Analysis of the Level of Environmental Development in the Rural Areas of Sistan with an Emphasis on Quranic Indices

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Abstract

Purpose: The environment is a divine favor whose protection can have a positive effect on lives of humans and other creatures. A look at the verses of the Quran and the life style of the Prophet s family (PBUT) make it clear that no school like Islam has attached such a great importance to nature and the environment. Accordingly, using Quranic indices, in this study we have aimed to analyze the level of environmental development in rural areas of Sistan.

Design/methodology/approach- The population of the study is the people in the rural areas of Sistan. To determine the sample population using Sharpe formula, 40 villages (with 51663 households) out of 796 villages in Sistan region were selected, and 381 heads of households were randomly selected according to Cochran formula. For data analysis, Kruskal-Wallis statistical method in SPSS was used, and then Topsis was employed to weigh and determine the degree of development of the villages.

Findings: The evaluation showed that level of environmental development in rural areas is less than .01% percent significant. Out of 9 environmental indices, the index of optimal utilization of water, with a mean of 4.29 ranked first.

Practical implications- According to the research results, coherent planning for the revival of the genuine Islamic culture and development of religious teachings about the role and significance of nature, the realization of God's real ownership of all national resources, optimal utilization of natural resources, prevention of corruption in the environment, and appropriate utilization of forests and rangelands, especially national resources, is a strategy that can lead our society to sensible utilization of natural resources.

Key words: Environmental development, environmental indices, Quran, villages in Sistan, Topsis.

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1. Introduction

Environment is the living place and the main supplier of most basic human needs, and is a phenomenon whose importance increases every day (Adhami & Akbarzadeh, 2011). The universal nature of the environment is composed of the different elements forming an integrated system. This means that everyone has the right to benefit from the atmosphere, climate, and biodiversity (Hosseini, 2013). Unfortunately, during his reign on earth, man has been consuming the natural resources in an uncontrolled and unplanned manner, as he is contaminating the soil and water, and is destroying their biological power (Adhami & Akbarzadeh, 2011). Undoubtedly, contemporary environmental crises are the result of materialistically expansionist ideas, and are the consequences of the insatiable appetite of political leaders, business executives, or in a nutshell, the practical ignorance of man about the world (Golshiri Isfahani & Sarsee, 2010). In general, it seems that our beautiful nature is gradually being destroyed, and our planet environment is intensely under pressure from various directions (Adhami & Akbarzadeh, 2011). The biological threats resulted from destruction of the environment has endangered the security and welfare of human beings (Baedinejad, Daryaie, & Aliabadi, 2005).

Currently, due to persistent environmental crises, world views towards religion has changed, and it has received great attention as an effective factor in decreasing the environmental problems. Now, many advocates of the environment believe that efficien environmental politics should be comprehensive, and it needs religious and moral support because in teachings of religions such as I slam, Judaism, Christianity, Hinduism, Zoroastrianism, etc., respect for nature and all the world is an accepted principle. In fact, the moral system of Islam has a high capacity for reducing conflicts and environmental degradation. The main goal of this system is to change man s attitude towards what is in his disposal, so that he reaches this deep understanding that he is a depositary, and he may use nature and environmental resources only where the true owner permits, and in making use of the nature, he should take into account all individual, social, human and inhumane dimensions. Therefore, he does not have the right to act in a way that may destroy nature (Farahanifard & Farahanifard, 2014). Carolyn Merchant, a professor of philosophy and environmental history in Berkeley University concerning the faith of the Muslim said: Islam provides an impressive example of ecological awareness. In Islamic perspective, man is the successor of God on earth. The Holy Quran teaches that the universe, nature, and the environment are all signs of the creator of the world. No religion on earth advocates the destruction of the environment or animal life, nor does it clearly advocate the destruction of natural resources and wealth granted by God (Merchant, 1992). Therefore, man is responsible for everything, including animals and nature around him. The most important duty of man towards nature is restoring the earth and avoiding corruption on it. One of the ways to improve the earth is to develop it. By development, we mean observing the ecological principles to protect the life of all living beings. In Islam, there are many teachings about preserving the environment (Akbari Rad, 2013). In Surah of Hud, God says: tIis He who created you from earth, and left its development to you (11:61). The Quran does not say that God has entrusted the earth to you (noting that the instrument is ready in every respect), but you have to work and make efforts to develop it (Adhami & Akbarzadeh, 2011); therefore, based on religious teachings, a healthy environment, away from pollution could be provided for human beings. Religious principles and teachings, especially the Quranic ones, with stablishing a strong link between natural elements and phenomena and the supernatural ones, provide a large capacity to preserve, protect, and sustain the natural resources and the environment (Farahani & Mohammadi, 2011).

Thus, human interaction with the environment and solutions to environmental crises should be sought in getting back to religious and spiritual principles. In this regard, a 3 year-research of 1000 scientists at the World Center for Religions at Harvard University, is a significant one which explored the relationship between religion and the environment, and finally remarked: "Religions should use their power to end the unbridled consumption of natural resources and develop a sense of shared responsibility for protecting the environment"(Akbari Rard, 1999).

Rural areas are highly dependent on natural resources to provide their livelihoods and meet their needs (Masika & Joekes, 1997). Therefore, the environmental sustainability of these areas is significantly important for achieving the goals of national development, and coping with the risks of

desertification and drought, and addressing soil erosion and degradation, and conserving the natural resources and their sub-climates (Golshiri Isfahani & Sarai, 2010). Given that, rural areas host a major part of the Iranian population and natural areas, rural communities play a vital role in economic and social life of the country. Environmental factors are among the factors that should be considered in the development of rural areas, as the protection of the environment and its values against pollution and degradation is very important, and in the implementation of rural development plans, we should make use of all facilities to prevent the general degradation of soil and climate (Asayesh, 2002).

So we can say, in Iran, despite evidence for widespread ecological instability (Movafagh, Sayyadi Anari & Karegar, 2012), and irregularities in most rural settlements and natural resources in general, and in Sistan in particular, there have been no comprehensive studies to assess the level of environmental development. As the authors of the paper are residents of the Sistan region, this study was conducted on this region. The aim of this study was to analyze the level of rural environmental development in the Sistan region with an emphasis on Quranic indices. Accordingly, the research questions are: 1. what are the most important indices to assess the level of environmental development according to Quran? 2. Given the environmental indices derived from Quran, how is the environmental development in Sistan region?

2. Research Theoretical Literature

Environment is the natural world as a general or a specific geographical location in which humans, animals, and plants live. Accordingly, as human survival depends on the knowledge of his environment, the human relationship with nature and thinking about the environment dates back to the history of human life on the planet. The environment plays a decisive role in the formation and cultivation of humans, as natural growth and development of humans do not occur without environmental stimuli. The environment, as a place all human generations need to use, is a very important factor in the material life of human beings, and as it is required for the growth of living beings, it is not neglected in Islamic teachings. The commitment of Islam to the environment and its responsibility towards all creatures, including animals and plants, can easily be deduced from Quran and Hadith. To appreciate earth as the homeland of humankind and the need to preserve it, and the respect for trees are what the Prophet (PBUH) recommends in this regard (Akbari Rad, 1999).

In compliance with the nature of mankind, Islam has always adopted a moderate approach in its doctrine. Accordingly, in dealing with nature and its blessings, Islam has neither left the man unrestrained to make any kind of manipulation he wishes, nor does it permit man to idolize the nature. However, while Quran says, we have created the whole world for the sake of human comfort and obedient to man , it does not describe the world as a creature without a spirit, rather Quran ascribes the creatures a relative intelligence that is consecrated to God, and for all of them, including animals and plants defines some rights, and askes man to respects those rights. Even in some verses, God swears by them to show their majesty. In Quranic view, the world is a manifestation of beauty and is praised by God. All components of the universe are harmonious and without defects, and all herbal and animal species have been created purposefully in the environmental cycle. In the Islamic worldview, man is the representative of God on the earth, which has the power to make use of the nature s blessings. As in a region like Sistan, it can be clearly seen that people of this region, despite many natural disadvantages caused by adverse weather conditions, have somewhat managed to grasp the situation and relatively develop the region (Ghafouri, 2005). In fact, protecting the environment does not mean not exploiting or even less using the natural resources, rather the optimal and sensible use of natural resources has always been emphasized by experts. Islam, as a religion that, beyond time and space, can respond to human needs at all ages contains concepts, teachings, and complete solutions for how to deal with and address environmental phenomena. Studies conducted by religious scholars show that all divine religions pay close attention to protecting the environment; however, Islam has specific orders in this regard. Various texts of Islam are well indicative of specific views on protecting the environment and natural resources (Srinivas & Nakagawa, 2008). Of all Islamic laws and regulations that have been introduced in various fields of human life in the Quran and Hadith, one can come to the conclusion that Islam wishes to create a suitable environment for mankind, as the rules of Islam about personal and social life, beliefs, ethics, and economy are in order to create a supreme, calm, safe, and secure environment which brings about human development.

Using a comparative and analytical comparison between human and the environment, Qalandariyan, Taghvaee, and Kamyar (2016) investigated the concepts of human and the environment in sustainable

development and Islamic thoughts. The results showed that to resolve the crisis, we need to change the concepts of human and redraw the relationship between man and nature. Further, we should reconsider the position of nature and man in the world.

Aghili and Eskandari (2012) have addressed environmental issues through analysis of the Quran, Islamic texts, relevant resources, and articles; and concluded that a coherent plan to revive the Islamic culture and develop laws and religious teachings about the real importance of the nature, understanding God's ownership of all property and natural resources, elimination of extravagance and wastefulness, and developing a sense of saving, is a guideline that can lead us to sensible utilization of natural resources.

Mohammad Zadeh Rahni (2010), in his paper investigated the environmental destruction according to the Quranic verses, Hadith, and the principle of 'no harm', and so on in a descriptive method. He concluded that man is obliged to protect the environment and its health.

In another study, Done, Webb, and Richardson (2010) investigated the behavior of 131 students in Australian universities. The results showed there was a significant relationship between social identity and environmental behavior. People who had a strong social identity, had a better behavior about the environment.

According to the literature on religion and environment, the presence of religion and ethics in the discussions of the environment, as a scientific basis for solving environmental crises have received careful attention (Mohammadi Ashtiyani, Mohammadi Ashnani & Hassani 1999). The results of these studies note the role of religions in putting an end to uncontrolled exploitation of natural resources and in developing a sense of shared responsibility to protect the environment. In this regard, Topfer, a UN environment executive director believes that spiritual values of the Islamic world, is a proper background for running essential programs to protect the creatures of God and biodiversity. In addition, we may also note the directives of Quran about the rights of animals, plants, and rivers (Towhidiniya, 2004). Ajuncan (2010) focuses on the role of religious values in environmental management. Given the Islamic discussions about the environment, the following works are worth mentioning: Islam and the Environment (Javadi Amoli, 2007), Environment, Difficulties and Guidelines in Islam (Farahanifard, 2006), and also the works of Frankel, & Rose, 2005, Haghshenas, & Zakeri, 2008. We can say, the emphasis of religious teachings on land development (Kolini,

1986), such as not contaminating the environmental elements such as water, soil, air, and even the natural environment of animals and creatures (Hore Amoli, 1981), as well as the need to keep useful pets and meet their needs (Imam Khomeini, 1981), and the prohibition of burning and cutting off trees and destroying nature even during a war with an enemy (Najafi, 1988), all suggest the importance of preserving natural resources and the environment in Islam.

3. Research Methodology
3.1 Geographical Scope of the Research

The Sistan region and its capital, Zabol, according to the latest administrative divisions in 2012, is comprised of five counties of Zabol, Zehak, Hirmand, Hamoon, and Nimroz. The region has an area of 15197 square kilometers in latitude of 30° 5' to 31° 28' EW, and longitude of 60° 15' to 61° 50' in southeast Iran, and the northernmost part of Sistan and Baluchestan province (Fig. 1). The province borders Afghanistan and Southern Khorasan in north, and Kerman province in west (Sohrabi & Shirazi Gilani, 2007). The climate in the entire area is hot and dry, with an average annual temperature of 21.8 °C, and average annual rainfall of 58.7 mm. Sistan 120-day wind is among the most well-known local winds in Iran which has an unavoidable impact on all ecological, economic, and social aspects of the region (Khosravi, 2008). The main activity of the people in the Sistan region is agriculture, which thanks to Helmand River and sedimentary plain of Sistan, has been the main economic activity across the prairie.
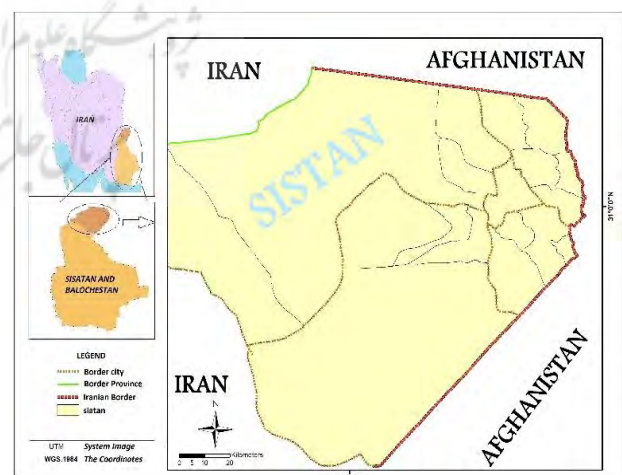

Figure 1. Rural areas of the sample community in Sistan region
(Source: Statistical Center of Iran, 2016)

3.2. Methodology

This research, conducted in a descriptive-statistical method, was based on field observations and interviews with a part of the population. Data was obtained from institutions and organizations in the study area, and the questionnaires completed by the sample population.

The population of the study included all villages is the Sistan region, which according to the statistics of 2011, has 796 villages and the sample villages, according to Sharpe formula included 40 villages. Table 1 shows the villages of the study and the population of each village. Out of 51663 rural households, a sample size of 381 households was calculated using the Cochran formula. TOPSIS was used in six steps to determine the degree of

development in rural areas. Topsis as a very strong multi-criteria decision-making technique is used to prioritize the options through making them similar to ideal solution, which has a low sensitivity to weighting technique, as its solutions do not change drastically. In this way, the selected option should have the shortest distance from the ideal solution and farthest from the most ineffective one (Srinivas & Nakagawa, 2008). According to Hwang and Yoon (1981), we can assume an analytical problem in a multi-criteria decision-making as a geometric system in which m options are evaluated with n criteria. This option is similar to m points in an n dimensional space; Therefore, the best option in this space, is the closest point to the ideal solution, and the farthest option, is the worst solution (Oslon, 2004).

Table 1. Rural areas of the sample community in Sistan region
(Source: Statistical Center of Iran, 2016)

County	Village name	Rural district	Number of households	Total village population	County	Village name	Rural district	Number of households	Total village population
Himand	Gale bache	Doust mohhamad	112	494	Hamon	khorashadi	Kohe khajeh	126	378
	Hossen safdar	Margan	52	180		Hamzeh abad	Mohhamad abad	47	193
	Gholam ali	Doust mohhamad	70	323		Shahrak abolfazl	Teymor abad	55	250
	Podine	Doust mohhamad	88	330		Rostam mahmoud	Mohhamad abad	29	105
	Chakol	Margan	108	451		Sadaki	Mohhamad abad	89	334
	Jalal abad	Margan	36	130		Baghak	Mohhamad abad	72	256
	Jahan abad sofla	Jahan abad	136	387		Abassiyeh	Mohhamad abad	139	517
	Molanor mohamad	Akbar abad	63	257		Deh ismail ghanbar	Teymor abad	147	607
	Sanjarani	Jahan abad	446	2071	Zahak	Ase ghazi	Jazinak	75	293
	Haji malek	Jahan abad	395	59		Seyed khan	Jazinak	29	208
	Mohhamad ghasem	Jahan abad	194	816		Hossen abad	Jazinak	51	222
	Ghorghori	Ghorghori	345	1287		Allari	khammak	225	843
	Margan	Margan	52	180		gouri	khammak		
	Deh khamar	Doust mohhamad	275	1261		Ghazagh	khammak	39	137
Nimroz	Deh bazi oliya	bazzi	46	175		Kondorak	khammak	109	403
	Kachiyan	Adimi	45	153		Samani	khammak	36	115
	Faghir lashkari	Adimi	643	2495		Kaftargi	Zahak	134	587
	Bala khaneh	Adimi	291	1018	Zabol	Fath abad	Bonjar	261	1114
	Deh issa sofla	Adimi	99	357		Ghasem abad	bonjar	247	1000
	Heydar abad	Bonjar	204	745		Kalokhi	Bonjar	283	1083

3. 3. Variables and Indices

In order to assess the validity of the research indices, we used the comments of 25 experts, 30 Quran experts, 12 seminaries and university professors. For this purpose, at first, we looked for Quranic verses related to environmental issues, and reviewed their valid Quranic interpretations. Then, with the help of seminaries, university professors, and Quran experts, in frequent meetings we discussed the topics. In fact, making use of the views made by experts and professors, has ensured the reliability of the indices and the compliance of verses with environmental issues, and has set their

power to explain the level of environmental indices. Besides, in order to calculate the reliability, 10% of questionnaires (38), were randomly distributed in the sample population and completed. Reliability of the questionnaire estimated by Cronbach's alpha test was 0.877 which showed the high reliability of the questionnaire.

Table 2 shows the indices appropriate for determining the environmental development which are derived from Quran under expert supervision and the evaluation made by professors. The conceptual model (figure 2) shows the indices effective on rural environmental development.
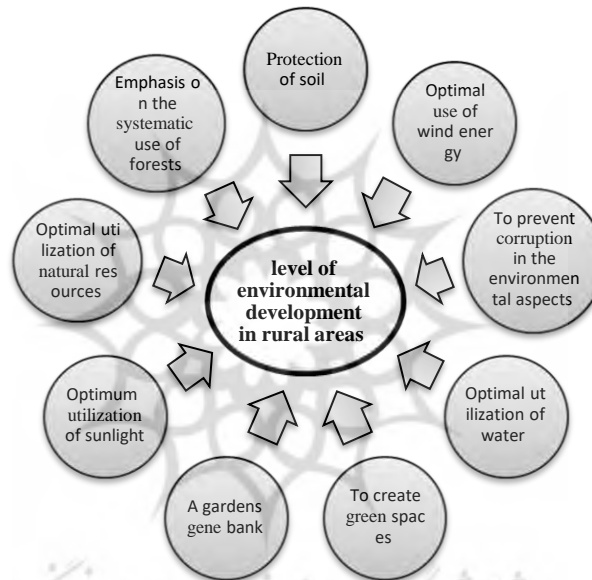

Figure 2. Conceptual Model of the study
(Source: the authors of the paper, 2016)

Table 2. Environmental components and indices affecting the development according to Quran
(Source: Research findings, 2016)

Rows	Components	Indices	Rows	Components	Indices
1	Protection of soil (Surah al-A'raf, verse 58).	Protecting the soil and preventing its erosion	6	Emphasis on the systematic use of forests (Surah the Cave, verse 7).	to preserve pastures and natural cover
2	To create green spaces (Surah Ghaf, verses: 7-8).	attaching importance to tree farming and planting shrubs	7	Optimum utilization of sunlight (Surah Noah, verse16).	Optimal use of sunlight in buildings
3	Optimal utilization of natural resources (Surah Ibrahim, verses 32 -33)	Optimal use of God given resources	8	A gardens gene bank (Surah Raad, verse 4).	Planting various tree species
4	Optimal utilization of water (Surah the believers, verse 18).	Proper use of water resources, modern irrigation methods	9	To prevent corruption in the environmental aspects (Surah the Romans, verse 41).	Changes in resources and environmental quality
5	Optimal use of wind energy (Surah the Romans, verse 46).	to make use of wind energy at home			

According to the indices summarized in Table 2, the Holy Quran is the most complete divine text which includes key terms recognizing the environment and its elements. The Holy Quran mentions the heavens, the stars, the sun, the moon, the clouds, the rain, the wind, the movements of ships in the seas, plants, animals, and, finally, all the sensible things that human beings find around them as topics that people must think about (Motahari, 2002). As Quran asks the man to study and meditate on the heavens and the earth: "Look what is in the heavens and the earth!" (Surah Jonah, verse 101). Attention to the verses shows that God has created nature and the environment for man, and he has the right to manipulate it; however, He emphasizes that the right to benefit from the environment is not dedicated to one generation. Therefore, utilization must be principled and fair, so that present and future generations can have a healthy lifeand abuse of this right, which leads to pollution, degradation, and destruction of the environment, and particularly infringes the right of future generations, is forbidden. Eventually, well-known Quranic exegeses (Tafasir) were used to obtain a more precise interpretation of the meanings of the verses. Undoubtedly, Al-Mizan is one of the best Quranic exegeses which is the result of the inspiration received by Allameh Sayed Mohammad Hussein Tabatabai (Hosseini Tehrani, 1999). Motahari believes it is one of the best Tafsirs written for the Holy Quran (1982). It is quite interesting, beautiful, and pleasant that it can be described as a representative of the Islamic beliefs and Shi'a to the world, and be introduced to all schools and religions, and accordingly be used to invite them to Islam and Shi'a. This Tafsir is a unique one as it shows precise and delicate points and avoids the fallacies of the infidels. It is also a comprehensive one. Indeed, from the very beginning of Islam, such a Tafsir has not yet come into being (Motahari, 1982).

The comprehensive view of the author in traditional and rational sciences and his broad and open-minded view, which provided the possibility of discussing all necessary issues of the present society in philosophical and Tafsir discussions in a scientific method, are the main strengths of this Tafsir. Accordingly, we studied the verses with the help of al-Mizan Tafsir. Table 3 shows a summary of the most important topics related to the verses we discuss.

Table 3. Review of the verses according to Al-Mizan Tafsir
(Source: Tabatabai, 1995)

Verses	relevant Quranic Exegeses
(Sura A'raf, verse 58)	The word "develop" means that you should turn the earth out of its natural state and change it in a way to take advantage of the benefits you may normally expect from the earth. The Almighty God is the one who created you from the soil on this very earth, in other words, on the land, He created the entity who is called human, and then completed it, trained it little by little, and taught its essence to make some changes on the earth so that he can make his living, meet his needs. In a nut shell, it states you do not need idols neither in your birth nor for your survival; you only need Almighty God.
(Surah al-Gaph, verse 7-8)	God has created the earth so wide that it is compatible with human life. The word "Bahij" in original Arabic text ( ) means blessing. Tabarsi, the author of the Majma al-Bayan believes "Bahij" is a good thing that is enjoyable like flowers, trees and green gardens which are pleasing to watch. Some argue that "Bahij" is what everyone is pleased and happy with. And when Quran talks about "growing Bahij" it means any beautiful plants and flowers.
(Surah Ibrahim, verses 32-33)	He has subjected to you ships which, by his command, run upon the sea. He has subjected to you rivers. God did state that He gave the ships for you to sail on, because among the marine blessings, ships are the most significant ones, not a unique one, and maybe that is why God puts more emphasis on ships rather than the sea. As in speech, the blessing of the ships is more impressive, even though the blessing of the sea is big enough, and if the sailing of ships is attributed to God, although natural causes, such as wind, steam, and other natural forces make it move, these statements are to show that God is the only cause that every cause stems from. And by streams ( ), He means flowing water in various parts of the earth; and by subjugation, it means to make them compliant so that human beings can use it for drinking and washing, and removing dirt. This is also true about the animal and plants which are subjected to man.

Table 3.

Verses	relevant Quranic Exegeses
(The Believers, verse 18)	We sent down water from the sky in due measure, and lodged it in the earth, and we are able to take it all away . That is, we store it in the underground warehouses, and we give it out of the mountains and plains, as streams, springs, and wells. Water, is totally involved in the existence of living beings. What the verse is discussing, i.e., the relation between water and life, is a fact which has been clearly noted and confirmed in scientific discussions.
(The Romans, verse 46)	And of his signs is that He loses the winds as bearers of glad tidings, so that He lets you taste his mercy. By tasting His mercy, God means all kinds of blessings that results from winds, because when winds blow, the practice of inoculation takes place in flowers and fruits, infections are removed, and the atmosphere is purified, and so on. As the grammar of the original Arabic text convey, all similar blessings are included. Besides, the ships move by His command.
(The Cave, verse 7)	We have appointed all that is on the earth an adornment for it . When something is considered beautiful, it is supposed to please, and make one feel attached to it. Then, when the time appointed by God for their residence on the earth came to an end, i.e., the test that God wanted to take from them, was over, God destroyed that interest between them and that material. When beautiful ornament are taken from the earth, and the soil becomes dry and unplanted, and loses that liveliness and freshness, and turns into a dry and arid land, and orders them to get out of their home, while they are alone the same as their birth time. For this reason, generations are created one after the other, and shows them the goods of life that are on the earth, then let them go, so that the test is completed. After that, the connection between man and those creatures is cut off, and they are transferred from this world, the place of action, to where they will be hold accountable.
(Noah, verse 16)	When Quran resembles the sun to a lamp, He means the sun illuminates the world, and if there was no sun, the universe would be in deep darkness, and when the moon is resembled to light, it means that moon illuminates our earth by the light that comes from the sun. The moon does not illuminates the world like a lamp.
(The Thunder, verse 4)	The first part of the verse asks humans to produce and make use of trees and pay attention to agriculture, and regards these types of trees a divine favor that man should be grateful of. In this verse, several trees are named for their importance: the trees that need scaffolding, and those that do not need scaffolding. Some trees such as palm trees and all kinds of shrubs that are cultivated are referred to as fruit farm. Olive and pomegranate trees and their varieties have been the focus of special attention.
(the romans, verse 41)	By corruption, He means any disaster that disturbs the current system of the world, whether it is done intentionally or unintentionally; because they are the source of all corruption that occurs in the sea and land, and disturbs the joy and happiness of human beings.

4. Research Findings

The average age of the sample size was 53.17 with the minimum of 25 and maximum of 65. In terms of literacy, 35% were illiterate and 65% were literate. Out of 381 participating households, 69% of the participants were male and the rest were female (31%), and farming with an average income of 200-300 thousand Tomans per month (50-75 USD), was the most frequent job of the participants.

4. 1. The Use of Topsis to Calculate the Degree of Rural Development in Sistan Region

In general, the Topsis model compares a set of alternatives by identifying weights for each criterion. It is a multi-criteria decision analysis method, which was originally developed by Hwang and Yoon in 1981. This model is one of the most appropriate multi-criteria decision making models frequently used by researchers. This model primarily, through decision making technique, optimizes the alternatives in terms of quality in a Pugh method and in a quantitative way by SID method. The main idea of this method is that the selected alternatives of the plan should geometrically have the shortest distance from the ideal solution and the greatest distance from the negative ideal. In 1994, Lia Yong Joe Ting, Yun Liu, Ching, Lai Hwang, were among the first to use this method (Yong, 1994). In this regard, nine indices related to the level of environmental development in 40 villages were examined. In this

scale, 1 represents the lowest and 9, the most significant score. In the next step, the qualitative scores were transformed into quantitative ones.

Step 1: Normalizing the decision matrix- There are several methods to normalize a decision matrix, one is normal method. In this type of normalization, each element of the decision matrix is divided by total sum of squares of the attributes of each row in the quantized table. In this way, all

the rows of the decision matrix have the same unit and can be easily compared to them. The result of this part is shown in Table 4.

$$nij = \frac{aij}{\sqrt{\sum_{i=1}^{n} a^2 ij}}$$

Table 4. normalized matrix by normal method
(Source: Research findings, 2016)

Indices	C1	C2	C3	C4	C5	C6	C7	C8	C9
Gale bache	0.059	0.093	0.063	0.147	0.193	0.125	0.229	0.034	0.103
Hossen safdar	0.059	0.031	0.095	0.059	0.161	0.188	0.065	0.034	0. 345
Gholam ali	0.207	0.218	0.222	0.207	0.161	0.125	0.295	0.308	0.276
Podine	0.029	0.218	0.252	0.059	0.032	0.062	0.146	0.137	0.138
Chakol	0.029	0.062	0.095	0.236	0.258	0.219	0.229	0.171	0.172
Jalal abad	0.088	0.063	0.095	0.177	0.161	0.219	0.032	0.068	0.172
Jahan abad sofla	0.207	0.250	0.222	0.236	0.258	0.250	0.197	0.239	0.276
Molanor mohamad	0.088	0.156	0.095	0.207	0.226	0.250	0.032	0.068	0.276
Sanjarani	0.088	0.218	0.190	0.147	0.193	0.219	0.229	0.239	0.242
Haji malek	0.088	0.218	0.190	0.177	0.193	0.188	0.197	0.205	0.207
Ghorghori	0.088	0.250	0.253	0.207	0.226	0.250	0.295	0.239	0.242
Margan	0.177	0.156	0.031	0.207	0.226	0.118	0.065	0.171	0.034
Deh khamar	0.088	0.093	0.126	0.177	0.193	0.062	0.032	0.137	0.069
khorashadi	0.059	0.062	0.031	0.088	0.161	0.156	0.229	0.171	0.034
Hamzeh abad	0.059	0.032	0.095	0.118	0.161	0.219	0.164	0.137	0.034
Shahrake abolfazl	0.059	0.031	0.063	0.088	0.032	0.063	0.032	0.034	0.034
Rostam mahhmod	0.226	0.250	0.285	0.207	0.226	0.282	0.262	0.274	0.311
Sadaki	0.207	0.125	0.095	0.207	0.129	0.250	0.164	0.034	0.034
Baghak	0.088	0.031	0.063	0.029	0.096	0.062	0.032	0.034	0.034
Abassiyeh	0.177	0.125	0.222	0.118	0.096	0.219	0.197	0.068	0.069
Ismail ghanbar	0.147	0.157	0.190	0.177	0.226	0.188	0.164	0.274	0.311
Ase ghazi	0.207	0.018	0.158	0.088	0.129	0.062	0.098	0.102	0.069
Seyed khani	0.029	0.062	0.031	0.059	0.032	0..062	0.065	0.034	0.034
Hossen abad	0.088	0.156	0.063	0.059	0.032	0.125	0.065	0.171	0.34
Mohhamad ghasem	0.177	0.156	0.158	0.118	0.226	0.125	0.065	0.034	0.138
Allari	0.887	0.062	0.158	0.236	0.258	0.125	0.098	0.171	0.034
gouri	0.207	0.218	0.158	0.207	0.032	0.063	0.065	0.034	0.172
ghazagh	0.207	0.218	0.122	0.177	0.193	0.188	0.197	0.205	0.172
kondorak	0.295	0.062	0.151	0.177	0.096	0.063	0.164	0.137	0.207
samani	0.295	0.062	0.063	0.591	0.032	0.031	0.098	0.034	0.034
kaftargi	0.295	0.062	0.095	0.088	0.032	0.063	0.098	0.171	0.034
Deh bazi olya	0.059	0.093	0.031	0.059	0.064	0.156	0.032	0.068	0.034
kachiyan	0.238	0.218	0.285	0.266	0.226	0.250	0.262	9.274	0.276
Faghir lashkari	0.207	0.156	0.031	0.059	0.129	0.094	0.197	0.171	0.172
balakhane	0.236	0.218	0.122	0.177	0.193	0.219	0.197	0.205	0.207
Deh issa sofla	0.207	0.156	0.158	0.207	0.063	0.063	0.164	0.205	0.172
Fath abad	0.029	0.156	0.190	0.088	0.032	0.094	0.262	0.034	0.069
Ghasem abad	0.236	0.218	0.063	0.059	0.032	0.063	0.146	0.034	0.069
kalokhi	0.236	0.187	0.190	0.118	0.096	0.125	0.098	0.068	0.103
Heydar abad	0.088	0.062	0.158	0.088	0.129	0.156	0.146	0.205	0.276

Step 2: Identifying the weights of indices- To get a balanced normalized matrix, one should identify the weights of the indices. To do this, at first using Shannon entropy technique, the weights of the

indices were identified. These weights are given in Table 5.

Part one, step 2: To calculate pij

Table 5. To calculate pij
(Source: Research findings, 2016)

Indices	C1	C2	C3	C4	C5	C6	C7	C8	C9
Gale bache	0.010	0.016	0.011	0.027	0.032	0.021	0.038	0.006	0.019
Hossen safdar	0.010	0.005	0.016	0.011	0.027	0.031	0.011	0.006	0.006
Gholam ali	0.038	0.038	0.038	0.038	0.027	0.021	0.049	0.056	0.051
Podine	0.005	0.038	0.044	0.011	0.005	0.010	0.027	0,025	0,025
Chakol	0.005	0.011	0.016	0.027	0.043	0.037	0.038	0.031	0,032
Jalal abad	0.016	0.011	0.016	0.033	0.027	0.037	0.005	0.012	0.032
Jahan abad sofla	0.038	0.044	0.387	0.044	0.043	0.042	0.033	0.044	0.051
Molanor mohamad	0.038	0.027	0.016	0.044	0.038	0.042	0.005	0.012	0.032
Sanjarani	0.038	0.038	0.033	0.027	0,032	0.037	0.038	0.044	0.044
Haji malek	0.038	0.038	0.033	0.033	0.032	0.031	0.033	0.037	0.038
Ghorghori	0.038	0,044	0,044	0,044	0,038	0,042	0,049	0,044	0,044
Margan	0.032	0.027	0.005	0.027	0.038	0.031	0,011	0,031	0,006
Deh khamar	0,016	0,016	0,022	0,044	0,032	0,010	0,005	0,025	0,012
khorashadi	0,010	0,011	0,005	0,016	0,027	0,026	0,038	0,031	0,006
Hamzeh abad	0,010	0,005	0,016	0,022	0,027	0,037	0,027	0,025	0,012
Shahrake abolfazl	0,010	0,005	0,011	0,016	0,005	0,010	0,005	0,006	0,012
Rostam mahhmod	0,049	0,044	0,049	0,044	0,038	0,047	0,044	0,050	0,057
Sadaki	0,038	0,022	0,016	0,038	0,021	0,042	0,027	0,066	0,006
Baghak	0,016	0,005	0,011	0,005	0,016	0,010	0,005	0,006	0,006
Abassiyeh	0,032	0,022	0,038	0,022	0,016	0,037	0,033	0,012	0,012
Ismail ghanbar	0027	0,027	0,033	0,033	0,038	0,031	0,027	0,005	0,057
Ase ghazi	0,038	0,033	0,027	0,016	0,021	0,010	0,016	0,018	0,012
Seyed khani	0,005	0,011	0,005	0,011	0,005	0,010	0,011	0,006	0,006
Hossen abad	0,016	0,027	0,011	0,011	0,005	0,021	0,011	0,031	0,006
Mohhamad ghasem	0,032	0,027	0,027	0,022	0,038	0,021	0,011	0,006	0,025
Allari	0,016	0,011	0,027	0,028	0,043	0,015	0,016	0,031	0,006
gouri	0,038	0,038	0,027	0,038	0,005	0,010	0,011	0,006	0,032
ghazagh	0,038	0,038	0,038	0,033	0,032	0,031	0,033	0,037	0,032
kondorak	0,005	0,011	0,027	0,033	0,016	0,010	0,027	0,025	0,038
samani	0,005	0,011	0,011	0,005	0,005	0,005	0,016	0,006	0,006
kaftargi	0,005	0,011	0,016	0,022	0,005	0,010	0,016	0,031	0,006
Deh bazi olya	0,010	0,016	0,005	0,005	0,010	0,026	0,005	0,012	0,006
kachiyan	0043	0,038	0,049	0,005	0,038	0,042	0,044	0,050	0,051
Faghir lashkari	0,038	0,027	0,005	0,033	0,021	0,015	0,033	0,031	0,032
balakhane	0,043	0,038	0,038	0,038	0,032	0,037	0,033	0,037	0,038
Deh issa sofla	0,038	0,027	0,027	0,005	0,010	0,010	0,027	0,037	0,032
Fath abad	0,005	0,027	0,033	0,027	0,005	0,015	0,044	0,006	0,012
Ghasem abad	0,043	0,038	0,011	0,011	0,005	0,010	0,027	0,006	0,012
kalokhi	0,043	0,033	0,033	0,027	0,016	0,021	0,016	0,012	0,019
Heydar abad	0,016	0,016	0,027	0,022	0,021	0,026	0,027	0,037	0,051

Part two, step 2: To calculate the entropy value of Ej

At first, the entropy coefficient is calculated using the following relation, where K is a constant

number, and m is the number of villages or alternatives:

$$K = \frac{1}{ln(m)} \qquad K = \frac{1}{ln(40)} = 0.271$$

After obtaining the entropy coefficient (k), the entropy of the j index is calculated as follows:

Table6. The entropy value of Ej
(Source: research findings, 2016)

Indices	C1	C2	C3	C4	C5	C6	C7	C8	C9
EJ	0.984	0.991	0.301	0.921	0.981	0.841	0.903	0.952	0.877

Part three of step 2: Here we calculate the value of dj uncertainty.   dj=1-Ej=   1 ˚ 0/984=0/016

Table 7. Dj uncertainty
(Source: research findings, 2016)

Indices	C1	C2	C3	C4	C5	C6	C7	C8	C9
Dj	0,016	0.009	0.699	0.079	0.019	0.159	0.097	0.048	0.0123

Step 3: Calculating the weights of wj: In this part, the weights of indices are identified.

$$w_j = \frac{d_i}{\sum d_i}$$

Table 8. Weights of wj
(Source: research findings, 2016)

Indices	C1	C2	C3	C4	C5	C6	C7	C8	C9
Wj	0,012	0.006	0.540	0.061	0.014	0.122	0.075	0.037	0.095

Step 4: Balancing normalized Matrix -In this step, the balanced normalized matrix can be obtained. To do this, the normalized matrix is multiplied by the square matrix whose main attributes, are weights of the indices, and its other attributes are zero (Wn *n). This matrix is called balanced normalized matrix and is represented by V.

V = N × Wn × n

Table 9. Balanced normalized matrix
(Source: research findings, 2016)

Indices	C1	C2	C3	C4	C5	C6	C7	C8	C9
Gale bache	0,015	0,051	0,003	0,001	0,010	0,005	0,032	0,008	0,007
Hossen safdar	0,005	0,011	0,006	0,002	0,019	0,002	0,064	0,00	0,00
Gholam ali	0,012	0,012	0,004	0,045	0,154	0,091	0,021	0,0150	0,0142
Podine	0,006	0,003	0,006	0,011	0,019	0,008	0,051	0,081	0,062
Chakol	0,002	0,004	0,045	0,012	0,010	0,003	0,004	0,006	0,004
Jalal abad	0,013	0,010	0,045	0,003	0,003	0,001	0,003	0,011	0,020
Jahan abad sofla	0,125	0,023	0,015	0,011	0,081	0,004	0,002	0,0161	0,0172
Molanor mohamad	0,006	0,010	0,045	0,013	0,002	0,005	0,003	0,166	0,0183
Sanjarani	0,053	0,011	0,012	0,033	0,001	0,010	0,010	0,0182	0,190
Haji malek	0,016	0,020	0,060	0,006	0,010	0,006	0,090	0,172	0,160
Ghorghori	0,045	0,060	0,004	0,003	0,102	0,003	0,151	0,188	0,160
Margan	0,015	0,004	0,003	0,008	0,003	0,015	0,006	0,101	0,103
Deh khamar	0,012	0,005	0,003	0,010	0,001	0,012	0,005	0,099	0,080
khorashadi	0,003	0,361	0,003	0,045	0,006	0,003	0,002	0,071	0,050
Hamzeh abad	0,004	0,006	0,001	0,011	0,005	0,044	0,001	0,065	0,045
Shahrake abolfazl	0,003	0,053	0,009	0,012	0,002	0,003	0,075	0,004	0,002
Rostam mahhmod	0,160	0,016	0,009	0,003	0,008	0,201	0,168	0,190	0,195
Sadaki	0,012	0,045	0,010	0,004	0,002	0,003	0,041	0,058	0,042
Baghak	0,060	0,015	0,015	0,011	0,008	0,004	0,002	0,005	0,006

Table 9.

Abassiyeh	0,036	0,036	0,006	0,012	0,015	0,011	0,001	0,062	0,063
Ismail ghanbar	0,012	0.012	0.00	0,010	0.012	0,009	0,005	0,140	0,150
Ase ghazi	0,060	0,003	0,060	0,011	0,003	0,008	0,006	0,092	0,095
Seyed khani	0,036	0,001	0,003	0,003	0,001	0,00	0,003	0,003	0,00
Hossen abad	0,003	0,019	0,036	0,006	0,003	0,006	0,005	0,009	0,005
Mohhamad ghasem	0,004	0,010	0,010	0,258	0,036	0,085	0,001	0,080	0,075
Allari	0,010	0,016	0,019	0,10	0,010	0,069	0,063	0,099	0,062
gouri	0,019	0,006	0,154	0,013	0,013	0,087	0,003	0,095	0,091
ghazagh	0,154	0,003	0,019	0,015	0,011	0,0121	0,005	0,165	0,132
kondorak	0,019	0,006	0,010	0,006	0,009	0,031	0,042	0,035	0,032
samani	0,010	0,002	0,002	0,003	0,003	0,00	0,001	0,00	0,001
kaftargi	0,075	0,003	0,019	0,060	0,004	0,001	0,005	0,003	0,002
Deh bazi olya	0,015	0,006	0,012	0,005	0,006	0,003	0,041	0,005	0,004
kachiyan	0,150	0,003	0,075	0,169	0,002	0,195	0,158	0,191	0,141
Faghir lashkari	0,019	0,002	0,020	0,054	0,001	0,140	0,010	0,0150	0,0141
balakhane	0,075	0,014	0,075	0,045	0,005	0,156	0,011	0,185	0,160
Deh issa sofla	0,054	0,010	0,003	0,081	0,006	0,132	0,002	0,162	0,145
Fath abad	0,020	0,075	0,010	0,063	0,003	0,123	0,005	0,142	0,132
Ghasem abad	0,060	0,060	0,036	0,003	0,041	0,149	0,006	0,168	0,151
kalokhi	0,060	0,020	0,019	0,002	0,023	0,120	0,008	0,152	0,123
Heydar abad	0,012	0,012	0,154	0,001	0,003	0,142	0,004	0,152	0,145

Step 5: The distance from the ideal positive and negative alternatives

The positive and negative ideals for this decision making position is as follows:

= [minVj1, maxVj2, maxVj3, maxVj4, maxVj5, maxVj6] ^+J

[minVj1 , maxVj2, maxVj3, maxVj4, maxVj5, maxVj6] J

J [0,002, 0,36, 0,154, 0.258, 0,154, 0,201, 0.151, 0.190, 0.195]

[0, 160, 0.001, 0,002, 0,003, 0,001, 0.000, 0.001, 0.000,0,000] J

The following relation is used to obtain the distance between each positive and negative ideal:

The distance from the positive ideal

$$d_i = \sqrt{\sum_{j=1}^{m}(Vij - V_j^+)^2}$$

The distance from the negative ideal

$$d_i = \sqrt{\sum_{j=1}^{m}(Vij - V_j^-)^2}$$

Example:

$d_{j1}^+= \sqrt{}$ (0.015-0.002)^2+(0.051-0.036)^2+(0.003-0.154)^2+(0.001-0.258)^2+(0.010-.154)^2+(0.005-0.201)^2+(0.032-0.151)^2+(0.008-0.190)^2+(0.007+0.0195)^2= 0.082

$d_{j1}^-= \sqrt{}$(0.160-0.015)^2+ (0.151-0.001)^2+(0.003-0.002)^2+(0.001-0.003)^2+(0.010-0.001)^2+(0.000-0.005)^2+(0.001-0.032)^2+ (0.000-0.008)^2+(0.000-0.008)^2=0.045

Step 6: Calculating the relative proximity (CL) of an alternative to ideal solution and development level of the villages- In the Topsis model, d_j^+ is the ideal positive vector and d_j^- is the ideal negative vector. In this model, R is the distance from the status quo or the current situation vector. That is, the status quo is derived from two ideal positive and negative ideal alternatives and is calculated by $Cl_1 = \frac{d_j^-}{d_j^- + d_j^+}=$ the obtained values are between 0 and 1 (0≤ R ≤ 1), the more the value of R approaches 0, it shows the tendency of status quo to the undesirable status, and the more R approaches 1, it shows the tendency of the status quo toward the desired state. In other words, any alternative with a greater CL, is closer to the ideal state. By calculating the above values in the model, the relative distance of each alternative from the ideal solution is calculated using the following relation:

$$Cl_1 = \frac{d_j^-}{d_j^- + d_j^+}$$

As the results show (Table 10), the level of environmental development in the villages of Rostam-Mahmoud, Kochian, Qargari, and Jahanabad Salafi, respectively, approaches 1 indicating that highest level of environmental development was observerd in these villages. This value in the villages of Sayad khani, Samani, Abolfazl Township is the lowest and approaches zero in 0ه R ه1 and have poor status and other villages are in a moderate state.

Table 10. Levels of Environmental Development in Sistan Villages
(Source: research findings, 2016)

County	Village name	Levels of Environmental Development		County	Village name	Levels of Environmental Development	
		Levels of Development	Priority factor			Levels of Development	Priority factor
Hirmand	Gale bache	Developing	0,19	Hamon	khorashadi	Developing	0.15
	Hossen safdar	Developing	0,13		Hamzeh abad	Developing	0.16
	Gholam ali	Developing	0,78		Shahrak abolfazl	Less developed	0.09
	Podine	Developing	0,47		Rostam mahmoud	Developing	0.92
	Chakol	Developing	0,43		Sadaki	Developing	0.36
	Jalal abad	Developing	0,20		Baghak	Developing	0.10
	Jahan abad sofla	Developed	0,81		Abassiyeh	Developing	0.38
	Molanor mohamad	Developing	0,53		ismail ghanbar	Developing	0,60
	Sanjarani	Developing	0,66	Zahak	Ase ghazi	Developing	0,26
	Haji malek	Developing	0,67		Seyed khan	Less developed	0,003
	Mohhamad ghasem	Developing	0,25		Hossen abad	Developing	0,14
	Ghorghori	Developed	0,87		Allari	Developing	0,30
	Margan	Developing	0,23		gouri	Developing	0,50
	Deh khamar	Developing	0,25		Ghazagh	Developing	0,63
Nimroz	Deh bazi oliya	Developing	0,10		Kondorak	Developing	0,24
	Kachiyan	Developed	0,089		Samani	Less developed	0,08
	Faghir lashkari	Developing	0,36		Kaftargi	Developing	0,11
	Bala khaneh	Developing	0,71	Zabol	Fath abad	Developing	0,15
	Deh issa sofla	Developing	0,45		Ghasem abad	Developing	0,49
	Heydar abad	Developing	0,39		Kalokhi	Developing	0,35

The Figure 3 shows the environmental development levels in rural areas of Sistan; in fact, this map is for the analysis of indices. As can be seen, most villages are developing and located in Hirmand County.
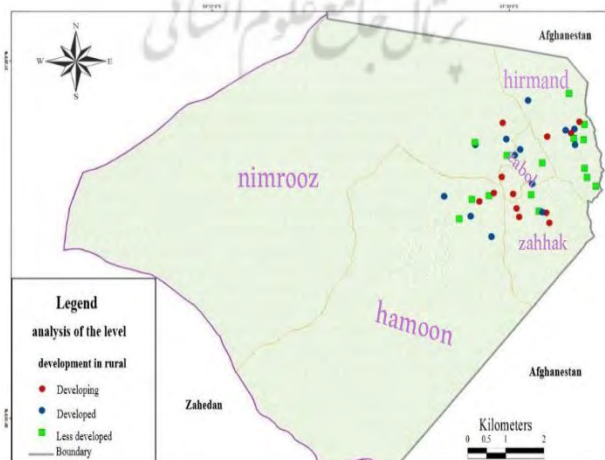

Figure3. environmental development levels in rural areas of Sistan
(Source: Research findings, 2016)

4.2. Analytical Findings

In the survey of rural environmental indices, the index of optimal utilization of water, with a mean of 4.29 ranked first, and the optimal utilization of natural resources and the prevention of environmental degradation, with a mean of 4.22, ranked second. The index of optimal wind power use with a mean of 2.66 and tree diversity, with a mean of 2.95, ranked ninth and eighth (Table 11).

Table 11. Frequency, weighted mean and standard deviation of rural environmental indices in view of the participants
(Source: Research findings, 2016)

Indices	Frequency of the level of effectiveness					m	SD	Rank
	Very few	few	Moderate	Many	Too many			
Protection of soil	12/9	14/4	21/8	28/6	22/3	3/33	1/31	5
Optimum utilization of sunlight	8/1	11	18/9	35/7	62/2	3/61	1/21	4
Optimal use of wind energy	23/1	23/1	27/6	17/1	9/2	2/66	1/25	8
Optimal utilization of water	1/3	3/1	10	36/2	49/3	4/29	0/86	1
To create green spaces	16	17/1	21	27/3	18/6	3/15	1/34	6
Emphasis on the systematic use of forests	2/4	5/5	19/4	39/4	33/3	3/96	0/98	3
A gardens gene bank	17/6	21	24/9	21/5	15	2/95	1/31	7
Optimal utilization of natural resources	1/8	3/9	11/3	46/2	46/7	4/22	0/92	2
To prevent corruption in the environmental aspects	43/9	25/2	18/4	12/9	8/7	4/22	0/92	2

Kolmogorov-Smirnov test showed the normal distribution of the data. If the data has a normal distribution, then a parametric test can be used; otherwise, a nonparametric test should be used. According to the Kolmogorov-Smirnov test, the data distribution is not normal and the researchers used nonparametric tests. Therefore, in the second hypothesis of the research, with the aim of investigating the difference between the Quranic indices and the level of environmental development in the rural areas, the "nonparametric Kruskal-Wallis test" was used (Table 12).

This test is a non-parametric one and is one of the variance analysis tests that is used for the comparison of three or more groups and determines the differences in the distribution location. The results of Kruskal-Wallis test of Quranic indices showed that the level of environmental development in rural areas in three levels of development has a significant level (Sig) less than .01.

Table 12. The results of Kruskal-Wallis test for indices of the Quranic environment in view of the participants
(Source: Research findings, 2016)

Explain	Average for indices of the Quranic environment
Chi- Square	53/940
Df	2
Asymp. Sig	0/000

Therefore, the null hypothesis (H0), that is, the assumption that the level of environmental development is not significantly different among the rural areas was rejected, and the alternative hypothesis (H1), that is, the existence of a significant difference among the rural development levels in three levels of the sample villages of the study was accepted.

5. Discussion and Conclusion

Nature and the environment are divine favors that arise from all beings, sources, and harmony existing around any living creature which is essential for their survival. Unfortunately, environmental pollution and destruction of natural resources are among the greatest issues of the current age that threatens human life. Given the

interaction between natural and social environment, such issues are turning into a human-social one. On the one hand, squandering of natural resources, abusive uses and the lack of proper utilization levels, especially for non-renewable resources, will permanently degrade and destroy nature. On the other hand, scientists argue that most of natural disasters, such as floods, seawater intrusion, reduced ground-water level, drought, and the vulnerability of the ozone layer are the consequences of environmental degradation and contamination.

In this regard, the authors reviewed the level of environmental development in the rural areas of Sistan. The results showed that in the study of environmental indices, the index of optimal utilization of water, with a mean of 4.29, ranked first. As mentioned in Quran (23: 18): we sent down water from the sky in due measure, and lodged it in the earth, and we are able to take it all away. What the verse is discussing, that is, the relation between life and water, is a matter which has been well-clarified in scientific discussions. Water is one of the most important natural resources for survival of terrestrial organisms, as well as one of the most important factors in agriculture that makes farming possible for man, and accordingly, for all creatures to live on the earth. In other words, water, not only brings about the beauty of nature by plants and prosperity of agriculture, but also increases the source of livelihood, and as a result, the wealth and power of human communities (Quran, 10:24; 6:99; 22:5). A great variety of human needs are met by water; therefore, if there is water and we properly utilize water resources, other needs would be provided. Food, clothing, housing, and other essential human needs and even many industrial products that are necessary for modern life, need water. In rural communities of the study, due to the scarcity of water resources and successive droughts, people were particularly interested in retaining and utilization of water, and built barriers and dams to stop water and transfer it to farmlands.

The second most effective index on environmental development is the optimal utilization of natural resources and the prevention of environmental degradation with a mean of 4.22. God has repeatedly warned human about corruption on the earth (Quran 21:22; 28:77; 2:205; 11: 88). Any kind of change in natural resources and their

quality that harms others, or infringes others rights and cause pollution and destruction of the environment, are considered clear disruptive behaviors that should be avoided. Certainly, any kind of manipulation in the environment that disrupts the harmony of elements and creatures of the nature is an instance of corruption on the earth. The Holy Quran considers destruction of the environment as corruption on the earth. As God states in Quran (7:56): d not make corruption on the earth after it has been put right .Today, developed countries, are conducting a variety of nuclear and non-nuclear tests in seas and deserts contaminating the environment in various ways. The colonial countries, in a greedy manner, are plundering the gas and oil resources of the developing countries, and even oil cargo vessels carry more than their capacity, as sometimes one of them sinks and plenty of oil gets into the sea, and this way, by contaminating the sea, they endanger the lives of many aquatic animals and create many serious problems for the environment.

Further, the index of optimal use of wind energy with a mean of 2.66 and tree diversity, with a mean of 2.95 ranked ninth and eighth. Concerning the optimal use of wind energy in Quran (30:46), He says: nd of his signs is that he looses the winds as bearers of glad tidings, so that he lets you taste his mercy and that the ships may sail at his command in order that you can seek his bounty and be thankful. Wind energy is a part of the solar energy that reaches the earth. Man has long been aware of the constant and lasting power of the winds.

The use of sailboats and windmills has been the first uses of this force. The Iranians were the first nation in the world who used the wind power to build windmills in 2000 BC. Iran, with huge wind resources, has a significant potential for producing electricity from these sources. This simple and low cost technology provides a clear horizon to reduce dependence on fossil fuels. Many areas of Iran, located in wind chambers, conjure up new oil wells which are endless and do not have environmental pollution. As the 120-day wind in Sistan is accompanied by dust, it cannot be used for power generation. The villagers are often dissatisfied with the wind as it damages their agricultural crops. Regarding the diversity of the trees in these areas, the climate has made way for the growth of certain species of Gaz and Eucalyptus trees, which are

compatible with dehydration and hot weather; in fact, plains and rainfall shortages, long-time winds, and excessive heat has provided the conditions for the growth of some indigenous tree species.

In this research, the Topsis model was used to rank the level of development in rural areas. The resulted coefficients showed that the level of environmental development in Rostam-Mahmoud, Kochian, Qargari, and Jahanabad Salafi villages, respectively, approaches one, indicating that the highest level of environmental development has happened in these villages. This value, in the villages of Sayad-khani, Samani, and Abolfazl Township is the smallest and approaches zero which suggests an unfavorable situation.

According to Quranic verses examined in this paper, man is responsible for everything, including animals and nature around him. The most important human responsibility for nature is to improve the land and avoid corruption. One of the means of land improvement is its development. In Quranic view, development means respecting environmental principles for human life. There are many rules and orders in Islam about the environment. The level of environmental development in rural areas has shown that people care about the environment and often harsh environmental conditions (lack of access to adequate water for agriculture and irrigation of gardens, excessive heat and evaporation, severe winds, droughts, etc.) cause environmental degradation.

Accordingly, coherent planning for the revival of genuine Islamic culture and development of religious teachings about the role and the true importance of nature, as well as the realization of God's real ownership of all resources, optimal utilization of natural resources, prevention of environmental degradation, and proper utilization of forests and pastures, especially in the case of national resources, is a guideline that can direct our society towards sensible utilization of natural resources. In Quran, the environment is highly regarded. Moderate use of natural favors, the universality of environmental responsibility, attention to water and its optimal utilization (to save water, keep it clean, the importance of water, not contaminating water resources, etc.), optimal utilization of sunlight, creation of green spaces and the restoration of nature, paying attention to main elements of the environment (water, wind, earth, air, plants) and their optimal and sustainable use, conservation of soil and encouraging others to develop land, and the important role of Quranic education and culture in raising the level of knowledge and responsibility of individuals towards society and environment are among the most important guidelines of the Holy Quran about the status of the environment and its importance in human life. And if these recommendations are followed and implemented, the environmental issues and challenges will be eliminated and the environmental sustainability will be properly realized on the planet.

Scientific and Practical Recommendations:

* Efficient and optimal use of all natural resources (plants, land, energy, soil, water, minerals, etc.) based on Islamic principles. Providing rural people with free seedlings to preserve vegetation and revitalize the rural environment.

  Developing and encouraging horticulture, tree farming, and agriculture using new sciences and techniques adapted to weather conditions of the region.

  Promoting an environment friendly culture and using the Quranic perspective to teach individuals to protect the environment.

  Encouraging people to have a healthy relationship with nature and to prevent contamination of water, soil, and the environment in general.

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تحلیل سطح توسعه محیط زیست مناطق روستایی سیستان با تأکید بر شاخص‌های قرآنی

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چکیده مبسوط

۱. مقدمه

امروزه بحث حفاظت از محیط زیست، یکی از مباحث مهم جهانی محسوب می‌شود به گونه ای که در برخی موارد، درست نگهداری نکردن یا رعایت نکردن استانداردهای حفاظت از محیط زیست در یک کشور می‌تواند سلامت کل جهان را مورد تهدید قرار دهد؛ تهاجمی که توسط برخی کشورها و انسان‌ها نسبت به محیط زیست صورت می‌گیرد، نگران کننده است. آموزه‌های دینی به طور عام و دین اسلام به طور خاص به طبیعت به گونه‌ای نگریسته که نه تنها تخریب محیط زیست را تجویز نکرده، بلکه با تربیت انسان درصد رشد و بهتر شدن آن برآمده است. تأکید آموزه های دینی بر عمران و آبادانی زمین، کراهت آلوده ساختن عناصر محیط زیست مانند آب، خاک و هوا، و حتی کراهت آلوده ساختن محیط زندگی طبیعی حیوانات و جنبندگان، و نیز لزوم نگهداری از حیوانات مفید و تأمین نیازهایشان، و ممنوع بودن آتش زدن و قطع کردن درختان و تخریب طبیعت حتی در زمان جنگ با دشمن، دلالت بر اهمیت و جایگاه حفظ منابع طبیعی و محیط زیست در اسلام دارد. بدین ترتیب تاکنون مطالعه‌ای در رابطه با محیط زیست روستا با توجه به شاخص‌های قرآنی صورت نگرفته است؛ لذا هدف از پژوهش حاضر تحلیل سطح توسعه محیط زیست روستایی با تأکید بر شاخص‌های قرآنی در منطقه سیستان می‌باشد.

۲. روش شناسی

این تحقیق مبتنی بر اطلاعات حاصل از مشاهدات میدانی و مصاحبه با بخشی از جامعه آماری و دریافت اطلاعات از نهادها و سازمان‌های منطقه مورد مطالعه و تکمیل پرسش‌نامه از جامعه نمونه تحقیق، با روش توصیفی و تحلیلی مورد بحث قرار گرفته است. جامعه آماری شامل کلیه خانوارهای روستایی منطقه سیستان، که بر اساس آمار سال ۱۳۹۰ برابر با ۵۱۶۶۳ خانوار می‌باشد. حجم نمونه با استفاده از فرمول کوکران در سطح برابر با ۳۸۱ خانوار تعیین شده است. ضریب آلفای کرونباخ در این رابطه ۰/۸۴۹ برآورد گردیده، که اعتبار بالای پرسش‌نامه را نمایان می‌سازد. در نهایت داده‌های گردآوری شده با استفاده از نرم‌افزار **SPSS** تحلیل و از آزمون آماری کروسکال - والیس استفاده شده است.

۳. یافته‌های تحقیق

در بررسی شاخص‌های محیط زیست، شاخص بهره برداری بهینه از آب، با میانگین ۴/۲۹ رتبه اول و بهره برداری بهینه از منابع طبیعی و جلوگیری از فساد در عرصه زیست محیطی با میانگین ۴/۲۲ رتبه های دوم را به خود اختصاص داده‌اند. همچنین شاخص استفاده بهینه از انرژی باد با میانگین ۲/۶۶ و تنوع درختی، با میانگین ۲/۹۵ در رتبه های نهم و هشتم قرار دارند. با هدف بررسی تفاوت بین شاخص‌های قرآنی و سطح توسعه محیط زیستی مناطق روستایی "آزمون معناداری ناپارامتریک کروسکال والیس" استفاده شد. نتایج آزمون کروسکال- والیس شاخص‌های قرآن، نشان می‌دهد سطح توسعه محیط زیستی مناطق روستایی در سه سطح توسعه، با سطح معنی داری (**Sig**) کمتر از ۰/۰۱ درصد بوده است. بنابراین فرض **H0**، یعنی فرض عدم تفاوت سطح توسعه محیط زیست بین مناطق روستایی رد شده و فرض مخالف **H۱**، یعنی وجود تفاوت بین سطح توسعه مناطق روستایی در سه سطح روستاهای جامعه نمونه تأیید گردیده است.

۴. نتیجه گیری

بر اساس آیات، انسان در مقابل همه چیز و از جمله حیوانات و طبیعت اطراف خود مسئولیت دارد. مهم‌ترین وظیفه انسان در قبال طبیعت اصلاح در زمین و اجتناب از فساد در آن است. یکی از وجوه اصلاح زمین

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عمران و آبادی است. منظور از عمارت زمین تأمین اصول زیست محیطی برای حیات انسانی است. احکام اسلام درباره محیط زیست فراوان و متنوع است. بررسی سطح توسعه محیط زیست در روستاها نشان داد که مردم به حفظ محیط زیست خود اهمیت می‌دهند و در واقع شرایط محیطی منطقه در اغلب مواقع به آن‌ها اجازه نمی‌دهد که به محیط خودشان توجه داشته باشند. کاشت درخت از سوی اهالی روستایی به ندرت صورت می‌گیرد و تنوع درختی اصلاً وجود ندارد. با توجه به اینکه اسلام، دین جهانی، جاوید و کامل است. این دین هدیه ای است که از طرف خدای متعال به بشریت ارزانی شده است. سعادت دنیا و آخرت انسان در صورت ایمان به عمل به دستورات اسلام تأمین می‌شود. در نهایت پیشنهادات زیر ارائه می‌گردد:

ـ گسترش فناوری‌های پاک.

ـ جلوگیری از انجام متخلفانه و سوء استفاده های نا به جا.

ـ مجازات مرتکبین به وارد نمودن اثرات نامطلوب بر محیط زیست و سایر انسان‌ها.

کلمات کلیدی: قرآن، شاخص های محیط زیست، توسعه محیط زیست، روستاهای سیستان، مدل **TOPSIS**.

ارجاع: میرلطفی، م. ر. و نوری، م. (۱۳۹۶). تحلیل سطح توسعه محیط زیست مناطق روستایی سیستان با تأکید بر شاخص‌های قرآنی. *مجله پژوهش وبرنامه‌ریزی روستایی، ۷*(۱)، ۱۲۲-۱۰۳.

http://dx.doi.org/10.22067/jrrp.v5i4.64920