

The accessibility enhancement of park and environment tourism for tourists by applying Surabaya's tourism route

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Abstract. Surabaya City's tourism has potentials throughout its landscape, such as beaches, seas, floral, and faunas. Therefore, synergistic tourism areas must be developed, thus it can be used to entice more local or foreign tourists. Park and environmental tourism in Surabaya has three themes of, 1) beach-sea-fresh water, 2) flora and fauna, also 3) theme park. Recently, the park and environmental tourism destination do not have the needed connection between each other. The effort of park and environmental tourism development is done through engagement approach using Participatory Rural Appraisal (PRA) which involved an area's stakeholders. The stakeholders are able to enrich the tourist attractions' characteristic through Focus Group Discussion (FGD), map the tourist attractions' locations using ArcGIS, and give suggestions in choosing the routes by considering the accessibility, distance, and transportation of the tourist attraction sites at Surabaya. These characteristics are parts of the achieved research target. The existence of park and environmental tourism route map as an integration of park and environmental tourist attraction is expected to increase the amount of reachable locations and is able to promote more tourist attraction sites.

Keyword: *Environmental Tourism, Map, Park Tourism, Proximity Distance, Tourism Route*

1. Introduction

Surabaya's tourist attraction is not only offering the attractions of city buildings and modern lifestyle, but also has natural potentials which are match for an attraction's criteria. These natural potentials are the part of Surabaya's landscape as beaches, seas, floras, and faunas. However, the city development as the center of governing activities, housing and settlement, and business is threatening for the existence of these natural potentials. As known cases of mangrove area's functional shifting, building the sediment in beaches and estuaries (river mouth), also the declining of environment's quality which are happening in almost of the city areas. Thus, to decide an area as a tourist attraction has the consequences for all involved department to develop their appointed tourist destinations, to complete the supporting facilities, and to affirm the occurrences of positive effects of every aspects of surrounding societies and environments.

Knowing that not all the cities with natural potentials are surely make the city is livable, thus it is a must in every city to provide 30% of its area as green spaces. Surabaya has rehabilitated some themed park and city forest, also giving in effort in increasing more green spaces which are can be functioned as recreational sites. By creating those recreational activities, the development of tourist attractions at Surabaya that consist of natural beaches, seas, theme parks, city forest, also the varieties flora and fauna, Surabaya's natural landscape can be classified as park and environmental tourism.



The park and environmental tourism, as mentioned in the review of *Rencana Induk Pengembangan Pariwisata Daerah* (RIPPDA) which is a main plan of city tourism development of Surabaya for the year 2017, Surabaya has 32 tourist attractions which divided to three themes of, 1) beach-sea-fresh water, 2) flora and fauna, and 3) themed park. The tourist attractions at Surabaya are spread unevenly, also till recently is yet connected to each other. In fact, the integration between tourist attractions will ease the tourists to visit various attractions by a single trip. By knowing the tourism development in big cities around the world is concluding a tourism route for every attractions, Surabaya's park and environmental tourism also needs to develop one which help tourists to reach a tourist attraction and move to another which is accessible, short in distance, and provided with transportation facilities.

2. Forming Concept and Research Strategy

2.1. Research Concept

The various themes of park and environmental tourism needs specific development plan with a concept that is involving stakeholders using Participatory Rural Appraisal (PRA) method. The Stakeholders directly participate in compiling all information about the particular tourist attraction's characteristics, mapping the location, and giving suggestions in choosing the tourism route.

2.2. Research Strategy

Based on the research concept above, the application strategy of the research describe as follows:

- Literature Study
This study aims to achieving a thorough understanding toward the theory also recent case study about Participatory Rural Appraisal and tourism theories thus support the acquiring research variables.
- Data Collecting
This activity of collecting data is divided to compiling the secondary data and primary data. The secondary data is used as table 1 shows. Meanwhile, the primary data is gained through an observation activity from field survey for acknowledging the existing condition of the tourist attractions, which later formed as tourist attraction's characteristics. Moreover, the primary data is compiled by the data taken from interviewing the stakeholders in the process of applying Participatory Rural Appraisal (PRA) method.

Table 1. The Necessary Secondary Data with the Data Source

Data	Sources	Government Office
Surabaya Tourism Plan Document	RIPPDA of Surabaya	Tourism Bureau
Potential Tourist Attraction List in Surabaya	RIPPDA of Surabaya	Tourism Bureau
Spatial Plan of Surabaya	RTRW of Surabaya	Planning and Development Bureau (Bappeko) Surabaya

2.3. Research Target

In the process of the research toward the analyzing data process, the research targets are set for the research can be systematically executed. The targets are:

- First Target: Identified the park and environmental tourism of Surabaya's characteristic.
- Second Target: Analyzed the distribution of park and environmental tourism sites of Surabaya's distribution.
- Third Target: Forming the map of the park and environmental tourism routes based on the proximity distance, accessibility, and provided facilities.

3. Research Result

3.1. First Target: Identified the park and environmental tourism of Surabaya's characteristic.

As the observation result and compiled field data, thus achieved that the characteristic of park and environmental tourist attractions of Surabaya, such as:

- Theme parks which are commonly in a form of a park with specific theme, intended for providing the city's RTH (Ruang Terbuka Hijau) or green spaces necessity.
- The attractions of every theme park are very diverse. For example, Taman Apsari was constructed as a leisure site with Gubernur Suryo Statue, the first governor of East Java as a valuable and historical landmark, and Taman Prestasi was designed as an outdoor play ground for kids with various statues and amusement rides as educational medias, which is often offer free tickets for kids with academic achievement, such as first rank in class.
- Flora and fauna theme is a natural environmental tourism. The offered attractions are scenery, fresh air, particular vegetation, also city's conservation areas, such as Kebun Bibit-Taman Flora, Mangrove Wonorejo, and Mangrove Gunung Anyar.
- Most of theme parks (park and environmental tourism) were built as public green spaces which is free of charge for all visitors. Meanwhile, the natural environmental destination is low entry ticket and parking prices.
- The beach-sea-fresh water theme park and environmental tourism of Surabaya is the result of revitalization and/or development of natural environment area with several physical development phases. These projects mostly included in city, province, and national government's development plan. This theme is applied at Artama Cruise Harbour, Kawasan Kaki Jembatan Suramadu, Jembatan Surabaya, Pantai Ria Kenjeran, Kenjeran Park, Wisata Sumur Welut, and Jurang Kuping.



Figure 1. Park and Environment Tourist Destination: (a) Taman Flora and Kebun Bibit; and (b) Wisata Mangrove Gunung Anyar.

3.2. Second Target: Analyzed the distribution of park and environmental tourism sites of Surabaya's distribution.

Through Focus Group Discussion, it is gained that there are 186 tourist attractions with 32 of it are park and environmental tourism destinations or 17,2 %. Those park and environmental tourism destinations can be seen on the table 2 and figure 2 below:

Table 2. List of (Park and Environmental) Tourist Attractions of Surabaya

No.	Destination	No.	Destination
1	Taman Apsari	17	Rolak Outbond Kids Surabaya
2	Taman Ekspresi	18	Taman BMX and Skate park

No.	Destination	No.	Destination
3	Taman Prestasi	19	Taman Kunang-kunang
4	Taman Bungkul	20	Taman Lansia
5	Taman Pelangi	21	Taman Jangkar
6	Taman HarmoniKeputih	22	Taman Persahabatan
7	Taman Jayengrono	23	Taman Mundu
8	Pantai Kenjeran	24	Kebun Binatang Surabaya
9	Jembatan Surabaya	25	Kawasan Kaki Jembatan Suramadu
10	Taman Buah Undaan	26	Hutan Kota Pakal
11	Kebun Bibit dan Taman Flora	27	Agrowisata/ Urban Farming Pakal
12	Kebun Bibit Wonorejo	28	Eduwisata SIER
13	Ekowisata Mangrove Wonorejo	29	Eduwisata TPS Benowo
14	Wisata Mangrove Gunung Anyar	30	Hutan Kota Balas Klumprik
15	Wisata Sumur Welut	31	Taman Suroboyo
16	Jurang Kuping	32	Artama Harbour Cruise



Figure 2. The FGD method applied on the PRA method application.

The distribution area of park and environmental tourist attractions for beach-sea-fresh water theme are concentrated on Northern Surabaya part. Western and Eastern Surabaya are for flora-fauna the med d attractions. Meanwhile, the theme parks are scattered around Central and Southern Surabaya. In Figure 3, it is shown a map of park and environmental tourism of Surabaya with the green dot shows each tourism destinations.

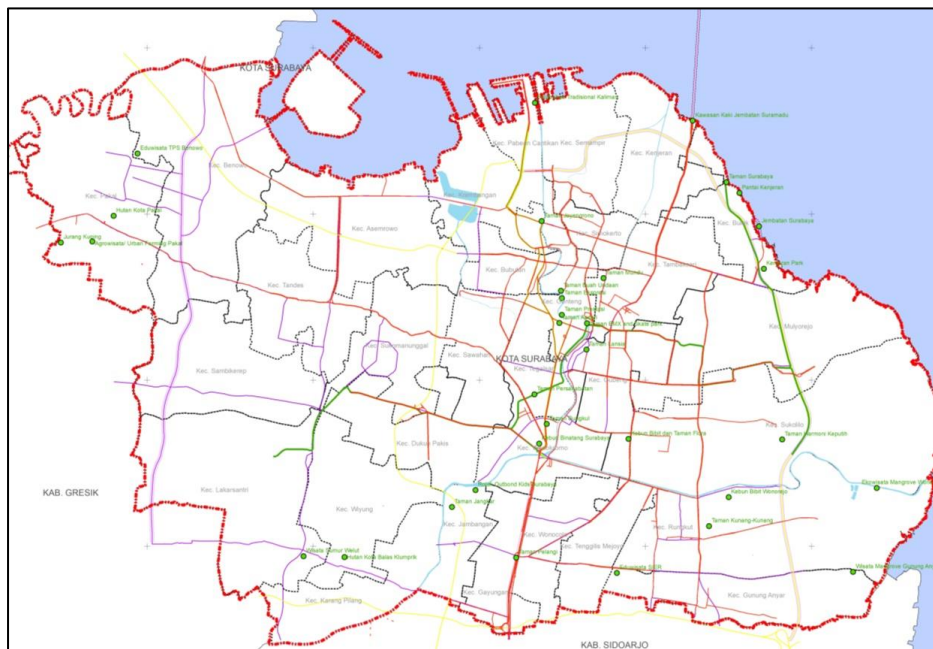


Figure 3. The Map of the Park and Environmental Tourism of Surabaya

3.3. Third Target: Forming the maps of the park and environmental tourism routes based on the proximity distance, accessibility, and provide facilities.

With the locations of park and environmental tourism destinations are partly scattered and partly concentrated in several areas, the next step of the research is to analyze the data qualitatively based on the attractions' criteria of distance proximity. Parts of the concentrated tourism attractions divided to three concentration areas, which are: 1) Central-Southern, 2) Western-Eastern, and 3) Northern part of park and environmental tourism destinations of Surabaya.

The central part area consists of 14 tourist attractions. These tourist attractions proximity distance will be calculated between points of tourist attraction A to tourist attraction N (represent each of park and environmental tourism destination in Central-Southern Surabaya areas). The result of the calculated distance can be seen on the distance calculation matrix on table 3. In the Western-Eastern area, there are 13 tourist attractions which represent by point A to point M, which is resulting on the distance calculation matrix on table 4. Meanwhile, the Northern area is constructed based on the distance between the attraction sites which will be integrated with the cable car route development plan as the transportation facility.

The special route for cable car is integration between the tourist attractions which connects Kawasan Kaki Jembatan Suramadu, Taman Suroboyo, Pantai Ria Kenjeran, Jembatan Surabaya, and Kenjeran Park, using mass transportation vehicle in the form of aerial tramway, which is pulled with a cable in a constant speed. However, the existence of the cable car (Green Line Route in figure 5.) is only a mass transportation plan in the future. This means that when this research is conducted, this type of transportation facility is not existed yet. Thus, the route between tourist attractions at the Northern Surabaya area is still using the recent common transportation.

Table 3. List Central-Southern Part's Distance Calculation Matrix

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A	0	4,5	7,5	8,0	9,3	9,0	7,3	10,3	8,8	10,3	13,7	11,3	12,1	17,0
B	4,5	0	3,7	4,3	4,7	3,6	3,0	5,0	3,5	6,4	9,3	8,5	6,8	11,7
C	7,5	3,7	0	0,5	2,5	1,6	0,28	3,3	2,5	4,3	7,0	5,7	4,8	9,7
D	8,0	4,3	0,5	0	2,0	1,0	0,8	4,0	3,3	3,8	6,4	4,9	4,0	8,9
E	9,3	4,7	2,5	2,0	0	0,5	1,0	4,7	2,8	3,4	5,7	4,8	3,8	8,7
F	9,0	3,6	1,6	1,0	0,5	0	1,2	3,2	3,0	2,9	5,9	4,2	3,4	8,3
G	7,3	3,0	0,28	0,8	1,0	1,2	0	3,0	3,3	5,7	8,2	7,1	6,2	11,0
H	10,3	5,0	3,3	4,0	4,7	3,4	3,0	0	3,5	6,4	4,3	4,2	3,2	8,0
I	8,8	3,5	2,5	3,3	2,8	3,0	3,3	3,5	0	5,5	6,3	6,7	5,9	10,8
J	10,3	6,4	4,3	3,8	3,4	2,9	5,7	6,4	5,5	0	4,6	2,0	1,7	5,8
K	13,7	9,3	7,0	6,4	5,7	5,9	8,2	9,4	4,3	4,6	0	4,6	3,1	7,4
L	11,3	8,5	5,7	4,9	4,8	4,2	7,1	4,2	6,7	2,0	4,6	0	0,8	4,4
M	12,1	6,8	4,8	4,0	3,8	3,4	6,2	3,2	5,9	1,7	3,4	0,8	0	5,0
N	17,0	11,7	9,7	8,9	8,7	8,3	11,0	8,0	10,8	5,8	7,4	4,4	5,0	0

Keterangan:
 : Jarak Terpendek per baris (dari kiri ke kanan tabel)

A. Artama Harbour Cruise/Kapal Artama III
 B. Taman Jayengrono
 C. Taman Ekspresi
 D. Taman Prestasi
 E. Taman BMX dan Skate Park
 F. Taman Apsari
 G. Taman Buah Undaan
 H. Taman Lansia
 I. Taman Mundu
 J. Taman Persahabatan/Taman Korea
 K. Kebun Bibit dan Taman Flora
 L. Kebun Binatang Surabaya
 M. Taman Bungkul
 N. Taman Jangkar

Table 4. Western-Eastern Part's Distance Calculation Matrix

	A	B	C	D	E	F	G	H	I	J	K	L	M
A	0	2,7	4,8	5,1	17,4	23,5	24,7	28,0	33,6	34,1	32,3	33,1	28,8
B	2,7	0	2,2	2,5	13,8	18,1	19,6	23,4	28,5	28,5	24,6	23,4	23,7
C	4,8	2,2	0	0,3	14,2	18,7	21,5	25,1	30,5	25,3	24,9	25,5	25,7
D	5,1	2,5	0,3	0	14,6	19,0	21,8	25,4	30,8	25,6	25,2	25,8	26,0
E	17,4	13,8	14,2	14,6	0	4,6	14,6	18,2	25,4	20,2	19,8	22,3	20,7
F	23,5	18,1	18,7	19,0	4,6	0	10,4	15,8	21,2	16,0	15,6	18,0	16,4
G	24,7	19,6	21,5	21,8	14,6	10,4	0	4,1	11,0	8,0	9,1	11,0	9,9
H	28,0	23,4	25,1	25,4	18,2	15,8	4,1	0	7,0	4,7	8,4	9,4	7,0
I	33,6	28,5	30,5	30,8	25,4	21,2	11,0	7,0	0	7,8	7,6	11,1	8,2
J	34,1	28,5	25,3	25,6	20,2	16,0	8,0	4,7	7,8	0	4,2	6,3	2,9
K	32,3	24,6	24,9	25,2	19,8	15,6	9,1	8,4	7,6	4,2	0	7,4	0,95
L	33,1	23,4	25,5	25,8	22,3	18,0	11,0	9,4	11,1	6,3	7,4	0	6,4
M	28,8	23,7	25,7	26,0	20,7	16,4	9,9	7,0	8,9	2,9	0,95	6,4	0

Keterangan:
 : Jarak Terpendek per baris (dari kiri ke kanan tabel)

A. Eduwisata TPS Benowo
 B. Hutan Kota Pakal
 C. Agrowisata/Urban Farming Pakal
 D. Jurang Kuping
 E. Sumur Welut
 F. Hutan Kota Balas Klumprik
 G. Taman Pelangi
 H. Eduwisata SIER
 I. Mangrove Gunung Anyar
 J. Taman Kunang-kunang
 K. Kebun Bibit Wonorejo
 L. Taman Harmoni Keputih
 M. Ekowisata Mangrove Wonorejo

Table 5. Distance Calculation Matrix which Shows The Route of Park and Environmental Tourism Based on the Shortest Distance

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A	0	4,5	7,5	8,0	9,5	9,0	7,5	10,3	8,8	10,3	13,7	11,3	12,1	17,0
B	4,5	0	3,7	4,3	4,7	3,6	3,0	5,0	3,5	6,4	9,3	8,5	6,8	11,7
C	7,5	3,7	0	0,5	2,5	1,6	0,28	3,3	2,5	4,3	7,0	5,7	4,8	9,7
D	8,0	4,3	0,5	0	2,0	1,0	0,8	4,0	3,3	3,8	6,4	4,9	4,0	8,9
E	9,3	4,7	2,5	2,0	0	0,5	1,0	4,7	2,8	3,4	5,7	4,8	3,8	8,7
F	9,0	3,6	1,6	1,0	0,5	0	1,2	3,2	3,0	2,9	5,9	4,2	3,4	8,3
G	7,3	3,0	0,28	0,8	1,0	1,2	0	3,0	3,3	5,7	8,2	7,1	6,2	11,0
H	10,3	5,0	3,3	4,0	4,7	3,4	3,0	0	3,5	6,4	4,3	4,2	3,2	8,0
I	8,8	3,5	2,5	3,3	2,8	3,0	3,3	3,5	0	5,5	6,3	6,7	5,9	10,8
J	10,3	6,4	4,3	3,8	3,4	2,9	5,7	6,4	5,5	0	4,6	2,0	1,7	5,8
K	13,7	9,3	7,0	6,4	5,7	5,9	8,2	9,4	4,3	4,6	0	4,6	3,1	7,4
L	11,3	8,5	5,7	4,9	4,8	4,2	7,1	4,2	6,7	2,0	4,6	0	0,8	4,4
M	12,1	6,8	4,8	4,0	3,8	3,4	6,2	3,2	5,9	1,7	3,1	0,8	0	2,0
N	17,0	11,7	9,7	8,9	8,7	8,3	11,0	8,0	10,8	5,8	7,4	4,4	5,0	0

Keterangan:
 : Jarak Terpendek per baris (dari kiri ke kanan tabel)
 A. Artama Harbour Cruise/Kapal Artama III
 B. Taman Jayengrono
 C. Taman Ekspresi
 D. Taman Prestasi
 E. Taman BMX dan Skate Park
 F. Taman Apsari
 G. Taman Buah Undaan
 H. Taman Lansia
 I. Taman Mundu
 J. Taman Persahabatan/ Taman Korea
 K. Kebun Bibit dan Taman Flora
 L. Kebun Binatang Surabaya
 M. Taman Bungkul
 N. Taman Jangkar

Central-Southern Part

	A	B	C	D	E	F	G	H	I	J	K	L	M
A	0	2,7	4,8	5,1	17,4	23,5	24,7	28,0	33,6	34,1	32,3	33,1	28,8
B	2,7	0	2,2	2,5	13,8	18,1	19,6	23,4	28,5	28,5	24,6	23,4	23,7
C	4,8	2,2	0	0,3	14,2	18,7	21,5	25,1	30,5	25,3	24,9	25,5	25,7
D	5,1	2,5	0,3	0	14,6	19,0	21,8	25,4	30,8	25,6	25,2	25,8	26,0
E	17,4	13,8	14,2	14,6	0	4,6	14,6	18,2	25,4	20,2	19,8	22,3	20,7
F	23,5	18,1	18,7	19,0	4,6	0	10,4	15,8	21,2	16,0	15,6	18,0	16,4
G	24,7	19,6	21,5	21,8	14,6	10,4	0	4,1	11,0	8,0	9,1	11,0	9,9
H	28,0	23,4	25,1	25,4	18,2	15,8	4,1	0	7,0	4,7	6,4	9,4	7,0
I	33,6	28,5	30,5	30,8	25,4	21,2	11,0	7,0	0	7,8	7,6	11,1	8,9
J	34,1	28,5	25,3	25,6	20,2	16,0	8,0	4,7	7,8	0	4,2	6,3	2,9
K	32,3	24,6	24,9	25,2	19,8	15,6	9,1	8,4	7,6	4,2	0	7,4	0,95
L	33,1	23,4	25,5	25,8	22,3	18,0	11,0	9,4	11,1	6,3	7,4	0	6,4
M	28,8	23,7	25,7	26,0	20,7	16,4	9,9	7,0	8,9	2,9	0,95	6,4	0

Keterangan:
 : Jarak Terpendek per baris (dari kiri ke kanan tabel)
 A. Eduwisata TPS Benowo
 B. Hutan Kota Pakal
 C. Agrowisata/Urban Farming Pakal
 D. Jurang Kuping
 E. Sumur Welut
 F. Hutan Kota Balas Klumprik
 G. Taman Pelang
 H. Eduwisata SIER
 I. Mangrove Gunung Anyar
 J. Taman Kunang-kunang
 K. Kebun Bibit Wonorejo
 L. Taman Harmoni Keputih
 M. Ekowisata Mangrove Wonorejo

Western-Eastern Part

Information :

- Closest Distance between tourist attractions (km)
- Route A
- Route B
- Route C
- Route D
- Route E
- Route F

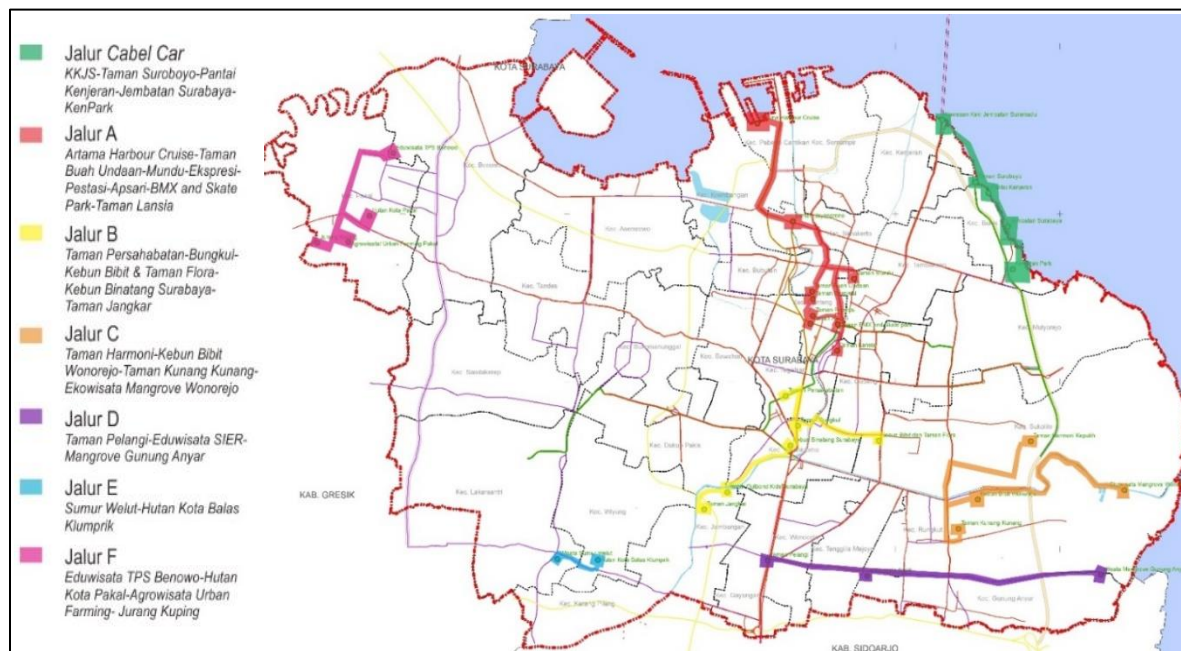


Figure 4. The Map of Park and Environmental Tourism Route Development.

Table 6. The Result of Park and Environmental Tourism Route Development.

Tourism Route	Destination	Tourism Route	Destination
A	<ol style="list-style-type: none"> 1. Artama Harbour Cruise/Kapal Artama III 2. Taman Jayengrono 3. Taman Ekspresi 4. Taman Prestasi 5. Taman BMX dan Skate Park 6. Taman Apsari 7. Taman Buah Undaan 8. Taman Lansia 9. Taman Mundu 	E	<ol style="list-style-type: none"> 1. Sumur Welut 2. Hutan Kota Balas Klumprik
B	<ol style="list-style-type: none"> 1. Taman Persahabatan/ Taman Korea 2. Kebun Bibit dan Taman Flora 3. Kebun Binatang Surabaya 4. Taman Bungkul 5. Taman Jangkar 	F	<ol style="list-style-type: none"> 1. Eduwisata TPS Benowo 2. Hutan Kota Pakal 3. Agrowisata/Urban Farming Pakal 4. Jurang Kuping
C	<ol style="list-style-type: none"> 1. Taman Kunang-kunang 2. Kebun Bibit Wonorejo 3. Taman Harmoni Keputih 4. Ekowisata Mangrove Wonorejo 		
D	<ol style="list-style-type: none"> 1. Taman Pelangi 2. Eduwisata SIER 3. Mangrove Gunung Anyar 	Cable Car	<ol style="list-style-type: none"> 1. Kawasan Kaki Jembatan Suramadu 2. Taman Suroboyo

Tourism Route	Destination	Tourism Route	Destination
		3.	Pantai Ria Kenjeran
		4.	Jembatan Surabaya
		5.	Kenjeran Park

The park and environmental tourism route at the Central-Southern part consist of two routes, which are: A route with 9 tourist attractions, shown by red color and B route with 5 tourist attractions, shown by yellow color. For the Western- Eastern part, there are 4 routes of: (1) C route with orange color and 4 tourist attractions, (2) Deep purple D route with 3 sites, (3) 2 destinations included in E route with light blue, and (4) F route with light purple which have 4 tourist attractions.

4. Conclusion

Based on the targets and analysis result, it can be concluded as follows:

- There are three themes of park and environmental tourism, such as: beach-sea-fresh water, flora and fauna, and themed park;
- The amount of the park and environmental tourism destinations are as much as 32 sites or 17,2% from all of the tourist attractions of Surabaya;
- The spreading of the park and environmental tourism destinations located on the Central-Southern part, Western-Eastern part, and Northern part of Surabaya; and
- The mapping of park and environmental tourism route is resulting on 7 routes of A, B, C, D, E, F, and a cable car route.

5. References

- [1] Charter, Denny and Agtrisari, Irma 2003, *Design and Application of Geographic Information System*, Elex Media Komputindo, Jakarta.
- [2] Chambers, R 1996, *Participatory Rural Appraisal: Understanding the Rural Society Participatively*, Kanisius, Oxfam and Yayasan Mitra Tani, Yogyakarta.
- [3] Handinoto, K 1996, *Tourism Destination Development Planning*, University of Indonesia, Jakarta.
- [4] Inskeep, E 1991, *Tourism Planning: An Integrated and sustainable Approach*, Van Nostrand Reinhold.
- [5] Suwena, IK 2010, *Basic Knowledge of Tourism*, Udayana Press, Badung.
- [6] Yoeti, OHA 1996, *An Introduction to Tourism*, Angkasa Offset.
- [7] Suyitno 2001, *Tourism Planning*, Kanisius.
- [8] Rafani. 2013, 'Master Plan of Sahapm Tourism Village Sengah Temila Sub District Landak Regency', *Journal of Vocation*, vol. 9, no. 3, pp. 180-185.
- [9] Kuhaja, T 2014, 'Institutional Review in Sustainable Coastal Tourism Development', *Journal of Development and Regional Studies*, vol. 10, no. 3, pp. 278-292.
- [10] Zakaria, F. and Supriharjo, R.D. (2014) 'Tourism Village Area Development Concept of Bandungan Village Pakong District Pamekasan Regency', *Journal of Engineering, POMITS*, vol. 3, no. 2.
- [11] TAP MPR No. IV/MPR/1999 about Indonesian: Broad Guidelines of State Policy Year 1999-2004.
- [12] Indonesian Law. Tourism (2009) 10