

## Zoning Phenomena and Geo-tourism Attractions in Coastal Cities using the GIS Technique: A Case Study of Noashahr and Chalous Cities

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### ABSTRACT

Nowadays tourism industry is developing and enjoys paramount importance and specific attraction due to the demand and need for geographic areas. In recent decades, the tourism industry has gone far beyond and entered a new realm of use and enjoyment of geo-tourism capabilities. Geo-tourism as a new word developed the role and significance of tourism industry and all countries attempt to take as much advantage of this industry as possible. Meantime, despite having highly significant potentials in industry, Iran has not been yet able to use such potentials efficiently. Hence in this paper we aim to identify the geo-tourism potentials in the coastal areas of the north part of Iran and as a case study, the cities of Noashahr and Chalous. This is an analytical-descriptive study using exploratory survey as a typically library research method through literature review and case studies such as interviews and questionnaires. GIS software was used to analyze the spatial-location features of geo-tourism in the study area. Results show that the study area has potential capacities which can be operational and eco-tourism can be considered as one of the aspects of development in this area.

**Key words:** Geo-tourism, Zoning phenomena, Stable tourism, Cities of Noashahr and Chalous.

### INTRODUCTION

Tourism as a modern industry is rooted in the increase of leisure time for people and is considered as an effective activity in all aspects of development. On the other hand, the growth of modern capitalism in the ultra-industrial era, the appearance of the main features network societies, and the extension of a technological revolution in all fields requires passing leisure time and international tourism plays a significant role in the world economy as a mid-science course to speed up tourism industry. Industrial tourism is a source of revenue and economical and is highly attended due to the lack of environmental pollutions by creating mutual cultural and social exchanges among diverse nations. In the current trend of rapid development of tourism

industry, traditional employed methods are gradually less efficient in this field the one who presents new methods and modern attractions is successful (Servati & Kozazi, 2006). The functional science of geo-tourism is a new science which has witnessed impressive progress in recent decades and is even viewed as a determining strategy in land logistics at the national level in the development planning of tourist destination countries. UNESCO also calls it a new method in tourism industry. Despite various natural capacities, potentials and geo-tourism in Iran, they have not unfortunately been employed properly in development planning so far. Therefore, we intend to identify geo-tourist potentials in the coastal cities of Noashahr and Ramsar in order to take basic steps to achieve sustainable development in geo-tourism.

## Theoretical foundations

### Tourism

'Gardeshgari' is the equivalent of the Latin word "tourism" and French word "tour" which means "rotating and travelling". There are various equivalent for the word "tourism" in Persian texts such as 'gardeshgari', traveling, tourism, recreation, and even traveling in Iran (Heidari, 2008). According to Oxford dictionary, the word "tourism" is made up of two parts. Tour means trip, and 'ism' is a suffix which refers to a philosophical, religious, political, literary, or school of thought. So, tourism is a school that traveling is its basic idea (Oxford, 1989). The Greek root of this word is "tourist" which has entered Spain from Greece, then to France, and finally to England. In the 14th century, the word tour meant turn or period of service, in 15th century it meant rotation and in 17th century it meant traveling around and in 18th and 19th centuries the words "tourism and tourist" were derived from it (Kazemi, 2008). This word appeared in an English magazine, "Sporting Margarin" (sport Magazine) for the first time. At that time this word stood for making a trip to see the historical monuments and to visit the landscapes for enjoyment (Mahallati, 2001). Tourism means passing voluntarily part of your leisure time in a location other than your dwelling place to relish (Baheer, 1998). Others considered tourism as making a trip for recreation and rendering service for this purpose. The tourism organization presented a more elaborated definition of this word; it is a kind of service industry which consists of some material and non-material combinations. Material elements include air transportation system, rail way transportation, ground transportation, water transportation, and space transportation nowadays, catering accommodation, foods tours, and related services such as bank services, insurance, health and safety services. Non-material elements consist of rest, pacification, culture, adventure, and different new experiences.

### Geo-tourism

In recent years, a fairly new concept of geo-tourism has been heeded against the word "tourism" all over the world. Though this word has been used informally since 1997 ([www.nationalgeographic.com/travel](http://www.nationalgeographic.com/travel)), this concept was clearly presented in a report by American Association of Tourism Industry in 2002 and the national geographical tourism

journal (Aryafar, 2009). They had a very general attitude towards this issue and they had dealt with the prefix "Geo" in the compound word "Geo-tourism" with a geographical attitude not with a geological attitude (Sadri, 2009). Actually this new approach of geo-tourism found a new application and included social and cultural input and output components. This perspective was soon replaced by the technical concept of "geological tourism" since 2002 (Sadri, 2009). Geo-tourism has been defined differently and a variety of definitions are used for it. Ezati states that "whenever a word with a prefix "geo" is proposed with special reasons and considering changes at the global scale, discrepancies appear in defining and describing it simultaneously that we witness it now (2001). Feri and Atal place geo-tourism according to the concept of geo-park at the social development level ([http://www social edge org/features](http://www.socialedge.org/features)). Geo-tourism is a form of cultural, environmental tourism which can be developed in areas with important geological works and is based on maintaining and developing geological heritages (KPMG, 2003). It enjoys a high growth in the world and it is predicted that the number of nature tourists increases from 7% of the whole passengers of the world now to more than 20% within the next decades (Amrikazemi, 2003)

Generally, the most important causes of geo-tourism which attracted tourists to natural phenomenon include: erosion, volcanoes, folds and faults, salt domes, salt crystals and coral reefs. However, the main cause of geo-tourism phenomena is erosion which is comprised of water erosion, wind erosion, and dissolution erosion. The most significant resources and phenomena of geo-tourism are caves, valleys, fractures, springs, rivers, synclines and anticlines, folds direction, salt dunes, coastal cuts, tides, tunnels, fossil remains, forest and vegetation, sand dunes and various forms and phenomena of the Earth (Asadi, 2007). Noticing the goals of geo-tourism shows that this kind of tourism can cause positive effects like economic performance and efficiency, unity and territorial integrity, extension of social justice, regional and inter-regional equilibrium, environmental conservation, restoration of natural resources, preservation of national identity and cultural heritage, deprivation elimination specially in less developed rural areas in line with spatial planning (Divsalar *et al.*, 2011). Nevertheless, geo-

tourism is considered as a type of tourism founded on spatial pattern "tourism based on nature" having unique supply and demand market of its own and includes a special target market that the tourists have the least familiarity with its natural environment.

### Research purposes

Main objective: Identifying geo-tourism potentialities in the cities of Noashahr and Chalous in order to present basic solutions to achieve sustainable development of tourism.

### Specific objectives

- Taking advantage of the natural capabilities of different regions of the cities of Noashahr and Chalous in order to develop geo-tourism.
- Promoting the quality of tourism resources and ameliorating the presentation of tourism attractions by preparing the region's map of geo-tourism.
- Geological and cultural norms conservation of the region against vandalism.
- Improving the living conditions of local communities through their partnership in implementing geo-tourism projects like geo-park and geo-sites.
- Familiarizing managers and public constitutions with natural and cultural capabilities of the area for planning sustainable development of the urban and rural regions harmoniously.
- Training managers, public constitutions and people to maintain the natural capabilities and cultural norms, strengthening local values and traditions and increasing pride and national identity.

## MATERIAL AND METHODS

Since description and analysis of this research is of main significance, the research method is analytical-descriptive using an exploratory survey. The researchers have typically used library research method, literature review, material contents, maps and case studies such as interviews and questionnaires. The rational argumentation of the research is provided through literature review and theoretical arguments. GIS software was used to analyze the spatial-location features of geo-tourism in the study area.

### Identification of the study population

The study area of this article are the cities of Noashahr and Chalous. Noashahr with 5.1716 square kilometers area covers 2.7% of the total area of Mazandaran province. This city is located in the west of Mazandaran and is surrounded by the Caspian Sea in the north, Noor city in the east, the Alborz mountain, Noor and Chalous cities in the south, and Chalous city in the west. According to 2006 census, Noashahr population was 114,814 people and it has two districts and six villages. Noashahr is topographically divided into two main parts including coastal plain and mountain part. The northern territory leading to the Caspian sea is dedicated to recreational tourism.

Chalous is located in the west of Mazandaran province with 3.1597 square kilometers area which covers 2% of total area of Mazandaran province. Chalous is bordering with Noashahr in the east, Tonekabon in the west, the Caspian sea in the north, and Tehran province in the south. This city is topographically divided into two separate parts including low land and high land regions; the first is a strip between the Caspian Sea and the mount and the latter is located in the south. Two towns of Kelardasht and Marzan Abad are located in the mountainous region and Chalous is developed in the plains. General slope of this county is from south to north following topography of the region. Chalous has two districts, three towns and five villages from the political divisions viewpoint.

### Tourism resources and potentials in the study area

#### Natural attractions

Among the various attractions of tourism in the study area of Noashahr and Chalous the role of natural phenomena prevails over the others. The nature of the study area like the other areas of Mazandaran Province is the result of interactions among sea, forest and mountain which created various natural attractions. The most significant natural tourism attractions of the study area can be classified under the general categories of coastal beaches, forests and forest parks, country areas, mounts and rocks, valleys, springs, rivers and sweet water lakes and the Caspian Sea shores.

**Sea coasts**

The Caspian Sea which is also called by other names, as the largest lake of the world, plays a significant role in the ecosystem of the study area since it has a specific location. It is clear that the Caspian Sea has abundant economic value in terms of fishing, oil resources, sea transport (Noashahr port) and tourism. Despite the importance of Caspian Sea coast tourism, unfortunately much of the coast is out of the reach of normal people and is possessed by private, state and military owners. According to the technical department of cultural heritage and tourism of Mazandaran Province, five projects under the name of “purification of the sea, have been performed in Noashahr and Chalous areas in 2006 to prevent the sea pollution and to maintain the ecosystem but most of these projects lack basic health facilities. The sea is the habitat of the world most valuable fish namely sturgeon

fish and Fereidounkenar catching station located in Noashahr is of high importance in terms of fishing (sturgeon fish), Bloka type. Sand and gravel beaches and sandy and rocky seabeds from Noashahr port to Fereidounkenar along the coast line to the depth of 50 meters are the outstanding features of the sea coast in Noashahr and Chalous regions.

**Natural forests**

The link of the three factors of altitude (Alborz mountain), rainfall and sea has created the wet Caspian ecosystem. The growth of dense forest affected by these factors in the study area created a wonderful and charming beauty so that the forests of the study area are the main destination of domestic tourists. The most famous forests of Chalous are Sinava, Talajou, Zovat Sharghi, Mahmoud abad and Pole Karat. The names of these forests are included in the province notification resources.



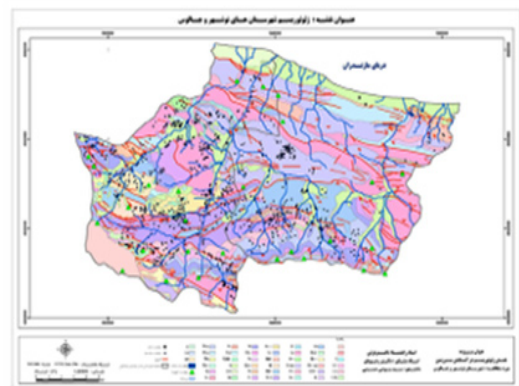
**Fig. 1: Singan forest-coastal park in Noashahr**



**Fig. 2: Satellite image of the Velasht Lake and surrounding mountains**



**Fig. 3: Another view from the beautiful Velasht Lake**



**Fig. 4: The following map illustrates zoning phenomena and geo-tourist attractions of Noashahr and Chalous**

### Forest parks

Natural forest parks are parks under recreation, protection, and conservation management due to their proper condition, attractions, and natural features. Mazandaran forest parks are the most beautiful tourism region and main flora and fauna reserves of the country. Not only are these parks important due to their tourism application, but also they are noteworthy in terms of research and scientific fields. According to a report of planning and management organization of the province, Chalous and Kelardasht have the highest rank regarding the scope of parks by having 6705 forest hectares from the set of 13054 hectares of forest parks of Mazandaran province that is 51% of the total area of the forest parks and the first in the country.

The most important forest parks of the study area include Sisangan of Nowshahr, Verkavij and Fin of Chalous. In addition to forest parks, the largest number of promenades are located in Chalous too. Promenades such as Namak Abroud, Einkat, Nok, Chaman Rudbarak and Do Ab are the best in the country which are located in this county.

### Countryside and mountain region

Mountains as a natural phenomena have much value in attracting tourism and mountain regions are suitable places for various kind of mountain sports such as mountain climbing, rock climbing, spelunking, valley rolling, ski, fishing etc. since they have a high altitude, cold and dry climate, mines, caves, deep valleys, rocks and springs. In this regard, it can be acknowledged that a vast

territory of study area is located in the mount due to antiquity and residence civilization and geological developments of natural kinds of attractions are favorite for eco-tourists specially geo-tourists. The most important natural glaciers of peaks and caves in the study area are included in table 1.

Among the peaks, Alam kouh peak of Noashahr has a great significance. The countryside of the study area such as Nech Kouh, Mikhsaz, Lashak and Kojour are the most charming and attractive ones in the country that have a pleasant weather, herbs and pasture as well as forest growth and has long been inhabited because of appropriate strategic position. Therefore, there are plenty of historical monuments and ancient hills in the region.

### Falls

The remarkable phenomena in the course of the rivers and springs are the falls which are created under the influence of hard stones in the form of more or less long step in the bed of the river that falls there. The most famous identified falls in the study area are Harijan and Akaber of Chalous.

### Springs and mineral water

The natural output of underground reservoir and its flowing is produced on the surface spring. Mineral water is formed when springs water in the ground meet different minerals and dissolves them and flows; otherwise, it exits in the form of fresh crystal clear water from the spring. Springs are related to underground reservoir, perpetual glaciers

**Table 1: The most important countryside, caves and natural glaciers of Noashahr and Chalous**

City	Countryside regions of peaks, caves and natural glaciers
Chalous	Natural glaciers of Sarchal, Miansechal, Hesarchal, Takhte Soleiman, Merjikesh, Alamchal, Haft khan, Yakhmorad Cave, Alam kouh peak, Takhte Soleiman peak, Spilet, Khorsan peak, Shanekouh peak, Alam kouh wall, Siah Kaman bozorg peak, Dandane Ozhdaha peak, Mish chale peak, Rostam nisht peak, Merchi kouh Peak, Se chal peak, Gardoun kouh peak, Sanad kouh Peak, Moghaz peak, Chaloun peak, Lizunak peak, Siah gog peak
Noashahr	Kandalous countryside and natural region, Lashak Kojour Plains, Nazir Kojour, Chelik chalandar Caves, visar kojour countryside region, Shour peak, Pirzan khani, divoo, Kola abad peak, South salahed-din kola, Shahkouh, fargh kouh

Resource: Iran Tourism & Touring Organization from the view of tourists in 2004

and mount snowfields and enjoy a unique feature and landscape particularly in mount regions.

The study area has hundreds of big and small fresh and crystal clear springs in the mountains, hills, valleys and forests that in turn are regarded as a magnificent phenomena in tourism attraction. The most important mineral water in the study area is Dalir mineral water of Chalous.

#### Lakes, marshes and wetlands

Among the natural unique phenomena of interest in the study area are lakes, wetlands and marshes that are formed due to much rainfall and geological characteristics of the region. It is interesting that each of these lakes and marshes in the region has a unique flora and fauna ecosystem. The most prominent lakes, wetlands and marshes of the study area include:

- Sarcheshme forest lake, Kandouchal marsh, Velesht lake of Chalous
- Prophet Khidr lake in mountain region of Noor

#### Rivers

In addition to the importance of rivers for irrigation and surface water, they create a novel landscape due to rocky bed, turbulent water and passing through green valleys and they are the best habitat for trout because of cold and crystal clear water in up streams particularly in Kojour region. In addition, it is a suitable place for kayaking due to the steep terrain, having sufficient water and rocky bed. Cold rivers such as Abroud, Anguran, Megaroud, Tabarsou, Palang Abroud, and Chalous river are located in Chalous and rivers like Kurkur sar, Mashak rud khizrud and Amir roud are the most important

rivers in the study area. Hence, they are the main tourism attractions particularly geo-tourism of the region

#### Historic and monument attractions of the study area

##### Monuments and historical monuments

This group of attractions includes Shrines and religious places, fortresses and Castles, prehistoric ancient monuments, some bridges and buildings (Centre for Studies and Research, Department of Housing and Urban Planning and Architecture, 1989, p.8). Due to good living conditions and environmental model in earlier times, settlement and civilization of the mountainous and foothill areas of study has a long history. Out of 366 identified historical works in Mazandaran Province, Chalous has 6 historical monuments and Noashahr has 79 historic monuments ([www.mechto.ir](http://www.mechto.ir)).

Among the identified historical works in Mazandaran Province, only 4 of them belong to Cultural Heritage organization, 10 monuments are state- owned, 21 monuments have an endowment, 25 monuments have private owners and 27 monuments have unclear ownership. Among the recorded monuments of the study area, 11 monuments are related to before Islam and 10 monuments are religious. These works were totally included in the National works List ([www.mechto.ir](http://www.mechto.ir)).

Along with works and historical monuments, a number of villages in the study area were identified as target rural tourism because of having wonderful attractions which include: Kelar dasht, Kordichal and Koleh since they have a summer weather, are bordered with Alam kouh high peaks have a beautiful nature in Chalous and Kojour and Mikhsaz

**Table 2: The names of villages with religious monuments in the study area**

City	Villages with religious monuments before and after Islam	Villages with historic monuments of Islam	Villages with historical monuments after Islam
Chalous			Sarab
Noashahr	Hezar khal, Salehan, Chalandar, Lashak, Chourn, Poul, Firouz kola	Kojour, Koushkak, Nirang	Salehan, koushk, Kojour, Do ab, Poul, Kinj, Chalak, Angil, Astangroud, Abendak, Alavikola

in Nowshahr in terms of natural preserve, beautiful springs and falls, grants banking facilities with 4% interest to investors who desire to work out in rural ecotourism in this relation.

The names of villages with recorded religious and historical works in the study area are included in table 2.

Religious, traditional and national ceremonies (such as music, clothing, meal) housing and architecture, handicrafts, (wood crafts, La Tarash, Orsi famous windows) weaving industry like mat weaving, woolen socks, batch, felting and local cuisine in the study area have unique capabilities that each of them is significant in developing geo-tourism and attracting the tourists.

The following map illustrates zoning phenomena and geo-tourist attractions of Noashahr and Chalous.

### CONCLUSION

The issues raised in the theoretical study of the research show that according to the global significance of this industry, our country and

particularly the study area can be considered as a world ecotourism hub in the world because of having various landscapes and natural heritage and geo-tourism, historical, archeological, tourism and pilgrimage attractions and unique works of art. With respect to the present potentials in the study area and research field findings, some recommendations are offered to develop the geo-tourism industry and achieve the objectives of sustainable development:

- Extending nature tourism and expanding it in the study area as one of the sources of livelihood
- Residents participation in ecotourism programs
- Training the host community to understand the basics of nature tourism specially geo-tourism regarding proper social behavior
- Creation of appropriate facilities to extend the travel agency offices for ecotourism
- Providing a comprehensive and detailed plan of geo-tourism of the region especially the geo-tourism atlas
- Installing a signboard containing summary information on the routes to geo-tourism stations in different locations of the study area

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