

ASSESSMENT OF SUSTAINABLE TOURISM DEVELOPMENT IN CU CHI DISTRICT, HOCHIMINH CITY

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ABSTRACT: Cu Chi is a district to the north of Hochiminh City, in the Southern Key Economic Region connecting Southeastern Region and Southwestern Region. Although the district is surrounded by major industrial zones, tourism is a potential direction for development. The article aims to introduce research from field survey and assessment of natural and social resources from which sustainable tourism can be developed. We identified and ranked 12 potential tourism sites. Of which 4 sites are ranked as in favourite condition, 6 are in fairly favourite condition and 2 are in very favourite condition. This provides an important basis to propose sustainable tourism development.

KEYWORDS: assessment, tourism, AHP, Cu Chi District

1. Background

Located on the northwest of Ho Chi Minh City, adjacent to Hoc Mon district, Tay Ninh province and Binh Duong province. Cu Chi District is more than 30km away from the city center. Cu Chi is located between the two rivers Saigon River and Vam Co Dong River. With this location, Cu Chi district has many favorable conditions to develop. It has an underground tunnel system of more than 250 km in length built during the war against the American. With its natural advantages and unique cultural identity, the district can become a popular tourist destination.

As mentioned above, the development of tourism industry in Cu Chi District is an urgent need to improve local economy and people's living standard. As a result, a research by the topic "Assessment of sustainable tourism development in Cu Chi District, Ho Chi Minh City" to assess the potential for tourism development.

2. Research area and methods

2.1. Overview of Cu Chi District

Cu Chi District is located in the green belt of Ho Chi Minh City with a total natural area of 43,496 hectares, occupying 20.45% of the city's area, ranking second among the districts of the city. The population is 355,822 people circa 2015. Cu Chi Town is the administrative centre of the district, approximately 50km away from the Hochiminh City along the trans-Asia road. There are 20 communes and 1 town. The district is famous for the historic Cu Chi Tunnels, which was used in Vietnam War (the War against the American in Vietnamese literature) by Vietnamese nationals as shelter, storage and concealment of troop movement. This special system is a great potential to promote local tourism development.

Cu Chi District is situated on a transitional land from the highlands of the Southeastern mountains and forests to the lowlands of the Mekong Delta. The terrain of Cu Chi district is quite simple with the tendency of lowering in the Northwest and South-East and South-West South with the height from 0 to 8m. It is divided into 3 regions: hilly areas, sloping areas hollow. They create diverse terrain and landscape. Located in the tropical monsoon climate, the equatorial nature. The climate is relatively mild all year round, creating favorable conditions for vegetation around the year with ecosystems such as shallow ecosystem, river ecosystem, etc. Cu Chi district has the strength of Trans-Asia route running along the length of the district so the

traffic with provinces and cities is quite convenient, making it easier to connect points and routes with other provinces. Cu Chi has an important advantage in the development of economic sectors and tourism services, which is an important stop on the route to Ho Chi Minh City, which is the starting point for the tours. This is the main route to Cambodia, which will create favorable conditions for visitors to Cu Chi and Ho Chi Minh City.

2.2. Research Methods

- *Statistical, analysis and synthesis methods* : Statistical documents are extracted from various sources: national and central archives, documents of city and tourism agencies. Ho Chi Minh City, other related documents.

- *Field method* : A traditional method of geography, which is widely used in tourism geography to accumulate actual literature on the formation, development and character of territorial organizations. calendar. In the process of research, this method is always taken seriously to get a realistic view of the territorial characteristics.

- *Pairwise comparison method (AHP)* : is the method of quantitative analysis commonly used to compare alternatives. In this paper, this method is used to determine the weight of appropriate evaluation criteria in Cu Chi district.

To determine the weight of the above criteria, the method of pair comparison is used. First set up a square matrix n (where n is the number of criteria set, in this study n = 5).

TC1 = Attractiveness and ability to organize many types of tourism;

TC2 = Sustainability of resources and environment;

TC3 = Location, accessibility to the destination;

TC4 = Capacity of tourist destination;

TC5 = Duration of tourist activity.

	TC1	TC2	TC3	TC4	TC5
TC 1					
TC 2					
TC 3					
TC 4					
TC 5					

Then we compare the indicators in pairs, the above five indicators we compare 15 pairs of indicators.

For example, if we think that TC1 is as important as TC2, then in cell (1,2) we enter number 1, if we think that TC1 is equal to only one third of TC3, then in cell (1,3) 1/3. And so on up to the 15th pair. That is also why the cells on the diagonal of the matrix have the value of 1. These quantities are denoted by the a_{ij} . The a_{ij} or inverse of them must be integers from 1 to 9 [1, 5, 6].

Table 1. Comparative ranking of pairings in the AHP algorithm

Importance	Value	Discription
Equally important	1	Two activities have equal contribution
Equally important to moderate	2	
Moderately important	3	Moderate preference in experience and judgment for an activity
Moderate to fairly important	4	
Slightly more important	5	Strong preference in experience and judgment for an activity
Somewhat important to very important	6	
Very important	7	A very important activity
Very important to extremely important	8	
Extremely important	9	

3. Results and discussion

3.1. Status of tourism development in Cu Chi district

The study has identified the main tourist sites in Cu Chi as follows:

a. Cu Chi Historical Tunnels

- The Cu Chi Tunnels are currently preserved in Ben Duoc and Ben Dinh, about 70km northwest of Ho Chi Minh City. The resort is suitable for visitors who like to visit and examine the history, experience the interesting local life activities of the local people during two harsh and arduous wars. Helping especially young people in the country have a better understanding of the history of the nation. The relic complex consists of the base of the Party Committee and the Military Command of the Saigon - Gia Dinh Military Zone in the war of resistance was restored in full detail as the original status, which is attractive to tourists. .

- Ben Duoc martyrs memorial: The temple was built on a land area of 70.000m², including the gate, the beer writer, the tower nine floors about 40m high and the main power. In the main power locale name engraved beer around 50,000 children of the fatherland Vietnam fought and sacrificed in Saigon - Gia Dinh. From 1995 up to now, Ben Duoc Memorial Martyrs Memorial has been upgraded two times to change the composite materials of stone and copper such as pillars, dragons, dragons, cranes, ... to bring eternity, as well as adding many items of martyrs engraved on stone.

- Ben Duoc Tunnel: Located in the Cu Chi tunnel system, Ben Duoc is a base of the Party Committee and the Command of Saigon - Gia Dinh Military Region. This is a unique architecture, tunnel system is deep in the ground, there are many basements, many nooks like spider webs are over 200km long, where there are eating, accommodation, meeting and fighting.

b. Saigon - Cho Lon - Gia Dinh Memorial: basement Ben Di martyrs' commemorative plaque is a place of display, paintings, statues, relief, representing the revolutionary struggle typical, typical characters in the unyielding struggle of the people of Saigon, Cho Lon, Gia Dinh. The basement has 9 spaces. Each space represents a specific stage of the history of more than 100 years against the French invaders, American invasion.

c. Ben Dinh Tunnels are historical relics recognized by the State (ranked) historical relics at the national level on December 15, 2004. Like Ben Di tunnel, this place is a place where food, accommodation and meetings are unique, contributing to the fight against invaders.

d. Cu Chi Ecological Ethnological and Cultural Park : Here you will discover many interesting things. The resort is designed with the main structure of wood, bamboo, bamboo, palm leaf ... In the tourist area, visitors will feel like going to a rural village. This is a special place to attract visitors. In this place visitors not only admire the unique characteristics of each house and the beliefs of different ethnic groups but also their eyes to observe the living and production materials such as the reel of the Muong the smithy of the S'tieng people, the way of making wine of the Zuar, the brocade weaving of the Ba - na, Thai girls; the craft of S'tieng artisans, the pottery making by the Cho-ro, etc.

e. "A glimpse of Vietnam" Park: This is the convergence of Vietnamese culture throughout Vietnam. The resort is a complex of traditional handicraft villages. With an area of 22.5 hectares located near the mouth of the Scorpion, near the Saigon River, the resort has about 30 items typical for different cultures across the country.

g. Binh My Ecotourism Park: 25km from the city center, 2km from Thu Dau Mot Town, Binh Duong Province. With a quiet space, the resort offers visitors the feeling of relaxation after hard working days. With advantage along the Saigon River, the resort has a poetic and cool landscape with bamboo, river, monkey bridge.

h. Trung An orchard: 40 km from the center of the city is orchard of Trung An commune, Cu Chi district. There are about 10 fruit traders. Here visitors can enjoy the fruits as; rambutan, mangosteen, durian, plum, guava, ... Interesting that visitors can pick and enjoy themselves in the garden. Every year, Trung An welcomes at least 35,000 to 50,000 visitors, 75% of fruit trees are sold to visitors.

i. Cu Chi Water Park: Located in hamlet 4 of Phuoc Vinh An commune, the water park covers an area of about 3 hectares, including: swimming pool for adults, children's pool, games Adventure like "swing death", try feeling strong, there are games "3 water slides ", or visitors can relax with "artificial wave lake", "Lazy river".

k. Hi-Tech Agricultural Park: Located on the Cu Chi tunnel road, about 44km northwest of Ho Chi Minh City, convenient transportation to the provinces. From here visitors can take the bus to go to Cambodia and Thailand along the Trans-Asia route. It was built according to the Decision No. 3534 / QĐ - UBND dated 14/7/2004 by the People's Committee, with the scale of 88.17 ha.

l. Wildlife Rescue Centre: station has an area of 4000 m², which was upgraded in 2008 and operates stations capable salvage different animals such as primates, mammals cats, pangolins, turtles, otters, ... hundreds of individuals and many different animals were released to nature. The station also includes a wildlife education gallery.

m. Green Noen Farm: 60 ha, appropriately divided, Green Noen farm with 33 mushroom houses; 4 dairy farms, goats, sheep and more than 3 hectares of Mokara orchards, safe vegetables. Green Noen is a model of farming farm combined with livestock development in the direction of sustainability. Growing from the An Nhon mushroom farm, mushrooms were identified as the main crops of the farm. and Lingzhi mushrooms are considered the most important product of the Green Noen.

3.2. Assessment of the potential for tourism development

a. Select the destination to evaluate

The tourism potential in Cu Chi district is not developed balancedly. The current status of tourism in each area is different while development levels are also different while it is important to identify standout sites for investment and operation. The basis for choosing a typical tourist destination is:

- Sites of nature sightseeing or with potential for nature sight-seeing;
- Sites are in operational or capable of being operational in the future;
- Sites should be representative and evenly geographically distributed.

From the above, the selected tourist sites are evaluated according to the following table:

Table 2. Selected sites for evaluation

Item	Site	Location
1	Ben Duoc Tunnels	Phu Hiep hamlet, Phu My Hung commune
2	Ben Dinh Tunnels	Ben Dinh hamlet, Nhuan Duc Commune
3	Trung An Orchard	Trung An commune
4	Phu Hoa Dong Rice Paper Craft Village	Phu Hoa Dong commune
5	Wildlife Rescue Center	An Nhon Tay commune
6	Cu Chi Water Park	Hamlet 4, Phuoc Vinh An commune
7	Hi-tech Agricultural Park	Pham Van Coi commune
8	Binh My Ecological Park	Binh My commune
9	Green Noen Green Resort	Xom Moi Hamlet, An Nhon Tay commune
10	A glimpse of Vietnam Resort	Phu Binh hamlet, An Phu commune
11	Ethnic minorities Resort	Hamlet 4, Nhuan Duc commune
12	Cu Chi organic farming village	Phuoc Vinh An commune

In order to assess tourism potential many methods can be used, in which the general scales approach is widely used. This method allows the researcher to quantify the criteria, assess the ranking of natural attractions under the influence of many factors.

For potential tourism in Cu Chi district, the selected criteria and criteria are:

- attractiveness and ability to organize many types of tourism;

- Sustainability of resources and environment;
- Location, accessibility to the destination;
- the capacity of the destination;
- Travel time.

b. Determine the weighting of the criteria

Table 3. Comparison of indicators

	TC1	TC2	TC3	TC4	TC5
TC1	1	1	1/3	1/7	1/5
TC2	1	1	1	1/5	1/5
TC3	3	1	1	1/3	1/3
TC4	7	5	3	1	1
TC5	5	5	3	1	1

After setting up the matrix, the weights of the norm are calculated according to the following formula:

As such we can calculate the weight of the criteria as follows:

- n1 = 0.059 (Gravity)
- nw2 = 0.079 (Sustainability)
- n3 = 0.121 (Location)
- nw4 = 0.383 (Capacity)
- nw5 = 0.358 (Uptime)

One thing to note is:

When comparing TC1 with TC2, TC1 is as important as TC2;

When comparing TC1 with TC3, TC1 is as important as 1/3 compared to TC3;

Therefore, TC2 must be as important as TC3, but when it comes to comparing TC2 with TC3, TC2 is as important as TC3.

In his theory, Saath, the author of AHP, introduced the concept of "conflict." If the "conflict" ratio is $\leq 10\%$, he says that the evaluations in table 3.4 are acceptable, whereas the re-evaluation is recalculated.

Conflict rates are defined as follows:

With CR as a conflicting ratio, the quantities CI and RI are determined by the following sequence of expressions:

Table 4. Relational RI index proposed by Saaty

N	first	2	3	4	5	6	7	8	9	ten
RI	0.00	0.00	0.058	0.90	1.12	1.24	1.32	1.45	1.49	1.51

In this case, we calculate CR = 1.2% with CI = 0.013, RI = 1.107, $\lambda_{max} = 5.051$, m = 5. Therefore, the a_{ij} in Table 2 is acceptable or otherwise. The above formulas are acceptable.

c. Specify points for criteria

Each criterion is divided into 4 levels from very convenient, quite convenient, convenient to less convenient. In order to determine the level of convenience of the sites, we set a common score for each criterion. Specific points for each level are: Very convenient: 10 points, quite convenient: 7 points, convenient: 4 points, less favorable 1 point.

Table 5. Classification criteria

Criteria	Ratings scale	Grade points	Weight
Duration	Very long	10	0.059
	Fairly long	7	
	Long average	4	
	Short	1	
Location	Well suited	10	0.079
	Quite appropriate	7	

	Suitable	4	
	Less appropriate	1	
Capacity	Very expansive	10	0.121
	Expansive	7	
	Medium	4	
	Small	1	
Sustainability	Very sustainable	10	0.383
	Fairly sustainable	7	
	Less sustainable	4	
	Sustainable	1	
Attractive	Very attractive	10	0.358
	Pretty attractive	7	
	Attractive	4	
	Not attractive	1	

d. Conduct evaluation for the criteria

- Tourist location: Tourist sites are located in the district of Cu Chi, not far from the center of Ho Chi Minh City (from 30km to 50km) so the transport is easy. The transportation of tourists to sites shall not exceed 3 hours. According to Table 3.6, the scoring is 10

- Duration of tourism activities: Trung An orchard planted trees such as durian, mangosteen, rambutan, jackfruit, grapefruit ... Because of the plantation of these trees, tourist duration of fruit orchard is seasonal dependent. The harvest is only in April, May, June and July, making the tourist duration short. Duration ranges from 100 to 150 days per year (average length). Thus the score is 4, while the other sites do not depend on the season, attaining score of 10 for tourist duration.

- Capacity of tourist sites

Table 6. Capacity of tourist sites

Item	Tourist sites	Capacity (persons/day)	Point
1	Ben Duoc Tunnels	> 1000	10
2	Ben Dinh Tunnels	> 1000	10
3	Trung An Orchard	<100	1
4	Phu Hoa Dong Rice Paper Craft Village	<100	1
5	Wildlife Rescue Center	100 - 500	4
6	Cu Chi Water Park	100 - 500	4
7	Hi-tech Agricultural Park	100 - 500	4
8	Binh My Ecological Park	100 - 500	4
9	Green Noen Green Resort	500 - 1000	7
10	A glimpse of Vietnam Resort	500 - 1000	7
11	Ethnic minorities Resort	500 - 1000	7
12	Cu Chi organic farming village	100 - 500	4

- Attractiveness

Table 7 . The attractiveness and ability to organize different types of tourism

Item	Tourist sites	Type of tourism	Level of importance	Point
1	Ben Duoc Tunnels	- sightseeing - research - rest and relax - entertainment	National	10
2	Ben Dinh Tunnels	- sightseeing	National	10

Item	Tourist sites	Type of tourism	Level of importance	Point
		- research - entertainment		
3	Trung An Orchard	- rest and relax - orchad - entertainment	Provincial	7
4	Phu Hoa Dong Rice Paper Craft Village	- sightseeing - research	Provincial	4
5	Wildlife Rescue Center	- sightseeing - research	Provincial	4
6	Cu Chi Water Park	- rest and relax - entertainment	Provincial	4
7	Hi-tech Agricultural Park	- sightseeing - research	Provincial	4
8	Binh My Ecological Park	- rest and relax - sightseeing - DL garden	Provincial	7
9	Green Noen Green Resort	- rest and relax - sightseeing - orchad	Provincial	7
10	A glimpse of Vietnam Resort	- rest and relax - sightseeing	Provincial	4
11	Ethnic minorities Resort	- sightseeing - research	Provincial	4
12	Cu Chi organic farming village	- sightseeing - orchad	Provincial	4

- Sustainability of environmental resources

Ben Duoc tunnel, Ben Dinh: due to the tunnel extension (about 30 cm in height and width) to make underground movement of tourists more convenient, underground soil was disturbed but negligible.

Environmental pollution caused by tourism activities comes from subjective factors (activities of service facilities, other tourist services, hotels and tourist transports). Impact of tourism activities on the environment mainly in tourist areas, tourist destinations, ecological tourist areas, historic Cu Chi Tunnels, water park,... The source of environmental pollution from solid waste, wastewater, and exhausts from tourist facilities and tourists. Sustainability in this area is 7 points according to Table 3.6.

e. Total score

Based on the maximum score determined by the rating scale and the specific assessment result at each subject to determine the percentage of points compared to the maximum score. There are ratings based on different percentages.

Table 8. Rating criteria

Rating	Score	Percentage vs. maximum score
Very convenient (VC)	8 - 10	80 - 100%
Quite convenient (QC)	6 - 7.9	60 - 79%
Convenient (C)	4 - 5.9	40 - 59%
Less convenient (LC)	≤ 3.9	≤ 39%

Table 9. A comprehensive assessment of tourist sites in Cu Chi District

Item	Tourist destination	Component score (weight)					Total score	Rating level
		Attractiveness (0.383)	Sustainability (0.358)	Capacity (0.121)	Location (0.079)	Duration (0.059)		
1	Ben Duoc Tunnels	3.83	2.506	1.21	0.79	0.59	8.926	VC
2	Ben Dinh Tunnels	3.83	2.506	1.21	0.79	0.59	8.926	VC
3	Trung An Orchard	2.681	2.506	0.121	0.79	0.236	7.423	QC
4	Phu Hoa Dong Rice Paper Village	1.532	2.506	0.121	0.79	0.59	5.539	C
5	Wildlife Rescue Center	1.532	2.506	0.484	0.79	0.59	5.902	C
6	Cu Chi Water Park	1.532	2.506	0.484	0.79	0.59	5.902	C
7	Hi-tech Agricultural Park	1.532	2.506	0.484	0.79	0.59	5.902	C
8	Binh My Ecological Park	2.681	2.506	0.484	0.79	0.59	7.051	QC
9	Green Noen Green Resort	2.681	2.506	0.847	0.79	0.59	7.414	QC
10	A glimpse of Vietnam Resort	1.532	2.506	0.847	0.79	0.59	6.265	QC
11	Ethnic minorities Resort	1.532	2.506	0.847	0.79	0.59	6.265	QC
12	Cu Chi organic farming village	1.532	2.506	0.484	0.79	0.59	5.902	C

Obtaining a score of favorable conditions to organize tourism, we see the tourist sites show a clear distinction. Although all eleven destinations are in the same location of accessibility, when comparing different criteria there are different advantages.

Cu Chi Tunnels include Ben Dinh and Ben Duoc with the advantage of high attractiveness plus being recognized as national historical monuments, so tourist operation is rated as very attractive.

In the case of rice paper villages, water parks and wildlife rescue centers, it is necessary to invest in expanding the capacity and adding tourist products in order to increase the full potential of tourism.

4. Conclusion

Tourism activities of Cu Chi district in the past few years have not developed adequately with

the potential of being located in the coastal area of Ho Chi Minh City, which is considered as a tourist center of the country with good physical infrastructure. Tourism products, though quite diverse but not outstanding, are not yet trademarked and of high quality. Tourism promotion is still limited.

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