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HAKIM SABZEVARI UNIVERSITY

**SABZEVAR 2**



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# Sabzevar Watershed

## Introduction

Part of a land where all the water is leaking or flowing in it is reaches the end point, called watershed. The lowest point in a basin may be the sea, the lake, the swamp, the river and etc, which usually name it on the watershed.

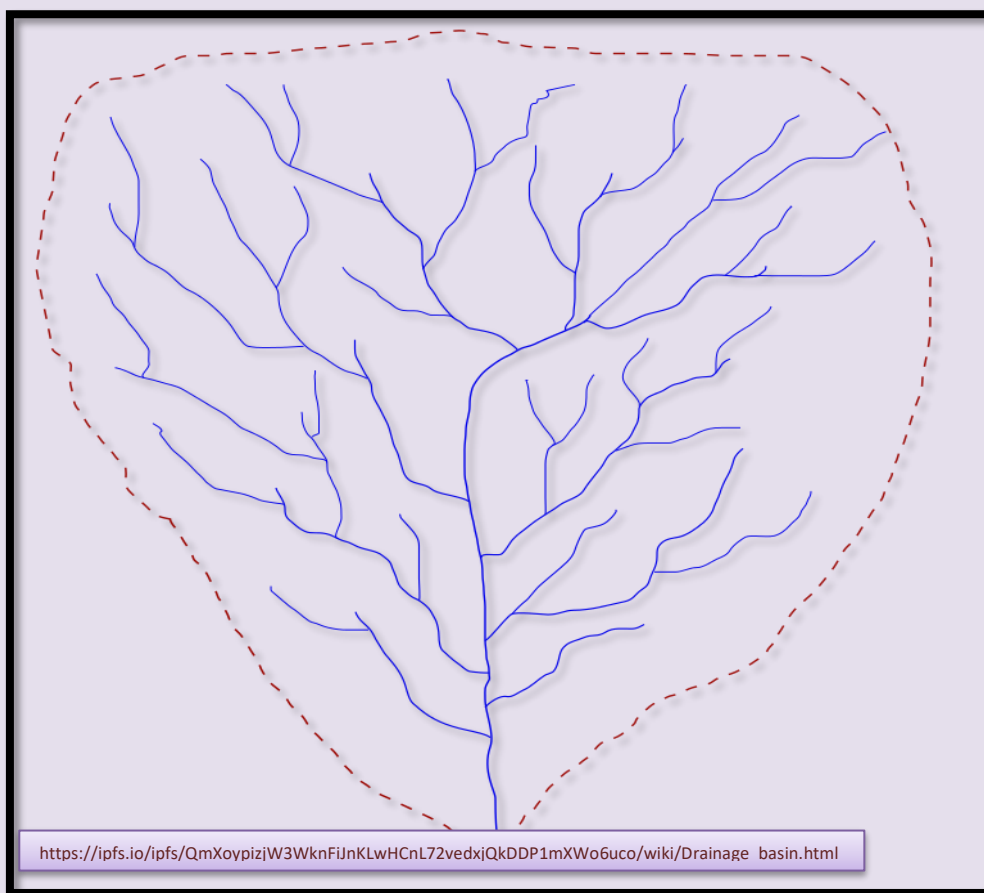


Fig.1. Example of a watershed

Other English phrases to describe the watershed are: catchment, catchment area, catchment basin, drainage area, river basin and water basin.

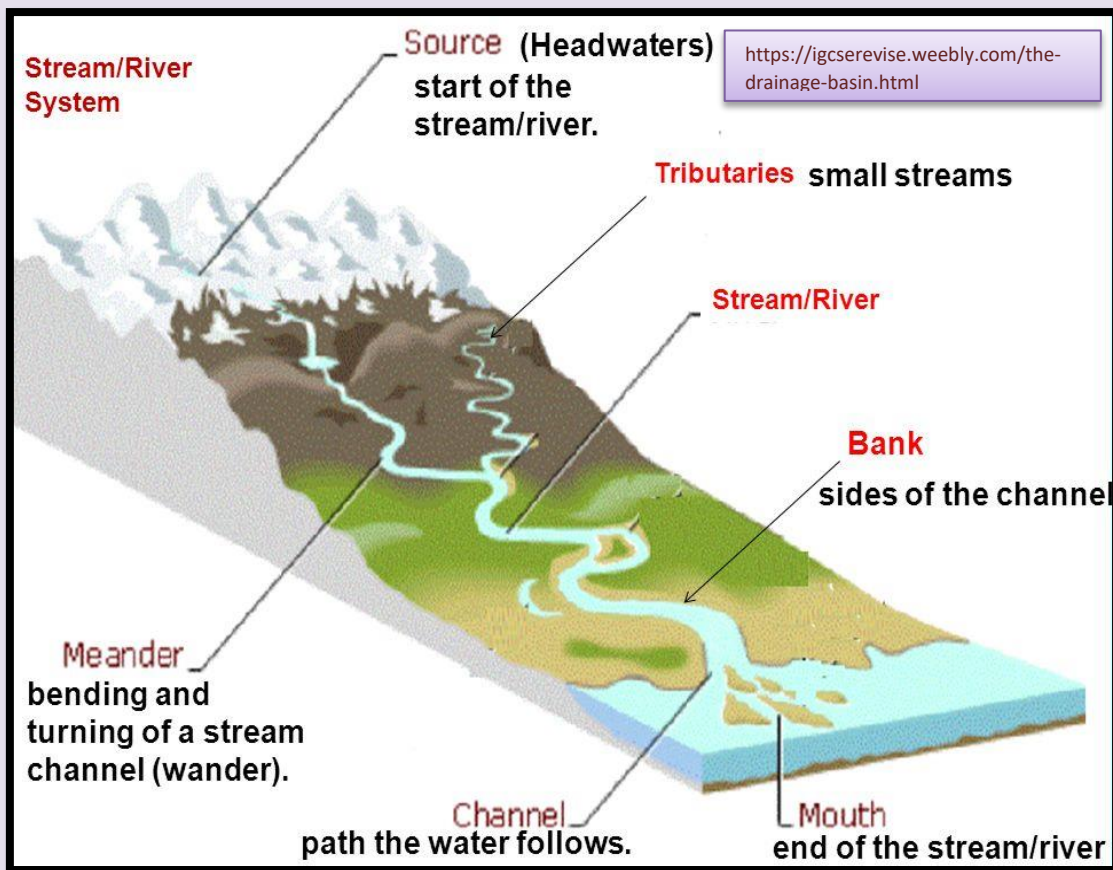


Fig.2. Different parts of watershed

In closed watershed, which known as the sink, water is collected into a point within the basin. It may be a permanent lake, or a desert, or a point where surface water is sunk into the ground.

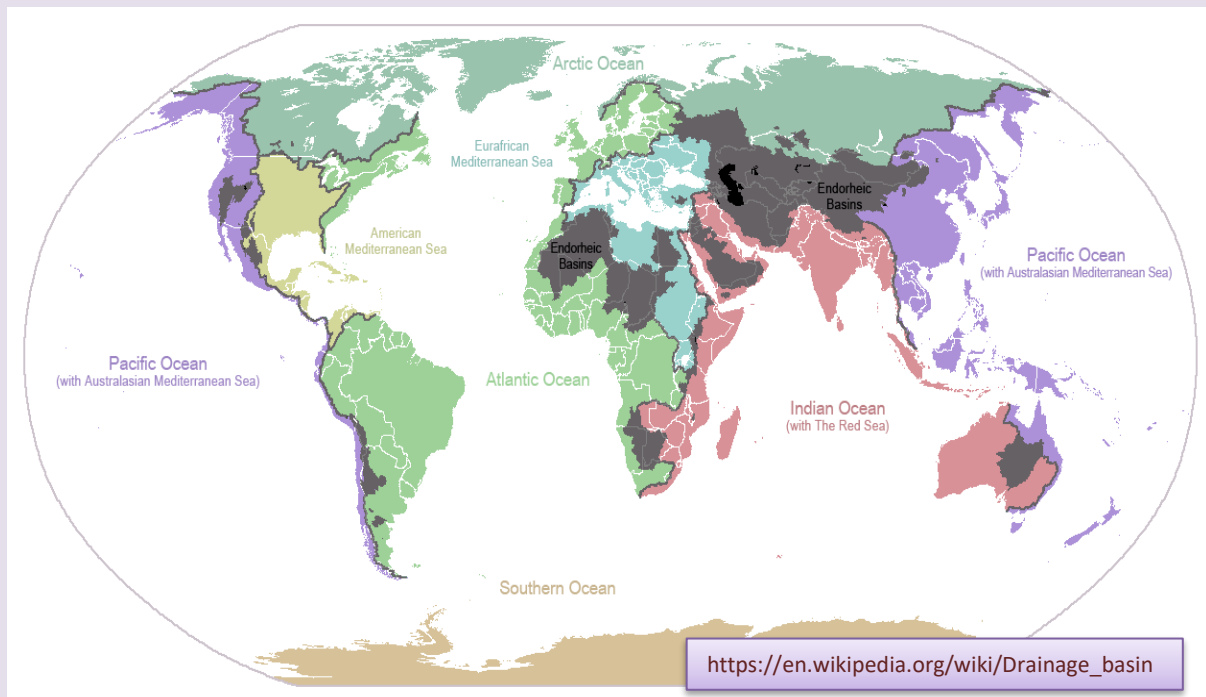


Fig.3. Watershed of the principal oceans and seas of the world

# Iran watershed

The watershed of Iran include 6 basins which are equal to the total area of the country.

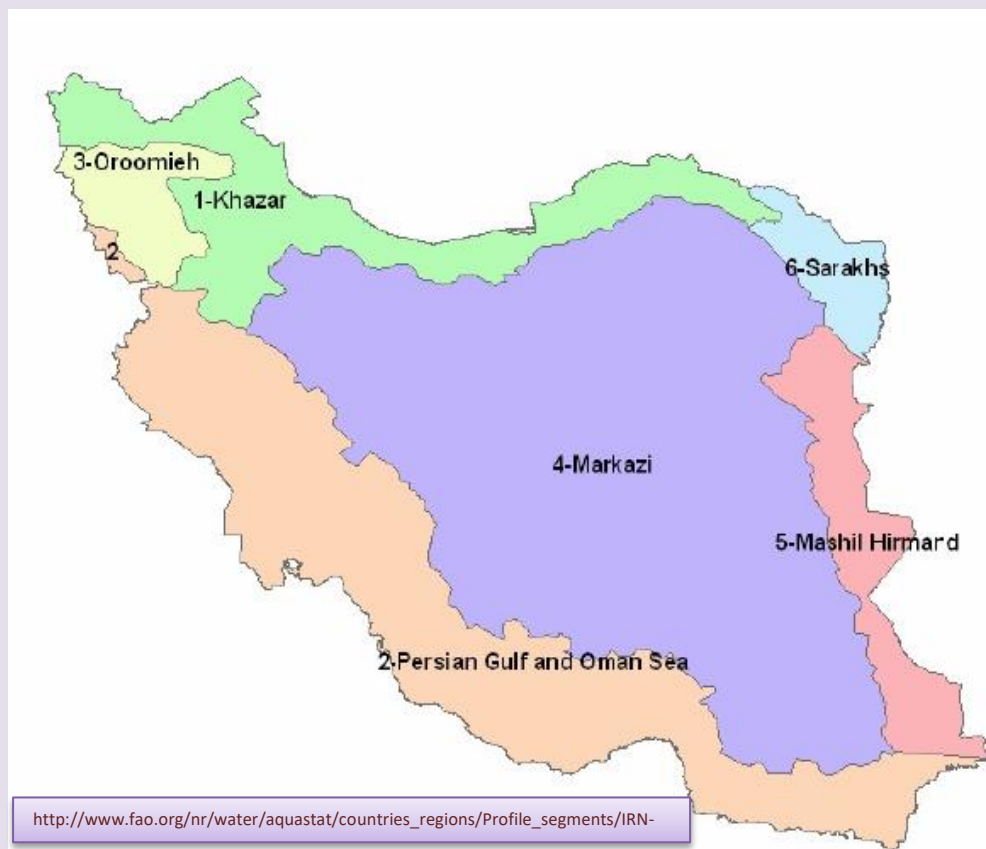


Fig.4. Iran watershed

Each of these basins is separated into smaller basins. These six basins are: Caspian basin with 7 smaller basins, Persian Gulf basin and Oman Sea with 9 smaller basins, Urmia lake basin, central plateau basin with 9 smaller basins, the east boundary basin with 3 smaller basins, Qar-e-Qom basin.

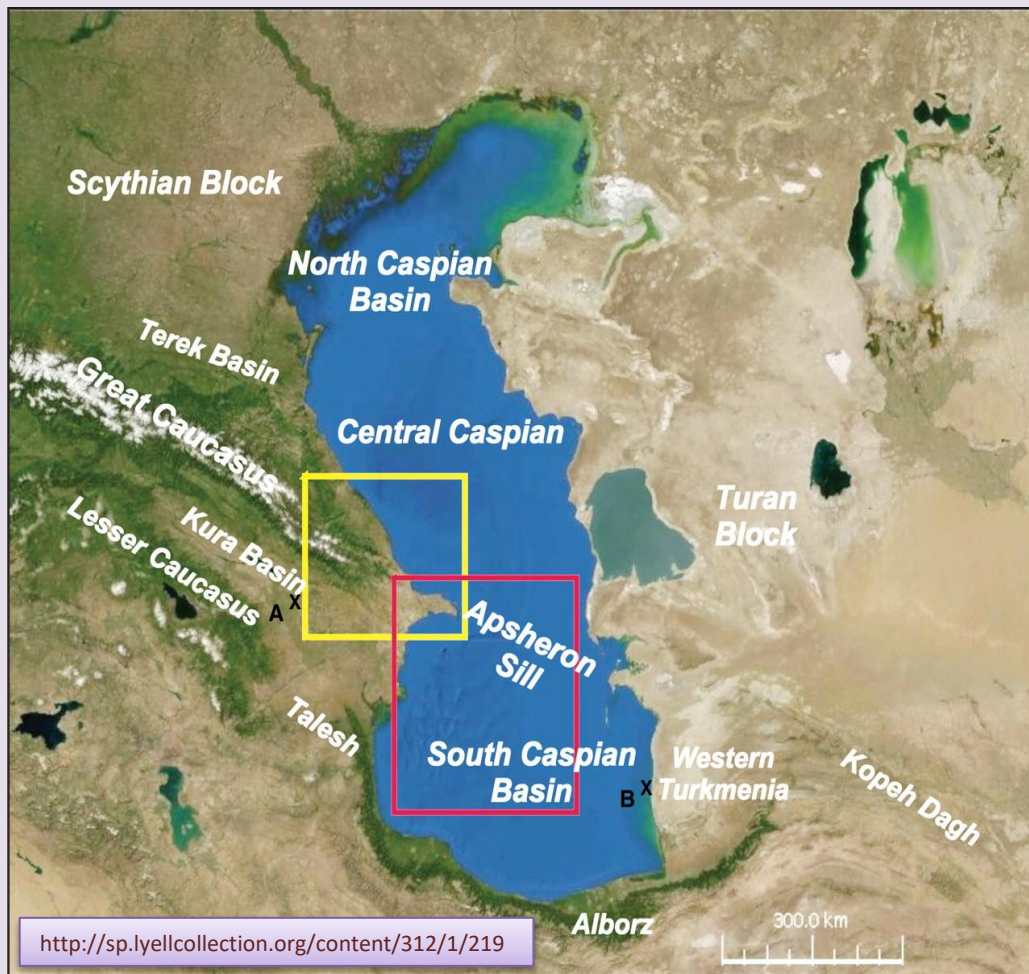


Fig.5. Caspian basin

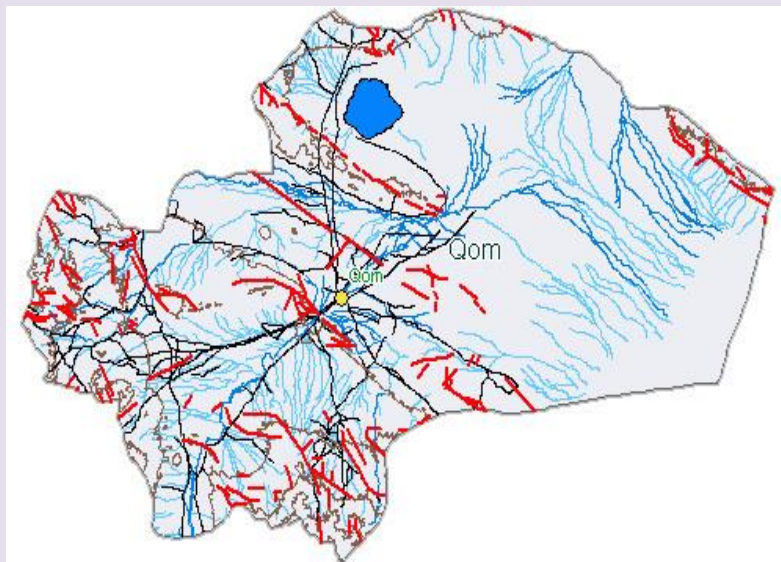


Fig.6. Qom drainage basin

Based on country divisions, watershed cover about 125 million hectares of land area. About 39 million hectares of the country's surface has been formed by deserts, swamps, lakes, and cities.

# Sabzevar watershed

Sabzevar basin is generally dry and desert climate with hot summers and cold winters. Its average annual rainfall is about 187 mm. Sabzevar Basin is divided into four categories, which we will describe them.

## 1- Sabzevar plain watershed

Sabzevar plain seasonal rivers are usually dependent on the material and age of rocks and the gradient of the earth. The most important river of the central watershed or Kavir plain is Sabzevar Kalshor river. This river runs eastward to the west by a length of 235 km and eventually ends up in Mazinan desert. The area of this basin is 14704 square kilometers. The condition of aquaculture breeding is provided In the course of this river.

## 2- Davarzan plain watershed

Due to being near to Mazinan desert the basin is warm and dry, and its average rainfall is 155 mm. The highest point of it is 2924 meters high and the lowest point is 790 meters high which is in Mazinan desert. The depths of the alluvial of the Davarzan plain are reduced from east to west. The most important rivers in this basin are Davarzan, Bafreh and Mehr.

## 3- Qaleh Meidan watershed

The area of this basin is 2083 square kilometers and its average gradient is 1.7 percent. The main river of this basin called Sangerd with 20 kilometer length. The river currents of the basin are 67 million cubic meters, the most of which come out of the plain and flow into the Kal Shor river.

## 4- Jovein plain watershed

This basin has cold winters and warm and dry summers, and its average rainfall is 300 mm. The total area of the basin is 6120 square kilometers, which the highest point is 2858 meters. The main rivers of this basin can be referred to the Jovein river. The length of this rivers is 250 kilometers.

# References

- 1- "What is a watershed and why should I care? University of Delaware
- 2- "Hydrologic Unit Geography". Virginia Department of Conservation & Recreation
- 3- "Recommended Watershed Terminology". Watershed.org
- 4- "Drainage basin". The Physical Environment. University of Wisconsin–Stevens Point
- 5- Bell, V. A.; Moore, R. J. (1998). "A grid-based distributed flood forecasting model for use with weather radar data: Part 1

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# *Spring in Hakim Sabzevari University*





# Sabzevar dams with tourism capability

## Introduction

Today, the tourism industry is considered as an important part of the global economy. Among different types of tourism, nature tourism is an appropriate tool for achieving sustainable tourism. Ecotourism or tourism in nature is one of the most important types of tourism that has the most compatibility with development. Currently, most countries in the world are in a close competition, seeking to capitalize on their country's capabilities in order to attract more share of the income of the tourism industry. If ecotourism and tourism in nature are properly planned and managed, it can stimulate a developed process to achieve sustainable development in less developed areas. In the area of the dam and the lake behind them, there are areas that, in addition to having ecological values, have the potential to exploit the land for ecotourism.

## Dams tourism capability

In addition to be considered as the most important sources of water and energy supply, dams also have high capacity for the development of the tourism industry. The natural scenery of the margin of the lake behind the dam on the one hand and the huge construction projects on the other hand provides many attractions for tourists. In many countries, the dams and lakes behind them are considered to be the most important tourist hubs and attract thousands of passengers annually. (*e.g.* Hoover dam in United States and Aswan in Egypt).



Fig.1. Hoover dam



Fig.2. Aswan dam

There are also large dams in Iran for example Karkheh, Karun 3, Masjed Soleiman, Shahid Rajai, Kowsar and Doosti. These dams with the large lakes that have been formed behind them are effective in creating the pleasant climate of the region.



Fig.3. Karkheh dam



Fig.4. Karun 3

In general, dams can attract tourists in the following cases:

- 1- Water sports including water skiing and boating
- 2- Aquaculture for the development of fishing
- 3- The use of the main structures of the dam to visit domestic and foreign citizens
- 4- Holding scientific and technical tours in the fields of electricity, civil engineering and environment for experts, professors and students

One of the main goals of the construction of all dams is tourism development. In this report, we introduce the features and objectives of construction of the most important dams in Sabzevar.

Dam name	Type	Height from the river	Crest length	Crest width	Reservoir volume	Construction purposes
Sangerd	Rockfill dam	43 meters	430 meters	10 meters	30 million cubic meters	<ol style="list-style-type: none"> <li>1. Flood control</li> <li>2. Aquaculture and tourism development</li> </ol>
Komayestan	Gravity dam	29.5 meters	83.5 meters	4 meters	1.2 million cubic meters	<ol style="list-style-type: none"> <li>1. Creation a recreational and tourism center</li> <li>2. Aquaculture</li> </ol>
Yam	Embankment dam	19.5 meters	202 meters	6.8 meters	1.18 million cubic meters	<ol style="list-style-type: none"> <li>1. Providing water for agriculture</li> <li>2. Creation a recreational center</li> </ol>

Table 1. Specifications of Sabzevar dam



Fig.5. Sangerd dam



Fig.6. Komayestan dam



Fig.7. Yam dam

## Conclusion

The topic of tourism in the dam and the lake behind it, in Iran, is a new topic that has been very limited in recent years. While over hundreds of dams in Iran have been constructed by domestic and foreign consultants and engineers for different purposes (electricity supply and urban drinking water). But so far, there has not been a proper plan for using these dams as recreational and tourist destinations. Therefore, planning authorities for sustainable use of dams and lakes behind dams for tourism should be based on the potential of the dam and the lake behind dam.

## References

- 1- Arenillas, Miguel; Castillo, Juan C. (2003). "Dams from the Roman Era in Spain. Analysis of Design Forms (with Appendix)". 1st International Congress on Construction History [20th–24th January]. Madrid
- 2- "Hoover Dam". National Historic Landmark summary listing
- 3- Rogers, J. David (September 22, 2005). "Hoover Dam: Grout Curtain Failure and Lessons Learned in Site Characterization
- 4- Egyptian Drainage Research Institute, DRI, yearbook 1995/1996
- 5- "Hydro-iran". Industcards.com. Retrieved 3 September 2015
- 6- [http://www.karkheh.com/gen\\_p0\\_en.asp#q1](http://www.karkheh.com/gen_p0_en.asp#q1)

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