

Assessing the risk of environmental pollution caused by tourism activities in natural environments of Shahrood County

Sepideh Hosseini Dinani¹, Seyed Mostafa Tayebi Sani*², Bagher Morsal³, Ali Fahiminejad³

1. Ph.D. Student on Physical Education, Faculty of Science, Shahrood Branch, Islamic Azad University,
 2. Department of Physical Education, Faculty of Science, Shahrood Branch, Islamic Azad University, Shahrood, Iran
 3. Department of Physical Education, Faculty of Science, Shahrood Branch, Islamic Azad University, Shahrood, Iran
- *Correspondence author: tayebi.sani@gmail.com

Received: 25 July 2020/ **Accepted:** 30 August 2020/ **Published:** 31 September 2020

Abstract: The purpose of this study is to identify environmental pollution caused by tourism activities in Shahrood County and environmental risk assessment. In the first step, tourism sites (recreational-sports) in the study area were identified. In the next step, the type and extent of environmental pollution in each were identified and their zoning map was drawn. Finally, risk assessment was performed using risk assessment models. The results showed that some types of environmental pollution can be seen in these areas, but the pollution caused by solid waste has been present in all tourist sites. The daily sewage pollution rate produced by natural tourism in Shahrood is relatively high and is about 140kg/day and the waste production rate is 10 tons per year. Also, the average measured sound level is 88dB. In terms of the level of risk of pollutants, the three most common types of pollution are solid waste and then sewage. The lowest type of pollution is related to air pollution. As for air pollution, the type of risk is obvious and the level of the aspect is low. In the case of noise pollution, the type of risk is obvious and the level of risk is high. In the case of wastewater pollution and waste pollution, the type of risk, the level and the level of the aspect is the ultimate. The principles of sustainable tourism in this region have not been observed and the need to develop a comprehensive and strategic model for tourism management is essential.

Keywords: Environmental pollution, Sport tourism, Risk assessment, Shahrood

1. Introduction

The tourism industry will become the world's largest industry by 2025, and will provide significant economic income and countless job opportunities for various countries (UNWTO 2016; Gratton & Taylor 2010; Funk & Brunt 2007). According to the World Tourism Organization and UNESCO, the annual growth of the industry is projected at 3.4 to 6.7 percent, so that ecotourism with annual growth of 30 to 40 percent is the highest growth in various sectors (UNWTO 2006). Sustainable tourism is a type of tourism that refers to environmental considerations in natural areas. This thinking is aimed at protecting more and more natural ecosystems from global communities (Castelanni & Sala 2010; Bimonte & Punzo 2003; Neto 2003; Wells 1997). Also, this type of tourism, while meeting social and economic needs, is also

considered as a tool to control the quality of the environment (Ceballos 1996; Açıksöz et al. 2010). Around the world, one of the most developed sectors of tourism is sports tourism. The relationship between sports and tourism has become more and more understood in recent years (Higham & Hinch 2002). Sport Tourism; In fact, it is a kind of travel for non-commercial reasons to watch or participate in sports activities that are far from living. Both sports and tourism are emerging as fast-growing industries in today's world of economics (Daniels et al. 2004; Daniels 2007). In fact, the resources and infrastructure needed for tourism and sports are often shared. These include the natural environment, equipment, services and facilities. Sports tourism is a term derived from the combination of "tourism" and "sports". In other words, sports are one of the most important activities for tourists during



tourism. In 2010, the World Tourism Organization (WTO) and the International Olympic Committee (IOC) held a joint global conference on the relationship between sport and tourism (Keller, 2001). Certainly, and considering the importance of sustainable

tourism, in this study, a type of sports tourism that is considered, sustainable sports tourism, Because the observance of environmental aspects along with tourism and sports activities is considered. The interaction of these three domains is shown in Figure (1).

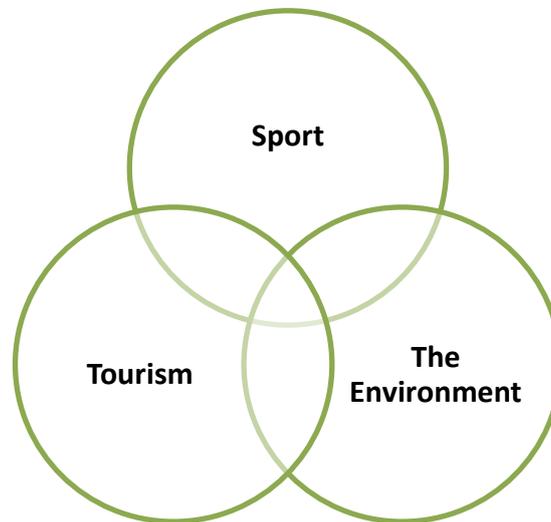


Figure 1: Relationship between 3 categories of tourism, sports and environment (UNWTO 2016)

Obviously, if environmental considerations and safety and health aspects are not taken into account in this type of tourism, there will be many negative consequences for the environment and natural resources. Of course, given the importance of sustainable tourism, this type of sports tourism is also considered to be sustainable sports tourism, because environmental considerations are considered in conjunction with tourism and sports activities. In the last decade, numerous studies have been conducted in the field of sports tourism, as well as the role of various factors in the development of sports tourism. Adabi (2006) stated that the attractions in Iran, which are less affected by seasonal phenomena and also have more diverse activities, have a longer tourist season and are more important in the development of sports tourism in Iran. Honarvar (2007) introduced the interest in culture, art and architecture as well as the existence of night entertainment in the country as important factors in the development of sports tourism. Kave (2003) points out that other types of tourism, in which the main goal of the tourist is to exercise, are significant. For example, the existence of natural attractions such as wildlife, waterfalls, lakes, mountains and forests are very effective in the development of sports tourism. Kosasi (2005)

mentions the most important natural sports attractions in India as winter sports such as skiing and skating. In a study of sports tourism in Spain, Andueza (2005) found that natural attractions, water sports, and walking were more important in attracting sports tourists, respectively. Prideaux and Cooper (2010) noted the importance of eco-tourism in the development of Indonesia's local economy. Marobela (2011) emphasizes the importance of stakeholders in the development of the tourism industry in Botswana. Also, economic prosperity and seasonal jobs are the most positive aspects of this activity. Fataei et al., (2017) state that indigenous community due to the need for tourism and having an economic mindset has turned to entrepreneurship in tourism and actively participates, and due to limited negative effects and conservation of environmental resources, have favorable social exchanges with tourists.

Because all human activities are associated with risk (Jozi & Padash, 2009), assessing and determining the risk of actions and activities can be used as a tool in planning and managing future actions (Tayebi Sani 2012). The main purpose of risk analysis is to determine the degree of uncertainty of the system under study and the resulting cost and to provide solutions to reduce it, as well as to

accumulate the cost of the relevant solution (Allen et al. 2009). The purpose of this study is to assess the risk of environmental pollution caused by tourism activities (in the form of sports and recreation) in natural areas of Shahrood County.

The study area is Shahrood County in Semnan province. Figure 2; It shows the

geographical location of Shahrood in the world and in Iran (SYSP 2015). The area of this county is 27339 square kilometers and its average annual rainfall is 157 mm. The minimum temperature is $-14\text{ }^{\circ}\text{C}$ and the maximum temperature is $+42\text{ }^{\circ}\text{C}$ (IMO 2011).

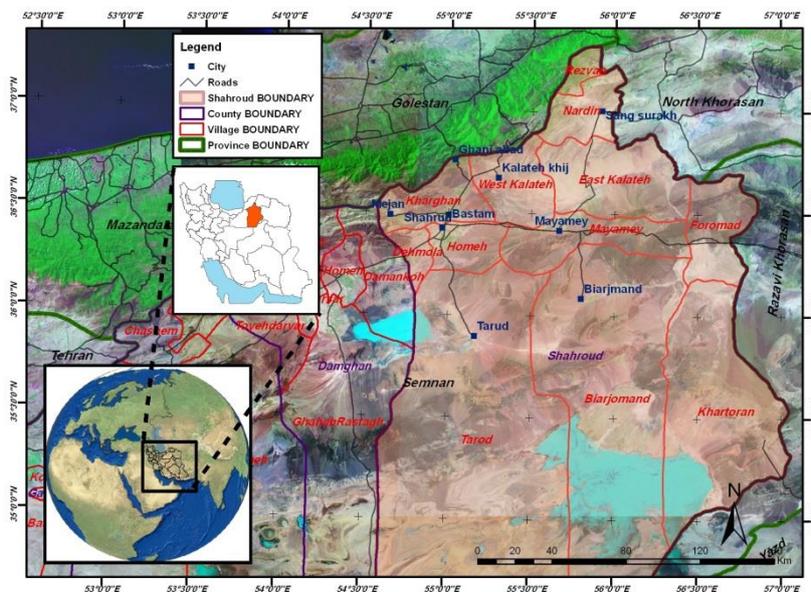


Figure 2: The location of the study area in the country and the province (scale 1: 100000) (SYSP 2015)

2. Methodology

This was a descriptive-analytical study. Initially, by examining documents, field observations and interviews with experts, environmentalists, foresters, managers of relevant organizations and NGOs, the types and extent of environmental pollution in natural areas of Shahrood were identified. For this purpose, 33 natural tourism sites in Shahrood were carefully examined and the main sources of pollution caused by natural tourism activities in the county were identified. Then, using mathematical models of production and emission of pollution, the amount of pollution (sewage, sound and Solid waste) in the region was calculated and estimated. The required data were obtained from global reference organizations such as the World Health Organization as well as the Cultural Heritage, Handicrafts and Tourism Organization. The UNWTO (2006) guidelines were used to calculate the volume of wastewater generated in the resorts. The sound level emitted in each of the measuring stations

at a distance of one meter, in level A and as an equivalent level was measured by the portable device and software Decibel X version 2019 and compared with the audio standard (OSHA -90 dBA). Measurements were performed according to South's guide (2016).

In the next step, the identified effects were assessed. In this study, only those effects and consequences of tourism that cause pollution in the environment and not all effects have been considered. For this purpose, using the "Risk Assessment Table", which is one of the quantitative methods of risk assessment, environmental pollution caused by tourism activities in natural areas of Shahrood County was evaluated. Completion of the form of identification and evaluation of environmental aspects is done according to Tables (1 to 4):

A) The intensity of the effect (S) of completing this column is done according to the following classification:

Table 1: Determining the intensity of the effect (class and rank of the effect) (Aven 2011)

| | | Effect intensity | |
|----------------|------|---|--|
| Classification | Rank | Explanation | |
| Catastrophic | 4 | Irreparable destruction of resources, failure to take effective measures to reduce and control it, widespread spread of pollution inside and outside the environment, violation of international law, the existence of repeated complaints from stakeholders. | |
| Important | 3 | Destruction of resources in a compensable manner along with control measures, release of pollutants into the environment with the impact of the accident on the organization's environment, violation of national laws | |
| Border | 2 | Production of pollutants in part or part of the organization, severe visual pollution, violation of other requirements | |
| Partial | 1 | Consumption of natural resources with savings, polluting production to a lesser extent, the scope of impact around the department, minor video pollution | |

B) Probability of occurrence (P): Based on the time intervals, the environmental aspect is selected and classified as follows.

Table 2: Probability of occurrence (class and rank) (Bahmanpour 2016)

| Probability of occurrence | | |
|---------------------------|------|--|
| Classification | Rank | Explanation |
| Frequent (High) | A | It happens frequently (every day or every week) |
| Probable (Moderate) | B | It occurs several times during the life of a system (once a month or several months). |
| Occasionally | C | Occasionally occurs throughout the life of the system (once a year) |
| Partial (Rarely) | D | The probability of its occurrence during the life of the system is very low (once every ten years) |
| Insignificant | E | It is very unlikely to occur during life (over 10 years) |

C) Evaluation Number: The number listed in this column is the result of the following formula (Bahmanpour 2016):

$$\text{The degree of aspect evaluation} = S \times P$$

$$\text{The degree of aspect evaluation} = \text{Effect intensity} \times \text{Probability of occurrence}$$

D) The proposed criterion for evaluating the degree of aspect can be considered according to the following matrix:

Table 3: Matrix for evaluating the degree of aspect (Lerche & Glaesser 2006)

| Partial 1 | Border 2 | Important 3 | Catastrophic 4 | Intensity | Repetition |
|--------------|-------------|----------------|-------------------|-----------|---------------|
| 1A | 2A | 3A | 4A | A | Frequent |
| 1B | 2B | 3B | 4B | B | Probable |
| 1C | 2C | 3C | 4C | C | Occasionally |
| 1D | 2D | 3D | 4D | D | Partial |
| 1E | 2E | 3E | 4E | E | Insignificant |

The interpretation of this matrix will be as follows:

Table 4: Matrix interpretation of degree (Lerche & Glaesser 2006)

| Control | Aspect level | Type | The degree of aspect evaluation |
|---|--------------|-------------|---------------------------------|
| Appropriate control action and the need for corrective action | Very high | Obvious | 4A-3A-4B-3B-4C |
| Control action / corrective action if necessary | High | | 2A-2B-3C-4D |
| Control action | Moderate | Not obvious | 1A-2C-2D-3D-3E-4E |
| Ability to take action (preventive) | Low | | 1B-1C-1D-1E-1E |

E) In the existing control column, it is possible to record the actions taken to control each aspect or according to the scope of the evaluation of its aspect and the proposed criterion for those cases such as the following.

1) If the level of environmental aspects is final or high, the environmental aspect is considered obvious, which is necessary for obvious aspects with the final level of issuance of corrective action, but if the environmental aspects have high level, with appropriate control action, the desired aspect We control and issue corrective action if necessary.

2) If the level of environmental aspects is medium or low, the environmental aspect is considered non-productive and for non-productive environmental aspects, appropriate control action is defined and for preventive aspects with low level, if necessary, preventive action is issued.

In the end, based on Bahmanpour et al. (2012) guide model, the main areas and tourist zones in Shahrood County were determined. This model is taken from a document carried out by the Sports and Environment Commission in cooperation with the Sports Tourism Commission of the National Olympic

Committee of Iran and specifically in the Shahrood region. Since this report is considered as a sub-document in this regard, it has been selected as a model for evaluating the appropriateness of sports uses with the ecological potential of the region. According to this model, the natural attractions of Shahrood County and the natural spaces that have the possibility of sports tourism are classified in 3 main areas and 5 zones. According to this guide, recreational activities (tourism / sports) are divided into two categories: focused and extensive. Concentrated activities are those actions that require extensive and significant infrastructure and equipment to be implemented, such as skiing. Also, extensive recreation includes a variety of tourism and sports activities that do not require extensive and numerous equipment to be implemented and is applicable with minimal facilities and equipment, like mountaineering. Considering these two cases and the main areas and zones in Shahrood County, it is possible to introduce all kinds of recreational and sports activities in this area (Table 5). Figure 2 shows the research flowchart.

Table 5: Guide to the main areas and zones with sports tourism potential in Shahrood County (Bahmanpour et al. 2012)

| Main area | Zone | Sport / Recreation | |
|-----------|------------------------|---|--|
| | | Intensive tourism | Expensive tourism |
| North | Forest | Picnic | Riding, Walking, Soft running, Hunting and fishing, Mountain climbing, Forest trekking |
| | | | Riding, Walking, Soft running, Hunting and fishing, Mountain climbing, Forest trekking |
| | Mountainous and rocky | Motorcycling (cross) Mountain biking Skiing and winter sports Picnic | Mountaineering, Mountain climbing, Walking, Rock Climbing, Hunting and fishing, Nature tourism, Kite riding, Cave climbing |
| Central | Mountainous and forest | Motorcycling (cross) Mountain biking Picnic | Mountain climbing, Walking, Forest trekking, Hunting and fishing, Nature tourism, Riding |
| | Desert | Rally (motorcycle, bicycle and car races) Picnic Golf Gliding and light aircraft | Riding (camel and horse), Walking, Hunting and fishing, Nature tourism, Soft running |
| South | Salt desert | Rally (motorcycle, bicycle and car races) Picnic Gliding and light aircraft | Walking, Hunting and fishing, Nature tourism jogging, |

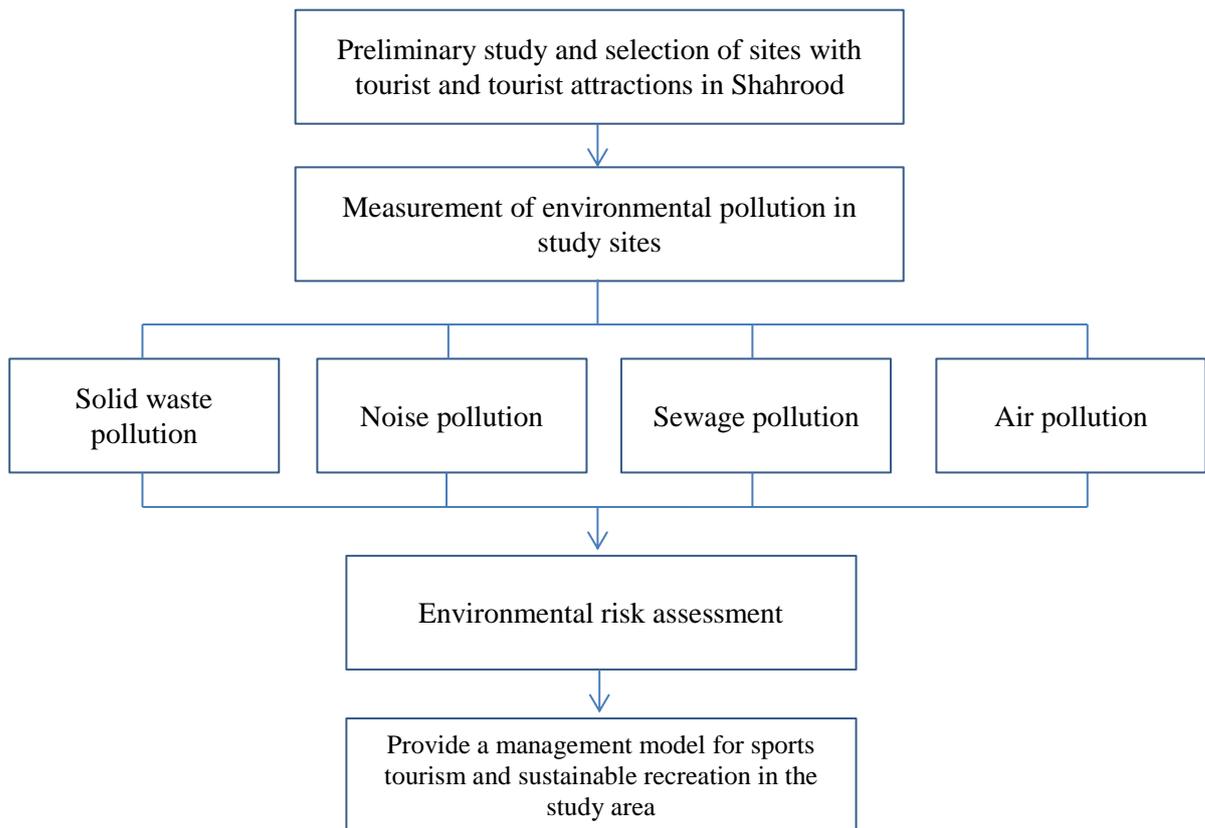


Figure 3: Research flowchart

3. Results

Research findings show that in areas of the county of Shahrood where tourism is carried out, unfortunately, environmental pollution is evident. Assuming that the amount of water consumed per natural tourist per day is about 12 liters per person (20,000 nature tourists per year) and water conversion coefficient to sewage, which is 80%, the volume of sewage produced is:

$$20000 \text{ people} \times 12 \text{ lit/day} = 240000 \text{ lit/day} = 240 \text{ m}^3/\text{day}$$

The amount of water consumed in natural tourism per day is 240 cubic meters and

$$240 \text{ m}^3/\text{day} \times 0.8 \text{ m}^3/\text{day} = 192 \text{ m}^3/\text{day}$$

Finally, the volume of sewage produced in natural tourism in Shahrood in 2018 was equal to 192m³/dat. Due to the fact that the amount of BOD₅ human wastewater fluctuates around 400-220mg/l, and taking into account the maximum BOD₅ wastewater equivalent to

400mg/liter and considering the per capita wastewater per day for each person will calculate the BOD₅ load as follows Was:

$$\begin{aligned} \text{BOD}_5 &= 192 \text{ m}^3/\text{day} \times 400 \text{ mg/lit} \\ \text{BOD}_5 &= 76800 \text{ gr/day} = 76.8 \text{ Kg} \end{aligned}$$

On the other hand, the total amount of oxygen demand of wastewater (total biodegradable organic matter) is:

$$\begin{aligned} \text{BODL} &= \text{BOD}_5 \div 0.7 = 109.7 \text{ Kg/day} \\ \text{Also, chemical oxygen demand is obtained from the following equation:} \end{aligned}$$

$$\begin{aligned} \text{COD} &= 1.6 \text{ BOD}_5 \\ \text{COD} &= 175.54 \text{ Kg/day} \end{aligned}$$

Whole organic carbon also includes:

$$\begin{aligned} \text{TOC} &= 0.8 \text{ COD} \\ \text{TOC} &= 140.43 \text{ Kg/day} \end{aligned}$$

Examining the above, it can be seen that the amount of pollution in the sewage produced daily by natural tourism in Shahrood County

will be relatively high. In the northern parts of the county, due to the soil type, the possibility of transferring and access to groundwater is also high.

On the other hand, according to the reference data, the per capita waste production by tourists in nature is about 1 kg, which assuming their 50% release in nature, the volume of waste left in the natural tourism sites of Shahrood can be calculated.

$$1 \times 20000 \times 50\% = 10000 \text{ kg}$$

As it can be seen, every year about 10 tons of waste in the natural areas of the county (such as: forests, deserts, mountains, pastures and deserts) is abandoned by tourists.

Based on the obtained data, the map of the main centers of pollution resulting from tourism activities was drawn in the natural recreation areas of Shahrood County (Figure 4). As it can be seen, waste pollution has been present in all tourist sites.

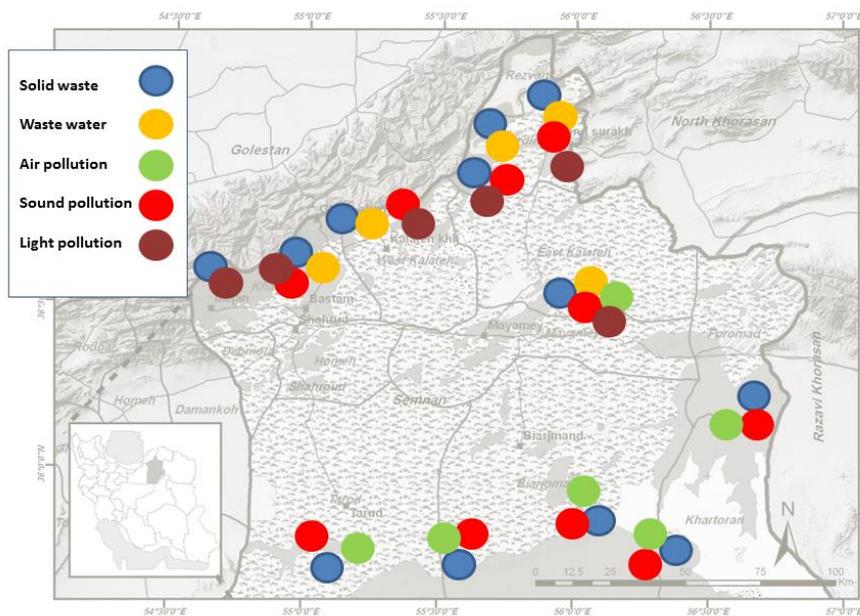


Figure 4: Environmental pollution zoning in Shahrood tourist sites

In terms of noise pollution, the average measured level in the natural tourism sites

studied was 88 decibels, which is higher than the standard (Figure 5).

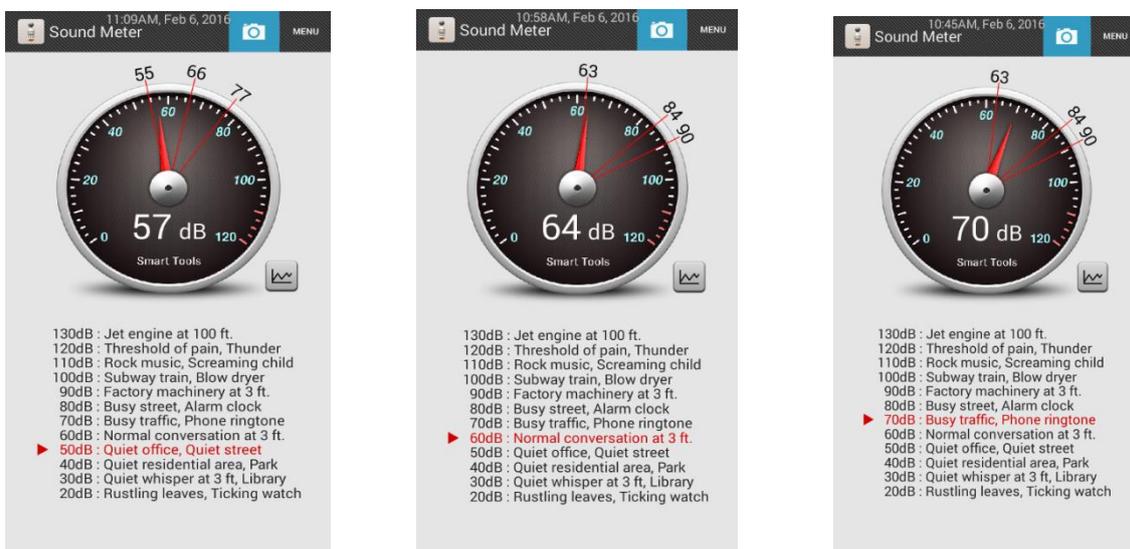


Figure (5): An example of the sound intensity level measured in Shahrood tourist sites

According to Bahmanpour et al. (2012) guide, the sports tourism zoning of Shahrood County

can be plotted as follows (Figure 6 and Table 6).

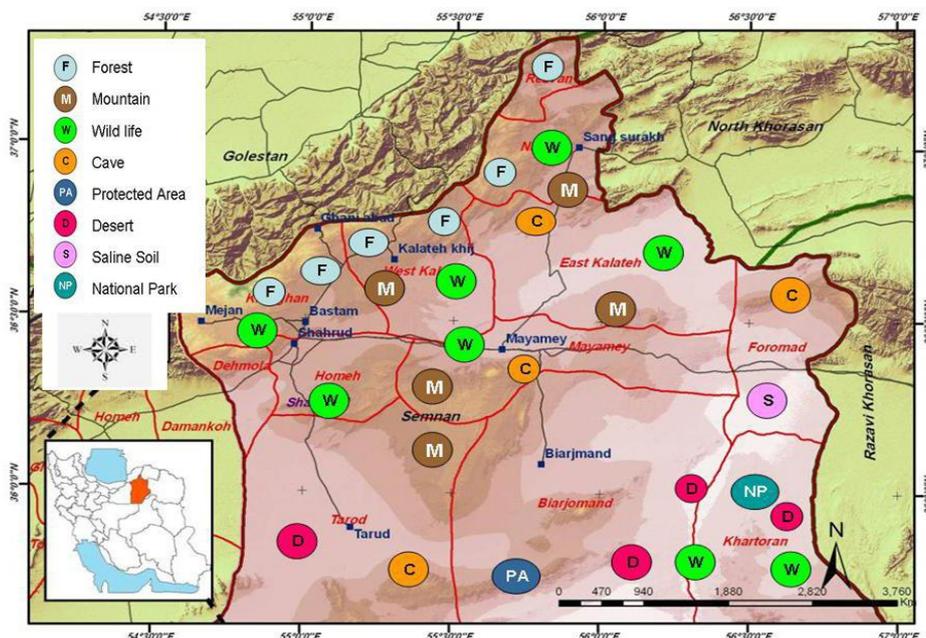


Figure 6: Location of natural-sports attractions in Shahrood County

Table 6: Proportion of the type of tourism activities with the environmental potential of the land in Shahrood (Source: Authors based on research findings)

| Area / Zone | Activity type (sport / recreation) | Suggested times |
|--|---|--|
| North (forest / mountainous and rocky) | Camping, motorcycling, mountain biking | May, June, August, September |
| | Horse riding, Caving, Walking, Walking, Soft running, Hunting and Fishing, Mountaineering, Forest running, Hiking | April, May, June, August, September, October |
| Central (forest-mountain / desert) | Motorcycling (cross), mountain biking, rally competitions, Camping, golf, gliding and light aircraft | May, June, August, September |
| | Mountaineering, hiking, forest running, hunting and fishing, hiking, equestrian (camel and horse) | April, May, June, August, September, October, November |
| South (desert) | Rally races (motorcycles, bicycles and cars), rides, gliding and light aircraft | May, June, October |
| | Walking, hunting and fishing, hiking | April, May, June, October, November, March |

Risk assessment of environmental pollution caused by tourism activities in Shahrood County can be calculated using the

quantitative risk assessment model as described in Table 7:

Table 7: Determining the degree and level of environmental pollution risk in Shahrood County

| Pollution type | effect intensity | Probability of occurrence | Risk assessment degree | Type of risk | Aspect level |
|----------------|------------------|---------------------------|------------------------|--------------|--------------|
| Air | 1 | C | 1C | Not obvious | Low |
| Sound | 2 | B | 2B | obvious | High |
| Sewage | 3 | B | 3B | obvious | Very high |
| Solid waste | 4 | A | 4A | obvious | Very high |

As shown in the table, 4 types of pollution were assessed for environmental risk separately. Meanwhile, air pollution in the study area was assessed as very low. The risk of noise pollution in promenades was assessed as high. Finally, the level of risk for wastewater and solid waste pollution was assessed as very high.

4. Discussion

As shown in the results, most of the county's tourist sites are located in the northern zone and then in the southern zone of the county. The northern zone has numerous forest and mountain resorts that are naturally used for recreation and sports such as camping, motorcycling, mountain biking, horseback riding, caving, hiking, soft running, hunting and fishing, mountaineering, forest running, kite riding is good. On the other hand, the southern zone, which includes deserts and deserts, is suitable for some sports and recreational activities such as rally competitions (motorbike, bicycle and car), riding, gliding and light aircraft, walking, hunting and fishing, nature tourism, software.

The results of the present study were in line with the studies of Bahmanpour et al. (2012) in terms of the appropriateness of sports uses with the natural ecosystem of the region, but; it is in conflict with the results of Andueza (2005), because all tourist sites in Shahrood have been polluted. Accordingly, the type of pollution created varies according to the type of activity. Waste

is the only pollutant that exists in all the tourist sites studied in the area and is well visible. The types of waste studied were: disposable containers, bottled mineral water and soft drinks, food packaging, food waste, batteries, worn-out and used car parts, bullet casings, cigarette butts, waste paper.

In terms of the level of risk of pollutants, the three most common types of pollution are waste and then sewage. The lowest type of pollution is related to air pollution. As for air pollution, the type of risk is obvious and the level of the aspect is low. In the case of noise pollution, the type of risk is obvious and the level of risk is high. In the case of wastewater pollution and waste pollution, the type of risk, the level and the level of the aspect is the ultimate.

5. Conclusion

The tourism industry is an environmentally dependent industry, and the ecosystem, as a natural attraction, has a great impact on attracting tourists and boosting tourism in the region. If environmental considerations are not taken into account and sustainable tourism principles are not taken into account, various aspects of pollution will emerge. Due to the diverse and numerous attractions of Shahrood County for tourism (recreational-sports) and non-compliance with environmental considerations in this region, it is necessary to develop a strategic plan and practical and executive instructions for tourism management in this region as soon as possible.

References

- Açıksöz S, Görmü S, Karadeniz N, (2010) Determination of ecotourism potential in national parks: Kure mountains national park, Kastamonu-Bartın, Turkey, *African Journal of Agricultural Research*. Vol. 5(8), pp. 589-599.
- Adabi J, (2006) Study of important factors on tourism development in Iran due to international sport events, M.Sc. project, Tarbiat modare University.
- Allen HH, Chia-wei H, Tsai-Chi K, Wei-Cheng W, (2009) Risk evaluation of green components to hazardous substance using FMEA and FAHP, *Expert Systems with Applications*, 36, 7142-7147.
- Andueza M, (2005) The role of sport tourism destination chosen by tourists visiting Spain, *Journal of sport tourism*.
- Aven T, (2011) *Quantitative risk assessment, the scientific platform*. Cambridge University Press, Cambridge.
- Bahmanpour, H., Laghaei, H.A., Moharamnezhad, N., Mafi, A., Abdi, H. (2012) Sustainable Sport Tourism Site Selection by Ecological Capability Evaluation (Case Study: Shahrud Nature Park-IRAN), the 3rd International Conference on Sports and Exercise Science. *Journal of Sports Science and Health Academic Journal of Faculty of Sports Science, Chulalongkorn University*. 279-293 pp.
- Bahmanpour H, (2016) Environmental risk assessment in sport, tool kit, the environment and sport commission N.O.C. I.R.IRAN, Workshop educational package.
- Bimonte S, Punzo L, (2003) *Turismo, sviluppo economico e sostenibilita` : Teoria e pratica*. Siena: Protagon.
- Castellani V, Sala S, (2010) Sustainable performance index for tourism policy development. *Tourism Management*. 31. 871-880

- Cave P, Leader C, (2003) Sport tourism: The role of sport tourism: the case for a local approach in Africa, Second Africans on peace trough tourism.
- Ceballos-Lascurain H, (1996) Tourism, Ecotourism, and Protected Areas: The State of Nature-based Tourism around the World and Guidelines for its Development. 315 pages. IUCN-World Conservation Union, Gland, Switzerland.
- Daniels M, Norman W, Henry M, (2004) Estimating Income Effects of a Sport Tourism Event. *Annals of Tourism Research*. 31: pp180–199.
- Daniels MJ, (2007) Central place theory and sport tourism impacts. *Annals of Tourism Research*. Vol. 34(2): 332–347.
- Fataei E, Arooji H, Alizadeh M, Azhari S, (2017) Explaining the social capacity of tourism acceptance in rural areas (case: Egyptian village in Khor and Biabank city). *Iranian Journal of Space Economics and Rural Development*. 6 (4): 173-196.
- Funk DC, Bruun TJ, (2007) The role of socio-psychological and culture-education motives in marketing international sport tourism: A cross-cultural perspectives. *Tourism Management*. 28: 806–819.
- Gratton C, Taylor P, (2000) The economics of sport and recreation. New York: E & FN Spon. 255 P.
- Higham J, Hinch T, (2002) Tourism, sport and seasons: the challenges and potential of overcoming seasonality in the sport and tourism sectors. *Tourism Management*. 23: 175–185.
- Honarvar A, (2004) Study of important factors on tourism development in Iran due to international sport events, Ms.c.project, Tarbiat moalem University.
- IMO, (2011). I.R. of Iran Meteorological Organization. {www.irimo.ir}.
- Jozi A, Padash A, (2009) Risk assessment and Management, IAU publisher, 344 pp. [Persian].
- Keller P, (2001) Sport & tourism: Introductory report. Madrid: World Tourism Organization.
- Kosasi V, (2005) Sport tourism in India, *Journal of Sport Tourism*.
- Lerche I, Glaesser W, (2006) Environmental risk assessment : quantitative measures, anthropogenic influences, human impact., Berlin: Springer, ISBN 3-540-26249-0, retrieved 27 September 2010
- Marobela MN, (2011) Tourism and Decent Work in Botswana: from private sector to a collectivist model, *African Journal of Hospitality, Tourism and Leisure* Vol. 1 (3).
- Neto F, (2003) A new approach to sustainable tourism development: moving beyond environmental protection. *Natural Resources Forum*, 27, 212.
- Prideaux B, Cooper M, (2010) Ecotourism in Indonesia: A Strategy for Regional Tourism Development, *Asean Journal on Hospitality and Tourism*, Vol 1. Number 2.
- South T, (2016) Managing noise and vibration at work; a practical guide to assessment, measurement and control, Routledge; 1 edition, 2016; ISBN-13: 978-1138177994, 280 p.
- SYSP, (2015) Statistical Yearbook of Semnan Province. Iranian Statistical Center Publications. 77 p.
- Tayebi SM, (2016). Identifying between environmental EIS and public participation, Ph.D. Thesis, Islamic Azad University, Tehran North Branch, 276 p. [Persian].
- UNWTO, (2016) United Nations World Tourism Organization. 2016. Tourism facts and figures. Available from www.unwto.org.
- UNWTO, (2006) United Nations World Tourism Organization. International trade statistics. Geneva: World Trade Organization. {www.who.org}.
- Wells M, (1997) Economic perspectives on nature tourism, conservation and development. Environment Department Paper No. 55 (Environmental Economics Series). Washington DC: World Bank.