

## **Geomorphology potential of the island and its role in attracting tourism Using GIS**

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### **Abstract**

**Introduction:** *One of the fundamental researches for planning and development is to get knowledge on natural features of regions and awareness of their potential.*

**Methods:** *In this regard, geomorphology as a science deals with landforms and features in terms of identity, material type and effective process in their evolution. It plays a fundamental role in development plans. In this thesis, the Hengam Island as Iranian islands in the Persian Gulf which is truncated cone-shaped island located in the South coast was studied. The present research aims to assess geomorphological phenomena for Hengam Island and its role in the development tourism of this island. The study is based on field experiences and objective observations, library research and data available were analyzed in descriptive – analytic manner using software GIS 10.01. The data used in this study included maps for topography, geological, Land capability, physiography, vegetation, depth and classes, geomorphology and aspect. **Conclusion:** Study area has great functionality for use the landscape and with the privileges of the island High natural potential in the tourism industry The need for more accurate planning and provision of facilities. **Results:** The results show that morphological topography in study area both in shape and position as well as in terms of its appearance is very important so that it can have positive effects in establishing infrastructure facilities and developing geo-tourism industry in area.*

**Keywords:** *GIS, Hengam Island, Morphologic features, Geotropism.*

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## **Introduction**

Tourism is an industry that has significant economic and social effects. Creating jobs and achieves stable and suitable exchange income and also recognition the cultural interaction towards peace and international consensus Are the industry's economic and social effects. Tourist attractions According to its attractiveness can attract tourists and in this attractive structure this attraction is very important for tourist attraction (Cartner, 2014). In fact, the structure tourism of a place including factors that could provide extra motivation for tourism demand in those places (Law, 2014). Iran is one of the few countries in the world that has a privileged geographical location and variety of natural beauty and geological phenomenon. Hengam is one of the Qeshm island cities with rare natural attractions, like variety of terrestrial and coastal landforms, safe and secure Rocky shores and sandy beach, coral Fossils, red soil mines, unique wildlife, Antiquities And also specific culture of indigenous people Has great potential to attract tourists Which collectively can have a significant impact on the local economy, But due to negligence and lack of proper tourism management suffered unprecedented economic boom. Lack of public awareness and the facilities to introduce the province attraction can be a factor in the low tourism boom on the island. According to above facts in order to improve the performance of tourism on the island and regarding to the conditions and natural features and history of the island it's necessary to take advantage of strategies and solutions to develop tourism in this area. Taleghani and Ftahi (2005) have examined the tourism services quality and its importance to satisfy tourists. Afifi and Ghnbari have (2009) examined geo-tourism attractions of Larestan Salt domes and have studied at Kermostag salt doom area. In this paper introduced interesting geomorphology related to Larestan salt domes and also examined Domestic and foreign geotourism and its role in regional and national employment and economic prosperity. Servati and et al (2014) examined the geologic aspects and tourist potential by using geospatial data to sustainable

tourism development in Ilam. This article introduces geo-tourism and geomorphological and geological attractions and Try to solve the problems of unemployment and job creation. The present study examines the geomorphology of Hengam Island and its role in tourism by its geographic information system (GIS) and considers to specifying various morphological characteristics of the area which have significant impact on economic and take advantage of natural environment. And using by executives, planners and researchers to removing some difficulties and environmental problems and optimal utilization of land and environmental management and also appropriate and principled measures to enhance the development of regional tourism implemented. Attention to natural potential of Hengam Island has an important role in attracting tourists and development. The study area is Hengam Island Which has not been done any good research about it for various reasons such as deprivation, lack of specialists in various fields, the problems caused by lack of sufficient funding for research studies and problems with access to all its parts for researchers And there is no perfect, accurate and specialized study on the island geomorphology. More available researches about this area are reports and pamphlets that are related to the organization and administration studies that have been done in the form of provincial and regional comprehensive plans.

## **2- The geographical location of the Hengam Island**

Hengam is in the waters of the Persian Gulf, in the crater the Strait of Hormuz between 40, 54, 55 and 55, 54, 55 east and 43, 36, 26, 15, 41, 26 of northern latitude. Hengam is part of the Persian Gulf and Strait of Hormuz defense system and can be the source of naval operations and a good support for submarines. Hengam surrender by Qeshm from the north, from North-East by Qeshm and Lark, from the South East by Rasolmasdam and from South West by The Greater Tunb. Hengam Distance (from the pier) to the south coast of Qeshm island in the nearest path (to the pier Kandalo) is 07/1 miles (2 km), To Lark island (the port) is 34/28 miles (5/52 km), to Rasolmasdam is 29/24 miles (45 km) And to The Greater Tunb (the most northern point of the island) is 49/40 miles (75 km). the highest point of the island is Fox mountain with the height of 105 meters and the lowest point of height on the

curve island is zero. Hengam has 8.9 km length and 3 to 6 km wide and 50 km in area (Kamran, 2002).

### 3. Material and methodology

After studying and identification of geomorphologic characteristics of sites we used of library and field study which includes the topography with scale 1:25000 from mapping organization and Hormozgan province programming organization GIS unit, geology map of the area with scale 1:45000 and in telemetry analysis we used of UTM coverage images from Landsat satellite (figure 1-4) related to the 1990 period. Then mentioned maps in ArcGris 10.01 software were numerated and earth reference, after it Dem height numeral layer were created and on this layer, geomorphology layers, earth capability, area height surfaces, plant coverage, tourist areas and depth maps, area slope and direction of the case study were prepared. From the map, topography of the resident layers area and connected lines were obtained and from the layer geological map, formation type and ground composition were extracted. It is obvious that from Dem layer for topography analysis and providing the curve line of the layer were used. Also during the study surfaces in several periods we used of Google Earth satellite images for results and information comparison with reality.



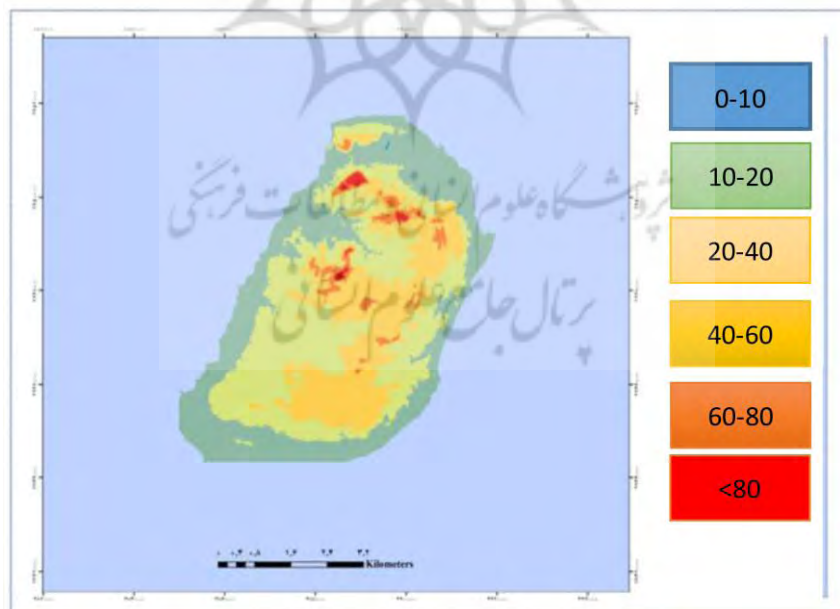
Figure 1. Hengam island geographical

### 3. Discussion and analysis

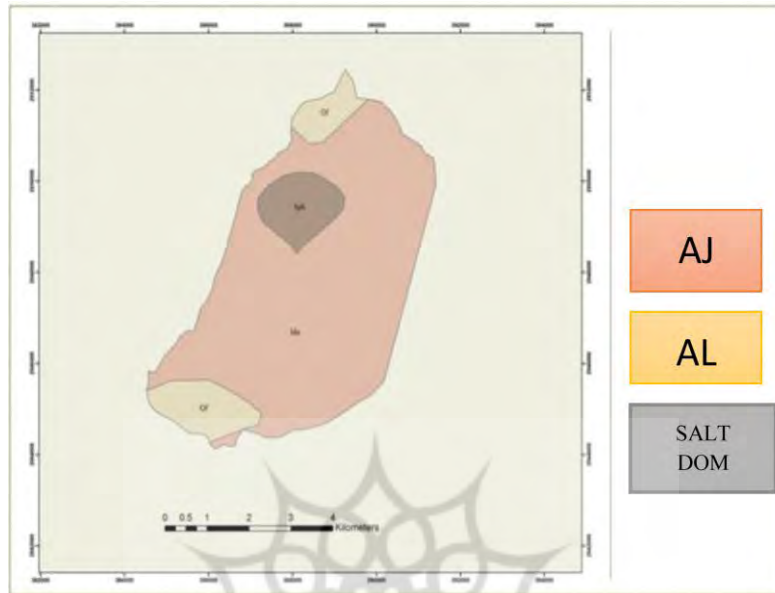
#### a) Mapping in GIS environment

##### Geology map

Base map was the geology organization map with scale 1:250000. From the geology viewpoint, Hengam Island is located in Zagros mountain Khavari station and is a part of Bandar Abbas arena and strait Zagros. Occurrences stratigraphy units in surface of this island from past till now, include the: Hormoz Paleozoic, Aghajari, Miusen and fourth period illuviation. Hengam island is the result of salt dome extracted actions which was activated from Perkamberine period, this dome is located in semi north part of island and brought plutonic stones including internal and external (including the evaporation deposition and salt and gypsum stone, conlogemra, tuff, stone sand with underwater igneous rocks which is located together alternatively). Aghajari formation (post miusen till Pliocene) is composed from rock sand and maren rock in cream, brown, gray colors, has several protrusions in Hengam Island and covers the most of island. Quartz deposits in north and south part of the island is in Pliocene with lime sea terraces with Holocene deposits.



Map 1. Hengam island topography



Map 2. Hengam island geology map

### **Topography map**

Are topography map is obtained from curve lines map with scale 1:25000 from the Hormozgan province mapping organization document. For simultaneous rapid and comprehensive establishment of data from ground environment, we use of topography maps. One topography map is the given image of all grounds in earth in one given area, with extensive application in different areas such as base map, data collection guidance, an appropriate data source and identifying the earth information and finally as the source and appropriate instrument in data presentation of ground. Height surfaces 2-layers is shown. Hengam Island in a general view seems that almost have not considerable height difference. If we divide the Hengam from north and south, south semi-side have less topography and smooth slope and north side have more height and depth. Generally, most of the Hengam Island area have height surface between 20-40 m which is Mahoor hill and in north, eastern-north, western-south side of the Island have height surface approximately 10-20m. In north half side of the island there are some point with more than 80 m height which are the most prominent between them is the Fax Mountain with 106 m height. Regarding to the topography situation, the most

appropriate side of the island, north-sea and eastern north and south and western south (distance between Hengam and Ghil village) is used for civil projects.

**Surfaces map and slopes direction**

Slopes are usually mentioned regarding to the movement and in numeral in negative and positive and are the identifiers of up and downs in vertical on assumptive horizontal axe. Moreover to the geomorphologic factors, slope angle will also affect the potential sites identification in order of Hengam Island c\development. Regarding to the present data, fundament and guidance in programming are summarized in table 1 between slope angle, construction development, excavation and clearing (Szabo et al 2010).

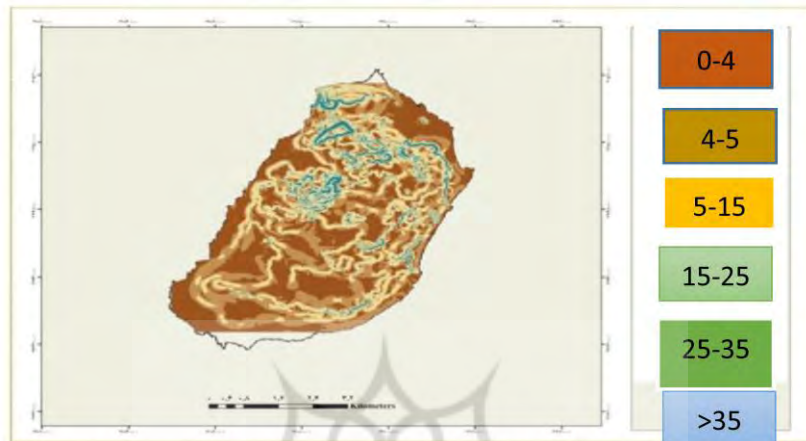
**Table 1. Slope angle, construction development, excavation and clearing average.**

Civil project development and excavation and required clearing potential	Slope angle
Areas with easy and economic development potential. In general, terracing is not required, excavation and clearing is only limited to the wastewater and drainage. Up and down surfaces is not creating the special limitation in construction area or building aspects.	0-5%
Development cost increasing. Clearing and excavation is not inevitable, development is only possible with terracing and slope clearing. Development is limited.	5-12%
These areas are developed with cost and considerable working force, terracing and retaining wall. Topographic change is required and basically the up and down will be the identifier of development.	12-25%
Surfaces with limited potential for development. Construction with low density assigned with buildings with small size are allowed.	25-35%
Inappropriate surfaces for civil development	≥35%

Source: (Szabo et al, 2010: 182)

Slope surface 0-2 and 2-5 have the most inferior areas, therefore in these areas with economic and easy development potential, generally, terracing is not necessary, clearing and excavation is only limited to the wastewater and drainage. Up and down surfaces is not creating the special limitation in construction area or building aspects. Slope more than 35% is observed with lowest surface in area. Fax is the most height point in Island heights, is actually a salt hill which is predominated around with slope more than 25%. North and eastern side of island have sharper slopes rather than south and western sea coast. Generally the coast of this island are harmful and are lowered with smooth slope and in order of planting strength rooting plant in these areas, betted stabilization of soil will be executed. It will also allowing the soil protection and drainage process to be executed in desired condition. In this island, topography slope direction, in north

side which have the highest height, direction in north mountain is toward north side, in south side is toward the island sea center.



Map 3. Hengam Island slope map

### The study area lands

This map is derived from natural resources and land capability map of the Department of Natural Resources of Hormozgan Province with a scale of 1:500000, shows soils of the island into two types: 3:3 (plateau and upper terraces) 2, 4 type (mountain planes). In this island, most of the land capability is the mountain and upper terraces types with area 1819 hec, 67.07% which is ranged in range of non-soil and with shallow depth soil or rare depth of stone and inhomogeneous and in mountain land unit composing from sea old deposits including the stone deposit on Maren with humility and vast cuts and with limitation, sharp sloop mountain and non-soil and non-plant coverage and with high erosion, smooth sloop mountain have shallow depth soil with low plant coverage and rather high erosion. This type have the most capability in land and generally includes the eastern and north side of island.

Table 2. Hengam Island ground capability.

Area	limitation	Soil categorization	Ground unit	Soil type
894 hec	32.94%	Flooding danger, underwater level in sides are up and with drainage limitation	Deep soil till very deep with average texture till heavy and sore till most	Mountainous planes with smooth slope and low up and down Planes
1819 hec	97.06%	flat plane with vast humility and sharp slope	Without soil or very low deep or rarely deep and inhomogeneous	Hills composed from old sea sediment including material stone on marine with humility Mountain types and terraces



### Island map natural position

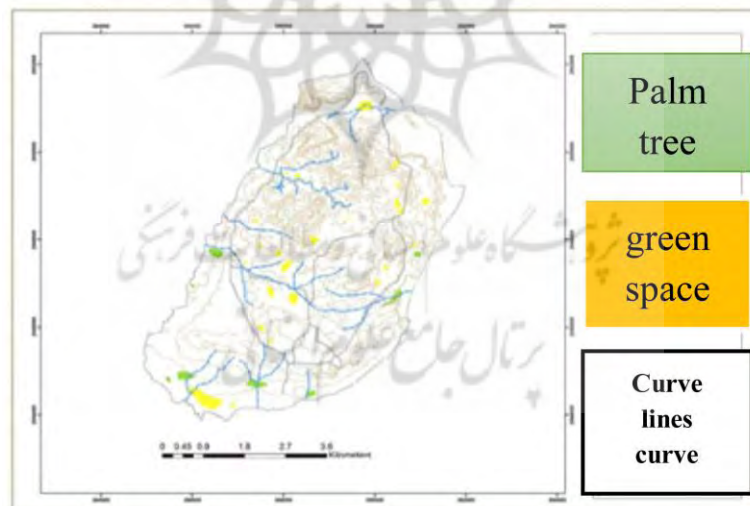
When the island is almost smooth and is only in the northern half of the island there are a few high points, the highest mountain with a height of 106 meters Fax. Southern half has less complications with topography and slope and the northern half, has a lot of ups and downs. In the absence of large differences in altitude and latitude and also hot and humid climate and salinity of soil and water, especially tropical vegetation of the island is not much diversity, so the small communities in the classes of green space and the palm groves as it can be seen all over the island. Sub-basins Island includes:

A) The North catchment area: There is no water in the basin to exploit and non optimum quality.

B) Eastern basin: the amount of water is low and the operation also has undesirable quality.

C) South Basin (the old): significant amounts of water stored in the basin. This area is estimated about 2.53 km<sup>2</sup>.

D) Western Basin (Ghilarea) is an area of 32.5 km<sup>2</sup> and the basin area is covered 9.48 km of coral calcium formation.



Map 4. Hengam Island natural situation.

### Plant coverage map

This map is extracted from the Agency of Natural Resources and the scale of 1:50000. As it can be seen in the map of the region in terms of 3-4 number coverage, three categories (low-density pasture, irrigated

agriculture and horticultural land without vegetation) had been divided. Land without vegetation and rock outcrop had been observed in the northern part with an area of 60.442 hectares. More areas and gardens with a total area of 30.395 hectares of agricultural water often located in the southern half of the island. Dominant vegetation, pasture area of 3204.5 hectares have low density.

**Table 3. Ground capability (coverage type) in Hengam Island**

row	Plant coverage type	TYPE	Area-hec
1	Low density ground	R3	3204.5
2	Ground without plant coverage and stone side	BL	60.442
3	Farm and water farming	IF	3.1
4	Farm and water farming	IF	3.758
5	Farm and water farming	IF	12.686
6	Farm and water farming	IF	4.578
7	Farm and water farming	IF	6.273

#### **Depth value map around the island**

For mapping the contour map with a scale ranging from 25:10000 had was mapped from the source of Hormozgan province. As it can be seen, from North Cape to East northeast coast of the island to a depth of 1-6 meters altitude are close to each other. East Coast along the coastline to the south coast of the island Elevation depth of 1-10 meters are closer together, and shows the depth of water in parts of the East, South East and South islands. South-West coast began at 6-10 meters from the beach and only two points height of 1-3 meters along the western coastline is drawn to North Cape. The depth of water between the coast of the island (north coast) and the coast of the island in the Strait of up to 15 meters. In general, western and northern coast of the eastern coast of the island to have less depth. As a result, the northern coast because of its shallow depth and relative position, the most appropriate way to move buoyant from the island to the west coast is the perfect place for recreational buoyant diving area. The ornamental aquatic habitat on the northern coast and dolphins on the southwest coast, attracts tourists.

#### **Land user situation**

Land Usage Map for the preparation of documents and information that are typical in identifying effective visual phenomena, such as topographic, vegetation, natural geography and local views on any phenomenon were used. Much of the study area lands with the exception of existing settlements are a part of the national territory and possession and transfer it to the government owns and Agriculture

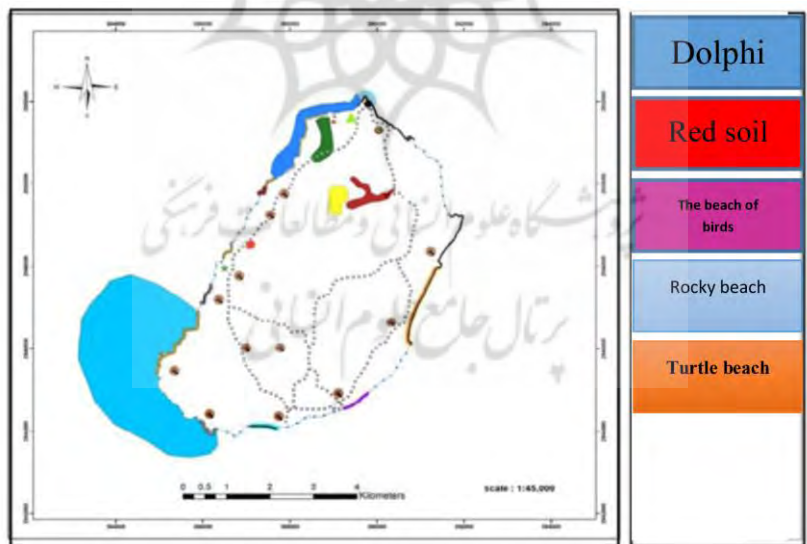
Organization of the land. When the user types the land on the island, including agriculture, land and made the land is barren. As you can see, the most prominent land with an area of 3264.90 hectares area belongs to barren lands and 64.9% of the rural context is made in the next land and agriculture respectively percent. As Figure 10 shows the major human activities, in coastal areas of the island is concentrated.

**Table 4. human actions in Hengam Island**

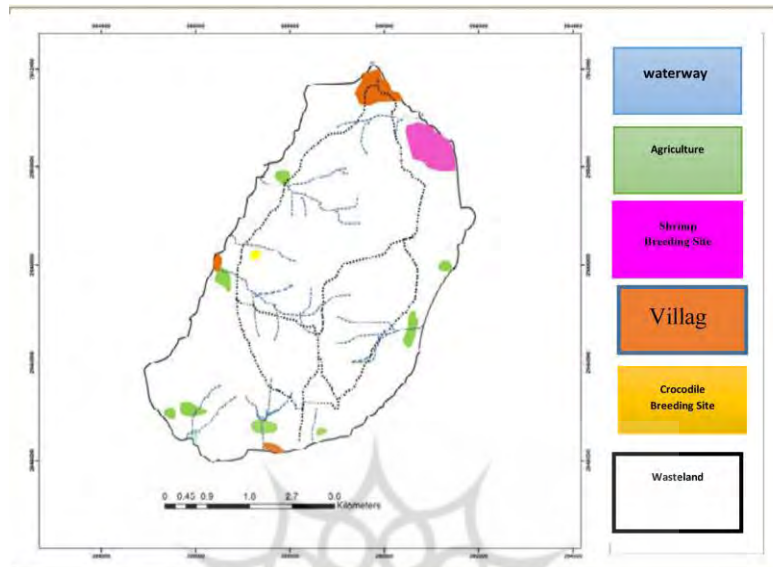
percent	Area hec	class	row
2.5	30.395	Farming ground: farming	1
32.6	400.0215	Constructed ground: residence, commercial, education, animal growth	2
64.9	3264.907	Dry ground: height, hills, sand, stone, salt hill ...	3

**Tourism map of the study area**

Details required include maps, geological maps; normal maps based on field observations have been developed in three phases of the area. The map was introduced 23 tourism regions, 19 regional ecotourism attractions of the area are, on the beautiful island can be introduced as a Geopark because it could have a very important role in regional development. Resources and tourist attractions of the island that can be separated into two groups of attractions human and natural attractions.



**Map 5. hengam Island tourism**



Map 6. Earth ground situation in Hengam Island

## **B. geomorphological units' analysis**

### **Watershed**

North basin due to its adjacent location to the island because of high salt and high-salt rock and minerals is very low catchment area of the eastern half of the island and is aligned with half of the Western due to high salt water quality is low. Due to a relatively large extent in the western part of the island watersheds and water quality, suitability of the West Coast because of the slope between 0-2% and coral formations in order to save water, collect and direct surface water basin should have a top priority. Redirecting surface water to pond or lake artificial island that is suggested in the island at the point where the height is lower than elsewhere, be done.

### **Elevation points**

Mountains and low hills with an area of 389.331 lowest level, as heterogeneous had been observed the entire island and the highest level in the northern half is accounted for mainly by trends NE-SW West. With an area of 933.1472 hectares in the north of the island when the salt domes that forms the island's height. Salty hillmass from salt have the shape about dome that on effect weight special less salt and pressures incoming to the sedimentary layers upper, From depth

Earth top the and on both Full (Afifi, 2007). For formation of salt dome three conditions is necessary:

1. Existence one layers with plastic Properties;
  2. Placement of this layers plastic at depth appropriate at least 1000M;
  3. Existence forces tectonic to the subject factor starts to move.
- Butfinal shape on salty hillin conditions as uniformity and homogenous will be compounds salt, mother rock thickness gravity floors and density salt are dependent (Nabavi, 1990).



Figure 2. Faz mountain (salt hill) (source: Davoodi Pour)

#### **Relatively flat unit with ups and downs**

Relatively flat unit with ups and downs, with an area of 184.5623 hectares, the highest level in the whole island, especially the southern half is allocated.

#### **Smoothed Unit**

With an area of 1462.4302 hectares of mostly flat or low-lying areas around coastal areas are being observed. The plains have a gentle slope and is covered mainly by deposits of alluvial terraces and shore. Alluvial fan sediments can be seen with the seasonal river flows superficial and temporary, resulting from precipitation and rainstorms in smooth parts, folds are being formed due to the proximity to the coastline, most of them to line water have been completed. On the island, there are no permanent rivers. Fans are generally divided into two categories:

- A) Young Fans: Fans young and farther from the mountains near the coast were formed.
- B) Older Fans: Fans old and mostly located near the mountains have been cut by waterways.

**Table 5. Height type of Hengam Island**

Height type	Area hec
Rather smooth, with up and down	1843.5623
flat	1462.4302
Height point	389.331

Whatever, the type which consists mostly of flat plains, coastal areas to the interior of the island is to go ahead with a gentle slope increased height of the roughness of the island raised type that is higher from foreign shores? The increased dip and reach its maximum height in the northern part of the region. The western part of the sharp slope will end towards the sea ripples. When the surface layers of the island, extended along with other lower classes to the North East to the South-West slope own again, therefore steeped island is formed. Convex layer in the folds of the eastern half of the island were higher in the older classes are located in the center of the anticline is formed. During the episode, the cliffs, eroded by factors such as rivers and erosion created the triangular-shaped cuts in the end had been divided the headland to the east side triangular-shaped parts. On the south side of the island south-east-northwest trending normal fault is observed that is of tectonic origin.

#### **Landforms shore of Hengam Island**

Sea shore rocks are shattered and materials resulting from the degradation of dry sediment that comes along always leave at different points in their bed. Erosion and sedimentation followed one another, they cause permanent deformation Sea coast. Abrasion and erosion on the banks generally three ways to dissolve the direct impact of waves (hydraulic operation) is (Chorley, 2015). When the morphology of the coastline of the island is irregularities in the adjacent building, but the process is basically function and external dynamics have an important role in the current form. Due to diversity and interaction between the processes of the continent construction, blue and tectonic research-driven coastal many forms of diversity of functions. Landforms in all shapes and forms of the same type is said to be unique genetic influences the processes of attrition density or geographical factors caused (swaminathan, MS, 1991) to all forms of interference caused by surface unevenness building, climatic factors, human factors, flora and fauna in different regimes arise is mentioned. Landforms known in coastal areas of the island when the effects of natural and man-made landforms two parts divided.

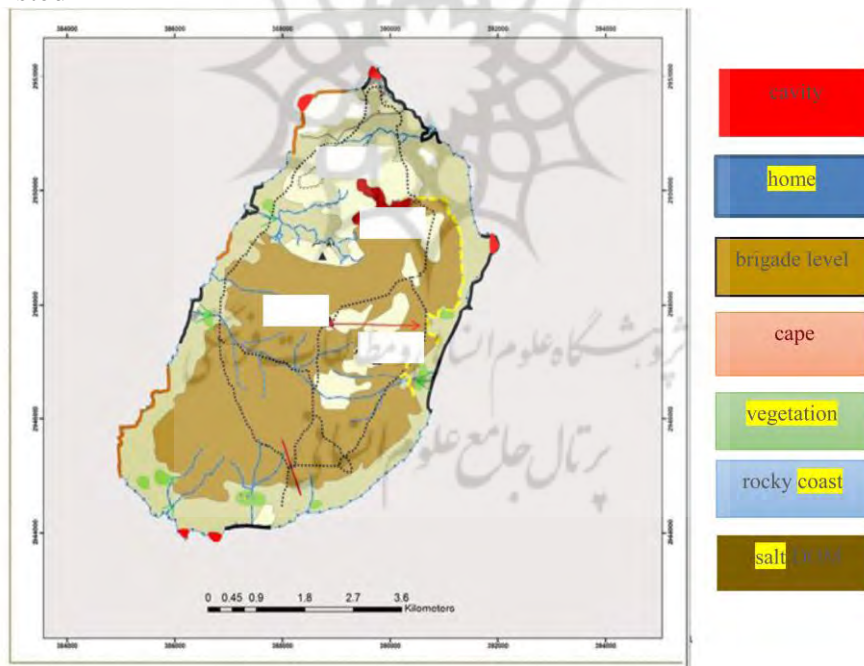
#### **Natural landforms**

Coast and inland water bodies and areas of activity confluence of factors such as hydrodynamic and dynamic processes is related to

active and living conditions, climate and location. The process of erosion, compaction Explore a variety of forms in this environment, the beaches of the system environment are delicate because under the influence of morph dynamic processes governing these areas, where relatively fast development and perhaps this is not comparable to the other systems geomorphology (Nohegar and Yamani, 2006). by an emphasis on field surveys and topographic maps, geological and natural landforms of the land around the island, into two types (high and rocky shores) and (beaches opened) can be detected and classified:

**High and rocky coast**

Rocky beaches with rough morphology, with a relatively steep slope or steep faces are young and most of the coast is accounted for. In this type of coast from erosion explore a variety of landforms are visible good examples in the following graph rocky island shore landforms listed



**Map 7. Hengam Island geomorphology**

**Sea Ivan and beach bars**

Including erosion forms are the result of the cutting action of the waves on the beach adjacent land base. This type of cliff into the sea

off the coast of live and active loads appear. With the progress of erosion, unstable cliffs and crushed and suspended in the RIP area, and coming down the cliff retreat (Taleghani, 2009).

By continuing the gradual withdrawal cliff sea waves and thus relatively flat part of the foot caused it to mention that Ivan beach or coastal capital. Rock retreat and relatively flat surface such as a patio with benches beach will do. Stability of waves with practice becomes more widespread Ivan (Eric wins, first edition 2013). Part of the surgery waves in rocks that have come into existence as part of the beach sand along the edge of the water on the left and the rest are shipped into the sea



figure 3. Sea coast Hengam Island (source: Davoodi Pour)

### **Sea and nip pothole**

On the coastal cliffs of great height and there are few small holes for potholes or dissolve in the cavity, and accordingly, in most cases it has accumulated in the stagnant water. Manner of formation of this hole is that at night when marine plants and algae carry out respiration, oxygen and carbon dioxide release in the air into the water the day after. So gradually acidic found inside the holes and the rocks are affected, causing gradual dissolution. They usually dissolve within the cavity is covered with marine plants and even closer to the sea more water because the effect of sea waves and tide are filled with water. There is a fairly large coastal cliff at the foot troughs formed by the impact caused the sea to the coastal cliff. This gap is commonly known to Nip indicates the water level in the present level, because this hole only by sea waves crashing on the rocky coast (Eric wins, first edition, 2013).





Figure 4. Type Hengam island (source: Davoodi Pour)

### **Coastal sea cave or cave**

A cave Caused by waves Sea Shape. Sea caves are formed early in the process of erosion (The first Vlyamzchap Powell, 2011). Sea caves are found worldwide and are active along the coastline as well as the current and remaining ancient coastal lines are formed. Dissolution caves formed in limestone. The effects of sea level rise submerged and are now at risk of coastal erosion. They are the ones that cause a new period of expansion. The upper flat seaside out of the water when the tide is out. Digging parts of the underside of a cliff by waves, sea cave or arch may bring a sea view.

### **Sea stone columns**

Drought that stretched into the sea due to the waves breaking behind by the fall, the natural vertical cliffs, the natural accumulation of minerals or semi-solid minerals were formed. This amazing vertical columns that stand in the sea fully formed by water and wind. This process usually begins the formation of the sea on the cliffs, creating gaps and causes them to collapse and form to the free stone columns. The same process that creates stone columns it leads to destruction (Kltat, 2002). This column is an island off the coast range. These rocks are eroded by the sea and thus a feature, are always changing.

### **Nose**

The nose, part of the dry mass of tape or is going into the sea. Several small-scale cape coastline on the island of origin has emerged that the morphology of the rough, steep and certain cuts are the source of their structure and are associated with rocky shores. When the island due to rocky beaches, numerous nose and cuts serration and a great beach that is mostly deep enough for ships are docking.

### **Water, rocks or coral reefs**

Some beaches by a critical phenomenon, the growth of corals and sometimes (algae or sponges), are correct. The remaining calcareous skeletons of countless coral animals that live together in colonies of coral reefs are being called the mass of limestone that arise. Corals are usually are found in all areas of the deep sea around the island. But the distribution of reef-building hard or limited to shallow areas and island with an area of hundreds of square kilometers. Mainly in depths of 25 meters or less living, reef-building corals due to the need to light. In fact, a mass of reef deposits of calcium carbonate (limestone) are coral reefs mainly by construction or partly Hermatopic caused by other organisms such as calcareous algae. Given that corals in the Persian Gulf, mainly belonging to the fourth period and therefore is very young to be (Kltat, 2002). Reef coral island capable of withstanding temperatures can be 36-40° C. Coral reefs in the construction able to withstand low salinity than the normal range for seawater (32-35ppt) and thus not in areas where freshwater input has not been found. So that in some areas of the Persian Gulf to 42g/lit of salt can also be thriving country.

### **Flat and homogen coasts**

The coast is flat and pelagic especially in the sea of the mountain, most attended and straightforward fashion, e-sand beaches, the sand dunes to form bands, sand and more for beam width 20-30meters. the slope is very gentle (the Klnat, 2002). Thus, for berthing ships and construction of ports and marinas are not suitable Conversely, for the recreation, tourism, swimming and the like are highly desirable. Open sandy beaches on the island is small. This strip of beaches on the east coast, west and south of the island that has seen therein particles, this coast deposit possibly made of single-cell animal shell or inoysters that are usually made of lime and in western post coast which in salt hill adjacent, ferrous oxide (Hematite) which is related to high special weight, erosion and sediment will find metallic luster, known as placer deposits (silver beaches) are observed to be.

### **Human made effect**

- a. Port centers (waterfront, breakwaters, quay and harbor)
- b. Resident buildings and local market
- c. transport system (road)

#### **4. Conclusion**

Hengam Island is one of the high potential area from the geology viewpoint and phenomenon from geomorphologic process. In other hand this area due to its several capabilities in different environmental and animal type's areas, special surface problems and appropriate climate conditions can be considered. Regarding to the obtained maps, the area have several capabilities that requires more accurate programing and instrument providing for usage. As we mentioned from geological viewpoint this island is made from Lomashly coral lime formation and Hormoz series salt hills, so presence of this affair in different areas especially in western and southern areas have high effect on resource quality and lead the pollution. Porosity presence and diffusion capability in geological formation, also cracks in between them, had been led to entering vast water volume from rain after diffusion and saving from water resource and in underwater paths from sea out of availability. In other hand, presence of this affair lead the sea water with illuviation, therefore fresh water quality will be eliminated. Results of the study of island position from limitation viewpoint are as the following:

1. Climate rare condition in 5 years (from ordibehesht till Shahrivar)
2. Increasing in relative humidity (sultry)
3. Presence of sea floods (seasonal and monthly)
4. Ground salinity and inappropriateness of area soil
5. Structure corrosion from special climate condition.
6. Energy carrier high costs
7. Lack of service and health requirement in island
8. Transferring problem from island to other areas
9. Livestock and hunting traditions in island
10. People migration from southern side of Persian Gulf
11. Drought

#### **5. suggestion**

1-Generally prominent actions for investing in Island include the fishery, agriculture, sea and mineral industry, processing industries, tourism, 2-tourism station establishment in Ghil and old Hengam areas, 3-north coast clearing for diving, 4-service camps establishment, praying place, restroom in island, 5-sea and coast sport camps, 6-entertainment buoyant, tourist service office, appropriate

vehicle entrance for tourism, 7-hotel establishment, sea restaurant, 8-natural and artificial parks (dolphin show in western south in north and western north side and coral show and sea cucumbers in eastern shallow depth of sea), 9-tourism park establishment (such as crocodile cage, deer maintaining in western side of island and turtle show and their seeding in eastern side of island and birds show campaign), 10-sea museum in old Hengam, Island coast show, 11-tourist hunting places establishment, 12-plague for women in southern side, 13-bicycle path in island, 14-coast shopping center development.

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