

A model for environmentally-friendly food tourism in Ban Koh Klang, Khlong Prasong Sub-District, Mueang District, Krabi, Thailand

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Abstract

This research paper aimed to study the context and tourism resources in the community of Ban Koh Klang, Krabi and also to study a model for environmentally-friendly food tourism in Ban Koh Klang; and in addition it studied tourist satisfaction and its impact on environmentally-friendly food tourism in the same area. The investigation combined both qualitative and quantitative research methods. A study of 400 tourists in Ban Koh Klang found that the overall tourist satisfaction in Ban Koh Klang was at a high level ($\bar{x} = 3.63$). The highest level of satisfaction among tourists was with the abundance of resources in the area ($\bar{x} = 4.56$). The satisfaction with environmentally-friendly management practices was found to be at a high level ($\bar{x} = 4.03$). Results also show that community members believe three local ingredients to be particularly suitable for the promotion of environmentally-friendly food tourism. These are sangyod red rice, pagoda snails and grouper. The research team tested the satisfaction levels of 20 tourists regarding these environmentally-friendly food tourism options in Ban Koh Klang. Results showed that the highest level of satisfaction was with the tourism activities ($\bar{x} = 4.15, SD = 0.377$) and the lowest level of satisfaction was with the black crab learning center provision ($\bar{x} = 3.70, SD = 0.718$). In order to increase the confidence levels of tourists, the research team analysed the three products in a laboratory to ensure they complied with food safety standards. No alpha-toxins were detected in sangyod red rice. Traces of three heavy metals were detected in pagoda snails - cadmium (0.011 ml/kg), lead (<0.060 ml/kg) and mercury (0.019 ml/kg). However, the small levels of these metals are not harmful to humans. There was no trace of cadmium or lead in the grouper fish, although there were small traces of mercury (0.130 ml/kg). Again, this level is not considered to be harmful to humans.

Keywords: Environmentally-friendly, food tourism, Thailand, satisfaction.

Introduction

The World Tourism Organisation (UNWTO) valued the food tourism industry at 150,000 million US dollars and identified Spanish, French and Italian as the most common nationalities of food tourists. Food and drink experiences are common features of recreational holidays, but food tourists place these activities as the most important aspect of their vacations. Food tourism, also referred to as culinary or gastronomic tourism, means traveling to another place specifically to stay and explore the local cuisine, and experiencing a new culture through food.



Culinary tourism is a new feature of the Thai tourist industry and has the potential to increase understanding and knowledge exchange between local community members and visiting tourists. Moreover, culinary tourism raises the reputation of Thailand as a holiday destination and can help encourage visitors to return to the country for a repeat visit. Currently, hotels and specific culinary schools offer tourism experiences in learning how to cook traditional Thai food. If local communities can also offer these kinds of activities, it will increase the income channels available to local people and give them a stake in the tourism industry.

Thai food has an excellent worldwide reputation due to the appealing and recognisable tastes, but also due to its reflection of Thai eating habits, lifestyle and natural resources. Especially important are the signature flavours in Thai cuisine, especially Thai herbs, and the preparation procedures. Moreover, the presentation of Thai food makes it an artform, recognised for its beauty as well as its taste. Nevertheless, there remain obstacles to culinary tourism in Thailand, especially low cleanliness levels, safety, cost and standard of service. In order to develop Thailand as a culinary tourist destination, there must be greater promotion of the variety of local Thai produce. This can raise the image of specific locations within the country and raise the national profile as a whole.

The Thai provinces on the Andaman coast as renowned for their rich and diverse culinary culture that includes traditional Thai, Chinese, Malay, Muslim, Hindu and Western influences. These flavours are combined in the restaurants and hotels of Thai tourist towns to raise the international profile of the rich natural resources available in the area. Indeed, in 2014 one of the Andaman provinces, Phuket, was named as a UNESCO City of Gastronomy. This reveals the creativity of Phuket citizens to innovate new products based on traditional cuisine that tell the story of the local culinary heritage.

Krabi is one of the Andaman coast provinces and has unique gastronomic traditions that can be developed to both complement and rival those on offer in Phuket. Ban Koh Klang is a community in Khlong Prasong Sub-District, Mueang District, Krabi. The community is surrounded by mangrove forests and is located at the Krabi Estuary. Primary local occupations include making fishing nets and shopkeeping. Supplementary work is also found making Batik fabric and processing various seafoods. There are professional groups in the area operating community-based tourism initiatives and many of the locals maintain a traditional way of life to preserve their cultural heritage. One of the ways in which locals share their traditions with visiting tourists is by cooking local delicacies. The Ban Koh Klang community was also selected by the Ministry of Science, Technology and Energy to be a waste-free rice production village and zero waste systems were installed in local agricultural businesses. In addition, some community members farm sea bass and mussels. There is thus a high potential for the development of the area as a community-based tourism destination.

However, there is still not a great deal of tourism interest in Ban Koh Klang due to the intense competition from surrounding areas. Additionally, the community does not promote its interesting local identity and there is no collaboration between groups to create new tourist attractions. One such experience might encompass the environmentally-friendly gathering of ingredients and their preparation processes, which would conform to modern trends of environmentally conscious cultural tourism. The research team were thus interested to design this investigation and develop a model for environmentally-friendly food tourism in Ban Koh Klang with the working hypothesis that this is something that would be of interest to tourists.

Research Aims

This investigation had three aims: 1) to study the context and tourism resources in the community of Ban Koh Klang, Krabi; 2) to study a model for environmentally-friendly food tourism in Ban Koh Klang; and 3) to study tourist satisfaction and its impact on environmentally-friendly food tourism in Ban Koh Klang.



Literature Review

Despite the vast potential benefits, "there are numerous hazardous effects of rapidly increasing tourism," including "uneven development, income inequality, geopolitical risks, rising costs of materials, extreme weather conditions and climate change" (Azam, Alam & Hafeez, 2018:331). This has been especially visible in Thailand with the closure of the world-renowned Maya Bay on Koh Phi Phi due to the destruction of corals caused by tourism activities (Koh & Fakfare, 2019). Education on environmentally friendly practices across Thailand is institutional, although there is still some way to go to close the gap between the securely embedded theory and practice (Laiphrakpam, Aroonsrimorakot & Shanker, 2019). However, tourists are becoming more acutely aware of environmentally-friendly practices and it is vital that service providers adhere to the principles they are promoting (Sangpikul, 2019).

Environmentally-friendly tourism is a fast growing trend given the worldwide fears about the human impact on our ecosystem. In Ban Koh Klang, Krabi Province, research has centred on restoration of the local mangrove forest (Lin, 2015). The forest is a rich natural resource that contributes 196,029 baht per rai per year to the Thai economy in the form of fishery products, coastal erosion, firewood, tourism resources and carbon sequestration (Srang-iam, 2017). It is critically important that the natural resources are managed properly to preserve this fragile income source for local people. More than this, the mangroves are a good food source, flood barrier and protection against the natural elements. Their protection is a major concern of conservationists worldwide and has caused globally-recognised groups such as the International Union for the Conservation of Nature (IUCN) to visit Koh Klang and try to educate local people about their wider benefits (King & Cordero, 2015). Indeed, external actors have played an increasing role in the governance on the community natural resource in Koh Klang for some time, which has had both positive and negative effects (Shafwaty Sa'at & Lin, 2018).

Food tourism is one unexplored area of the tourism industry in Koh Klang that has been attributed to having a positive effect on the local environment in other locations around the world (Everett & Aitchinson, 2008). Not only do local producers benefit from greater demand, the reduction in 'food miles' caused by the increased popularity of locally sourced raw ingredients has a beneficial impact on the environment (Eastham, 2019). Thailand has created a 'culinary brand identity' (Berno, Dentice & Wisansing, 2019). The flavours of Siam are well known across the globe, although there is a select number of dishes that are promoted worldwide at the expense of traditional local delicacies (Muangasame & Park, 2019). In order to develop the culinary tourism market in Thailand, Lunchaprasith and Macleod (2018) recommend "that traditional food may be further promoted in traditional markets by stimulating visitors' engagement in food culture." Indeed, experiential food tourism is a recent development across Asia, with a plethora of cooking schools popping up to cater for the burgeoning demand (Jolliffe, 2019). Given this increasing popularity, the potential for food tourism to benefit Ban Koh Klang and the lack of research on this topic in the area, the researchers were interested in developing an environmentally-friendly food tourism model for Ban Koh Klang, Krabi Province.

Methodology

The study used a mixed-method investigation employing both quantitative and qualitative research methods. The research team used a quantitative method to investigate tourist opinions concerning the management of tourism in Ban Koh Klang. Questionnaires were given to 400 tourists to determine their satisfaction levels concerning tourism management in Ban Koh Klang. Answers were provided by informants on a four-point Likert rating scale (very satisfied, moderately satisfied, slightly satisfied, not satisfied). The questionnaire was quality-tested in two ways. Firstly, the index of item objective congruence indicated that the



questionnaire was suitable for further use (=0.67). Secondly, the questionnaire was pre-tested with 30 individuals outside the research sample and the Cronbach's Alpha Coefficient for pre-tests was recorded at 0.895, indicating the questionnaire was of sufficient quality.

A non-probability sampling method was used to select informants from the research population of 5.8 million tourists visiting Krabi province in 2016. The three stage selection process was as follows: Stage 1) tourists who visited Ban Koh Klang during 2016 were purposively selected; Stage 2) Quota sampling was used to select an equal number of tourists entering the community from each of the three access ports, Tha Hin, Thale and Laem Kam. The number was fixed at 400, meaning either 133 or 134 tourists were selected at each port; Stage 3) Accidental sampling was used to gather data from individuals identified in stages 1 and 2, until the desired number of respondents had been reached.

For the qualitative part of the study, there were five phases. In phase 1, the research team studied related domestic and international academic literature on the subject of tourism, tourism management and environmentally-friendly tourism, as well as government reports on tourism in the area. Following documentary analysis, the research team created research instruments for data collection. In phase 2, the researchers completed a basic survey of the research location, Ban Koh Klang, to identify tourist attractions, tourism activities, related laws and regulations and amenities for tourists. In phase 3, the research team interviewed key informants (unstructured in-depth interviews). Informants were interviewed in groups according to their role in the community.

There were four groups in total: 1) homestay owners and household members (n=10); 2) members of businesses with the potential for food production in Ban Koh Klang (n=30); 3) members of tourism-related businesses (n=15); 4) tourism business owners and community leaders (n=10). In phase 4, data obtained in phases 1-3 were analyzed and linked to the import routes of agricultural products and raw materials used in the cooking of tourism groups, communities and other occupational groups related to tourism services. Meetings were then held for community members and groups related to tourism management to create a plan for the organisation of culinary tourism activities in Ban Koh Klang. The topics of the meetings were: 1) environmentally-friendly tourism (7 Green Concept); 2) environmentally-friendly agriculture; 3) selection of agricultural products and raw materials suitable for the creation of culinary tourism activities; 4) food sanitation; 5) selection of local dishes suitable for promotion as gastronomic experiences; 6) creation of a system for presenting culinary processes that are both environmentally-friendly and reflect local culture. In phase 5, the research team finalised the model and created a handbook for environmentally-friendly food tourism in Ban Koh Klang. 20 domestic tourists were selected to participate in a culinary and cultural tour of Ban Koh Klang and evaluated their satisfaction levels in a variety of areas using a rating-scale evaluation form. Data were analysed using a variety of methods, namely content analysis (documentary research), inductive analysis (survey and interview results) and descriptive statistics (questionnaire results). The results are presented below as a descriptive analysis.

Results

The results of questionnaires disseminated to the 400 tourists showed that the majority of respondents were female (58.6%), with the highest percentage aged between 31 and 40 years old (27.5%). 50% of respondents were married. 37.8% of tourists answering questionnaires held an undergraduate degree, with the largest income bracket being between 20,000 and 30,000 baht per month (31.8%).

The vast majority of respondents were on their first visit to Ban Koh Klang in the calendar year (78.1%), with the rest being the most frequently selected purpose of visit (62.3%). The most popular tourist activity of choice in the area was nature watching (31.3%), with a majority of respondents identifying natural tourist attractions as the type of attraction they preferred in the



area (53.2%). The top three reasons for respondents selecting Krabi as a holiday destination were the beauty of the location, the cheap prices and the ease of travel. 56.5% of respondents indicated that they were unsure whether they would visit Ban Koh Klang again.

Respondents indicated that the overall marketing of tourism in Ban Koh Klang was at a moderate level, with a high level of advertising provided by third parties (friends or tour operators). The majority of respondents received information about tourism in Ban Koh Klang from the internet or from social media.

The overall level of tourist satisfaction with their visit to Ban Koh Klang was at a high level ($\bar{x}=3.63$). The level of satisfaction concerning the condition of tourist attractions was at a high level ($\bar{x}=3.86$). All aspects of this were at a high level of satisfaction, except satisfaction with the abundance of resources in the area, which was at the highest level ($\bar{x}=4.56$). The overall level of satisfaction with tourism activities and public relations was at a high level ($\bar{x}=3.95$). The only aspect of tourism activities and public relations found to be at a moderate level was the clarity of signposting on the roads ($\bar{x}=3.21$). The overall satisfaction of respondents towards souvenirs was at a high level ($\bar{x}=3.70$), with the quality of souvenirs causing the highest satisfaction rating ($\bar{x}=4.53$) and the attractiveness of packaging causing a moderate satisfaction rating ($\bar{x}=3.32$). Tourist satisfaction towards tour operators and their services was rated at a high level ($\bar{x}=3.92$), as was the level of satisfaction concerning prices ($\bar{x}=3.52$). Respondents indicated that amenities for tourists in Ban Koh Klang are at a moderate level as is health and security.

Tourist satisfaction regarding the quality of food and services was at a moderate level ($\bar{x} = 3.36$). Within this category, cleanliness of utensils, sufficiency of beverage supply, personal hygiene of chefs and nutritional value of the food were rated at a high level. There was also a high level of satisfaction towards the environmentally-friendly nature of tourism practices in Ban Koh Klang ($\bar{x} = 4.03$).

From these questionnaire results, it is clear that there is a positive feeling among tourists visiting Ban Koh Klang, although there are clear areas for potential improvement of the tourism experience, especially the quality of food and services.

Context and Natural Resources

Tourism in Ban Koh Klang really began when visitors came to the area to conduct community development work. A variety of government and international organisations helped assist the community in a variety of areas, including The Coastal Habitats and Resource Management Project (CHARM), Responsible Ecological Social Tours (REST), The European Union, The United Nations Children's Fund (UNICEF) and the Department of Skill Development. The presence of these groups caused locals to recognise the potential for tourism development and the opportunities it could provide for the community. From these beginnings a number of tourism initiatives spawned, mostly emphasising natural and cultural tourism. The most prominent natural resource available to the community of Ban Koh Klang is the surrounding mangrove forest. Even though some of the wood from the forest has been harvested, some large trees remain. It is home to at least 221 species of water birds, 139 species of mangrove birds, 137 species of other local birds and 107 species of migratory birds. There are also at least 50 species of fish in the area, of which milk-fish and barramundi are the primary species for the local economy.

The local tourist attractions in Ban Koh Klang are the mangrove forest and the beaches. There is also a mountain and cave system, Khanap Nam Mountain. The valley is flanked by two mountains and filled with water, making it a popular tourist destination for canoeing. Moreover, there are a number of learning centres and professional groups catering for tourists in the area



and raising awareness of the local environment and ecology of Ban Koh Klang. These include: Khlong Prasong Sub-District Farmers Group, the Organic Vegetable Production Group, the Grouper Fish Aquaculture Group, Hua Tong Boat Learning Center, the Batik Cloth Housewife Group, the Black Crab Cultivation Group, the Organic Salted Fish Processing Group and the Homestay Group. Members from these groups and other representatives from the local community were invited to meetings with the research team to discuss the potential development of culinary tourist activities in Ban Koh Klang Community.

A model for environmentally-friendly food tourism in Ban Koh Klang

Meetings concerning environmentally-friendly tourist activities in Ban Koh Klang Community revealed that the ingredients most used by locals to create traditional dishes for tourists are sangyod red rice, grouper, pagoda snails, black crab, salted fish and organic vegetables. Of these ingredients, the key informants present during discussions identified sangyod red rice, grouper and pagoda snails as community staples due to their vast quantity in the local market and their year-long supply. This last factor is also an important element of environmentally-friendly produce because there is minimal waste during the production and storage stages of processing. The respondents also came to the meeting with suggestions for dishes that would be suitable for promoting as a traditional culinary experience for tourists to try (Table 1). The dish selected for particular promotion by respondents was spicy pagoda snail salad.

Pagoda snails are small single-shelled molluscs found in the mud flats, estuaries, river mouths and mangrove forests of Thailand. Interviews with key informants revealed that pagoda snails are collected in the area and incorporated in the traditional spicy pagoda snail salad. This dish reveals much about the heritage and traditions of the community due to the use of entirely locally-sourced ingredients, including *rese*, pounded roasted coconut.

Table 1. Dishes suggested by key informants for further development as a traditional culinary experience.

Dish	Source of raw materials		
Sangyod red rice	Khlong Prasong Sub-District Farmers Group		
Traditional chilli paste with locally sourced vegetables	Organic Vegetable Production Group		
Spicy mixed vegetable soup with grilled fish	Organic Vegetable Production Group / Organic Salted Fish Processing Group		
Stir fried gnetum gnemon with shrimp	Organic Vegetable Production Group / Organic Salted Fish Processing Group		
Sour curry with grouper	Organic Vegetable Production Group / Grouper Fish Aquaculture Group		
Steamed black crab	Black Crab Cultivation Group		
Deep-fried salted fish	Organic Salted Fish Processing Group		
Spicy pagoda snail salad	Khlong Prasong Sub-District Farmers Group / Organic Vegetable Production Group		

Table 2. Ingredient list and recipe for spicy pagoda snail salad.

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Ingredient	Quantity
Pagoda snails	2 cups
Eggplant, thinly sliced	1 cup
Banana blossom, thinly sliced	1 cup
Red onion, thinly sliced	1 cup
Long beans, shredded	1 cup



Lemongrass, minced	½ cup
Chilli flakes	1 tablespoon
Pepper	1 tablespoon
Rese (pounded roasted coconut)	2 tablespoons
Fish sauce	2 tablespoons
Palm sugar	2 tablespoons
Lime juice	3 tablespoons

Recipe for Spicy Pagoda Snail Salad:

- 1 Boil and slice pagoda snail meat
- 2 Mix snail meat with thinly sliced eggplant, banana blossom, shredded long beans, minced lemongrass, chilli flakes and pepper together.
- 3 Add rese to the mixture and integrate thoroughly. Season with fish sauce, palm sugar and lime juice.
- 4. Taste and adjust seasoning if required.

Following selection of suitable ingredients and dishes for further development, the research team held a one-day workshop with 30 individuals responsible for providing food for tourists visiting the Khlong Prasong Sub-District Farmers Group, the Organic Vegetable Production Group and the Organic Salted Fish Processing Group. In order to create greater confidence in the ingredients and dishes selected, the research team sent samples to Central Laboratory Thailand Limited in order to test them according to international food safety standards. No alpha-toxins were detected in sangyod red rice (Table 3).

Traces of three heavy metals were detected in pagoda snails - cadmium (0.011 ml/kg), lead (<0.060 ml/kg) and mercury (0.019 ml/kg) (Table 4). However, the small levels of these metals are not harmful to humans. There was no trace of cadmium or lead in the grouper fish, although there were small traces of mercury (0.130 ml/kg) (Table 5). Again, this level is not harmful to humans.

Table 3. Results from testing sangyod red rice for alpha toxins.

Toxin type (mg/kg)	Source			LOD	Reference test method
	1	2	3		
Alfatoxin B ₁	Not Detected	Not Detected	Not Detected	0.03	In house method base on AOAC(2005)999.10
Alfatoxin B ₂	Not Detected	Not Detected	Not Detected	0.02	
Alfatoxin G ₂	Not Detected	Not Detected	Not Detected	0.08	
Alfatoxin G ₂	Not Detected	Not Detected	Not Detected	0.05	
Total Alfatoxins	Not Detected	Not Detected	Not Detected	-	
Arsenic (As)	Not Detected	Not Detected	Not Detected	0.089	In house method base on AOAC (2005) 986.15

Table 4. Results from testing pagoda snails for heavy metals.

Metal	Quantity found (mg/kg)	Standard	LOD	Reference test method
Cadmium	0.011	1		In house method base on AOAC (2005)999.10



Lead	<0.060	1	In house method base on AOAC (2005)986.15
Mercury	0.019	0.5	In house method base on AOAC (2005)974.14

Table 5. Results from testing grouper fish for heavy metals.

Me	tal	Source			Reference test method
		1	2	3	
Cadmium	ปริมาณ (mg/kg)	Not Detected	Not Detected	< 0.005	In house method base on AOAC (2005)999.10
Gaarmann	LOD	0.001			
Lead	ปริมาณ (mg/kg)	Not Detected	Not Detected	Not Detected	In house method base on AOAC (2005)986.15
	LOD	0.018			
Mercury	ปริมาณ (mg/kg)	0.109	< 0.019	0.130	In house method base on AOAC (2005)974.14
wercury	LOD		0.010		

Aside from the natural resources that can be used to create an environmentally-friendly culinary tourism experience, there are a number of other tourist attractions in Ban Koh Klang Community. To conclude the field study, the research team designed a model for environmentally-friendly food tourism in Ban Koh Klang based on the form of a daytrip (Table 6).

Table 6. Proposed daytrip for an environmentally-friendly culinary tourism experience in Ban Koh Klang, Krabi Province.

Time	Activity
09.00	Travel from Chao Fa Port
09.15	Visit the Grouper Fish Aquaculture Group
09.30	Study the ecosystem of the mangrove forest and collect pagoda snails
10.30	Learn about sangyod red rice, organic vegetables and food preparation
12.00	Lunch at the Culinary Learning Center
13.00	Visit the Hua Tong Boat Learning Center
14.00	Visit the Black Crab Cultivation Learning Center
14.30	Visit the Batik Cloth Housewife Learning Center
15.30	Visit the Organic Salted Fish Processing Learning Center
16.00	Return

The daytrip structure was evaluated by 20 domestic tourists in a range of issues. The overall satisfaction level among respondents was rated at a high level ($\bar{x} = 4.09$). Tourist satisfaction with the culinary learning centre was at the highest level ($\bar{x} = 4.45$), with all other learning centres rated at a high level. Activities at the rice farm and pagoda snail collecting were rated at the highest level, with all other activities rated at a high level. The environmentally-friendly



nature of the tour was rated at the highest level ($\bar{x}=4.40$), with all other service aspects of the trip rated at a high level. Of the local dishes eaten during lunch, spicy pagoda snail salad and sangyod rice were rated at the highest level ($\bar{x}=4.60$ and $\bar{x}=4.45$, respectively). All other dishes were rated at a high level.

Conclusion and recommendations

The culinary experience created during this investigation will hopefully help to reduce the food and produce used to cater for tourists visiting Ban Koh Klang Community in Krabi Province. This is because the ingredients used to create the traditional dishes are sourced locally (Blakey, 2012; Hall and Gössling, 2013). In addition, they are year-round products, meaning that there is very little wastage and limited need for preservation and storage, which will also have a positive environmental impact. Through food tourism it is important to generate economic development "that can help preserve natural resources and improve the quality of life of the communities in a region" (Buiatti, 2011). The model proposed during this investigation will likely help to achieve this and harness the untapped potential of Ban Koh Klang's delightful local cuisine. Moreover, ingredients such as the pagoda snails are sourced in the mangrove forest, which makes a vital contribution to community sustainability.

It is crucial that the local residents conserve the forest to maximise the benefits it provides and also preserve their traditional heritage. Spicy pagoda snail salad achieved a high satisfaction rating among visiting tourists. This is partly due to the flavour combination, but also due to the nature of the dish, which is truly specific to the Ban Koh Klang area. However, it must be noted that the evaluation of the dish was only carried out by domestic tourists. Were international tourists to have tried the dish, the results may have been lower. Tan et al. (2016) found that unusual novel foods are poorly received in comparison to more culturally acceptable dishes. As pagoda snails would be considered exotic to the Western palette, it is important that a variety of more well-known ingredients is provided for tourists. It is therefore important to maintain a menu that includes the more recognisable Thai dishes of sour curry and deep-fried fish.

There are areas in which the culinary experience requires further development, not least the integration of modern technology and child-friendly media into the learning centres. This will enable the community members to cater for the interests of young children and modern-thinking visitors. Moreover, the environmentally-friendly nature of the food tourism activities should be promoted more systematically to garner more interest among both domestic and international tourists. There is a lot of competition for tourism business in the surrounding districts and provinces, so it is critically important for the residents of Ban Koh Klang to raise awareness of the services they can offer.

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