



A Survey of the Environmental Effects on the Livability of Rural Areas (Case Study: Villages of Buin Zahra County)

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Abstract

Purpose: Every human being, regardless of the city or village that he lives, in pursuit of a desirable and satisfying life needed fields and factors to enable a person to provide comfort and long-term well-being for himself and his community. To some authors this condition is synonymous with livability or suitable conditions for life, in general, it refers to a set of objective characteristics that make a place in point is that people tend to live in the present and future. The aim of this study is to evaluate the environmental factors affecting the livability of rural areas and tried to answer the question of whether environmental factors affect the livability of rural areas or not?

Design/methodology/approach: The nature of this study is applied, and it uses the descriptive-analytical method. Data was collected by documentary study and field studies (questionnaires, interviews, and direct observation). The population statistic was the rural area of the city of Buin Zahra. 211 households were chosen through Cochran formula. To analyze the data descriptive statistics (mean, standard deviation) and comparative statistics (correlation analysis, one sample t-test, ANOVA) were used.

Finding: The results showed that the livability of the villages in all dimensions is moderate. The results of analysis of variance showed that the environmental factors affecting the livability of the villages have significant differences in all indicators. Furthermore, the analytical results indicated that the correlation between habitability and environmental factors are significant and there is a positive relationship between them. By promoting the quality of environmental factors, the livability of rural areas will be upgraded.

Originality/value: Due to their lifestyle and livelihood, villagers are the direct beneficiaries of environmental resources (i.e., water, soil, forest, grassland); therefore, environmental factors should be considered in the development of a village and its livability because the preservation of the environment against pollution and destruction of the village and its values is especially important. This study aimed to explain the effects of environmental factors on the livability of rural areas and finally offers some recommendations for improving and promoting the rural environment factors.

Key words: Livability of villages, environmental factors, sustainable rural development, Buin Zahra County.

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1. Introduction

Around the world, rural settlements are facing many different problems. However, identifying and understating both the needs of rural inhabitants and livability of these settlements ultimately contribute to an increase in the quality of life in rural areas thereby preparing the ground for achieving the overall goals of rural sustainable development (Isalou, Bayat, & Bahrami, 2014). Accordingly, some studies have tried to provide some solutions to these problems by addressing socio-economic issues (i.e., unemployment, poverty, lack of job opportunities, low level of literacy, etc.) as the most important problems facing rural communities nowadays (Okulicz-Kozaryn, 2012). Some consider the lack of health-care facilities as well as social services (i.e., administrative, welfare and education) as the main reason for underdevelopment of rural areas (Faiz, Wang, W., & Bennett, 2012). They argue that rural inhabitants inevitably migrate to urban zones hoping for easier provision of and access to services and facilities, as the level of services and facilities does not match in cities and rural areas. Moreover, some studies have implicitly identified environmental problems as one of the factors affecting the underdevelopment of rural settlements (Bahrami, 2011).

Therefore, every human being, regardless of whether he lives in a city or a village, strives to have a desirable and satisfactory life, and having a meaningful and satisfactory life naturally requires some factors on the basis of which one can provide long-term welfare for himself or his society (Rostamalizade & Soleimani, 2012). Generally, such conditions, as some argue, synonymous with livability or good conditions for life, refer to a series of objective features which turn a place into somewhere fit for people to live in the future or at the moment (VCEC, 2008). Furthermore, inhabitants of each settlement see livability as the main factor which improves the conditions of a place for life, shopping, rest, children's growth, and formation of a community of family and friends. However, it should be noted that positive attitude towards a community cannot necessarily mean that the community has a suitable condition in terms of livability, because those who are dissatisfied with their condition

may have a positive attitude towards their community as they are not aware of the real shortcomings in their community or of the facilities that can be provided in the society (Evans, 2002). On the other hand, livability is a complicated and relative concept. It is complicated because many factors are involved in improving the overall living conditions of the individual and community; and it is relative because principles and characteristics, which are perceived as suitable standards of life in one community, might seem highly undesirable from another perspective or in other parts of the world.

Due to their lifestyle and livelihood, villagers are considered as the direct beneficiaries of environmental resources (i.e., water, soil, forest, and rangeland); despite the fact that rural population accounts for only 28.5% of total population of the country, they possess and exploit around 90% of natural resources of the country. Therefore, any action to preserve the environment and natural resources through desertification, soil erosion control, and prevention of degradation of pastures and even forests will be successful, mainly through the consideration of rural areas and within the framework of rural development programs (Rezvani, 2004). Accordingly, the environmental factor is the main factor, which should be taken into account as it regards rural development and its livability since preservation of the rural environment and its values against all forms of pollution and destruction is highly important, and it is necessary to prevent general destruction of rural environment such as soil, water, and air (Hasanvand, 2014). The preservation of water, soil, and plant is of great importance for human survival; therefore, the current study aims to answer the following questions:

What is the current livability condition of the rural areas of Buin Zahra County?

Do environmental factors serve as effective factors in livability of the rural areas of Buin Zahra County?

2. Research Theoretical Literature

In its general sense, livability means access to living potentials, which is, in fact, the access to good planning and sustainable space. Most often, the term livability is synonymously used with the terms "vitality" and "viability". In Robert Cowan's *The Dictionary of Urbanism*, vitality and

livability have been synonymously defined as a characteristic of small and large-scale city centers; an urban vitality reflects how crowded it can be in different times of the day and different parts, while livability is a measure to assess the city's capacity to attract investment for survival, improvement, and adaptation to changing needs (Cowan, 2005). However, the dictionary defines the term viable as "the ability to survive, grow, and achieve a level of development, which provides the possibility of living under normal condition" (Ibid, p. 442). The term livable describes a place with vitality potential. In *The Dictionary of Urbanism*, Robert Cowan defines livability as favorable to people, providing

standard quality of life. The comprehensive concept of livability is usually associated with economic, social, cultural, and environmental fields (Fig. 1) (Ibid, p. 221). In Vancouver Working Group Discussion Paper for Livable cities, a complete urban system is described taking into account the social, economic, cultural, and environmental dimensions along with v including the ability to access (to food infrastructure, clean air, affordable housing, employment, green space, and parks); equity/fairness (in access to infrastructures and security); and participation (in making decisions to meet their needs).

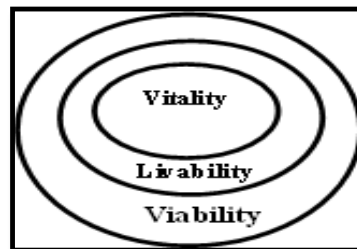


Figure 1. The relationship between livability, viability, and vitality in terms of their scope of conception

Source: Ghorbani & Jome'epour, 2014

Regarding the concept of livability, there have been extensive discussions on sustainability, transportation, viable environments, different dimensions of society, etc. showing that achieving livability becomes possible through viability (environmental, ecologic sustainability, solving social problems, i.e., poverty, class differences, etc.), economic (unemployment, addiction, etc.), environmental (reduce pollution, etc.), and cultural (illiteracy, etc.). Livability refers to a subset of sustainability objectives that directly affect community members, including access to economic and employment opportunities, resistant houses (against natural disaster), provision of drinking water, electricity and ICT, high quality schools, and reliable health services (Faiz et al., 2012). In fact, it can be said that quality of life of inhabitants depends on their access to infrastructures (transportation, communication, water, and medical services), food, clean air, affordable housings, satisfactory jobs, and green spaces and parks (Timmer & Seymoar, 2005). The concept of livability, depending on the context in which it is defined, can be very narrow

or broad. Nevertheless, quality of life receives attention at any place and it includes various measurable indicators, the constituent parts of which are density, transportation, security, and sustainability (Perogordo Madrid, 2007).

Charles Landry thematically examines the concept of livability using 4 main approaches, and introduces 9 main criteria for identifying a livable place: useful density of people, diversity, accessibility, safety and security, identity and distinctiveness, creativity, communication and collaboration, organizational capacity, and competition. Like many other planning paradigms such as sustainability etc., livability can be generalized and classified into economic, socio-cultural, and environmental dimensions, which are explained as follows:

Economic Livability encompasses employment levels, net income and living standards of community members, retailers' performance, land value and assets, and finally the living and travelling costs of inhabitants, which are associated with urban planning rules.

Socio-cultural livability is measured through activities and social interactions along with nature of social communications. Socially speaking, a livable city can be described in terms of low poverty rate, strong social cohesion, good communication and dynamism among social layers, security, collective mentality and civil pride, a wide range of lifestyle practices, balanced relationship, and refreshing urban community.

Environmental livability encompasses ecologic sustainability associated with such variables as air and noise pollution, waste and sewage disposal, traffic density, etc., on the one hand, and depends on the amount of energy consumed in the city which is a result of inhabitant's lifestyle, their consumption behavior, as well as the spatial layout of main elements of the city and its neighborhoods, on the other (Landry, 2000).

3-1- Environment and rural livability

Environment, in Persian, means surrounding and encompassing, and in English, it refers to a variable and unstable area (Shieh, 1993). Overall, it can be said that “environment” is a general term to describe such conditions as location, temperature, light, water, etc. of where living organisms live. An environment, however, is examined when the interrelations between the elements and their components are taken into account. All creatures have the natural right to live in a safe and healthy environment and use non-polluted air, soil, and water; man by nature and the system inherent in his creation, requires clean air and a healthy environment, sufficient sun exposure, healthy food, peace and comfort, temperature and moisture, balanced air pressure, and proper condition for using different tools (Bayat, Rastegar, & Aziz, 2011). As Evans (2002)

argues, the coin of livability has two faces, livelihood is one of them and ecological sustainability is the other. Livelihood means jobs close enough to decent housing with wages commensurate with rents and access to the services that make for a healthful habitat. Livelihoods must also be sustainable. If the quest for jobs and housing is solved in ways that progressively and irreparably degrade the environment of the city, then the livelihood problem is not really being solved (Cedar Hill Municipality, 2008). Since a great deal of livelihood resources of rural spaces relies on utilization of environmental resources, rural spaces are of great importance (Motiee Langroodi, 2009), and as environment and natural resources undergo some changes, rural spaces bear a lot of pressure, and at the same time, they will have limited choices (Ruth & Franklin, 2014). On the other hand, accommodation patterns in rural settlements reflect, more than anything, such environmental features as weather, vegetation, and environment, access to water and soil resources, distribution of water network and soil quality (Saiedi, 1998: 43). It can be said that the environmental capabilities of each area are the most important determinants of the type of economic activity, as well as the distribution of population in that area (Mandal, 1989).

Furthermore, Michel in his model of “environmental quality” tried to apply various components of quality of environment. In this approach, quality of life or livability of a place concerns health, environment, and natural resources, economic developments, promotion of individual’s social position, and security (Fazelniya, Shams al-Din, & Dehghani, 2014).

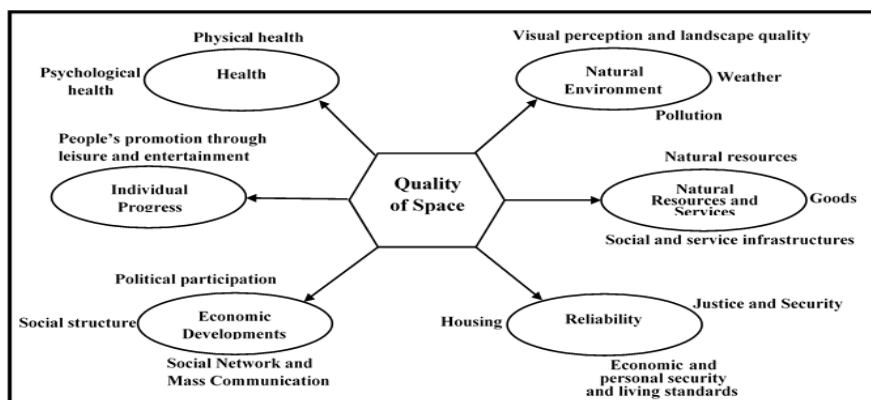


Figure 2. Constituent parts of quality of place
 Source: Van Kamp, Kees, Meijer, & Marsman, 2003



Today, achieving sustainable development has been a major issue in most countries (Badri, 1997: 12). Based on global writings on development, if promoting poverty eradication, eliminating nutritional deficiencies, providing minimal public services, developing job opportunities, raising income and productivity, increasing agricultural and food products, meeting nutrition security, transferring public resources to villages, preserving the power of the natural and biological environment, developing participation, and enhancing confidence are seen as objectives of rural sustainable development (Niles, 2007; Oseni, 2007), then the deep relationship between rural man and environment will be determined.

Therefore, it is necessary to take environmental factors into account in rural development planning for the following reasons:

1. The undeniable impact of environmental factors on population and population distribution, and on the pattern of the establishment of population centers;
2. The undeniable impact of environmental factors on rural sustainable development;
3. The requirement to preserve the environment at the eve of the 21th century, and the idea of “we do not have more than one globe” that makes humans take environmental features and potentials into account in any plan (Institute of Rural Studies, 2008).

Accordingly, less literature can be found on environmental sustainability, which has not taken into account the preservation of environment (Nooripour & Shahvali, 2011). Since any activity aiming for the improvement of quality of life and human development is realized in the environment, the condition of environment and its resources in terms of sustainability and unsustainability affects the place. In practice, the mere discussion of sustainability, without considering environmental sustainability, would be incomplete (Barimani & Asghari Lafmajani, 2010). In the context of sustainable development, an inclusive development pattern is a model that has the most appropriate link with environmental characteristics (Parishan, 2006). The success of rural

sustainable development depends on, inter alia, developing and implementing comprehensive strategies for dealing with climate change, drought, desertification, and natural disasters.

Therefore, World Bank (2004) listed urban environmental goals to reach a livable city as:

1. Protecting and enhancing environmental health in urban areas
2. Protecting water, soil, and air quality in urban areas from contamination and pollution
3. Minimizing the urban impact on natural resources at the regional and global scales
4. Preventing and mitigating the urban impacts of natural disasters and climate change (Khorasani, 2012, p. 41).

As the main business in rural areas is farming and livestock raising, the problems and issues are also associated with these businesses; that is, millions of tons of garbage including household wastes, animal wastes, etc. are produced every day, which are either left in the open air or directly discharged into rivers and valleys causing serious air, soil, water, and environmental pollution. It can be said that the main contaminants in rural areas are chemical fertilizers, pesticides, etc., which are used during agricultural activities. The use of agricultural chemical fertilizers leads to water and land pollution thereby causing reduced fertility and salinity of the soil (Zhang & Zhao, 2013), which can result in reduced level of rural livability and rural development.

The Economist Intelligence Unit annually identifies the world’s most livable cities based on a series of indicators. In 2015, it listed the livable cities of 140 countries across the world (Table 1) through assessing such indicators as security, medical services, educational resources, infrastructures, and environment. The Global Livability Index is comprised of 5 main indicators and 30 sub-indicators rating from 0 (intolerable) to 100 (ideal). Moreover, the Economist Intelligence Unit Reports (2015) indicate that the quality of life in the world’s cities has decreased by 1% since 2010, and global security and stability has dropped by 2.2%.

Table 1. main indicators and sub-indicators of livability in Economist Report

Source: <http://www.eiu.com>, 2015

Main indicator	Sub-indicators
Stability and security	Prevalence of petty crime, prevalence of violent crime, threat of terror, threat of military conflict, threat of civil unrest/conflict

Table 1.

Main indicator	Sub-indicators
Health care	Availability of private healthcare, quality of private healthcare, availability of public healthcare, quality of public healthcare, availability of over-the-counter drugs, general healthcare indicators
Culture and environment	Humidity/temperature rating, discomfort of climate to travelers, level of corruption, social or religious restrictions, level of censorship, sporting availability, cultural availability, food and drink, consumer goods and services
Education	Availability of private education, quality of private education, public education indicators
Infrastructure	Quality of road network, quality of public transport, quality of international links, availability of good quality housing, quality of energy provision, quality of water provision, quality of telecommunications

The total score of livability indicator describes the condition of life in the country.

Table (2) presents a rating description of livability indicator.

Table 2. Rating descriptions of livability indicator

Source: <http://www.eiu.com>, 2015

Main indicator	Sub-indicator
80-100	There are few, if any, challenges to living standards.
70-80	Day-to-day living is fine, in general, but some aspects of life may entail problems.
60-70	Negative factors have an impact on day-to-day living.
50-60	Livability is substantially constrained.
50 or less	Most aspects of living are severely restricted.

The term “livable cities” was first used in 1970 by the National Organization of Arts in order to realize their urban planning ideas, followed by other research centers and organizations, which have performed extensive studies on livability of American cities. Then, the emergence of this term in the literature of the context can be found in the writings of William Martin on livable cities in Saturday Review and Christian Science Monitor; with regard to rural areas livability (Mc.Nulty, 1998), however, very few studies have been performed. Some cases in point are as follows. Xunzhang Wang (2010) examined the index system of rural areas in terms of five aspects including materials standard, the status of rural education, living condition, medical services and health care, and social security status of rural areas using a descriptive-analytical method. In this study, the level of ability of 10 provinces during the year 2008 was evaluated, ranked, and analyzed. Based on the obtained results, the evaluation system was shown to have a good reliability. Faiz, Wang and Bennett (2012) in their study, using a qualitative-quantitative method, discussed livability and sustainability as well as the relation between sustainable road and its effect on rural livability. Their findings showed

that the road quality and sustainability of a settlement could directly affect the provision and improvement of livable conditions of a settlement. Khorasani and Zarghamfard (2017), using a descriptive-analytical method, examined the role of spatial factors on livability of peri-urban villages. They found that proximity to urban areas and access to facilities cannot guarantee the formation of livable villages. In general, their results showed a significant relationship between spatial factors and livability indicators in peri-urban villages.

Bandarabad (2011) explained the origin of new ideas of urbanism, and then addressed the literature of livability and the livable city in detail. Moreover, he determined the differences and similarities of livable cities with other contemporary urban theories, thereby providing conceptual models and constituent components of a livable city; finally, he tested and analyzed the model in relation to some regions of Tehran city. In another study, Isalou et al. (2014) found that economic indices such as job, income level, saving rate, etc., among other criteria, have a significant contribution in the determination of livability degree in the rural areas of the region under investigation. In their study Khorasani & Rezvani (2013) found that there was no significant relationship

between livability of villages and development of services. Khorasani, Rezvani, Motiee, and Rafieian (2012), in another study concluded that the livability of peri-urban villages is not in a good condition. Moreover, they found that the economic and social dimensions of livability of villages are average, and the environmental dimension has an undesirable condition. Tahmasebi and Jome Pour (2014) examined a three-fold dimension of livability including economic (employment and income, housing, transportation, and infrastructure and educational facilities); social (health care, solidarity and social participation, sense of belonging, and social and individual security); and environmental (quality of the place in terms of no pollution) in the villages under study. Based on their results, livability and quality of life levels are low in peri-urban villages; they concluded that villages with desirable quality of life have also desirable livability. Sadeghloo and Sojasi Qidari (2014) examined the relationship between livability and resilience of villagers using multi-index decision-making PROMTHEE technique. Based on their findings, as rural settlements livability increases, the residence of villagers increases as well. The current study, considering the literature review, aims to examine the role of environmental factors in rural livability.

3. Research Methodology

3.1 Geographical Scope of the Research

Buin Zahra County is geographically located at 49°30' east and 35°30' north with an altitude of 1210 m above sea level. Based on Amberje and De Martonne climate classification methods, the climate of Buin Zahra County was classified as dry, with an average annual rainfall of 242/81mm (Fig. 3) (Buin Zahra Meteorological Organization, 2016). Moreover, based on the conducted studies, the soil of the area under study is "clay-loam" (Ministry of Agriculture Jihad of Bun Zahra, 2016). According to the statistics of 2006 and 2011, the population of Buin Zahra County, except for the county, has had a positive growth

rate, with an increase in population. Immigration of young people to cities has contributed to a negative growth rate of population in the Ramand county, and because of the high growth rate and more population, the highest unemployment rate is seen in Dashtabi and central districts. Moreover, most rural areas of these districts are close to urban areas, which lead to population acceptance of these villages (Table 3).

2.2. Research Method

The current study is descriptive-analytical with an applied research method. For better examination, livability was classified into three classes: economic, social, and environmental. Relevant references were designed and extracted in terms of Likert scales, as shown in Table (4). Then, 22 items were used for analyzing the effect of environmental indices on livability of rural areas. Research independent and dependent variables were environmental factors and livability of villages, respectively. Data collection methods included library (note taking from books, articles, and internet resources) and field (questionnaire, direct observation, and interview with the head of the families). One of these two methods was used depending on the necessity at each step of the research. The statistical population of the study was the villages of Boein Zahra city and the level of analysis in this research were villages, and the rural households were the analysis unit. The region under study has 4 districts, 9 rural districts, and 88 villages with 66213 people in 18419 households. The stratified sampling method was used; after stratification of villages under study (in terms of population and proximity to urban areas), 20 villages were randomly selected and 211 questionnaires were completed by the villagers. Cronbach's alpha coefficient was used to assess the internal consistency and validity of the questionnaire. For this purpose, 30 questionnaires were completed and pre-tested and the Cronbach's alpha coefficient was obtained ($\alpha = 0.82$) showing a good reliability level of the questionnaire

Table 3. Total population, growth rate and unemployment rate of villages in Buin Zahra County, 2006 and 2011

Source: Statistical Center of Iran, 2012

Cases study	Total population 2006	Total population 2011	Growth rate 2011	unemployment rate 2011
Ramand district	9605	8919	-2.57	5.22
Shawl district	8117	8240	0.8	4.2
Markazi district	28658	30056	1.85	7.7
Dashtabi district	18207	20011	4.03	7.61

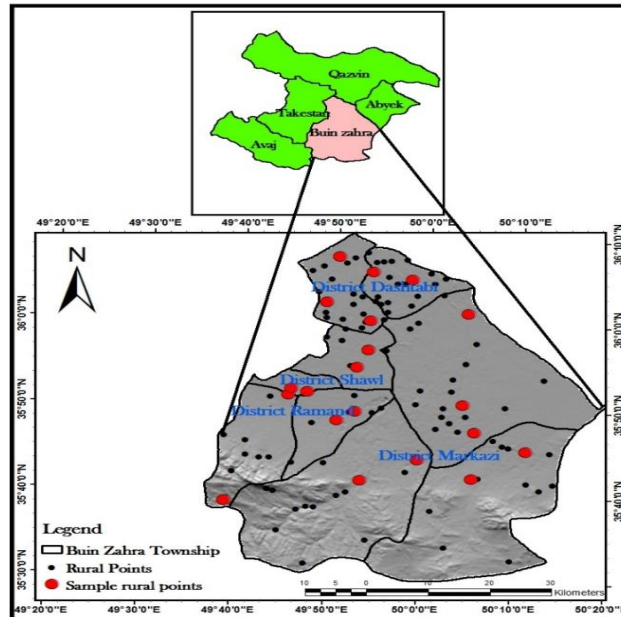


Figure 3. Map of Buin Zahra County

Source: Government of Buin Zahra County, 2017

Table 4. livability indices in three dimensions: economic, social, environmental (dependent variable)

Source: Khorasani, 2012, Research Findings, 2017

Dimensions	Items
Economic livability	Having a good job and having access to it in the village, the number of job opportunities in the village, good income, future prospect of income and employment in the village, the house strength, existence of a wastewater drainage system in the building, good access to public transportation, quality of access to the city and the surrounding villages, quality of drinking water in the village, quality of supplying everyday needs in grocery stores in the village.
Social livability	Quality of access to schools or suitable training space in the village or city, quality of network services (Health Houses) of the village, people’s participation in village’s development, presence of village women in rural affairs like men, acceptance of people’s participation on behalf of the Islamic Village Council, reliability of village people, the desire to work in the village, the desire to invest in the village, living in the village in case of existence of working and living conditions in the surrounding towns, low rate of delinquency and crime, quality of services and the gym equipment of the village, quality of services and the size of the village library, ability to travel to spend leisure time for the villagers.
Environmental livability	The possibility to cultivate children’s talent in the village, quality of village garbage collection, quality of sewage collection, no voice pollution and pollution caused by vehicle traffic, pollution caused by industrial factories, contamination due to proximity to waste disposal site and debris, beautiful natural landscape, proper buildings and architectural view, good quality passages and streets, good village green space.

The meaning of the term “environment” in this research is the general concept of the word, that is, the living environment of the village, which is

a combination of natural and human environment of villages. Table 5 presents the indicators of natural factors

Table 5. effective environmental factors on livability (independent variable)

Source: Research Findings, 2017

	Indices	Items
ENVIRONMENTAL	Open and green spaces	Optimal use of leisure time (recreational spaces, game, etc.), use of the peaceful environment of the village, open space for collecting animal waste, creation of animal husbandry outside the village.



Table 5

	Indices	Items
Environmental factors	Pollution	Quality of village garbage collection, quality of sewage collection, quality of animal waste collection, no pollution caused by industrial factories.
	Environmental capability	Existence of fertile lands, access to adequate water resources (for agricultural purposes), availability of and access to sanitary water (clean drinking water), availability of and access to pastures, etc. for livestock, good climate, the possibility of cultivating various products, location of the village (proximity to metropolitan centers and other villages), high-quality streets and pathways.
	Natural hazards	Occurrence of natural hazards such as flood, earthquake, and drought.
	Future perspective (environmental factors)	Soil erosion and its destruction in the coming years, underground water drop, change of agricultural land use to residential use and other uses, aggravation of natural hazards (flood, earthquake, drought, etc.) in the coming years, destruction of pastures, village evacuation.

Research Findings

An examination of the individual characteristics of respondents shows that the average age of individuals is 44.33, 76.8% of whom are male and the rest are female. The birthplace of 167 individuals and 79.1% was the village under study, and the birthplace of 44 individuals and 20.9% was other villages. In terms of education level, 15.2% of participants were illiterate, 11.4% had an elementary, 23.2% a middle school, 20.4% intermediate, 26.1% a BA, and 3.8% a MA degree. In terms of activity type, 21.8% of

participants were employees, 12.3% farmer, 8.5% rancher, 10.9% worker, 17.1% housewife, 22.3% free-employed, and 7.1% jobless. The respondents evaluated the economic livability of villages under study to be at a good level with 31.75%. In addition, social and environmental livability was at a good level, respectively with 25.11% and 27.01%. The obtained results, according to the mean of Table 6, suggest that the condition of rural livability of Buin Zahra County is at the intermediate level (Table 6).

Table 6: livability analysis in economic, social, and environmental dimensions of villages under study

Source: Research findings, 2017

Livability dimensions		Mean	Very little	Little	Somewhat	Much	Very much
Economic livability	percent	3.43	5.21	17.53	21.80	31.75	23.69
Social livability	percent	3.13	12.32	22.74	22.27	25.11	17.53
Environmental livability	percent	3.21	9.47	22.74	25.11	27.01	15.63

The numerical mean obtained from livability dimensions' analysis suggests that livability is at the intermediate level in all dimensions, and economic livability has a more desirable condition. Based on one-sample t-test, considering

the Likert scale ranging from 1-5, the mean has been evaluated to be at the intermediate level (3) for all dimensions. This difference is significant at 0.01 alpha level, and its difference is evaluated with positive numerical desirability (Table 7).

Table 7: livability analysis of villages from the viewpoints of participants, based on one sample t-test

Source: Research Findings, 2017

Explain	Test value:3			Mean difference	95% confidence interval of the difference	
	Mean	T	Sig		lower	upper
Economic livability	3.43	9.14	0.000	0.431	0.338	0.524
Social livability	3.13	2.31	0.02	0.134	0.020	0.249
Environmental livability	3.21	4.41	0.000	0.210	0.116	0.304

In order to find if there is a significant difference among the different dimensions of livability

among villages of Buin Zahra County, ANOVA (Analysis of Variance) was used. Based on the

obtained results from ANOVA (Table 8), it can be concluded that livability in all dimensions has a significant difference in all the counties under study; Duncan test was used to examine the details. The obtained results indicated that villages located in the central district, Dashtabi district, and Shal district of Buin Zahra, in terms of economic livability, according to higher average rank, are from the county, and go to the first group; and the county with an average rating of 3.03 goes to the second group of economic livability. In terms of social livability, the Shal district with an average rating of 3.68 has the

highest average rating going to the first group, and the central district, Dashtabi district and the county, with the presented ratings shown in Table 8, have a lower average rating and go to the second group. Moreover, in terms of environmental dimension, the Shal district and the county with an average rating of 3.56 and 3.42, respectively, go to the first group and the central district with an average rating of 3.14 goes to the second group, and the Dashtabi district with an average rating of 2.88 has a lower average rating and goes to the third group.

Table 8: classification of the counties under study into homogeneous groups based on significant dimensions of rural livability

Source: Research findings 2017

Economic livability	Mean of group		Social livability	Mean of group		Environmental livability	Mean of group		
	1	2		1	2		1	2	3
Ramand	3.03		Ramand	2.89		Dashtabi	2.88		
Dashtabi		3.45	Dashtabi	2.98		Markazi		3.14	
Markazi		3.56	Markazi	3.05		Ramand			3.42
Shawl		3.58	Shawl		3.68	Shawl			3.56
F(Anova test): 6/66 sig:0/000			F(Anova test): 9/33 sig:0/000			F(Anova test): 11/73 sig:0/000			

Examination of the relationship between individual characteristics of the participants and rural livability using correlation analysis showed that there is a significant relationship between the

duration of stay, education level, income rate, and age. Based on the research findings, as age increases, education level, income rate, and stay duration of rural livability increases.

Table 9: Correlation between livability and individual characteristics (Pearson)

Source: Research findings, 2017

		Duration of stay	Education level	Income rate	Age
Livability	Pearson correlation	0.218**	0.178**	0.195**	0.223**
	Sig	0.001	0.010	0.005	0.001
	N	211	211	211	211
** : significant at the 0.01 level					

4-1- Analysis of the environmental factors' role in rural livability

In order to study the effective environmental factors in rural livability, 16 indicators were used. Based on the people's viewpoints and the obtained results, from among the 16 indicators

under study, sufficient water resource with an average of 4.189, appropriate farm land with an average of 4.180, and village location with an average of 4.14 have been shown to be the most important factors effective in rural livability (Table 10).

Table 10. Analysis of the role of environmental factors in livability

Source: Research Findings, 2017

Indices	Item	Mean	Standard deviation	Rank
Open and green spaces	Optimal use of leisure time (recreational spaces, game, etc.)	3.92	1.05	6
	use of the peaceful environment	3.45	1.15	12
	Access to open space	2.69	1.16	16



Table 10.

Indices	Item	Mean	Standard deviation	Rank
Pollution	garbage collection	3.62	1.01	10
	sewage collection	3.81	0.99	7
	Animal waste collection	3.68	1.08	8
	pollution caused by industry	2.96	1.33	15
Environmental capability	high-quality streets and pathways	3.95	0.89	4
	fertile lands	4.180	0.86	2
	adequate water resources	4.189	0.98	1
	sanitary water	3.93	0.94	5
	access to pastures	3.03	1.19	14
	good climate	3.44	1.14	13
	possibility of cultivating various products	3.50	1.25	11
	location of the village	4.14	1.03	3
Natural hazards	Natural hazards	3.66	1.27	9

As Table 11 shows, in view of villagers, environmental capability with 33.64% and an average of 3.79 compared to other indicators, has a high effect on livability. Then, the natural hazard indicator with 37.44% of participants and an average of 3.66 affects the rural livability. The

pollution indicator with 28.90% and average of 3.52 affects livability to some extent, in view of the villagers. Finally, the open and green space indicator with 24.17% and an average of 3.36 has little effect on livability.

Table 11: Descriptive analysis of the role of environmental indicators in livability

Source: Research Findings, 2017

Dimensions of livability		Very low	low	somewhat	much	Very much	Mean
Open and green spaces	percent	5.68	24.17	22.74	23.69	23.69	3.36
Pollution	percent	3.31	17.53	28.90	23.22	27.01	3.52
Environmental capability	percent	2.36	13.74	18.95	31.27	33.64	3.79
Natural hazards	percent	6.16	13.74	25.11	17.53	37.44	3.66

In order to find if there was a significant difference among the effective environmental factors in livability among the residents of Buin Zahra County, analysis of variance (ANOVA) was used. Based on the obtained results, shown in ANOVA Table (12), it can be concluded that environmental factors have a significant difference with all dimensions in the counties under study; Duncan test was used in order to examine the further details. The results showed that environmental factors in rural livability in terms of open space were more effective in villages of Dashtabi district, Shal district, and the Ramand

county. Based on their higher average, these districts were categorized as the first group; the central district with an average rating of 2.90 obtained from Duncan test went to the second group (i.e. open space indicator). In terms of pollution indicator, the Dashtabi district with an average rating of 3.87 had the highest average rating and went to the first group; the central district and the county, as shown in Table (12), had lower average rating and went to the second group; finally, the Shal district went to the third group with the lowest average rating of 3.06.

Table 12. Classification of the counties under study into homogenous classes based on effective environmental indicators (open space and pollution) in rural livability

Source: Research Findings, 2017

Open space	Mean of group		pollution	Mean of group		
	1	2		1	2	3
Markazi	2.90		Shawl	3.06		
Shawl		3.44	Markazi		3.49	

Table 12.

Open space	Mean of group		pollution	Mean of group		
	1	2		1	2	3
Dashtabi		3.56	Ramand		3.50	
Ramand		3.58	Dashtabi			3.87
F(Anova test): 11/50 sig:0/000			F(Anova test):10/52 sig:0/000			

Based on the results presented in Table (13), the environmental capability of the county with an average rating of 4.15 goes to the first group, and the Dashtabi district and Shal district, respectively with average ratings of 3.87 and 3.83 go to the second group, and the central district with an average rating of 3.43 has a lower average rating and goes to the third group. Based on findings of

Table (13), in terms of natural hazard indicator, the Shal district and the county with average ratings of 4.26 and 3.85, respectively, go to the first group, and villages located in the central district and Dashtabi district with average ratings of 3.40 and 3.35, respectively, go to the second group.

Table 13. Classification of the counties under study into homogenous classes based on effective environmental indicators (environmental capability and natural hazards) in rural livability

Source: Research Findings2017

Environmental capability	Mean of group			Natural hazards	Mean of group	
	1	2	3		1	2
Markazi	3.43			Dashtabi	3.35	
Shawl		3.83		Markazi	3.40	
Dashtabi		3.87	4.15	Ramand		3.85
Ramand				Shawl		4.26
F(Anova test): 6/18 sig:0/000				F(Anova test): 20/30 sig:0/000		

As shown in Table (14), it can be understood that, according to Pearson test, there is a positive and significant relationship between environmental factors (open spaces, environmental capability,

and natural hazards) and rural livability. In other words, as any of the above-mentioned factors increases, rural livability also increases.

Table 14. Correlation between livability and effective environmental factors in livability (Pearson)

Source: Research Findings, 1395

	Environmental factors	open spaces	Pollution	environmental capability	Natural hazards
Livability	Pearson correlation	0.260**	0.031	0.138*	0.141*
	Sig	0.000	0.651	0.045	0.040
	N	211	211	211	211
*: significant at the 0.05 level		**: significant at the 0.01 level			

In order to understand how much concerned the villagers under study are about future of the rural environmental factors, 6 indicators were used. The obtained results, as shown in Table 15, indicated that the villagers with a frequency of 36.5% and an average of 3.56 have shown their concern about the drop of water level; that is, they are

more concerned about this factor than the other environmental factors. Then, the items including destruction of pastures with a frequency and average of 34.1% and 3.49, respectively, and soil erosion with a frequency and average of 30.8% and 2.95, respectively are the most important concerns of the villagers.



Table 15. Analysis of the villagers' concerns in relation to the future of environmental factors

Source: Research Findings2017

Items of environmental concern		Very low	Low	somewhat	Much	Very much	Mean
aggravation of natural hazards	percent	12.3	23.2	34.1	23.7	6.6	2.89
drop of water level	percent	4.7	10.9	27.5	36.5	20.4	3.56
Change of land use	percent	16.6	23.7	27	21.3	11.4	2.87
soil erosion	percent	13.3	25.1	22.7	30.8	8.1	2.95
destruction of pastures	percent	10.4	6.2	28	34.1	21.3	3.49
village evacuation	percent	33.2	21.8	25.6	15.2	4.3	2.35

5. Discussion and Conclusion

Rural sustainable development aims at improving the quality of life and reaching a healthy and habitable village in accordance with today's conditions, which is possible through providing standard conditions for human life in various economic, social, and physical-environmental dimensions. Environmental factors are viewed as an important aspect, as the villagers are in contact with environment more than any other group of society; as a result, environmental factors can be one of the effective factors in rural livability. Therefore, the current study addresses an examination of the role of environmental factors in rural livability.

The obtained results suggested that the villages have a more desirable condition in terms of economic livability; in general, it can be said that rural livability is intermediate in all dimensions. The ANOVA results showed that there was a significant difference between the livability mean in all dimensions among the villages under study; moreover, the results indicated that the average rating of villages of Dashtabi district, central district, and Shal district was more than the county in terms of economic livability; therefore, they go to the first group; the county goes to the second group due to its lower average rating in terms of economic livability. In terms of social livability, the Shal district has the highest average rating and goes to the first group, while the central district, Dashtabi district, and the county have lower average ratings and go to the second group. Furthermore, the Shal district and the county, with higher average rating in terms of environmental livability go to the first group, while the central district with lower average rating goes to the second group. Finally, the Dashtabi district with an average rating lower than others, goes to the third group. In addition, the result of Pearson's

Correlation test showed that there was a significant relationship between duration of stay, level of education, income rate, and age of villagers with rural livability; therefore, as each item increases, livability also increases. More precisely, if the villagers have longer duration of stay, higher level of education, higher income, and are older, then the villages will have higher level of livability. In fact, they will be more satisfied with the village.

The results of analyzing the effective environmental factors in rural livability showed that the villagers consider the access to sufficient water resource for agricultural purposes, access to suitable farm land, and the village location as the most important effective factors in rural livability, and these factors should be taken into account in planning for rural population stability, so that the villagers can perform farming activities according to the regional climate and water resource and avoid cultivating crops that are not compatible with the soil and water of the region. In fact, Jihad-e-Keshavarzi can play an important role in this regard by conducting and promoting educational classes. Furthermore, the descriptive results of effective environmental indicators in livability suggested that environmental capability (fertile land and access to sufficient water resources for agricultural purposes), availability of and access to sanitary water (clean drinking water), availability of and access to pasture, etc. for livestock, good climate, the possibility of cultivating various products, village location (proximity to urban centers and other villages), and the good quality of passages and streets greatly affect rural livability in the participants' opinion; therefore, it can be said that environmental capability is more important than other factors.

The results obtained from ANOVA analysis showed that there was a significant difference

between the mean of effective environmental factors in livability among the villages under study; in other words, in terms of open and green spaces, villages of Dashtabi district, Shal district, and the county, according to higher average rating than the central district, go to the first group, and the central district goes to the second group. Due to the fact that the villages of central district are located near the Buin Zahra County and the villagers are more involved in service industries and less with agriculture and animal husbandry, open space has little impact on livability in views of the participants of that area. In terms of the pollution indicator, the Dashtabi district goes to the first group; the central district and the county go to the second group; and the Shal district goes to the third group. According to the research findings, villagers of the Dashtabi district announced that pollution highly affected rural livability; since the villages of Dashtabi district are located in the neighborhood of Lia industrial town, and based on our interview with the villagers, they claimed that contaminants caused by these industries affect their health and given that the use of agricultural land is changing to residential and service use, despite the fact that the latter has resulted in population increase, the demographic solidarity of these villages has disappeared, and the workers from the surrounding cities and villages who are working in this industrial town, mostly compose the population of this village. Accordingly, in their view, livability of the villages in this county is decreasing as influenced by the pollution factor. Based on the obtained results, in terms of environmental capability, the county goes to the first group, the Dashtabi and Shal districts go to the second group, and the central district with an average rating less than others goes to the third group. According to the results, it was found that the villagers in the Dashtbeh section have stated that the pollution index has a great impact on the survivability of these villages, because the villages of the Dashtabi district are located in the vicinity of the Lia Industrial Town. According to the interviews, the villagers have acknowledged that the waste and contaminations caused by these industries affect their health. Also, agricultural land is changing to residential and service use. The result is an increase in population, but the population solidarity of these villages has been

eliminated, and migrant workers make up the population of these villages.

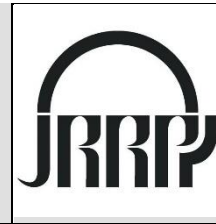
Finally, in terms of natural hazards, the Shal district and the county with a higher average rating go to the first group, and villages located at central district and Dashtabi district with a lower average rating go to the second group. As mentioned previously, most villages of the county have minimum population due to their location, however, some villagers attribute the reason to natural hazards such as flood, frost, and earthquake. Villages of the Shal district have faced such hazards as drought, therefore, as the participants announced, livability of the villages located at these two parts have been influenced by natural hazards. Thus, more attention should be paid to these factors, and it is necessary to take these factors into account in the implementation of programs that aim for rural development and increasing rural quality of life. More importantly, if a village is evacuated, the inhabitants will migrate to cities, food manufacturers will decrease, and other problems such as marginalization, unemployment, and delinquency will appear; therefore, regarding the drought conditions currently present in our country, it is essential to plan accurately to mitigate drought consequences, especially the drop in water level in villages (i.e., preventing unauthorized digging of wells, cultivating crops that need less water, using new irrigation methods, etc.). In this regard, the villagers' participation should not be neglected. Regarding the concern of rural area inhabitants about environmental factors, it was realized that their most important concern was drop of the water level; thus, this factor should be given more attention. The results of the correlation analysis suggested that there was a positive and significant correlation between rural livability and environmental indicators (open space, environmental capability, and natural hazards). As mentioned above, these factors are the most important effective factors in rural livability and it is important to take all necessary measures into account in order to both increase the quality of these factors and rural livability; otherwise, villages, especially small villages, will be vacant leading to irreparable consequences.

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تبیین اثرات عوامل محیطی بر زیست‌پذیری نواحی روستایی (مطالعه موردی: روستاهای شهرستان بوئین زهرا)

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چکیده مبسوط

۱. مقدمه

هر انسانی فارغ از اینکه در شهر یا روستا زندگی کند، در پی دستیابی به زندگی مطلوب و رضایت‌بخش است و طبیعتاً برای داشتن زندگی مطلوب، رضایت‌بخش و پرمعنی، زمینه‌ها و عواملی لازم است که انسان بتواند بر پایه آن آسایش و رفاه درازمدتی را برای خود و اجتماعش فراهم نماید. این شرایط که به اعتقاد برخی از نویسندگان مترادف با زیست‌پذیری یا شرایط مناسب برای زندگی است؛ به طور کلی اشاره به مجموعه‌ای از ویژگی‌های عینی دارد که یک مکان را به جایی بدل می‌سازد که مردم تمایل دارند اکنون و آینده در آن زندگی نمایند.

بر این اساس؛ ساکنان هر سکونتگاه زیست‌پذیری را به عنوان عاملی برای بهبود شرایط مکان برای زندگی، خرید، استراحت، رشد کودکان و ایجاد اجتماعی از دوستان و خانواده‌ها می‌بینند. روستاییان به دلیل شیوه زندگی و نوع معیشت خود، بهره‌برداران مستقیم منابع محیطی محسوب می‌شوند؛ از این رو عامل محیطی از جمله عواملی است که در توسعه روستا و زیست‌پذیری آن باید در نظر گرفت، زیرا حفظ محیط روستا و ارزش‌های آن در برابر انواع آلودگی‌ها و تخریب، اهمیت بسیار دارد و در اجرای برنامه توسعه روستایی باید با تمام وسایل لازم از تخریب عمومی محیط روستا از جمله خاک، آب و هوا جلوگیری به عمل آید. اهمیت حفاظت از آب و خاک و گیاه برای ادامه حیات بشر بسیار زیاد است. در این راستا، تحقیق حاضر سعی دارد در مسیر کلی پژوهش به سوال‌های زیر پاسخ دهد:

- زیست‌پذیری روستاهای شهرستان بوئین زهرا در چه وضعیتی قرار دارد؟
- آیا عوامل محیطی در زیست‌پذیری روستاهای شهرستان بوئین زهرا تاثیرگذار می‌باشد؟

۲. مبانی نظری

زیست‌پذیری در معنای اصلی و کلی خود به مفهوم دستیابی به قابلیت زندگی است، در واقع می‌توان گفت کیفیت زندگی ساکنان به میزان دسترسی آنها به زیرساخت‌ها (حمل و نقل، ارتباطات، آب و بهداشت) غذا، هوای پاک، مسکن مناسب، شغل راضی‌کننده و فضای سبز و پارک‌ها بستگی دارد. فضاهای روستایی به واسطه اینکه بخش عظیمی از منابع معیشتی آنان در ارتباط با بهره‌برداری از منابع محیطی متکی است، از اهمیت و توجه بسیار برخوردارند. لذا توجه به عوامل و مولفه‌های محیطی در برنامه‌ریزی توسعه روستایی و زیست‌پذیری به چند دلیل ضروری است:

- ✓ تاثیر انکارناپذیر عوامل محیطی بر جمعیت‌پذیری و توزیع جمعیت و الگوی نظام استقرار کانون‌های جمعیت؛
- ✓ تاثیر انکارناپذیر عوامل محیطی بر رشد و توسعه پایدار مناطق روستایی؛
- ✓ الزام به حفظ محیط زیست در آستانه قرن ۲۱، با توجه به این نکته که «بیش از یک کره نداریم»، انسانها را ملزم می‌سازد که در هر طرح و برنامه‌ای، به ویژگی‌ها و پتانسیل‌های محیطی توجه نمایند.

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۳. روش تحقیق

روش پژوهش حاضر از نظر روش تحقیق کاربردی و از نظر ماهیت توصیفی-تحلیلی است. روش گردآوری اطلاعات به صورت کتابخانه ای (فیش برداری از کتاب، مقاله و منابع اینترنتی) و میدانی (پرسشنامه و مشاهده مستقیم و مصاحبه با سرپرست خانوارها) می باشد. جامعه آماری تحقیق، روستاهای شهرستان بوئین زهرا می باشد و سطح تحلیل در این تحقیق روستاها هستند، و واحد تحلیل خانوارهای روستایی می باشند. روش نمونه گیری در این پژوهش روش طبقه ای است و پس از طبقه بندی روستاهای منطقه تحقیق (بر حسب جمعیت و دوری و نزدیکی به نقاط شهری) به طور تصادفی، ۲۰ روستا برای نمونه انتخاب شدند و ۲۱ پرسشنامه در روستاهای مورد مطالعه تکمیل شدند. برای تجزیه و تحلیل اطلاعات از آمارهای توصیفی (میانگین، انحراف معیار) و آمار استنباطی (تحلیل همبستگی، آزمون t تک نمونه ای، تحلیل واریانس) استفاده شده است.

۴. یافته های تحقیق

نتایج آزمون t تک نمونه ای نشان داد؛ زیست پذیری روستاهای مورد مطالعه در همه ابعاد در سطح متوسط می باشد و بر اساس نتایج آزمون همبستگی پیرسون بین ویژگی های فردی (سن، سطح تحصیلات، میزان درآمد و مدت اقامت) و زیست پذیری رابطه معناداری وجود دارد. نتایج تحلیل واریانس نشان داد که عوامل محیطی مؤثر بر زیست پذیری در بین روستاهای مورد مطالعه در همه شاخص ها اختلاف معنی داری وجود دارد؛ نتایج توصیفی شاخص های محیطی مؤثر بر زیست پذیری حاکی از آن است که شاخص قابلیت محیطی (وجود زمین های حاصلخیز، دسترسی به منابع آب کافی (برای کشاورزی)، وجود دسترسی به آب لوله کشی و بهداشتی (آب شرب و شیرین)، وجود دسترسی به مراعات و ... برای دام، اقلیم خوب، امکان کشت محصولات متنوع، موقعیت قرار گیری روستا (نزدیکی به مراکز شهری و سایر روستاها) معابر و خیابان های مناسب و با کیفیت از نظر پاسخگویان تاثیر خیلی زیادی بر زیست پذیری روستاها دارد، و نتایج تحلیل همبستگی نیز حاکی از آن است که بین زیست پذیری و عوامل محیطی

رابطه مثبت و معناداری وجود دارد. و در نهایت یافته های پژوهش در مورد آینده نگری روستاییان در رابطه با عوامل محیطی با میانگین ۳/۵۶ صدم نشان داد که نگرانی روستاییان بیشتر در مورد افت سطح آب می باشد.

۵. نتیجه گیری

نتایج نشان داد که عوامل محیطی مؤثر بر زیست پذیری در بین روستاهای شهرستان بوئین زهرا اختلاف معناداری وجود دارد؛ یعنی تاثیرگذاری عوامل بر زیست پذیری روستاها متفاوت است، چنانچه در شاخص فضاهای باز و سبز، روستاهای بخش دشتابی، رامند و شال با توجه به میانگین بالاتر نسبت به بخش مرکزی در گروه اول قرار گرفته اند و بخش مرکزی در گروه دوم قرار گرفت. از نظر شاخص آلودگی بخش دشتابی در گروه اول و بخش های مرکزی و رامند در گروه دوم و بخش شال در گروه سوم قرار گرفتند. با عنایت به نتایج مشخص شد که در شاخص قابلیت محیطی بخش رامند در طبقه اول و بخش دشتابی و شال در طبقه دوم و بخش مرکزی با میانگین کمتر از سایر بخش ها در طبقه سوم قرار گرفتند. در نهایت از نظر شاخص مخاطرات طبیعی بخش شال و رامند با میانگین رتبه ای بالاتر در گروه اول و روستاهای بخش مرکزی و دشتابی با میانگین رتبه ای کمتر در گروه دوم قرار گرفتند. با توجه به این مطالب باید در برنامه ریزی هایی که برای توسعه روستاها در نظر گرفته می شود باید به این تفاوت ها توجه شود و اینکه در هر روستایی عوامل متفاوتی بر زیست پذیری تاثیر می گذارند که با سایر روستاها متفاوت می باشند، بنابراین نمی توان از رویکردهای یکسان برای توسعه روستاها بهره برد.

کلمات کلیدی: زیست پذیری روستاها، عوامل محیطی، توسعه پایدار روستایی، شهرستان بوئین زهرا.

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