CHAPTER III
STUDY OF AREA

3.1 INTRODUCTION

Today, the phenomenon of tourism and ecotourism has had considerable investment into this sector in many countries because of its abundant allocated income. Although huge amount of investments is not typically justified for attractive and interesting tourism places, ancient national works, in the field of preparation of places, availability of good roads, stars hotels and suitable vehicles, etc., ecotourism takes advantages to surf and has fun regardless of such investments and in terms of attachment to nature with minimal facilities and equipment and the blessings of the divine nature and addressed the areas of natural scenery with varied and relaxing benefits. Obviously, the countries have offered a more fortunate of diverse nature in recruiting and attracting ecotourism and its revenues. Countries in the continents of Asia, Africa and the United States take more advantages than other countries including Kenya, Rwanda, Nepal, Ecuador, USA, Canada, India, Russia and China. These states have their foreign exchange earnings in millions of dollars annually from ecotourism in national parks and protected areas.

Iran has also great variety of climatic and biological potential to attract ecotourism. However, the first step to mobilize the economic wheels of ecotourism is to identify capabilities and potential capabilities. Comprehensive plan for ecotourism exploitation of nature and habitats are important matters of tourism and sustainable development. Tourist exploitation requires less work for natural areas in comparison with other activities and use of land like mining could be an effective help for forest and pasture utilization and industrial production activities and investment. Ecotourism can be destructive and harmful to the environment and nature, and not creating incentives for visitors to the preservation of nature. In fact, ecotourism is a kind of operating principles, where logic and environmental resources are measured.
Iran has protected areas under the names or parts (national parks, national natural works, protected area and wildlife refuge) that are under supervision of Environmental Protection Agency. These parts could be attracted with a little investment to the largest centre of ecotourism in Middle East and Asia. Semnan province has a special place among the provinces of Iran, because the four parts of the region with 134, total area of about, 5.8 million acres. Semnan province region has more than 7 regions, has more than 2.3 million acres. In other words, 27 percent is located in four parts in Semnan province and its ecotourism is ranked first in the country, which is also about 25 percent area of the province. The circumstances are considered a lot developed in which the global standard protected areas are 10 percent with 27 percent of Semnan province region, 17 percent higher than the standard four global region and provinces in this regard. Naturally, investment planning can attract and absorb domestic and foreign ecotourism evolve and transform the economy of the province and so far there is not much attention to the protection and benefit, more productivity of natural resources and exploitation solely as traditional grazing, mining etc. Undoubtedly by preparing and organizing the province, the region could be vulnerable to the country's largest centre took ecotourism. There is no need to clarify the importance of this issue for income of countries with some of the protected areas where ecotourism is mentioned in 1980’s. In preparing the Handbook National Park and protected areas for ecotourism are: "U.S. National Park System has become the largest tourism centre in the world. Therefore, it had more than 270 million visitors in 1989. National Parks in Canada had more than 20 million visitors, while the number of visitors to state parks reaches more than 47 million. In Kenya, tourism attracted the largest foreign currency in 1988 and brought 400 million dollars to the country, through tourism.

Obviously, given the potential capabilities of the environment in four areas with a little investment in province can easily admit a significant number of domestic and foreign ecotourism and foreign exchange to the province.

Geographic features provide a field location required for utilization of natural resources, for tourism. A geographical location can act as natural resource for development such as component placement location, climate, topography effects, and
water networks, especially networks with visible surface water, vegetation and wildlife displays considering each of these elements in the field of tourism.

Since this is caused by nature and tourism or in other words natural and important places they have a critical importance and prominent role in this phenomenon in terms of well being of humans.

In this chapter, we try to give a suitable perspective feature of location, climate, vegetation and animal life that can develop as a tourism resource for planning.

3.2 THE POSITION OF SEMNAN PROVINCE

Factors that influence the tourism industry are include its geographical location in the country, near the capital, a pathway to Khorasan province due to pilgrimage attractions, special climatic conditions resulting from the province located in northern and southern slopes of Elburz ranges and other parts of north central desert of Iran, including factors affecting attracting tourists in the region.

According to the programme 2004, Management and Planning Organization of Semnan province, an area equivalent to 815.95 kilometres of the province is 8.5 percent of the area allocated to the country and sixth in terms of provinces and its area is about four times the province of Tehran.

Semnan Province, is located between 51 degrees and 57 degrees and 51 minutes to 3 minutes and 34 degrees east and 37 degrees 13 minutes north latitude and 20 minutes from the Greenwich meridian.

This province is limited to the northern provinces of Mazandaran and Golestan, south of Isfahan, from south to Khorasan, and east to the west of Tehran and Qom and its centre is the city of Semnan.
Figure 3.1: The Position of Semnan province in Iran
A part from four cities of Semnan province, are 16 towns, 28 villages and 12 wards. Total villages of the province are 2651, of which 789 villages with residents (76/29 percent of the total number of villages of the province) and 1862 villages haunted (24/70 percent of the total number of Province).
3.3 CLIMATIC CHARACTERISTICS

Awareness of the potentials lies in the characteristics of atmospheric and climate in the country's vast geography of different seasons has considerable importance in order to focus on different plans such as national and provincial development of tourism industry. One of the most important elements are tourism areas, tourism atmospheric conditions, geographic and climatic hazards and disasters caused by weather and climate and the limitations of the meteorological variables in different seasons. Semnan province generally influenced atmospheric flow from hot and dry desert plain located away from the sea, but factors such as height, location, direction along the mountains, latitude, air masses and weather systems, vegetation and agriculture, affect the formation of climate.

3.3.1 Air masses and effective systems of Semnan province:

Air masses and weather systems in different seasons, the geography of the country and invaded the invaded provinces are the following:

Systems and air masses of winter: the masses of the Iranian plateau in cold seasons affected Semnan are divided by the two high-pressure and low pressure systems.

Winter high-pressure systems:

The most importants high-pressure centres with multiple foci in the Northern Hemisphere are:

A- Siberian high-pressure centres:

In winter, the high-pressure centres and the heavy cold air masses from the North East into the plateau country are the first to enter into Khorasan and then fill the country and a lot of rain causes a temperature drop.

Semnan province is affected due to proximity to Khorasan in time of invasion of these systems. These areas are locations in the middle and southern part as well as north.

B- Polar cap high-pressure centre:

Formation of air masses is from the North Pole during its route from the former Soviet Black Sea and south into Iran and the dry cold, which makes its influence in the
northern highlands province Firuzkuh as snow and dry and bitter cold and in other parts of the province as a temperature drop.

C- High-pressure centre in Canada:

In the cold season snow covered areas of Canada produce cold air masses and that masses have started to enter Europe and then settle in Europe and move towards the East. Creating high-pressure mass of cold tabs emerged from the Siberian high pressure, expanding tabs on the south by the former Soviet Union and the Caspian Sea, causing precipitation to be useful. Sometimes it crosses with high pressure along the tab through Azerbaijan and enter the plateau in Semnan Province during the cold season could be affected.

D- Azure high-pressure centre:

Masses derived from the Azores Islands in cold seasons of the route through southern Europe or Africa is to enter the country if comprehensiveness in Semnan also were noticed. Naturally, in the Northern provinces the effects are great.

• Winter low-pressure systems:

The systems that influence Iran and provinces in the cold months are:

A- low-pressure centre of the Mediterranean:

Mediterranean Sea has always been such an effective regime of rainfall in the country because the masses always cold season to the wet rain-causing emissions that our system. Mediterranean Sea is always a cyclone maker with a situation in which the cold months, several cyclones move to the East with cold months. In a situation where the ground is cold enough to warm fronts, this system is very active.

Sometimes the system created by after passing through Turkey and on dealing with the altitude of this region into two branches, including a branch of the West and Northwest into the country and the rainfall on the region Khorasan into former Soviet territory and another branch of the soil of Iraq into Afghanistan via Khorasan.

Higher rainfall in Semnan is caused by these systems. Snow and rain is in the northern highlands provinces mainly in other parts.
B- Low-pressure centre in Sudan:

The low-pressure system is active generally in cold seasons in the province of Bushehr, Khuzestan, Hormozgan, and sometimes due to high development potential, scope to the country's central region is extracted and the areas that influence loss caused by rain is warm like a drop in altitude to be cold and frozen. Semnan province sometimes is affected by the system in the cold months.

- **Summer system and air masses:**

  A low-pressure centre of the Central Desert Heat, Semnan province, especially in southern and southeastern parts of the warm seasons is strongly influenced by the system. That is evident as the desert climate in these areas.

  In Iran's central desert, such as Saharan Africa and Saudi Arabia, in warm months the warm air mass is transferred to various regions of linkage because parts of the province works with the desert and its complications are visible.

C. Indian Ocean low-pressure centres:

This centre will influence the warm months of June to mid September, the South East of our country. Sometimes it is drawn to increase the radius to the central parts of Iran. In this mode of Semnan province also impressed that the dominant phenomenon to be associated with increasing temperature with the existence of wind, dust cloud and no rainfall.

Other systems in Semnan pressure that are effective in summer weather can be migratory flows from Europe and Azures.

3.3.2 The climate affects of air masses on Semnan:

Semnan province in terms of how influence of air masses and weather systems are affecting the distinct is divided into three parts.

- **A.** southern and southeastern parts of the desert climate have had warm and dry summers and cold and dry winters.

  In warm seasons due to the establishment of a thermal low-pressure centre in the central desert of Iran it is called the so-called Synoptic Thermal - low, warm air mass
produced will affect large parts of the central plateau of Iran. Parts of southern and southeastern provinces are affected by these conditions due to proximity and linkage with the central desert of Iran. The desert makes cold months cold and dry. **B.** Middle parts of the province is Hossein Abad Kalpush starting from Miami and lowland areas and Biarjomand and Sydabad and southern parts of the cities like Damghan, Semnan and Garmsar and encompass the Eyvanki compared to the southern parts with a more temperate climate.

### 3.3.3 Temperature and freezing:

Factors that determine the status of the area are heat, including a combination of more temperature, dry temperature, dew point, minimum temperature, maximum temperature, mean temperature, absolute maximum temperature, minimum temperature etc. Function of above thermal factors is latitude, altitude, land and sea distribution, uneven ground etc.

In order to achieve comprehensive data elements, climatic conditions and their changes over the years, four stations of climatology have been used in subsequent tables and status in changes of temperature and frost elements of the station is inserted.

**Figure 3.3: Isothermal map of Semnan province**

*Source: www.semnanmet.ir*
3.3.4 Rainfall and humidity:

Amount and seasonal distribution of rainfall and humidity are investigated in addition to effect, formation of a special natural environment catchy tourism, mobility and dynamism in tourism is also effective for some short key elements.

In Semnan province, precipitation begins when the dynamic pressure based on the plateau towards lower latitudes and geographical mobility is close to the equator. In this case, the waves of rain find west of the existing entry into the country. This usually occurs in mid-October and late April. With the restoration of this high-pressure centre, regular rainfall ends, and therefore the main source of rainfall in the province will be affected and this leads to atmospheric loss.

Pornographic rainfall in some mountainous parts of the province is particularly evident in the northern bar portion of the rainfall originated by mountainous north of the country, and this causes loss of atmospheric patterns and increased its annual volume than other areas.

Convective rainfall also occurs in Semnan province. This type of rainfall-induced accumulation of moist air masses rise and the warming is caused by local instability. Repeated occurrence of summer rainfall in the province is due to the above process. Spatial distribution of rainfall makes clear the following points:

A) Generally moving from south to north the amount of annual precipitation adds automatically to the East West axis. Relative decrease in annual precipitation is also seen. These exceptions a case are due to single rainfall nucleus located in south Miami and East Furmad.

B) Low-kernel 100 mm rainfall in the south Garmsar. Low precipitation can be considered in the most of the area in addition to the core of low rainfall and 125 mm Damghan Kheirabad Garmsar Semnan and the component parts are very dry.

C) Loss of atmospheric highest annual rate in the northern province of more than 400 mm is observed.
Figure 3.4: The rain map of Semnan province

Source: www.semnanmet.ir

Table 3.2: Statistical characteristics of desired rainfall in the weather stations
(Unit mm rainfall)

<table>
<thead>
<tr>
<th>Station</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>SD</th>
<th>CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semnan</td>
<td>276</td>
<td>5 / 60</td>
<td>5 / 137</td>
<td>2 / 57</td>
<td>6 / 41</td>
</tr>
<tr>
<td>Shahrood</td>
<td>2 / 343</td>
<td>9 / 72</td>
<td>9 / 166</td>
<td>3 / 60</td>
<td>2 / 36</td>
</tr>
<tr>
<td>Garmsar</td>
<td>2 / 182</td>
<td>30</td>
<td>5 / 104</td>
<td>7 / 44</td>
<td>8 / 42</td>
</tr>
<tr>
<td>Damghan</td>
<td>308</td>
<td>34</td>
<td>4 / 116</td>
<td>64</td>
<td>9 / 54</td>
</tr>
</tbody>
</table>
Table 3.3: Mean percentage of seasonal precipitation in the desired weather stations
(Unit mm)

<table>
<thead>
<tr>
<th>Stations</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>rainfall</td>
<td>Percentage of rainfall</td>
<td>rainfall</td>
<td>Percentage of rainfall</td>
</tr>
<tr>
<td>Garmsar</td>
<td>8 / 33</td>
<td>1 / 23</td>
<td>76</td>
<td>52</td>
</tr>
</tbody>
</table>

Sources: Iran Meteorological Organization
Figure 3.5: Seasonal rainfall in the synoptic stations of Semnan

Sources: Iran Meteorological Organization

Annual rainfall distribution in different seasons has proper pluvial compliance with entry systems to Semnan province. These systems can be seen to begin entering the province in dry period of autumn and during winter to cold seasonal distribution of rainfall and reach their peak in spring with a seasonal drop in rainfall. With the end of the regular entry on this system in mid-spring dry season begins and minimal rainfall during the summer season can be seen.

Humidity of Semnan province shows that changes in relative air moisture in parts of the province is affected by the cold season rainfall in the early autumn, and increase in the transition to spring in warm season loss in the winter.

3.4 TOPOGRAPHY

Topography is the degree of steppers and height of the land. Calculation of height is very important for urban planners and designers.

The steepness of the land will affect the amount of energy receding from the sun. Therefore the slopes facing south will be warmer than the slopes face north (Baniasad, Ali, 1995).
3.4.1 Heights:

Semnan province on southern slopes of Elburz Mountains ranges the height decrease gradually from north to south and leads to the salt desert the most important heights:

1. Elburz Mountain ranges have the average height of 3200 m because of which it fences the city of Semnan province apart, and makes its highest peak called Nizva, located in north of Urpalang pasture and northwest Shahmirzad farm.
2. The main series of multiple fields separates Elburz Mountains and reduces the height to about 6 km north of Semnan and gradually continues it equal to the ground.
   A series of Major Elburz Mountains extracted between the cities of Semnan and Damghan.
3. There are low altitude mountains between south Damghan and desert, a sequence of fields mentioned above and some of them will be connected to some single and parallel to the Elburz Mountain range along the desert. The mountains closer to the centre are desert plains of their height and gradually decrease until they are equal to the ground.
4. Elburz Mountain ranges in the north of Shahrood from the west towards the East and the extracted aqueduct is the main source of rivers in the region. In the southern part of the main range, low-elevation Mountains stretched parallel to the main field, are equally close to the desert plains, Shahrood and villages throughout the valleys reduce the height, and often Heights located in this series and their natural ridge heights are the same. The peak heights of major peaks Khoshyeilagh is 2802 meters height and peak height Chnashk is 2670-meters, Cloud Peak height is 2630 meters.

**Figure 3.7: Mountain in Semnan province**

![Mountain in Semnan province](Source: www.seccim.org)

Inequality ever had an important factor in addition to cases such as climate and vegetation, important in attracting tourists.

Neighbouring province with Iran central desert is considered valuable for attractions of this province. The availability of mountain peaks and springs in the northern highlands provinces are suitable for climbers. There are Caves that have potential to attract cavers and researchers as other attractions of the city.
Perhaps the appropriate ways and facilities required (such as accommodation and vehicles needed for communication) are the biggest challenges to tourism attractions in the area of inequalities, also uncertain condition for climbers entering protected areas with attractions is another issue that may be debatable.

3.4.2 Soil of region:

Soil in Semnan region has moisture regime, so if revolutionized less and possess the main category of Anti-tuberculosis which accordingly can be categorized as follows:

1. Flood Soil:

This soil is relatively deep and light weight and it is made up of small and some big stones, lands which contain this soil are mostly flooded and are arid and there is no farming on this soil. The sample of this soil can be found in Damghan City, between Garmsar and Dehnamak.

2. Salty Soil:

The obvious characteristic of this soil is low amount of water, high amount of salt and alkaline condition. This soil is not much deep. Samples of this soil can be found in Garmsar's Aliabad and Hamatabad regions and in southern part of Semnan, in region called Alaa to Khorian region.

3. Gravel Soil on the top of alluvial fan this soil usually has steepness level equal to 3% The depth of this soil is very low and it is about 30 cm. In this kind of soil, there are rubbles in a depth of above 50 CM and there are gypsums crystals in this soil. This kind of soil is not suitable for farming because there exist small and big rubbles (Environmental research department of Semnan province, plan for assessment and analysis of development on environment in Semnan province, Journal No.15, 1988 Page 22).

4. Hillside Soil:

This soil mostly can be seen near mountains, and near hillsides. This soil is alkaline and in some areas some gypsum can be seen in this soil.

In some areas in Semnan province with this soil, they farm wheat and barley.
5. Soils Syrzyvm:

Generally, Syrzyvm soil can be found in dry and semi dry regions and since Semnan province is located in dry region, most of its soil is of this kind.

In south-west part of Semnan in a small area there is Lytocell soil and in Lower regions there is calcareous - Lytocells and in desert soil there is Syrozyvm. From physiographic point of view soil in Semnan province is made of two Categories of allurial coluvial fans and sand plains.

3.4.3 General Geological features of Semnan region:

1. Geographical Structure:

   From geological point of view, Semnan region is located in a geological span of two Geological constitutions of Iran. The first one is Elburz Azarbajan unit in the North and the other is Central Iran Unit in the south.

   It seems that all events, which caused the separation of these two units, were lead by parallel faults between these two units. The volcanic rock of Andozit and diorite belonging to Neosen era can be seen only in the unit of Semnan.

   What can be seen at present in natural landscapes in Semnan province is mostly due to fourth geological era of which were made revolution there (regional plans of Semnan province 2005- Page 16).

2. Major Faults in Semnan Province:

   Major Faults in Semnan province are as follows: Tarood Faults, Miami, Faults, Semnan fault, Abyek Faults, Firoozkooh fault, Shahrood Faults, Ajiloo Faults, Attari Faults (regional plans of Semnan province 2005) P 18).

3. Earthquake Zoning:

   Historical study of Semnan earthquakes show that the number and density of earthquakes decreases from North to South and the density of earthquakes are more in Elburz zone because of existence of vacillator faults, which shows the direct impact of foundation of faults in creation and occurrence of earthquake in the region.
The oldest recorded earthquake happened in Semnan belongs to 9/2/1903 at 18:5 minute and geographical location of earthquake 5 36 3 and 54 9 (longitude, latitude) is respectively.

Its magnitude in scale was 5.0 and the centre which recorded the earthquake is international seismology counter – England (PAS)

The last earthquake occurred in Semnan province on 11/10/2003 at 10:36:3 longitude and latitude 34 3, 54 8 centres respectively.

Its magnitude in internal wave's scale was 4.7 and the centre, which recorded the earthquake, was Moscow geographic centre Russia (MOS)

The biggest earthquake ever happened in Semnan occurred on 12/02/1953 at 55 08 and 35 39 latitude and longitude.

Its magnitude in surface wave scale was 6.5 and in internal surface wave scale was 6.9 and the centre, which recorded this earthquake, is International seismology center England (PAS)

3.4.4 Wind:

Analysis of winds in Semnan region: Information related to wind can be utilized in different areas in building airport landing, establishment of smoke producing and pollutant industries, isolation of buildings, buildings windbreaks, agricultural activities, fishing and marine activities.

Study and analysis of winds is of high importance and architecture planners and urban designers should always consider this fact.

3.4.5 Direction of Dominant Wind:

Recognition of wind direction especially the dominant wind in order to establish human facility and form plural perspective is of high importance. According to statistics released by Semnan weather station, the dominant wind in spring is from North West and Southwest. In summer, the direction of dominant wind is from south of southeast and in autumn, it is from west and in winter also it is from west.
Therefore, air monitoring at Semnan station shows that in most months of the year the direction of the wind is from west and this is because of west quantity of air masses. In winter and beginning of spring the North-west streams come towards Iran from Scandinavia and one of its branches passes the Elburz-mountain range and in Semnan and Damghan constitutes a stream called “Tooraneh”.

Generally, the dominant and main winds of Semnan blow from: North West, South-West and South (Comprehensive plan of Semnan, 1st 1995, P 26).

3.5 WATER NETWORK AND RESOURCES ANALYSIS OF SEMNAN

Other issue of tourism attraction in this province is water lakes, rivers, springs, wetlands, and so on. This element alone has valuable attraction. It is unique and it plays an essential role.

Semnan province is located in an arid climate, in this respect it is not compared to other areas of north and west attractions with a remarkable national and international scale. However, it has many springs (mineral, drinking) that give unique beauty to this province.

The province actually is faced with water shortages according to geographical location and climatic component of arid and low water. So that agricultural and industrial purposes have water shortage.

To provide water through surface water, groundwater, and considering that is important about 80 percent of the total water is groundwater and 20 percent of the total water allocated to surface waters groundwater in the area.

Total annual groundwater discharge based on Programme Management and Planning Organization in the year of 2000, is 983 million cubic meters. It is estimated that more amount of water volume is estimated; therefore, there are forbidden zones for digging wills in Eyvanki and Shahrood plains.
Accordingly, water can be divided into two; groundwater and surface water. Totally, it is included into the large part of Semnan Desert basin and a little of Gorgon basin plain and the central basin.

3.5.1 Surface water:

Semnan province with the exception of Hableh river in Garmsar, lacks permanent rivers, although some of the nearly constant surface currents induced groundwater has also been referred as a river (such as Cheshmeh Ali damghan). Actually, river is a kind of flow that has atmospheric fall. Due to this, the surface currents in this region are composed of the flows that continued after the end of rainfall and after a while got disconnected.

Morphological study has shown that severe floods have considerable erosion on the flood regime and surface flows are not possible due to the possibility of using them. The main branches of fresh water are Gursefid, Namrud, Dryjay (Delichai) and the salty branches are Shurab, Talkhab, Gholamab, Rashidsultan, Kharmandareh, Arusparan, Arzaq and Saridareh.

Other rivers are River Tash, Kal shur, Asseman – su, Cheshme Ali, Fnjar (Fikhar), Tuyedarvar, and river Khshkrud Daryan (Daryan), Emamzadeh Abdullah River, Tange Ij, River Zivan, River Sorkheh, Gol - e – Rudbar, and Zard tul.

A channel network is based on four main systems affected in Semnan province. River system is in Habelrud-shurab.

Habelrud River is the main branch of the River Heights of Mishineh Marg Mountain originated in the northwest part of the basin lands outside the province and it will be reach the public along the south side.
**Figure 3.8: Habelrud River in the north of Garmsar**

![River in Garmsar](image.png)

Source: [www.acisemnan.mihanblog.com](http://www.acisemnan.mihanblog.com)

- **Tajan-Talar river systems:**
  The main branches of this system originated in land elevations and north of mountain akanly and along flows the northern parts of its basin. The main river system form Talar and Tajan.

- **River system of Cheshme Ali- kal shur:**
  The main branches of two major river systems namely Cheshme Ali and kalshur originated in northern parts of the heights of Semnan province.

- **River system of kalshur Jajarm-Kalshur:**
  The main branches of this system originated in heights outside the basin in the east of Semnan province. The system has formed two separate networks, namely a channel Kalshur Jajarm in the northeast and kalshur Sabzevar in the eastern part.
3.5.2 Groundwater:

Groundwater can be divided into wells, springs and aqueducts:

A. Wells:

The numbers of wells are 382 and in that 323 are deep wells and 60 semi-deep. The deepest wells located in Semnan-Damghan road are 250 meters deep and shallow wells and most related Bhadorabad has the depth of 12 meters. The maximum discharge is about 55 liters and the minimum is 12 liters.

B. Aqueducts:

148 fields in the annual subterranean zone discharge of about 38.7 million cubic meters of groundwater resources of the region. Study shows that the discharge flow from aqueducts is 8.3 liters per second and the maximum flow rate is 35 liters per second and at least one liter per second. It is also the region with 86 percent of aqueducts with instantaneous discharge of less than 10 litters per second is just a spring containing subterranean discharge of more than 50 liters per second.

A gap of 78 springs is extracted in Semnan range about 59 million cubic meters per year of groundwater. Average discharge of springs is about 24 liters per second which is 450 liters per second maximum flow and minimum at about 15 litters per second at 0.85 percent springs with discharge less than 10 litters per second are three with a discharge gap of more than 100 liters.

Table 3.4: Water consumption in the province, taking the type of separation in the province: 2000-2002Unit: million/m

<table>
<thead>
<tr>
<th>Type of consumption</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1181</td>
<td>1182</td>
<td>913</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1101</td>
<td>1106</td>
<td>835</td>
</tr>
<tr>
<td>Drinking</td>
<td>66</td>
<td>63</td>
<td>64</td>
</tr>
<tr>
<td>Industrial</td>
<td>14</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: General Department of Water Affairs Semnan province
3.5.3 Dams of Semnan Province:

Based on available information, on dam in the Damghan is Cheshme Ali. In all these Chhartaq dam with a height 70.2 meters height and capacity of the basin floor is the longest 3.6 m per second, has the highest flow rate. Maximum length of Ali Damghan with springs is 100 meters long.

3.6 VEGETATION OF SEMNAN

Increasing population growth and technological changes in natural phenomena is established such that the full potential of ecosystem destruction brings irreparable damage to the next generation.

Ecosystem is considered the origin of life on one hand and human spirits and energy of nature are taking stylized due on the other. Tired of technology, man again will search for comfort in nature. Remember, the minimum required ventilation for human world. Therefore, identifying these areas and their reconstruction efforts for using modern techniques of the greatest services to human society is considered. One of the main branches according to vegetation ecosystems and the highest allocated to tourism offers. In Iran climatic effects due to the geographical diversity with vegetation is very diverse. Semnan Province also benefits from this diversity was not admitted that it has nourished without a very different and beautiful and most rare in itself ecosystem.

Semnan provinces are with 606000.7-hectare grassland, forests, deserts and plains. Out of this amount, 225,000-hectare is jungle, 150, 000 hectares is Needle-leaf forests, in the southern slopes of the Elburz and 50.000 hectare of Broad-leaved forest species of oak - Walnut - alder - Hornbeam and extensions located in the northern Elburz. 25000 hectare in desert regions has dense masses of Haloxylon and Tamarisk. Approximately 5,500,000 hectares of pastures allocated to the area. According to this region and revealed classified by Torgopof (1970) relatively small part of the region in Iran and Turan has overall TV herb found in the definitions of the dry climate. Little amount of rainfall and long dry season and severe fluctuations of temperature zone is the main feature.
Semnan habitats generally based on climatic classification identified three regions that can be divided into:

• **Semi-desert region:**

Large part of land in the southern parts of the region is with an approximate height of 850 meters above sea level. Post underlying cause of the region affected most are the soil and topography. Variety of plant species of the family Chenopodiaceous Halophytes contain rows of fastidious friendly dandruff grains.

• **Plain Region:**

Region with average annual rainfall of 150 mm in the south and 230 mm in the northern regions fluctuate. High density of vegetation grows in this region and its most prominent type is Artemisia Plant.

• **Mountain province:**

Mainly southern slopes of Elburz and Juniperus site contain trees. Due to the long winter, activities in this vital region will be halted for a long time. Only a few species of trees and Juniperus can resist, Incompatible in this environment.

• **Forests:**

This area with about 225,000 hectares of natural forest area of almost 3 percent is allocated to the province. Forests in the province, including natural forests and artificial forests are divided into three categories:

• **Broad-leaved forests:**

Broad-leaved forests of the northern border provinces in the mountainous north of the country's forests has continued at the beginning of the northern forests located in watershed and its area is about 50,000 hectares of which about 10,000 hectares and 40,000 hectares of the industrial forest is destroyed.

• **Juniperus forests and southern slopes of Elburz Mountain:**

Area of approximately 150,000 hectares of these forests and these forests are very important. The forests are Juniperus Parvar, Avlang, Khoshyeilagh and adjacent
Chaharbagh of Shahrood is one of the densest forests of Juniperus known in Iran and sometimes as a mass storage protected and supported. Trees reach 15 meters, height.

• Desert forests:

The forest area is 250.00 hectares and half as dense masses Haloxylon and Tamarisk are located in the southern and central areas of the province Chahjam and Khvartvran a big Tamarisk forests and desert regions also has a forest Garmsar Tamarisk.

B. Artificial Forests:

Construction of forest parks and green spaces in the province over an area of 370 hectares will be included in the surrounding towns and population centres in the province. In addition, an area totalling 960 hectares in the province of input and output path ways to create green spaces and is dedicated to planting shrubs Haloxylon.

Haloxylon forests also seized the equivalent of planting 64,896 hectares of the surface surrounding the province.

• Production Forests:

• Natural forests Province:

Because these forests are located in the mountain climate and high slope, and being sensitive to these areas and erosion and flood, this species of tree grows and the highest exposure to watershed areas, exploitation as commercial and industrial forests was not feasible for only timber and wood products of the forests for fuel and building material, using rural forests are being marginalized.

• Plantation areas:

Forest parks and green spaces have been constructed around cities to prevent industrial pollution and provide a healthy environment and enhance vegetation and warm desert stylized, and sometimes warm desert products are stylized to create resorts.
Figure 3.9: Vegetation of Semnan province

Sources: semnan.frw.org.ir

Table 3.5: Area of natural forests and planting in Plain Province

<table>
<thead>
<tr>
<th>Area percent</th>
<th>Area (ha)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>51.5</td>
<td>150.000</td>
<td>Juniperus species</td>
</tr>
<tr>
<td>17.1</td>
<td>50.000</td>
<td>Broadleaf</td>
</tr>
<tr>
<td>8.58</td>
<td>25.000</td>
<td>Haloxylon and Tamarisk</td>
</tr>
<tr>
<td>0.13</td>
<td>370</td>
<td>Parks and green spaces planting</td>
</tr>
<tr>
<td>0.33</td>
<td>960</td>
<td>Green spaces, roads margin</td>
</tr>
<tr>
<td>22.3</td>
<td>64.896</td>
<td>Plantation</td>
</tr>
<tr>
<td>100</td>
<td>291.226</td>
<td>Total</td>
</tr>
</tbody>
</table>

Explained that during 70-1364 the amount of broad-leaved forest 859 m 2.981 tons of wood and coal exploitation and 656 hectares of forest work have been done during the same period.

Also in connection with the turnout of wood production, activities in recent years, including 100 hectares and 508 hectares growing poplar, walnut, and about 100 hectare of other species have been done.

Table 3.6: Profile of forest parks built

<table>
<thead>
<tr>
<th>Tree type</th>
<th>Area (ha)</th>
<th>Operation area</th>
<th>Years in construction</th>
<th>Srjngldary</th>
<th>Park Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>pine, cypress, acacia, bray, Purple</td>
<td>85</td>
<td>1971</td>
<td>1970</td>
<td>Semnan</td>
<td>Semnan Svkan</td>
</tr>
<tr>
<td>pine, cypress, acacia, bray</td>
<td>12</td>
<td>1981</td>
<td>1976</td>
<td>Semnan</td>
<td>Koomesh (1)</td>
</tr>
<tr>
<td>pine, cypress, acacia</td>
<td>10</td>
<td>1988</td>
<td>1984</td>
<td>Semnan</td>
<td>Koomesh (2)</td>
</tr>
<tr>
<td>pine, cypress, acacia, weighs</td>
<td>28</td>
<td>1990</td>
<td>1976</td>
<td>Semnan</td>
<td>Mahalat</td>
</tr>
<tr>
<td>pine, cypress, acacia, sycamore</td>
<td>80</td>
<td>1990</td>
<td>1979</td>
<td>Shahrood</td>
<td>Jghvlgyr</td>
</tr>
<tr>
<td>pine, cypress, acacia</td>
<td>50</td>
<td>1981</td>
<td>1974</td>
<td>Damghan</td>
<td>Damghan</td>
</tr>
<tr>
<td>pine, cypress, acacia, tamarisk</td>
<td>70</td>
<td>1988</td>
<td>1984</td>
<td>Garmsar</td>
<td>Kavir</td>
</tr>
</tbody>
</table>


• Pasture:

Semnan Province is one element of the country's livestock and poles. Summer rangeland in the northern Semnan province Garmsar and Damghan, cover a variety of legumes any Gramynh plants to enjoy, and being a mountainous region and soil considering the rainfall conditions and the type of parent rock, vegetation in the areas is suitable for soil protection observance of Season grazing cattle with regard to capacity.
Most winter pastures province make up the southern side along the road to border Tehran Mashhad, Isfahan and Khorasan provinces and province continues. Total 5 / 5 million hectares of pastures province have a degree of 5 percent, 28 percent of grade 2, 7 / 36 percent grade 3 and 30 percent of grade 4.

Unfortunately, due to excessive grazing and non compliance, during grazing season, there is destruction of livestock in most areas and destroy species palatability and do grazing on alternative species.

Becky Semnan province of poles in livestock pasture country is considered significant in terms of economic and protein supply. Livestock developments in the province due to higher pastures are very rich, so in the past decade, approximately 6,220,000 hectares of winter and summer pastures had forage production of approximately 2 to 5.2 million people. Due to no increase in excessive livestock grazing practices and rangeland degradation, significant levels of grazing in 5,500,000 hectares with approximately 646.800 tons during a period of grazing has decreased.

Relatively good quality winter pastures and interesting element lead and prepare plans to improve soil conservation and rangeland forage production. Summer rangeland is located in the northern border provinces, including a variety of vegetation etc. Gramynh enjoyed the mountainous region with regard to soil conditions and types of parent rocks covering the area are suitable for soil conservation. Distribution ranges in the province are affected by factors such as water, air, soil, undulating and have been ... and these factors make the plant growth and development and thus the creation of pastures by the use of time and seasons different. Considering the total amount ranges in a province, any city with 314.718 has highest pastures, and the city with 34.139 ha Garmsar has lowest ranges allocated to the province.

Pasture lands in Semnan city is about 120.233 ha, and pasture lands in Damghan city is 8.091 hectare.

Because of relatively good pasturelands in the city, more than half of the pasturelands are allocated to the province.
If you want the average number of animal unit capacity of the province, we calculated according to 2,697 thousand animal units during a period, meadows meet the province would be about 900,000 animal units.

3.7 WILD ANIMAL

Wildlife can be among one of the most important economic resources of a region taken into account, because human beings long back and even from prehistoric times use various wildlife.

Increasing population and development of technology industry and urban development and threatened use of land mines it is vital to take these natural resources.

Identify and preserve this important resource through income generation for each country. The beauty of wildlife attraction because of numerous people being drawn towards the world's animal species is different. View research on specific species and even hunt important factor in attracting tourists.

Semnan normal position and proper facilities and adequate area are suitable for wildlife of types. Due to climatic variation in this region one can trace various wild animals, birds, reptiles and mammals to be scattered in mountainous areas and desert plains.

Semnan region is unique in terms of climate variability and ecosystem diversity of relatively rich wildlife of some species.

In this area, two major orders of mammals and birds have enjoyed. A considerable population of animal species have been observed in Semnan province, such as whole, goat, ewe, ram, leopard, brown bear, wild pig, Quebec, eagle, vulture in the mountainous areas. Plain Semnan province has been observed like zebra, cheetah, and reptiles in the southern province and the desert environment suitable for maintaining wildlife generation in Semnan region since 1964. With the establishment of the Organization Department of Shkarbany environmental measures have been useful.
3.8 DEMOGRAPHIC CHARACTERISTICS OF SEMNAN

According to the survey, population of Semnan province in October 2006 was equal to 589,742 out of which 74.7 lives in urban areas and 25.3 percent lives in rural regions, and the relative density of population in the same year was 5197 person per square kilometre.

3.8.1 Demographic composition of Semnan province (gender, age and population):

In October 2006 from a total of 589742 people, 302433 of them were male and 287309 of them were female, therefore the gender ratio of 705.26 also yielded 28.63 percent of them were below 15 years old and 71.33 of them were in 15-64 years old range and 6.04 percent of them were above 65 years old. Also, 25 percent of people in the village of Semnan Province and 75 percent are living in cities.

Figure. 3.10: The relative distribution of population status based on residence in Semnan 25% rural 75%city

Immigration:

From October 1996 to 2006, 123123 persons entered or left the province.

Literacy:

In October 2006 out of total population above 6 years old, 88.6 percent of people are literate.

Employment condition:

In October 2006 from the total population of Semnan province, 17.44 were working in agriculture section, 33.13 percent in Industries and 47.95 percent were working in service section and only 3 percent of population was jobless.