



# Municipal Solid Waste Management for Coastal Tourism Destinations in Eastern Thailand: Challenges and Opportunities

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## ABSTRACT

Solid waste management (SWM) responsibilities have been clearly under the local government authorities (LGAs) in which municipal services are covered. However, waste management in public areas has faced difficulties for tourism destinations due to the dynamic of waste generated and regional transformation. This study thus is aimed to review the current SWM system of four selected LGAs considered as tourism destinations in the eastern coast of Thailand, with a focus on identifying challenges and opportunities. Sustainability assessment was used with multiple aspects of evaluation including policy, organization, technique, social, economic, and environmental aspects to determine challenges and to analyze the opportunities further for enhancing the current SWM in the study areas. The results indicated that the characteristics of SWM in those LGAs were quite different, which can be categorized into two cases: with Public-Private Partnership (PPP) and without PPP. Although, with PPP case has been better in many aspects, a critical challenge of negotiating with private partners to sustain the operation and relationship has been found. In terms of without PPP case, there were mostly organizational disadvantages. Besides, both cases also have faced common challenges in several dimensions. To shed the light on those issues, the opportunities to strengthen those LGAs' capacity in SWM have been identified and prioritized based on the severe SWM situation. Further studies should seek an effective sector partnership for enhancing SWM service towards local and regional sustainability..

## 1. INTRODUCTION

The global crisis in solid waste (SW) has become more severe and the communities are directly affected [1]. As it was widely known that economic and population growth has increased rapidly, almost half of the generated waste in developing countries was not being collected. It was dumped non-sanitary in the streets and drains that led to the flooding, then rats, rodents, and finally the spread of diseases. Although the waste collected was disposed of on a regular basis both in managed and unregulated dumpsites or incineration and open burning, the pollutant water and air are still released [2].

The Public-Private Partnership (PPP) was commonly recognized as a possible mechanism for both infrastructure and social services to create a collaboration to achieve the goal of the project [3]. Waste Management (WM) was one of the popular PPP strategies of local government and the private sector. However, the tourism area has enormously different waste characteristics and has different environmental impacts, such as the quantity of waste in each season. Residents and visitors of the modern age have

also, adjusted their habits of eating and traveling with a few factors. Internet order, for example, has an impact on food and service consumption, pushes the need for too high consumption and makes plastics the most convenient for food packaging [4]. At the end of the day, quick and comfortable services will create a full range of plastic packaging that will have an impact on the nature of tourism. This phenomenon has been hidden behind the increasing quantity of daily waste produced daily.

Thailand's coastal tourism was thriving with many famous beaches and coastal destinations such as Rayong, Ko Samed, Bangsan, Pattaya, Hua Hin, Phuket, Ko Samui, Ko Pha Ngan, Ko Phi Phi, and Ko Tao [6]. PCD has also established a strategy aimed at regulating the rate of waste generation and providing technological and human resources to local government authorities (LGAs) in order to introduce a sustainable waste management system. This encourages LGAs to work together to address the issue of solid waste, in particular the establishment of local waste disposal centers. It also aims to encourage and facilitate the role of the private sector and the environmental sector in the resolution of waste-related issues in specific tourism

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areas. However, the rate of generation of SW in Thailand was 27.37 million tons per year and 74.998 tons per day in 2017 [5]. It increased marginally from 27.06 million tons per year in 2016. The Pollution Control Department (PCD) reported crisis provinces in Thailand with the problem of uncollected SW, two provinces in the EEC region ranked among the top ten.

**Table 1: The Amount of Uncollected SW in 2018 [5]**

Country Rank	Province	The Amount of Uncollected Waste (Tons)
4 <sup>th</sup>	Rayong	253,046
10 <sup>th</sup>	Chonburi + Pattaya	119,611
13 <sup>th</sup>	Chachoengsao	102,444

Note: Total in the EEC Region = 475,101 tons/year

Total of Thailand = 5,337,838 tons/year

Table 1 indicated that the uncollected waste situation of these provinces in the EEC zone was in the top rank of Thailand. Moreover, the overall uncollected amount of waste in this area was still a significant influence, accounting for about 13 per cent of Thailand's total.

Thus, even the current EEC is becoming a center of investment in which capital and technology flow into the region, but economic growth has also driven large numbers of tourists and contributed enormous waste to these coastal destinations during the high season. Coastal tourism has affected the fragile marine environments of people's livelihoods, local and tourists, as well as economic development initiatives and activities. This paper aimed to study the current SWM through a sustainability assessment of selected LGAs in East Thailand's coastal tourism destinations, with a view to identifying the challenges and opportunities of SWM services.

## 2. LITERATURE REVIEW

This section discusses several pieces of literature, such as the challenges faced by WM in the specific tourism region, the appropriate tools for assessing the performance of SWM, as well as the management of the beach zone in the East Coast of Thailand.

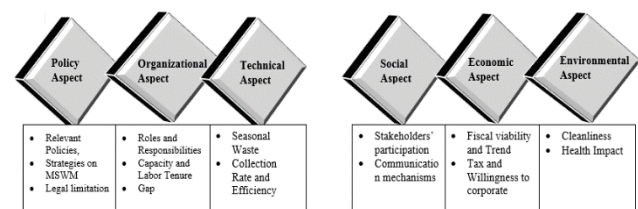
### 2.1. The Challenges of WM in the Specific Tourism

Waste generation and classification are known to be a by-product of the economic productive system. This means that tourism specialization defines certain characteristics of SWM systems and challenges: 1) Small tourism destinations tend to provide landfills due to their small geographical areas and high land costs [7]. On the other hand, destinations with large land endowments prefer to focus on managed landfills to reduce environmental

emissions rather than switch to other technical solutions [8]. 2) In many tourism destinations, especially in the islands, the SWM method relies on incineration facilities and avoids the use of landfill sites which encourage the biodiversity conservation. [9]. 3) Seasonality introduces additional SWM costs as this leads to overcapacity in MSW treatment facilities during the low season and this should be considered in the tax and PPP fiscal contract. Mallorca case, more than approximately 70% of annual tourism arrivals are distributed between May and October, which comprises the months with the highest usage of MSW treatment facilities [10].

### 2.2. Sustainability Assessment

As a result of the review of the related articles, a set of performance indicators can be grouped into different aspects – policy, organization, technological, social, economic and environmental aspects, as shown in the figure.



**Fig. 1: Indicators for Assessment the LGAs' Performance in SWM [13].**

These indicators, in the scope of the sustainability assessment aspect of Figure 1, covered the overall municipal SWM. This was also necessary to implement and examine the SWM in developing countries. Various assessment techniques and tools have been adapted on the basis of available literature to support decision-making in SWM. In addition to these advantages, it can be used to systematically recognize the challenges and opportunities of SWM systems and to highlight the factors that can be evaluated in order to improve SWM efficiency.

### 2.3. Beach Zone Management in the Eastern Coast of Thailand

Understanding the management of the beach zone was significant, given that Pattaya City was the most visited tourism in the EEC region, it has influenced many beaches to manage the major and the minor tourism areas as well as the tourism cities. That is why it was better suited for a pilot analysis before going to the main area of this article.

Pattaya Beach, along with a number of other public sectors and companies in Figure 2, showed the physical structure of the mix of agencies responsible for managing many dimensions of the Pattaya Beach area. However, from a study on the management of a mature coastal destination, Pattaya found that each public entity has its

own vision or set of goals in line with its responsibility for specific activities in the Pattaya Beach Region [14].

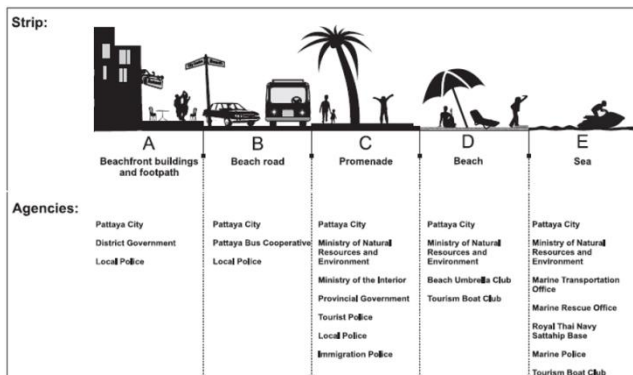


Fig. 2: Pattaya Beach Zone Management [14].

As a result, these literatures have been discussed the specific SWM of tourism area, identified insight the applicable tool, and also realized the public sectors responsibility on the complexity of beach zone management. However, there were still some gaps that, with a high ability of the EEC region, caused some of the beaches in the EEC to be categorized as wasteful tourism. Moreover, an example of the SWM sustainability assessment in the EEC region was hardly to be found. Thus, to fill the gap and accomplish the purpose of this study, a variety of research approaches have to be addressed, which were outlined for depth in the next session.

3. METHODOLOGY

3.1. Research Approach and Overall Methodology

The overall methodology was exploratory with an analytical approach, using a qualitative method to explain the current performance of the SWM according to the sustainability assessment of selected LGAs in coastal tourism destinations.

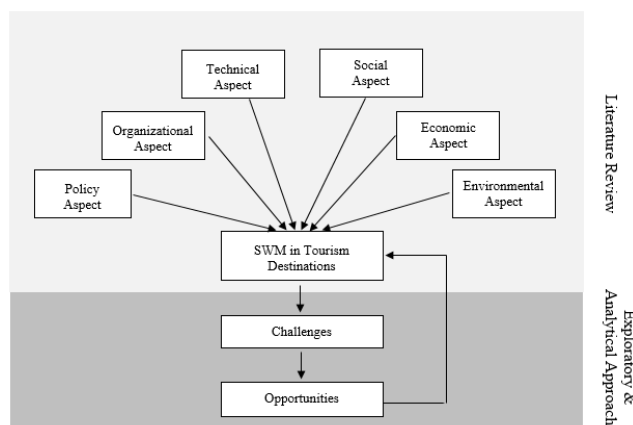


Fig. 3: Conceptual Framework.

According to the conceptual framework in Figure 3, questions based on six aspects were used to explore the SWM of selected LGAs in tourism destinations in the EEC region. The challenges were required to be found during the exploration process. The strengthening opportunities will be analyzed from the results to be recommended as a SWM enhancement for coastal tourism destination municipalities.

Thus, in order to meet the challenges and recommendations, to improve the efficiency of the SWM of the LGAs, its methodology includes five steps:

- *Step 1:* This step involves a review of the sustainability assessment of LGAs using published sources (including,[11],[12],[13])
- *Step 2:* Review the current SWM data, focus on wasteful problems in the tourism destination of the EEC region, in particular the beach area. Data were gathered from related organizations such as the PCD (2017) and the Office of Natural Resources and Environmental Policy and Planning (ONEP), the News Article, etc.
- *Step 3:* This step focuses on the exploration of existing SWM of selected LGAs by using sustainability assessment indicators to define their challenges.
- *Step 4:* Analyze on-going efforts and strengthening opportunities to enhance LGA capacity based on the challenges finding.
- *Step 5:* Conclusion and recommendations can be made, based on those findings from the previous steps, to potentially enhance the SWM capacity of LGAs in the Eastern Coast of Thailand.

A set of guiding questions has been developed and was also included in table 2.

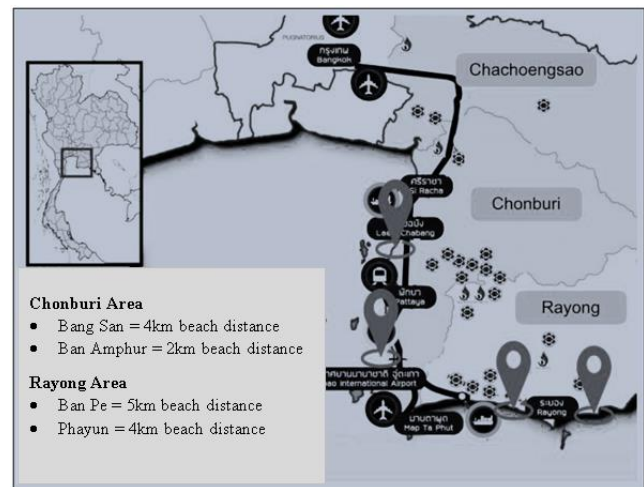
3.2 Study Area

Based on tourism information, the Eastern Economic Corridor (EEC) was a diverse area and attracts a wide range of tourisms and visitors. EEC consists of three provinces (Rayong, Chonburi and Chachoengsao). This region currently contributes 20% to Thailand’s GDP and was becoming a tourism destination for large-scale tourisms such as Pattaya Beach and Islands: Ko Samet, Ko Chang and Ko Sichang, as well as agricultural tourism in Rayong. The area was 13,285 sq.km [15] across three provinces. There are only two provinces with many attractive beaches: Chonburi and Rayong. The length of all the beaches throughout the two provinces was more than 200 km. The exact location of the study area can be found in Figure 4.

**Table 2: Guiding Questions for Sustainability Assessment [11], [12], [13]**

Policy and Legislative Aspects	
<ul style="list-style-type: none"> <li>• Relevant Policies,</li> <li>• Strategies on SWM</li> </ul>	<ol style="list-style-type: none"> <li>1. What are the policies decentralized to your organization?</li> <li>2. Are the policies and legalization sufficient;</li> <li>3. Is the current SWM operation accord to the rule and regulation defined?</li> <li>4. Do the decentralized SWM receive support from the private</li> </ol>
Organizational Aspect	
<ul style="list-style-type: none"> <li>• Roles and Responsibilities</li> <li>• Capacity and Labor Tenure</li> </ul>	<ol style="list-style-type: none"> <li>1. What are the main roles of the municipal waste management system?</li> <li>2. How do you monitor and control SWM?</li> <li>3. In your opinion, is it effective for the current SWM operation?</li> <li>4. Is your skilled-staff enough and can work legally?</li> <li>5. The current SWM framework is good enough waste produced</li> </ol>
Technical Aspect	
<ul style="list-style-type: none"> <li>• Seasonal Waste</li> <li>• Collection Rate and Efficiency</li> </ul>	<ol style="list-style-type: none"> <li>1. The amount of waste high &amp; low seasons</li> <li>2. Can it handle waste both high and low season?</li> <li>3. The amount of Bins/Truck/Sweeper/Scavenger</li> <li>4. The percentage of collected waste in both high and low seasons</li> <li>5. Is the management waste system enough for the population number?</li> </ol>
Social Aspect	
<ul style="list-style-type: none"> <li>• Stakeholders' participation</li> <li>• Communication mechanisms</li> </ul>	<ol style="list-style-type: none"> <li>1. Do tourisms and the population believe the SWM is a benefit to society?</li> <li>2. Are they ready to support the SWM?</li> <li>3. If yes, please give some examples of the situation or project from the people sector!</li> <li>4. How to communicate among municipality-contracted partner-people for SWM?</li> </ol>
Economic Aspect	
<ul style="list-style-type: none"> <li>• Fiscal viability and Trend</li> <li>• Tax and Willingness to corporate</li> </ul>	<ol style="list-style-type: none"> <li>1. The arrangement of the municipality's revenue, expenditure, how much portion between SWM expenditure and the total expense</li> <li>2. The trend of SWM expenditure</li> <li>3. How much for the tourism zone? How much for the community zone?</li> </ol>

	4. Are they willing to pay SWM charge?
Environmental Aspect	
<ul style="list-style-type: none"> <li>• Cleanliness</li> <li>• Health Impact</li> </ul>	<ol style="list-style-type: none"> <li>1. Is there any improper disposal of the area?</li> <li>2. Is the current waste collection clean enough?</li> <li>4. People in the community have good health?</li> </ol>



**Fig. 4: Study Area in EEC Region [15].**

Four beaches have been chosen as the study area for the EEC region from Figure 4: Bang San, Ban Amphur, Ban Phe, and Pha Yun, these areas have a different beach's length. As a result, it affected the different number of tourisms. However, the outlined criteria for area selection were constantly considered as follows: 1) Urban tourism, 2) located in the coastal area of the EEC region, 3) Waste generation problems as a result of economic and tourism development. In order to ensure reliability, these selected areas have complied with the characteristics outlined [5].

**3.3. Data Collection and Analysis**

The semi-structured interviews were developed to cover sustainability assessment aspects. To ensure reliability, four key informants interviewed must be the head of public health and environment division of municipalities. Face-to-face interviews were conducted with four key informants. The semi-structured interviews were transcribed and quoted the similar or relevant issue of all interviewees. To ensure the validity, all quoted result will be checked again with the content of each aspect in sustainability assessment. In addition, the secondary data was used to increase the validity as supporting evidence included municipality the three years development report, the report on the situation of waste by PCD, National statistics report, journal articles, and reports. The analysis of data was based

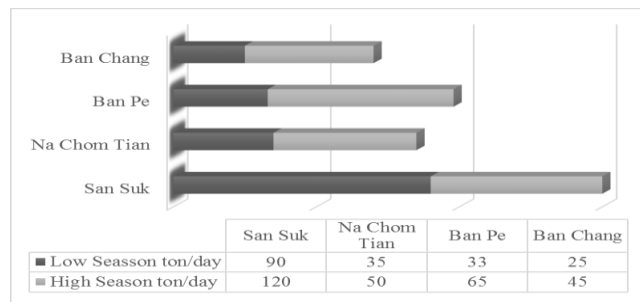
on a qualitative approach. Content analysis was the specific analytical method for this research. For the number and statistic collected from the interview, it was interpreted in the bar chart and table platform to compare the common and specific results and to determine the validity of the findings.

**4. RESULTS AND DISCUSSIONS**

**4.1. Situation of SWM in EEC Region**

*Technical Aspect: Seasonal Waste & Collection*

Based on interviews with selected municipalities, the results show that the average amount of waste recorded per day during high and low seasons was significantly different, and LGAs should pay attention to managing this rate during high seasons. This recorded number was the total amount of waste in their municipality area, which can be shown as follows in the form of a bar chart. This recorded number was the total amount of waste in their municipality area, which can be shown as follows in the form of a bar chart.



**Fig. 5. Seasonal Waste Generation.**  
Data Source: *Semi-structured Interview*

**Table 3: SW collection rate in 2017 of selected LGAs [16]**

LGAs	The residual amount of waste (ton)	The amount of Produced waste (tone/day)	The amount of Collected waste (tone/day)	The Process	The amount of reuse waste (ton/day)
				Landfill (tone/day)	
San Suk	-	90.00	90.00	88.0	2.00
Na Chom Tian	-	35.00	35.00	-	-
Ban Phe	300 (existed since 2015 at Sa Met Island)	33.00	30.00	30.00	3.5
Ban Chang	-	25	24	24	1.0

Figure 5 indicated the specific amount of waste during the high season, with almost a one-time rise in the low season. In order to check the validity of the interview data, secondary data were further reviewed to support a report on the waste situation.

Those issues above indicated that the data interviewed and the secondary data reviewed were consistent with each other. It can not be neglected that the volume of waste shapes the ability of LGAs to manage waste differently.

*Policy Aspect: Strategy on SWM*

When decentralization gave LGAs the power to respond to the policies being transferred, all selected LGAs have different SWM strategies in their territory. It was realized that there were two types of SWM in this EEC region: with public-private partnership (PPP) and without PPP of SWM. San Suk and Na Chom Tian municipality have chosen to make a PPP, while Ban Pe and Ban Chang municipality still have a traditional form of SWM (without PPP). The different characteristics of these two SWM categories have therefore been quoted, according to the background of tourism, geography and the number of tourisms in Table 4.

**Table 4: Differences SWM strategies of selected LGAs**

With PPP	Without PPP
SWM was divided into 2 zones: tourism and community zone	LGAs have covered SWM service the whole area of their territory.
For tourism zone, LGAs fully responsible SWM directly while the community areas look after by private partner	Both tourism and community zone has been implemented the same even that area has increased the volume of waste differently
The tourism areas have been supported and collaborated from many private sectors such as the sorting waste campaign, PR street sign, separated-bins, and etc.	LGAs have to encourage SWM participation by themselves both in-kind and in-cash with the budget limitation.

Data Source: Semi-structured Interview

In summary, due to the transfer of full authority in Thailand, SWM services in the EEC region can be realized in two characteristics: with PPP and without PPP. It was true that when the SWM process was different in response to waste production, there were some advantages and disadvantages that were clearly defined. The other measures of the sustainability assessment of the SWM have also been affected differently.

**4.2. Common Challenges**

*Policy Aspect: Relevant Policies*

Currently, all municipalities in Thailand are responding to the “Clean Province” Policy. Prime Minister General Prayut Chan-ocha gave a speech on this strategy in the Waste Management Award Ceremony and Outstanding Performance of Local Government 2018 that Thailand has a Master Plan Strategy 2016-2021 and an Action Plan each year. Prime Minister said, “The governor must be in charge of any clean element, not only of a specific score of waste management, but also of accountability and corruption.

Interestingly, all selected LGAs have the same beach zone management as Pattaya. Figure 6 was an example view of Bang San Beach Area Management that was quite similar to Pattaya. It took by the architecture to see the bird’s eye view of Bang San beach in 2016.



Fig. 6: Bang San beach zone management [17].

Even the above-mentioned beach zone management literature indicated that this form of management has a variety of public entities responsible for setting their goals differently. All selected LGAs believed the missions and strategies transferred were not a problem, as LGAs have had many years of experience implementing each typical and new policy. The problem of decentralization was generally the return to the government of overall output reporting. Due to a wide range of government agencies, sometimes the work was quite complicated and repetitive. One of the interviewees mentioned the following:

*“In order to avoid being confused and complaining about the delay in the job of municipality. We must send two or three reports, the first to the district and the second to the provincial administrative organization“*

Moreover, the adequacy of waste management policies transferred to LGAs has been much more satisfactory and comes from a range of government departments. As a result, all selected LGAs have said on the same page that the current related waste management policies were adequate, decentralization was not the main problem, but reporting back to the government was becoming a major challenge faced by LGAs in each fiscal year.

#### *Economic Aspect: Tax and Willingness to corporate*

Based on interviews with selected LGAs, the rate of collecting waste for residents was almost the same, and

there was no disparity between tourism and community zone rate. As a result, it has been founded that LGAs have been using the Ordinances since 2000 to determine the rate for waste management on an equal basis until this year. Both residents and the private sector were satisfied to pay these fees. In the case of the private sector, if they do not pay a waste collection fee, they would not permit the continuation of a business license in the tourism zone. However, there was a little dispute, as quoted below from Na Chom Tian and Bang San Municipality that said:

*“There was a time when the municipality had to raise the rate of waste management services because of the new government-elected party. Some groups of companies started the protest and were not willing to pay the monthly charge set out in the new municipal ordinance. Some municipalities have decided to keep the same rate to prevent conflict within their area.”*

Description of the economic dimension, it can be seen that both citizens and the private sector were able to pay the rate of waste management service, but they were afraid of rising it. It would also be another obstacle for those LGAs that have fewer budgets for SWM and want to be responsible for various people's waste management charge.

#### *Social Aspect: Stakeholders Participation*

All selected LGAs have delivered consistent opinions on stakeholders that the municipality was currently collaborating well as a mediator with other stakeholders in society. However, even the people sector (residents) claimed that waste management was a service to them and society, but it was very difficult for visitors to participate. In particular, most tourists in the EEC region were excursionists who stay less than 24 hours in the tourism area. This kind of behavior of the tourism was quite careless about their consumption and the waste they produce.



Fig. 7: Crowded excursionists in EEC region [18].

From Figure 7, the social aspect can be summed up by the fact that due to the near distance between the EEC region and Bangkok, current transport was also more

comfortable and people would love to have a one-day trip. Thus, the majority of tourists in the EEC were excursionists who do not care enough about the environmental impact. It became the challenge for LGAs to request SWM participation when other stakeholders (residents, businesses, and industrial estate sector) could participate.

#### *Environmental Aspect: Cleanliness & Health Impact*

All selected LGAs indicated that the current SWM was getting better from the past due to the quality and sufficient of the equipment. Although there have been several reports of invasion of the dump within the area, there has never been a case of illness from those situations and the landfill. The next session will be an analysis of the specific result based on sustainability assessment

### **4.3. Specific Challenges**

#### *Organizational Aspect of With PPP Case*

Although there were many barriers in the SWM service of without PPP case, there was no gap between the service provider and receiver. While with PPP case has a critical gap with private partners, the details of this gap were as follows:

*“Most gaps of with PPP case was budget issue, the municipality understands that the private partner wants to make a profit for their organization, but LGAs have a budget limitation. Since waste was a type of work that not many people want to do and the amount of it was increasing every year, the private partner was trying to raise the cost of every contract throughout the year. Luckily, LGAs have been a partnership with partner for many years, and we can talk generously to sustain our relationship.”*

Even the reasons of PPP case seemed to sustain the partnership; it might risk a trade-off for the WM service relationship if the LGAs kept the same private partner for a long time to operate SWM.

Summary, increasing the workload on SWM service to a private partner was more advantageous to LGAs (i.e. role, responsibility, capacity and labor tenure). The LGAs themselves also have more working hours to carry out other activities and carry out tasks. However, with PPP case has a crucial budget gap that was very sensitive and may end the partnership if the LGAs do not handle the budget well. In addition, a long-term relationship with a private partner may lead to a trade-off that could risk the corruption of the SWM service.

#### *Organizational Aspect of Without PPP Case*

As a consequence, when the WM mechanism was different, another variable was also affected. Here was a list of advantages and disadvantages in a number of ways to compare all selected LGAs from the interview.

- In terms of role and responsibility, it has been established that LGAs with PPP have the role of inspector to monitor the operation of a private partner, while LGAs without PPP have the role of operator to cover all SWM services processes.
- LGAs with PPP have been certified for labor tenure, and LGAs without PPP do not have enough manpower and expertise.
- Communication process, LGAs with PPP communicate through a private partner manager and a group of companies, while LGAs without PPP will communicate directly to each company and individual.
- Finally, even financial viability and trend of both LGA case were not different, but with PPP has more stable expenditure and fluctuates over a period of time, depending on number of tourism and economy, while LGAs without PPP have gradually increased SWM expenditure on a yearly basis.

### **4.4. Opportunities**

According to these challenges, further analysis of the opportunities to strengthen the LGAs' SWM capacity needs to be prioritized. Since then, the Prime Minister has released a roadmap for Thailand's development strategy. The promotion of tourism was included in the 12th National Plan that the "Development of a network of tourism routes linking tourism attractions from major to minor tourism areas" should be focused [19]. A number of events and festivals hosted by TAT and other private sectors have tried to promote a networking route and a small tourism town that expects to distribute the number of tourists and increase economic growth.

From the above study, it was found that without the PPP case, which was located in a small tourism area, SWM has a higher disadvantage in the coastal tourism destination. Thus, if it is not well prepared for SWM, the existing environment of small-scale tourism areas will finally be destroyed. Prioritized opportunities for SWM capacity building without PPP case were:

- ❖ Enhancing the SWM strategy of without PPP case by separating the SWM zone to clarify roles and responsibilities and the allocation of the budget. This can attract support from many private sectors, such as equipment, CSR and social activities, and the PR board and sign green behavior campaigns.
- ❖ Building a contract partner by opening a proposal transparently to obtain a number of private sector support lists for controllable SWM costs, improve the quality of SWM services, solve the problems of workers, reduce the workload and also prevent the health impact on the community around the landfill.
- ❖ Initiate a group of people and the private sector in a tourism destination for easy contact across and endorse group activities linked to green actions in long-term relationships.

For with PPP case, which already had a private partner but had an awkward feeling when re-signing each contract year. Strengthening the recommendation was as follows:

- ❖ Preparing the supplementary budget for increased waste as part of the contract agreement.
- ❖ Minimizing waste by working with local shops and companies to encourage people (residents and tourists) who have green actions
- ❖ Announcing the transparency bid-up to receive a number of private sector support lists that can meet the needs of the municipality.

In addition, the common challenge of SWM services in coastal tourism destinations can be improved by the below opportunities recommended as follows:

- ❖ Intergovernmental cooperation among LGAs in coastal tourism destinations to put together the enforcement of excursionist behavior, the same good performance reporting pattern at district and provincial level, and value-added support for increasing SWM costs.

**Table 5: Overall Challenges and Opportunities Identified by SWM in EEC Region**

Cases	Challenges		Opportunities
	Common and general	Specific	
With PPP	<ul style="list-style-type: none"> <li>- Reporting the WM performance back to the government agencies</li> <li>- Changing WM fee</li> <li>- Requiring participation from excursionist</li> </ul>	<ul style="list-style-type: none"> <li>- Negotiating to sustain the relationship with the private partner</li> </ul>	<ul style="list-style-type: none"> <li>- Preparing the supplement budget for increased drain waste.</li> <li>- Engaging with the private sector for green behavior</li> <li>- Announcing the transparency bid-auction for receiving many supporting the private sector.</li> </ul>
Without PPP		<ul style="list-style-type: none"> <li>- LGAs' role as an operator</li> <li>- Deficiency of manpower</li> <li>- Non-efficiency communication</li> <li>- Increase WM cost every year</li> </ul>	<ul style="list-style-type: none"> <li>- Separating the WM zone to clear role, and budget allocation for without PPP case.</li> <li>- Initiating the formal private partner to enhance WM service</li> </ul>

Data Source: Semi-structured Interview

#### 4.5. Discussions

Until addressing the discussions of this study, it was

important to see an overview of common and specific challenges and identified opportunities to enhance the ability of selected LGAs in coastal tourism destinations.

Table 5 summarized that sustainability assessment was an effective tool for investigating the SWM in coastal tourism destinations that have a particular challenges [8]. This tool will provide insight into the policy, economic and social aspects that have been identified as a common challenge, such as reporting back to the government, fear of rising waste management costs, and the majority of excursionists who do not care about the environmental effects. In addition, they also generated specific challenges, such as negotiations with the private partner of the PPP case and several disadvantage dimensions of organizational aspect of without PPP case. To shed light on these common and particular concerns, the proposed measures for improvement must be prioritized on the basis of the significant environmental impact situation [11]. It was precisely that, without the PPP case was the first priority to be healed, followed by the PPP case. SWM service in coastal tourism destination can be prepared in time and have a better management plan to embrace the transformation of the EEC area with the waste generated as a result.

In addition, the particular challenge raised by the PPP case was that LGAs should negotiate a consistent SWM cost to sustain the operation and the relationship. This will risk trade-offs between alternative SWM goals and objectives that are unavoidable due to LGAs have limited budget resources but needed a comprehensive waste management service to respond the economic and tourism growth in the EEC region [20]. Thus, apart from the recommended opportunities to prepare the supplementary budget and to announce the transparency of the bid-up to have a large number of private partners supporting it. Intergovernmental cooperation may help to improve the effectiveness of the SWM in the broad regional perspective. Due to the complexities of SWM in a specific tourism destination, the difficulties in SWM in the EEC region have been mentioned in the introduction, and the transformation of the EEC region into the hub of the ASEAN economy and tourism [5], [7]. It was inevitable that there would be a mass of people around the world, bringing dramatic waste and pollution to the region. The trend towards regional integration, collaboration between local governments is an essential and required strategy chosen by local governments on the basis of their position as providers of public services, taking into account the demands of the governance competence and taking into account regional integrated advantages [21].

#### 5. CONCLUSIONS AND RECOMMENDATIONS

As the current SWM service was not adequate to cope with the dynamic generation of waste and the necessary management from the transformation zone, the selected



LGAs in the study area were designed to respond to dramatic waste in two strategies: with PPP and without PPP. The key specific challenges of with PPP case were the frequency of negotiations aimed at maintaining operation and relations with the private partner, while without the PPP case was a disadvantage in terms of the organizational aspect of the SWM service. In addition, there were common challenges in both cases related to reporting performance back to government agencies, increasing the cost of SWM service, and stakeholder participation. Thus, there are three priority opportunities to suggest the strengthening of SWM capability in coastal tourism destinations: 1) LGAs without PPP will distinguish the WM zone and create formality partners. 2) The LGAs with PPP will plan a supplementary budget and create transparency for bid auctions in order to have acceptable partners. 3) LGAs in both cases should collaborate together to strengthen policy and regulation, SWM cost planning, and creativity in reporting on win-win situations.

While the knowledge contribution of the current study suggests that PPP has contributed to many government programs and welfare services, this paper argues for particular PPP cases that LGAs may face the challenge of negotiating a rise in service costs that may possibly risk trade-offs. In addition, both with PPP and without PPP cases, there are also common challenges related to several dimensions. Intergovernmental cooperation was a practical contribution to the launch of creative management and administration to tackle these issues. Further studies on the role of stakeholders in enhancing the SWM service in coastal tourism destinations should be conducted on synergies in the various sector partnerships to expand governance collaboration towards sustainable tourism development.

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#### REFERENCES

- [1] Suocheng, D. (2001), Municipal Solid Waste Management in China: Using Commercial Management to Solve a Growing Problem, *Utilities Policy*, 10, 7-11.
- [2] Zurbrugg, C. (2003) Urban Solid Waste Management in Low-Income Countries of Asia, How to Cope with the Garbage Crisis, Retrieved August 2019 from <http://www.sandec.ch>
- [3] Ahmed, S.A., Ali, S.M. (2006) People as partners: Facilitating people's participation in public-private partnerships for solid waste management, *Habitat International* 30 (2006) 781–796
- [4] Buenrostro, O., Bocco, G. (2003). Solid waste management in municipalities in Mexico: goals and perspectives. *Resources, Conservation and Recycling*, 39, 251–263.
- [5] PCD (2017). Integrated Municipal Solid Waste Management, Pollution Control Department, Bangkok, Thailand: Ministry of Natural Resources and Environment.
- [6] Khamung, R., (2018) Mature Coastal Destinations and Management Strategy for the ASEAN Regional Integration of Sustainable Coastal Tourism, *ASEAN Journal of Management and Innovation*, Vol. 5. No.1, 113 - 127
- [7] Papachristou E., Hadijangelou H., Darakas E., Alivannis K., Belou A., Ioannidou D., Paraskevopoulou E., Poulivos K., Koukourikou A., Kosmidou N., Sortiko K. (2009) Perspectives for integrated municipal solid waste management in Thessaloniki, Greece. *Waste Management*. 29, 1158–1162.
- [8] Shekdar, A. V., (2009). Sustainable solid waste management: An integrated approach for Asian countries. *Waste Management*, 1438-1448.
- [9] Jin, J., Wang, Z., Ran, S. (2006). Solid waste management in Macao: practices and challenges. *Waste Management*, 26, 1045–1051
- [10] Candela, G., Figini, P. (2012). The Economics of Tourism Destinations. *Springer, Berlin Heidelberg*.
- [11] Spoann V., Fujiwara T., Seng B., Lay C., Yim M. (2019), Assessment of Public-Private Partnership in Municipal Solid Waste Management in Phnom Penh, Cambodia. *Sustainability*, p.1-19
- [12] Zurbrugg C., Caniato M., Vaccari M. (2014), How Assessment Methods Can Support Solid Waste Management in Developing Countries—A Critical Review, *Sustainability*, p. 545-570
- [13] Suttibak, S., Nitivattananon, V. (2005). Enhancing Solid Waste Management Capacity of Local Government Authorities: Review of Current Status in Thailand. Proceedings of International Conference on *Integrated Solid Waste Management in Southeast Asian Cities. (SEA-UEMA) The project*, Asian Institute of Technology
- [14] Longjit C., Pearce D.G., (2013) Managing a mature coastal destination: Pattaya, Thailand, *Journal of Destination Marketing & Management* 2,165–175
- [15] EEC (2018). Background. Retrieved June 12, 2018, from: <https://www.eeco.or.th/en/background>
- [16] PCD (2017) Thailand State of Pollution 2016. Retrieved June 2019, from Public Relation Section, Pollution Control Department: <http://www.pcd.go.th/Public/News/GetNewsThai.cfm?task=1t2017&id=17611>
- [17] Arch Daily (2016) Kalm Bang Saen Hotel, Junnarchitect Photographs: Beer Singnoi, Room Magazine. Retrieved August 2019 from <https://www.archdaily.com/879086/kalm-bangsaen-hotel-junnarchitect/59ae872bb22e387006000059-kalm-bangsaen-hotel-junnarchitect-photo>
- [18] Barrow R. (2013) Why are Bangkok's Best Beaches. Richard Barrow in Thailand: Writing about Thailand on Blogs and Social Media. Retrieved September 2019 from <http://www.richardbarrow.com/2013/04/where-are-bangkoks-best-beaches/comment-page-1/>
- [19] ONESDB (2017) the Twelfth National Economic and Social

Development Plan (2017-2021) Office of the National Economic and Social Development Board Office of the Prime Minister.

[20] Schübeler P. Wehrle, K. Jürg C. (1996) Conceptual Framework for Municipal Solid Waste Management in Low-Income Countries: Working Paper No 9: St Gallen: SKAT.

[21] Ling Z. and Jiang W. (2013) Intergovernmental Cooperation

in Cheng-Yu Economic Zone: A Case Study on Chinese Regional Collaboration under Synergy Governance. *Canadian Social Science*, 9(3), 15-23

[22] Nitivattananon V., Srinonil S. (2019) Enhancing coastal areas governance for sustainable tourism in the context of urbanization and climate change in eastern Thailand, *Advances in Climate Change Research* 10, 47-58.