection of stakeholders is also unclear
- Lacks a comprehensive cooperation mechanism to systematically tie together local administrative organizations
- The quality of the EIA Report is problematic. For a large-scale project, EIA is conducted after receiving approval
- The environmental management and implementation organizations are divided, and clear results were not obtained in regards to the efficiency and quality of the system
- Natural resources are inclined towards degradation
- Recovery of soil resources is delayed
- The controlled state of forest resources is inclined towards degradation
- Progress in counter direction of objectives in regard to management of biodiversity
- Regression opposed to objectives for contaminant issues. Particularly water contaminant problems
- Pollution from dangerous waste continues to increase
- Occurrence of illegal dumping in public areas of industrial hazardous wastes

## **c. Objectives of New Environmental Quality Management Plan (2007-2011)**

The objectives of the new Environmental Quality Management Plan are set down as concrete value objectives, as shown below:

1. Protect natural resources and vulnerable areas needed for sustainable development.
  - 1) Prevent forest destruction at any rate whilst increase current forest coverage by at least 0.5% within 5 years;
  - 2) Establish a National Biodiversity Database Center, and reduce rate of biodiversity loss and illegal wildlife trade;
  - 3) Resolve land ownership problem by some 700,000 poor agriculturalists and restore degraded soil in agricultural areas by at least 2% per year;
  - 4) Advocate integrated water resource management in 25 watersheds, focusing on water demand, whilst reassuring a safe drinking water supply for every village;
  - 5) Establish an early warning system in areas at high-risk from natural disaster and geo-hazards; and
  - 6) Restore and protect the coastal and marine resources in every coastal province.
2. Maintain environmental equilibrium needed for a better quality of life.
  - 1) Improve the quality of surface water resources by at least 85% of the total amount and marine and coastal water resources by at least 97%;
  - 2) Improve air quality by 90% of the daily air quality index;
  - 3) Minimize the amount of solid waste to 1 kg per day per person, recycle 30% of

- municipal waste, and reduce municipal contagious waste by 40%;
- 4) Support an appropriate collection and treatment process of hazardous waste and toxic waste. Properly manage 30% of hazardous community waste. Promote solid waste management in clustering by establishing at least one waste management cluster unit per region. Properly manage 95% of industrial waste.
  - 5) Reduce the use of 500 types of high-risk chemical substances for agricultural and industrial application within 5 years;
  - 6) Manage urban and community environment according to Livable City criteria for no less than 50% of the targeted local administrative organizations;
  - 7) Strengthen 20% of designated target groups and their networks for the conservation of natural and cultural environment.
3. Protect national interest under international obligation and agreement on natural resources and environment.
    - 1) Develop a central unit responsible for monitoring any impact on natural resources and environment through implementation under international cooperation;
    - 2) Issue Biodiversity Accessibility and Sharing Law as well as Bio safety Law.

**d. Implementation Plan for the Environmental Quality Management Plan**

The specific implementation plan for the Environmental Quality Management Plan shown in Table 2-23 sets the strategy, regulations and guidelines for implementation of each resource type. Furthermore, the organization responsible for the actual implementation of each item of the guidelines for implementation is clearly written; these include the Ministry of Natural Resource and Environment, Ministry of Interior, Ministry of Justice, Office of the Prime Minister, Ministry of Tourism and Sports, Education Organizations, Local Administrative Organizations, and so on. The guidelines for natural resources and environmental management by sector are as follows;

- 1) **Forest and Wildlife:** prevent forest destruction, support reforestation, resolve overlapping areas between forest and agricultural, amend forest and wildlife-related laws, support public participation in forest and wildlife;
- 2) **Biodiversity:** set up biodiversity database, effectively utilize biological resources on a sustainable basis, protect natural habitats, issue Biodiversity Accessibility and Sharing Law as well as Biodiversity Law;
- 3) **Soil and Land Resources:** set up land database system, set up policy on land ownership distribution, improve soil quality, strengthen the capacity of agriculturists in soil and water conservation, reduce the use of chemical substances, reduce open burning, reduce salinity;
- 4) **Geological and Energy Resources:** promote alternative use of mineral resources, set up early warning system, set up a proper benefit sharing system between government and concessionaire, prevent pollution to reduce the adverse environmental impacts associated with mineral resources development, increase energy efficiency, support research and development in renewable and environmental-friendly energy;
- 5) **Fishery, Sea and Coastal Resources:** rehabilitate marine and coastal resources, set up early warning systems, prevent coastal erosion, set up regulations on sustainable fisheries and equipment;

- 6) **Water Resources:** encourage public participation in integrated watershed management, reassure stock water supply, promote the conjunctive use of ground and surface water, promote demand-side management, increase public awareness on effective use of water, formulate a long-term plan on flood and droughts as well as Water Act;
- 7) **Pollution Control:** prevent pollution at its origin, increase capacity of local administrations in pollution control and management, support cleaner production technology, promote solid waste management clustering, proper manage infectious and hazardous wastes, encourage the use of economic instruments for environmental pollution management;
- 8) **Urban, Natural and Cultural Environment Management:** promote urban planning, increase green areas, strengthen communities and natural and cultural environmental conservation network in natural cultural environmental protection and conservation; and
- 9) **International Obligation and Agreement in terms of Natural Resources and Environment:** strengthen human resources in international negotiation under obligations and agreements, encourage public awareness and participation concerning the implementation of international obligations and agreements relevant to natural resources and environmental issues.

Table 2-23: Number of Strategies, Regulations and Implementation Guidelines

No.	Resource Type	Strategies	Regulations	Guidelines for Implementation
1	Forest Resources	6	14	58
2	Biodiversity	5	11	48
3	Soil Resources	5	12	37
4	Mineral Resources, Energy Resources	6	20	70
5	Fishery Resources, Marine and Coastal Resources	6	22	80
6	Water Resources	6	17	81
7	Pollutant Control	4	20	112
8	Urban Environment and Residential Environment	3	15	52
9	Natural Environment and Environment of the Fine Arts	3	8	26
10	Matters of Agreement and International Agreement in the field of Natural Resources and Environment	3	14	40



## **2.4 Issues of LAs on Natural Resources and Environmental Management (NREM)**

### **a. Local Administration (LA) NREM need support and strengthening by both Central and Provincial Administrations**

Many types of authority that have previously belonged to the Central Government have already been handed over to LAs, but the LAs often do not possess enough administrative capacity due to the rapid pace in which decentralization occurred. Especially the Orborjor (PAO) which holds jurisdiction over province-wide NREM is very weak in terms of technical expertise or human resources. It must be pointed out that NREM is clearly written as one of the main responsibilities of Orborjor in Orborjor Act (1997), and it is an important duty that is yet to be carried out. As a conclusion the Orborjor plays a minimal part in NREM at present.

The PA (Changwat) encompasses divisions that are heavily related to the preservation and utilization of natural resources and the environment, such as agriculture, fishing, livestock, industry, transportation, public health, and safety divisions, and the management of natural resources and environment is practically impossible without the support of such PA (Changwat) divisions. Therefore, for the time being, problem-solving in NREM of LAs will be difficult without the strong support of Central Administration organizations and their agencies, as well as various PA (Changwat) offices.

Having said that, the various PA (Changwat) offices are themselves unable to support LAs in the field of NREM on a technical/specialist level, and the organizational structure necessary to support localized administration of NREM also have not been sufficiently built up in MNRE, which is the relevant Central Administration organization for NREM. Therefore, both Central and Provincial Administrations need to strengthen their supports to NREM of Local Administration (LA).

### **b. The current size of administrative units are unsuitable for NREM in certain sectors**

Many international organizations including the IMF and World Bank have criticized the extremely small scale of LAs, which prevent them from tackling projects that require a certain amount of funds. In particular, projects related to pollution control require a larger-scale administrative approach and their implementation and/or maintenance can be beyond the scope for individual LAs. Thus the scale merits of clustering must be considered.

As a comparative exercise, the average population and area of SKP Tessaban and Orborjor are 8,610 persons/12.0km<sup>2</sup> and 5,082 persons/13.2km<sup>2</sup> respectively, while in comparison the 1,820 Japanese local administrative organizations (779 cities, 844 towns, and 197 villages) average 70,202 persons/207.6km<sup>2</sup> (see below).

Table 2-24: Comparison of Size of LAs in Thailand to local administrative organizations in Japan

Name of Province	LA	Number of LA	Average Area LA (km <sup>2</sup> )	Average Area Japan (km <sup>2</sup> )	Average Population LA	Average Population Japan	Japanese Administrative organization
AYP	Orborjor	1	2,556.6	8,039.0	760,645	2,718,467	Province
	Tessaban	34	16.3	207.6	8,799	70,202	City, town, village
	Orbortor	19	18.9		4,480		
SKP	Orborjor	1	416.7	8,039.0	195,068	2,718,467	Province
	Tessaban	5	12.0	207.6	8,610	70,202	City, town village
	Orbortor	30	13.2		5,082		

Source for LA: Opinion survey among LAs

**c. The seat of authority over issues that go beyond the administrative capacities of Orbortor and Tessaban is not clearly defined, but at the same time, the authority of Orborjor over these issues is not recognized**

The opinion that “solid waste management and wastewater treatment projects are completely beyond the administrative capacity of Tessaban” was voiced in the 1<sup>st</sup> PEQMP Seminar, which was conducted to disseminate the contents of the draft PEQMP and to gather the opinions of relevant stakeholders.

Such problems stem from the fact that the administrative scale of Orbortor and Tessaban is too small, and the necessity arises for the clustering of administrative units or, alternatively, the implementation of joint projects between multiple Orbortor and Tessaban. In the latter scenario, the Orborjor (PAO) is expected by law to play a coordinating role. It has become clear through interviews with the PEO, however, that both Orbortor and Tessaban are reluctant to accept coordination attempts by the Orborjor. There are three possible causes behind such reluctance; because the relationship between organizations are not clearly defined, because they do not understand each others’ role, or because they do not understand that cooperation is necessary for the success of such projects. Thus the Central or Provincial Administration must mediate, instruct, and initiate the construction of a cooperative structure between LAs. Only after such an intervention can master plans regarding solid waste management and wastewater treatment be formulated under leadership of the Orborjor.

**d. The Local Administration expenditure is proportionately too small within the total national expenditure**

To establish the independence of LAs, the LAs must by themselves improve their local areas for better living of their residents, and this requires funds. At present, only 1/4 of the national expenditure is expended locally (i.e. by Local Administration), and the remaining 3/4 are disbursed by the Central Government. The strengthening of administrative capacities of LAs should be accompanied by an increase in the local allocation of budget. The Central Government has already set a goal to allocate 1/3 of its expenditure locally, and the early realization of this goal is desirable.

Incidentally, in Japan, 3/5 of the national expenditure is local.

**e. The distribution of Central Government subsidies to LAs is mainly weighted by population figures**

The distribution of Central Government subsidies to LAs is mainly weighted by population figures. For example, in the case of the Strategic Provincial Development Plan (SPDP), 40% of the total budget is distributed equally to all Provinces, an additional 40% is distributed according to population size, and the remaining 20% by income per capita within the Province. According to interviews with the NESDB and World Bank reports, population, student population, aged population, and per capita earnings of a Province commonly become the basis of budget allocation decisions. While it is important to have such clear basis for budget allocation and distribution, it is also crucial in the case of NREM that the seriousness of issues and problems within each Province be considered on a policy and priority basis, and that the budget allocation process be weighted by such considerations. At minimum, policy decisions and priorities set out in the National EQMP should play a role in determining Central Government subsidy allocations to LAs. The formulation of sector-based master plans by Orborjor and its study teams will, for example, in addition to being important in proposing area-based solutions for serious issues in NREM, allow such decision-making to proceed without relying on the petitions by individual Orborjor and Tessaban of problems within their individual jurisdictions.

**f. At present, neither a section for NREM, nor sufficient budget for it, exists within Orborjor (PAO)**

A Province-wide viewpoint is a requirement in finding a solution to pollution control problems; thus the Orborjor (PAO) plays an especially important role in this sector. Both the increase in numbers of environment-related staff in Orborjor and an abundant budget are necessary to solve pollution control problems.

The Orborjor of AYP already has an Environmental and City Planning Section in the Engineering Division, but since their 4 staff members are also in charge of city planning. There are no environmental divisions in the Orborjor of SKP. The environmental budget within Orborjor for FY2006 was 0.2% of the total budget for AYP and 0.1% of the same in SKP<sup>4</sup>. The MNRE has instructed LAs to commit 8% of the total budget to environment in the National EQMP, and thus it can be said that a drastic increase is required.

**g. The number of PEO staff is insufficient in e.g. wastewater and solid waste management**

The PEO is a branch office of MNRE, represents the MNRE in the Provinces, and in theory promotes environmental administration as intended by the Central Government within the Provinces. In reality, however, a small staff covers the whole range of sectors in natural resources and environment. Staff dedicated to natural resources management, solid waste management, and wastewater management is, at minimum, required in order for PEO to fulfill its intended duties. In PEO of AYP, of the 5 permanent environment-specialized employees, only 2 are in charge of NREM and the other 3 are involved in work unrelated to environment. In this example, at minimum, the commitment of all 5 PEO staff to NREM is desirable.

**h. LAs currently do not play an active role in the Well Being Strategy (WBS)**

WBS is a strategic plan for the improvement of living conditions at the Mooban and Community levels that will be implemented by the Changwat-Amphoe-Tambon-Mooban line.

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<sup>4</sup> Source: Opinion survey among LAs

As the plan will unfold within the LA sphere, the Orbortor and Tessaban should become involved with this plan and cultivate the relationship between LAs and local residents, which is important for NREM.

**i. Local residents are not sufficiently involved in the formulation and implementation of PEQMP at present**

The opinion that “local residents should take part in the formulation and implementation of PEQMP” was voiced in the 1<sup>st</sup> PEQMP Seminar.

The PEQMP-KPI Formation Handbook (Manual) prepared by ONEP instructs the user to establish a PEQMP-KPI formulation committee led by the Governor, and to include LA staff as members. However, the inclusion of local residents is not among its instructions, and the form of resident participation is left up to the discretion of each Governor. It is desirable to revise the PEQMP-KPI Formulation Manual and at the same time consider the ways in which local residents can participate.

**j. It is currently difficult to access the NREM GIS Database**

The opinion that “the NREM GIS Database needs to be improved and easily accessible” was voiced in the 1<sup>st</sup> PEQMP Seminar.

In AYP, an Environmental Information Center has been established within the PEO and responds to inquiries by local residents and companies, but such inquiries are handled non-systematically. SKP does not have an Environmental Information Center.

**k. There is insufficient promotion of environmental awareness education and insufficient publicity for environmental information by organizations responsible for NREM**

The opinion that “environmental awareness education and the increased publication of environmental information should be actively promoted by governmental organizations” was voiced in the 1<sup>st</sup> PEQMP Seminar. The Opinion Survey conducted by the Study Team also showed that the residents wished for more public access to environmental information.