

**ECOLOGICALLY SENSITIVE DEVELOPMENT OF
NEW TOURISM DESTINATIONS IN THE GREATER
MEKONG SUB-REGION**

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by

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A thesis submitted in partial fulfillment of the requirements for the
degree of Master of Science in
Urban Environmental Management

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ABSTRACT

Tourism sector development in the Greater Mekong Sub-region (GMS) put enormous pressure on local ecosystems where rapid growth of tourism activities have taken place. Local authorities that should play the role of enabler and regulator do not know how to deal with the rapid pace of tourism development and its impacts. Therefore, this study aims to examine how local authorities in some ecologically sensitive destinations in GMS are dealing with tourism. The research employed a multiple case study approach. Some river based, eco- tourism destinations in the middle part of the Mekong river basin, viz., Vang Vieng in Lao, and Pai in Thailand were studied first to understand the factors that affect the ecological sensitivity of a tourism destination. These factors were used to analyze the trend of tourism growth in the newly emerging destination, Chiang Khan, in Loei province of Thailand. The study finds that Chiang Khan is experiencing even more rapid tourism growth compared to Vang Vieng and Pai. It also finds that the local authority in Chiang Khan is not effective in managing the changes and development in the eco-system. The study proposes some environmental management measures (EMMs) based on the findings from all three cases.

Keywords: ecologically sensitive tourism destinations, tourism development, environmental management, local authority, Greater Mekong Sub-region

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Abbreviations

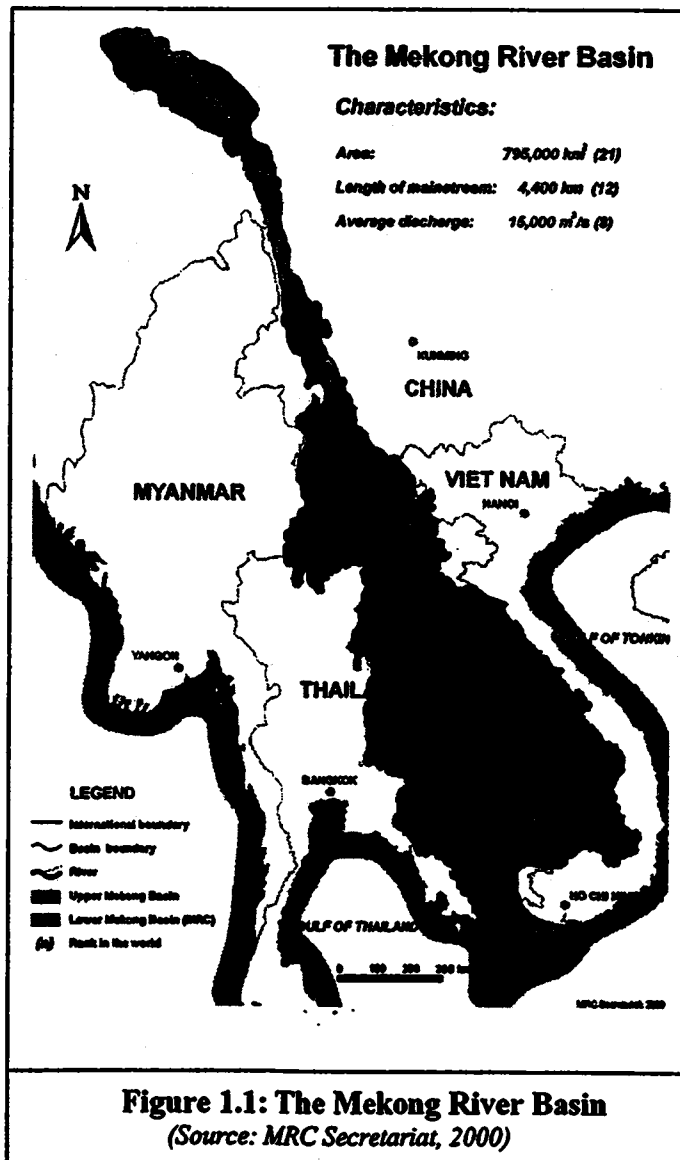
ADB	Asian Development Bank
AMTA	Agency for Coordinating Mekong Tourism Activities
DP&E	Department of Public health and Environment
DPW&CP	Department of Public Works and Town & Country Planning
EMMs	Environmental Management Measures
GMS	Grater Mekong Sub-region
LNTA	Lao National Tourism Authority
MTCO	Mekong Tourism Coordination Office
MTF	The Mekong Tourism Forum
NTWGs	National Tourism Working Groups
PATA	Pacific Asia Travel Association
TAT	Tourism Authority of Thailand
TWG	Tourism Working Group

Chapter 1

Introduction

A river basin is the part of land drained by a river and its tributaries. Many river basins around the world play an important role in human society and provide natural resources for riparian communities. In Southeast Asia, the Mekong river basin is the most important and largest river with high diversity of resource in the region. The Mekong Region spans over six countries namely, Cambodia, People's Republic of China (PRC), Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand, and Viet Nam. They are collectively known as GMS countries, with the exception that only the Yunan province of PRC is considered on part of GMS. With this exception the Greater Mekong Sub-region (GMS) countries are home to more than 300 million people (ADB, 2005). The total area of the Mekong River Basin, the total area is approximately 795,000 square kilometers. While, the basin covers only 1.7% of Yunan and 3.5% of Myanmar, a much larger share of the land mass lies in the four lower countries – Laos, Thailand, Cambodia and Vietnam. These countries cover areas of 85.3%, 35.9%, 85.6% and 20% respectively from their total areas (Hori, 2000).

The tourism sector is a major contributor to the socio-economic development of the GMS. For this reason, the GMS Ministers include tourism as one of the flagship programs of the ten-year GMS strategic framework (ADB, 2005). The framework envisions a future where the vast potential of the sub-region is fulfilled, people are freed from poverty, and sustainable development provides opportunities for all (Jamieson, 2001). Tourism has the potential to generate jobs and economic benefits for people across this sub-region. The strategy envisions the GMS as a single destination, with a strong focus on culture, nature, and adventure. It is hoped that the strategy will inspire not only governments of the sub-region, but also stakeholders, particularly in the tourism industry, to develop a truly unique Mekong brand of tourism (ADB, 2005)



1.1 Background

The Mekong river basin's high variation in geography and climatic zones supports an immense amount of biodiversity and critical landscapes of international biological importance. The basin represents the greatest concentration of eco-regions on mainland Asia (*WWF Greater Mekong Program, 2007*). Regard to the richest, most valuable natural resources and Asian culture, the GMS has become an attractive tourist resource (*Leksakundilok, 2004*). Biodiversity landscape, traditional and cultural heritage site in many parts of GMS are promoted at both international level and national level to be eco and cultural tourism destinations (*Jamieson, 2001*).

In general, tourism development especially in developing countries has proven to be socially and culturally destructive, forcing local stakeholders to undergo a process of urbanization (*Vourc'h, 2003*). While cities require tourism development, frequently it also conflicts with existing circumstance of natural environment in relation to urbanization and change on land use, physical habitat and population (*Voelker, 1998*). There are tensions to handle in tourism destination management, especially the tourism development in ecologically sensitive areas that are easy to be threatened.

As governance structures become more decentralized in the GMS countries, the responsibility of tourism development lies more and more with local authorities. Many important policies that have an effect on tourism development are often in the hands of local authorities, acting within the framework of national policies and strategies (*Lardere, 2003*). However, local authorities still lack knowledge on how to manage the destinations when the number of visitors are increasing and creating negative effects.

In term of tourism development, local authorities have an important role in tourism destination management because they are in the position to control and conduct the locality (*Begin, 2003*). Therefore, local authorities are the best placed organizations for sustainable approach and strengthen capacity to manage local environment for future tourism growth (*Vourc'h, 2003*).

This research will focus on the new tourism destinations in the Mekong sub-region and examine how local authorities can take proactive measure for ecologically sensitive tourism development. Moreover, local authorities should more concern on the existent environment context and manage the destination be sustainable tourism by application of management tools. The study will be initially conducted involving multiple cases in order to analyses the top-down tourism policy approach. Then this study will bring to an understanding of a complex issue on the area in order to investigate how local authorities in the GMS can manage ecologically sensitive tourism destinations for sustainable tourism growth.

1.1.1 GMS Cooperation Program

The GMS economic cooperation program started in 1992 with aims to promote economic and social development in the six countries namely, Cambodia, the People's Republic of China (PRC, Yunnan Province), Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand, and Viet Nam, by strengthening economic linkages between and among them. Moreover, the long term vision of the Program is; "*prosperous, integrated and harmonious development by implementing the 3Cs strategy of enhanced Connectivity, increased Competitiveness and a greater sense of Community*" (*GMS Tourism Sector Strategy, 2005*). The GMS Program promotes market-based integration of the member countries, concentrates on providing the physical infrastructure and software that have public goods

characteristics, such as facilitation of the trans-border movement of goods and people, and development of regional power trade. Furthermore, the program also emphasizes on the mitigation of shared concerns, such as communicable diseases and trans-boundary environmental issues. The priority GMS projects and activities are either being implemented or prepared for implementation with support from ADB and other development partners in the nine sectors of cooperation, namely, transport, energy, telecommunications, environment, agriculture, human resource development, trade facilitation, investment, and tourism (*ADB Review, December, 2004*).

In addition, the GMS possess the vast potential for tourism development because of its rich blend of culture, nature and history. Therefore, international tourism was seen as the major growth engine for the GMS countries and therefore included tourism as one of the 11 flagship programs in the ten-year strategic framework of the Greater Mekong Sub-region Economic Cooperation Program (*Mekong Institute, 2007*). This is in recognition of the important contribution that the tourism sector could make towards socio-economic development, especially poverty reduction in the region (*GMS Tourism Sector Strategy, 2005*).

The GMS cooperation in tourism has been coordinated by the Tourism Working Group (TWG), since 1993. It is formed by representatives of the national tourism organizations (NTOs) with the Agency for Coordinating Mekong Tourism Activities (AMTA) as its secretariat (*GMS Tourism Sector Strategy, 2005*). With the revision of the institutional framework for tourism cooperation, the AMTA's role has been taken over by the Mekong Tourism Coordination Office (MTCO), which will provide sustained organizational capacity to address tourism issues at the sub regional level. The Mekong Tourism Coordinating Office (MTCO) has been established since February 2006 in Thailand and was set up with seed funding from the GMS Tourism Working Group which represents the six national governments in the Greater Mekong Sub-region. The MTCO has two primary functions; (*ADB, 2006*)

- **Development** – To co-ordinate sustainable pro-poor tourism development projects in the Mekong Region in line with the United Nations Millennium Development Goals
- **Marketing** – To promote the Mekong region as a single travel and tourism destination.

There is also tourism cooperation between individual countries resulting from GMS cooperation or country to country negotiation. The cooperation includes the study and planning, marketing, capacity building, training etc. One example is that the Tourism Authority of Thailand (TAT) assisted the Lao National Tourism Authority (LNTA) and the Cambodia NTO in studying and planning several tourism development plans (*Australian Mekong Resource Centre, 2004*)

Tourism development in the GMS grows rapidly with benefits of rising national incomes and generating job opportunities for local people. However, negative impacts from tourism development will occur when the number of tourists is increasing and uncontrolled of development. These because of local authorities in the destinations lack of knowledge to prepare and control the development for the future tourism growth especially in the ecologically sensitive areas.

1.2 Statement of the Research Problem

Many places in GMS are promoted to be tourism destinations. These are linked to bring the six countries closer together to be a single tourism destination. Especially, the corridor project being promoted is to enhance this single tourism destination concept. It is expected to encourage cross border development in order to create new job opportunities, reduce poverty, increase economic rate and foreign exchange earnings (*GMS Tourism Sector Strategy, 2005*).

At the international level, the main actors are the TWG and MTCO (Mekong tourism coordination agency). They have been strengthened with organizational capacities to address tourism issues at the sub regional level (*UNESCAP, 2001*).

In term of tourism development in each country, tourism development plan and strategies are in line with the Top-down policy. For example, in Thailand, the framework for developing tourism policy, planning and programming is managed by the Ministry of Tourism and Office of Tourism Development then assigned to lower administrative levels such as local and provincial tourism, only at the implementation stage (*Phayakvichien, 2007*)

In GMS countries, most tourism destinations are promoted by central government which is heavily dependent on the natural resources and cultural attraction. (*CUC-UEM-TTTP, 2000: p.vi*). Therefore, many ecologically sensitive areas in the GMS are promoted to be tourism destinations. Unfortunately, these attractions and resources have come under significant challenge from imprudent use. (*CUC-UEM-TTTP, 2000: p.vi*).

Within the context of tourism, many tourism activities can have adverse environmental effects such as air pollution from increasing of vehicles, solid waste, wastewater and resource degradation by land development. "*The negative impacts from tourism occur when the level of visitor use is greater than the environment's ability to cope with this use within the acceptable limits of change. Uncontrolled conventional tourism poses potential threats to many natural areas*" (*UNEP, 2001*)

In general, tourism development will put enormous pressure on the natural resources, local communities and ecologically sensitive destinations. Moreover, tourism development in the GMS countries was still largely a matter of top-down planning which hardly addresses local needs and problems. The central government has seen the potential for tourism development in the natural resources of some areas and then includes these areas in the national tourism plan, promoted to be the new tourism destinations. When the plan from central government is assign to local authority, there is no clear framework for their responsibility. Moreover, local authority lack of tourism destination management knowledge, they do not know how to deal with when tourism development lead to the negative impacts (*UNESCAP, 2001*). Especially, many ecologically sensitive areas that are promoted to be the tourism destinations have been threatened and polluted by uncontrolled development (*Jamieson, 2001*). Often, tourism development occur the destination without preparation from local authorities. Therefore, these problems lead to the questions regarding the effectiveness of local authorities who play an important role to the ecologically sensitive tourism destination management. Moreover, the application tools for sustainable tourism are used by local authorities in order to manage the destination be sustain development for long-term protection of natural resources in sensitive areas.

1.3 Research Questions

While seeking the knowledge, how to manage new tourism destinations in GMS by local authorities, the research questions that this research aims to answer are as follows.

1. What are the effects of tourism development on the ecologically sensitive destinations in GMS?
2. What are Environment Management Measures (EMMs) used by local authorities and their effectiveness?
3. How local authorities in GMS can manage ecologically sensitive tourism destinations for sustainable tourism development?

These research questions are formulated in order to set main focus for the research which tries to solve the problems of unsustainable tourism development in locality management of ecologically sensitive tourism destination in the GMS countries.

1.4 Rationale of the Study

Many ecologically sensitive areas in the GMS are promoted to be new tourism destinations. As result tourism services and economic activities such as hotels and restaurants, are emerging to cater the need of both local and foreign tourists.

There can be positive and negative effects on the tourism destinations, depending on how the local authorities develop and manage. Increasing in the number of tourists, services and revenue of riparian countries clearly shows the positive economic benefit of tourism development. These benefits are accessed by both local people and those who came from outside (e.g. people from Bangkok to invest in the GMS tourism). However, in reality there are a number of negative impacts on the economy, society, culture and the environment (*Pleumarom, 2002*). For example, the loss of community character and sense of place, environment degradation, traffic congestion, inappropriate design of new buildings, erosion of cultural traditions and increase in the cost of living (*Jamieson, 2001*)

When the places become famous, many investors from locality and outside flow in to the destinations in order to provide tourism facilities and services such as hotels, resorts, home-stay facilities and restaurants. In general, local authorities do not have knowledge on development control and tourism destination management. They do not know how to deal with any environmental impacts due to new construction or how to decide on the limits of growth (i.e, carrying capacity of the destination). Therefore, the lack of capacities of local authorities can lead to negative effects in a local society and environment. The influx of tourists and workers to a destination can affect the local community's social fabric and cultural values. Moreover, it can cause environmental pollution, habitat destruction and health risks due to the growing pressures resulting from unsustainable growth and poor management of tourism destinations, many ecologically sensitive areas in GMS are threatened (*Jamieson, 2001*).

Regard to the tourism growth, local authorities have an important role to play in destination management because they are the main actors responsible for any development in the locality (*Begin, 2003*). Local authorities are the best placed organizations for promoting sustainable approach to tourism, setting strategies and balancing the interests of tourism enterprises, tourists and local residents (*Vourc'h, 2003*).

Therefore, this research aims to examine how local authorities manage the new tourism destinations. The study will emphasize on the relatively new tourism destinations in the GMS where tourism has blossomed since the late 19th century. The research can draw lesson from these new destinations in order to provide local authorities with suggestions environment management measures to make sustainable tourism. Base on that the tourism development trend of an emerging destination can be examined for development in the future. Therefore, case studies on new tourism destinations are needed to draw lesson and experience so that proactive measures can be taken to avoid mistakes and guide new destination through sustainable tourism development.

1.5 Research Objectives

The general objective of the research is to examine how local authorities in GMS manage the tourism growth in ecologically sensitive destinations. The specific objectives are;

1. To provide an overview of the effects of tourism activities and services on the relatively new tourism destinations in GMS.
2. To examine the Environment Management Measures (EMM) used by local authorities and the effectiveness of their application.
3. To propose the application of EMMs for local authorities in the GMS to manage in the future tourism growth on ecologically sensitive tourism destination.

The next section provides a brief explanation on the method of study. It will be detailed in chapter 3.

1.6 Methodology

As justified in the study rationale, the case study approach is the desirable method for characterizing the consequence of the top-down tourism policy in GMS countries and the effectiveness of local authorities in translating that policy into action. The case study method is suitable to investigate a contemporary phenomenon within a real context (*Neuman, 2000*). The researcher considers that multiple case studies at the overview level will enable to identify a specific case study for detailed analysis and draw inference.

Therefore, this study will follow a two step case study process starting from general overview of multiple cases and then study of a specific case. Accordingly the new tourism destinations of multiple case studies in GMS are divided into two types. Firstly, the destinations in GMS that currently face the effects of increasing tourism as discussed in literature and media. There are the destinations were uncontrolled tourism growth and unsustainable tourism development. The case studies selected for this purpose are Vang Vieng District, Vienntiane Province in Lao PDR and Pai District, Mae Hong Son Province in Thailand. They represent recently emerged tourism destination. For the purpose of detailed case study, a newly emerging tourism destination in GMS is selected. This is Chiang Khan district of Loei province in Thailand. It is promoted as a new tourism destination by TAT since 2009 and already witnessing an increasing number of tourists, especially domestic tourists, experiences and lesson drawn from cases in first group will be used to analyze what effects may occur in the new destination (the detailed case study).

1.7 Scope and Limitations of the Study

There are mainly two types of scope of study; the scope of substance and the scope of study area. In term of scope of substance, the research will study the tourism destination management from local authorities and focus on ecologically sensitive destination areas in the Greater Mekong Sub-region (GMS).

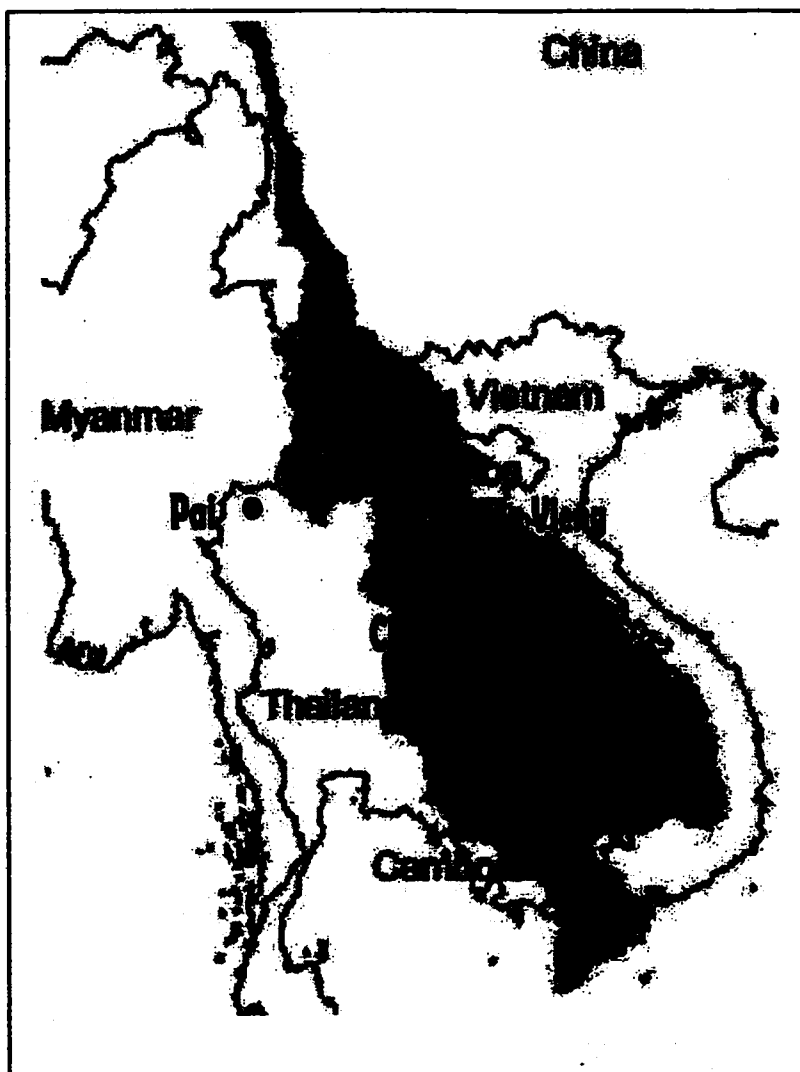


Figure 1.2: The Scope Area
(Source: MRC Secretariat, 2000)

As mentioned in statement of the research problem, many parts of countries in GMS are promoted to be tourism destinations. Furthermore, most of these destinations in the GMS have same problems of poor overall management by local authorities.

This research will be focusing on how the local authorities manage the tourism destinations to be sustainable tourism development.

In term of the scope of study area, this research will deal with multiple destinations in the middle of GMS in order to refer what have occurred up to now in many ecologically sensitive destinations after start tourism development without knowledge and good management from local authorities.

This is only overviewed; it will be based on secondary data. The lesson and experience from the multiple destinations will be used to for guide local authorities in the GMS.

1.8 Conceptual Framework

The major research interest is focused on tourism destination development for ecologically sensitive in the Grater Mekong Sub-region, through the application tools to make sustainable tourism for local level.

Figure 1.3: Conceptual Framework

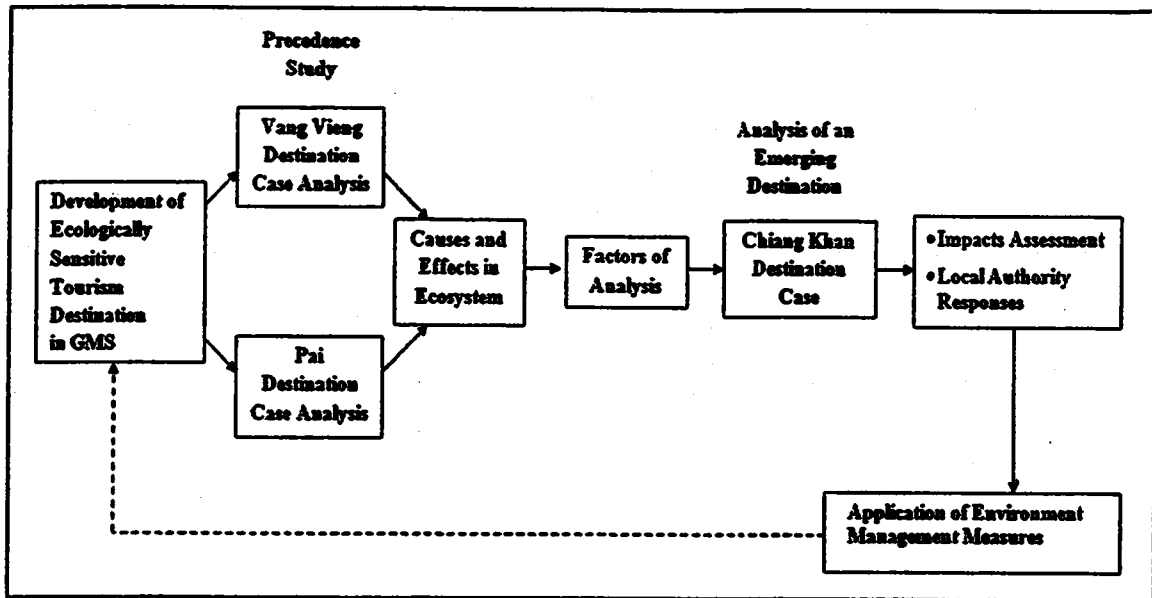


Figure: 1.3 shows the conceptual framework and the relationship of the parameter of study. Firstly, the research finds out the development of ecological sensitive destinations in the GMS from multi-case study based on secondary data. Then, the study conducted in the case study approach on the new ecological sensitive tourism destination, the evidences from general tourism destination in GMS were used to analyze the trend of demand and supply from tourism service, identify key factors that occurred in the new destination, suggest an application tools used by local authority for future growth in destination Finally, the study can draw the lesson learnt to suggest of development and management to the similar case of tourism growth in GMS.

Chapter 2

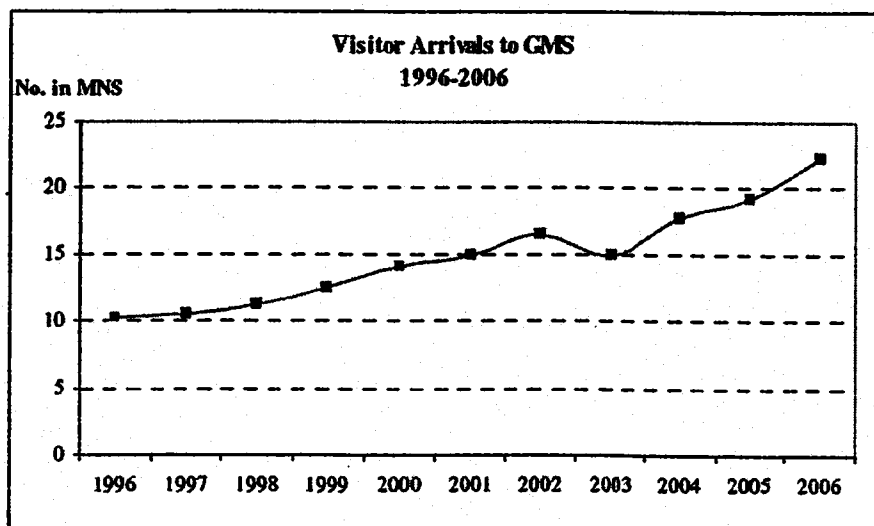
Literature Review

Review of literature refers to what has done in related studies, articles and reports. Moreover, this section aims to review the critical point of current knowledge and address the study. It is used to analyze and discuss in the related issues. This chapter will review the overall tourism in GMS, define the scope of tourism destination, ecologically sensitive area and tourism development effects. Then, sustain tourism development and environment management measures will be review in order to clear understand and used for data analysis.

2.1 Overview Tourism Development in GMS

As mention in chapter 1, the tourism sector is a major contributor to the social and economic development of the GMS. The objective is to develop and promote the Mekong as a single destination in order to provide opportunities and distribute the benefits of tourism for countries in the region (ADB, 2005). The Greater Mekong Sub-region is well endowed with World Heritage sites and many pristine environments such as Luang Prabang in Lao PDR, Angkor Wat in Cambodia, Golden Quadrangle Tourism Zone including Lao PDR, Myanmar, Thailand and Yunnan Province PRD (Kaosa-ard & Untong, 2008). Tourism is increasingly important for the greater Mekong economies in terms of income, foreign exchange and employment (Kaosa-ard, 2007). In 2006, total international arrivals to the sub-region reached 22.28 million with an increasing 9.4% from 2005 and continue increasing.

Figure 2.1: The number of visitor arrivals to GMS in 1996-2006



Source: ADB, 2008

Figure 2.1 shows the number of visitor arrivals¹ to GMS from 1996 to 2006. The line graph illustrates that tourist continued increasing during the decade. Increasing in the number of tourists, services and revenue of riparian countries clearly shows the positive economic

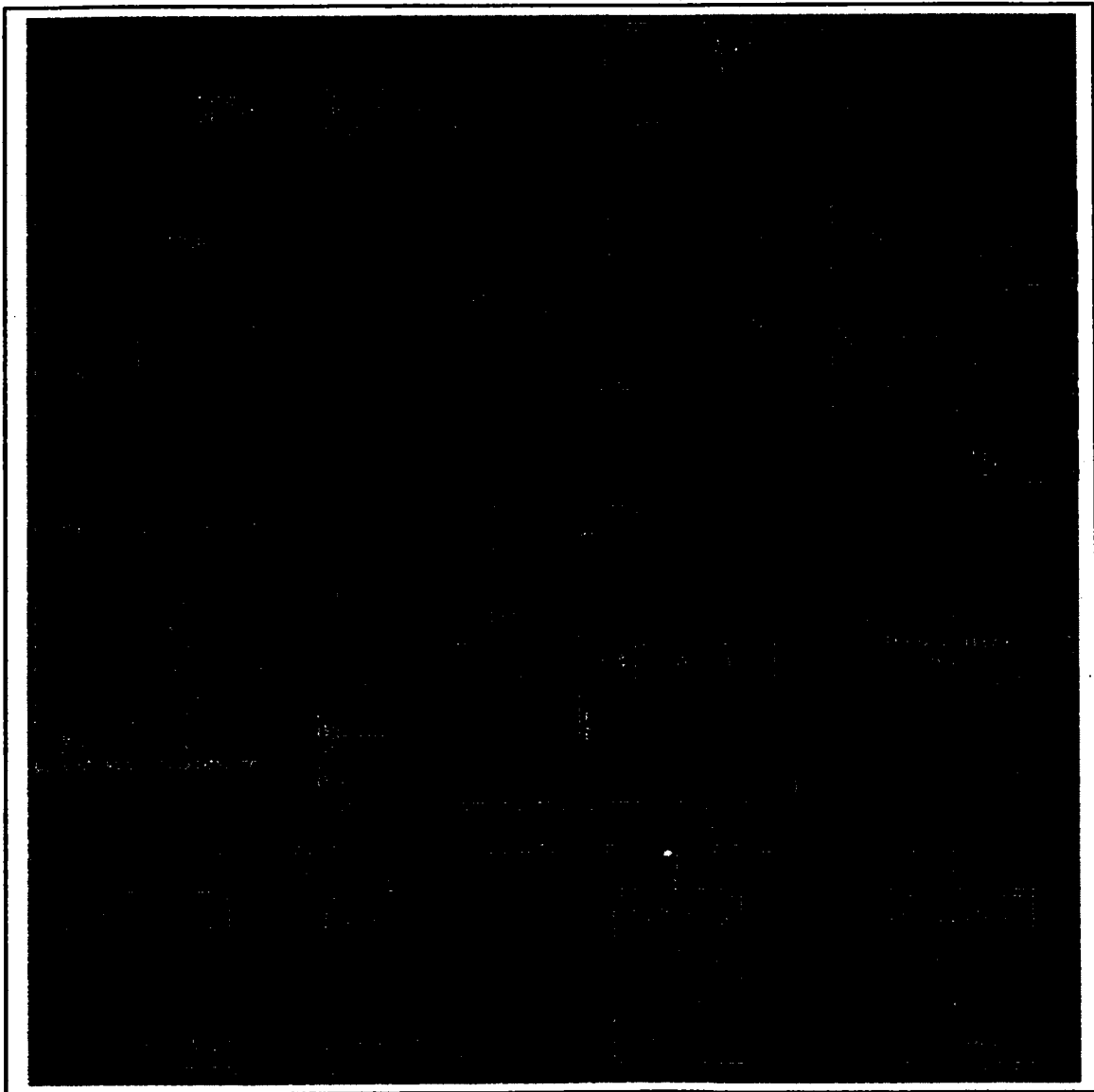
¹ In 2003, the number of visitor arrivals had dropped because there was SARS and Bird Flu epidemic in Asia

benefit of tourism development. For this reason, GMS country members have seen the potential and the benefit from tourism development. Therefore, many places promoted to be the new destination for boots economic, employment and generate income to both country and local community.

2.1.1 The structure for the Greater Mekong Sub-region Tourism Cooperation

The organization framework for implementing the GMS tourism programs involves several international organization and national-level groups. The implementation of the program will result in a smoother movement of tourists to and between the GMS countries in order to improve competitiveness of the sub region as a single destination and increase number of visitor arrival in the region. The structure and relation of international and national institution were illustrated in the Figure: 2.2.

Figure 2.2: Structure for GMS Tourism Cooperation



Source: GMS Tourism Sector Strategy, 2005

Figure 2.2, shows the organization framework of GMS tourism cooperation. The circled numbers in the figure refer to organization and working group which each component will be explained.

A regular meeting of GMS minister (senior official) and tourism minister (1) provides leadership and policy guidance to the strategy. Then, GMS Tourism Working Group (2) continues to be responsible for formulating and directing the implementation of the programs and projects. The Mekong Tourism Coordination Office (3) is responsible for marketing the program. In this state, an advisory board (4) advises and supports the TWG and MTCO. Moreover, there are national tourism working groups (6) in each country cooperates the implementation. There is a private sector partner group (5) to support the marketing and product development functions of the MTCO. Then, the Mekong Tourism Forum (7) supports a strong dialogue between the public and private sector on the implementation. Finally, each project will be established at the national level and project coordination units (8) will be established in each of the participating countries.

2.1.2 The Priority Tourism Development Zone for GMS Tourism Cooperation

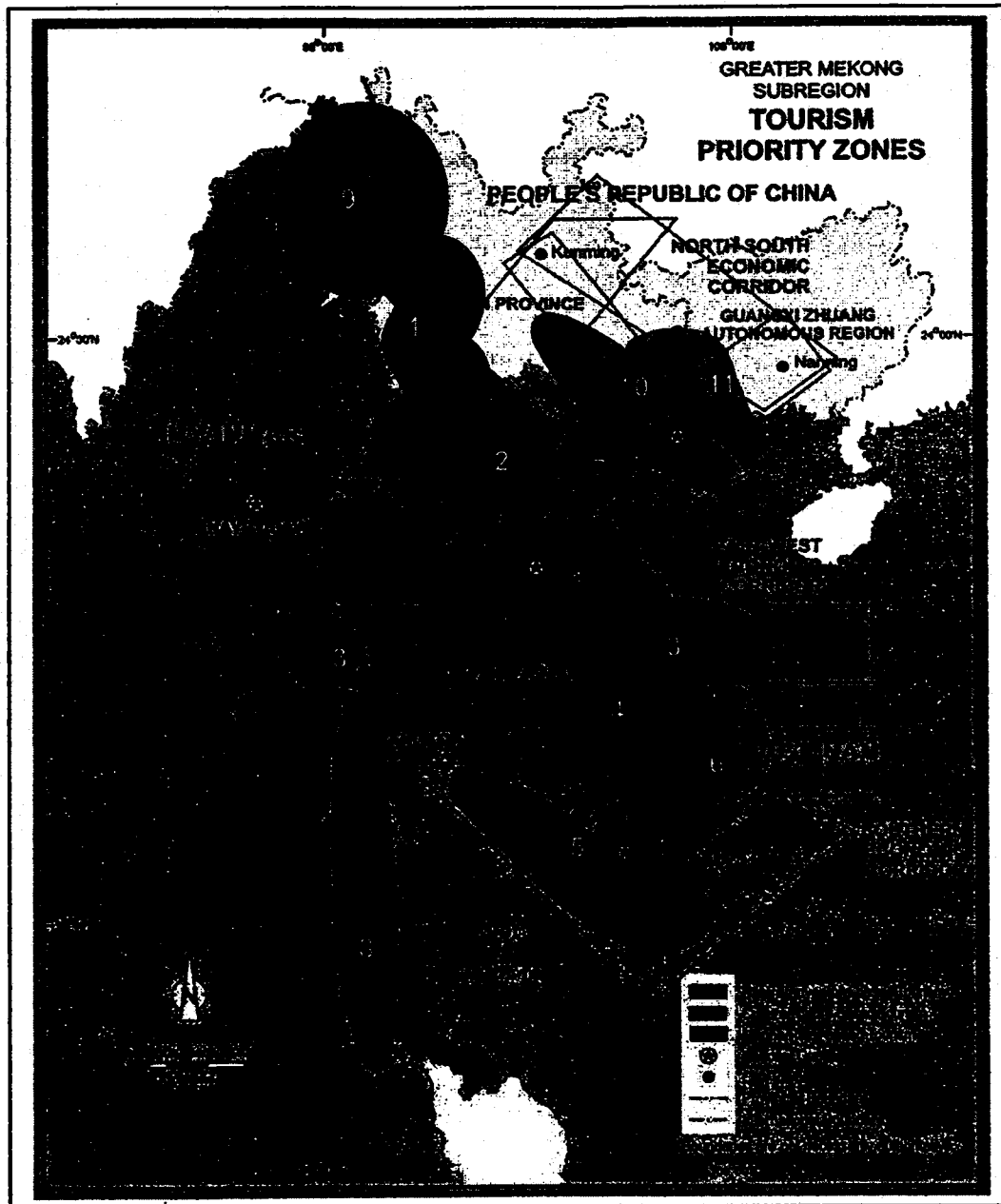
The overall GMS tourism approach is to distribute the benefits of tourism more widely by encouraging travel around all the GMS countries. Specifically, the strategy aims to direct increased tourism flows to key zones in the sub-region, involving natural, cultural, and historical resources shared by neighboring countries, in areas where there are poor communities.

The strategy promotes the positioning of the sub-region as a single tourism destination. It recognizes that international tourism to the sub-region flows through Bangkok (Thailand)—the main gateway—and key, alternative emerging gateways, such as Guilin (Guangxi Zhuang Autonomous Region PRC, Phnom Penh (Cambodia), and Hanoi (Viet Nam). From these gateways, tourists will be encouraged to travel not only to other tourist spots in the host country, but also to other cities and tourist hubs in other countries of the sub-region (*GMS Tourism Sector Strategy, 2005*).

The objectives of this program are to strengthen and focus sub-regional product development, implement a sustained single destination promotion campaign, and develop a strong sub-regional marketing institution (*ADB, 2008*).

A key element in achieving these objectives is to enable the private sector to design, develop, promote, and operate competitive, sound cross-border products based on culture, nature, and adventure tourism, directed at widening the distribution of tourism benefits and promoting pro-poor tourism. To achieve this, 13 sub-regional priority tourism corridors, zones, circuits, and lines have been identified in the figure 2.3.

Figure 2.3: Priority Tourism Development Zones



- | | | |
|---------------------------------------|---|---|
| 1. Mekong River Tourism Corridor* | 6. Green Development Triangle | 10. Red River Valley Tourism Zone |
| 2. Golden Quadrangle* | 7. Lao PDR–Viet Nam Cross-Border Community-based Tourism Zone | 11. Guangxi–Northeast Viet Nam Borderlands Tourism Zone |
| 3. East West Tourism Corridor Zone* | 8. Andaman Coast Tourism Zone* | Not shown on the map are: |
| 4. Emerald Triangle* | 9. Shangri-la–Tengchong–Myitkyina Tourism Development Zone | 12. Heritage Necklace Circuit* |
| 5. Southern Coastal Tourism Corridor* | | 13. GMS Coastal and River Cruise Lines* |

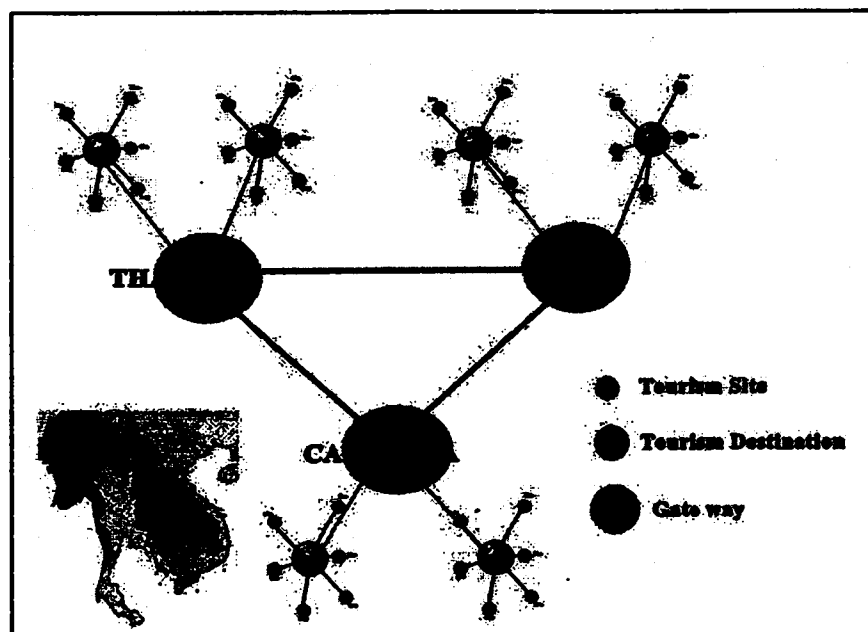
**Note: Priority tourism development zones involving Thailand*
Source: GMS Tourism Sector Strategy, 2007

These priority tourism zones contain most of the sub-region's major cultural, natural, and adventure tourism resources of strong interest to the market, are connected to the developing sub-regional transportation network. The GMS countries, through their NTOs, have already agreed to cooperate in the development and promotion of these zones under the strategy of GMS tourism cooperation (*GMS Tourism Sector Strategy, 2005*).

2.1.3 Tourism Destination in GMS

The destination lies on the tourism area, it refers broadly to an area where tourism is a relatively important activity. The area is that economy may be significantly influence by tourism revenues (*UNEP-DTIE, 2002*). Various researchers refer to destination in different scale. For example, Metelka (*1990, p.46*) defined the destination as the "geographic location to which a person is traveling" while Gunn (*1994, p.107*) saw a destination as being a "travel market area" and referred to destination zones that are geographic areas "containing a critical mass of development that satisfies traveler objectives". The tourism area is ranged from the country, region, province, city and town that are visited by tourists (*Cooper and Hill, 2008*).

Figure 2.4: The tourism area definition



Regard to the strategy envisions the GMS as a single destination. Figure 2.4 illustrates the linkage of GMS countries as the single destination. While each country represent the gate way for travelling to the destination within each country. For example, Laos is the gate way that generate tourists to Luang Phrabang (tourism destination) and Wat Chiang Tong and Wat Sansukharam are the tourism sites.

2.2 Overview Urban Ecosystem

In order to analyze the changes and developments in the destination, it is important to view the urban as an ecosystem. The word refers to a system and ecology. Chorley and Kennedy (*1971*) was defined a system as 'a structure set of objects and attributes. These consist of components that relate with each other and operate together as a complex pattern'. Moreover, the relationship of components and the pattern of system will be changed and

transferred due to the factors from outside. While, Sukopp and Trepl (1995) were defined ecology as the scientific study of the relationships amongst living creature and communities as well as their relationship to their environment.

It is clear that ecosystem is a complex set of the relationships or interconnection of among living things, habitats, communities and environment (Schmitz, 2007). In recent years, environmental policy and research circle have advocated an ecosystem approach in light of the growing importance of ecological issue and recognition of the interconnectedness of social, economic and environmental systems (UNU, 2003). Therefore, ecosystem approach is particularly important for urban development and management. Produced concepts and applications of an ecosystem approach will provide the understanding cities as a set of interconnected activities, the need of social, economic and environmental. This helps to approach the urban environment management in ecologically sensitive area.

2.2.1 Ecologically Sensitive Destination in GMS

World Resources Institute in 2008 described the ecologically sensitive areas that the critical ecosystems and natural areas are at greatest risk for high impacts to ecosystem function or the interconnection in ecosystem. The geographic conditions on the area and the topography may intensify pollution, noise and any endangerment. Moreover, the ecologically sensitive areas refer to the unique natural resources or unique cultural heritages exist including unspoiled natural or mostly natural areas, rare landscapes and habitats, national monuments and nature protection zones (UNECE, 1997).

As mention in the background, regard to the richest natural resource, tourism in the GMS heavily relies on the nature and culture. Therefore, many ecologically sensitive areas are promoted to be the new tourism destination. For example, Luang Phrabang (the World Heritage Site in Lao PDR) and The Golden Triangle (The border zone of Thailand, Myanmar and Laos), these tourism destinations are the sensitive areas where are easy to be threatened from development and tourism growth.

2.3 Effects of Tourism Growth on Ecologically Sensitive Destination in GMS

Tourism in GMS is significantly and rapidly growing. More and more areas have been promoted and introduced for both domestic and foreign tourists. Ecologically sensitive areas, those where natural resources are critically endangered by physical changes and which contain a great diversity and interdependence of living habitats, have been experiencing such increase in visitation (UNWTO, 2004). Sensitive areas hold the main assets on which the tourism activities and services occur. Any changes in the component of an ecosystem will have effects on the entire system.

2.3.1 Economic changes

Tourism activity is an increasingly important contributor to economy in GMS. The most obvious and tangible benefits are income, foreign exchange earnings, tax revenue and generation of employment. As mention, tourism is the important economic sector in the GMS, it can be seen the size of tourist economies in table 1.

Table 2.1: Size of Tourist Economies in 2005

<i>Country</i>	<i>Tourist arrivals (m)</i>	<i>Tourism revenue (\$m)</i>	<i>Tourism revenue as % of GDP</i>	<i>Total export earnings (\$b)</i>	<i>Exports as % of GDP</i>	<i>Tourism revenue as % of exports</i>
Thailand	11.57	9,591	5.4	110.18	62.53	8.7
Vietnam	3.47	2,520	4.8	32.44	61.16	7.8
Cambodia	1.42	832	15.1	3.01	54.53	27.6
Lao PDR	0.67	147	5.1	0.55	19.23	26.7
Myanmar	0.23	153	1.4	3.81	34.11	4.0

Source: Social Research Institute, Chiang Mai University

Table 2.1 shows the proportion of tourism income as a proportion of export value and GDP for the Mekong countries. According to national planning and development in GMS countries, governments try to enlarge the tourism industry of the countries in order to gain economic benefit. There is no doubt that the development from tourism activities and services bring inflow of income (including foreign exchange from international tourism) employment and contribution of government revenues through taxes. However, there are positive and negative effects from the changes of economic in the destination as followed (Jamieson, 2004)

a) Economic Benefit

- Generate local employment and new job opportunity from tourism sector
- Stimulate profitable domestic industries hotels and other facilities, restaurants and other food services, transportation systems, handicrafts and guide services.
- Generate foreign exchange for the county and income to local economy.
- Increased tax revenues from tourism activities and services to the government
- Increased entrepreneurial opportunities to provide goods and services not already available in the community and create new tourist product

b) Economic impact

- Inflated prices as result of local business attempting to raise profits from tourism services.
- Increased cost of living in the local community of destination.
- Inflated property values beyond the reach of local communities which will drive them out.

As the tourism sector contributes the economic development in the destination, it creates both benefits and impacts on the area to various stakeholders. Investor from outside who came to the destination and grabbing the benefit of economic development while vulnerable group from economic impact is the poor in local community. For example, as tourist numbers have grown in Luang Prabang in Lao PDR, demand for food has also

increased. As the result, the price of food in the town has rising while local residents particularly the poor has adversely impacted from that and similarly on other consumer goods. Furthermore, land prices have increased in the area as a result of tourist facility development, leaving many local people unable to afford to purchase land. Moreover, local people who are the owner of land and property in the business area, they sell their land to investor and move out to other city (UNESCO, 2004). Consequently, part of the tourism activities, the services and the economic effects lead to the effect on society in the destination that will examine in the following section.

2.3.2 Social changes

Social change is a dynamic process with numerous internal and external factors contributing to this change. People of the local community are both positively and negatively. In term of urban sociology, the effect from development and the tourism growth also bring the impacts from urbanization to mentality and the life style of local people. For example, Chiang Khan District , the new destination in Loei Thailand, there is the debate between local people and tourists on the topic of establishing the convenience store (7-Eleven) in term of the service fulfill the need of tourists but lead to change local people behavior (*www.chiangkhan.com, Access, September 18, 2010*). Moreover, the behavior, speech and attire of community members are also influenced by visitors and people from Bangkok. In the case of Pai District, Mae Hong Son province in Thailand, the outside entrepreneurs played a key role in developing on the area. They modify houses or building as resorts, coffee shops and restaurants to attract Thai and foreign middle-class tourists. The interaction of different cultures has gradually transformed to the modernization (*Lortanavanit, 2009*). Refer to the social effect and urbanization, this link to the increasing of crime and drug abuse (UNESCO, 2004)

It is important that many cities are not only the tourism destinations but also the home of thousands of people. It is the place where people have their traditional culture and their own history. Unfortunately, most tourism development in many destinations often brings the effect of urbanization to the local society and change social element such as costume, local culture, believes, traditions, custom, the way of people thinking and livelihood. This social impact of tourism is result of interaction among tourists, local population and investors from outside. Increasing of visitors, changing to urbanization, rising density and rapidly changing lifestyles are lead to a number of environment issues in the tourism destination.

2.3.3 Environmental changes

The rapid changes in the destination have significant stress on the environment issues by changing consumption pattern and expansion of economic activities. The impacts are often anthropogenic, i.e. caused by the relationship between human beings and the environment. Tourists through their daily consumption habits such as transportation, accommodation, food and recreation, then the environment impact as these products and services require the use of recourses. The environment impact issue as following;

a) Land-used

The growth of tourism services and activities and the pressure of land use have seen in the many destinations. The boundaries of tourism activities encroach on untouched and cultivatable land. Tourist attractions need to be developed facilities and infrastructure such

as roads, hotel, resort and car parking for tourism services. The construction and maintenance of these would also have impacts on the environment. In can be seen in Luang Prabang, the wetlands aligned throughout the town are vital to the ecology of the flood-prone town which provide a vital retention capacity for excess water during the rainy season. They are also areas where local people cultivate vegetables and fish. Unfortunately, some landowners have filled-in ponds to extend or construct new buildings thereby jeopardizing fragile ecosystems (UNESCO, 2004). In the case of Pai District, Mae Hong Son province in Thailand, the investors often build home stay or resort overlap into Pai river boundary in order to attract tourists but such construction lead to river bank erosion (Lortanavanit, 2009). The change of urbanization expansion and landscape diversity in the destination is caused by tourism activities. This has led to the negative ecological effects on the existing national resource on the destination area (Mei Li and Chen, 2010)

b) Solid waste management, Wastewater management

Apart from supporting tourist activities in tourism destinations, tourism also contributes additional environmental burdens due to different consumption needs and lifestyles. With increasing visitors, rising use of plastic and other packaging, there is a huge of solid waste and putting pressure on the destination area.

In Luang Prabang reviewed by UNESCO in 2004, there is amount of solid waste that is not collected because of insufficient equipment, poor road and lack of budget. Unfortunately, people in the village often burned the rubbish or dumped in the waterways. Moreover, guesthouses, restaurants and laundries generate substantial amounts of wastewater, which is not currently being adequately managed. This pollution not only damages local ecological systems and reduces biodiversity but can make the wetlands breeding grounds for infectious disease. Dumping of waste into waterways also puts the town's freshwater resources in danger. It is clear that without a suitably funded and effective solid waste management system the impact of increased tourism and consumption in the community could lead to serious aesthetic and ecological impacts.

c) Traffic and Pollution

Tourists have intensified in the destination area with the increasing automobile, and its impacts. The increase in motorized vehicles in the destination has been one of the major pollution issues. Air pollution is a result of emissions from vehicles with potentially damaging consequences for local ecosystems and community health (Andereck, 1993). The traffic, particularly air traffic, has also caused noise pollution which diminishes the tranquility of the area and is disturbing for local residents. These traffic and transportation impacts indicate a need for a broad-based planning process that seeks to find transportation solutions that are acceptable to all stakeholders.

d) Other effects

Some tourism activities have significant effect on the destination area: For example, Boat Racing Festival in Vang Vieng held in mid October every year, while there is the festival in the area, tourism activities have polluted in the river and eroded riverbank. Furthermore, the waterways of Luang Prabang are also being impacted by the additional water traffic brought about by tourism activity. Currently over 500 boats ply the local rivers, transporting people and goods. Many of these boats are used primarily for transporting

tourists. The boats cause significant noise pollution which is very disturbing for residents and is having an adverse effect on the nesting and mating habits of birds in the area. According to local residents the increased number of boats is also intensifying riverbank erosion (UNESCO, 2004).

The tourism in Amphawa, the destination in Samut Songkhram Province, Thailand, in the recent year, the environment problems from tourism are growing significantly from motorboat of tourists to see the fireflies. With air pollution, noise pollution and the waves from motorboats that wash down riverbank, these lead to land erosion and the enormous number of fireflies decreasing (Silapacharanan, 2008). While tourism and associated development have definitely intensified environmental problems, the capacity of environment, ecological systems and the increasing of tourist population must be considered.

2.4 Sustainable Development of Tourism

There has been an increasing interest in the impact of tourism over the decade. Therefore, the sustainable tourism development was studied, in order to make awareness for development related tourism and consider for the less effect on stakeholder and the destination areas. World Tourism Organization (1999) defined that sustainable tourism is the tourism that manage all resources in a way that economic, social and maintaining cultural integrity, essential ecological processes, biological diversity and life support systems.

Therefore, Sustainable tourism activities have minimal impact on the environment and culture of the host community. Moreover, sustainable tourism is also defined as a process which meets the needs of the present tourists and host communities whilst protecting and enhancing needs in the future

The principles of sustainability refer to the environmental, economic, and socio-cultural aspects of tourism development, and must balance between these three dimensions to guarantee long-term protection. Thus, sustainable tourism should follow; (UNWTO, 2004)

a) Economic

Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.

b) Social

Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.

c) Environment

Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.

However, sustainable tourism development requires the informed participation of all relevant stakeholders as well as strong political leadership to ensure wide participation and

consensus building. Therefore, the local authority of the destinations play important role to conduct sustainable tourism development.

2.4.1 The Role of Local Authorities in the Sustainable Tourism

Normally, many tourism developments have depended on initiatives taken by the private sector. In the GMS countries, local authorities have not been closely involved in tourism development. Moreover, the general of local authorities have little experience of tourism planning, development and management (*Kaosa-ard, 2007*).

Refer to Local Agenda 21 has define local authority as the level of government closest to the people. Local authority's position in society has a major role in promoting and working towards sustainable development. It is the political and administrative structure most closely related to local development. The direct involvement and vision of the elected members is centrally important, as are the internal performance of local authorities and their overall approach to the planning, development and servicing of their areas (*Department of Environment, Heritage and Government, 1995*). Therefore, in recent year, the key role of local authorities becomes the important organization of sustainable tourism development in the destination.

2.5 Environmental Management Measures (EMMs) to make Sustainable Tourism

Within the overall context of the sustainable development and the responsibility of local authority in the destination, the management of the urban environment must recognize that all forms of management occur within a specific economic, social and environment issue. There is an urgent need for strengthening and building the capacity of local authority to act in more effective ways with the aims of sustainability.

In urban environmental management (UEM) approach, use EMM as measures for environmental improvement and protection. The set of social cultural and environment is a component of urban environment. Therefore, this research will apply of EMM as a set of instrument for protect environment and make sustainable tourism development in the study area. Environment Management Measures (EMMs) comprised of three set measures namely command and control measures, economic measures and suasive measures as following.

a) Command and control measures

This instrument will be enabling local authorities to exert strict formal control over certain aspects of tourism development and operation (*UNEP/WTO, 2005*). Command and control measures are the legal and enforceable which main objective is to reach a desired, prescribed environmental quality target or performance standard by regulating individual and firm behavior or performance (*Foo, 1996*). The example of command and control measures will be seen as following;

- **Legislation, regulation and licensing** are inter-related tools that can be used to strengthen sustainability by setting out requirements that are compulsory and enforceable. These lead to sanctions and penalties if they are not met. Legislation provides the local authority to enforce requirements, which are defined and elaborated by regulations. Licensing is a process of checking and signaling compliance with regulations or otherwise identified obligatory standards, conveying permission to operate. (*UNEP/WTO, 2005*)

Local authorities are in a position to apply laws, regulations and penalties to control aspects of tourism business, services and activities in the destination. The operations of legislation will influence tourism activities and business in community such as home stay licensing and permission of business.

- **Land use planning and development control** are inter-related tools which can be used to influence the location and type of new tourism activities and to control potentially harmful development (*UNEP/WTO, 2005*). Denman (*2007*) defined that the effective land use planning and control used can cover the sitting scale and design of new development for sustainability. Land use planning can be helpful, and provided a clear requirement to developers. Furthermore, development control can refer to measurement instruments that used to determine levels of tourism impact that affect the change in the area.

- **Measurement instruments** can refer to sustainability indicators and identifying tourism limits. Indicators can be used to set targets and to measure success. Indicators might cover, for example, the number of visitors each month, water use and the percentage of visitors using public transport. It is important to monitor by used such indicators and aims to identify of approximate carrying capacities or limits of acceptable change (*Denman, 2007*). This limit can be very useful in determining policies on the acceptance of nature in a tourism destination

b) Economic measures

Economic measures are used to influence behavior and impact through financial means and sending signals via the market. Robert et al (*1992*) identify economic instruments which provide firms with greater flexibility and incentives to look for more effective ways of making sustained environmental progress. The example of economic measures will be seen as following;

- **Taxes and charges**, these measures work through factors, namely cost, price and income, which have long proven to be major influences on the choices and decisions made by enterprises and consumers. *UNEP/WTO (2005)* identified that there are two important consequences in term of taxes and setting charges. (i) Behavior of consumers and enterprises can change through their effect such as pollution and pattern of demand on prices, costs and income. (ii) Raising revenue from consumers and enterprises
However, this is indirect instruments; it is difficult to be sure and measures the net effect from their activities.

- **Financial incentives and agreements** are economic instruments that influence the behavior of enterprises by providing them with specific financial support or commercial opportunities provided that they act in a certain way. (*Denman, 2007*). For this instrument, centre government may involve in order to provide financial support

c) Suasive measures.

Suasive measures mean programs of persuasion that appeal to a person's sense of moral values or civic duty; that is, to get him to refrain voluntarily from doing things that degrade the environment. Basic principles of these measures are reliance on voluntary compliance by polluters, environmental education and awareness rising (*Amin, 2005*). Voluntary initiatives such as certification schemes, prizes and awards are provide to tourism enterprises in order to encourage their operations and activities more sustainable. Capacity can achieved to strengthen awareness of sustainability issues. Guidance on good practice is

provides through the provision of relevant training and advance to enterprise and to local communities (*Denman, 2007*). Local authorities can deliver such services directly which can be strengthened by encouraging enterprises to more sustainable operate.

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Chapter 3

Research Methodology

As the concerns of the research, the methodology is a description of the process how to achieve the research objective. Aim of this study is to propose strategies for local authorities in GMS. It required the data and information within the real context of tourism area. Therefore, the study was conducted in the case study approach which brought understanding of complex issue through the purpose of the research

3.1 Case Study Approach

As mention in chapter 1, the case study approach was desirable for this research in order to investigate a contemporary phenomenon within a real context. Regard to the main objective, the research result enabled a researcher and local authorities in GMS understand the management of ecologically sensitive tourism destinations for long-term protection. In order to investigate an overview of the effects from tourism activities and services, the data and information required reviewing multiple case studies in GMS. The evidence from the multiple cases was often considered more compelling and the overview of the study was more robust (*Herriott & Firestone, 1983*). Therefore, the multiple cases study was used for the research methodology.

3.1.1 Case Studies Selected

The multiple cases selected for the study of ecologically sensitive tourism destination in the GMS were chosen of the recently emerged destination in the middle of GMS that was facing the problem from tourism development. The criterion of case selection was analyzed by the similar attraction on the area in order to draw the inference of tourism effects of the similar cases in the GMS. The scope of case study area was focus in the middle part of the Mekong river basin. The middle area of GMS had the similar geography and topography which illustrated the same ecosystem in the study. Therefore, the multiple case studies in this research were selected in the three cases which are the same of nature based tourism and have river attraction in the middle part of GMS namely (i) Vang Vieng District, Vientiane Province in Loas (ii) Pai District, Mae Hong Son Province in Thailand and (iii) Chiang Khan District, Loei Province in Thailand. The three cases were broken down into two types which were the tourism destinations with facing the tourism effects development currently and the new tourism destination is growing up.

The cases in the first group were selected the currently tourism destination that is facing problems of tourists overload during high season. These cases were reviewed based on secondary data in order to investigate the tourism developments affect the ecologically sensitive areas. The two cases were chosen as (i) Vang Vieng District, Vientiane Province in Loas (ii) Pai District, Mae Hong Son Province in Thailand (*represented the recently emerged destination in GMS*).

The second type of case was the detail case study that represented the newly emerging tourism destination in GMS. The case selected was Chiang Khan District of Loei province in Thailand. It is the new destination that was promoted by TAT since 2009 and already increasing a number of visitors.

Figure 3.1: The Three Cases Study

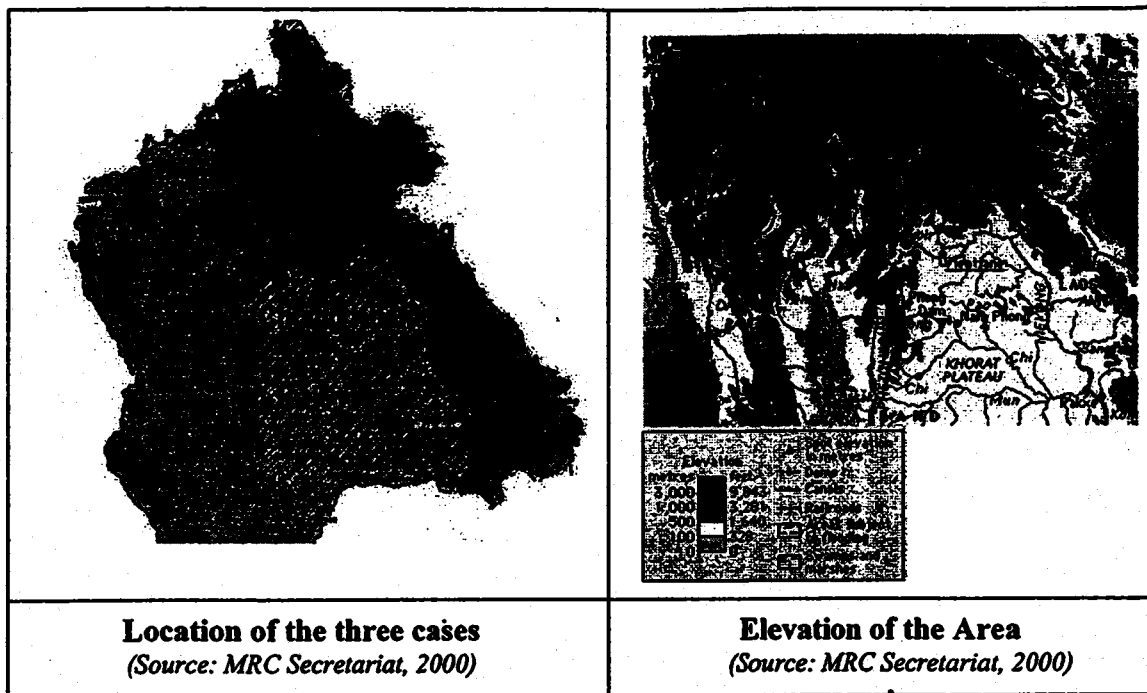


Figure 3.1 shows locations of the three cases selected in Thailand and Lao PDR. As the neighbor of three locations, most of these destinations have the similar elevation and geography

3.1.2 The Three Cases Selected

(i) Vang Vieng in Laos

Because of concentration of attractions in the vicinity of the Vientiane and Luang Phrabang, Vang Vieng had a potential for tourism growth. Vang Vieng District is the one of several places, which can boast of natural beauty, for local and foreign tourist attraction in Lao PDR. There was a rapid increase of tourism facilities and development. Furthermore, the number of tourists was increasing around 60 percentage from 1996 to 2000 (*Phimmachack, 2001*)

(ii) Pai in Thailand

Pai is a small town in the northern Thailand's Mea Hong Son Province. It lies along the Pai River. Today, Pai is an important tourist attraction in northern Thailand, contributed to economic development and generated employment. In the high season of November through March there were large numbers of tourists by attracting 119,407 tourists in 2006 (60,784 Thai tourists and 58,623 foreign tourists) and generated an income of 478 million baht (*Pai District Office*)

(iii) Chiang Khan in Thailand

The new tourism destination case in GMS selected Chiang Khan District, Loei province in Thailand. The destination that was promoted to be the new tourism area because TAT had

seen the potential of natural tourism attraction since 2009 then became the famous destination with majority tourists during high season (TAT review, 2010).

In term of the results and the lessons learnt from the general multiple case studies in GMS were used to control the tourism growth and the tourism development management in the new tourism destination of Chiang Khan

3.2 Data requirement

In term of the research question and objectives of research, there were three types of data and information was required for data analysis. The data requirement, data collection method and sources were shown in the table 3.1

Table 3.1: Objective - Data Requirement - Data Collection – Sources

Objective	Data Requirement	Data Collection	Sources
1. To provide an overview of the effects of tourism activities and services on the relatively new tourism destinations in GMS.	<ul style="list-style-type: none"> - The data on the overall context of the case study area, the main activities and tourism services in order to identify the change and development in the areas. - The information required to indicate clearly the current state of environment including demographic, geographic, topographic, land use and the exactly negative effect from tourism development to the nature resource in the areas. 	<ul style="list-style-type: none"> - Observation - Questionnaire - Interview 	<ul style="list-style-type: none"> - Related report from municipality, DP&E, DPW&C, TAT - Key informant (local people, tourists, investors, municipality, DP&E, PW&CP)
2. To examine the environmental management used by local authority in response to the effects of tourism development and the effectiveness of their management.	<ul style="list-style-type: none"> - Identify the environmental management used by local authority - Identify the potential and the weakness of local authority in management 	<ul style="list-style-type: none"> - Observation - Questionnaire - Key informant 	<ul style="list-style-type: none"> - Journal, studies, publication, - Related report journal, studies from municipality, PW&CP, - Key informant (local people, investors, municipality, PW&CP)

<p>3. To examine the Environment Management Measures (EMM) used by local authorities and the effectiveness of their application.</p>	<ul style="list-style-type: none"> - The clearly define the used of EMMs by local authorities in the case study area, broken down into three types. - Command and Control Measure - Market Based Measures - Suasive Measures 	<ul style="list-style-type: none"> - Observation - Questionnaire - Key informant 	<ul style="list-style-type: none"> - Journal, studies, publication, - Related report journal, studies from municipality, PW&CP, - Key informant (local people, investors, tourists, municipality, PW&CP)
<p>4. To propose the application of EMMs for local authorities in the GMS to strengthen capacity to manage in the future tourism growth on ecologically sensitive tourism destination.</p>	<ul style="list-style-type: none"> - All data and information above need to be used for analysis and propose the guideline. 	<ul style="list-style-type: none"> - Observation - Questionnaire - Key informant 	<ul style="list-style-type: none"> - Journal, studies, publication, - Related report journal, studies from municipality, DPW&C, - Key informant (local people, investors, tourists, municipality, DPW&C)

Table 3.1 shows, the objective that the research aims to be study following by data requirement that need to investigate for supporting information and data using for analysis in the research. Most of data and information requirement were collected both secondary data and primary data that detailed in data collection method.

3.3 Data collection Method

Both secondary and primary data were collected for the research though the multiple case studies. As mention in the case study approach, the multiple cases were divided into two categorizations; the currently tourism destinations facing in trouble and the new tourism destination. The data collection procedure was in the figure 3.2.

Figure 3.2: Overall Data Collection Procedure

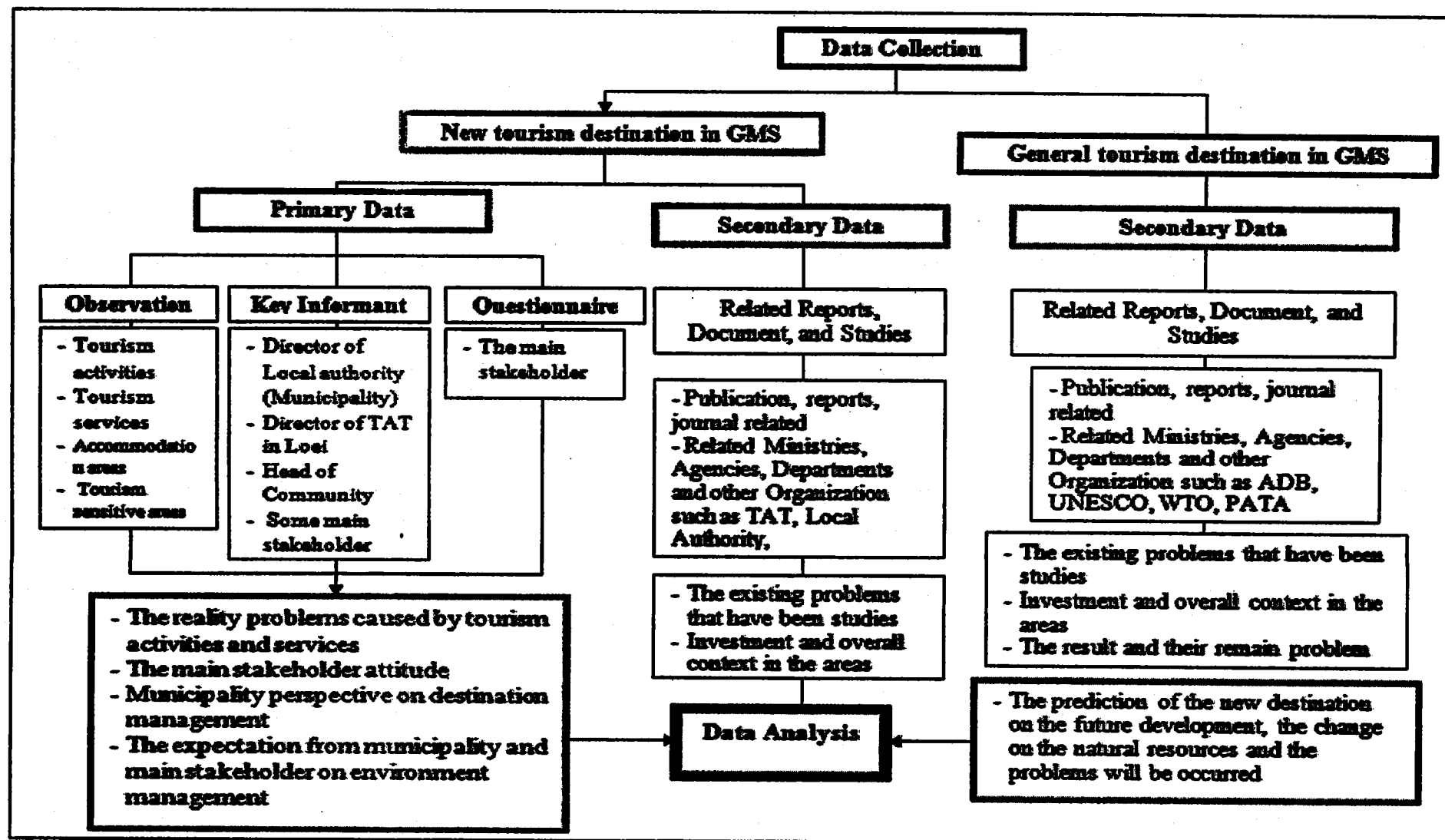


Figure 3.2 shows the overall data collection procedure, the data collection on the multiple case studies based on secondary data and primary data. The cases of general tourism destination in GMS was collected based on only secondary data to investigate environment effects on the sensitive area and used these evidence to identify the growth and effects that will occur in the new sensitive tourism destination in the future. In the specific case of the newly tourism destination was collected both of secondary data and primary data.

3.3.1 Secondary data

Secondary data was including the overall context of the study area such as demographic, geographic, and topographic and other data related tourism development on the areas. The existing effects and problem that have been studied from many available sources for instead, UNESCO, ADB, UNWTO, TAT, other related journals and previous studies and related report from;

Municipality of Chiang Khan
Department of Public health and Sanitation in Chiang Khan
Department of Public Works and Town & Country Planning in Loei Province
Tourism Authority of Thailand in Loei Province

3.3.2 Primary data

Primary data was collected from various sources to investigate the existing tourism development and the reality problems caused by tourism activities and services. Moreover, the study was clearly defined main stakeholder attitude, local authority perspective on destination management and the expectation from various stakeholders on environment management. The primary data used methods of site observation, questionnaire survey and interview as below.

- **Observation**

The information was observe and collected by reflected in the real problems of environment of land used changed, solid waste and wastewater management. Moreover, the social changed and effects from economic to local people were also observed. The visual inspection on potential attraction sites, land used pattern, urban infrastructure and facilities were undertaken. The observation illustrated the better understanding of the overall context and more information on the study area's tourism status.

- **Questionnaire**

The questionnaire was used for collecting data on the percentage of demand from tourists and supply from tourism services. The structural information was asked of the perception and attitude from various stakeholders on tourism development and management in the study area as well as the expectation from local authority and main stakeholder on environment management.

- **Interview**

Both formal and informal interview were conducted from occupational groups who had experience in running tourism development business and know the growth of economic in the destination. Moreover, local authority was the key informant who is the major

responsibility of locality development and the effectiveness of environment management measure by municipality.

3.4 Method of Analysis

Base on the data required, all the information were used by researcher to evaluate the transition from an existing tourism development to the future growth and its effect on environmental resource. Then, researcher identifies the possibility of setting Environment Management Measures (EMMs) though the guideline proposed for long-term resources protection and its application that will be used by local authority. Moreover, the effectiveness of municipality and the gap of management were also evaluated.

Regard to data requirement and methodology that were used in the research, these lead to achieve the main objective of the research. That enabled researcher and local authority deeply understanding how to prepare and manage the new sensitive tourism destination in the locality for the future growth and be sustainable tourism.

Chapter 4

Tourism Development in Ecologically Sensitive Destinations in GMS

Regard to research methodology in chapter 3, there are two stages of data analysis. Firstly, it provides an overview of tourism development in ecologically sensitive destinations with GMS based on analyzing secondary data. The second stage of the analysis is based on a new tourism destination in GMS. The case of Chiang Khan is analyzed bases on both primary and secondary data.

In this chapter, the discussion is centered on stage one. The purpose of this analysis is to clarify how tourism developed on ecologically sensitive destinations and what effects of their ecosystems, and how local authorities responded. This analysis is largely based on the case of Vang Vieng and Pai districts which have experienced tourism growth since 1980s. The analysis on this stage was used DPSIR framework as Figure below.

Figure 4.1: DPSIR Framework for analysis of Chapter 4

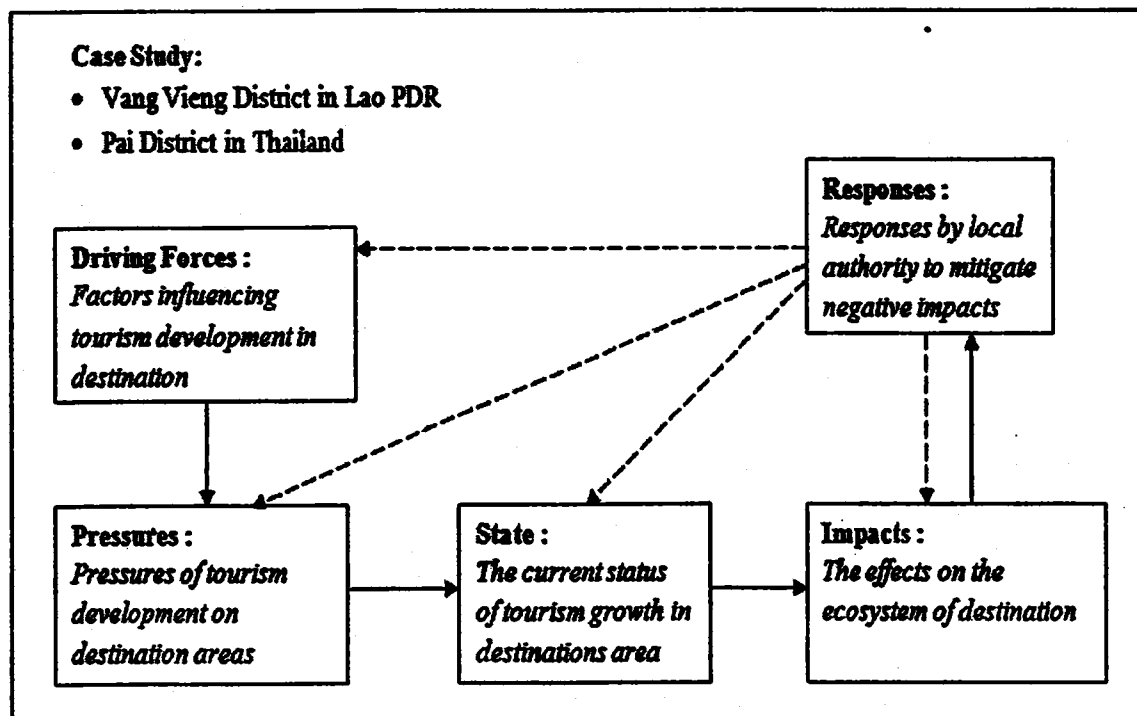


Figure 4.1 shows the analytical framework which is used in this chapter. DPSIR framework is developed by OECD (Organization for Economic Cooperation and Development). It is popularly used to analyze the stage of environment. This assessment can lead to identify gaps in responses by local authority and the key factors causing the ecosystem effects in the sensitive destination area. All finding of this chapter would greatly support that general of ecologically sensitive tourism development in GMS. Then, key main factors were used to analyze in the new tourism destination for the next stage

4.1 State of Environment in the Two Case Study Areas: Vang Vieng in Lao PDR and Pai in Thailand

In term of ecologically sensitive area, it refers to two characteristics of the areas. First, the areas refer to the unique natural resources or unique cultural heritages exist including unspoiled natural or mostly natural areas (UNECE, 1997). Second, the critical ecosystems and natural areas are at greatest risk due to high impacts of human activities to the interconnection in ecosystem and may intensify pollution and any endangerment (World Resources Institute, 2008).

This section presents the process of tourism development and growth of tourism in the selected ecologically sensitive destinations which were once the unspoiled natural areas.

The two cases used for this analysis as followed;

- Vang Vieng District, Vientiane Province in Lao PDR.
- Pai District, Mae Hong Son Province in Thailand.

These two cases were analyzed within the framework of DPSIR as shown in analysis framework (Figure 4.2).

Vang Vieng District:

It is situated in Vientiane province in the north of Lao PDR. It is 160 kilometers northern part of Vientiane Capital and 210 kilometers south of Luang Prabang. Vang Vieng district covers an area of 104, 561 ha (1,045.61 sq. km.) and its urban area covers 1670 ha (16.7 sq. km.) Vang Vieng district is divided into 64 villages. They have 10,187 households. The total population is 51,734, with 25,706... females. The average population growth in the district is 1.6% per year.

Figure 4.2: Location of Vang Vieng District, Vientiane Province in Lao PDR



Source: www.villanamsong.com
(Online Access: 10 December, 2010)

The population density is 243 people per square kilometer. About 30% of the district population is settled in Vang Vieng town. Most people are farmers, traders and service

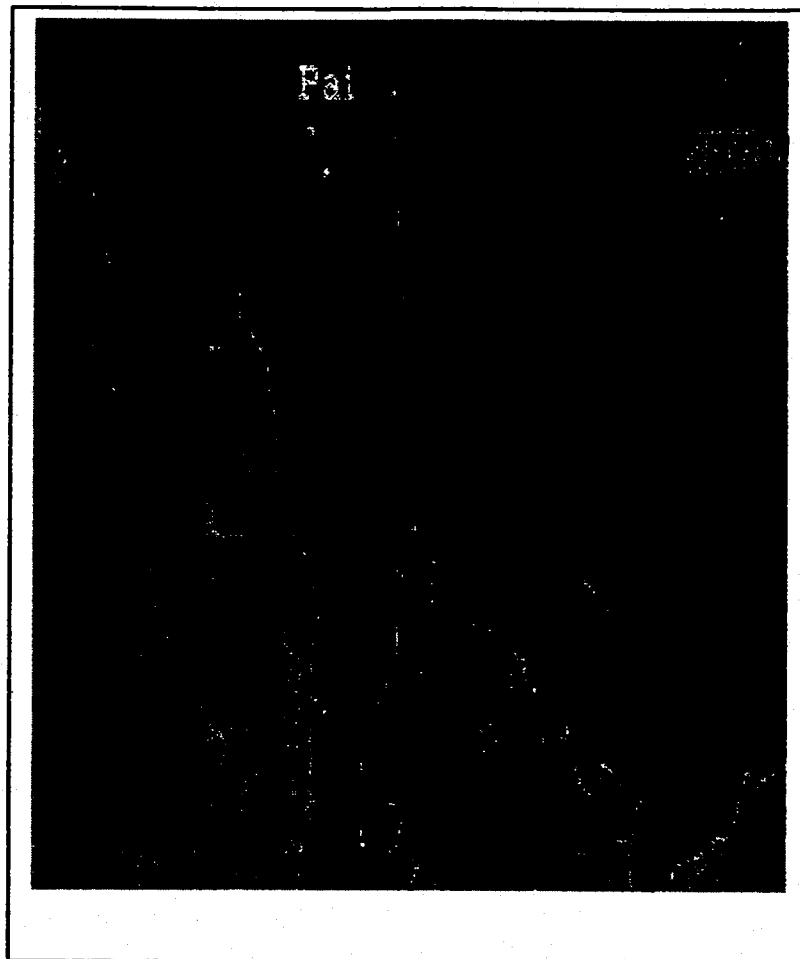
providers.. Vang Vieng Town is one of the most popular tourist attractions for both local and foreign tourists in Lao PDR. The North of Vang Vieng is characterized by mountainous areas with many curves on its road and highland communities, and the South with relatively flat landscape, more accessible road and river with islands.

Pai District: it is situated in Mae Hong Son province in the north of Thailand. It is 111 kilometers north of Mae Hong Son's Muang district and 150 kilometers from Chiang Mai's Muang district. Its area is 2,244.7 sq. km. Pai district is bordered as follows:

- North: Shan State of Myanmar
- East: Chiang Mai Province
- South: Chiang Mai Province
- West: Muang district and Pang Ma Pa district of Mae Hong Son Province

The total population of Pai according to household registration in 2003 was 27,370 people in 10,206 households (Pai District Office, summary report, 2008).

Figure 4.3: Location of Pai District, Mae Hong Son Province in Thailand



Source: www.maehongsontravel.com
(Online Access: 10 December, 2010)

The population density is 13 per square kilometer. Farming is the major occupation of local people. About 53% of the population is in farming households. Pai was a small town as a peripheral area, heavily forested and mountains.

4.1.1 River based Tourism Related Ecosystem

Tourism based tourism refer to the relationship between tourism and river. Rivers provide the attractions and aesthetic for tourists. The focus of the study is on ecosystem. Therefore, the major concern could refer to tourist' activities related tourism ecosystem and tourists' use of major riverine system. The relationship of tourists and the river in the destination classify into two areas. First, tourism beside the river is the use of riverside setting as a tourism resource. Second, tourism on the river is the major tourism activities on the river such as cruising, sailing and rafting. (Cooper & Prideaux, 2009)

The roles of river in tourism perspective are defined by Predeaux, Timothy & Cooper in 2009. There are direct and indirect roles of river in tourism destination.

“Direct roles are (i) Location for activities and places of tourist interest, including built and natural environments (ii) Transportation (iii) Providing recreational activities, including water sport and fishing (iv) Supply of potable drinking water. Indirect roles are (i) Food source, the supply of fish and the agriculture that the river supports (ii) Disposal of human waste (iii) Provision of hydroelectricity.”

Both Vang Vieng and Pai are promoting nature based tourism and both have rivers as main attractions that flow along the town. Vang Vieng and Pai were small rural towns, with unspoiled natural beauty before the onset of tourism in 1980s. The two cases of Vang Vieng and Pai had changed their ecosystems to be the ecologically sensitive areas because of tourism activities and the use of river system in the area. The discussions of tourism effects in the two cases are available in the next section which examine followed DPSIR framework.

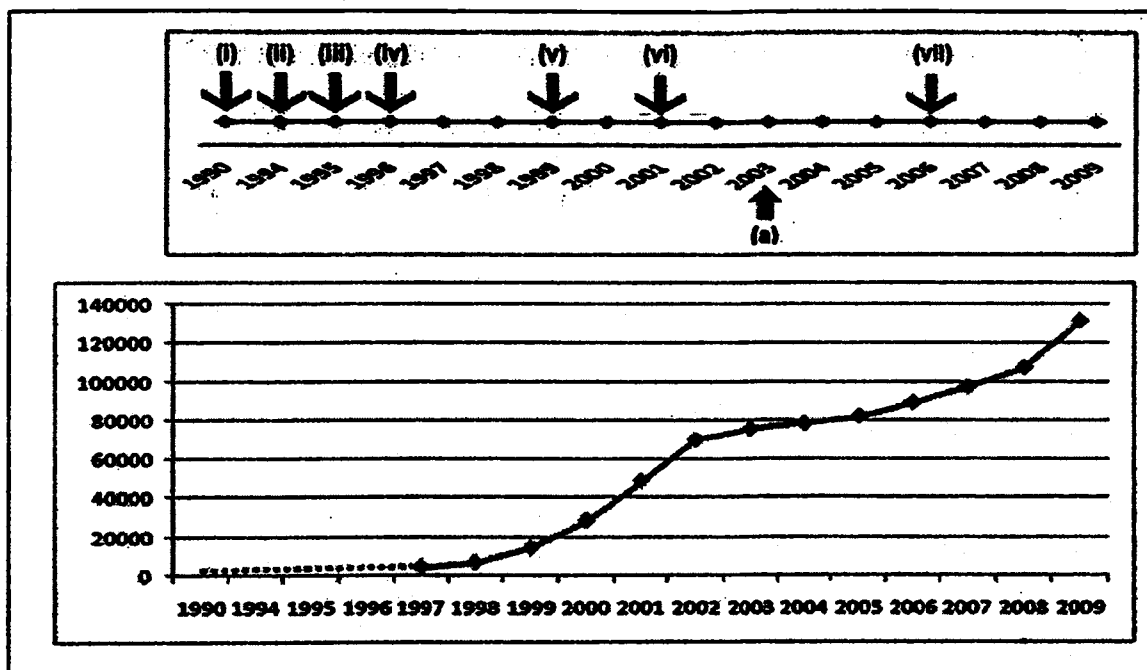
4.2 Driving Forces of Tourism Development

The discussions of this section were the influence and the trigger point to develop tourism in the destinations area. The main focus was on policy, plan, program and project which was implemented and contributed tourism activities in the areas.

Vang Vieng District

Tourism development in Vang Vieng started since 1990 with the establishment of tourism policy from the government of Lao PDR. Figure 4.4 shows the graded tourism development in Vang Vieng. The graph illustrates relationship of driving forces that influences to develop tourism in the area and increasing of visitor arrival in Vang Vieng.

Figure 4.4: Period of Tourism Development Related to Driving Forces and Increasing of Tourism Demand in Vang Vieng Destination



*Note: (i), (ii), (iii), (iv), (v), (vi) and (vii) = the policy, plan, program and project that direct and indirect influences to develop tourism in Vang Vieng

(a) = SARS and Bird Flu Epidemics in Asia (2003) which impacted the tourism sector in Lao PDR

..... = the estimated number of tourists arrivals

———— = the number of tourists arrivals according to secondary data

Source: Hasen Partnership (2009), Phimmachack (2001), Rogers (2009),

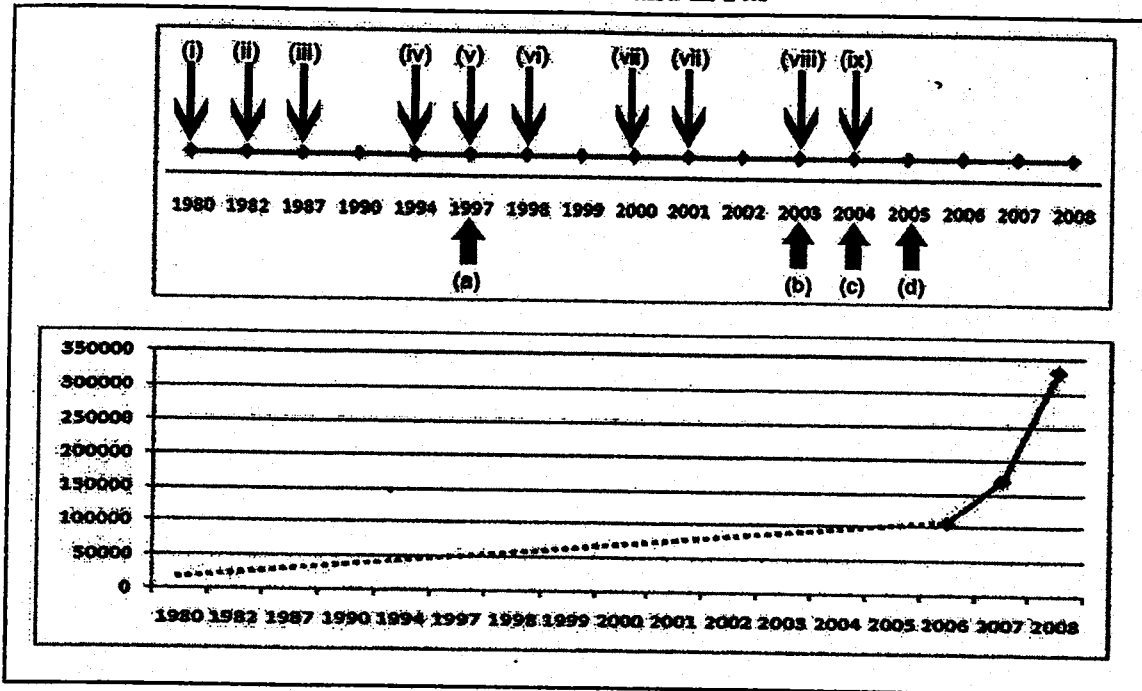
UNESCO-Lao National Tourism Authority (2002), Xayviliya (2010)

In 1990 (i), the government of Lao PDR established a policy on tourism development. Meanwhile, the first Thai-Lao Friendship Bridge opened in 1994 (ii). The bridge was built over Mekong River connecting Nong Khai province in Thailand and Vientiane Capital in Lao PDR in order to develop transportation and also contribute to tourism between Thailand and Lao PDR. In 1995 (iii), Luang Prabang was declared a world heritage site by UNESCO which drew international attention to Laos and sparked a tourism boom. In 1996 (iv), five year National Socio-Economic Development Plan (1996-2000) placed emphasis on tourism development. The policy states that tourism is one of the eight priority development section. In 1999 (v), the Lao National Tourism Administration (LNTA) launched tourism campaign of “Visit Laos Year” which led to increasing of visitor numbers in Lao PDR. As the same result in Vang Vieng, the number of tourists was sharply rising from 1999 to 2002. Then, the graph of tourist’s number had small increasing after 2003 (a) because of SARS and Bird Flu epidemic in Asia. In addition, the tourism priority development program was also in The National Socio-Economic Development Plan from 2001-2005 (vi) and 2006-2010 (vii). Mostly policy, plan, program and project that have mentioned, it placed emphasis on Vientiane Capital and Luang Prabang which is the major tourism destination in Lao-PDR. However, it is the main factor to contribute tourism in Vang Vieng because Vang Vieng town lies central between Vientiane and Luang Prabang. Vang Vieng town is often used as a tourist pit stop between these two Lao cities. It can be seen in Figure: 4.4 that the number of visitors in Vang Vieng continues increasing after place the tourism policy involving Vientiane and Luang Prabang areas.

Pai District

Tourism in Pai case was developed in the 1980s by promoting from Tourism Authority of Thailand (TAT). The influence of tourism development in Pai was not only from TAT but also the factor international level and local level which presented as Figure 4.5.

Figure 4.5: Period of Tourism Development Related to Driving Forces and Increasing of Tourism Demand in Pai



*Note: (i), (ii), (iii), (iv), (v), (vi), (vii), (viii) and (ix) = the policy, plan, program and project that direct and indirect influences to develop tourism in Pai

(a) = Financial crisis in Thailand (1997)

(b) = SARS and Bird Flu Epidemic in Asia (2003)

(c) = Indian Ocean Earthquake and tsunami in the south of Thailand (2004)

(d) = Flood in Pai (2005), ** (a), (b), (c) and (d) have effects to tourism sector in Pai

..... = the estimated number of tourists arrivals

———— = the number of tourists arrivals according to secondary data

Source: Manit (2007), International College of Mekong Region (2009), Lortanavanit (2009), Pai District Office Report (2008), Putwanakul (2008)

In 1980, The Tourism Authority of Thailand began promoting tourism in the north of Thailand. While, Route 1095; the main Chiang Mai – Mae Hong Son road continued upgrading and paved completely in 1982. Then in 1987, TAT launched “Visit Thailand Year” campaign, Mae Hong Son town was included in the focus of this tourism campaign. In 1994, there was the first conference in tourism sector development the Golden Quadrangle Project, which was supported by ADB. Then in 2000, there was transportation development of 10 provinces in the north of Thailand under the Golden Quadrangle Project. Mae Hong Son was one of the 10 provinces. In 1997, there was financial crisis in Thailand but it became the turning point in Pai. Young Bangkokians and unemployed turned the crisis into an opportunity to open small businesses in Pai such as souvenir shops, cafés and guesthouses. They promoted themselves through travel magazine and social network. Then, Pai had suddenly become a popular destination among Thai and foreigner tourists. In 1998, 2001 and 2003, TAT continued promoting tourism campaign to encourage tourism sector in Thailand namely “Amazing Thailand”, “Thai Tour Thai” and

“Unseen in Thailand” respectively. The number of tourists in Pai also continued increasing because of these campaigns.

In general, the main factors that influenced to contribute tourism development in Vang Vieng and Pai were categorized into three levels namely international, national and local level which are presented in Table 4.1.

Table 4.1: Driving Forces of Tourism Development in Vang Veing and Pai

	Vang Vieng	Pai
At International Level	<ul style="list-style-type: none"> • Opened the first Thai-Lao Friendship Bridge (1994) • Luang Prabang was declared a World Heritage site by UNESCO (1995) 	<ul style="list-style-type: none"> • Golden Quadrangle Project (<i>first conference of tourism sector in 1994</i>) • Golden Quadrangle Project (<i>Transportation development of 10 provinces in the north of Thailand in 2000</i>)
At National Level	<ul style="list-style-type: none"> • First tourism policy from Lao PDR government (1990) • Emphasized tourism policy and included tourism be one of the eight priority development program (1996-2000) • “Visit Laos Year” tourism campaign from the Lao National Tourism Administration (1999) • Five year of socio-economic development plan which including tourism development sector (2001-2005 and 2006-2010) 	<ul style="list-style-type: none"> • Promoting tourism in the north of Thailand by TAT (1980) • “Visit Thailand Year” tourism campaign by TAT and Mae Hong Son was included in the focus of tourism campaign (1987) • “Amazing Thailand” tourism campaign by TAT(1998) • “Thai Tour Thai” tourism campaign by TAT (<i>Encourage Thai people to travel within Thailand, 2001</i>) • “Unseen in Thailand” tourism campaign by TAT(<i>Encourage tourism in Thailand because the effects from SARS and Bird Flu in Asia, 2003</i>)
At Local Authority	<ul style="list-style-type: none"> • Transportation development project (<i>Not available</i>) 	<ul style="list-style-type: none"> • Upgrading of Route 1095 and paved completely in 1982

Source: Hasen Partnership (2009), International College of Mekong Region (2009), Lortanavanit (2009), Manit (2007), Pai District Office Report (2008), Phimmachack (2001), Putwanakul (2008), Rogers (2009), UNESCO-Lao National Tourism Authority (2002), Xayviliya (2010)

The number of visitor arrival in Vang Vieng and Pai was rising after the areas were placed these above policy, plan, program and project.

These were both directly or indirectly influence to develop tourism the two popular destinations. The analysis from this stage shows that most driving forces were from national level which influenced tourists flowing to the destination. It illustrates that policy from central government or tourism authority in the national level is the main influence to contribute tourism development in the destination.

The influx of tourists also play important role in the destination area. Visitors can draw tourism services development into the locality. In the next section presents the increasing of tourists that related tourism growth in the two destination cases.

4.3 Pressures of Tourism Development in Destinations

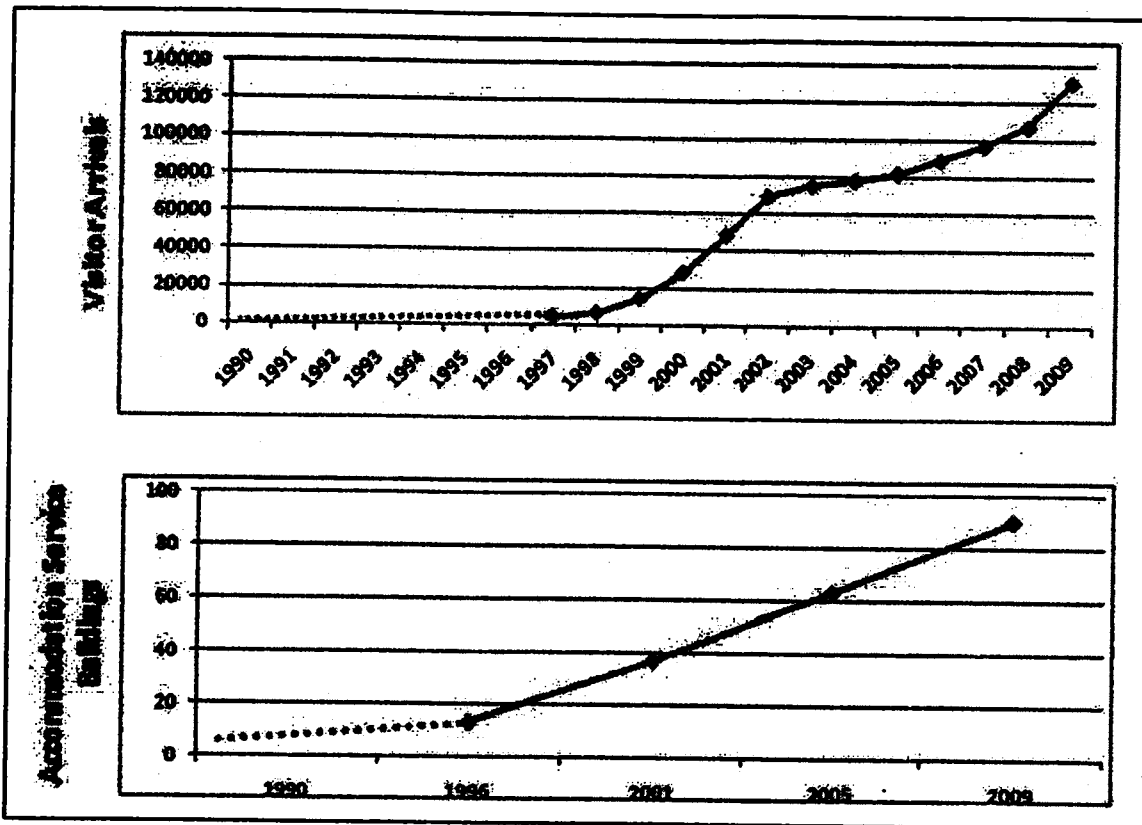
The development of tourism in destination area connects with tourism demand, supply of tourism services and tourist activities (*Cooper & Hall, 2008*). Normally, visitors travel to the destination, take part in tourism activities, spend the night at the destination area then return home. *Gosling et al. 2002*, defined the resource and the use of areas by tourism into 4 categories which are 'transport', 'accommodation', 'activities' and 'food & fiber consumption'. However, in order to understand easily, the analysis categorized the area of used into 3 groups which are 'transport', 'accommodation' and 'tourism activities'. Food & fiber consumption was explained in term of restaurant which included in tourism activities category. Therefore, this section explained the increasing of visitor arrival connected to the resource used of three areas (transport, accommodation and sectors of tourism activities) in the two cases.

a) Tourists Related Accommodation Services in Vang Vieng District

After the demand of tourism in the destination increasing, there was also increasing of accommodation services in order to support the influx of tourists to the area.

Figure 4.6 shows the increasing of tourism demand from tourists related to tourism services of accommodations. The number of tourism services was increasing followed by the number of visitors in order to serve tourism demand in the area which illustrates as below.

Figure 4.6: Visitor Arrivals Related Accommodation Services in Vang Vieng Destination From 1990 to 2009



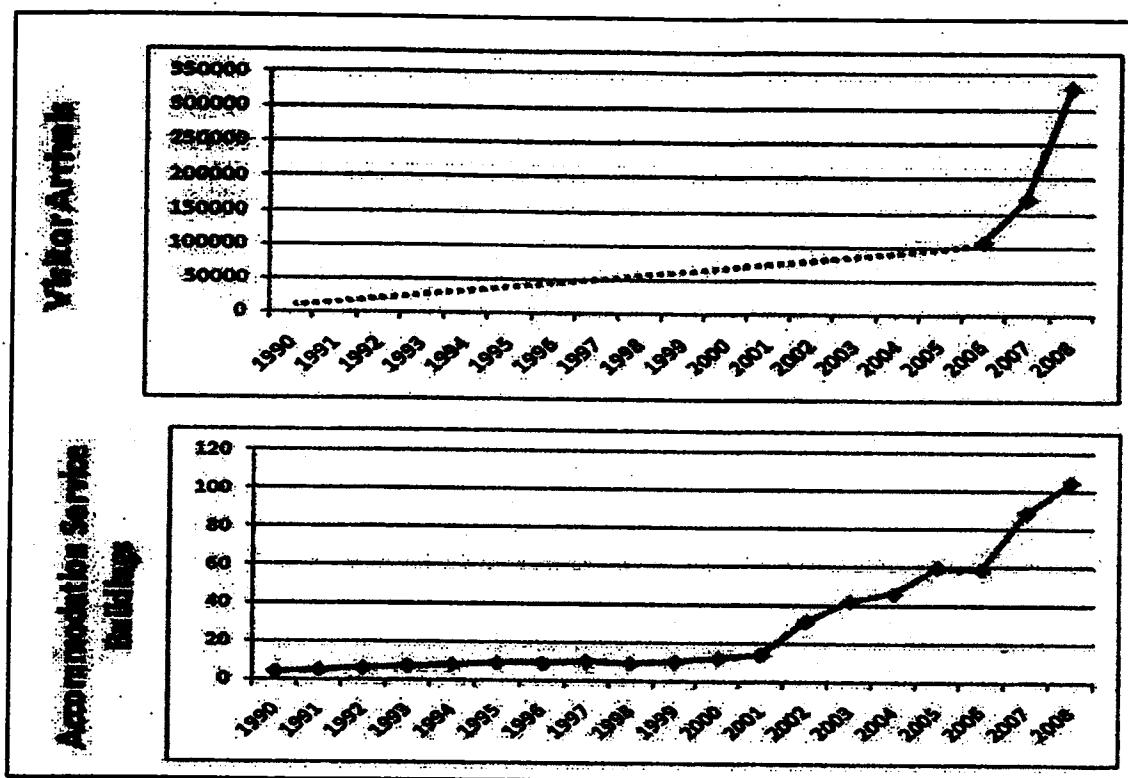
*Note: = the estimated number
 ————— = the number as secondary data
 Source: Hasen Partnership (2009), Phimmachack (2001), Rogers (2009),
 UNESCO-Lao National Tourism Authority (2002), Xayviliya (2010)

The number of visitors in Vang Vieng was dramatically increasing in the beginning of the period, 1999-2002. After that it slowed down in 2003 because there was SARS and Bird Flu epidemic in Asia. Then, the number was sharply rising again in 2008 and 2009. However, overall trend of tourist's number was increasing from 1990 to 2009. Similarity with accommodation and restaurant services, the trend of accommodation number continued increasing during the same period (1999-2009). In term of restaurants and nightclubs, the number was sharply increasing from 1996 to 2005. Then, it was increased by little from 2005 to 2009. However, the overall trend of restaurant and nightclub's number in Vang Vieng from 1990 to 2009 was still increasing in order to serve the influx of tourists into the area.

b) Tourists Related Accommodation Services in Pai District

The number of tourists in Pai was not available from 1980 to 2005. Although, the exactly number of visitors had not expressed, most journals and reports said that there was visitor arrival increasing in Pai during that period. The data on tourist number was available in 2006 with 106,437 tourist arrival. Then the number was increased by three times to be roughly 350,000 in the next two year (2008) as shown in Figure 4.7.

Figure 4.7: Visitor Arrivals Related to Accommodation Services in Pai Destination From 1980 to 2009



*Note: = the estimated number
 ————— = the number as secondary data

Source: Manit (2007), International College of Mekong Region (2009), Lortanavanit (2009), Pai District Office Report (2008), Putwanakul (2008)

The overall trend of accommodation services in Pai was clearly increasing from 1980 to 2008 in order to serve tourists in the area. (The number of accommodation had small decrease in 2005 because of flooding around Pai River in the town). Figure 4.7 shows the increasing of tourists related to accommodations services in Pai. It expresses that the number of accommodation services increasing due to the increasing of visitors in the area.

4.3.1 Tourism Demand and Supply in the Two Cases

Tourism demand from the number of visitors also connects to activities in the area and their consumption. The increasing of visitor arrival also and resources used could be concluded in the three areas namely transport, accommodation and sectors of tourism activities in the destination. Detail in the two case presents in Table 4.2.

Table 4.2: Tourism Demand and Supply in Destination Area: Case of Study of Vang Vieng and Pai

Tourism Demand (Number of Visitors)		<ul style="list-style-type: none"> • The number of visitor arrival in Vang Vieng continued increasing from 1997 up to nearly 140,000 in 2009. 	<ul style="list-style-type: none"> • In 2006, TAT office in Mae Hong Son reported that there were 106,437 of tourist arrival in Pai. Then, the number increased to be 330,684 in 2008 which is a triple increase.
Tourism Supply in Destination Area	• Accommodation	<ul style="list-style-type: none"> • An overall trend of accommodation number in Vang Vieng was rising from roughly 15 places in 1996 to be approximately 100 in 2009. 	<ul style="list-style-type: none"> • An overall trend of accommodation number in Pai was increasing from nearly 10 places in 1990 to be over 100 in 2008.
	• Transportation	<ul style="list-style-type: none"> • Transportation development project by local authority (<i>Detail Not available</i>) 	<ul style="list-style-type: none"> • The upgrading of Route 1095 (the main Chiang Mai – Mea Hong Son Road) paved completely in the 1980s. • There is new accessibility by air from Chiang Mai to Pai.
	<ul style="list-style-type: none"> • Activities <ul style="list-style-type: none"> - Tourism Activities - Entertainments - Retails / Shops - Restaurants 	<ul style="list-style-type: none"> • Tourism Activities <ul style="list-style-type: none"> - Tubing / Rivers swings / Kayaking, Rafting / Caving / Trekking, Motorbike / Cycling / Climbing • Entertainments and Restaurants <ul style="list-style-type: none"> - An overall trend of restaurant and nightclub's number in Vang Vieng from nearly 10 in 1990 to be roughly 90 in 2009. • Retail / Shops <ul style="list-style-type: none"> - Not Available 	<ul style="list-style-type: none"> • Tourism Activities <ul style="list-style-type: none"> - Kayaking / Rafting / Motorbike / Cycling • Shops <ul style="list-style-type: none"> - 24 hours convenience store was established to service tourists • Entertainments / Restaurants <ul style="list-style-type: none"> - Not Available

Source: Hasen Partnership (2009), Phimmachack (2001), Rogers (2009), UNESCO-Lao National Tourism Authority (2002), Xayviliya (2010), Manit (2007), International College of Mekong Region (2009), Lortanavanit (2009), Pai District Office Report (2008), Putwanakul (200

As a result of tourist number in Vang Vieng and Pai was increasing, the tourism supply of accommodation, transportation and tourism activities was also increasing. These services were operated in order to serve tourists in the destination. The increase of tourism demand and supply in the destination put the pressure to the ecosystem in the areas. The tourists play important role in the tourism destination in term of consumer and taking part of activities. Tourism service supply is also the important factor that affects ecosystem in the area due to resources consumption and waste polluted. The discussion of tourism demand and supply related resources consumption and ecosystem provides in the next section.

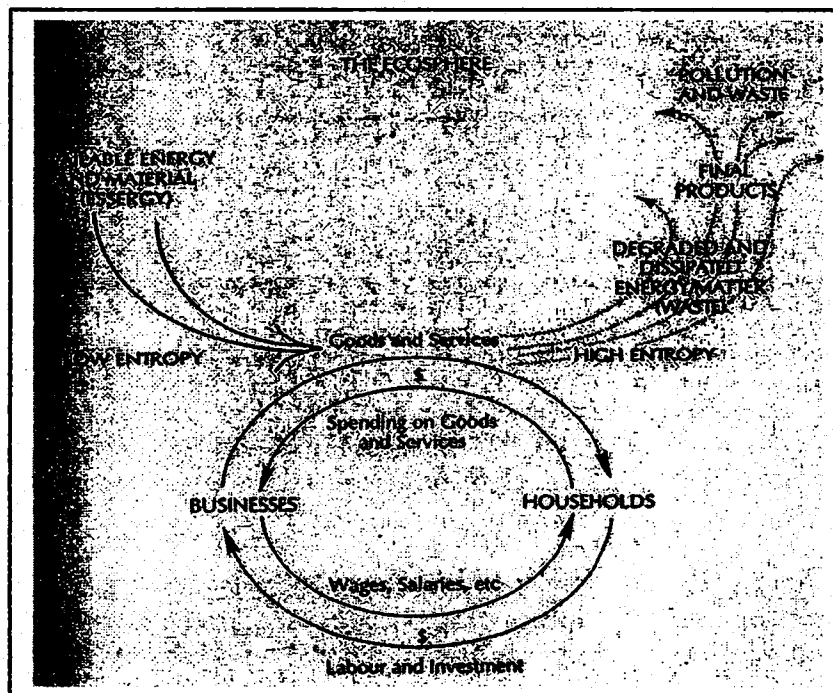
4.4 Current State of Tourism Growth in Destination Areas

Tourism demand and supply refer to the tourism growth and the consumption in the destination. The discussion of this section was provided on the consumptions from tourism activities in the tourism destination area.

4.4.1 Tourism Growth Related Ecosystem

In 1999, Satterthwaite identify urban related ecosystem that human consume energy, natural material and transform the available portion of goods and services. Then they return the entire material and energy flux to the environment. The relationship in Figure 4.8 also shows the generic of urban context related with ecosystem in the area.

Figure 4.8: The Linear Throughput of Energy, Matter and Waste Polluted in Urban ecosystem



Source: Satterthwaite, 1999

Figure 4.8 illustrates the general model of urban eco-system. The system is accrued by tourists, activities and also enterprise of tourism business. This concept was used to analyze and draw the relationship of tourism growth and ecosystem component.

4.4.2 Component of Ecological System related Tourism Growth

Regard to tourism growth in Vang Vieng and Pai, it refer to tourism demand and supply in the destination areas. In term of ecosystem approach, this increasing of tourists, their activities and service supplies interconnect to ecosystem components in the area. The relationship amongst component will be changed due to these factors. The term of impact, *Andrews et al. 1997, Dooley 1979 and Lee 1982*, has referred both to activity and its effects on ecosystem. Therefore, the main focus of this section is on relationship between human activity and context area. In term of tourism perspective, people who take action on tourism destination classified into three groups namely, tourists, local people and investors. The relationship between these people and the component in destinations could generate effects to ecosystem of the areas. The generic term of urban ecosystem, it is an overlay of several systems such as, built system, socio-economic system, bio-physical system and administrative system (*Perera, 2009*). The concern of this section is referred to activities of tourists, local people and investors on the component of the system in the tourism destination namely socio-economic system, built system and nature bio-physical system.

1) Socio-Economic System

In term of socio-economic system, it is related urban ecosystem in destination such as activities of people in community, local economic activities or culture and tradition of local people.

(a) Tourists' spending money, goods and services in destinations, contribute local economic increasing and local people also change their occupation to tourism service operation

Tourists' spending goods and services is the important tourism activity to increase economic in destination. The increasing of tourists leads to need more goods and services in the destination area. The need of goods and services from visitors is main factor to contribute tourism business services and increase economic in the area. After tourism development, local people in Pai and Vang Vieng can more income from tourism service operation. In Pai, the average of income's household was 6,317 Baht per month in 1995. Then after tourism development, there was 47.6% of total household which earned 5,000-10,000 Baht per month. (*Manit, 2007, Lortanavanit, 2009*)

Local people in destination turn to do some small tourism services business due to increasing their earning. They change their occupation from framing to tourism service which is changing from primary economic activity to secondary economic activity. In Pai, after local people turn to start joining tourism business, there is lack of labor who works in agriculture sector because the harvest season is overlap with tourism high season in the area. (*Manit, 2007*).

(b) Influx investment from outside into local community

Tourism development in the destination contributes to increase the investment in the area. Tourism service investment is not only from local people but also investor from outside. Normally, the investment from outside is large scale investment. This investment also put the pressure of competition to the small enterprise of local. For example, in 2004, the morning market in Pai district is taken over by the investor from outside and renovated to be night plaza Moreover, 24 hours convenience store was established in Pai town and forced local grocery to shut down (*Manit, 2007*). The influx of investment in local area

also leads to increase of new construction and renovation in the area which put the effects on the built system.

(c) Tourism activities affect to culture and traditional of local community

Tourism activities from tourists could affect the locality. In Vang Vieng, tubing and river swing have become a hallmark of the area. The activities of tourists and their behavior such as dressing, eating, manner and lifestyle could be role model for local youth. This is causing cultural degradation and changing local people manner.

Figure 4.9: Tourism Activities in Vang Vieng

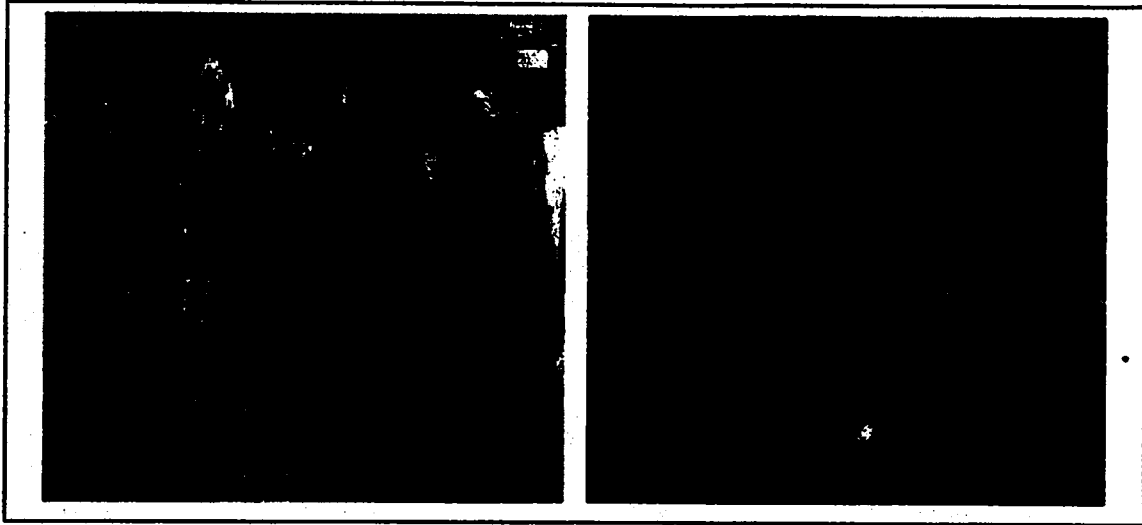


Figure 4.9 shows the tubing activity which is the floating down the Nam Song River on the inner-tube. There are about 12 to 13 bars and restaurants along a 2 km stretch of the river. Normally, the tourists stop tubing for food, drink and to jump and swing into the river. The activities along the river are included party and drink alcohol (Rogers, 2009). Tourism activity is not only effect local community but also effect to the nature environment which provides in the next discussion.

2) Built System

The built system has been defined in different ways by different researchers. In general, the term built environment refers to the human-made surroundings that provide the setting for human activity. It consists of the following elements: land use patterns, the distribution across space of activities and the buildings, the transportation system, the physical infrastructure of roads, sidewalk, etc., as well as the service this system provides; and urban design, the arrangement and appearance of the physical elements in a community (Handy & Boaenet, 2002).

(a) Increasing tourist activities and tourism services supply lead to increasing infrastructure, both new construction and renovation

In Vang Vieng, There are new constructions along Nam Song River, built to serve tourism activities. These constructions lead to change land used in along the river, consume more natural resources and change topography in the area such as river bang erosion. In Pai, the construction along built up retaining wall for protecting their land. This leads to land slide and bank erosion in the opposite side of riverbank and make the change of river flow through the other direction. Moreover, fill up the land into the river boundary for

construction along the river is also the cause to riverbank erosion and change the river flow.

3) Natural Bio-Physical System

The growth in the destination has significant stress on the environment system by increasing consumption and polluted. Moreover, tourism activities of visitors were also effects local environment especially nature based tourism that have river attraction such Vang Vieng and Pai. Most activities connected and enclosed with the nature such as kayaking or rafting, trekking and climbing.

(a) Tourism Activities connected to environment

Regard to river based tourism activities, the activities in Pai and Vang Vieng are both on and beside the river. The activities are on the river such as tubing, river swings, rafting and kayaking, these direct affect to river. These activities enclosed and affect the river such as dumping solid waste to the river, rafting and kayaking contribute riverbank erosion. The activities are beside the river such as bars, restaurants and construction for river swings along Nam Song Rivers. It was the main factor that led to riverbank erosion. Land owners in Vang Vieng along the river try to construct the river bank erosion protection but that retaining walls are using local labor without getting any technical help or knowledge. As a result, such construction was collapse and then it contributed to soil slip and land erosion during rainy season (*Phimmachack, 2001*). Therefore, the tourism activities both on and beside the river put the effects on river ecosystem such as riverbank erosion, quality of water and changed condition of the nature.

(b) Spending goods from tourist lead to increase solid wastes

Tourists could refer to the consumer in destination area. More consumers lead to more waste polluted. The general activity of tourists in the tourism destination is spending goods and services. This consumption leads to increasing solid waste in the area. Pollution from solid waste is the critical problem in the two cases. It was observed during the field surveys that most tourism facilities dump solid waste generated along the river or burning without separation. This creates not only air pollution, smell but also visual pollution. Data from *Rasphone, 2001*, shows that because there are not adequate collection points. Moreover, dump site is located about 2.5 km. away from the town, the staff governors usually collect the waste only 3 to 4 times per month and just burning at the dump site (*Rasphone, 2001*).

(c) Increasing resources used and polluted from tourism services supply

Tourism service supply in destination area was divided into three categories which are transport, accommodation and activities. These services refer to the consumption and waste polluted to environment. Normally, the transport mode using by tourism in the area are divided into 'bus or public transport service', 'private car', 'motorcycle', and 'bicycle'.

Figure 4.10: Transportation Used in Destination

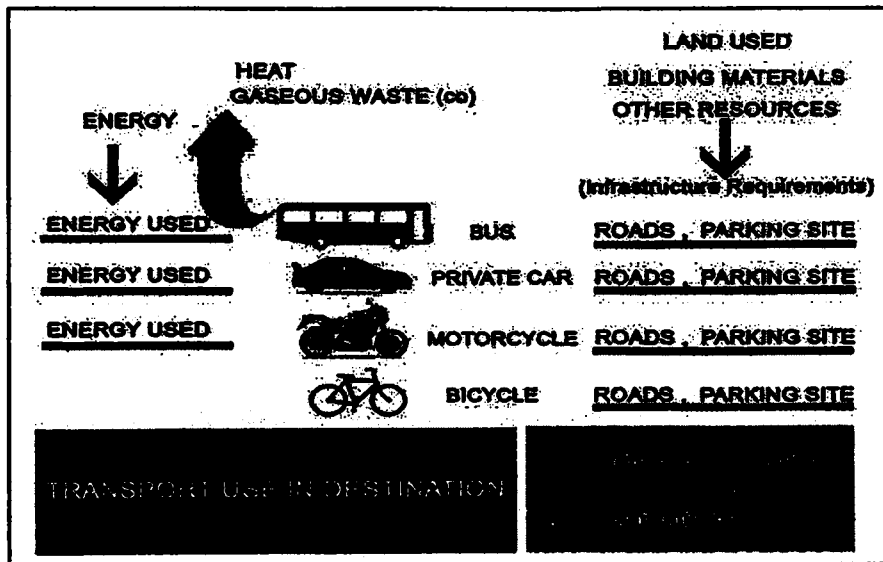
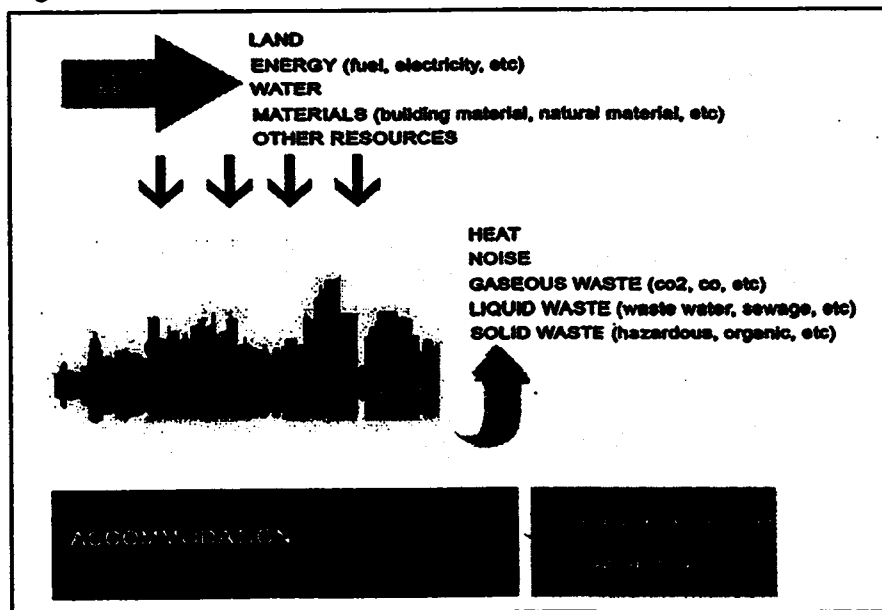


Figure 4.10 illustrates the transport used in the destination. The figure shows that transportation requires the energy used then pollutes heat and gaseous waste to environment, except the mode of bicycle. Moreover, there are also infrastructure requirements for road and parking site. Therefore, they are also requiring land use, building material and other resources for constructions. An accommodation services in destination also requires the use of resource such as land, energy, water, building material and other resources as illustrated in Figure 4.11.

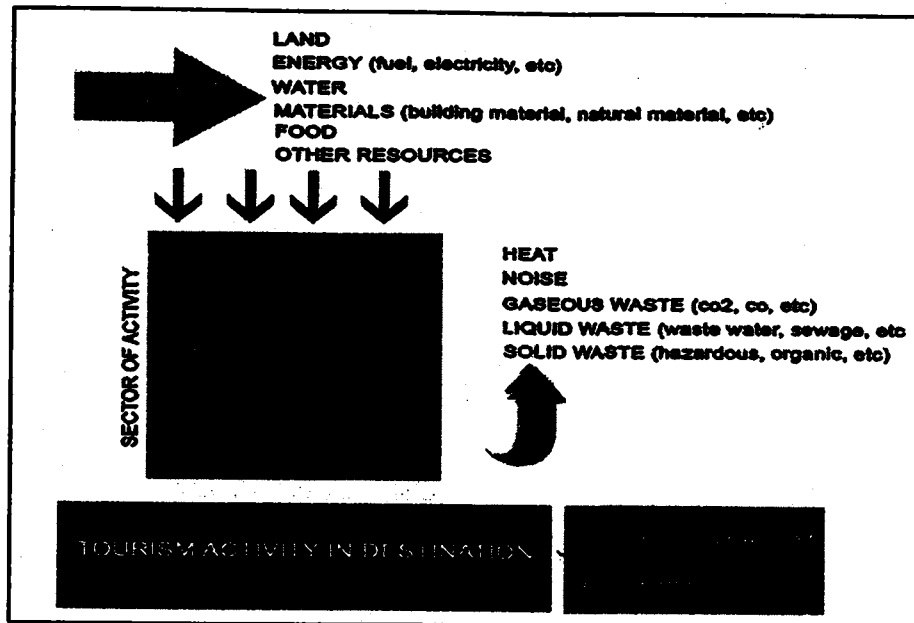
Figure 4.11: Accommodation in Tourism Destination



The expanding of accommodation services shows the increasing of resources consumption and pollution of heat, noise, liquid and solid waste. The increasing of ecological footprint also related to tourism activities in destination. Regard to the increasing of tourist number in the destinations, these tourism activities sectors are also expanding in order to serve the enormous of visitors. The growth of tourism activity sectors is the factor of the large

ecological footprint in destination. Most resources used and waste polluted are shown in Figure 4.12

Figure 4.12: Tourism Activities in Tourism Destination



The tourism activity sectors in the destination require many resources to operate the service. For example, restaurant requires land and material to construction, food, water and energy to produce foodstuff service. Then these sectors also pollute and return the waste into the environment. The increasing visitors, tourism activities and tourism services refer to rising of resource requirement and more waste pollution which are the driving factors of effects in destination.

As a result of tourism growth in Vang Vieng and Pai, it related to the component of ecosystem in the areas. The entry of tourism activities and services is the factor causing the changed relationship of component in the system such as changed of local people life style, changed of land used pattern and changed of natural condition which provides discussion in the next section.

4.5 Impacts on Ecosystem of Destinations

This section provides an overview of the effects and changes in the destination when the number of visitors and consumption increasing. In case of tourism aspect, ecosystems of the destination area have been transformed by tourism activities, and also factors from outside. All components in a city such as communities, interconnected activities, social, economic, environment and the relationship of them will be changed because of tourism development in the area. A review of secondary related to the two cases of Vang Vieng and Pai, clearly shows effects of an ecosystem in the locality from the current state of tourism growth in the areas. The relationship presents as the causes and effects diagram in Figures 4.13.

Figure 4.13: Causes and Effects of Ecosystem in Vang Vieng and Pai

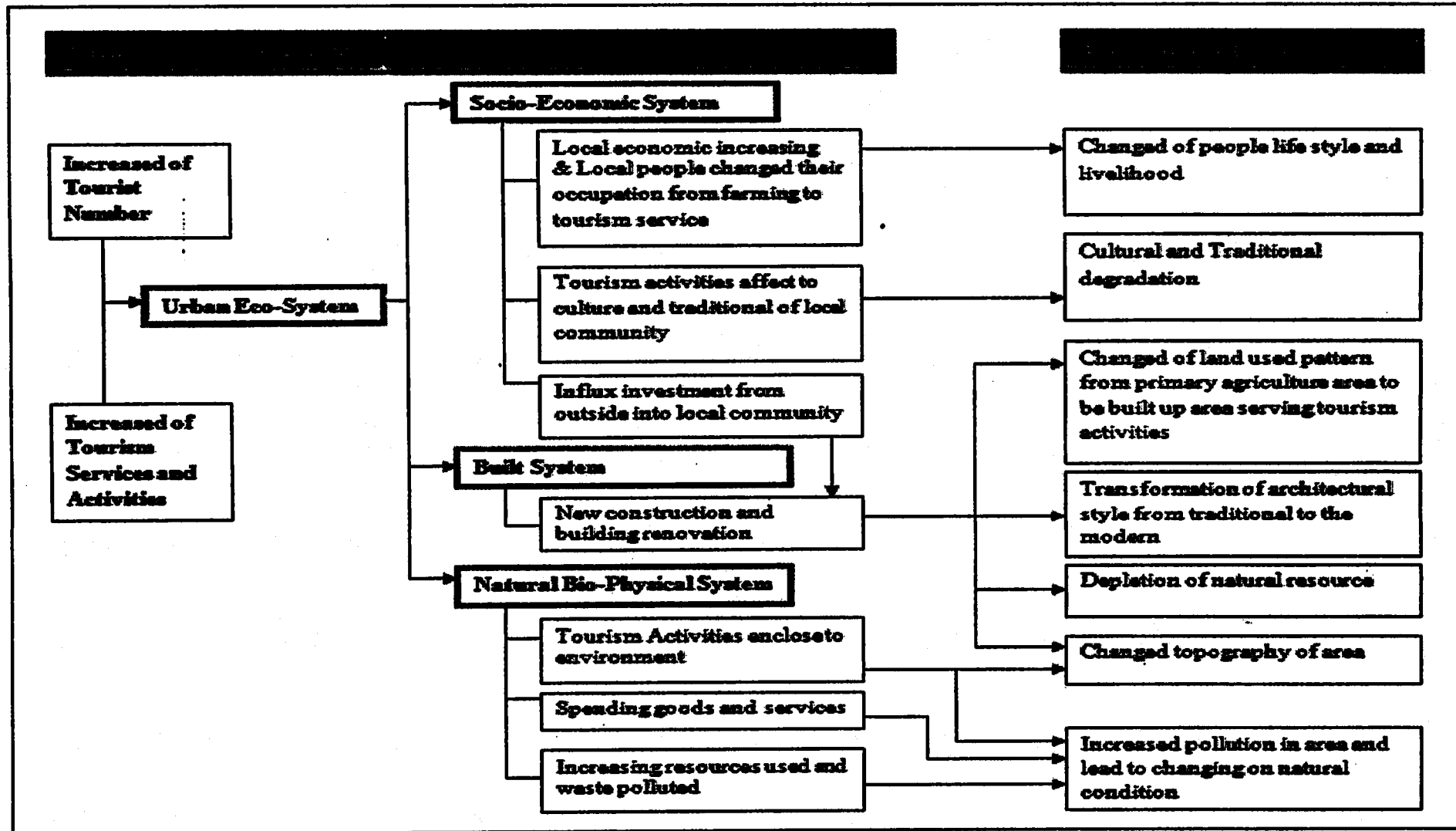


Figure 4.13 shows the linkage between causes and effects in the two cases. It shows the factors related the growth of tourism area which lead to the changed of ecosystem in the destinations. The details of these effects explain as below.

a) Changed of people life style, behavior and livelihood

Increasing local economic that generate job opportunity to local people. Then, people changed their occupation from farming jobs to tourism business tourism business which was a change from primary economic activity to a tertiary economic activity. Due to people busy with tourism service business, there is decreasing of relationship among people in the community. In the past, people live with close relationship and helping each other but today, people live individual; they need to work and pay because everything is not for free anymore (Manit, 2007)

b) Cultural and Traditional degradation

Tourist activities in destination could affect the local community. Teenagers in the local have observation learning or modeling from outside people's behavior or tourism activities such as culture, dressing, eating, and language. These lead to erode of culture and traditional in Vang Vieng district.

c) Changed of land used pattern from primary agriculture area to be built up area serving tourism activities

Due to increasing tourism services for serving the enormous of visitor, there was also increasing of new infrastructure. In Vang Vieng, before 1990s, there was agriculture area 3% and forestry area 1% in Vang Vieng Town. After tourism development, they were replaced by shops, hotels and guesthouses. Moreover, there was overload from the new construction along the river, most of them overstep into river boundary in order to serve tourists with a great view (Xayviliya, 2010).

In Pai district, the new construction could lead to deplete green space and change land use pattern. Table 4.3 shows the comparison of land used between 2000 and 2005.

Table 4.3: Compare land used in Pai District between 2000 and 2005

Land Used	2000		2005	
	Rai	Percentage	Rai	Percentage
Road	8.49	3.36	11.57	4.49
Open Space	36.14	14.54	33.86	13.45
Agriculture	154.71	61.4	119.31	47.34
Built Up Area	40.02	15.9	65.47	25.98
Water resource	12.64	5.0	21.79	8.64
Total	252.00	100	252	100

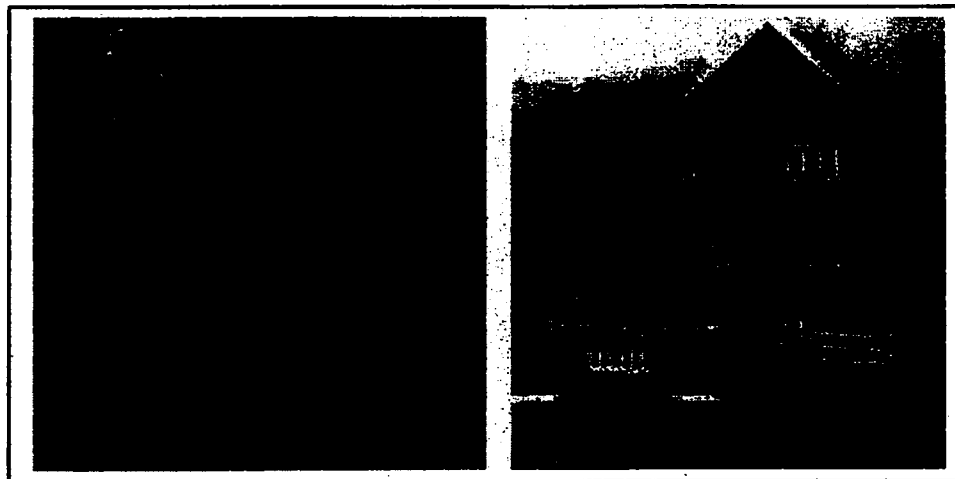
Source: Manit, 2007

The percentage of land used in Pai district shows that open space and agriculture area were decreasing from 14.54% and 61.4% to be 13.45% and 47.34%, respectively. These areas were clear out and replaced by road and built up area with increasing to be 4.49% and

25.98% in 2005. Report from Chiang Mai University provides that there was built up area spread to public space in the north of Pai town, near and along Pai River. Moreover, there is conflict of land used pattern after increasing infrastructure. To give example, there are built up for tourism service and activities nearby temple with create noise pollution. The built up area also spread to agriculture area and pollute waste to the farm surrounding (Lortanavanit, 2009)

- d) *Transformation of architectural style from traditional to the modern due to new construction and renovation without concerning the value of traditional architecture*
 The increasing of construction and renovation is not only effects natural environment but also lead to architecture transformation.

Figure 4.14: Comparison of Building in the Past and Present



Source: Site Observation, 2008

Figure 4.14 illustrates the traditional houses in the past and new and renovation buildings in the present. Most traditional and wooden houses are replaced by the new style of constructions without awareness of architectural transformation. Traditional and wooden houses in Pai are replaced by the new style of constructions without awareness of architectural transformation. Some new constructions were built too high which block view of river and create visual pollution (Manit, 2007).

- e) *Depletion of natural resource*

Tourism services lead to increase consumption of land, energy, water, natural material and other resources. The new constructions in Vang Vieng lead to increase natural material consumption. The demands of cement, rock and sand have expanded significantly. Most of buildings constructed in Vang Vieng have used sand and rock from Nam Song River and nearby mountains. Mining sand in the river and rock in the mountains are continuing due to the growth of tourism (Phimmachack, 2001). The most serious problem from uncontrolled tourism growth and mining activities is riverbank erosion, brownish water in the river, land degradation.

- f) *Changed topography of area*

The new construction which encloses the nature could be effect to the topography of the area especially the area along river. Both Vang Vieng and Pai, the constructions have built

overlap into river boundary in order to serve tourism activities related the river such as river swings, bars and restaurants which lead to land slide and bank erosion. Vang Vieng had high impacts on riverbank erosion because tourism activities very enclose the river such as tubing, rivers swings, kayaking and rafting. The big wave from these activities washes down riverbank and lead to soil erosion.

g) Increased pollution in area and lead to change on natural condition

The increasing of resource used by tourist and their activities lead to increase waste polluted in the area. If local municipality cannot deal with this waste polluted, it will lead to impact of pollution and lead to change natural condition in the area.

In Pai, the wastes from community have changed from organic waste to be more solid waste such as plastic bag, bottle, aluminum can and foam. The amount of solid waste was 2 tons per day before the year 1998. Today, the waste is increasing to be 7 tons per day, it is nearly 4 times rising (*Manit, 2007*). This created pollution in the area because the local municipality cannot deal with this amount of the waste. They just collects the waste dumped it into the disposal site (*Pakkrasa, 2009*)

In Vang Veing, the report from Hansen Partnership, 2009 notes that Nam Song Basin is constantly changing on the natural aquatic condition and also water quality. This become the significant issue, especially during dry season, many native species (aquatic) is declining in both size and breeding. This also affected local people and created health problems.

In the past, both Vang Vieng and Pai were the small towns with unspoiled natural areas and river attraction. Due to the driving forces of tourism development and the pressure of tourism activities and services, the two cases were facing the critical problems and had changed their ecosystem and intensified pollution. However, there were some responses and managements taken by local authorities who are direct involvement in any development. The responses were discussed in detail in the next section.

4.6 Responses by Local Authorities

Regard to review of environmental management in the two cases, it illustrated that there were management only in solid waste and water waste management by the district authority of Vang Vieng and Pai Municipality.

Solid waste management by Vang Vieng district authority:

There are only 3-4 times per month and just burning at the dump site then open burning (*Rasphone, 2001*). There was no drainage system and wastewater treatment. Liquid waste just discharged into the natural system (*Phimmachack, 2001*).

Solid Waste management by Pai Municipality:

Pai municipality just collected the waste from the community every day and dumped it to the area nearby Pai River which is not the sanitary landfill. Wastewater from the dumping site absorb through the river. Then, people who live along the river near the disposal site have the health problem such as skin allergy and cannot use water from the river. (*Manit, 2007, Pakkrasa, 2009*)

Both local authorities in Vang Vieng and Pai case had fewer responses of the impacts in the area. There is the big gap on tourism growth and the response by local authority which presents in the next section.

4.6.1 Major Gap of Responses

The authorities in the two cases only managed on solid waste and wastewater. However, the management cannot deal with the increasing of waste from tourism activities and the other problem effects on the locality. The major gap of their responses was identified as follows.

1) Increasing tourist, increasing resources used but there is limit natural resources

The two local areas have limited the nature resources. Therefore, the increasing of consumption in the area was the problem. There was increase consume the resource such as land used, building material resources, water and energy without the limit or any responses from the authority.

2) Cannot dealing with the amount of waste increase

In the past, the two cases were the small communities; they used to generate a small volume of waste. Waste management by local which relied on the nature, it is not the problem. After, tourism development, the increase of consumer that leads to increase waste polluted. The old management system by authority cannot deal with the large volume of waste. Therefore, it created pollution from these waste, change natural condition and lead to health problem of local people.

As a result of the analysis, there are many effects on ecosystem from the increasing tourists, tourism activities and tourism services. The problems were more critical due to poor management and response by locality.

4.7 Concluding Remarks

This chapter focused on the general process of tourism development in GMS. It was found that the development in destination has driving factors form policy, plan, program and project in the three level. The influences from these, contributed to tourism development and then the growth also lead to impacts to local ecosystem. Refer to the case analysis of Vang Vieng and Pai, it drew the key factors which contribute the effects of ecosystem in destination as shows in Table 4.4.

Table 4.4: Key Factors Causing Ecosystem Effects in the Destination

Key Factors		Ecosystem Effects
Tourism Demand		<ul style="list-style-type: none"> • The trend of effects in the area • Lead to increasing resources used, waste polluted, lead to pollution and change natural condition
Tourism Supply (investment and infrastructure)	Accommodation Service	
	Transportation Service	
	Entertainment Service	
	Restaurant	
	Shop / Retail	
Influx investment into locality		<ul style="list-style-type: none"> • Lead to increase infrastructure
Local economic increasing and Local people changing their occupation to run tourism business		<ul style="list-style-type: none"> • Lead to affect relationship in community and change local people life style • Lead to change local people livelihood
Construction and services along the river		<ul style="list-style-type: none"> • Lead to change land used pattern • Lead to change topography of area (<i>riverbank erosion and change the river flow</i>) • Lead to dump solid waste and discharge wastewater to the river
New construction and renovation		<ul style="list-style-type: none"> • Lead to change land use pattern • Lead to transform of architectural style • Lead to depletion of natural resource
Tourism Activities	River based activities	<ul style="list-style-type: none"> • Increasing waste polluted to the river • Lead to change topography of area (<i>riverbank erosion</i>)
	Other tourism activities	<ul style="list-style-type: none"> • Lead to degrade local culture and traditional
	Resource use and waste polluted	<ul style="list-style-type: none"> • Lead to depletion of natural resource • Lead to increase waste polluted • Lead to create pollution
Responses by local authority		<ul style="list-style-type: none"> • Dealing with the changes in the area

Figure 4.10 illustrates key factors which could affect the ecological system in destination. These factors were used to analyze in the new ecologically sensitive destination in GMS in order to find out what the current tourism growth, current effects and future effects on ecosystem.

Chapter 5

New Tourism Destination Development : Case Study of Chiang Khan District

Refer to previous finding on chapter 4 based on DPSIR analytical framework, it was found the causes of tourism development and the effects to ecologically sensitive destinations in the two cases. Due to tourism demand and supply, the tourism growth was related to system and components of the ecological in the destination. This led to affects the relationship or the ecosystem in the areas.

Figure 5.1: Data Analysis Framework of Chapter 5

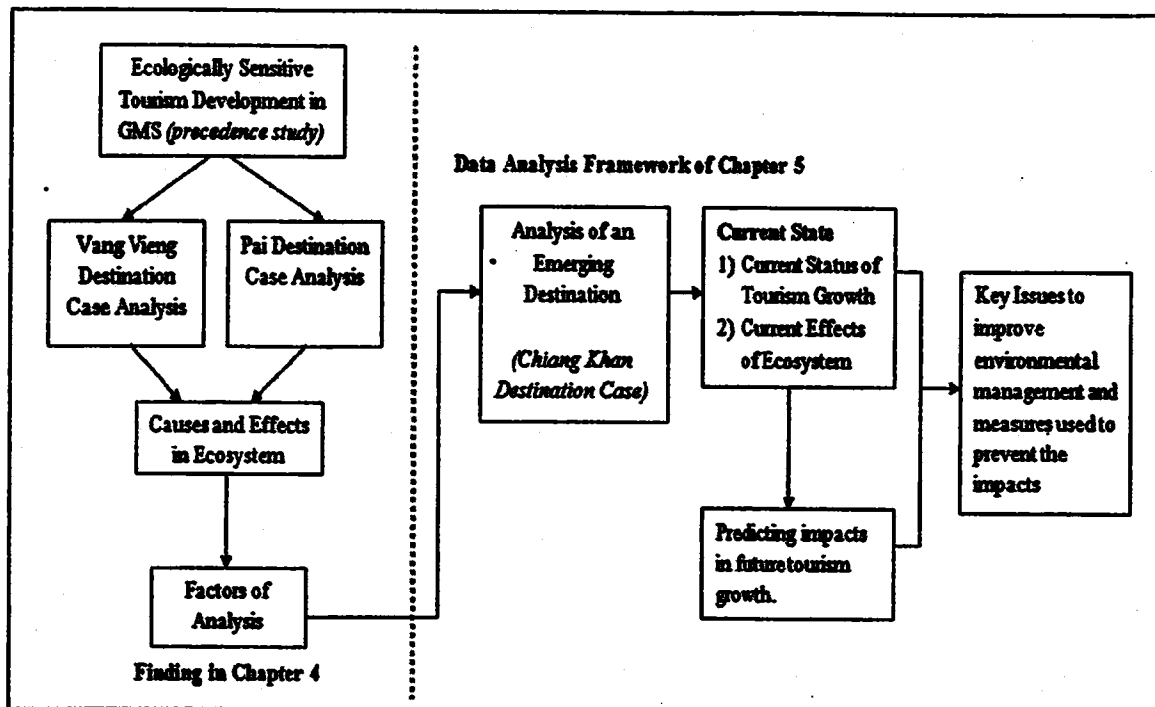


Figure 5.1 shows the linkage of finding from chapter 4 and the analysis on chapter 5. Main finding of chapter 4 was the key significant factors of ecosystem effects in the destinations areas as follows.

- (i) *Tourism demand*
- (ii) *Tourism supply*
- (iii) *Investment in locality*
- (iv) *Local economic and local people occupation*
- (v) *New construction and renovation*
- (vi) *Constructions and services along the river*
- (vii) *Tourism Activities*
- (viii) *Responses by Local Authority*

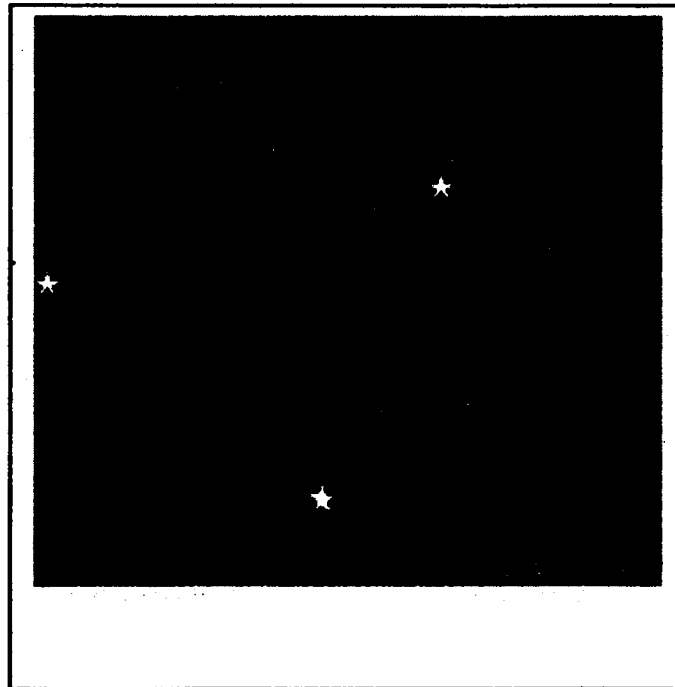
These key factors were used to analyze on the new tourism destination. The emerging tourism destination represented by Chiang Khan District. The aim of this chapter was to examine the present status of tourism growth, the trend and the future effects in the area.

5.1 Profile of Case Study Area

Background of case study; ChiangKhan district is situated in Loei province in the northeast of Thailand. It is 48 kilometers north of Loei's Muang district. and its area is 867 sq. km. (7.5 percentage of Loei province's area). ChiangKhan district is surrounded by the other districts of Loei and Vientiane of Laos as follows:

- North: Vientiane province of Laos
- East: Pak Chom District of Loei province
- South: Muang district of Loei province
- West: Tha Li District of Loei province

Figure 5.2: Location of Chiang Khan District, Loei Province in Thailand



Source: Chiang Khan Municipality, 2010

The total population of Chiang Khan according to household registration in 2009 was 59,321 people in 16,938 households (*Chiang Khan Municipality, 2010*). The population density is 67 per square kilometer.

The major occupation of people in municipality area is commerce and Farming. The general of topography, there are 3 characteristics as low plain, piedmont plateau and mountain (low plain and piedmont = 60% and mountain = 40%). The important rivers are The Mekong river, Hueang river and Loei river.

5.1.1 Tourism Development in Chiang Khan

Regard to the secondary data review, municipality and TAT provincial offices interview, there were influences to tourism development from national and local level but no data available from international level. Table 5.1 shows policy, plan, program and project which were introduced to Chiang Khan district by directly and indirectly.

Table 5.1: Policy, Plan, Program and Project Influenced to Develop Tourism

<ul style="list-style-type: none"> • Influences from international level 	<ul style="list-style-type: none"> • “Mekong River Tourism Corridor” was included in the priority tourism development zones in GMS tourism sector strategy in 2007, supported by ADB <i>(the provinces along Mekong river are involved, including Loei province)</i>
<ul style="list-style-type: none"> • Influences from national level 	<ul style="list-style-type: none"> • The ministry of Tourism Development had proposed a cluster of tourism development 2009-2012 plan. Mekong River basin tourism was included in one of tourism destination cluster and Loei province was also included in this plan. • In 2009, TAT has announced the program ‘Thailand Grand Festival’. ‘The Magnificent Mekong River’ was one of the campaigns, the provinces along Mekong River were promoted to be tourism destination <i>(including Loei province)</i>
<ul style="list-style-type: none"> • Influences from municipality 	<ul style="list-style-type: none"> • In 2009, TAT (Provincial official) has promoted Chiang Khan District to be the tourism destination followed “Thailand Grand Festival 2009” campaign. • In 2009, Chiang Khan District has celebrated ‘100 year of Chiang Khan’ in order to promote Chiang Khan and draw tourism into the area.

Source: ADB, 2007, Chiang Khan Municipality (2010), Ministry of Tourism and Sport (2009), TAT (2010)

Refer to in depth interview of local people and the municipality’s staff; there was influx of tourist to Chiang Khan since the centennial celebration 2009. Mayor of the municipality said that there were over 50,000 tourists in that celebration. After that, Chiang Khan was continued to be promote via TV and internet by both national and provincial office of TAT. As a result of that, the number of tourists continued increasing. This expressed that promoting from TAT and the celebration project of Chiang Khan from municipality in 2009 was the driving force of tourism in Chiang Khan. This destination became the famous destination within only one year especially for domestic tourists.

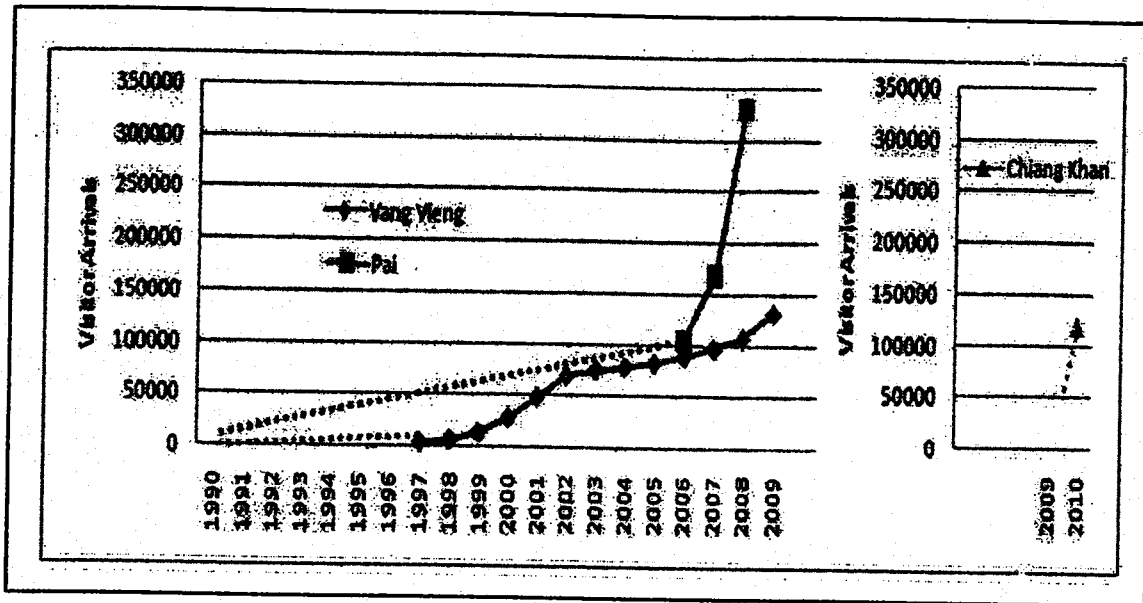
5.2 Key Factors Causing Ecosystem Effects

As a result from previous finding, the key factors that lead to the effects of ecological system in the destination area. These factors were used to analyze the case of Chiang Khan in order to find out what the current state and how it related to the ecosystem in the area.

5.2.1 Tourism Demand

The number of tourists was not available until the late of 2010. Although, there was not expressed the exactly number of visitors, from local people interview, the influx of tourist to Chaing Khan had started in 2009 and continued increasing. Chiang Khan Municipality began collected the number of visitor in October 2010. There were 10,124 visitor arrivals in October. Then, there were 21,428 and 58,809 visitors in November and December, respectively. The total of tourists in three months was 90,361. This can be estimated that the number of tourist in 2010 was over 100,000. Figure 5.3 shows the number of visitor arrivals in Chiang Khan compared with Vang Vieng and Pai.

Figure 5.3: Tourism Demand in Chiang Khan Compared with the Case of Vang Vieng and Pai



Tourism in Chiang Khan has boomed since 2009, while the number of visitor arrivals was over 100,000 in 2010. As the comparison between Chiang Khan and the other two cases, it expresses that tourism in Chiang Khan is rapid growing. The number of visitor arrivals in Chiang Khan was over 100,000 within one year of tourism development (2009-2010). This will put high pressure to the small town. As the result of increasing tourism demand, it leads to increase the services supplies in the area.

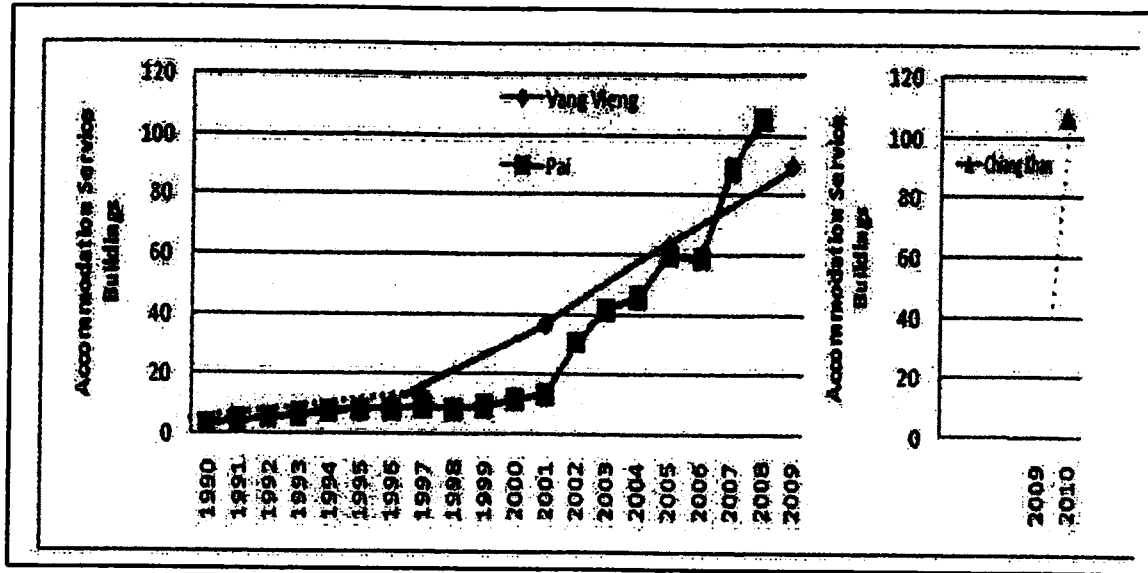
5.2.2 Tourism Service Supply and Investment in Locality

Tourism service supplies which affect the ecosystem were divided in to five services namely (i) Accommodation services (ii) Transportation services (iii) Entertainment services (iv) Restaurants (v) Shops / Retails

a) Accommodation Services

The number of accommodation was 71 places in September 2010. Then, the number was increasing to be 80, 81 and 107 in October, November and December 2010 in order to serve tourism in high season of New Year Celebration. This accommodation's number also shows the rapid growth when it compared with the case of Vang Vieng and Pai. Figure 5.4 shows the number of accommodation in Chiang Khan compared with Vang Vieng and Pai.

Figure 5.4: Comparison of Accommodation Services in Chiang Khan with the Case of Vang Vieng and Pai

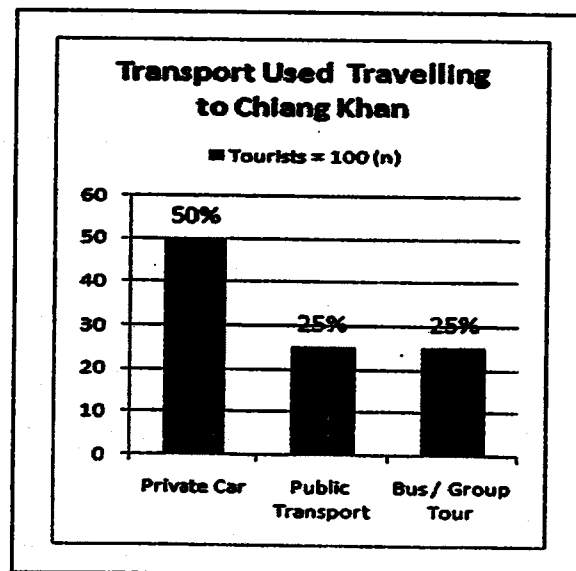


As the result of questionnaire survey, there was 60% of accommodation which established during 2009 to 2010. The graph expresses that it was rapidly growth in Chiang Khan during only one year.

b) Accessibility and transportation service

There was continual upgrading of Route 201 in order to service tourism in the destination. Moreover, there was also accessibility by air from Suvanaphumi Airport in Bangkok to Loei Province which operated by the small airline company based on domestic flight in Thailand. The first operation flight was on 3rd September 2010. (*TAT, Loei province office, 2010*). These accessibility and transport services facilitate the movement of visitors to the destination. Therefore, the increasing of this service also was the factor of the number of tourists in the area.

Figure 5.5: Transport Accessibility to Chiang Khan

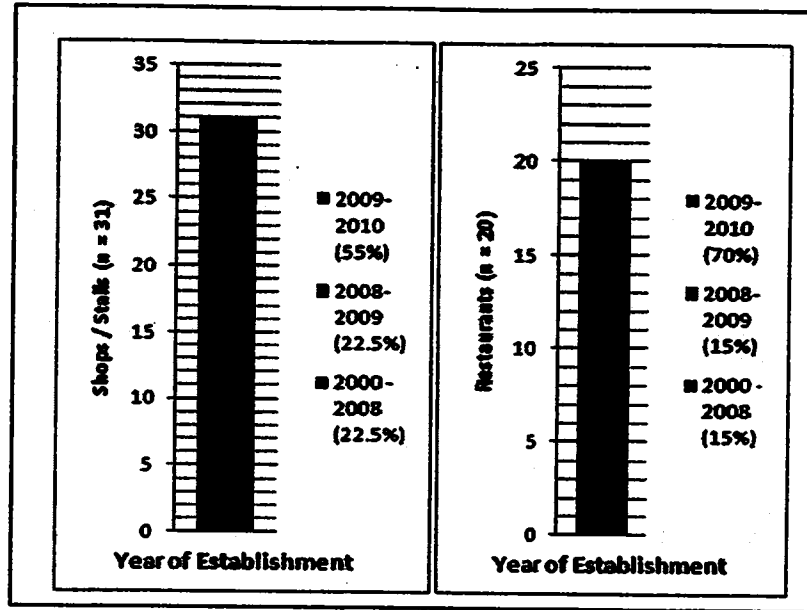


Source: Questionnaire Survey, 2010

c) Entertainment Services, Restaurants, Shops and Retail

The increasing of infrastructure in Chiang Khan was shown by the new tourism services operation. There was big increasing the operation during 2009 to 2010 as shows in Figure: 5.6.

Figure 5.6: Shops and Restaurants Services Related Year of Establishment



Note: Result of survey from respondents of 51 people who operated tourism business (December, 2010)

Figure 5.6 illustrates that restaurants and shops were just opened in 2009 and 2010. It shows that 55% of shops and stalls were opened during 2009 to 2010. Entertainment services supply was referred to bars and night clubs in the area. Chiang Khan Municipality does not allow opening bars and night clubs business in the community area. However, in the area still have an illegal small business such as a small bar that opened until the lately night.

5.2.3 Local Economic and People Changing Occupation

After tourism was developed in Chiang Khan in 2009, some local people turn to do tourism business. Based on questionnaire survey from 66 respondents who are local people, there are 40 people who operated tourism enterprises. It expressed that there was 61% of local people changing their occupation to involve in tourism business. As the review, tourism development was not only generating job opportunity but also increasing local people income.

Table 5.2: Comparison Average of Local People Income between 2008 and 2010

Period	Average of Local People Income
2008 * (Before Tourism Development)	13,000 Baht / person / year 1,083.33 Baht / person / month
2010** (After Tourism Development)	50% of total respondents earn less than 10,000 Baht / month 38% of total respondents earn 10,000 - 20,000 Baht / month 12% of total respondents earn 20,000 – 30,000Baht / month

*Note: *Report from Chiang Khan Municipality (2008)*

***Result of survey from respondents of 66 local people who operated tourism business(January, 2011)*

Table 5.2 shows that the average of income in 2008 was only 1,083.33 Baht /person / month. In 2010, after tourism development, there was 38% of total respondents earn 10,000 to 20,000 Baht / person / month. This presents that local people earn more income after tourism occurred in their town.

Table 5.3: Cost of Living
Query: Local peoples' perception on cost of living

Attitude	Local People (n=66)	Percentage (%)
Strongly Agree	33	50%
Agree	22	33%
Neutral	8	12%
Disagree	5	3.5%
Strongly Disagree	1	1.5%

Note: Result of survey from respondents of 66 local people (December, 2010)

Local peoples' opinion on economic issue expressed; there was 50% had strongly agreement that their cost of living was increasing as presents in Table 5.3. Furthermore, due to the growth of economic and increasing of tourists, there was also increasing investment from outside and local people who run business.

Table 5.4: Proportion of Local People and People from outside who operated Accommodation Services

Accommodation Operators (n=71)	Number of Operators	Percentage (%)
Local People	54	76 %
People from Outside	17	24 %

Note: Report from Chiang Khan Municipality (September, 2009)

As review of Chiang Khan Municipality report, the investors from outside was only 24%. It was still small proportion in the investment area. However, the result of questionnaire survey, investors from outside was 45.9% who operated tourism business services (shops / stalls / restaurants / accommodations) as table below.

Table 5.5: Proportion of Local People and People from outside who operated Tourism Services

Shops / Stalls / Restaurants / Accommodations Operators (n=74)	Number of Respondents	Percentage (%)
Local People	40	54.1%
People from Outside	34	45.9%

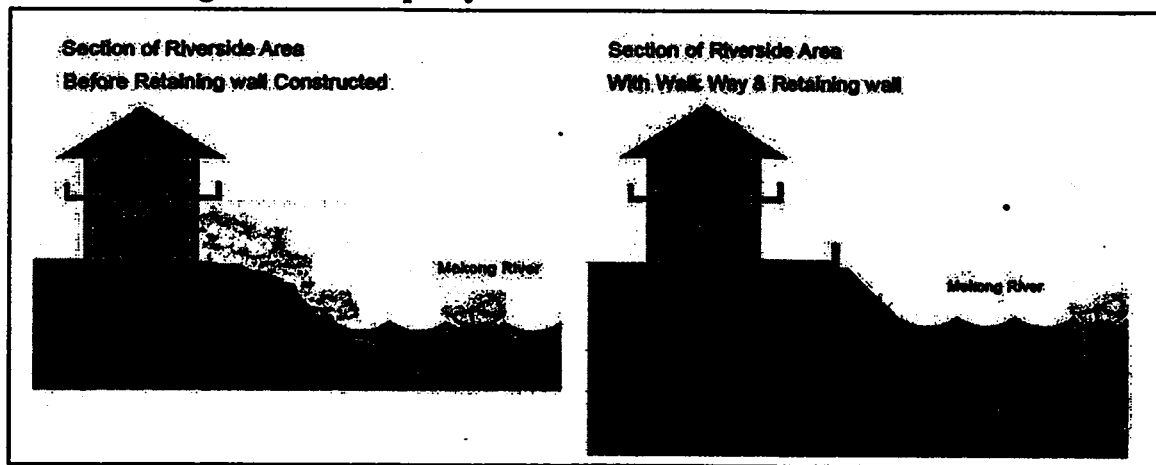
Note: Result of survey from respondents of 74 people who operated tourism business (December, 2010)

The current state of tourism growth in Chiang Khan based on questionnaire survey, it shows the similar status in Vang Vieng and Pai. Tourism sector contributed economic development in the town. Local people changed from doing farm to running tourism services business which can earn more income.

5.2.4 Construction Along the River

Based on observation and key interview, Chiang Khan, there is retaining wall and embankment including walkway is constructed along Mekong River. This can make municipality has better management in riverbank area than the two cases and can control undesired construction along the river. This project is provided and budget supported by the Department of Public Work and Town & Country Planning which the first construction started in 2001 with only 300 meters. The project was done in several phases until it cover within the municipality zone in 2005. Actually, aim of the project is to protect land erosion along the Mekong River and protect land lose along Thailand border. Figure 5.7, provides the section of riverside area before and after constructed retaining wall.

Figure 5.7: Section of Riverside Area With and Without Walkway and Retaining Wall in Chiang Khan Municipality

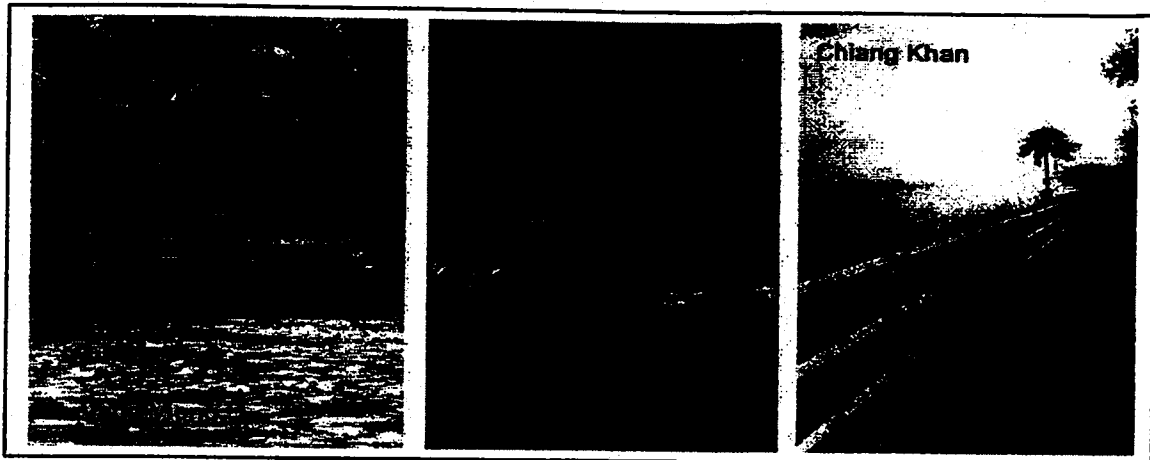


Source: Department of Public Works and Town & Country Planning (PWT&CP), 2010

Refer to the information from Department of Public Works and Town & Country Planning, retaining wall and embankment is designed and constructed based on the existing area. There is no demolition of building along the riverside which shows in Figure 5.7. This structural project is also the co-benefit to river bank area in Chiang Khan that the municipality can keep space along the riverbank to be green space and public recreation. Moreover, embankment and walkway can keep away from undesired construction and encroachment on the Mekong River.

Refer to site observation, the interested issue of land used in Chiang Khan that comparison with the other two case studies of Pai and Vang Vieng is the land used along riverbank.

Figure 5.8: Comparison of Land used Along the Riverbank in the Three Case Studies



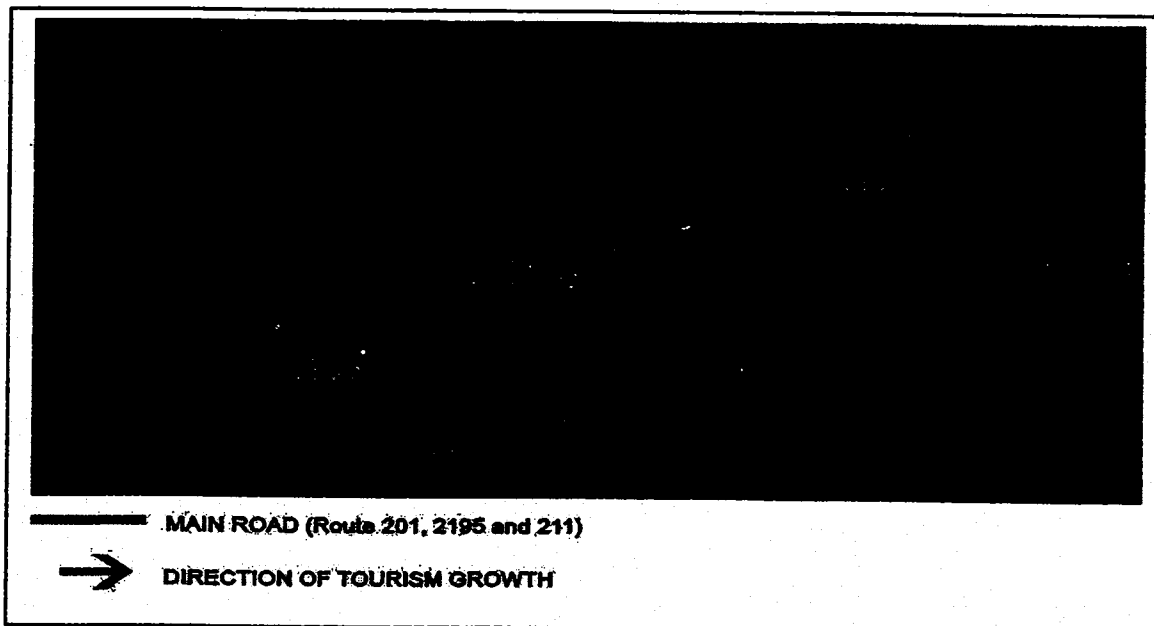
Source: Site Observation, 2010

Figure 5.8 shows land used along the river bank in the three case studies. Most construction beside the river in Pai and Vang Vieng try to build overlap into the river boundary because they can gain more benefit on their business. Meanwhile, Chiang Khan has clear space along the riverbank area.

5.2.5 Now Construction and Renovation

Regard to the information from Loei Office of Public Works and Town & Country Planning (PWT&CP), it presents that the growth trend of the town's dimension related with residential, commercial and tourism development. Direction of the growth is parallel the Makong River and the route no. 211 which is the main road going to Pak Chom District.

Figure 5.9: Direction of City's Growth in Chiang Khan



Source: Loei Office of Public Works and Town & Country Planning (PWT&CP), 2009

Figure 5.9 shows the direction of city's growth, the development grows related river and transportation. According to the growth direction in Figure 5.9, the trend shows that green area in the east will be clear out and replaced by infrastructure. The new tourism services operations not only refer to the new construction but also the renovation of the old buildings or old houses in order to open the services. There was no data available of the new construction during the tourism occurred period, but there was data of houses renovation based on questionnaire survey which shows in Table: 5.6.

Table 5.6: People in Community Related Houses Renovation

People in community	Renovated House for Tourism Purpose	Renovated House due to collapse	No Renovated
Local People (n=66)	14	15	37
Outside People (n=34)	26	0	8

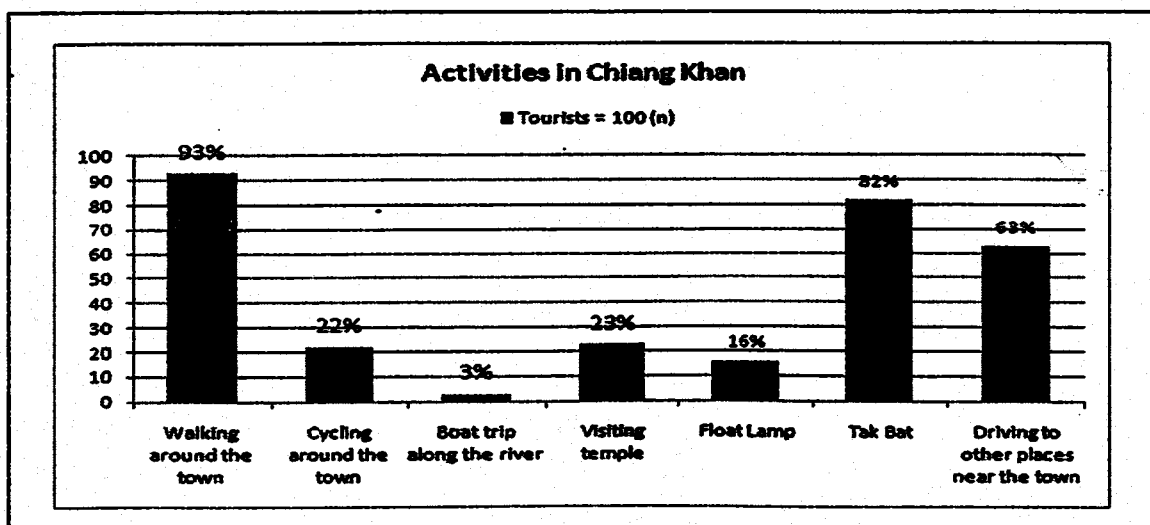
Note: Result of survey from respondents of 100 people who live in Chiang Khan Municipality (December, 2010)

As the review of Vang Vieng and Pai cases, both new constructions and renovated building are the factor to change ecosystem in Chiang Khan. The discussion of its effects was available in the effects section.

5.2.6 Tourism Activities

Tourism activities in Chiang Khan based on the survey, there are seven activities that tourists always take action namely; (i) Walking around the town, (ii) Cycling around the town, (iii) Boat trip along Mekong River, (iv) Visiting temple, (v) Float Lamp², (vi) Tak Bat³ (vii) Driving to other places near the town. Normally, most people had been walking around the town and taken photo, joined Tak Bat² activities and driving to other places near the town.

Figure 5.10: Activities of Tourists in Chiang Khan

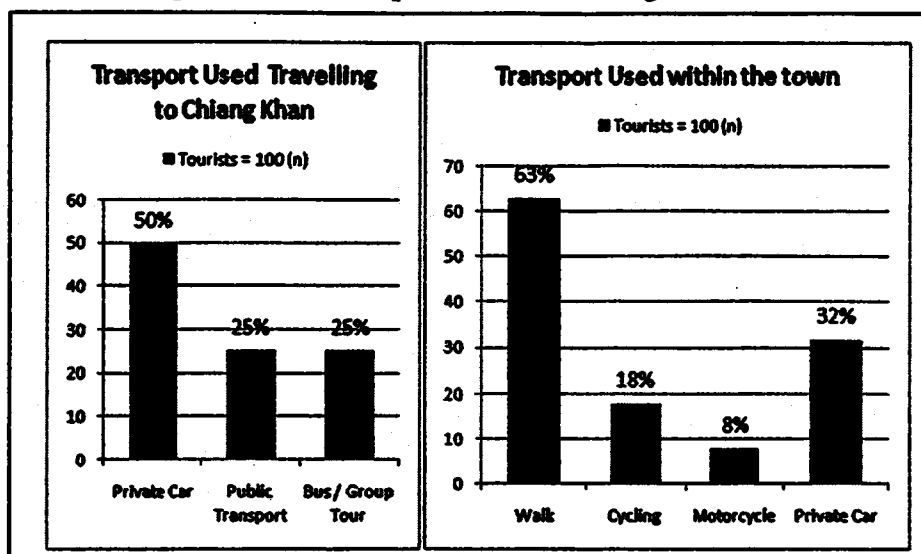


² Float Lamp or Khom Loy is a handmade balloon in northern part of Thailand such as Chiang Rai, Chiang Mai and other province. The people in the north will make and float it only for ceremony such as New year, Song Kran Festival or other Thai traditional ceremony.

³ Tak Bat is the activity that people provide rice to the Buddhist monks and earn merit

The situation of transport used in Chiang Khan, normally, tourists just walked within the town and along Mekong River. However, they drove for the long distance or to travel the other places near the town.

Figure 5.11: Transport used in Chiang Khan



Note: Result of survey from respondents of 100 tourists (December, 2010)

Refer to local people interview and observation, the use of private car by tourists lead to shortage of parking area during weekend or high season. In term of local peoples' opinion on transport used issue; there was 60.5% had strongly agreement that there was increasing of transport in the town compared between 2008 (before tourism development) and 2010 (after tourism occurred).

Table 5.7: Transport used in Chiang Khan

Query: Local peoples' perception on increasing of transport used in community compared between 2008 and 2010

Attitude	Local People (n=66)	Percentage (%)
Strongly Agree	40	60.5%
Agree	19	29%
Neutral	3	4.5%
Disagree	3	4.5%
Strongly Disagree	1	1.5%

Note: Result of survey from respondents of 66 local people (December, 2010)

Most of tourism activities of tourists were effects local ecosystem. However, the effects were depended on how activities connect or enclose with the nature of the area. The effects from activities in Chiang Khan were discussed in the effects section.

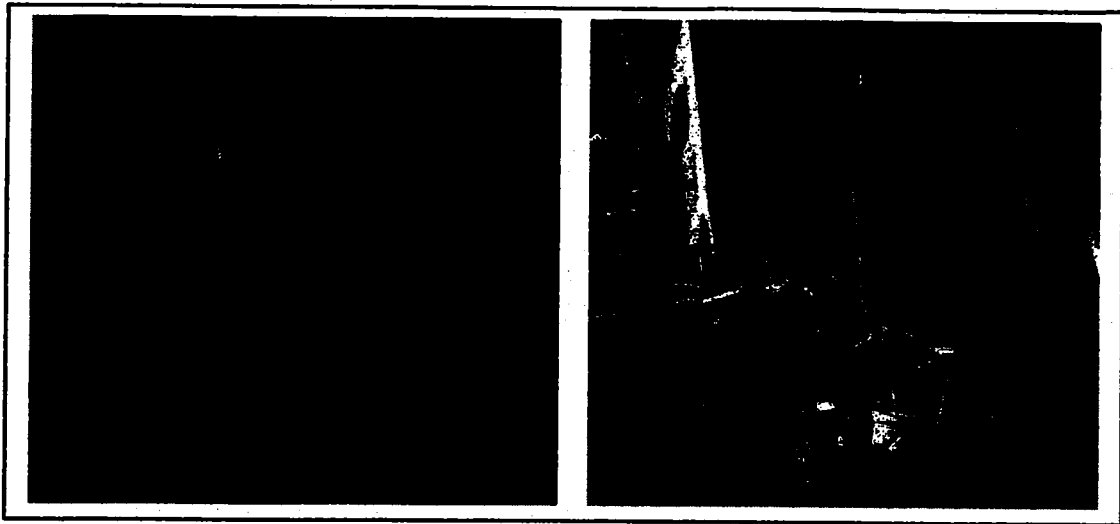
5.2.7 Response by Chiang Khan Municipality

The responses by the municipality were found that there were on solid waste and wastewater management which present as follows.

a) Solid Waste

Even, there is lack of the exactly amount of waste data from the municipality, but it can express from the result of survey and interview. The staff governors from sanitary section of Chiang Khan Municipality said that there is waste collection everyday from 4 a.m. to 6 a.m. in the morning. The municipality provides the waste collection bin along the main road but on the walking street which is used for many tourism activities, they provide only one point of the collection bin. Moreover, the enterprises on the walking street also do not want any litter bins placed in front of their shop. This is because they worry about visual pollution.

Figure 5.12: Overload of Solid Waste along the Walking street and the Litter that Tourists Leave on the street



Source: Site Observation, 2010

Therefore, in the high season or peak period, the only one disposal point is not enough for the large amount of increasing waste. Many tourists just leave their litter in some places such as in front of souvenir shop or other area along the walking street which shows in Figure 5.12.

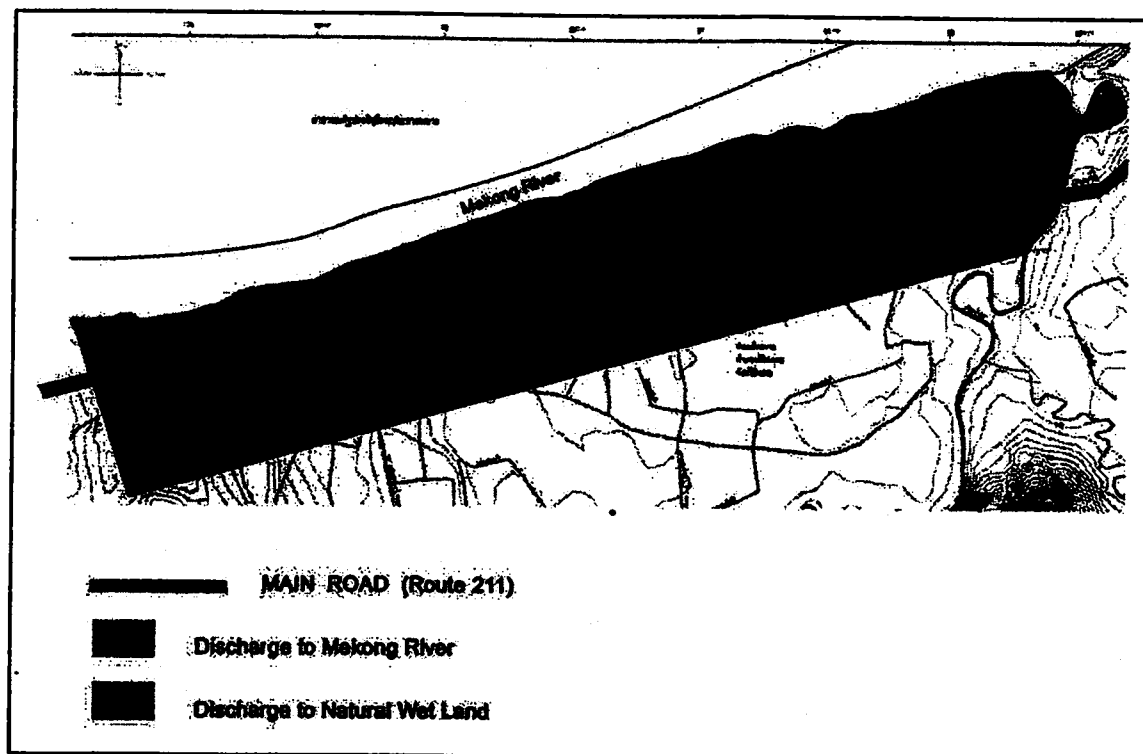
In addition, the term of the place for disposing all wastes, it located about 10 kilometers away from the municipality zone. The area of disposal site is approximately 9.3 Rai (14,880 square meters). The responsibility from the staff, they collect waste in municipality everyday and just dumping to the site, then open burning every week or few weeks for one time which depend on amount of waste. This creates air pollution surrounding. Some wastes are not burnt with fire and generate a bad smell around the area then breeding flies and rodents. The municipality responds by spraying chemical for anti-flies about 1-2 times per month.

b) Wastewater

The liquid waste in Chiang Khan will refer to waste water system and sewerage disposal. Firstly, the sewerage system in Chiang Khan is not the problem in the area because based on the survey and key interview, most households and non-domestic buildings having toilets connected to individual septic tanks. Therefore, it less pollute to the environment. Secondly, the wastewater drainage system that still relies on the nature drainage and not well management. Wastewater from household and other sectors are discharged directly to

the ground and leave it evaporated by the nature. The other way is that connected pipe and discharge directly to public drainage system without treatment. Refer to the key interview and information from the municipality, the public drainage systems in Chiang Khan Municipality, there are two zones which illustrate in the Figure 5.13.

Figure 5.13: Overload of Wastewater Discharge Zone in Chiang Khan Municipality



Source: Chiang Khan Municipality, 2010, Loei Office of Public Works and Town & Country Planning (PWT&CP), 2009

First zone is in the north of the town which flow waste water and discharge directly to Mekong River. Second zone is in the south, flowing into the natural wet land in the south of the town. The problem is both drainage system are discharge to the nature without treatment. Today, in Chiang Khan still has not water pollution yet because Mekong River is the large river which has more capacity to absorb wastewater from the city. The same with wet land in the south, it is large scale to absorb the waste. However, for long term, the expansion of the city, population increasing and majority of tourists, this natural drainage system will encounter environment problem.

Mekong River is the main water resource for Chiang Khan's water supply. The municipality pumps up water from the river to feed the water supply system. Water in the river is also used directly by the municipality for public activities such as washing market and extinguishing a fire. The main water resource of the district is from Mekong River, therefore, waste polluted should not threaten the river. Chiang Khan Municipality has to improve drainage system, treat wastewater before discharge to the nature in order to be proactive from water pollution.

5.3 The Trend of Tourism Growth Related Ecosystem Effects

As a result of key factor analysis in Chiang Khan Cases, it was found that tourism growth in the area affected some component of ecosystem. The growth in the area is in the dynamic process; some effects are still not happen but the trend express that it could be occurrence in the future. This section presents trend of the growth related with the current effects and the assessment of future effects.

a) Rapid growth of demand and supply

Tourism Demand in Chiang Khan was over 100,000 of visitor arrivals within only one year. The number expressed the rapid growth in the area and this factor is important to require more investment and services in the area. The supply of accommodation also shows that it was sharply increasing. There was 60% of accommodation which established during 2009 to 2010. The rapid increasing of demand and supply put the high pressure to the local area. The lesson from Vang Vieng and Pai case had illustrated that the increasing of tourist, their activities and the supply of services had affects to all components of ecosystem. The all effects presents as following.

b) Local economic increasing and people changed to do tourism business

Tourism development in Chiang Khan contribute local economic increasing and local people changing to do tourism services business. Based on the survey of tourism services owner, there is 39% of the total respondent who are local people. This number shows that there is nearly 40 percentages of local people who related tourism business.

c) Increasing of investment in locality

Due to the rapid increasing of tourist in Chiang Khan, it leads to require services supply investment from outside. The influx investments are from outside because the services from local cannot reach the demand. Moreover, the investors want to gain their profit in the destination area. In the accommodation services, the investors from outside was only 24%. However, the other tourism business service, such as shop and restaurant, the investors from outside was 45.9%. The percentage was nearly 50%, this shows that the big number of investors from outside were operated restaurants and shops. Moreover, most of them took a lease houses in community and operated their business.

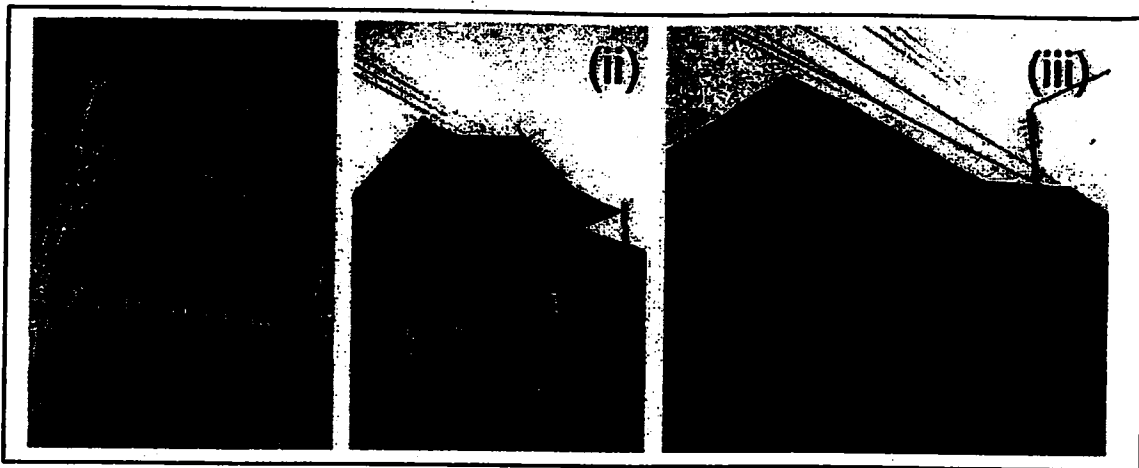
d) Increasing construction along the river but not overlap into the river boundary

As a result of the survey, the constructions along the river in Chiang Khan were not constructed into Mekong boundary due to the embankment and walk way along the river. However, the trend of construction expanded to the green space along the river which leads to change the pattern of land use.

e) Increasing renovation building

Refer to the survey; tourism services operated in the town was the renovation building. Business owner took a lease of houses from local people and renovated before opening. As a report from Mahasarakham University's Workshop (2009), there are three architectural styles in the district namely (i) the modern style (ii) the contemporary style and (iii) the traditional style, which shows in Figure 5.14.

Figure 5.14: Built Environment and Construction in Chiang Khan District



Source: Maharakam University, 2009

The report shows that most building in the center of the town is contemporary and traditional style. As the result of survey, the renovated building is on the same area. Therefore, if there is still increase of renovated building, it will lead to transformation of architecture style.

f) *Increasing resources used and increasing waste polluted*
 Waste polluted and resources used are causing from tourism activities. The increasing tourists lead to increasing activities. Table 5.8 shows the activities that consume the nature resources and pollute waste.

Table 5.8: Resources and Waste polluted of Tourism Activities in Chiang Khan

Tourism Activities	Resource Used	Waste Polluted	
Tourism Activities *Note • Standard of parking area: 2.5x5.5m. =13.75 m ² /car 2.5x5.5m. =13.75 m ² /van 4.2x12m. =50.4 m ² /Bus	• Walking (93%)	• No Recourses Used • No waste polluted	
	• Tak Bat (82%) • Float Lamp (16%)	• No Recourses Used	• Solid waste
	• Cycling Around the town (22%)	• Land used: <i>Not Available</i> • Building Materials Used for parking area	• No waste polluted
	• Boat Trip along River (16%)	• Energy Used	• Heat polluted • Gaseous waste (CO)
	• Driving to other places near the town (32%)	• Land used: 2.5x5.5 =13.75 m ² • Building Materials Used for parking area • Energy used	• Heat polluted • Gaseous waste (CO)

Source: Time-Saver Standards for Landscape Architecture (1997), Interview, Questionnaire Survey (2010)

Table 5.8 shows resources and waste polluted of the activities in Chiang Khan. According to the survey, the percentage of tourist doing the activity, it was 93% of walking around the

town but this activity was not polluted. However, there was 82% who doing Tak Bat which generated solid waste. Then, it was 32% of tourist driving which created heat and CO in the area. Moreover, driving also consume more on the resources. Therefore, this activity is the critical issue in Chaing Khan.

g) Increasing transport used

The result of survey shows that there was increasing of transport used due to tourist activities. This leads to increase air pollution and fuel consumption in the locality. The transport mode that tourist used that creating effect were motorcycle and private car. And the use of private car was 32% which is quite large scale. The increasing of private car used, need land used for parking and energy used with polluted of CO and heat to the environment. These lead to create pollution in Chiang Khan Community.

h) Tourist participate with local activity

Regard to tourist activities, there was 82% who participate in 'Tak Bat'¹ activities which local people provide rice to the Buddhist monks and earn merit. The data shows the almost tourist participate in this activity. Based on site observation, increasing of tourists can disturb local people when they are giving food to the monk. Moreover, many tourists behave in uncouth manner by ignoring the monks and taking photograph during participated in the activity and (*observation, 2010*). Some investors sell 'Float Lamp'² or 'Khom Loy' to tourists in order to float for ceremony. Actually, 'Float Lamp' or 'Khom Loy' is not traditional of ceremony in Chiang Khan, it is the traditional ceremony in the northern part of Thailand which investors are doing without awareness of traditional transformation.

i) Municipality cannot deal with the increasing waste polluted

As a result of local people' questionnaire survey, the question of whether or not the municipality collects solid waste every day; respondents gave the rating 3.20 with standard deviation of 1.19. And the satisfaction of waste management in community by municipality; respondents gave the rating 3.13 with standard deviation of 1.51. Both results were in the neutral rate. However, the depth interview of local people support that the only one disposal point on the walking street is not enough for the large amount of increasing waste during high season. Many tourists just leave their litter in some places such as in front of souvenir shop. Moreover, during high season, the municipality cannot collect all the waste, they just left some because the truck cannot access.

5.4 The Current Effects in Chiang Khan

As a result of tourism growth related urban ecosystem in Chiang Khan, it already put some effects in the area. In this section presents both the current effects and future effects could happen in the locality as shows in Figure 5.15.

Figure 5.15: Causes and Effects of Ecosystem in Chiang Khan

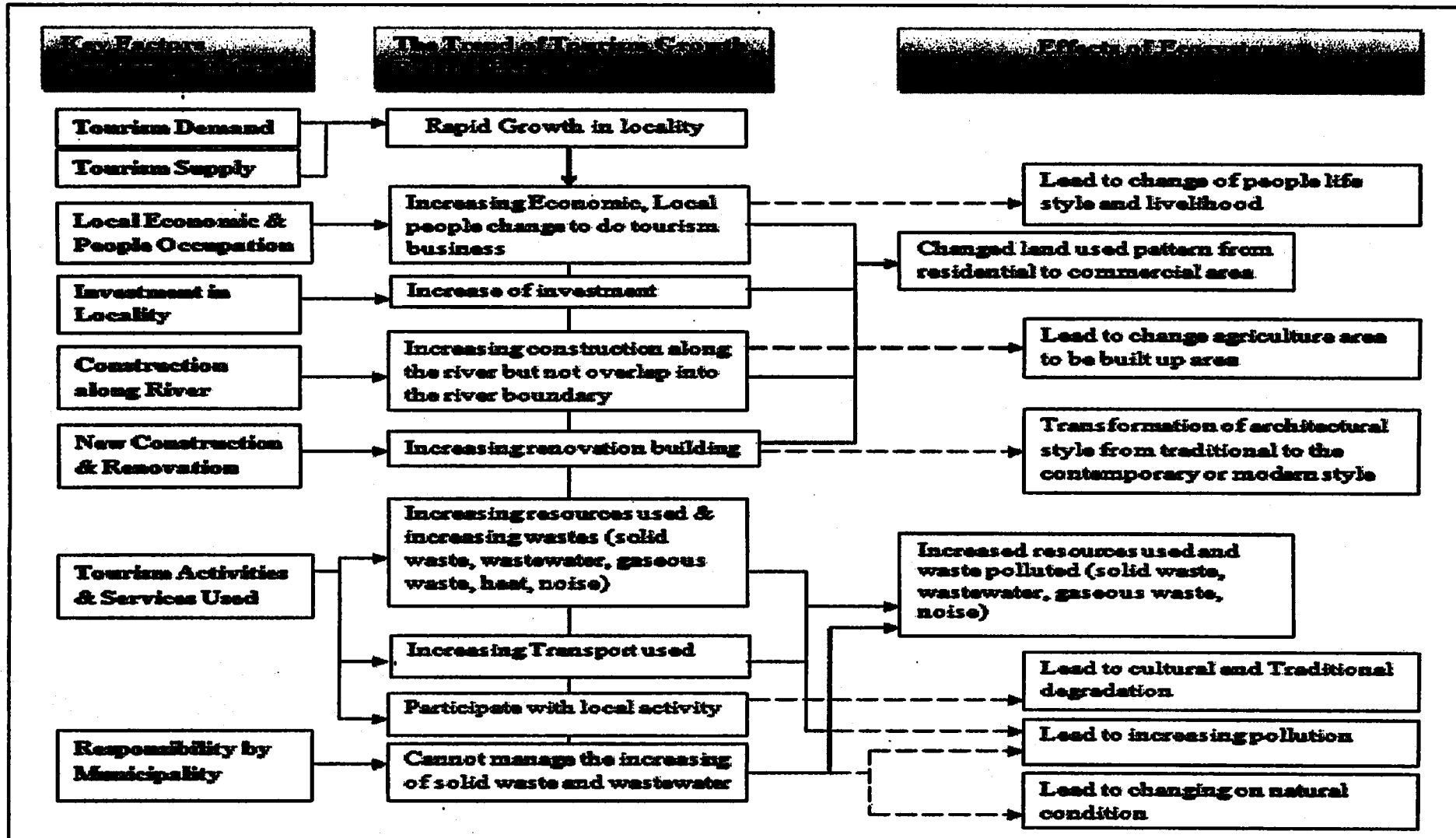


Figure 5.15 shows the linkage between causes and effects in Chiang Khan. It shows the factors related the tourism growth which related to ecosystem. And then, it leads to the effects in the locality area. The diagram illustrates that there are two effects that already happen in Chiang Khan, the others are the effects which will occur in the future. The current effect presents as follows.

1) Change land used pattern from residential to commercial area

Due to tourism activities and tourism supply in Chiang Khan take place in the community of local, land used in the locality already changed from residential area to commercial area. This leads to be conflict of land used, commercial and business area could lead to noise pollution in the community.

As the result of survey, the higher proportion of local people opinion was agreement with noisy from tourism. However, the proportion was quite similar with the neutral. This perception was compared between 2008 (before tourism development) and 2010 (after tourism occurred) as presents in Table 5.9.

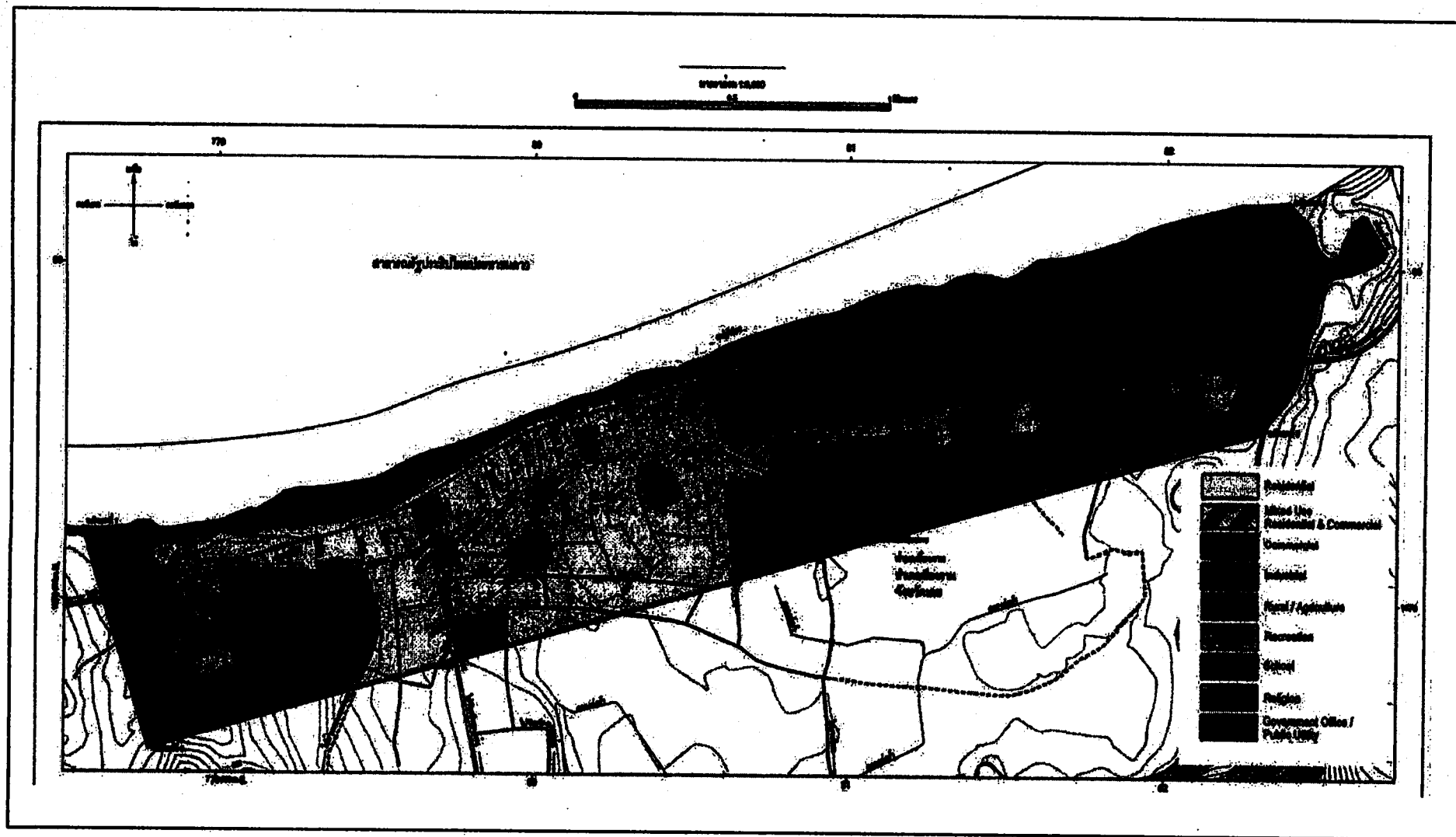
Table 5.9: Noise increasing in Chiang Khan
Query: Local peoples' perception on increasing of noise pollution from tourist in community compared between 2008 and 2010

Attitude	Local People (n=66)	Percentage (%)
Strongly Agree	14	21%
Agree	18	27.5%
Neutral	16	24.5%
Disagree	12	18%
Strongly Disagree	6	9%

Note: Result of survey from respondents of 66 local people (December, 2010)

This situation happens in Chiang Khan because most tourism activities take place in the center of the town which was the community area. Figure 5.16 shows the existing land use in Chiang Khan which is the same area of tourism activities and tourism service supply located.

Figure 5.16: Existing Land Used in Chiang Khan



2) Increased of waste

The tourists' consumption in the area refers to the spending goods and services which lead to increasing solid waste in the area. Based on observation, the types of waste generated in the area are very mixed. The wastes include plastic bags, bottles, glasses, containers, plastic, papers, fruit peels, food wastes and other organic wastes. The quantity of this solid waste is large compared to the quantity two years ago. According to key interviewing, the non-organic component of solid waste in the last two year (*Since 2009*) has significantly increased with the visitors and their consumption.

Regard to the information of sanitary section in Chiang Khan Municipality, there was dramatically increasing of solid waste after tourism occurred but they had lack of waste's amount data collection. However, the result of survey expressed that, there was 44% had strongly agreement that there was increasing of solid waste in the town compared between 2008 (before tourism development) and 2010 (after tourism occurred).

Table 5.10: Solid waste in Chiang Khan
Query: Local peoples' perception on increasing of solid waste in community compared between 2008 and 2010

Attitude	Local People (n=66)	Percentage (%)
Strongly Agree	29	44%
Agree	27	41%
Neutral	6	9%
Disagree	1	1.5%
Strongly Disagree	3	4.5%

Note: Result of survey from respondents of 66 local people (December, 2010)

In term of gaseous waste can refer to local peoples' perception of air pollution in community. The opinion compared between 2008 (before tourism development) and 2010 (after tourism occurred), the result shows that people perception was neutral. Air pollution was not much increased after tourism occurred.

Table 5.11: Air pollution in Chiang Khan
Query: Local peoples' perception on increasing of air pollution in community compared between 2008 and 2010

Attitude	Local People (n=66)	Percentage (%)
Strongly Agree	10	15%
Agree	19	29%
Neutral	20	30%
Disagree	13	20%
Strongly Disagree	4	6%

Note: Result of survey from respondents of 66 local people (December, 2010)

Moreover, the result of wastewater management by household based on the survey, it illustrated that there was high proportion of managing by connected their pipe to the municipality drainage system (76%).

Table 5.12: Household Management of Wastewater in Chiang Khan

Waste water drainage in community	Treated water before discharged to the municipal drainage system	Connected pipe and discharged directly to Mekong river	Connected pipe to the municipal drainage system	Discharged to the ground
People in community (n=100)	15	9	76	4

Note: Result of survey from respondents of 100 tourists (December, 2010)

As a result, it was 76% of household managed their wastewater by connected to the municipality drainage. Then, it was discharge directly to Mekong River. This result shows that if there is increase of tourist, there will be increase of waste discharge to the river. Then, it will affect quality of water in the river.

The result of survey express that it was increasing of waste in the area. Refer to the responses of waste management by the municipality, they are still relies on the nature which could not deal with the high volume of waste.

The disposal site is just dumping area without well management of solid waste. Refer to the increasing of solid waste from tourism activities; there will be more frequency of burning with increasing air pollution. Another problem is that solid waste cannot be burnt during raining season. Then, it creates wastewater from the dumping area with smell and visual pollution as well.

Today, Chiang Khan still has not water pollution because Mekong River is a large river which has more capacity to absorb the wastewater. However, the wetland of wastewater discharging, there was smell pollution in sometimes based on in depth interview of local people living around there.

5.5 Concluding Remark

This chapter describes the current growth in the new tourism destination in GMS with the case of Chiang Khan District, Loei Province in Thailand. The analysis of Chiang Khan Case was used the lesson learnt issue from Vang Vieng and Pai. It was found that there both current effects and trend that lead to affect in the future. These effects also show the weakness of local authority's response which need to improve.

The finding of ecological effects in this chapter was used to analyze for the key issue improvement environmental management in the next chapter. It provides the discussion and setting of possible application environmental management measures for the municipality in order to mitigate the current effects and prevent the future impacts in Chiang Khan.

Chapter 6

EMM Applications for Chiang Khan Municipality

Regard to the effects and the existing of responses, it need to enhance the performance of the municipality's management and responsibility. Therefore, this chapter aims to find what are the necessary management and responses of future growth with less effect on ecosystem.

The previous finding of the tourism growth related ecosystem in Chiang Khan town. It was found that there are two types of the effects. First, the current effects that already happened in the area are two issues namely *(i) the change land used pattern from residential to commercial area and (ii) increased of resources used, waste polluted and pollution*

Second, the effects will occur in the future which analysis based on the result of the growth related ecosystem and the lesson learnt from the two cases of Vang Vieng and Pai. The future effects are *(i) lead to change people life style and livelihood, (ii) lead to change green area to be built up area, (iii) transformation of architecture style, (iv) lead to cultural and traditional degradation, (v) lead to increasing pollution, (vi) lead to change natural condition*

The finding of chapter 5 also expressed that the improvement of local authority has important role to manage and develop in destination for sustainable tourism. The role of municipality's responses could mitigate current effects and prevent impacts in the futures.

The response from Chiang Khan Municipality could mitigate the pressure in the destination area and slow down the tourism growth and consumption in the current state. Then, it could prevent the effects on ecosystem of the area in the future. Moreover, the concern and awareness of local authority could be used to indicate how to make decisions of policy, plan, program and project in local level and also the higher level.

6.1 The Responses Needed in Chiang Khan

Refer to environment management issues in Chiang Khan; there was still weakness of waste management. In order to prepare for the future tourism growth and mitigate the present problems of increasing wastes in the area, Chiang Khan Municipality need to enhance the management of solid waste and the drainage system of their area.

Table 6.1 Linkage of Key Analysis of Findings and Responses Needed in Chiang Khan

Analysis / Finding		Responses Needed
Causes	Ecosystem Effects (Current and Future Effects)	
<ul style="list-style-type: none"> • Increasing Tourists • Tourism Activities <ul style="list-style-type: none"> - Transport used • Increasing Tourism Services Supply <ul style="list-style-type: none"> - Accommodation - Transportation - Restaurant - Entertainment - Shop / Stall 	<ul style="list-style-type: none"> • Increasing waste polluted <ul style="list-style-type: none"> - Solid waste - Wastewater - Co, Co₂ - Heat - Noise • Depletion of natural resource <ul style="list-style-type: none"> - Land (<i>green area</i>) - Water - Energy (<i>fuel, electricity</i>) 	<ul style="list-style-type: none"> • Waste management improving <ul style="list-style-type: none"> - Solid waste - Wastewater • Transportation management <ul style="list-style-type: none"> - Public transport improving - Transport use control • Investment control <ul style="list-style-type: none"> - Permission (<i>licenses, registration</i>) - Scale - Type • Land use control <ul style="list-style-type: none"> - Zoning (<i>separate community and tourism service area</i>) - Green area conservation • Water use control • Fuel use control • Electricity use control
<ul style="list-style-type: none"> • Increasing Tourism Services Supply <ul style="list-style-type: none"> - Changing residential area to commercial area - New building construction - Increasing land value 	<ul style="list-style-type: none"> • Change land used pattern <ul style="list-style-type: none"> - Land used conflict (<i>creating noise pollution to local community area</i>) - Depletion green area 	<ul style="list-style-type: none"> • Investment control <ul style="list-style-type: none"> - Permission (<i>licenses, registration</i>) - Scale - Type • Land use control <ul style="list-style-type: none"> - Zoning (<i>separate community and tourism service area</i>) - Green area conservation

<ul style="list-style-type: none"> • Increasing Tourism Services Supply <ul style="list-style-type: none"> - New building construction - Traditional and wooden renovation • Investment from outside <ul style="list-style-type: none"> - Traditional, wooden old house was occupied by investors to do tourism business 	<ul style="list-style-type: none"> • Transformation of architecture from traditional to contemporary style 	<ul style="list-style-type: none"> • Building construction control <ul style="list-style-type: none"> - Scale - Type and Style
<ul style="list-style-type: none"> • Wastewater discharge directly to the river 	<ul style="list-style-type: none"> • Change natural condition in Mekong River <ul style="list-style-type: none"> - River pollution 	<ul style="list-style-type: none"> • Wastewater management <ul style="list-style-type: none"> - Drainage system improving
<ul style="list-style-type: none"> • Tourists Activities 	<ul style="list-style-type: none"> • Culture and traditional degradation 	<ul style="list-style-type: none"> • Tourism activities control
<ul style="list-style-type: none"> • Change occupation 	<ul style="list-style-type: none"> • Change local people life style and livelihood 	<ul style="list-style-type: none"> • Economic activities <ul style="list-style-type: none"> - Support and promote local product

Table 6.1 illustrates the finding of causes and effects in Chiang Khan related to the management areas that the municipality need to consider. The effects referred to both in the current and the future, the municipality needs to minimize and prevent the changes in the areas. As the linkage of key analysis of finding and responses needed in the area, Chiang Khan Municipality could consider on the parameter as follows.

- (i) Land use
- (ii) Nature resources use
- (iii) Investment and Economic activities
- (iv) Tourism activities
- (v) Transportation
- (vi) Waste polluted
- (vii) Building and construction

These parameters were used to set the possible environment management measure to reduce and avoid the impacts which could affect ecosystem in Chiang Khan.

6.2 Possible Application of Environmental Management Measures

The use of EMMs aims to mitigate tourism growth in the area. These tools could be used by local authority which makes sustainable tourism and prevent ecological effects.

1) Land use

Land used in Chiang Khan town was changed in term of transformation of residential area to commercial area. Most tourism services supply such as accommodation, restaurant and

shops were located in the center of the town which was the residential area in the past. Therefore, the present status of land used in the town has changed to be mix land used between resident and commercial areas. The problem is the services supplies creates noise and disturb local community. Based on the survey, tourism services building were both new construction and house renovation. Most owners renovated their houses to do tourism business. However, there are 2-3 places that owners bought the houses from local people, demolish and built the new building instead.

Moreover, the trend of land used is expending into the green area around the town. Based on the data collection, the direction of land used is going along the river and the road. The concern of this growth is the use of land along the river and riverbank. Other important issue that is wastewater discharged along the river. Therefore, municipality should declare land use planning and announce as it in order to control land used in the town by local people and investors. The strategies and objective of this land use plan as follows.

- Declare zoning of land use:
- Separate community zone and tourism service zone.
- Entertainment service such as night club and bar cannot operate in residence zone
 - To avoid noise problem
- Declare conservation zone
 - To conserve traditional buildings
 - To not allow to construct new building in the conservation zone
- Specify green area
 - To conserve green area such as park, buffer zone along a riverbank and green belt around the town
 - To not allow any infrastructure to construct in green zone

Due to rapid growth of tourism services supplies in Chiang Khan, this land used plan should announce as soon as possible. This is the command and control measure to be used for controlling local people and investors in the area.

2) Nature resources use

Based on the survey and key finding analysis, the main resources used from tourism activities and services in the area are water used, electricity used and fuel used. The used of water and electricity in the town was increasing due to increasing of tourists and increasing of service supplies such as accommodation and restaurant. Water and electricity used could be control by using economic measure and incentive by user charge. User charge for tourism services supply and local people who used the resources. The strategies and objective of user charge as follows

- Announce the incentives for less user, for example; free charge for less consumers
- Announce of different rates for different types of consumers, for example; the rate of hotels and resorts should higher that households
 - To reduce water used and electricity in the town

This is economic measure which could be used by the municipality for controlling and incentive to reduce the use of resources from local people and investors. Furthermore, fuel used by transportation should be concern for the resources used issues. Due to the increasing of tourists in the area, the trend shows that there was increasing private car used by tourists and tourism activities. Therefore, local authority should reduce private car used by using this strategies and its objective below.

- Develop public transport: providing mini bus or van travelling from Chiang Khan town to other tourism site nearby.

- Encourage tourist to cycling instead of driving.

This a suasive measure to encourage tourists reducing their own private car used and fuel consumption.

3) Investment and Economic Activities

Due to the rapid growth of tourism sector in the town, the number of services supply or investment was also increasing. This was the main factor causing the impacts in the destination. Therefore, the municipality should deal with the growth of the investment of tourism services.

- Investment permission (license, registration, inspection, penalties)
 - To control type and scale of investment, for example: The services of accommodation, restaurant, nightclub or bar must register in order to permission to operate, and the large scale of services must do EIA

This control measure also could use to control carrying capacity of tourist. Due to the number of tourists was related the accommodation supply, the control of accommodation services could control the number of tourist staying in the town.

- To control carrying capacity of tourist: by specify scale of accommodation services in the town such as giving permission to the accommodation services
 - Limit hotel and resort scale with capacity not more than 20 rooms
 - Limit home stay with capacity not more than 50 peoples

In order to encourage local people still doing farm, the municipality could use suasive measure for local people and the community by supporting and promoting local or agriculture products. For example, providing assistance and training in cotton fabric development such as new design of fabric pattern, providing training in agriculture product development such as coconut sweet, banana chip or banana candy, then, providing shop for selling local products.

4) Tourism Activities

As the analysis finding, the tourism activities that have affected the Chiang Khan ecosystem are transport using (private car and motorcycle rent), boat trip in Mekong River and traditional activities (Float Lamp⁴, Tak Bat⁵). The municipality could control these tourism activities and provide knowledge on traditional tourism activity to tourists.

- Develop public transport: providing mini bus or van travelling from Chiang Khan town to other tourism site nearby in order to reduce the travelling by private care
- Ban motorcycle rent operation in the town and encourage tourists cycling instead of riding motorbike and driving car.
- Limit the number of boat trip agency in the town and limit the round trip operation
- Ban other traditional ceremonies or activities which are not Chiang Khan traditional such as Float Lamp¹
- Provide or introduce culture and traditional knowledge to tourists such as establish museum or set up the permanent exhibition in the town.

These strategies could achieve to control tourism activities and mitigate the effects from tourist's action.

⁴ Float Lamp or Khom Loy is a handmade balloon in northern part of Thailand such as Chiang Rai, Chiang Mai and other province. The people in the north will made and float it only for ceremony such as New year, Song Kran Festival or other Thai traditional ceremony.

⁵ Tak Bat is the activity that people provide rice to the Buddhist monks and earn merit

5) Transportation

Base on the transportation survey, there are 32% of tourist using private car and 8% of tourist using motorcycle. The rest is walking and cycling. The use of private car and motorbike affects on air pollution, shortage of parking in the town. The strategies and objective of transportation management in the town which the municipality should improve as follows

- Providing mini bus or van travelling from Chiang Khan to other tourism sits nearby
- Providing cycling lane to the near tourism sites
- Promoting travel by cycling such as cycling route within the town and going to other tourism sites
 - To reduce using private car and encourage tourists cycling instead of riding motorbike or driving
- Not allow any car driving through and parking along the walking street
 - To control transportation on the walking street
- Providing the area for tourist's car parked and charging for parking (User charge)
 - To encourage tourist using public transport and reduce private car in the town

These measures are used to control and limit transport used by tourists. Moreover, it could encourage tourists used bicycle travelling around Chiang Khan town.

6) Waste polluted

The problem of waste polluted is that the municipality cannot deal with the increasing of the waste. The waste pollution in Chiang Khan Town is from solid waste, wastewater, gaseous waste, heat and noise. The municipality could prevent the high impacts from this problem by used the plans as follows.

Solid waste management

- Provide Disposal point and small truck for collection on narrow road
- Provide garbage bins for every household and tourism building
- Provide separated garbage bins for waste separating in some area such as on the walking street and the market

The purpose of these strategies is to prevent visual pollution on the street. The important concerned is the increasing of solid waste from tourist spending goods in the destination area. Therefore, the response of the local authority is reducing and manages solid waste

- Waste collection fees; Announce of different rates for different types of collection points, for example; the rate of hotels, resorts, home stays and restaurants should higher that households
 - To reduce solid waste from tourism services
- Educational and training of recycling and composting
- Educational and training workshop how to separate waste, recycling and composting
 - To reduce solid waste in the town and encourage people to recycle waste
- Construct sanitary landfill for disposal solid waste in municipality or share sanitary landfill with other municipality in order to reduce cost
 - To manage solid waste in Chiang Khan for long term

Reducing the waste and management plan for long term could mitigate waste pollution in the area and prevent risk of impacts in the future such as environmental problem from dumping site and overload solid waste in the town.

Wastewater management

The existing management of wastewater in Chiang Khan still relies on the nature. The end of drainage system discharges directly to Mekong River and wetland near the town. The problem is water supply in the town pumping from Mekong River and the water is contaminated. Therefore, municipality should deal with this problem. The strategies are available as follows.

- Upgrading drainage system and installing wastewater treatment in order to treat water before discharge into the river or the nature
 - To manage wastewater and mitigate problem
- Install water treatment and oil-water separator in the services operation with more polluted such as restaurant
 - To manage wastewater before discharge into public drainage system

Other waste polluted

The other waste was polluted due to tourism activities in Chiang Khan are gaseous waste from transportation, heat waste from accommodation services and noise polluted from tourists. In order to mitigate and prevent the high impacts, the suasive and control measures could be used by the municipality.

- Promoting and encourage tourists and local people to walk and cycling in order to reduce air pollution
- Encourage local people and investors to do not install air-condition in their places and encourage tourists to stay in non-air condition accommodation services in order to reduce heat polluted
- Separate community zone and tourism service zone to avoid noise problem

7) Building and construction

As a result of ecosystem effects in Chiang Khan, building construction is the one of factors causing the effects. Scale of building and services are also the cause to resources used and waste polluted. Moreover, transformation from traditional architecture to be modern is also the effects in Chiang Khan. It could degrade the value of traditional architecture, if local authority does not control building construction or renovation. Therefore, building regulation or building code should be used in the town. The suggestion of building regulation and the objective presents as follows.

- Building code; Declare traditional style of Chiang Khan's wooden old houses for renovated building and new constructed building
- Specify building material and the height for renovated building and new constructed building
 - To conserve wooden traditional houses
- Building scale control;
- Accommodation services; hotel and resort (capacity more than 15 rooms), home stay (capacity more than 30 people) need to do EIA
 - To control scale of building in the town.

The set of EMMs related to management areas and the purposes. However, the important of EMMs is the implement stage and there are some barriers of applying in the context and condition of Chiang Khan which presents in the next section

6.3 Possible Barriers in Applying EMMs

As implementation step by Chiang Khan Municipality, there could be many barriers to apply these above EMMs. The potential of barriers was analyzed based on key informant interview and Chiang Khan Municipality context which as following.

- **Poor governance**
 - *Homan resource*

Human recourses are the important key to apply EMMs. Based on key interview of the mayor and local governor, the mayor of municipality still has no long term vision and lack knowledge of tourism management. Moreover, there are no professional people who work in local authority. Unless, there are local governor or mayor who understand EMMs, the applying or implement stage is still difficult.

- **Stockholder participation**
 - *Private sector*

Normally, it is difficult to control private sector or investor such as investment permission. Most investors will not want to be charged or limited their operation. However, private sector or investors play important role in tourism sector and usually take action that affects ecosystem in the destination such as pollute more solid waste, discharge wastewater to the nature, construct new building and renovate building without awareness.

- *Local people*

Similar with local people, will be not willing to participate in the training or pay for any charge such as solid waste collection.

- **Budget**

Regard to the suggestion of EMMs, It seem to be costly in the implementation step. Although, local authority can ask for the budget from central government, it still takes long time for approving. Therefore, budget and financial issue may be the trouble of applying.

- **Location for land fill**

In Chiang Khan District, there is 40% which is mountain area and 60% is low plain and piedmont. However, most low plain and piedmont area is community area. Therefore, it is difficult to find the suitable location for constructing sanitary land fill in Chiang Khan.

- **Poor implementation**

Regard to tourism development in Chiang Khan, the number of tourism service is very rapid growth. The municipality might not able to use EMMs to control all over the services. For example, the municipality cannot charge unregistered accommodation services or restaurant.

6.4 Concluding Remark

The set of application EMMs in Chiang Khan Municipality can adapt and be the guideline for using in similar tourism destinations in GMS. The similar cases that are the nature based tourism destination with river attraction or the river based tourism. However, the implementation depends on the role or power of the local authorities in those destinations including tourism management framework in each country.

Chapter 7

Conclusion and Recommendation

This chapter summarizes the major findings of the study on ecologically sensitive destination development and management. Moreover, there is provision of recommendation for similar tourism destinations in GMS.

7.1 Conclusion

The discussion has moved forward from the issues of ecological sensitive tourism destinations development in GMS. Increasing in the number of tourists and services shows the negative impacts on urban ecosystem of locality area. In general, local authorities who play an important role in local management do not know how to deal with the impacts and decide on the limits of growth. Therefore, the overall objective of this research is to examine how local authorities in GMS manage the tourism growth in destinations by using environmental management measures.

Multiple case study approach was used for this research methodology in order to investigate a contemporary phenomenon within a real context of tourism destination in GMS. The selection of the case study areas was focus in the middle part of the Mekong river basin based on significant criterion. The multiple case studies were utilized in the three cases which are the same of nature based tourism and have river attraction in the middle part of GMS namely (i) Vang Vieng District, Vientiane Province in Laos (ii) Pai District, Mae Hong Son Province in Thailand and (iii) Chiang Khan District, Loei Province in Thailand. The data analysis was on two step case study process starting from precedence multi-case study (*Vang Vieng and Pai Cases*) based on secondary data and then analysis of an emerging destination (*Chiang Khan Case*). The evidences from precedence destination cases were used to draw the lesson learnt and analyze the emerging case. Then, it suggested an application tools used by local authority for future growth in destination area.

The finding of Vang Vieng and Pai Cases was found that most driving forces to develop tourism in destinations were from policy, plan, program and projects from three level of international, national and local level. It illustrates that the main influence was from national level. The two cases drew causes and effects in the three component of urban ecosystem which was socio-ecosystem, built system and bio-physical system. The key factors were causing effects in urban ecosystem of the two cases as follows.

- 1) Tourism demand and supply in destination lead to effects of spending natural resource used, increasing waste generated and lead to pollution and change natural condition in the locality
- 2) Due to economic increasing, it is causing to increase of investment in locality which leads to increase of new construction and renovation building for tourism business purpose. Then, new construction and renovation will put the pressure to the area.
- 3) Tourism development in destination, contribute local people to change their occupation from farming to tourism business. These could lead local people to change their behavior and relationship in the community.
- 4) Construction and services along the river causes to riverbank erosion, change land use pattern in locality and increasing waste polluted to the river.

5) New construction and renovation of building lead to change land use pattern, transformation of local architectural style and increasing building material resource used.

6) Normally, tourism activities of river based tourism enclose to the river with lead to pollute waste to the nature and lead to the bank erosion.

7) Responses by local authority is the important factors which causing the effects of ecosystem in the locality of destination. Due to the influx of tourist and services supply in the area, it could create the change in the ecosystem especially on the nature environment. However, local authority with the main of responsibility in local level, but they have less responses on these effects. There was only basic on public management in the area such solid waste and wastewater management with poor management and low capacity. The effects in ecosystem will more critical if local authority has not improve the management in the destination.

The key factors causing of ecosystem in Vang Vieng and Pai Cases was used to analysis in Chiang Khan Case. It was found the current effects on the ecosystem and the trend of tourism growth which lead to effects the locality in the future. The current effect in Chiang Khan is the inner town was changed land use pattern from residential to commercial area. And regard to the survey, there is increase of resources used and waste polluted. In term on the future effects, the analysis based on the lesson learnt from Vang Vieng and Pai Case with the trend of tourism growth related ecosystem in Chiang Khan. The effects of ecosystem are on six parameters namely, (i) lead to change people life style and livelihood, (ii) lead to change green area to be built up area, (iii) transformation of architecture style, (iv) lead to cultural and traditional degradation, (v) lead to increasing pollution, (vi) lead to change natural condition.

Regard to the parameters of effects in Chiang Khan, it was used to analyze for setting the possible environmental management measures (EMMs) to mitigate the current effects and prevent the effects of the future growth which could be used by Chiang Khan Municipality.

7.2 Recommendation of EMMs for Similar Destinations in GMS

As analysis of the major findings, the process of tourism development and its effects on the ecosystem in the sensitive area could be the same pattern in other river based tourism destinations in GMS. Therefore, the critical management issues in Chiang Khan can adapt and be the guideline for setting application EMMs in the similar tourism destinations in GMS. Parameters of management concern with EMMs were recommended as follows;

Land use; Land used in tourism destination was change due to the growth in the area. Sensitive area should be concern because land used changing could lead to deplete green area or conflict of land used. Land use plan could be used to control local people or investors using the land. Moreover, it could be used to specify the area that wants to conserve or separates the zone to prevent the conflict of user.

Nature resources use; Due to tourism demand increasing lead to increasing natural resources use in the locality. Local authority need to manage or reduces using in order to avoid the problem such as shortage of water resource or increasing of electricity used with heat polluted. User charge and incentive measure could be used, for example, user charge: announce of different rate for different type of consumer, incentive for less user: free charge for less consumer.

Investment and Tourism activities; Large scale of services business usually put more pressure to local area such as more polluted and more resources used. Moreover, tourism activities services operation also affects the area boat trip and motorcycle rent. Investment permission in the area could used to control the scale and type of the services. Local authority could specify scale and type of services in destinations such as not giving permission to the hotel or resort with capacity more than 200 rooms, limit the number of boat trip service agencies and limit the round trip per day.

Transportation; Increasing of transportation used could create air pollution in destination. Local authority should encourage tourists using public transport by development public transport services in their area such as providing mini bus travelling from inner town to other tourism site nearby. Moreover, local authority should encourage tourists cycling and walking within the town or declare the pedestrian zone inner city.

Waste polluted; Waste polluted in destination could refer to solid waste, wastewater, gaseous waste (*CO from transportation*), heat and noise. The management could manage by type of waste. *Solid waste;* Sanitary landfill should be constructed for long term management, encourage and training local people and investors to recycle waste, improve capacity of waste collection in locality. *Wastewater;* Upgrading drainage system and install wastewater treatment for long term management in destination. *CO from transportation;* Reducing transportation used by transportation plan as already discussed. *Heat;* Polluted from transportation and electricity used which could reduce by transportation plan and resource used plan. *Noise;* Land use planning could prevent and mitigate noise from tourist to local community.

Building and construction; Building regulation could be used to prevent the transformation of architecture in destination and control type and scale for the building of tourism service operation. For example, declare traditional style of architecture in destination to control of new and renovation building.

Potential Challenges in implementation;

Stakeholder participation; Lack of awareness, motivation and involvement of the public; it is difficult to encourage people to participate in any program because they always think that it is not their business. Moreover, problem related to private sector; tourism business operators try to avoid the law or control from local authority

Poor governance; Problem related to decentralization (more responsibility without sufficient financial resources or less control)

However, the implementation depends on the role or power of local authorities in the destinations including tourism management framework in each country.

7.3 Recommendation for Further Study

Due to limitations and scope of the study, there are several recommendations for further studies as followed.

1) Regard to methodology of the research, it used multiple case studies for analysis. The limit of the study was used only secondary data to analyze of the first part (*Vang Vieng and Pai cases*). However, the case studies can be more than two cases and may be added more on primary data in order to broaden the studies.

2) The scope of study area was on the middle part of GMS and referred to only Lao PDR and Thailand. In order to clearly understand on tourism and its effects in GMS, it is important to compare and study on all six member countries. Then, the result would be useful to guide local authorities of the six countries in GMS.

3) The present study mainly focuses on river based tourism. Other characteristic of tourism such as culture based tourism, nature based tourism (*broader than river based tourism*), adventure based tourism and marine based tourism, were not taken into considered of the study. Therefore, it is interesting to study on other tourism characteristics. Such studies would be covering all the effects on ecosystem and it would be useful for the different destinations.

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Appendix A
General Institutional Framework in the GMS Member Countries

Countries	General Framework
Thailand	The framework for developing tourism policy, planning and programming in Thailand is managed by the Ministry of Tourism and the Office of Tourism Development. This comprises 5 bureaus: (i) the Bureau of General Administration; (ii) the Bureau of Policy and Strategy; (iii) the Communication and Information Technology Center; and (iv) International Relations Division.
Laos PDR	The Lao National Tourism Administration (LNTA) is responsible for tourism policy, planning and programming at the national and provincial level rests with. The LNTA is headed by a Minister of State. The LNTA comprises two units: (i) a Tourism Operations Unit responsible for planning, cooperation, promotion and management (regulation) of tourism enterprises; and (ii) an Administration support unit responsible for personnel, administration and finance.
Vietnam	The institutional framework for tourism policy, planning and programming at the national and provincial level in Vietnam is highly centralized in the Vietnam National Tourism Administration (VNAT), and embedded within a long-term policy planning framework with a 15 year timeframe. Within this policy framework, the planning framework for program implementation follows a 5-year timetable.
Cambodia	The institutional framework for national and regional (provincial level) tourism policy, planning and programming in Cambodia, in principle, comprises a collaboration process between the Ministry of Tourism (MOT), the Cambodian National Tourism Authority (CANTA) and the Office of the Council of Ministers, other relevant Ministries, Institutions, APSARA, and the private sector through the various associations. The tourism development policies, plans and program at the national level are intended to focus upon strategic issues related to tourism development, to ensure the sustainable development of tourism in the country, and provide a framework for the formulation and implementation of detailed regional and provincial tourism policies, plans and program. The capacity to develop tourism policy, plans and programs is seriously constrained by overlapping functions and responsibilities between MOT and the CANTA leading to confusion over who should take the lead; and by limited technical capacities in the technical division of the MOT.
China	The framework for tourism policy, planning and programming in Yunnan comprises the formulation by the Yunnan Province Tourism Administration (YPTA), respectively, of provincial-wide tourism policies, plans and programs, followed by the formulation of prefecture and county tourism plans and programs for implementing the provincial tourism policies and plans.
Myanmar	Institutional responsibility for national and provincial tourism policy rests with the State Peace and Development Council (SPDC) while the provision of tourism policy advice, planning and programming rests with the Ministry of Hotels and Tourism (MHOT). The Ministry is headed by a Minister of State and a Deputy Minister supported by a Minister's Office. Reporting to the Minister is the Directorate of Hotels and Tourism, headed by a Director General and Deputy Director General. The Directorate is divided into five units: (i) tourism promotion, (ii) tourism regulation; (iii) planning and projects; (iv) administration and budget; and (v) Myanmar Hotels and Tourism services. The tourism policy, planning and programming role sits with the Director General and planning and projects department.

Appendix B

The structure for Tourism Organization in Thailand and Lao PDR

The general framework for developing tourism policy, planning and programming in Thailand is managed by the Ministry of Tourism and Sports (Department of Tourism) and Office of Tourism Development. This comprises 5 bureaus: (i) the Bureau of General Administration; (ii) the Bureau of Policy and Strategy; (iii) the communication and Information Technology Center; and (iv) International Relations Division. The structure and relation of the tourism sector framework in the national level and local level will illustrate in the Figure B.

Figure B.1: The structure for Tourism Sector Framework in Thailand

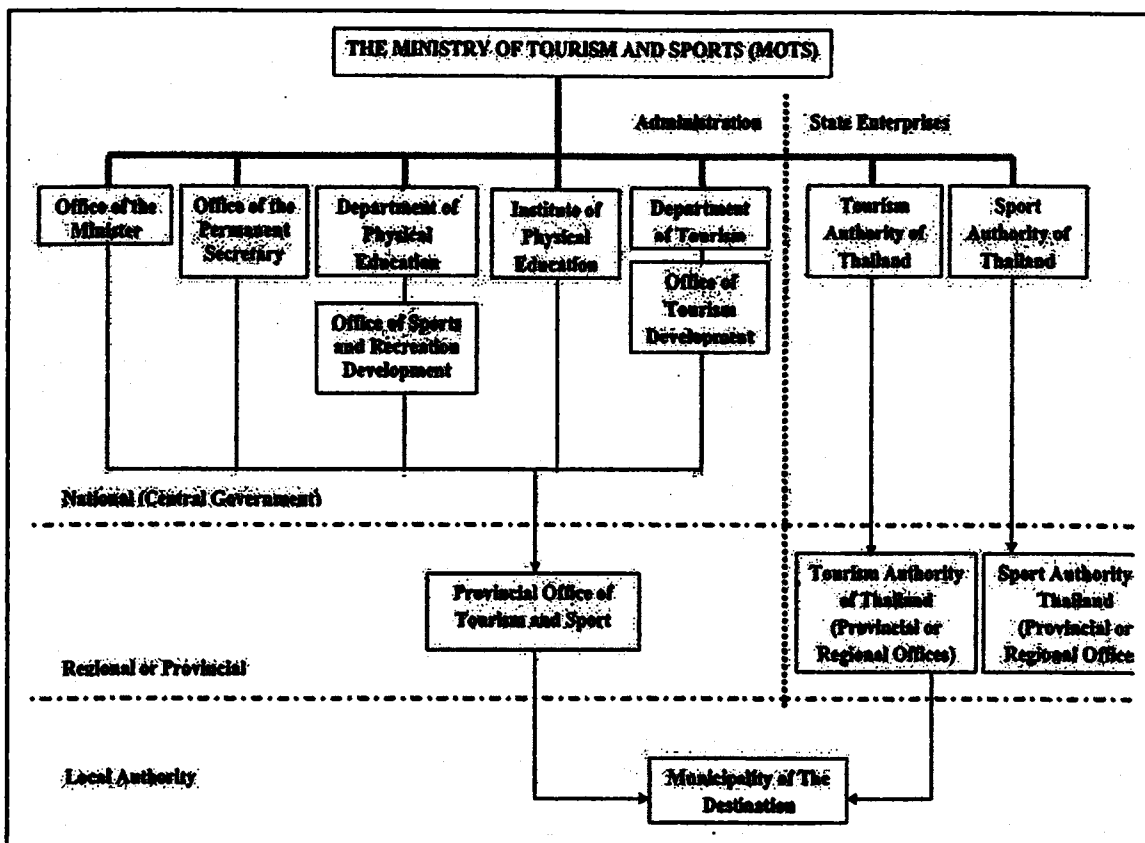


Figure B.1 shows the general organization framework of tourism sector in Thailand. As mentioned above, department of tourism and office of tourism development is responsible for developing policy, planning and programming. Then, there are 76 provincial offices of Tourism and Sports which play a supporting role in policy formulation. At the provincial or local level, the provincial governors or the mayors are required to follow the national tourism policies, plans and programs and then adapt these to their situations for implementation.

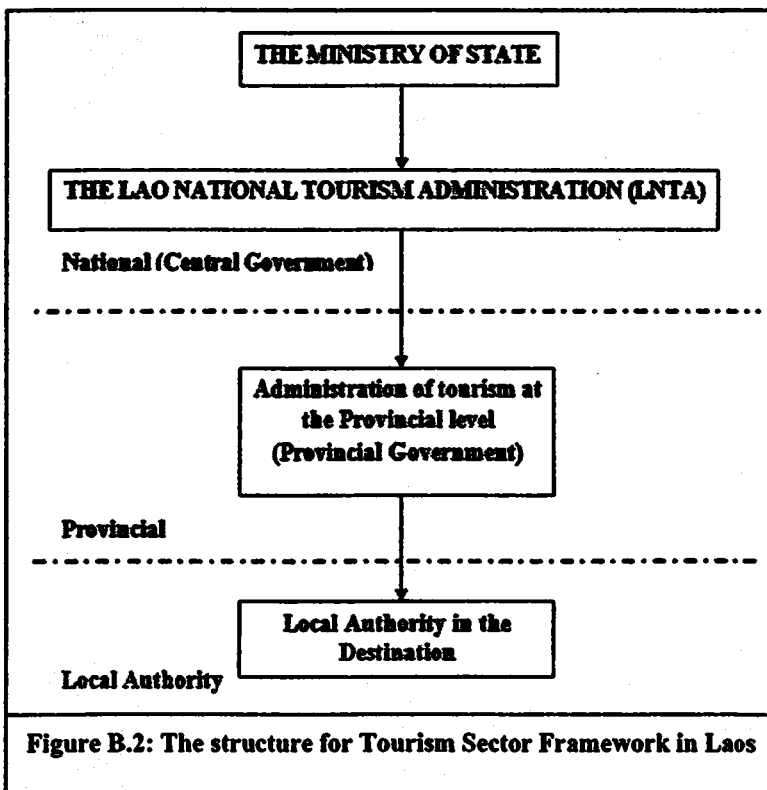
The Different Roles of MOTS and TAT

The Ministry of Tourism and Sports (MOTS) was established in accordance with Chapter 5 Section 14 of the Act Amending Ministry, Sub-Ministry and Department B.E. 2545(2002) and tasked with the duties and responsibilities on the promotion, support and development of tourism industry, sports, sports education and others as specified by the

law. The ministry's Office of Tourism Development assumes duties and responsibilities related to the development of service standard for tourist attractions or sites and tourism products and services offered by the Thai tourism industry. This includes the support of standards for tour businesses and tour guides, in order to achieve sustainable tourism development and generate economic, social and cultural benefits for local communities as well as the country. Following the establishment of the Ministry of Tourism and Sports (MOTS) in 2002, the Tourism Authority of Thailand's scope of work now focuses on marketing Thailand as a destination and the promotion of its multi-billion baht Thai tourism industry, both domestic and international. This is achieved through destination marketing campaigns, advertising and public relations, marketing and sales promotions and participation in international travel trade shows. In general, as a consequence of political decentralization after the year 2002, this creates different actors and some change in tourism management and responsibility which will mention in the next chapter.

The structure for Tourism Organization in Laos

The Lao National Tourism Administration (LNTA) is responsible for tourism policy, planning and programming at national and provincial level rests with. The structure of organization framework in Laos will illustrate in Figure 12



The LNTA is headed by a Minister of State. The LNTA comprises two units: (i) a Tourism Operations Unit responsible for planning, cooperation, promotion and management (regulation) of tourism enterprises; and (ii) an Administration support unit responsible for personnel, administration and finance.

The LNTA shares the administration of tourism at the provincial level with the provincial governments. The role of the provincial tourism bureaus is primarily to regulate tourism enterprises, collect data,

provide tourists information services, participate in promotional campaigns, and implement programs under the approved national policies and plans with adjustments for provincial government concerns. However, tourism policy, planning and programming skills in Laos are quite limited at the provincial office level which is a major barrier to implementation.