IUCN Conservation Outlook Assessment 2017 **(archived)**
Finalised on 09 November 2017

Please note: this is an archived Conservation Outlook Assessment for Lut Desert. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Lut Desert

SITE INFORMATION

Country:
Iran (Islamic Republic of)
Inscribed in: 2016
Criteria:
(vii) (viii)

Site description:

The Lut Desert, or Dasht-e-Lut, is located in the south-east of the country. Between June and October, this arid subtropical area is swept by strong winds, which transport sediment and cause aeolian erosion on a colossal scale. Consequently, the site presents some of the most spectacular examples of aeolian yardang landforms (massive corrugated ridges). It also contains extensive stony deserts and dune fields. The property represents an exceptional example of ongoing geological processes. © UNESCO

SUMMARY

2017 Conservation Outlook

Good

Natural processes in the site’s harsh desert environment will effectively maintain World Heritage values over most of the property for the foreseeable future. The protection and management system, once fully developed, should be able to address the few issues that the site is facing. Special attention will need to be paid to managing impacts from visitors and tourism (infrastructure) development, as well as general development pressure near the settlements at the edges of the property. Grazing and fuelwood collection is leading to some desertification in some areas on the edge of the property, with impacts noticeable in the degradation of some nebkhas. Use of natural resources, therefore, needs to be carefully managed to ensure it is sustainable. However, these impacts remain localised around parts of the edges of the property, which, owing to its vast size and harsh environment, is for the most part naturally protected against significant impacts. Given the recent inscription of this property, the assessment of its Conservation Outlook is largely based on the nomination file submitted by the State Party (State Party of Iran, 2015) and IUCN’s evaluation report (IUCN, 2016).

Current state and trend of VALUES

Good
Trend: Data Deficient

The property is large (22,780 km2) and surrounded by a wide buffer zone. The landscape and landform values are in an almost undisturbed natural condition, although nebkha dunes have been damaged by grazing and wood gathering around at least some of the site’s margins. Natural processes in the harsh desert environment effectively maintain World Heritage values over most of the area, although human impacts are noticeable near settlements and beside the main road where it passes through the property near the Shur River valley.

Overall THREATS

Low Threat

Development pressure, including livestock grazing and tourism development, are the main threats to the property. Impacts are particularly noticeable along the west to northwest periphery of the property, but much less so elsewhere, owing to the large size of the property and its inhospitable environment.

Overall PROTECTION and MANAGEMENT

Some Concern

The protection and management system is still being developed, and so is not able yet to address all the threats to the site’s values posed by expected increases in tourist traffic and facilities. But if the anticipated improvement in management capacity and protection materialises, then these issues could be minimised.

FULL ASSESSMENT

Description of values

Values

World Heritage values

▶ Superlative examples of yardangs

Criteria:(vii)(viii)

The area contains numerous unvegetated parallel and streamlined hills of several kilometres in length and up to 150 m high. They occur over an area of about 120 km long by 65 km wide and can be seen from space. These features are formed mainly by wind, although also gullied by rain, and are carved into almost flat lying fluvial and lacustrine sandy sediments that had previously accumulated in an internally drained continental basin in a hot desert environment. These essentially aeolian landforms are generally known as yardangs, but are locally called kaluts (or kaloots). The examples in the Lut Desert are the best in the world.

▶ Sand seas

Criteria:(vii)(viii)

Down-wind and to the east of the area of kaluts, blown sands have accumulated as sand seas, termed rig or erg. In the Lut Desert, the great Yallan Sand Sea (Rig-e Yallan), covers an area 130 km long by 70 km wide. Its dunes display a wide range of morphological styles, with individual dunes among the largest in the world and reaching 475 m high. Styles include linear, compound crescentic, star and funnel shaped. Interdune hollows sometimes reach brackish standing water with dune lakes ringed by salt crystal flats. Sands trapped around the lee of bushy plants at the margins of

the desert form dunes known as nebkha, with individuals to 12 m high.

► **Rocky desert**
Criteria:(vii)(viii)

Text book examples of rocky deserts (hamada) with pediments and pediplains (coalesced pediments) occur in bedrock areas without sand sea or yardangs. Pediments are flat but gently sloping erosional landforms cut across the geological structure. They are crossed by channels of intermittent streams that, on leaving the mountains, deposit alluvial fans before continuing as braided water courses across the low gradient pediplain surface, eventually terminating in salty sand flats with occasional lakes (playas). Some intermittent water courses are white with salt crystals.

Other important biodiversity values

► **Extreme hot desert ecosystem**

Although the Lut Desert has been described in the past as a place of ‘no life’, and no comprehensive study of biodiversity has been undertaken, the area does contain a sparse flora and fauna, including an interesting insect fauna. Species have made their home in this extreme environment, an arid region in which the world’s highest temperatures have been recorded.

Assessment information

Threats

Current Threats
Low Threat

In a newly established natural World Heritage property, construction of infrastructure for tourists, where little existed before, will inevitably have environmental impacts. Most of the facilities can be kept outside the property,

but roads, trails and viewpoints will be inside. If well managed, the impacts can be minimal and acceptable, especially considering the very large size of the World Heritage property. Nebkhas are already in a deteriorated state in some areas at the edge of the property, and increasing development pressure could further exacerbate this.

▶ Housing/ Urban Areas

High Threat
Inside site, scattered(5-15%)

Twenty-eight villages are located along the western edge of the property. Both the settlements and the activities associated with them, including grazing animals and wood gathering, have left impacts on the surrounding land, including incipient desertification in an area with nebkha dunes. Increased tourism may bring further incentive for construction and other developments; inappropriate activities in a World Heritage property. Nebkha dunes are best developed at the margins of the desert where there is more moisture and shrubby plants can grow, about which dune sands accumulate. Large nebkhas are an identified special feature of the World Heritage property, but most in this settled area appear to have been impacted by grazing, wood gathering and vehicles. Thus increased development pressure is unlikely to permit the rehabilitation of the nebkha field and, to the contrary, could lead to its further deterioration.

▶ Roads/ Railroads

Low Threat
Inside site, localised(<5%)

A main road passes through the northwestern edge of the World Heritage property, linking Shahdad with Dehsalm, and part of its route crosses the valley of the Shur River. Numerous unformed and informal side tracks, used by four-wheel drive vehicles, leave the main highway, some penetrating into the World Heritage property, especially in the Shur valley. The river floods occasionally and vehicle tracks across its sometimes muddy floodplain leave a web of intertwining ruts across the desert floor. The threat is that with pressure from more vehicles in the future there will be further expansion and erosion of landscape values around the boundary of the park.

Desert environments are very fragile, especially where the substrate

comprises soft-rock and sediment rather than hard bedrock. Vehicle tracks can persist for a long time, because natural processes can take decades to efface them. The temptation for tourists to turn off road must be restrained and managed by providing view-point access sites.

► Livestock Farming / Grazing

Low Threat
Inside site, localised(<5%)

Hot desert environments have a very low carrying capacity for grazing animals, hence grazing and harvesting vegetation for stock carries a high risk of accelerating erosion of thin top soil by removing the protection that vegetation offers against erosion by wind and runoff. This leads to desertification, a worldwide problem in arid areas where population and stock pressure have increased. The problem is exacerbated by the harvesting of firewood.

One of the landform types of particular interest in the Lut Desert is nebkhas. These are sand dunes that have accumulated in the lee of desert scrub, sometimes to 12 m high. Nebkhas are characteristic of the margins of the desert where there is a little more water available for plant growth, and hence more scattered bushes around which blown sands can accumulate. Such environments also provide the opportunity for human habitation, but the ecosystem is fragile and at its margin: too much harvesting of plants by stock and people may exceed its capacity to regenerate. Desertification inevitably ensues. This has already occurred around the more populated western margin of the Lut Desert in the vicinity of settlements around Shahdad. As population and tourist pressure increases, special care must be taken to maintain the natural vegetation. Nebkhas in the area are already in a degenerated state.

Potential Threats

Low Threat

The remoteness and aridity of the Lut Desert has been and always will be its main protection. For thousands of years people have moved around and sometimes settled in its edges. This will continue, the pace of change will quicken, and the impacts of people will be greater, but still the size of the

desert core is large and is too inhospitable to be seriously threatened. So although potential impacts will increase, the overall effect will remain relatively minor and confined to the margins.

▶ Tourism/ visitors/ recreation, Tourism/ Recreation Areas

Low Threat
Inside site, localised(<5%)

Threats include tourist infrastructure and off-road foot traffic, as well as pressure for tourist accommodation to be built near villages situated within the property rather than in settlements in the buffer zone and beyond. Provision must be made to receive tourists by facilitating access by road and air, by providing overnight accommodation, and by providing corridors and access points to view and appreciate the natural values of the Lut Desert. A difficult balance has to be achieved that enables visitors to view the landforms of the property at close range, yet contains and manages impacts associated with roads, parking, toilets and foot trail construction. Off-trail access is justified but, in fragile environments such as areas of kaluts and salt flats, must entail a minimum impact undertaking by licensed operators.

Protection and management

Assessing Protection and Management

▶ Relationships with local people

Mostly Effective

Local people, including administrators, support the concept of the World Heritage property and have long-standing traditional networks that ensure knowledge of activities within the park area. Thus there is good reason to believe that the cooperation of the public will ensure that protection will be achieved. That said, there are some traditional rural practices that have led inadvertently to desertification in some areas. Education will be required to bring awareness and improve management of land near settlements.

▶ Legal framework

Mostly Effective

The Lut Desert is state-owned, and the property is subject to a complex and multi-level protection regime, and to a range of legislation, regulations and protective mechanisms. State level authorities work under their specific mandates with three agencies sharing conservation and management responsibilities for the property: Forests, Range and Watershed Management Organisation; Iranian Department of Environment; and the Iran Cultural Heritage, Handicrafts and Tourism Organisation.

► Enforcement

Some Concern

From time immemorial, the desert has looked after itself. The harsh natural environment forces limitations on human behaviour. The distances between ranger stations and settlements constrain the ability to respond quickly to issues requiring enforcement or assistance, a matter of concern because with modern technology and increased tourist pressure, it seems inevitable that more problems will arise of a kind and perhaps of a scale not previously encountered. It is not clear how such problems will be met and dealt with.

► Integration into regional and national planning systems

Mostly Effective

Both national and regional government are fully supportive of the establishment of the World Heritage property, so there is every reason to believe that it will be integrated into regional and national planning systems. Although there is currently insufficient information available to make a decisive assessment, it is reasonable to consider integration of the property into regional and national planning systems to be mostly effective.

► Management system

Some Concern

The establishment of an overarching management system, and associated plan, for the World Heritage property as a whole is in its early stages. Detail is required on short, medium and long-term planning goals. Greater clarity is needed on the analysis of threats and measures to address them. Lines of control and responsibility need to be agreed and clearly documented. Existing field stations and staff are widely dispersed, and it remains to be

seen how coordinated and effective management will be, especially the lines of control and responsibility.

▶ Management effectiveness

Data Deficient

There has been little opportunity to assess this because the park is so recently established. The site is managed from a headquarters located at Shafiabad on the western margin of the protected area. Baselines need to be established, especially in tourist areas, against which to measure change and the effectiveness of management policy and practices.

▶ Implementation of Committee decisions and recommendations

Data Deficient

The World Heritage listing of the property is too recent for this to be assessed.

▶ Boundaries

Mostly Effective

These are largely appropriate and effective with the only doubts about boundary configuration in the west to northwest corner, where some 28 settlements and a main road are located within the property, and an area is included (Gandom Beryan Plateau) that is not of global significance and does not relate to the principal features of the Lut Desert.

▶ Sustainable finance

Some Concern

Funding comes from government appropriations: national, regional and local, as well as income generated from tourism and public use. Finances are derived from the independent budgets of the three responsible state agencies, but no information is available on the breakdown of funding for capital versus recurrent expenditure, nor any guarantee of continuity and ongoing adjustment for inflation.

▶ Staff training and development

Some Concern

There is little experience of international tourism in the area, especially of groups of tourists, so the expectations of international visitors are perhaps not fully appreciated. Further, the Lut Desert is the first natural World Heritage property in Iran, so there is no previous experience in managing the special requirements of UNESCO natural sites. Consequently, there is much to be achieved in staff training and development. How well this is being met at present is not clear.

► Sustainable use

Mostly Effective

The vast bulk of the property is ‘managed’ sustainably by ongoing natural processes. Around the edges, use of natural resources needs to be carefully managed to avoid desertification resulting from grazing and fuelwood collection.

► Education and interpretation programs

Some Concern

The field bases have information displays that assist visitors to understand the area. However, this is still on a small scale, consequently much remains to be done to interpret the area and convey this information to visitors.

► Tourism and visitation management

Some Concern

At present this is on a limited scale and usually involves individuals and small groups. Facilities for overnight stays are limited and no international standard hotels are available locally. Although visitation management is in its development stage, there is little doubt that good quality facilities and management systems will be developed.

► Monitoring

Data Deficient

There is awareness of the need for monitoring of natural features, tourist impacts and management effectiveness, but systems are only just being

established.

▶ Research

Data Deficient

Basic research has been carried out on the natural science of the property, including on climate, geology, landforms and biota. Effective cooperation exists between management authorities and university scientists. But the harsh environment and remoteness of the site has limited what has been achieved. Given the new status of the site as a World Heritage property, more research is required to fully understand the natural resources that require management, and research is needed on visitor cost-benefits and environmental impacts.

Overall assessment of protection and management

Some Concern

The protection and management system is still being developed, and so is not able yet to address all the threats to the site’s values posed by expected increases in tourist traffic and facilities. But if the anticipated improvement in management capacity and protection materialises, then these issues could be minimised.

▶ Assessment of the effectiveness of protection and management in addressing threats outside the site

Data Deficient

Nature has looked after itself successfully in this desert environment for millennia, although around the more humid desert periphery human impact has in places led to desertification. Protection and management measures related to tourism are only just being developed, and conflict between the demands of visitors to see a fragile environment and the need to minimise their impacts will lead to management issues that are not yet fully addressed.

▶ Best practice examples

Data unavailable

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Superlative examples of yardangs**

Good
Trend:Data Deficient

The yardangs of the Lut Desert are probably the best examples of this land form in the world. The harsh environment and lack of visitation mean that they are essentially undisturbed.

▶ **Sand seas**

Good
Trend:Data Deficient

The sand seas of the Lut Desert are among the best developed active dune fields in the world, displaying a wide variety of dune types. Within the vast and inhospitable desert landscape of the property, these dune fields and the geomorphological processes that shape them are essentially undisturbed. However, in some localised parts at the edges of the property, some nebkha dunes are showing signs of deterioration as a result of impacts from livestock grazing and fuelwood collection.

▶ **Rocky desert**

Good
Trend:Data Deficient

As is the case with the other desert land forms of the property, the harsh environment and vast scale of the landscape have conserved the rocky desert in an essentially undisturbed state.

Summary of the Values

► Assessment of the current state and trend of World Heritage values

Good

Trend: Data Deficient

The property is large (22,780 km2) and surrounded by a wide buffer zone. The landscape and landform values are in an almost undisturbed natural condition, although nebkha dunes have been damaged by grazing and wood gathering around at least some of the site's margins. Natural processes in the harsh desert environment effectively maintain World Heritage values over most of the area, although human impacts are noticeable near settlements and beside the main road where it passes through the property near the Shur River valley.

► Assessment of the current state and trend of other important biodiversity values

Low Concern

Trend: Data Deficient

Nomination documents indicate limited hunting continues, but impacts on the extreme hot desert ecosystem are unknown. Overall, there is a lack of biological study and research in the Lut Desert, leading to significant knowledge gaps about its desert ecosystem and the species (endemic and/or threatened) of flora and fauna that it harbours. Nevertheless, it can be reasonably assumed that the vastness of the landscape and its harsh environment, which is inhospitable for humans, have left its ecosystem essentially undisturbed.

Additional information

Benefits

Understanding Benefits

► Tourism-related income, Provision of jobs

The special nature of the Lut Desert is known within Iran (Amrikazemi, 2013) and attracts some tourists, but the site is almost unknown internationally. Its recognition and placement on the World Heritage List will inevitably bring international attention and attract overseas tourists. But the Lut Desert is inaccessible to local and international tourists alike; so a viable tourist industry will depend on the development of appropriate infrastructure and a well-trained guiding service. This requires serious investment, because conditions can be harsh and dangerous. But good quality infrastructure will facilitate a growing tourist industry that will bring direct and indirect employment and tourist-related income to the local people.

The negative effects will be minimised if most tourist-related construction is required to be outside the property, in the buffer zone or beyond.

► **Importance for research, Contribution to education**

The isolation and harsh conditions of the Lut Desert have meant that it has received comparatively little scientific attention. As access improves and the importance of the site as a World Heritage property is recognised, so more research is likely to be possible and supported financially. This will lead to an increase in knowledge about the special natural attributes of the Lut Desert which will, in turn, contribute to education at a local, national and international level.

Few factors will negatively affect this benefit.

► **Outdoor recreation and tourism, Natural beauty and scenery**

Increased access to a beautiful, challenging and sometimes awe-inspiring landscape brings many personal benefits.

Few factors are likely to have a significant effect on these benefits.

Summary of benefits

Benefits are typical of those expected in an isolated wilderness site of high landscape value.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	University of Tehran, Department of Physical Geography	From: 2017 To: 2017	Investigation of the physical environment of the region, including climatic processes and landscape development.

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	Ecosystem of the Lut Desert	Lists of flora and fauna found in and around the Lut Desert are available, but little is known about the nature and operation of its ecosystem. Considering that this ecosystem operates in one of the hottest (Mildrexler et al., 2011) and driest places on Earth, it is likely to have some unusual and scientifically interesting characteristics, conceivably of outstanding universal value. As an integral and almost unexplored part of a World Heritage property, the biota merit further serious investigation.	From: 2017 To: 2017

№	Site needed title	Brief description of potential site needs	Support needed for following years
2	Kaluts: their age and origin	Yardangs/kaluts are the signature features of the property (Goudie, 2007; Goudie and Seely, 2001). Yet we know almost nothing about their age and origin, and about the way in which they responded to the climatic changes of the Quaternary. How are they likely to change in the future and what will be the key drivers of change? These are fundamental issues, key to the interpretation of the site, and important for its management.	From: 2017 To: 2017
3	Sustainable tourism	International tourists will be disappointed if they cannot get well into the yardang country. It's what they will be coming to see. So it's no good just taking them to the periphery and looking in. So roads suitable for minibuses will have to be constructed for kilometres into the yardang field, plus turning circles, parking areas (with toilets), and walk-about sites. Importantly, there must be foot access to the tops of high yardangs, so that active visitors can obtain distant views across the yardang field and come to appreciate its impressive dimensions. This will give the 'wow' factor expected of a World Heritage site, and visitors will leave satisfied with their experience. But clearly this physical development will impact the very thing that visitors are coming to see. So huge care is required to balance access with conservation and to allow damage to heal by means of unrestrained operation of natural desert processes. Different access routes will be required so that some can be closed off and 'rested' while others are used. Park managers, therefore, need to acquire knowledge about how this can be achieved and what practical management techniques and regimes are required. Thus research is needed that is directed towards landscape management that aims at achieving a sustainable balance between tourist access and landscape conservation/rehabilitation.	From: 2017 To: 2017

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