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The Role of Geography Factors in Shaping the Villages of Astara

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ABSTRACT

Distribution and spatial structure of villages depends on geographic factors. In fact this structure is objective symbol and operation of natural-ecological and social-economic process. (Rahmani,1383:141). This study is done by using descriptive-analytical method and library studies and field observation in studying the role of natural factors in establishment of Astara villages. Astara is located in northeast of Gilan and the method of gathering information is field and documentary studies. Results of the research showed that 20.48% of villages are formed in fault area, 49.40% in river bed, 69.88% on appropriate soil, 69.88% on inappropriate vegetation. At the end, some suggestions are given for optimal and suitable selection in establishment of villages in the situation under the study. For example no activity must be done on slopes that are unstable and activity periods of faults must be specified according to historical recordings and geographic maps and the lands around the faults must be located as open spaces.

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INTRODUCTION

Considering the fact that the village is a geographical unit that complex natural and human factors are involved in its formation and its actual knowledge is simply not possible, geography approach is try to find space laws. In this approach in contrast to the traditional approach, the study of space and inequality without the space makers and economic-social mechanisms is unavailable [1]. However, natural beds create the conditions necessary for the establishment of rural settlement; some of them create more stable condition in comparison other. These beds are:

Slope, altitude, geology structural, water resources, soil and land capability. Nevertheless, to clear the fact that which of natural and human contexts has superiority role in the establishment of rural settlements in the villages of Astara, more study should be investigated. Each of these contexts or other factors, in addition to determined factors that have a greater role than other factors in the establishment of rural settlements, must be considered in rural planning. The results of such studies can be used, especially in organizing projects and collection and rural location to lead to rural development with rural population's consolidation.

Problem Statement:

A set of geographical factors (natural and human) as abstractly and common are effective to how settle rural settlement in terms of location – space and to give its own identity. Changing any of these factors can alter the importance and role of each position. Relatively constant natural features and factors and visibility in terms of morphology were investigated, while cultural factors are dynamic and constantly changing [6]. Given the geographical studies in rural areas, village as the geographic unit constitutes the basis of the study. In different places, geographical factors explain the dispersion and population density and the presence of some of them justifies appropriate and effective conditions and some unfavorable conditions in terms of how biological features. Therefore, this study tries to investigate the geographical factors affecting rural settlement of Astara.

Research questions:

1. Have geographic factors influence on the formation of Astara rural settlements?
2. Which geographic factor has an important role in the formation of Astara rural settlements?

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Hypothesis

1. It seems that geographical factors are involved in the formation of Astara rural settlements.
2. It seems that the topography has an important role in the formation of Astara rural settlements.

Research objectives:

The purpose of this study was to evaluate the role of both natural and human geographic factors in the formation of Astara rural settlements.

Literature:

Some studies carried out in this field are as follows:

Stelajee, Alireza [1] in an article entitled "Study of geographic factors in the establishment of settlements with an emphasis on quantitative techniques in the Vilkage from Namin Township" published in the Journal of Geographical study in Tehran University, stated that there was a significant inverse correlation between the type of lands and settlements. Besides the natural foundation in relation to human foundation, functional success also effect on the establishment system.

Akbar Oghli, Farahnaz and Velayati, Sadollah [2] in an article entitled "survey of natural factors position in the establishment of rural settlements in Kopedagh Mountains of hezarmasjed published in the Journal of Iran Geographical Society conclude that the study area due to the mountainous in most environmental-ecologic parameters, particularly unstable slope had an effect on placement rural settlements, so that, 47 percent of rural habitations are located in the slopes more than 10 percent and on mountains.

Hasanimehr, Seyyedeh Sedigheh [3] in a study entitled "Structure of rural settlement in relation to geographical factors in Astara villages published in the Journal of natural geography in the Islamic Azad University, Lar branch, conclude that due to geographical factors mechanisms and environmental capacities and neighboring with Azerbaijan has a major role in the establishment of rural settlements occurs in Astara.

Molaee Hashtchin, Nasrolah in a study entitled "Analysis on the application of geography in physical development planning in Iran rural settlements published in the Journal of geographical space in Islamic Azad University, Ahar branch stated that if rural planning consider as a process that seeks to provide a clear plan and a model for rural development, in addition to the physical and spatial dimensions, it is necessary to considered nonphysical aspects, particularly the economic and social fields in the villages.

MATERIALS AND METHODS

This project is a descriptive and analytical method.

Discussion:

This research includes the villages of Astara. The city, with an area equivalent to 425.38 km is located in the northwest of Guilan that from the north bound to Azerbaijan and from the East to the Caspian Sea, from the south to Talesh and from the West is bound to Ardabil.

Distribution the villages of Astara:

Plains units:

Villages in the area are located in the downstream area. Height of the village began from-28 meters in the East of Astara and continues to a height of zero meters and 11 Village has been located in this unit. Due to the proximity to the city center, this area is important.

Foothills Unit:

In this area, there are villages that part of its land located in the foothill plains or alluvial rivers terraces and partly, is located on the low heights highland. The villages start from the curve at zero level meters in downstream and have been drawn up to 100 meters curves. 22 Villages located in this unit.

Alpine Unit:

Villages that are located above the curve of 100 m are in this section. It consists of 50 villages of rural areas. The land is mountainous and mostly steep. And the area is larger than the previous two sections.

Geographic factors affecting the formation of rural settlements:

A variety of factors are involved in choosing the location and placement of rural settlements. Sometimes alone appear as the fundamental determinant in the choice of location, but in most cases, different natural factors and artificial environment act as a relevant set.

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Geologic structure:

The study area, the downstream and plains region are formed from the present covenant sediments and marine deposits of Pleistocene. Second period deposits (Lower Cretaceous) that are including volcanic rock, limestone, Silit and sand from foothill areas and foothill and high altitude mountain areas are consisted of Paleogene rocks and acidic tuff and polygenetic conglomerate.

Fault:

Due to seismic risk, the establishment of settlements in the area near faults must be avoided. In order to determine the appropriate and inadequate levels in terms of distance from the fault zone, faults layer was valued. Accordingly, rural settlements to less than 5 km from the fault and higher than 5km is considered as inappropriate and appropriate range, respectively [13]. There are two faults names Astara and Neor in the region that with these criteria in the study area, 17 rural settlements including Baghchehsara, Ghaleh, Khoshkedahane, Abbasabad, Darband, Kanroud, Sibli, Khosromahaleh, Sireliveh, Ghardehsara, Khalilehsara, Chelvand, Khanbolaghi, Baghcheghari, Ghashtehdel, Goleyelagh are located in high risk areas.

Table 1: Distribution of rural areas based on distance from the fault.

Distance to Fault	Appropriate level	Number of villages	%
More than 5 km	Appropriate	66	79.52
Less than 5 km	Inappropriate	17	20.48
Total		83	100

In the zoning of the land, active construction and active young faults especially near Astara and its earthquakes records caused to exposure all Astara villages in areas of high seismicity [4].

Topography:

The topography is one of the natural factors that alone is decisive for geographical features, but it's much influence in determining climate and its prominent role in the establishment of settlements and subsistence patterns is also quite evident. And in general, the natural landscape and biological evolution influenced by the interaction of roughness and climate. Therefore the reflect changes of natural geography will also observed in soil vegetation and water resources followed in terms of housing and living conditions [5].

Slope:

One of the environmental factors affecting the distribution systems in rural settlements is to measure the height and slope. Slope is one of the most important factors to surface roughness. Thus human life and human activities such as agriculture in the terracing of land, roads, tower of power lines and water projects providing in rural settlements have been carried out on the slopes [7].

Astara, I terms of slope is divided into six categories that are:

1. Slope 0 to 3 percent covered the beach and as strips from north to south and its area is 13.61 km.
2. Slope 3 to 5 percent, after Shoreline, where construction of the sea and the beach are located.
3. Slope 5 to 10 percent that contains the largest area and has the North – South process.
4. Slope 10 to 20 percent is located below the altitude 400 m and the area is 104.52 km.
5. Slope 20 to 30 percent that has north - south progress toward the West side of the city. The area is 105.12 km^2.
6. Slope 30 to 50 percent and total area is 89.04 km^2 (Topographic Map of Astara, 2004-1:50.000).

Height:

Villages of the study area extended at an altitude of -28 to1900 m. To better study and characterize the rural settlement in relation to height, height was classified. The results indicate that most rural settlements are located in altitude from -200 to -28 m with 50 villages. In order to prove the relationship between the topography and distribution of rural settlements of the study area, the Pearson correlation coefficient was used.

The calculated correlation coefficients indicate that there is significant relationship between the topography and the distribution and establishment of settlements in the study area. And the incomplete inverse correlation is used. That is, with increasing altitude, the number of settlements and the number of population is reduced. Table 2 indicated the highest distribution of the villages in the high -28 to 200m. Among the 83 villages in the study area, 50 villages have expanded in the height. The much higher altitude, the less scattered villages would be. So that only 5 villages are situated at an altitude of 1200-1900 m.

Surface water resources:

Rivers is one of the surface water resources of the region. Rivers come from the eastern slopes of Talesh central mountain range and with a steep gradient and winding path enter into the plains of Astara and after passing through villages and rice paddies enter into the Caspian Sea. Heavy rainfall in the area in all seasons,

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especially in spring and winter will cause to floods. In some cases, it damage land and gardens and even residential areas. However, because of the importance of water in the lives of the villagers, many villages were located at the margins of rivers. Some villages are so close to the river are located in the area of its privacy.

Table 2: Correlation and regression coefficient between the topography and the establishment of rural settlements.

Y^2	X^2	X.Y	SETTLEMENTS Y	Average height (m) X	Elevation (m)
49	196	-98	7	-14	-28-0
1089	10000	3300	33	100	0-200
100	90000	3000	10	300	200-400
100	250000	5000	10	500	400-600
100	490000	7000	10	700	600-800
25	810000	4500	5	900	800-1000
49	1210000	7700	7	1100	1000-1200
1	1690000	1300	1	1300	1200-1400
0	2250000	0	0	1500	1400-1600
16	3062500	7000	4	1750	1600+
1529	9862696	38702	83	8136	Total

The formula used to calculate the correlation coefficient:

$$=-0.3\ r= N\sum xy - \sum x\sum y/\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}$$

Table 3: Characteristics of the Astara River.

Row	Name of river	River height (m)		River average slope (%)	Environment Km	Density	Basin average slope (%)	An annual discharge m^3/s		Annual precipitation (t)	
		Minimum	Maximum					Minimum	Maximum	Minimum	Maximum
1	Virmooni	10-	600	6.53	24	1.3	16.79	-	-	-	-
2	Karimchie	10-	1260	9.3	23.5	1.3	23.5	-	-	-	-
3	Chavand	20-	2100	10.17	44.7	0.8	30.65	0.24	39.55	9909.6	141548.4
4	Kanrood	8	1020	10.74	25.8	1.2	28.9	0.25	19.98	675.6	7496.4
5	Lavandevil	-23	1200	6.4	34.8	0.64	29.52	0.65	25.4	8097.6	62754
6	Darband	10-	340	9.29	10.6	0.89	14.94	-	-	-	-

Source: Guilan Watershed, 2013

Rivers Privacy:

To better specification of rural position in relation to the Rivers privacy, rivers privacy is designated. The results indicate this fact that 41 villages are located in the privacy of Astara Chay, Khajegari Chay, Baharestan, Isti Sochay, Telekhanchay, Kanrood, Lavandevil chay and Chelvand chay rivers. Villages Khoshkedahane, Baghchehsara, Ghaleh, Anbaran mahale, Bibiyanloo, Kashfi in Astara chay privacy and villages Sheikhmahale, Sheikh Ali Mahale, Jebraeil Mahale, Asiab homes, Asghar Mahale, Lemir Mahale, Bijarbin, Shounan, Sevajzieh, Shataroud, Latoon in Khajegari Chay and villages Virmouni, Talekhan and Borzana in Talekhan chay and villages Baharestan, Mashand, Shaghola in Baharestan River and villages Moumbi, Dash Dibi in Isti Sochay and villages Kanroud and Dileh at Kanroud area and villages Sibli, Sireliveh, Khosromahale, Kotah

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Koumeh, Kholaj Mahale, Ghanbar Mahale, Aziz Baigh Hayati at Lavandevil chay river and villages Chelvand, Nazar Mahale, Mieh Koumi, Babaali, Khan Hayati, Ghoonesh and Seli at Chelvand River area.

Table 4 - Distribution of settlements based on distance from streams, according to Flood Risk.

Distance from River (m)	Appropriate level	Number of villages	%
20-2500	Appropriate	34	40.96
2500›	Relatively appropriate	8	9.64
Domain-20	Inappropriate	41	49.40
Total		83	100

Source: researchers using GIS, 2013

Table 5: Distribution of villages in Rivers domain in each River

Row	River Name	Number of villages	%
1	Astarachay	6	14.63
2	Khajegarichay	10	24.39
3	Talekhan	3	7.32
4	Baharestan	3	7.32
5	Isti Sochay	2	4.88
6	Kanroud	2	4.88
7	Lavandevilchay	7	7.32
8	Chelvandchay	7	7.32
Total		41	100

Source: researchers using GIS, 2013

Soil:

In the distribution of rural settlements, the quantity and quality of soil obviously can affect the position of rural settlements [10]. Because the soil in each area has different capabilities for different agricultural products, so it will affect the livelihood the structure in the zone [1].

Due to expansion in semi-deep and deep soils in the region, agricultural activities have developed. Because of this, 69.88% of the land is classified at the appropriate level and 30.12% of the rural settlements were located on relatively appropriate land.

Vegetation and land capability:

The land capability to a large extent (acceptability) identified an area in terms of optimum number of people who can make a living and settled in the area (DHV from Netherlands, 1992:451). In this regard, Kim and Chang believe that land appropriateness analysis will be take place based on six criteria including slope, drainage characteristics, type of land, and distance from roads, rivers and rural centers. The six criteria are effective in land use. In other words, above 6 criteria shall specify the type of land use [2]. Therefore, land use has broad impact on the distribution and deployment of rural settlements.

Those lands which are important in terms of economy for livelihood of the rural and settlements distribution were placed in the appropriate level. Thus, residential, agricultural and horticultural lands are at appropriate levels and pasture land because of appropriateness for livestock feed were categorized in relatively appropriate levels. Semi-dense to dense forest was categorized in inappropriate level. Results indicate that approximately 28.92%, 1.20% and 69.88% of the rural areas located in appropriate, relative appropriate and inappropriate land, respectively.

Table 6: Distribution of Astara villages by vegetation.

Soil Profile	Number of villages	Appropriateness level	درصد
Gardens and rice paddies	22	Appropriate	26.51
Pasture Land	1	Relatively Appropriate	1.20
Dense and semi-dense forests	33	Inappropriate	39.76
Dense forests	25	Inappropriate	30.12
Residential areas	2	Appropriate	2.41
Total	83	-	100

Conclusions:

The results of findings indicate that natural factors such as elevation and land topography have an important effect on rural settlement distribution in Astara. The results of data analysis indicate that in addition to human factors, environmental factors affecting the distribution of settlements. The survey conducted revealed that the most volatile ecological factor in the region is slope. Villages that are located on steep slopes always are at risk. Therefore, planning and practice can hinder the range of motion.

Fault is also as on of the natural factors limiting the establishment of settlements. It is appropriate strategy to deal with earthquakes in the settlements if there is possible displacement and appropriate allocation.

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Otherwise, the mechanism of act of the fault is determined according to historical records and the geologic record. And land surrounding faults was allocated to open spaces based on what calculated. In addition to natural factors, human factors such as socio-cultural, economic plays a major role in the establishment of settlements. And kinship factor and homogeneity in language and dialect and religion and ethnicity as well as collaboration is the other factors in the establishment and distribution of the population and thus forming villages of Astara.

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