



## **SUSTAINABLE ECOTOURISM IN DESERT AREAS IN IRAN: POTENTIAL AND ISSUES**

(Ekopelancongan Mapan di Kawasan Padang Pasir Iran: Potensi dan isu)

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### **ABSTRACT**

Desert areas are no longer left unattempted in tourism developments. Varieties formation of natural assets provides a spectrum of attraction to many segments of tourists, especially to nature lovers and adventure ecotourists. Broad and white salt plains, golden dunes as well as light green, yellow and red hilly areas make a wonderful spectrum of worth seeing colors for desert tourists in daylight. In fact, a variety form of natural formation such as desert forms (of wind and water erosion), special flora and fauna and beautiful panoramas are among many wonders to natural ecotourists. All the above attractions, if managed properly may provide positive impacts on local communities residing surrounding some of the areas. However, the benefits of sustainable ecotourism in desert areas in Iran are seldom been explored and studied. This study based on latest information and data has conducted in the first half of 2010 during the desert tourism season in Iran. The study indicates that desert tourism helps to create a sustainable employment for the local people and increases gross production as well as preserves valuable plant and animal species, cult. This article aims to explore the benefits of desert tourism in Iran for the local community as well as for the country heritage and stabilizes society institution at the macro levels. This article also tries to identify issues of desert ecotourism including over pressured on natural resources. This pressure takes the form in particular of overexploitation of land resources, and the excessive clearing and harvesting of land cover. The results are diminished crop yield, polluted streams and groundwater. The article concludes with suggestions of a holistic way of developing natural attractions for sustainable desert ecotourism in Iran.

**Keyword:** Iran, Desert, Ecotourism, Sustainable Development, Tourism activity

### **ABSTRAK**

Kawasan padang pasir kini tidak lagi dipinggirkan dalam pembangunan pelancongan. Pelbagai formasi semulajadi telah menyediakan spektrum pelancongan yang menarik di kalangan pelancong, terutamanya kepada pencinta alam yang menggemari cabaran. Dataran yang luas dan memutih, beting pasir keemasan dengan tumbuhan, kawasan bukit yang berwarna kekuningan menyediakan spektrum persekitaran yang menarik pada siang hari. Realitinya, pelbagai formasi semulajadi seperti bentuk yang terhasil daripada hakisan air dan angin, flora dan fauna yang menarik serta panorama yang cantik adalah antara beberapa keajaiban dalam ekopelancongan semulajadi. Semua tempat menarik di atas, jika diuruskan dengan baik boleh menyediakan impak positif ke atas komuniti tempatan. Bagaimanapun, faedah daripada ekopelancongan mapan di Iran masih jarang diterokai dan dikaji. Kajian ini dilaksanakan berdasarkan maklumat dan data yang dikumpul pada tahun pertama 2010, iaitu sempena musim pelancongan padang pasir di Iran. Tujuan artikel ini adalah untuk meneroka faedah pelancongan padang pasir kepada penduduk tempatan dan negara amnya. Hasil kajian menunjukkan pelancongan padang pasir telah mewujudkan jaminan pekerjaan kepada penduduk tempatan dan meningkatkan pendapatan melalui hasil keluaran disamping memelihara tumbuhan dan spesies binatang, warisan negara dan menyeimbangkan institusi sosial di peringkat makro. Artikel ini turut mengenalpasti beberapa isu berkaitan ekopelancongan padang pasir termasuklah tekanan berlebihan ke atas sumber semulajadi. Tekanan ini boleh dilihat dalam bentuk pengeksploitasikan berlebihan ke atas sumber tanah serta pembalakan dan penerangan kawasan litupan yang tidak terkawal. Hasilnya mengurangkan kawasan pertanian, pencemaran sungai dan air bawah tanah.

Artikel ini diakhiri dengan beberapa cadangan secara holistik bagi pembangunan tempat menarik semulajadi bagi mewujudkan ekopelancongan padang pasir secara mapan di Iran.

**Kata Kunci:** Iran, Padang Pasir, Ekopelancongan, Pembangunan mapan, Aktiviti pelancongan.

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## **INTRODUCTION**

With the exception of Arctic and sub arctic zones, deserts are defined as areas that are hyper arid and arid (annual precipitation of less than 2.5 cm and 25 cm, respectively) or semi-arid (precipitation of up to 50 cm a year), but with an extremely high level of evapotranspiration (Weigel 2000). Deserts cover about one-fifth of the earths and 13 per cent of the world's population live in deserts (Quinn 2008). Deserts have enormous unique natural and human attractions although they have many superficial roughnesses, and if they would be managed properly, they can be operated well in highly profitable industry of tourism. The special character of desert biodiversity also makes these regions natural laboratories for observation and analysis, while their geology (exposed rock and soil) makes them the ideal place for studying the formation of the earth and analyzing fossils and meteorites. Although there are no reliable figures on the progress of tourism in the deserts, the supply of desert tourism products has visibly increased and been offered to a wider market over the last decade or so. The appeal of deserts can largely be explained by the image of purity and serenity associated with them, and by travelers' quest for simplicity and well-being (UNEP 2006). In fact, deserts or desert regions are now being featured as new tourist destinations in packages offered by tour operators and travel agents, attracting customers who are eager for new discoveries and sensations. As a result, tourism is making a contribution to the socioeconomic development of desert regions, not least through the creation of temporary jobs that have eased the poverty of desert inhabitants. From a sustainable development perspective, the growth of tourism needs to be economically viable, ecologically sustainable and ethically and socially equitable for local populations (UNEP 2006). However, besides the positive effects tourism in these regions can generate adverse impacts, resulting in harm to desert ecosystems.

Deserts of Iran encompass all what is needed in an adventure tourism or desert tourism in an intact and beautiful nature. These deserts have been interestingly formed of diverse and colorful forms. Vast and white salt plains, golden dunes, and light green, yellow and red foothills create amazingly range of spectacular colors in the daylight for desert travelers. Breathtaking perspective of desert forms, such as wind erosion forms include intact desert areas, qanats , special flora and fauna, beautiful and full-of-star sky and etc., are part of the beauty of this region.

This article aims to explore the benefits of desert tourism in Iran for the local community as well as for the country heritage and stabilizes society institution at the macro levels. This article also tries to identify issues of desert ecotourism including over pressured on natural resources.

## **DESERT AS A PHENOMENON**

The term desert has many connotations. Many people think a desert is a barren wasteland of sand dunes with no water and no life. Deserts are regions where life is sparse but not nonexistent. Deserts can be caused by climate conditions, soil excesses or deficiencies, or human activities. An overabundance of one element, such as sodium, in the soil may retard plant growth so severely that the region becomes barren. Overgrazing of grassland or cutting

of timber may cause water erosion to devastate an area, leaving a lifeless landscape. Cities have been called urban deserts. This volume is devoted to climatic desert biomes with unique assemblages of plants and animals adapted to arid conditions, sometimes hot, sometimes cold, depending on the location (Quinn 2008). Deserts cover a third of the planet's land area, or about 50,000,000 km<sup>2</sup>. They are spread over two discontinuous zones on either side of the equator, generally in the inland regions of continents.

- In Africa: the Sahara, Kalahari and Namib Deserts.
- In the Middle East: the Arabian Desert.
- In Asia: the Gobi, Turkistan and Indian Thar Deserts.
- In the Americas:
  - North America: the Great Basin; the Sonoran, Mojave and Chihuahuah Deserts and the Grand Canyon,
  - South America: the Patagonian, Atacama and coastal Peruvian Deserts.
  - In Australia: the Great Australian Desert.
  - In Europe: Tabernas, In the Almeria region of southern Spain.

Desert or semi-desert areas can be found in 53 countries or geographic regions. With exception of the Polar Regions, the world deserts lie within a band between 15° and 40° latitude north and south. A desert is a region where very particular, sometimes extreme climatic conditions and environmental factors converge and together form the desert and its morphology. A desert's climate is a function of its altitude but also its latitude. The deserts of Asia receive polar influences and are quite cold in winter, when their temperatures can descend to -500 C. The African deserts nearest the equator are much hotter, with temperatures reaching up to +560 C.

- A desert is a particularly arid region of the planet where plant life is limited or virtually absent and fauna are rare.
- Precipitation is one of the basic parameters used to define deserts; deserts are generally, but not exclusively, considered to include areas receiving no more than 250 mm of rainfall per year.
- Temperature is another distinctive factor of deserts; average monthly temperatures are generally quite high, reaching up to 600 or 700 C in the hottest deserts. In colder deserts, average temperatures can fall as low as -300 C. In terms of this criterion, there are three main categories of desert: hot, transitional and cold.

## **STUDY AREA**

Iran is situated in a high-altitude plateau surrounded by connected ranges of mountains (Figure 1). The well-known deserts of Iran are at two major regions: 1) Dasht-e-Kavir, and 2) Kavir-e-Lut. They are both some of the most arid and maybe hottest areas of their kinds in the world. Kavir-e-Lut is the largest pit inside the Iranian plateau and probably one of the largest ones in the world. Kavir-e-Lut is a pit formed by broken layers of the earth. The maximum annual rainfall is approximately 100 mm there. The average altitude of this desert is almost 600 m above sea level (ASL) and the lowest point near "khabis" is almost 300m ASL. In Kavir-e-Lut, large amount of sand is always moving southward forming sand hills and running sand masses. Dasht-e-Kavir is a geological pit almost at the north of Kavir-e-Lut. The minimum altitude of this desert is 400 m ASL. The major part of Dasht-e-Kavir is covered by sand and pebbles and exposed to strong winds and storms that set salt-combined

sand in motion like sea waves. At times, this phenomenon forms long sand hills of 40m high. From structural point of view, Dasht-e-Kavir is very much different from Kavir-e-Lut. The difference of temperature between days and nights during a year in Dasht-e-Kavir is between 0 and 70 degrees C.



Figure 1: The Republic of Iran

## METHODOLOGY

The method of this study is to offer a strategic SWOT (strengths, weaknesses, opportunities, and threats) analysis of desert tourism development by analyzing its strengths and weaknesses and identifying the opportunities and potential threats. In this study I showed opportunities and threats in negative and positive impacts of desert Tourism to flora and fauna, water, soil and negative and positive impacts of desert tourism to socio-economic.

## RESULTS AND DISCUSSION

### (a) The Potential Offered by Nature and Heritage in Desert Areas

Desert tourism, especially for the inhabitants of European Countries who are deprived from this natural biome, is considered as one highly attractive tourism fields. Unique perspective of deserts, which has been ornamented by quick dunes, flora and fauna, unique vision and peace, difficulty and intensity of climatic conditions and consequently much temperature difference between day and night, historical memories and adaptations of human life in desert during elapse of time, has made the desert one of the unique attractions of the nature and has resulted that the tourists would be interested in visiting desert and experiencing its climate. Even some of adventurous tourists have commenced adventurous travels for themselves by accepting many difficulties for passing from broad deserts and endurance of hard conditions of desert. Nowadays, in some countries such as Tunis, the income of desert tourism is up to 3

billion dollars per annum (NGDIR 2006). The prosperity of desert tourism not only results in economic output for broad spectrum of the country which has no productive, agricultural and industrial competitive capabilities, but also it revives some of forgotten traditional customs, such as camel driving, and helps to improvement of life quality of local communities.

**(b) Potentials of desert offered by Nature**

Natural tourism resources in desert include various natural resources which have been made of mutual effect of topography, climate, water resources and plant type and density. These resources include sun, seasonal wetlands, desert mountains, distinctive tree, desert landscapes, dunes, caves and etc.

**(c) Human Resources and Potentials of desert offered by Heritage**

That manifestation of human life, which has been placed in desert and salt desert today and in ancient times along with traditional social actions, believes local customs and mores, historical and ancient monuments are from among human manifestations of desert which are demanded by tourists. We can point to the following subjects from among the most important tourism resources related to the human in desert: Historical and ancient memories in desert, Historical passages, Subterranean channel, Shrines and tombs, Ceremonies, Architectural attractions of human shelters, Manifestations of human & nature coexistence, Water reservoirs, Handicrafts, Local clothing & foods, Local sports and plays, Small Bazaars, Method of people’s traditional living.

**(d) Desert Tourism Activities**

The activities of desert tourism are limited but they are specific for these natural areas. These activities are depended on tourism resources, desert climate and land accidents. The following list is part of possible tourism activities of deserts:

- |   |                                      |
|---|--------------------------------------|
| 1. Sunbath  | 2- Sun therapy                       |
| 3. Sand therapy   | 4. Walking at desert and salt desert |
| 5. Bicycle deriving at desert                               | 6. Motorcycle driving                |
| 7. Driving over dunes                                       | 8. Desert rally                      |
| 9. Skiing on sand hills                                     | 1. Wind boat driving at desert       |
| 11- Camel driving   | 12. Visiting camel breeding centers  |
| 13. Flight with gliders and paragliders                     | 14. Desert visiting by balloon       |
| 15. Visiting desert perspectives                            | 16. Visiting subterranean channels   |
| 17. Visiting water reservoirs                               | 18. Observation of the stars         |
| 19. Visiting desert fauna at night                          | 20- Visiting old trees               |
| 21. Walking at desert woodlands                             | 22. Visiting waterfowls and waders   |
| 23. Using local restaurants                                 | 24. Purchasing handicrafts           |
| 25. Shopping from local small bazaars                       | 26. Visiting monuments and shrines   |
| 27. Visiting coexistence manifestations of human and nature | 28. Hunting                          |
| 29. Village tourism   | 30- Mountain climbing                |

### **(e) Potentials for Sustainable Ecotourism Development in Iran's Deserts**

More than one-fifth of the area of Iran is encompassed by vast deserts. In addition to such unique area of measurement that makes Iran's deserts area among the first four deserts of the world; several geographic factors have made deserts of Iran enjoy better conditions than other deserts in other parts of the world as tourism attractions. Iranian deserts have several technical and economic justifications in ecotourism development and by making suitable ground; tourism could be improved in this region:

1. In general, desert zones have much natural and cultural variety.
2. In most desert zones, including Iranian deserts, due to climate, the agricultural, cattle breeding and industrial activities are limited and therefore, tourism could be a source of jobs and income.
3. The zone subject of study has unique geographic and geology phenomena rarely found in other regions (Figure 2).



Figure 2: Tourists in Maranjab Desert, Kashan. Photos by: Mehdi Eshraghi

### **(f) The Impact of Sustainable Tourism Development in Desert Areas**

Desert spaces are still relatively well preserved today. The aim now is to anticipate the impact of tourism, which could otherwise prove destructive for these territories over the long term. It is therefore important to begin by identifying modalities for the sustainable development of these unique ecosystems so as to preserve this universal heritage for present as well as future generations and improve living conditions for local populations. The latter should be actively involved in their own development and derive benefit from tourism activity (Benmecheri 2007).

### **(g) The Benefits of Sustainable Tourism Development in Desert Areas**

Most successful tourist destinations today depend upon clean physical surroundings protected environments and often the distinctive cultural patterns of local communities. Destinations that do not offer these attributes are suffering a decline in quality and tourist use. Local communities suffer from impaired environmental quality loss of cultural identity and a decrease in economic benefits. It is the responsibility of local planners to ensure that resources are wisely managed today so that they are available for future generations. Fortunately when adapted to the local environment and society through careful planning and management, tourism can be a significant factor in conserving the environment. That is because an environment of scenic beauty and interesting features vegetation wildlife and clean air and water offers many of the resources that attract tourists. Tourism can help justify conservation and in fact subsidize conservation efforts. Sustainable desert ecotourism

effectively combat desertification and poverty, while helping to transform the secular aspects of desert life, tourism development must be centered on man and the environment. If sustainable tourism develops in desert areas, it will lead to the following cases.

- Improve the quality of life of the host community.
- Provide a high quality of experience for the visitor, and maintain the quality of the environment on which both the host community and the visitor depend (UNWTO 1995).
- Sustainable tourism encourages an understanding of the impacts of tourism on the natural, cultural, and human environments. It ensures a fair distribution of benefits and costs (Swarbrooke 1998).
- Tourism generates local employment, both directly in the tourism sector and in various support and resource management sectors (Swarbrooke 1998).
- Nature tourism encourages productive use of lands, which are marginal for agriculture, enabling large tracts to remain covered in natural vegetation (Wearing and Neil 1999).
- Cultural tourism enhances local community esteem and provides the opportunity for greater understanding and communication among peoples of diverse backgrounds (Swarbrooke 1998).
- Environmentally Sustainable tourism demonstrates the importance of natural and cultural resources to a community's economic and social well-being and can help to preserve them (Swarbrooke 1998).
- Sustainable tourism monitors, assesses and manages the impacts of tourism, develops reliable methods of environmental accountability, and counters any negative effect (Swarbrooke 1998).

### THE POSITIVE IMPACTS OF DESERT TOURISM

If ecotourism is properly managed and planned, it will bring numerous economic resources for the government, private sector, and local groups and societies and could help improve living conditions of people and changing quality of lifestyle in rural environments (Figure 3). On the other side this will be a tool for protection of natural environment and historical works.

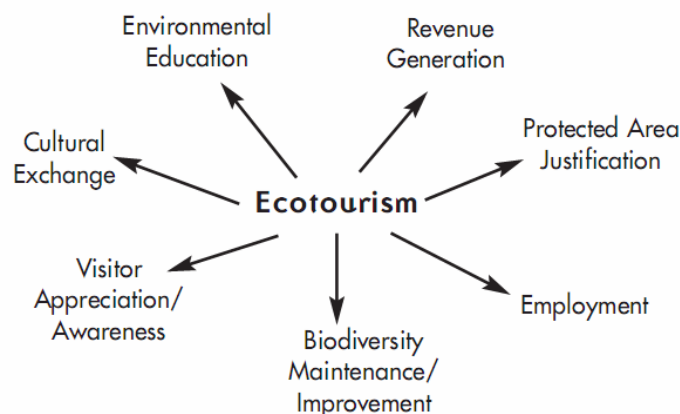


Figure 3: Ecotourism as an Opportunity (Drumm and Moore 2005)

### **(a) Employment Creation**

New jobs are often cited as the biggest gain from tourism. Protected areas may hire new guides, guards, researchers or managers to meet increased ecotourism demands. In surrounding communities, residents may become employed as taxi drivers, tour guides, lodge owners or handicraft makers, or they may participate in other tourism enterprises. In addition, other types of employment may be augmented indirectly through tourism. More bricklayers may be needed for construction. More vegetables may be needed at new restaurants. More cloth may be needed to make souvenirs. Many employment sources are enhanced as tourism grows. In some cases, community residents are good candidates for tourism jobs because they know the local environment well. Residents are ideal sources of information; for example, they can tell visitors why certain plants flower at particular times and what animals are attracted to them. As indigenous residents of the area, community members have much to offer in ecotourism jobs. However, care must be taken to protect the rights (sometimes referred to as intellectual property rights) of local peoples so that their knowledge is not exploited or appropriated unfairly by visitors or a tourism program (Drumm and Moore 2005).

### **(b) A Stronger Economy**

Tourists visiting nature sites boost economies at the local, regional and national levels. If tourism brings jobs to residents at the local level, they then have more money to spend locally, and economic activity within the area increases. Nature tourists arrive in the capital city of a country. They may stay for a few days or travel to the countryside. Along the way they use hotels, restaurants, shops, guide services and transportation systems. Typically, a multitude of businesses benefit directly from nature tourists. Although these businesses usually are set up to accommodate the broader groups of international and national tourists, nature tourists are an added market (Drumm and Moore 2005).

### **(c) Environmental Education**

Nature tourists provide an ideal audience for environmental education. During an exciting nature hike, visitors are eager to learn about the local habitats. They want to hear about animal behavior and plant uses as well as the challenges of conserving these resources. Many want to know the economic, political and social issues that surround conservation. Nature guides are one critical source of environmental education. Visitor surveys show that good guides are a key factor in a trip's success (Drumm and Moore 2005).

### **(d) Improved Conservation Efforts**

As a result of interest location, growing appreciation and pride conservation efforts often increase. Many residents are motivated to protect their areas and may change their patterns of resource use. Cultivation practices may be altered. Litter on roads may be cleaned up. Water may be better managed. Local populations often learn more about conservation and modify their daily habits because of tourism. Awareness often increases at the national level also, resulting in such improved conservation efforts as mandating and supporting protected areas. Even at the international level, ecotourism may engender an international constituency for improved conservation efforts and support for particular protected areas. International and local visitors to a protected area are likely to rally to its defense if a valuable area is being threatened (Drumm and Moore 2005).



## **THE NEGATIVE IMPACTS OF DESERT TOURISM**

Besides positive effects, negative effects of tourism must also be considered. Particularly in areas surrounding arrival points, attracting the neediest population to peripheral urban areas, spawning shantytowns, and generating unhealthy living conditions with all the attendant consequences lack of proper health care, drinking water, and waste management facilities. The consequences of intercultural contact can also be negative: too many tourist arrivals can be both a brutal for local population and “turn-off” for tourist preferring their travel in small groups, without encountering other tourists as the same sites, since their short stay do not allow them to stray too far from local airports. Local tourism actors, moreover, are prepared to accommodate only so many tourists; when their capacity is exceeded, the result can be poor service and tensions within the host community. Also, given the fragility of desert ecosystems, there is a threshold of tolerance beyond which tourism can produce significant negative impacts. Desertification is part of the context in these areas, and tourism should not have the effect of aggravating it. Soil degradation is synonymous with famine and poverty. To find other means of subsistence, populations living in regions threatened by desertification have been forced to move on, and such population movements are among the major consequences of desertification. Between 1997 and 2020, it is estimated that 60 million people will have left the desert areas of sub-Saharan Africa for the Maghreb and Europe. Africa, Asia, and Latin America are the regions most threatened by desertification (Benmecheri 2007).

### **(a) Environmental Degradation**

This is the problem most commonly associated with tourism in protected areas. Visitors may destroy the very resources they come to see. Degradation happens in many ways and in varying degrees. Much of tourism’s damage to natural resources is visible: trampled vegetation, trail erosion and litter (Drumm and Moore 2005). In desert areas tourists pose other kinds of threats to protected areas. In addition to surface damage, they affect the intricate workings of nature, causing subtle changes and problems including the alteration of such animal behavior as eating habits, migration and reproduction. Many changes are difficult to detect, but all are important indicators of the health of natural resources (Drumm and Moore 2005). For demographic reasons, the needs of sedentary populations living in semiarid rural environments are increasing steadily, exerting ever greater pressure on natural resources. This pressure takes the form in particular of overexploitation of land, and the excessive clearing and harvesting of plant cover. The results are diminished crop yield, depleted and polluted streams and groundwater, and leached soil (Benmecheri 2007).

Tourism can accentuate this phenomenon if not limited by quotas set beneath the threshold of tolerance of desert areas:

- through the overcrowding of tourist sites;
- through the trampling of dunes and excessive 4 x 4 vehicle traffic;
- through the destruction of a rare vegetation;
- through the uprooting of aromatic and medicinal plants;
- through the excessive use of timber;
- through the impact on water resources.

### **(b) Impact on local populations and their cultures**

The ways of desert life continue to survive, despite the fragile balance they require and threats to the social ties that underpin them. As the desert's principal resource, culture both tangible and intangible warrants particular attention (Benmecheri 2007).

Tourism can significantly affect and ultimately destroy these ways of life:

- through a lack of respect for traditional ways of life;
- through highly competitive pricing and inequitable distribution of the economic benefits of tourism;
- through the looting of archaeological sites, the removal of artifacts required to properly understand them, and the degradation of rock-art carvings and paintings;
- through excessive visitor traffic and overcrowding, leading to the deterioration of sites;
- through an artificially folkloric treatment of culture and a society's intangible heritage.

## PREDICTABLE ENVIRONMENT AND CULTURAL IMPACTS OF DESERT TOURISM IN IRAN

As said tourism can be negative and positive effects on the environment and local communities. The following table (Tables 1-5) reviews some of the effects of desert tourism in deserts of Iran (GAUL 2003).

Table 1: Impacts of Desert Tourism to Fauna

Impact	Source
(+) Improved knowledge/data about desert wildlife, distribution and behaviors	- scientific research on wildlife is more intensive in Ecotourism areas due to increased public awareness - financial gains of Ecotourism are partly used for scientific research
(+) Locals promote the protection of wildlife	- locals, working in Ecotourism, gain a better understanding on wildlife and change their views concerning the value of fauna because: 1. they recognized their dependence on wildlife 2. feel personally connected with wild animals and/or admire them
(-) Decline of rare or spectacular species	introduction of exotic species by tourists - capture and killing of rare animals for souvenirs - keen wildlife tourists prefer to seek out rare or spectacular animals for observations and photos which increases stress on them
(-) Habitat alteration/destruction	- road, track, campsite and lodge construction - vegetation clearing in order to provide better views for tourists
(-) Death of individual animals	- hunting - vehicle accidents - animals may die after they have been startled by tourists
(-) Unnatural and unhealthy food dependency	- feeding by tourists - inappropriate waste disposal and dumping places, which are easily accessible for wild animals
(-) Unnatural concentrations of wildlife	- establishment of artificial assistance like water holes and salt licks - inappropriate waste disposal and dumping places which are easily accessible for wild animals
(-) Unnatural species composition and physical population conditions	- establishment of artificial assistance like water holes and salt licks - artificial feeding programmes (mainly during winters or dry periods) - inappropriate waste disposal and dumping places which are easily accessible for wild animals - feeding by tourists
(-) Alteration of animal distribution (spatial and temporal displacement) and	- tourist overcrowding - wildlife viewing on inappropriate observatory facilities

behavior	<ul style="list-style-type: none"> <li>- guides actively seek for rare or spectacular species which are shy by nature</li> <li>- taming of wild animals</li> <li>- animals are caught to show them to tourists</li> <li>- tourists causing stress for wildlife by approaching too close</li> <li>- increased hunting pressure driven by the demand for souvenirs like furs, skins, stuffed animals, teeth or horns.</li> </ul>
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Table 2: Impacts of Desert tourism to flora

Impact	Source
(+) Improved knowledge/data about plant distributions and conditions	- scientific research on plants is more intensive in areas with Ecotourism due to increased public awareness and financial sources
(+) Locals promote the protection of (native) flora	<ul style="list-style-type: none"> <li>- locals, working in Ecotourism, gain a better understanding on plants and change their views concerning the value of plants because:               <ol style="list-style-type: none"> <li>1. they recognized their dependence on native flora</li> <li>2. feel personally connected with vegetation and/or admire plants</li> </ol> </li> </ul>
(-) Habitat destruction/alteration	<ul style="list-style-type: none"> <li>- road and campsite construction</li> <li>- eutrophication caused by soaps, detergents and human fecal material</li> <li>- soil contamination through burying of non-biodegradable litter such as glass bottles, aerosol cans, batteries and plastic bags</li> </ul>
(-) Reduced plant density and decrease in biomass	<ul style="list-style-type: none"> <li>- trampling</li> <li>- road/trail construction</li> <li>- campsite/lodge construction</li> <li>- cutting of vegetation in order to gain better views on wildlife</li> </ul>
(-) Displacement of rare species	<ul style="list-style-type: none"> <li>- theft of plants for private gardens</li> <li>- collection and selling of rare species as souvenirs</li> <li>- introduction of exotic species</li> </ul>
(-) Mechanical damage on vegetation	<ul style="list-style-type: none"> <li>- removal of twigs and branches along tracks and campsites</li> <li>- driving of nails into trunks in order to put up information for tourists</li> </ul>

Table 3: Impacts of Desert tourism to water

Impact	Source
(+) Improved water quality (for drinking water)	- ecotourism operators invest in chemical or mechanical treatment for water resources for the well-being of both, Ecotourists and locals
(-) Water contamination and reduced clarity of waters	<ul style="list-style-type: none"> <li>- oil and gas leakage from motorboats</li> <li>- burying of non-biodegradable litter such as glass bottles, aerosol cans, batteries and plastic bags</li> <li>- roads are built too close to water-bodies</li> </ul>
(-) Shortage in freshwater supply for	- water contamination

locals	- increased use of scarce freshwater resources by tourists (especially in hot and dry climates like in African wildlife tourism)
(-) Changing water courses	- directly: track/road and bridge construction next to water courses - indirectly: erosion on tracks/roads in hilly terrain leads to sedimentation of water courses
(-) River bank damage	- track construction along rivers

Table 4: Impacts of Desert tourism to soil

<b>Impact</b>	<b>Source</b>
(-) Soil erosion	- inappropriate quality and quantity of road and track networks - hikers widen existing trails - shortcutting of existing trails creates new trails, which are often very steep - plant removal - human traffic around campsites and overlooks (sheet erosion)
(-) Soil compaction	tourist trampling - horseback riding - (off-road) driving
(-) Loss of organic soil matter	- track/road construction
(-) Soil contamination	- burying of non-biodegradable litter such as plastic bottles and bags, batteries and aerosol cans

Table 5: Impacts of Desert Tourism to Socio-economic

<b>Impact</b>	<b>Source</b>
(+) Increasing employment possibilities for locals	- Ecotourism creates directly jobs for guides, managers, researchers, ... - Ecotourism creates indirectly jobs through tourist demands for food, accommodation, transportation, souvenirs, ...
(+) Additional regional income	- direct gains from Ecotourism operations and entrance fees for parks - indirect gains from local arts and crafts, restaurants, hotels, pubs and the taxes derived from these operations - Infusion of “hard currency”
(+) Improvement of comfort and living conditions	- facilities which have primarily been built for tourism (i.e.: roads, trails, lookouts, huts, toilets) can be used by locals as well - improved transportation connections in and out of areas where Ecotourism occurs
(+) Elements of traditional culture are revalued	- strong interest of Ecotourists in local cultures
(+) Improved healthcare	- several ecotourism operators support local health

	facilities or fund regular visits by nurses and doctors
(-) Rapid population increase	- creation of in-migration to Ecotourism sites through improved infrastructure and financial gains for local people
(-) Alteration of local cultural and religious values	- visitor interactions with local communities - growing population - influx of western values (especially in developing countries)
(-) Replacement of native languages and dialects	- communication with Ecotourists is only possible in (inter)national languages
(-) Increasing crime rate	- the presence of tourists attracts criminals to move into the area - locals may become criminal when confronted with rich tourists
(-) Seasonability of jobs	- Seasonability of Ecotourism (peak seasons and low seasons)
(-) Reduced satisfaction of locals	- overcrowding - disruption of local social relationship - increased inflation - increasing commercialization - leakage of financial benefits out of the region
(-) Confrontation and aggression between tourists and locals	- inappropriate behaviour of tourists - spaces, traditionally used by locals coincide with locations, set away for ecotourism activities - locals are only interested in economic benefits from ecotourism, and feel abhorrence at tourists, their behavior and their cultures

## CONCLUSION

adapted to the local environment and society through careful planning and management, tourism can be a significant factor in conserving the environment. That is because an environment of scenic beauty and interesting features vegetation wildlife and clean air and water offers many of the resources that attract tourists. Tourism can help justify conservation and in fact subsidize conservation efforts. Sustainable desert ecotourism effectively combat desertification and poverty, while helping to transform the secular aspects of desert life, tourism development must be centered on man and the environment. So if ecotourism is properly managed and planned, it will bring numerous economic resources for the government, private sector, and local groups and societies and could help improve living conditions of people and changing quality of lifestyle in rural environments (Table 6). On the other side this will be a tool for protection of natural environment and historical works.

Table 6: Expected Benefits of Ecotourism

Group	Subgroup	Main target society	Type of role
Economic	Microeconomic	Local people	Creating sustainable employment
	Macroeconomics	Governments	Preparing the ground for macro planning and increasing gross internal production
Environment	Biodiversity	Governments	Preserving valuable plant and animal species

Social	Cultural	Governments	Preserving cultural heritage
	Social	Governments	Stabilizing local societies in macro levels

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