# Research Paper: Ecotourism and the Role of Human Factors in environmental-ecological Instability of Rural Areas (Case Study: Darband watershed around the Tehran metropolis)

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## ABSTRACT

**Purpose:** Evaluating trends affecting environmental stability and instability in tourism activities is essential. Darband watershed is one of the critical areas in ecotourism activities, and natural and human factors and unplanned and unprincipled interventions have increased its instability.

**Methods:** In this research, unstable processes and areas in the study area were first examined and evaluated, and then the role of environmental awareness and guiding the behavior of tourists as an influential factor in the stability of the natural regions was examined and explained. This research, using descriptive-analytical methods, investigates and evaluates the human factors affecting the increase in environmental instability in the Darband watershed and tries to investigate the role of awareness elements and tourists' behaviors in modulating this process.

**Results:** According to the research results, this basin has been exposed to severe instabilities and widespread destruction due to environmental sensitivities, the volume of pressure, and extensive exploitation. The role of tourists and facility and service center owners, on the one hand, and natural factors, on the other hand, is significant in this field.

**Conclusion:** In the current situation, a set of known natural and human factors are the most critical threats at the regional level, and the development of appropriate environmental and control programs to improve this situation through responsible institutions such as the Agricultural Jihad Organization, Environmental Protection Organization, Cultural heritage, handicrafts and tourism affairs, governorship, municipality, non-governmental organizations (NGOs), etc. will be necessary.

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## 1. Introduction

Tourism activities are one of the main areas affecting sustainability and environmental instability, which have increased rapidly in the last few decades and have found numerous fans among different strata of people. Therefore, every year, millions of people worldwide move between different places as tourists and for recreation and relaxation. According to the estimates of the World Tourism Organization (W.T.O), the total number of international tourists is expected to reach 1.3 billion in 2023, which is 33% more than in 2022 and almost 90% more than the levels before the Corona pandemic (Cooper, 2004).

International tourism revenue could also reach $1.4 trillion in 2023, about 93 percent more than the $1.5 trillion tourism destinations earned in 2019 (WTO, 2008). Usually, more than 60% of world tourists are concentrated in the tourism group based on the natural environment (ecotourism or nature tourism) (World Bank: 2007). The above statistics and information show that tourists are under much pressure on the natural environment. Suppose there is no proper planning for the goals and control of tourist activities. In that case, there is no doubt that there will be destructive and irreparable effects on the environment, and the dire consequences will affect people's quality of life. Therefore, tourism-ecotourism activities are one of the most critical factors affecting environmental instability.

In this connection, Iran is among the top 20 countries in the world due to its essential natural resources and various environmental and ecotourism fields (Yari, 2007). For this reason, it is essential to evaluate the trends affecting environmental stability and instability in tourism activities (Hajehforoshnia, 2022). As a green industry, the natural tourism industry, especially ecotourism and tourism, has the most negligible dependence on the primary resources of water and soil. At the same time, it is essential in terms of earning money, employment, and cultural development (Hajehforoshnia & Karam, 2020).

The apparent environmental-ecological diversity in Iran's territory has provided many capacities, especially in tourism development, including ecotourism. Based on this, today, one of the main goals of planners is to try to develop and expand this activity on the one hand and to create a basis for sustainability and reduce environmental vulnerabilities in natural centers on the other hand (Cooper, 1998).

## 2. Literature Review

Taleshi (2011), in an article entitled The Instability of Small Rural Settlements in desert areas, points to the role of three natural factors (water, climate change, and desertification) as the three main factors in the instability of small settlements in desert rural areas. Besides causing the instability of marginal villages, three factors have caused disturbances in the environment and economy, as well as severe restrictions on the programs and sustainability of these areas.

Ghadiri-museum et al. (2013), in an article titled "The Role of Natural Factors in the Spatial Distribution of Rural Settlements in Torbat Jam City," concluded that more than 85% of the villages in this city are in a suitable and average situation, and 15% are in an unfavorable situation.

Anabestani (2008), in research entitled The Role of Natural Factors in the Stability of Rural Settlements, a Case Study of Sabzevar City, has concluded that environmental factors such as location, water, agricultural land, and population changes are indicators of the stability of the rural population. Between 2015 and 2015, there was a significant relationship.

Chen et al. (2019) examine the impact of ecotourism on environmental sustainability in Xanadu National Park and identify human factors influencing this impact. The research method used in this research is a case study that first analyzes the effects of ecotourism on environmental sustainability in Xanadu National Park. Then, the human factors affecting these effects are investigated through interviews and questionnaires with park managers and tourists.

Shaw (2017) examines the relationship between tourism and environmental sustainability in a developing country and the human factors affecting this relationship. This study uses the quantitative research method. Information about tourism and environmental sustainability in a developing country is collected, and then the relationship between the two variables is investigated using statistical analysis.

Honey (2008) examines the role of community-based ecotourism in sustainable development and assesses how human factors influence this pathway. This article uses the qualitative research method. Through a case study in an area with community-based ecotourism, the role of local communities in sustainable development is in-

vestigated. Information is collected through interviews, group participation, and field observations.

Fennell (2014) examines the relationship between ecotourism and sustainable development and the human factors that may influence environmental instability in this area. This book is based on a literature review and conceptual analysis. The author examines different ecotourism and sustainable development approaches and analyzes the human factors affecting environmental instability.

Newsome et al. (2012) compare the environmental impacts of ecotourism in two marine protected areas and evaluate human factors affecting these impacts. This study uses the comparative research method. Two marine protected areas are investigated, and the environmental impacts of ecotourism in each area are compared. Data are collected through field observations and case studies.

Kim and Marcouiller (2015) examine the human factors affecting the sustainable development of tourism and their role in evaluating environmental instabilities in this context. This article uses a mixed research method. First, the effects of ecotourism on environmental sustainability are examined. Then, human factors affecting ecotourism and sustainability are analyzed using interviews and questionnaires with tourists and local managers.

Weaver (2018) examines the balance between economic, environmental, and social goals in sustainable ecotourism and examines the human factors affecting this balance.

Gurung (2013) reviews Case studies of community-based ecotourism in Malaysia and assesses their impact on sustainable development.

Kapos et al. (2014) examine the effects of ecotourism on environmental education and conservation in the Galapagos National Park and the human factors influencing these effects.

## 3. Methodology

The Darband catchment basin is located north of Tehran at the geographical coordinates of 35 degrees 38 minutes 25 seconds to 35 degrees 53 minutes 20 seconds north latitude and longitude 51 degrees 23 minutes 30 seconds to 51 degrees 28 minutes. This watershed is located on the southern slopes of Central Alborz, in the central part of Shemiranat City, Tehran province, between Lavasanat and Ken. The field of natural resources overlooks the north of Tehran and is located in the catchment area of the Jafar Abad River, Gulabdare, and Darband. (Khosravi et al.: 1397, 186) The studied basin is one of the mountain basins where Tochal Peak, with a height of 2957 meters, is located. The minimum height of the basin is 1320 meters in the south, and the maximum is 3938 meters in the north. 2007), (A Detailed Plan of the Tehran 1 Region

The Darband River is considered the most crucial river in its upstream water basin, the second most abundant river, and among the most critical water basins in the north of the metropolis. It accounts for an essential part of the runoff flowing towards Tehran. The Darband river valley is located at an altitude of 1700 meters above sea level and is considered the beginning of one of the main routes for mountaineers to climb to Alborz Central (Morid, Saeed, et al.: 1379, 1).

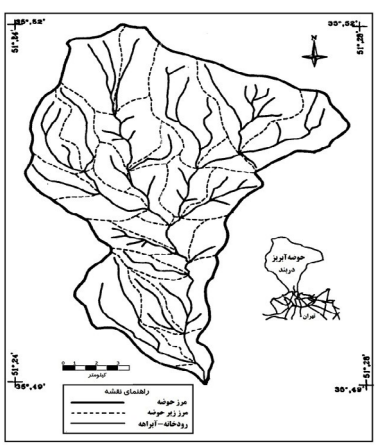


**Figure 1.** of the Darband catchment area

The region's climate is mountainous, and the slopes along the Darband Valley are towards the east and east and, on other fronts, towards the west and southwest. The existence of this slope is one of the main factors in the formation of the dam and the direction of the river in its bed.

Darband watershed, located in the north of Tehran, receives thousands of Iranian and foreign tourists daily due to its unique characteristics from the point of view of geomorphology and ecotourism. The density and pressure resulting from the presence of tourists have exposed this natural corridor to destruction, destruction, and instability. Due to the city's development, the construction of houses and linear structures (highways, streets, etc.) has had. It continues to significantly affect the geomorphology of this area's river system (Khosravi et al., 2018).

Due to the rapid growth of Tehran's population, especially in District 1 of the municipality, and the land use changes caused by those urban rivers in this area, including the Darband River, due to the human need for living space, it has been exposed to damage and encroachment on privacy. So now, it has faced a relatively significant drop in terms of environmental values. Undoubtedly, a set of human and non-human factors and the lack of knowledge and environmental planning have led to the intensification of the above process. Considering that the most critical factor in attracting tourists to this axis is related to special environmental structures in general and unique natural and geomorphological phenomena in particular, a detailed investigation of the trends governing and affecting environmental instability in the direction of stabilization and the control of destabilizing processes is critical. Based on this, it is essential to recognize the human threats to tourism development in Darband's ecological corridor and the necessary solutions to reduce natural vulnerabilities and increase environmental sustainability. According to what was said, the main issue in this research is to investigate the role of human factors in creating environmental instability in the Darband Valley. This study used quantitative and descriptive-analytical methods, and the required statistics and information were collected through library studies (fishing) and field methods (questionnaire, interview, and observation). Data analysis was also done using descriptive statistics. Finally, the unstable areas affected by human activities in the Darband watershed are investigated and evaluated.

According to the research topic and the need to investigate the role of human factors in the environmental-ecological instability of the rural areas and the studied area, a qualitative research method has been used. It should be noted that the qualitative method is mainly used for a more profound and descriptive understanding of social and psychological phenomena, factors, and processes. In this case, in-depth, collaborative interviews, direct observation, and content analysis have been used. In-depth interviews have also been used to involve local people in the research process to obtain the views, attitudes, and experiences of local people, environmental experts, and related officials about ecotourism and the role of human factors in environmental-ecological instability. By holding group meetings and specialized meetings with local people, their knowledge and experiences and more information about environmental-ecological instability in the region were obtained. In addition, using the direct observation method helped the researchers to understand the environmental situation and the impact of human factors on the region. By observing and recording behaviors, functions, and environmental changes, analyze and interpret human factors in the environmental-ecological instability of rural areas. Finally, by analyzing the content of interviews, reports, and collected data, patterns, central issues, and relationships between human factors and environmental-ecological instability have been identified, and the results and inferences have been presented in the form of qualitative analysis.

Most of the operators and users of the resources in the Darband River basin are tourists who visit this basin daily and weekly.

Considering that tourists and visitors of the studied ecotourism basin constitute more than 90% of the population of the studied area, a brief overview of the population statistics of the studied area will be necessary for this part of the research (Table 1).

**Table 1.** Population ratio of Darband catchment according to user type

| Row | users | ratio (percentage) |
|---|---|---|
| 1 | Residents | 6.2 |
| 2 | Tourists | 93.8 |

The statistics presented in the above table show a big difference between the population living in the basin and the tourist population. More than 93% of the users of the Darband watershed are tourists. This situation indicates that tourists have more effects than residents in the basin and have a much more significant and vital role in protecting the environment.

The analysis of the results of studies and surveys at the global level shows that "ecological-environmental instabilities" include a wide range of instabilities related to the destruction and deterioration of natural resources, including plants, animals, water resources, soil resources, air, etc. (shaw, 2017).

Therefore, to achieve the study's goals and to understand the current situation, the study area of the most important unstable environmental fields is investigated.

In summary, according to the findings of field studies and documents related to the region, the most important areas and unstable beds in the Darband River basin are divided into two main groups, as described below.

(A) Instabilities that originate from tourism activities and include:

1. Destruction of the riverbed

2. Destruction of water resources

3. Destruction of vegetation

4. Contaminating the environment by releasing garbage and waste

5. Changing the use of natural lands.

(B) Instabilities that originate from natural factors and environmental conditions, which include:

1. High erosion intensity in the river bed and surrounding basins

2. Occurrence of floods.

As can be seen, natural and geomorphological factors affecting the attraction of tourists in the studied area are mainly caused by instability and destruction. Therefore, tourism activities are directly faced with severe threats.

## 4. Findings

Unstable areas resulting from human activities:

**A - Destruction of the riverbed**

One of the main factors affecting the imperviousness and destruction of the natural bed of the Darband River and its tributaries in the study area, which is affected by human activities, is Unplanned and unplanned expansion of all types of residential and non-residential constructions around and near the main riverbed of Darband. A look at the construction situation in this area shows that during the last decades and in line with urban development as well as the development of recreational and tourism activities, The process of construction, including all kinds of houses, hotels, restaurants, etc., has been dramatically increased along the river bed. Has included:

1. Increasing the probability of flooding in the river bed due to the blockage or narrowing of the river channel

2. Contamination of river water;

3. Increasing the intensity of erosion;

4. Changing the river's visual appearance and general landscape and surrounding landscapes.

According to the studies, the mentioned conditions and the consequences resulting from them are the following factors:

"Indigenous people build and build their houses on steep slopes next to waterways for reasons such as access to water or roads. This issue is a big factor in blocking the floodbed and dumping garbage and construction debris. It causes the accumulation of headwaters and other debris in the path of floods, and as a result, the river bed that drains the watershed is blocked" (Ministry of Jihad Keshavzi, 2004). A significant point in this connection is the lack of supervision and control over the construction process in the sanctuary. The river is one factor that aggravates instability in the mentioned basin.

In this connection, it should be mentioned that although the river and its bed, as well as the surrounding landscapes as geomorphological and natural phenomena, are part of the essential attractions affecting the development of tourism and the construction of tourism facilities and facilities in this area is inevitable and necessary, but the location of the construction Facilities is an important issue that has been neglected in this region; This is while providing guidance, supervision and coherent and conscious planning while providing the necessary platform for the legal construction of the facilities, the destructive consequences of the existing situation are also prevented

in the best possible way. In general, what is evident today is the destruction and encroachment on the natural bed of the river with illegal constructions by the local community and the activists of the tourism sector in the mentioned area (Figure 2).

**Figure 2.** Construction in the central area of Darband River



**B- Destruction of water sources**

Water resources, as the central and most vital natural element in the environment in terms of tourism activities, have several roles, among which the following can be mentioned:

1. Provision of drinking needs

2. The characteristics of the visual image and its role in creating beautiful natural landscapes

3. The possibility of creating and developing water sports such as boating, swimming, etc

4. The possibility of creating recreational activities based on water, such as fishing, etc

The analysis of the factors affecting the attraction of nature tourists - ecotourists - shows that areas with many water resources are also more welcome. For this reason, preserving and protecting this critical and vital natural resource in nature is a fundamental and unavoidable necessity. The results of field findings and documentary studies related to the studied area show that in the watershed of Darband River, water resources are one of the main components and essential elements in attracting tourists. In general, the water resources of the Darband River basin can be divided into two main categories and several sub-categories:

(A) Surface water sources including:

1. The main river of Darband

2. Headwaters and other primary and secondary waterways

(B) Underground water sources include springs and springs. According to the investigations, there are more than ten natural springs in the studied basin (Table 2) and three waterfalls named Sutek, Duqlo, and Pasang.

As Table 2 shows, the number of springs and their average water level are very significant, and therefore, they play an important role in the development of tourism activities and the creation of natural landscapes.

Examining the results of the evaluation of the water above resources in this area shows that the trend of instability and destruction of water resources in this area has occurred in two main ways.

1. Contaminating surface water resources by releasing domestic sewage and all kinds of wastes and construction debris in the main course of the Darband River and its tributaries has affected the water quality of the Darband River, which is even potable in the upstream courses. It has heavily polluted it, and in some parts along the river, the concentration and accumulation of all kinds of garbage and sewage is so much that the smell caused by it, in addition to that, bothers the nose;

It also increases the possibility of the spread of various diseases. The role of tourists in polluting water sources is also very significant. Many polluting sources in the areas adjacent to the river and inside it arise from the activities and behavior of tourists.

The results of field surveys—questionnaires—at the basin level and among tourists and the local community show that 75% of tourists and nearly 8% of residents and property owners in the region consider tourists' behavior the most critical factor affecting resource pollution. They know water.

(Table 2) Both groups consider tourists' behavior as the leading cause and source of polluting water resources, mainly related to the release of garbage and waste. It is necessary to mention that in response to the question of how to reduce and solve the mentioned problem, a large part of the answers are related to culturalization and increasing the awareness of tourists about the importance of the environment and the resources in it, as well as the role of their behavior in their sustainability. This group of respondents considered the distribution of announcements, brochures, warning signs, catalogs, and radio programs the most effective solution for increasing environmental awareness.

**Table 2.** Coordinates of natural springs in the Darband River basin

| row | Basin name | name of the spring | Average flooding |
|---|---|---|---|
| 1 | Darband | Shirpla (1) | 10.50 |
| 2 | Darband | Shirpla (2) | 0.30 |
| 3 | Darband | Shirpla (3) | 6.50 |
| 4 | Darband | Farakhla | 7 |
| 5 | Darband | Shiro | 2.10 |
| 6 | Darband | Drummer | 1.60 |
| 7 | Darband | sorkhroo | 1.90 |
| 8 | Darband | Jafar | 1.50 |
| 9 | Darband | sargardan | 1.50 |
| 10 | Darband | Reza | 4 |

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**Table 3.** The survey results of tourists, local communities, and facility owners regarding the origin of water source pollution

| Object | Question | Questioned | Answer (percentage) | | | |
|---|---|---|---|---|---|---|
| | | | tourists | Restaurants and Coffee houses | native residents | etc |
| Factors affecting the pollution of water resources | Who do you think is the main factor affecting the pollution of water sources in the Darband region? | tourists | 75 | 20 | 5 | - |
| | | Native residents and owners of tourism facilities | 79 | 15 | 3 | 3 |
| Average | | | 3 | 4 | 17.5 | 77 |

Source: Authors' field studies, 1400

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2. Natural springs and spaces around waterfalls are being destroyed due to a lack of accurate and controlled monitoring by responsible institutions, etc.

This factor is also one of the most critical factors affecting the gradual destruction of springs in the study area. In this connection, the role of planning, monitoring, and control by related institutions about the organization and improvement of springs or waterfalls, beautifying their adjacent spaces, and other actions (including the construction of resting places and tourist attractions, etc.) is very significant. Also, in addition to human factors and activities, recent droughts have played a significant role in reducing flooding and drying up water sources in the region in general.

**C- Destruction of vegetation**

The vegetation cover of the studied area is a combination of the following items.

1. Extensive gardens on the banks of the river and around the villages

2. Poor and semi-poor pastures in the middle and upstream areas of the watershed

3. Plant cover (types of fodder plants, etc.).

Although vegetation, other than gardens, has a lesser role than other natural phenomena (such as landforms and waterways), they have a significant role. In this connection, the role of tree species and gardens is very significant and refreshing. The region also provides pleasant and attractive spaces to attract tourists. Field studies and documents show that the main factors of vegetation destruction in the studied area are:

1. Prevalence of (even limited) animal husbandry activities in some parts of the range;

2. The behavior of tourists and the local community.

The behavior of tourists and its role in the destruction of vegetation

The small size of the tourist area of Darband and the large number of tourists on a time and place scale are factors for intensifying the consequences of tourists' bad behavior in the destruction of the vegetation of this area. In this connection, the destructive effects of this group can be seen in the region, especially in tree cover.

Among the cases that can be mentioned in this connection are using trees and vegetation as sources of fuel supply, carving monuments on tree trunks, breaking them, especially on the main traffic routes, etc.

The questionnaire results in this connection also show that, according to tourists and the local community, they are the leading cause of the destruction of trees and vegetation by tourists. Table 4 shows the results of the evaluation of tourists' views about the factors affecting the destruction of vegetation at the level of the studied area.

As can be seen, 95% of tourists and 85% of residents and owners of facilities have found the behavior of tourists to be effective in destroying vegetation. In this connection, only 4% of the tourists have introduced native residents and ranchers as the cause of vegetation destruction. This is even though the residents, due to their knowledge and more information about the livestock farming situation, have found 15% of the role of the residents and ranchers to be effective in destroying vegetation. From the point of view of tourists, raising the level of the culture of action towards nature and the awareness of tourists regarding the importance of trees and vegetation in the development of tourism activities and the attractiveness of the environment and the installation of warning signs and notices play an essential role in preventing the trend of instability that dominates the vegetation of the region.

Polluting the environment due to the release of garbage and waste

As it was said in the previous parts of this study, the issue of polluting the natural environment of the Darband watershed through the release of all kinds of garbage, waste, sewage, etc., by tourists, native inhabitants of villages, and owners of tourism facilities is one of the main problems facing the destruction of resources and contaminating them and reducing the importance and quality of the visual landscape of the natural landscapes of the studied area. In all the crossing points and all the leading tourism and access routes, a large amount of garbage and waste can be seen, which, in addition to destroying the environment and making it sterile, spreads diseases and their transmission.

**Table 4.**

| Object | Question | Questioned | Answer (percentage) | | | |
|---|---|---|---|---|---|---|
| | | | tourists | Restaurants and Coffee houses | native residents | etc |
| The main factors affecting the destruction of vegetation | What are the most critical factors affecting the destruction of vegetation and trees in the Darband area? | tourists | 95 | 3 | 1 | 1 |
| | | Native residents and owners of tourism facilities | 89 | 5 | 10 | - |
| Average | | | 77 | 17.5 | 90 | 4 |

Source: Authors' field studies, 1400

**Figure 3.** A view of the garbage left by tourists in the environment

The results of the evaluation of a questionnaire in the study area about garbage and general pollution of the environment show significant results. Table 5 shows the results of this study from the point of view of tourists, the local community, and the owners of tourism facilities.

As can be seen from the statistics and information in the table above, tourists, tourism facilities (including restaurants, hotels, coffee houses, etc.), and residents are the most critical factors affecting environmental pollution, respectively, 64.6%, 24.3%, and 11%. Moreover, waste disposal is known.

In this regard, 60% of tourists, 62% of native residents, and 72% of restaurant and other facility owners emphasized the negative role of tourists in dumping waste, and 18% of tourism facility owners, 20% of native residents, and finally 35% of tourists emphasized the role of tourism facilities such as hotels, restaurants, and coffee houses in this field. Only 10% of tourists, 15% of residents, and 8% of restaurant owners emphasized the role of village residents in polluting the environment by dumping waste. In this connection, the analysis of the results of the respondents' evaluation regarding problem-solving solutions is interesting (Table 6).

As can be seen, the analysis of the evaluation and survey results regarding solutions to the problem related to the release of various types of waste and environmental pollution is very significant.

According to the opinions and answers of the respondents, information solutions through the distribution of posters, information, catalogs, etc., with 50.3%, culturalization and increasing the level of culture of tourists and people with 34.6%; and coercion and use of coercive factors with 15% are the priorities. They are ranked first to third.

In this regard, from the point of view of tourists, cultural creation and information are in the first ranks, with 50% and 46%, respectively, and using coercive factors and force has very few fans. According to the residents, informing is in the first place with 53%, and using coercive factors is in the second place with 30%.

From the point of view of the owners of tourism facilities (restaurants, hotels, coffee houses, etc.), information, culture, and the use of force and coercion are the first to third priorities, with 52%, 37%, and 11%, respectively.

**Table 5.** The results of evaluating factors affecting the release of waste and garbage in the public environment and polluting it

| Object | Question | Questioned | Answer (percentage) | | | |
|---|---|---|---|---|---|---|
| | | | tourists | Restaurants and Coffee houses | native residents | etc |
| Influential factors of polluting the public environment and leaving waste in the area | In your opinion, what are the influential factors in polluting the public environment of the Darband area through garbage, etc? | Tourists | 60 | 10 | 35 | 5 |
| | | Native residents | 62 | 15 | 20 | 3 |
| | | Owners of restaurants, coffee houses, and other facilities | 72 | 8 | 18 | 2 |
| Average | | | 64.6 | 11 | 24.3 | 33.3 |

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**Figure 4.** Another view of environmental pollution by tourists

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**Table 6.** The results of the survey on solutions to the problem of environmental pollution and waste disposal

| Object | Question | Questioned | Answer (percentage) | | |
|---|---|---|---|---|---|
| | | | tourists | Restaurants and Coffee houses | native residents |
| Practical solutions to prevent environmental pollution and waste disposal | In your opinion, what solution is needed to prevent the release of waste and sewage into the environment and its pollution? | Tourists | 50 | 46 | 4 |
| | | Native residents | 17 | 53 | 30 |
| | | Owners of restaurants, coffee houses, and other facilities | 37 | 52 | 11 |
| Average | | | 34.6 | 50.3 | 15 |

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**E- Change of land use**

Extensive land use changes are among the human factors affecting the increase in environmental instability in the Darband River basin, which has widely affected the region's environmental and geomorphological features.

The results of the investigations show that land use change has gradually started in the region since the Qajar era and has reached its peak in recent times. The role of the following factors in connection with the extensive change of land use in the region is very significant.

1. Development of tourism activities;

2. Development of economic activities based on the tourism sector, including facilities and applications for reception, accommodation, entertainment, etc.;

3. Activities of native residents of the area;

4. Development of the urban area of Tehran metropolis;

5. The mild and pleasant climate of the region.

About the number of land use changes at the regional level, there is no significant information available in the periods that can accurately state the number of changes, but the results of field studies show that during the last decades, the amount of natural uses has dramatically decreased. Moreover, the volume of commercial, hospitality, and residential uses (tourism and entertainment facilities) has increased rapidly, so in the entrance area of the region, artificial uses have taken the central part and have a significant volume. Other areas and natural substrates and land Have affected the construction and have changed the use, which has caused an increase in threats and dangers, such as floods, landslides, etc., in the region. At the upstream level, today, there are no traces of green pastures and a wide variety of animals, all resulting from humans' unwise activities.

## 5. Discussion

An overview of the findings and results of this research shows that the Darband watershed, located in the north of Tehran and the southern slopes of the Alborz mountain range, is one of the natural and tourist-attractive sites, which, in addition to becoming one of the most crucial resort and tourism sites, is characterized by It has unique environmental-natural and geomorphological features that distinguish it from other basins and natural and touristic sites, but due to the presence of environmental sensitivities and the volume of pressure and extensive exploitation exposed to severe instabilities and It has been destroyed.

The diverse and natural factors have prepared the ground for attracting nature lovers and ecotourists. In addition, the location and relative location of this basin compared to the Tehran metropolis have given it special conditions and situations from the point of view of tourism activities. As a result, a large number of tourists and citizens pour into this basin and its attractions daily.

According to this research, the average number of tourists and visitors in this basin is about 4 thousand people per day. The comparison of the volume of visitors and tourists in this basin with the number of natural resources available indicates the high pressure of tourism activities on the resources and phenomena of the studied basin. It is necessary to mention that the number of tourists in this basin is much more than the number of native residents or the employees of its facilities and equipment. Therefore, the pressures from tourism activities are more prominent.

In addition to the pressure exerted on the environmental and natural resources of this site by tourists and tourism activities, factors such as unwise and unplanned human actions such as the construction boom - due to the proximity to the metropolis of Tehran and the economic role and importance of land and activity in this basin. As a result of extensive changes in land use, encroachment on the sanctity of the river by destroying vegetation and trees, polluting water and soil sources due to the release of all kinds of waste and domestic waste, and tourism is the basis for the destruction and erosion of resources and as a result environmental instability. has provided

According to this, in the research process, After identifying the factors affecting instability and explaining their importance, a set of strategies and solutions was considered based on accurate scientific studies and field findings.

Considering the role of tourists, residents of the region, and the owners of tourism facilities located in the basin in creating instability, a large part of the programs and efforts that can be realized to control the process of instability should focus on activating their positive and constructive role through environmental awareness, culturalization, and dissemination of information to this group in different ways.

Based on this and in response to the initial question of the research, it can be stated that, firstly, in the current situation, a set of known natural and human factors are the most critical threats in the region. Secondly, the development of appropriate environmental and control programs to improve This situation will be necessary through responsible institutions such as the Agricultural Jihad Organization, Environmental Protection Organization, Cultural Heritage Organization, Handicrafts and Tourism Affairs, Governorate, City Hall, Non-Governmental and Non-Governmental Organizations (NGOs), etc.

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## Conflict of Interest

The authors declared no conflicts of interest.

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