

An Analysis of Sustainable Development of Isfahan Eco-Tourism

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Abstract:

"Let us think globally, but act locally." From various approaches to Tourism industry, Eco-Tourism or Natural Tourism will be highly welcomed in the third millennium. This branch of Tourism is the focus of attention due to the Naturalists' encouraging the whole world to protect the natural environment and due to the augmentation of economical welfare of local communities. In the meanwhile, The proper identification of economical, environmental and cultural potentialities of Eco-Tourist areas for a balanced and proper exploitation is of a vital and indispensable necessity. Accordingly, this paper intends to put forth the issue of "urban Eco-Tourism" and to identify the spatial inadequacy and inequality, which exists in Eco-Tourist areas of Esfahan, and also, with regard to the citizens' viewpoints, it is going to deal with the sustainability of Esfahan Eco-Tourism through a "descriptive-analytic" method and quantitative models. The findings reveal that from 21 studied Eco-Tourist areas, from the viewpoint of the citizens, 4 areas are sustainable (Kooch Soffeh, Abshar Park, Isargaran Park and Syose Pol), 6 areas are semi-sustainable (Pol-e Khajoo, Ghadir Park, Nazhvan forest Park, the lake of Pole-e Shahrestan, Pol-e Marnan and Hasht Behesht Park), and 11 areas are unsustainable (Moshtagh Park, Golestan Park, the public area of Ghadir Garden, Ghooshkhane Garden Park, Ayineh Khaneh Park, Ghalamestan Park, Boustan-e Mellat, Boustan-e Saadi, Laleh Park, Gole Mohammadi Park and Malek Shahr Mellat Park).

Key words: Eco-Tourism, cluster Analysis, sustainable development, Z-score Model

1. Introduction

What has caused Tourism to be viewed as an important issue is the improper distribution of possibilities and services in the villages and small cities and subsequently the migration of the individuals from rural centers and small cities toward large cities which enjoy abundant services and possibilities.

Irregular migration to the large cities accompanied by un-skilled migrants has created a lot of economic, social, cultural ... problems, and has provided unfavorable consequences for the cities particularly for their residents. In this manner the people who dwell in large cities go consciously to nature in order to get rid of the straitened circumstances

and spiritual problems resulted from living in these cities to escape from the noisy and busy city to be pacified.

Eco-Tourism has been considered as an appropriate means for promoting the level of sustainable development in developing countries (Weaver, 1999: 795). From the time of introducing the word "Eco-Tourism" to the literature of Tourism (second half of 20th century), various definitions have been presented for it so far. Eco-Tourism or Natural Tourism is a type of tourism in the nature which imposes little effect on the environment and natural resources and shares in preservation and survival of the species as well as natural residential places (Fennel, 1385: 63). Tourism in nature or Eco- Tourism includes all the trips which are taken to enjoy nature and it involves the environment and sustainability of natural attractions. Moreover, increase of income, employment or, in general, welfare of the local community is also considered (Saghaei and Abdollahi, 1382: 34). Eco-Tourism or Tourism in nature is a type of Tourism which is growing and attracts the people who are tired of living in busy cities (Hafeznia and Ramezani Darabi, 1382: 48). Urban Eco- Tourism can also be defined as follows:

"Depending on the situation and the site of the city, Urban Eco- Tourism embraces that part of Tourism activities that in geographical space of the city have value for Natural Tourism in order for the tourists to obtain peace and to enjoy natural attractions or constructions made by humans which have value for natural Tourism and affect

geographical space of the city". In this manner, many of the urban spaces including recreation centers, urban parks or natural landscape that exist in the city geographical territory are regarded as the domain and realm of urban Eco- Tourism.

Sustainable development is also a process according to which preservation of the environment is highly valued as well as the appropriate qualities of the life-style and the needs of the future generation (Hosseinzadeh Dalir, 1375: 93). Some people regard the concept of sustainable development as leading to achievement of the economic, social and biological purposes. The purposes of these three systems are:

1. Biological system: Preservation of versatility of living of biological variety and maximizing productivity,
2. Social system: stabilizing of the institutions and their support /social justice,
3. Economic system: Providing people's essential needs and their satisfaction with such affairs/equal distribution of goods and services (Rahimi, 1383: 19).

Drakakis Smith in 'process of sustainable urbanization' suggests the principles and strategies of sustainable development as a principle in the studies for development of the cities that consideration of equality in economic growth, social justice and urbanization rights, proper access to the services and essential requirements and promotion of awareness about the environment will be appropriate actions toward more efficiency in using the resources, environment

and social justice which in return it will take the cities in the direction of stabilization (Hekmatnia and Mousavi, 1385: 36-37).

In the field of urban sustainable development, considering Urban Eco- Tourism has special importance since by providing proper and fundamental planning, the city can attract and welcome tourists as an important source. Therefore, it is vital to facilitate the route for achievement of urban sustainable development by attending the issue of cities' Eco- Tourism.

We believe that we should think globally, but act locally. Based on the estimation of World Tourism Organization (WTO), it is foreseen that in the next decade, the number of tourists that are 7% out of total world travelers mounts to over 20% (Rezvani, 1380: 234). The studies performed for Eco-Tourism indicate that tourists spend equal to 1000- 1500 \$ in each trip (journal of free regions, 1381: 38). Under these conditions, paying due attention to Eco- Tourism is of special importance since it can result in high income and employment.

This branch of Tourism which is newer than the other types of Tourism has been recently of special significance in a manner that the year 2002 has been introduced as international year of Eco-Tourism by the United Nations Organization and the present century has been designated as the century of Eco- Tourism; however, scientific studies in this field are very rare and often they are related to the recent years. For example, Zamorrodian (a 1382) has considered five

factors for evaluating and ranking of streams and lakes surrounding Mashhad: Tourism resources (natural and cultural), surrounding attractions, tourist facilities (residential, recreational and infrastructural place), accessibility and local communities. Then they determined the level and rank of each one of the limits for Eco- Tourism regarding the given points to each component. Zamorrodian (b 1382), from a geomorphological point of view, introduces the potentials for Iran natural tourism. Zarrabi and et al (1385) have categorized Eco- Tourist capacities for Sistan & Balouchestan Province using 13 indices and using the model Z- Score.

This paper while mentioning "urban Eco- Tourism" analyzes the attractions of Isfahan Eco- Tourism to achieve proper and sustainable development by observing the viewpoints of citizens using cluster analysis model and by applying Z- Score Model.

2. Materials and Methods

Eco- Tourism is dependent on natural resources including forests, mountains, rivers and lakes (McDill & et al. 1999: 2). Isfahan city is not an exception to this rule either. Isfahan city has unique attractions for tourism that, accompanied by cultural attractions, has become a center for tourist attraction. presence of Zayanderud River, historic bridges, parks and urban green spaces and landscape which have formed Zayanderud's margin, or the areas such as Soffeh Mountain, Bagh-e-Parandegan, Bagh-e-Golha ... have privileged Isfahan for natural tourism.

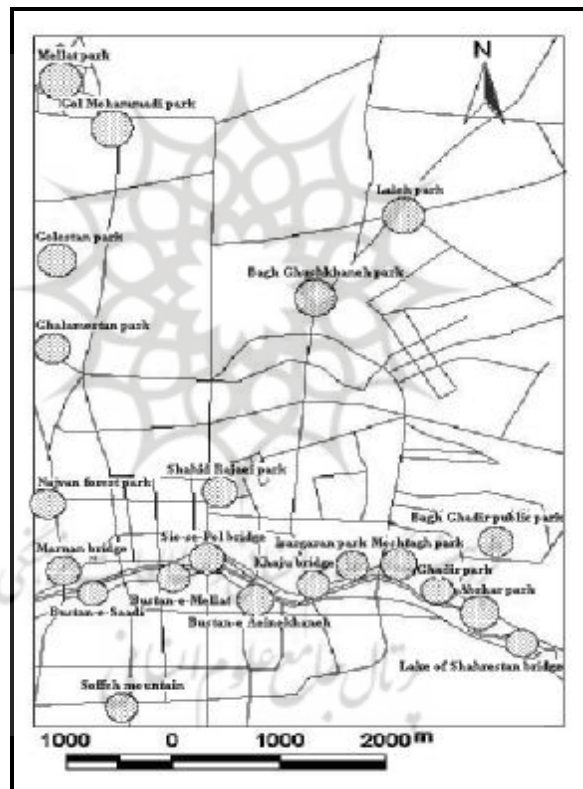
2. 1. Selection of Places

By looking at the definition of urban Eco- Tourism, in this study a part of Isfahan parks that are mainly urban parks and also some of the historic bridges which have been built on Zayanderud as well as the other regions valued as natural-tourism, which totally consist of 21 areas, have been studied (figure 1).

2. 2. Indices of the research

Indices under study for this research that express the extent of sustainability for each one of Eco- Tourism areas in the city consist of:

Figure No. 1. Spatial distribution of Isfahan Eco- Tourism areas



Source: researchers.

1. Green space, 2.Variety of wild animals and birds, 3.Lack of air pollution, 4.Lack of noise pollution, 5.Cleanliness of Eco- Tourism areas, 6.Lack of population density, 7.Security of the place, 8.Recreational attraction, 9. Quality of services, 10.Appropriate potential for camping and dwelling, 11.The effect of the place on

relaxation, 12.The effect of the site on urban economy, 13.Accessibility of parking lots, 14.The absence of building constructions around Eco-Tourism areas, 15.Absence of administrative restrictions, 16.The extent of citizens' satisfaction, 17.cultural attractions of the site, 18.Sport attractions of the place.

2. 3. The Method for Collecting Data

After selecting the sites and determining the research indices, actions were made for collecting required information through completing 400 questionnaires in a random manner during the summer 1385 (2006) and in various hours (morning, evening and night). In

a manner that each one of the respondents declared his/her view about each index with one of the answers: very little (20), little (40), medium (60), good (80) and very good (100). Then by adding obtained scores, the average score for each area was determined (Table 1).

Table No. 1. Average scores for Isfahan Eco- Tourism Potentials from Viewpoint of citizens

Indices Places	1	2	3	4	5	6	7	8	9
Mellat park in Malekshahr	58.33	21.66	30	16.66	58.33	28.33	38.33	48.33	40
Abshar park	80	20	60	40	100	60	80	100	80
Shahid Rajaei park	76	24	50	44	68	46	60	52	48
Najvan forest park	68	60	58.66	62.66	58.66	62.66	42.66	73.33	46.66
Isargaran park	80	20	60	60	80	40	80	60	20
Gol Mohammadi park	68	20	50.66	25.33	74.66	41.33	53.33	50.66	40
Sio-se-Pol	75	20	45	35	75	25	60	80	75
Lak of Shahrestan bridge	78.66	29.33	50.66	40	76	45.33	62.66	61.33	46.66
Moshtagh park	85	20	40	20	80	60	80	60	60
Bagh Ghadir public park	81.33	24	58.66	50.66	86.66	41.33	62.66	69.33	58.66
Aeinekhaneh park	80	20	60	20	40	60	80	60	40
Laleh park	62.66	20	54.66	34.66	64	34.66	54.66	49.33	44
Bustan-e-Mellat	60	20	40	40	60	40	40	60	60
Marnan bridge	73.33	30.66	41.33	30.66	66.66	14.66	66.66	66.66	53.33
Bustan-e-Saadi	60	20	40	40	60	40	40	60	60
Khaju bridge	64.44	28.88	60	42.22	80	28.88	71.11	84.44	51.11
Ghadir park	60	20	40	20	80	80	40	60	60
Ghalamestan park	72	22.66	44	21.33	69.33	21.33	73	53.33	53.33
Soffeh mountain	80	60	40	60	80	40	60	100	60
Bagh Ghushkhaneh park	73.33	29.33	58.66	38.66	72	44	54.66	48	48
Golestan park	68.88	24.44	60	55.55	82.22	44.44	66.66	53.33	55.55

Source: conclusions of completed questionnaires in summer 1385 (2006).

Continue of Table No. 1

Indices Places	10	11	12	13	14	15	16	17	18
Mellat park in Malekshahr	43.33	65	48.33	0	30	61.66	63.33	20	13.33
Abshar park	20	80	80	80	60	100	80	0	40
Shahid Rajaei park	48	60	58	46	50	70	66	24	0
Najvan forest park	40	66.86	54	36	48	58.66	68	0	76
Isargaran park	20	80	80	20	60	80	80	0	20
Gol Mohammadi park	29.33	62.66	40	44	30.66	60	74.66	0	0
Sio-se-Pol	50	75	70	65	35	80	80	20	40
Lak of Shahrestan bridge	36	70.66	52	74.66	37.33	68	81.33	20	20
Moshtagh park	20	60	80	40	20	80	60	0	40
Bagh Ghadir public park	65.33	76	64	74.66	18.66	65.33	80	1.33	20
Aeinekhaneh park	20	60	60	20	40	80	60	0	20
Laleh park	28	62.66	48	57.33	37.33	68	62.66	0	0
Bustan-e-Mellat	20	60	80	20	40	100	60	0	20
Marnan bridge	44	70.66	61.33	41.33	37.33	72	76	18.66	21.33
Bustan-e-Saadi	20	60	80	20	40	100	60	0	20
Khaju bridge	20	75.55	68.88	37.77	37.77	82.22	82.22	26.66	40
Ghadir park	20	60	60	80	60	100	0	0	40
Ghalamestan park	44	64	53.33	32	48	73.33	65.33	0	0
Soffeh mountain	20	80	60	100	80	100	80	0	60
Bagh Ghushkhaneh park	45.33	70.66	45.33	42.66	48	72	62	0	0
Golestan park	35.55	66.66	44.44	26.66	20	68.88	80	0	0

2. 4. The Method for Standardization of Data

In this research, using the model of Z-Score, the scores for Isfahan Eco- Tourism areas have been standardized. For Standardization, at first the average for each column is calculated using the following formula:

$$(1) \quad \bar{y} = \frac{1}{n} \sum_{i=1}^n y_{ij}$$

In the next stage we calculate standard deviation of each column (sdj) from above table using the following formula:

$$(2) \quad sd = \sqrt{\frac{\sum_{i=1}^n (y_i - \bar{y})^2}{n}}$$

Having the average and standard deviation of each column from table 1 and using the following formula we have formed table Z:

$$(3) \quad Z_{ij} = \frac{y_{ij} - \bar{y}_j}{sd_j}$$

In the above formula, y_j is the average of the column j^{th} and (sd_j) is standard deviation of the j^{th} column (Zarrabi and et al, 1385: 473). In this manner, table Z is formed in the form of table 2.

Table No. 2. Standardized scores (Z- Score) Isfahan Eco- Tourism

Indices Places	1	2	3	4	5	6	7	8	9
Soffeh mountain	71.39	57.75	34.74	57.33	74.35	37.23	59.56	95.84	55.36
Abshar park	71.39	17.75	54.74	37.33	94.35	57.24	79.56	95.83	75.36
Sio-se-Pol	66.39	17.75	39.74	32.33	69.35	22.24	59.56	75.83	70.36
Najvan forest park	59.39	57.75	53.40	59.99	53.01	59.89	42.22	69.16	42.02
Isargaran park	71.49	17.75	54.74	57.33	74.35	37.24	79.56	55.83	75.36
Ghadir park	72.72	21.75	53.40	47.99	81.01	38.56	62.22	65.16	54.02
Khaju bridge	55.83	26.64	54.74	39.55	74.35	26.11	70.67	80.27	46.47
Lake of Shahrestan bridge	70.05	27.08	45.40	37.33	70.35	42.56	62.22	57.16	42.02
Bagh Ghadir public park	51.39	17.75	34.74	17.33	74.35	77.24	39.56	55.83	55.36
Moshtagh park	76.39	17.75	34.74	17.33	74.35	57.23	79.56	55.83	55.36
Shahid Rajaei park	67.39	21.75	44.74	41.33	62.35	43.23	59.56	47.83	43.36
Marnan park	64.72	28.41	46.07	27.99	61.01	11.89	66.22	62.49	48.69
Golestan park	60.27	22.19	54.74	52.88	76.57	41.67	66.22	49.16	50.91
Bagh Ghushkhaneh park	64.72	27.08	53.40	35.99	66.35	41.23	54.22	43.83	43.36
Bustan-e-Saadi	51.39	17.75	34.74	37.33	54.35	37.23	39.56	55.83	55.36
Bustan-e-Mellat	51.39	17.75	34.74	37.33	54.35	37.23	39.56	55.83	55.36
Aeinekhaneh park	71.39	17.75	54.74	17.33	34.35	57.23	79.56	55.83	35.36
Ghalamestan park	63.39	20.41	38.74	18.66	63.68	18.56	71.56	49.16	48.69
Laleh park	54.05	17.75	49.40	31.99	58.35	31.89	54.22	45.16	39.36
Gol Mohammadi park	59.49	17.75	45.40	22.66	69.01	38.56	52.89	46.49	35.36
Mellat park in Malekshahr	49.72	19.41	24.74	13.99	52.68	25.56	37.89	44.16	35.36

Sources: Table Of 1 and researchers studies.

Continue of Table No. 2

Indices Places	10	11	12	13	14	15	16	17	18
Soffeh mountain	17.58	71.83	55.33	98.21	77.22	94.49	72.19	-.62	58.89
Abshar park	17.58	71.84	75.33	78.21	57.22	94.49	72.19	-.62	38.89
Sio-se-Pol	47.58	66.84	65.33	63.21	32.22	74.49	72.19	19.38	38.89
Najvan forest park	37.58	78.49	49.33	34.21	45.22	53.15	60.19	-.62	18.89
Isargaran park	17.58	71.83	75.33	18.21	57.22	74.49	72.19	-.62	18.89
Ghadir park	62.91	67.83	59.33	82.87	15.88	59.82	72.19	.71	18.89
Khaju bridge	17.58	67.38	64.21	35.98	34.99	76.71	74.41	24.04	38.89
Lake of Shahrestan bridge	33.58	62.49	47.33	72.87	34.55	62.49	73.52	19.48	18.89
Bagh Ghadir public park	17.58	51.83	55.33	78.21	57.22	94.49	52.19	-.62	38.89
Moshtagh park	17.58	51.83	75.33	38.21	17.22	74.49	52.19	-.62	38.89
Shahid Rajaei park	45.58	51.83	53.33	44.21	47.22	64.49	58.19	24.48	-1.11
Marnan park	41.58	62.49	56.66	39.54	34.55	66.49	68.19	18.04	20.22
Golestan park	33.13	58.49	39.77	24.87	17.22	63.37	72.19	-.62	-1.11
Bagh Ghushkhaneh park	42.91	62.49	40.66	40.87	45.22	66.49	54.19	-.62	-1.11
Bustan-e-Saadi	17.58	51.83	75.33	18.21	37.22	94.49	52.19	-.62	18.89
Bustan-e-Mellat	17.58	58.83	75.33	18.21	37.22	94.49	52.19	-.62	18.89
Aeinekhaneh park	17.58	51.83	55.33	18.21	37.22	74.49	52.19	-.62	18.89
Ghalamestan park	41.58	55.83	48.66	30.21	45.22	67.82	57.52	-.62	-1.11
Laleh park	25.58	54.49	43.33	55.54	34.55	62.49	54.85	-.62	-1.11
Gol Mohammadi park	26.91	54.49	35.33	42.21	27.88	54.49	66.85	-.62	-1.11
Mellat park in Malekshahr	40.91	56.83	43.66	-1.79	27.22	56.15	55.52	19.48	12.22

2. 5. Data Analysis Method

Cluster Analysis Model has also been applied for analysis and evaluation of places sustainability. In ranking the places by the method of cluster analysis, the places situated in the same level or rank are very similar to each other, but they differ considerably from

the places of other ranks (Hekmatnia and Mousavi, 1385: 236).

For measuring the distance between the average observations, Euclidean Method was used based on the following relation:

$$(4) \quad d_{(i,k)} = \sqrt{\sum_j (X_{ij} - X_{kj})^2}$$

In above formula 'i' is used for the rows, 'j' is used for the columns and 'k' is the number of groups (Gandomkar, 1385: 15) x_{ij} is the j^{th} amount on the Eco- Tourist space of i^{th} , x_{kj} is the amount of j^{th} variable on Eco- Tourist space of i^{th} and $d_{(i,k)}$ is Euclidean distance on Eco- Tourist space of i^{th} from k^{th} Eco- Tourist space.

In this study, cluster analysis has been applied by the hierarchical method. In this method accumulation of each place starts with a special cluster, then the two places are combined and a new cluster is made. Therefore in each stage, number of the clusters is reduced in the form of one to one. In some cases, a third site is mixed with 2- places cluster and a new cluster is created. In this manner gradually all the places are mixed and finally a great cluster is formed (Hekmatnia and Mousavi, 1385: 236).

In order to perform clustering, we calculate Eco- Tourist spaces of Euclidean distances and by the mix method of "Ward's" have been recognized.

Before constituting congregational clusters, proximity matrix for each one of Isfahan Eco- Tourist areas were provided (Table 3). In order to form proximity matrix, the data in the first column of above table are reduced from the data in the 2nd column and then we reduce the data of the 1st column from data of the 3rd column. This action continues until it reaches to the end of the column and we performed this work for all the columns¹. Then the obtained numbers are squared horizontally, they are added and then we calculated their root. In this manner the distance of each Eco- Tourist spaces has been obtained from later

spaces. The software SPSS has been used for analysis of research data.

3. Analysis of Data

Based on viewpoints of the citizens, statistical analyses and the implementation of cluster analysis model; Isfahan Eco- Tourist spaces are divided into 3 levels concerning the rate of sustainability.

3. 1. The first cluster (Sustainable spaces)

These spaces consist of Soffeh Mountain, Abshar Park, Isargaran Park and Allahverdikhan Bridge (Sio-se-Pol) that have the highest scores concerning sustainability.

3. 2. The second cluster (Semi-sustainable spaces)

Spaces such as Khaju Bridge, Ghadir Park, Najvan Forest Park, Lake of Shahrestan Bridge, Marnan Bridge and Shahid Rajaei Park (Hasht Behesht) form the Semi- sustainable spaces in Isfahan Eco- Tourism.

3. 3. The third cluster (Unsustainable spaces)

These spaces, which are almost 60% of Eco- Tourist spaces, consist of Moshtagh Park, Golestan Park, Bagh Ghadir Public Park, Bagh ghushkhaneh Park, Aeinekhaneh Park, Ghamestan Park, Bustan-e-Mellat, Bustan-e-Saadi, Laleh Park, Gol Mohammadi Park and Mellat Park in Malekshahr (Figure 2).

1- Refer to: Ziari, Keramatollah: Principles and Methods of Regional Planning, P 144.

Table No. 3. Proximity matrix of Isfahan Eco- Tourist Spaces

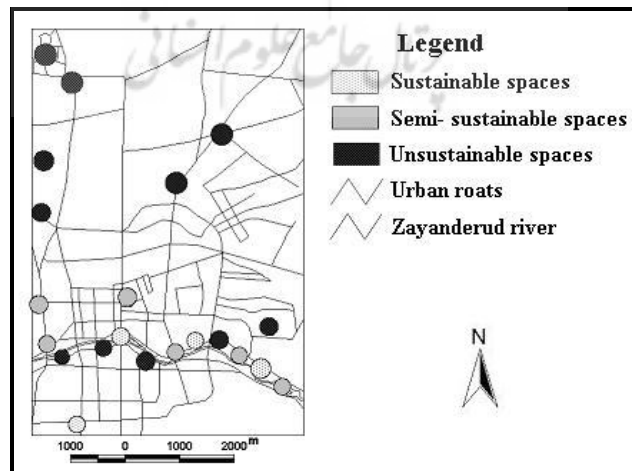
Places	Soffeh mountain	Abshar park	Isargaran park	Sio-se-Pol	Khaju ridge	Ghadir park	Najvan forest park	Lake of estan ridge	Marnan bridge	Shahid Rajaei park	Moshtagh Park
Soffeh mountain	0	116.57	118.35	110.84	136.58	127.01	122.42	121.54	141.19	147.65	129.5
Abshar park	116.57	0	10.87	10.52	11.68	11.26	11.06	11.02	11.88	12.15	11.37
Isargaran park	118.35	10.87	0	3.24	3.41	3.35	3.32	3.32	3.44	3.48	3.37
Sio-se-Pol	110.84	10.52	3.24	0	1.84	1.83	1.82	1.82	1.85	1.86	1.83
Khaju bridge	136.58	11.68	3.41	1.84	0	1.35	1.35	1.34	1.36	1.36	1.35
Ghadir park	127.01	11.26	3.35	1.83	1.35	0	1.16	1.16	1.167	1.16	1.16
Najvan forest park	122.42	11.06	3.32	1.82	1.35	1.16	0	1.07	1.08	1.08	1.07
Lake of Shahrestan bridge	121.54	11.02	3.32	1.82	1.34	1.16	1.07	0	1.03	1.03	1.03
Marnan bridge	141.19	11.88	3.44	1.85	1.36	1.16	1.08	1.03	0	1.01	1.01
Shahid Rajaei park	147.65	12.15	3.48	1.86	1.36	1.16	1.08	1.03	1.01	0	1.009
Moshtagh park	129.5	11.37	3.37	1.83	1.35	1.16	1.07	1.03	1.01	1.009	0
Golestan park	135.45	11.63	3.41	1.84	1.35	1.16	1.07	1.03	1.01	1.009	1.004
Bagh Ghadir public park	151.66	12.31	3.5	1.87	1.36	1.16	1.08	1.04	1.01	1.009	1.004
Bagh Ghushkhaneh park	142.56	11.93	3.45	1.85	1.36	1.16	1.08	1.03	1.01	1.009	1.004
Aeinekhaneh park	158.17	12.57	3.54	1.88	1.37	1.17	1.08	1.04	1.01	1.009	1.004
Ghalamestan park	157.46	12.54	3.54	1.88	1.37	1.17	1.08	1.04	1.01	1.009	1.004
Bustan-e-Mellat	157.46	12.54	3.54	1.88	1.37	1.17	1.08	1.04	1.01	1.009	1.004
Bustan-e-Saadi	157.46	12.54	3.54	1.88	1.37	1.17	1.08	1.04	1.01	1.009	1.004
Laleh park	155.81	12.48	3.53	1.87	1.37	1.17	1.08	1.04	1.01	1.009	1.004
Gol Mohammadi park	161.93	12.72	3.56	1.88	1.37	1.17	1.08	1.04	1.02	1.009	1.004
Mellat park in Malekshahr	172.92	13.15	3.62	1.9	1.37	1.17	1.08	1.04	1.02	1.01	1.005

Source: researcher's studies.

Continue of Table No. 3

Golestan park	Bagh Ghadir public park	Bagh shkhaneh park	Aeinekhaneh park	Ghalamestan park	Bustan-e-Mellat	Bustan-e-Saadi	Laleh park	Gol Mohammadi park	Mellat park In lekshahr
135.45	151.66	142.56	158.17	157.46	157.46	157.46	155.81	161.93	172.92
11.63	12.31	11.93	12.57	12.54	12.54	12.54	12.48	12.72	13.15
3.41	3.5	3.45	3.54	3.54	3.54	3.54	3.53	3.56	3.62
1.84	1.87	1.85	1.88	1.88	1.88	1.88	1.87	1.88	1.9
1.35	1.36	1.36	1.37	1.37	1.37	1.37	1.37	1.37	1.37
1.16	1.16	1.16	1.17	1.17	1.17	1.17	1.17	1.17	1.17
1.07	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
1.03	1.04	1.03	1.04	1.04	1.04	1.04	1.04	1.04	1.04
1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.02
1.009	1.009	1.009	1.009	1.009	1.009	1.009	1.009	1.009	1.01
1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.004	1.005
0	1.002	1.002	1.002	1.002	1.002	1.002	1.002	1.002	1.002
1.002	0	1.001	1.001	1.001	1.001	1.001	1.001	1.001	1.001
1.002	1.001	0	1	1	1	1	1	1	1
1.002	1.001	1	0	1	1	1	1	1	1
1.002	1.001	1	1	0	1	1	1	1	1
1.002	1.001	1	1	1	0	1	1	1	1
1.002	1.001	1	1	1	1	0	1	1	1
1.002	1.001	1	1	1	1	1	0	1	1
1.002	1.001	1	1	1	1	1	1	0	1
1.002	1.001	1	1	1	1	1	1	1	0

Figure No. 2. Spatial distribution of sustainability rate in Isfahan Eco-Tourist spaces

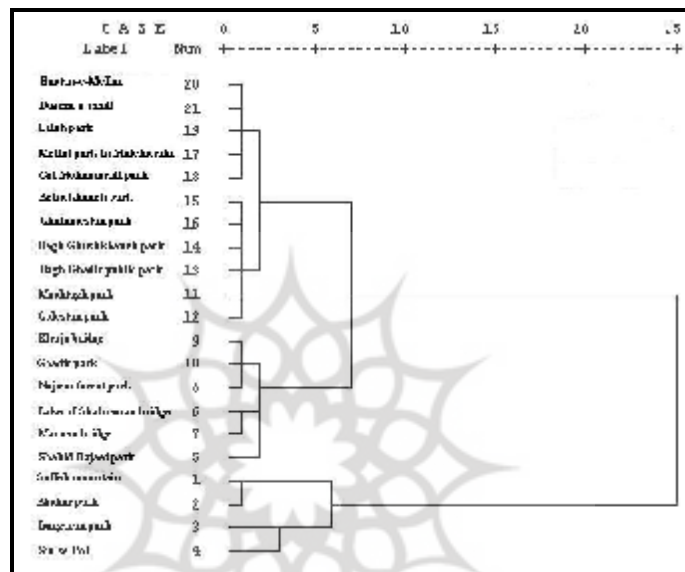


Source: researchers.

Diagram 1 indicates significant differences in the second and third clusters. In the second cluster Bagh Ghadir Public Park, Najvan Forest Park and Khaju Bridge are more sustainable than the other spaces that exist in this cluster. Also in the 3rd cluster Ainekhaneh Park, Ghalamestan Park, Bagh ghushkhaneh

Park, Bagh Ghadir Public Park, Moshtagh Park and Golestan Park are more stable compared to Mellalt Park in Malekshahr, Gol Mohammadi Park, Laleh Park, Bustan-e-Mellat and Bustan-e-Saadi.

Diagram No. 1. Cluster diagram of Isfahan eco- Tourist spaces



Source: researchers

4. Conclusion and presenting the suggested model

On the basis of field studies, local questionnaire and statistical analyses we can state that what threatens unsustainable spaces in Isfahan Eco- Tourism include: noise pollutions, air pollution in more than 75% of these areas and lack of cultural and sport attractions in a wide area of this space. In this space shortage of security threatens Bagh Ghadir Public Park. On the other hand, Bagh Ghadir Public Park has the highest potential for camping with fewer legal restrictions.

In semi- sustainable spaces of Isfahan Eco- Tourism, lack of proper utilization of sport attractions, lack of cultural attractions in more than 50% of existing Eco- Tourism areas, location in the central part of Isfahan city with

highest rate of noise pollution, insufficient and inaccessible parking lots in the central part of the city for all the natural tourists and also heavy traffic of vehicles and overcrowded streets are all the threatening factors in this space.

Air pollution in the areas such as Soffeh Mountain and Sio-se-Pol, absence of cultural attractions, excluding Sio-se-Pol, numerous constructions within the areas of this historic bridge that causes spiritual boredoms of the citizens and, in general, the overcrowded areas of this space are the most important threatening factors for Eco- Tourism attractions in this part of the city.

4. 1. Suggested Model

In the direction of sustainable development for Isfahan Eco- Tourism and in a spatial approach, it is required that Isfahan Eco- Tourist spaces to be prioritized regarding spatial development. This type of development has special importance due to the possibility for equal access of all the citizens to sustainable and proper spaces. In this manner we can express the priorities for spatial development of Isfahan Eco- Tourism as follows:

4. 1. 1. The first priority of spatial development

Generally in planning spatial development, the first priority for development belongs to the spaces which have lower score in clustering. This process will be practiced for other spaces respectively. On this basis, the spaces which are in the 3rd cluster (unsustainable spaces) shall be put in the first priority of spatial development.

The existing capabilities in this space are:

1. Presence of Bagh-e-Golha within the area of Moshtagh Park as the best potential for attracting tourists,
2. Location of some Eco- Tourism areas of this space in the central part of the city and near the cultural attractions,
3. High recreational attraction in the tourism areas of this space,
4. Closeness of some attractive Eco- Tourism regions with Zayanderud River and as a result the potentiality for enjoying the River,
5. Accessibility of proper and convenient services in this space.

4. 1. 2. The second priority of spatial development

In this level of development semi-sustainable spaces exist (spaces that have the second cluster in clustering).

Existing opportunities in this space include:

1. This space has high security like other Eco- Tourist spaces in Isfahan. In this space only Najvan Forest Park has the lowest security.

2. Although lack of high security is the most important threatening factor in Najvan Forest Park, the presence of Bagh-e-Parandegan in the center of this park not only adds to its attractions, but also provides an appropriate opportunity for sustainable development of this area.

3. In this space, there is possibility for enjoying water-sports such as boating, swimming, fishing ...,

4. This space enjoys cultural capacities and valuable historic places such as Naghsh-e-Jahan Square, Imam Mosque ...,

5. The presence of historical bridges with high sport and cultural attractions provide other opportunities in this space.

4. 1. 3. The third priority of spatial development

Finally sustainable(developed) spaces will exist in this level. In order to continue sustainable development of this space, considering its existing capacities is required:

1. Access, even though very limited, to the urban parking lots with the exception of Isargaran Park,

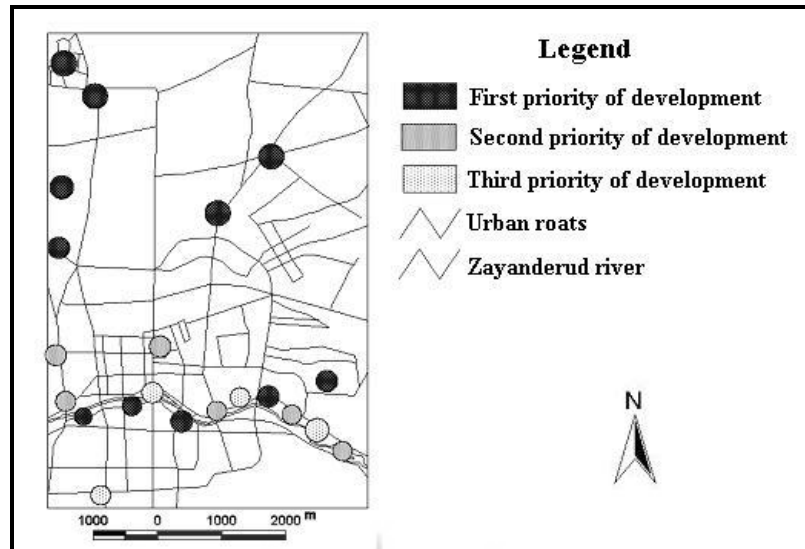
2. Capability for performing natural attractive sport activities such as mountain- climbing, rock- climbing, kiting ...,

3. Possibility for using tele-cabin station and wild life of Soffeh Mountain and their development,

4. Utilization of recreational attractions of this space.

In this manner, the process for sustainable development of Isfahan Eco- Tourism will be materialized with a spatial approach and in a hierarchical system in joining the spaces to each other (Figure 3).

Figure No. 3. Spatial development priorities of Isfahan Eco- Tourist areas



Source: researchers.

Table No. 4. Agglomeration schedule of Isfahan Eco- Tourist spaces

Stage	Cluster combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	20	21	.063	0	0	2
2	19	20	.129	0	1	5
3	17	18	.196	0	0	5
4	15	16	.264	0	0	6
5	17	19	.333	3	2	15
6	14	15	.405	0	4	7
7	13	14	.478	0	6	10
8	9	10	.554	0	0	11
9	11	12	.631	0	0	10
10	11	13	.714	9	7	15
11	8	9	.800	0	8	16
12	6	7	.889	0	0	14
13	1	2	.983	0	0	18
14	5	6	1.082	0	12	16
15	11	17	1.191	10	5	19
16	5	8	1.308	14	11	19
17	3	4	1.444	0	0	18
18	1	3	1.706	13	17	20
19	5	11	1.981	16	15	20
20	1	5	2.928	18	19	0

Source: researcher's studies.

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