

ASIA / PACIFIC

LUT DESERT

ISLAMIC REPUBLIC OF IRAN



Large kaluts and yardangs - © IUCN Paul Williams

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

LUT DESERT (ISLAMIC REPUBLIC OF IRAN) – ID 1505

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To refer the nomination under natural criteria.

Key paragraphs of Operational Guidelines:

Paragraph 77: Nominated property has potential to meet World Heritage criteria.

Paragraph 78: Nominated property does not meet integrity and protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 16 March 2015

b) Additional information officially requested from and provided by the State Party: Following the IUCN World Heritage Panel a progress report was sent to the State Party on 16 December 2015. The letter advised on the status of the evaluation process and sought responses/clarifications on a range of issues including management measures to deal with visitor access, specifically threats from vehicles, tourism and sporting events; clarification of the role of the nominated property's steering committee; updated information on funding for the site; and knowledge of the biodiversity values of the site and how these will be managed. The State Party was asked to confirm that mining, oil and gas exploration and extraction is, and will continue to be prohibited within the nominated property, noting reports of a major iron ore deposit within the Lut Desert. Lastly the State Party was asked to consider boundary modifications to exclude the villages and roads on the western side of the property. An additional point of clarification on the status of the site management plan was sought by way of IUCN letter dated 27 January 2016. The information in response was received from the State Party on 23 February 2016.

c) Additional literature consulted: Various sources including: Gabriel, A. 1938. *The southern Lut and Iranian Baluchistan*. Geographical Journal 92, 192-210. Cooke, R., Warren, A., Goudie, A. (1993). *Desert Geomorphology*. UCL Press, London. Goudie, A. S. (2002). *Great Warm Deserts of the World*. Oxford University Press, Oxford. Goudie, A. S. (2007). *Mega-yardangs: a global analysis*. Geography Compass 1/1, 65-81. Goudie, A. and Seely, M. (2001). *World Heritage Desert Landscapes: Potential Priorities for the Recognition of Desert Landscapes and Geomorphological Sites on the World Heritage List*. Gland, Switzerland: IUCN. 44pp. Mildrexler, D.J., Zhao, M., Running, S.W. (2011). *Satellite finds highest land skin temperatures on Earth*. Bulletin American Meteorological Society, 855-860. DOI:10.1175/2011BAMS3067.1 Aghanabati, A. (2004). *Geology of Iran*. Geological Survey of Iran, Tehran. Amrikazemi, A. and Mehrpooya, A. (2006) *Geotourism Resources of Iran*. In: Dowling, R.K. and Newsome, D., Eds., *Geotourism*, Burlington (Elsevier Butterworth-Heinemann), Oxford, 79-89. Moatamed, A. (1973) *Lut*

Hole Geological Issues. Journal of Geographical Reports. Tehran University, Tehran, 11. Stocklin, Y. (1973) *Basic Geological Study of Central Lut, East of Iran*. Report 22-F, Institute of Geology and Mining Publications, Tehran. Yazdi, A., Emami, M.H. and Shafiee, S.M. (2014) *Dasht-e Lut in Iran, the Most Complete Collection of Beautiful Geomorphological Phenomena of Desert*. Open Journal of Geology, 4, 249-261. <http://dx.doi.org/10.4236/ojg.2014.46019> Yazdi, A. (2012) *A study of Iran's Lut desert: Geomorphological and Geotourism attractiveness*. Geological and Earth Sciences, http://dx.doi.org/10.5176/2251-3361_GEOS12.27

d) Consultations: 11 desk reviews received. The mission also met with representatives of the senior staff from central and local levels of the Iranian Cultural Heritage, Handicraft, Tourism Organization, and from Iran's Environment Department. The mission also consulted widely with staff of the management bases of Lut Desert; Governors and officials of cities and villages around the property. During the mission, three meetings were held with governors and local representatives at Kerman, Shahdad and Nehbandan, as well as meetings with local communities in Shafiabad, Dehsalm, Heydarabad, Nosratabad and Chahhossein Ali.

e) Field Visit: Paul Williams and Maher Mahjoub, 20-26 October 2015

f) Date of IUCN approval of this report: April 2016

2. SUMMARY OF NATURAL VALUES

The nominated property Lut Desert is in the southeast of the Islamic Republic of Iran (hereinafter referred to as Iran) and straddles the three Iranian Provinces of Kermān, Sistāno Balūchestān and Khorāsān-e Jonūbi. It is an arid continental subtropical area notable for a rich variety of spectacular desert landforms. At 2,278,015 ha the nominated area is large and is surrounded by a buffer zone of 1,794,134 ha which varies in width between 10 and 30 kms.

In Persian language "Lut" refers to bare land without water and devoid of vegetation. The Lut Desert is situated in an interior basin surrounded by mountains, so it is in a rain shadow and, coupled with high temperatures, the climate is hyper-arid. The region often experiences Earth's highest land surface

temperatures: a temperature of 70.7C has been recorded within the nominated property.

The regional topography results in the nominated area being a focus for internal drainage that collects and evaporates in a salt plain (that has sometimes been a playa lake) at 117 m above sea-level. The largest incoming river, the Rud-e Shur, drains a catchment to the north of the nominated area. It is perennial but highly saline by the time it enters the core zone; so its banks are devoid of riparian vegetation and its channel is lined with salt crystals. The Fahraj is the major river catchment draining in from the south with an intermittent flow.

A steep north-south pressure gradient develops across the region in spring and summer with the result that strong NNW-SSE winds blow across the nominated area from between June and October each year. The long duration strong winds propel 1 mm quartz sand grains at great velocity creating transportation of sediment and aeolian erosion (by sand blasting) on a colossal scale. Consequently, the area possesses what many experts consider the world's best examples of aeolian *yardang* landforms, as well as extensive stony deserts and dune fields. Yardangs are bedrock features carved and streamlined by sandblasting, although they are also eroded by gullying from rainfall runoff and by mass movement. Some are also undercut by floodwaters. Yardangs appear as massive and dramatic corrugations across the landscape with ridges and corridors oriented parallel to the dominant prevailing wind. The ridges are known as *kaluts*. In the Lut Desert some are up to 155 m high and their ridges can be followed for more than 40 km. Yardangs cover about one third of the nominated area and are developed in consolidated lacustrine sediments (sands, silts, marls, evaporites) of mainly Plio-Pleistocene age that accumulated on the floor of the inland basin.

The wind also strips hard rocky outcrops bare of soil, which leaves extensive stony desert pavements (*hamada*) with sand-blasted faceted stones (*ventifacts*) across about 12% of the nominated area. An extensive, black stony desert covers the basaltic Gandom Beryan plateau in the northwest of the core zone. The stony deserts in eastern Lut cover (as a rubbly veneer) extensive pediplains, which are rock platforms that truncate bedrock and gently slope away from the foot of neighbouring hills.

Sands transported by wind and washed in by intermittent streams have accumulated in the south and east, where huge sand-seas (termed *rig* or *erg*) have formed across 40% of the core zone. These areas consist of active dunes some reaching heights of 475 m. These are amongst the largest dunes in the world and are displayed in the Lut Desert in a wide variety of forms, including linear, compound crescentic, star, and funnel shaped. Where sands are trapped around the lee of plants at the slightly wetter margins of the basin, *nebkhas* form to 12 m or more in height, arguably being the highest in the world. Nebkhas cover about 3% of the area, particularly along its western margin.

Large coalescing alluvial fans (*bajada*) and gullied badlands surround much of the Lut basin with their headwater apices in the buffer zone or beyond. The nominated property boundary tends to follow the distal margins of the fans as they grade into the basin and only small fans around isolated hills in eastern Lut are included in the nominated area. Ephemeral streams from fans transport sediment and solutes into the basin. Dissolved minerals evaporated from incoming streams result in white efflorescences of crystals and evaporite crusts down river beds, in yardang corridors and in salt pans (*playa*). A variety of small scale evaporite landforms develop, especially along the edges of the Shur River where white crystalline pools are a widespread feature. Small landforms result from the pressure effects of crystal growth, including salt polygons, tepee fractured salt crusts, small salt *pingos* (or blisters), salt karren and gypsum domes. Various salt features are found over about 4% of the nominated area, especially in the playa of Shurgaz-e Hamun.

Although not nominated for its biodiversity values, the Lut Desert is known to possess natural values that result from the ecological and biological processes which evolved in parallel with the development of the desert ecosystem. The region has been described in the past as a place of 'no life' and information on the biological resources in this area is limited. Nevertheless the nomination dossier documents the area's known flora and fauna including an interesting adapted insect fauna and other species which have made their home in this extreme environment. Supplementary information provided by the State Party confirms that no comprehensive study of biodiversity in the region has been undertaken, however, there are plans outlined in the management plan to further investigate this aspect of the property.

Within the nominated area, only the western edge includes settlements (there being 28 villages, the largest with just over 700 people). In the buffer zone there are 15 villages and Shahdad town with a population of nearly 6,000. The region has evidence for habitation going back 7,000 years, however this has always been around the periphery of the nominated area, because the aridity of the core zone rendered most of it uninhabitable.

3. COMPARISONS WITH OTHER AREAS

The nomination dossier presents a reasonably comprehensive and convincing comparative analysis of key landforms such as sand dunes, yardangs/kaluts and nebkhas and objectively assesses the relative values of Lut Desert against a number of logical sites both in Iran and around the world. The Lut Desert is compared with several other desert landscapes sites in Iran and internationally with the Namib Sand Sea (Namibia), Grand Canyon National Park (USA), Wadi Rum Protected Area (Jordan), Uluru-Kata Tjuta National Park (Australia) and Air and Ténéré Natural Reserves in Niger. This analysis is particularly relevant to criterion (vii) and concludes that the nominated property exhibits a range of desert landforms and

associated processes that exceed other places in extent, scale of features and diversity.

However the dossier's analysis of key aspects of earth history pertinent to criterion (viii) values has some shortcomings. Under (viii) the nominated property is ultimately only compared to Willandra Lakes in Australia and the Namib Sand Sea in Namibia. The analysis concludes that only the Namib Sand Sea is seen as comparable on the basis of its extent, the variation in desert geomorphology and fact that it is the only World Heritage site containing yardangs. The nomination concludes that what makes Lut Desert more striking relative to the Namib Sand Sea is its greater diversity of landforms including the highest nebkhas, the highest and longest yardangs, and the highest sand dunes of the world as well as the hottest spot on earth.

Further comparative analysis has been undertaken through the evaluation and with the support of expert reviewers. Hot to warm deserts are unevenly researched because of their hostile environments, although some have been studied in detail, especially in parts of Africa, the Americas and Australia. Less work has been done on deserts in the Middle East and Central and Southern Asia. So within the limits of readily available information, the comparative analysis was considered accurate, complete in most key areas and reasonably comprehensive. One landform, *pediments*, and where they merge as compound features, *pediplains*, received little attention in the dossier. They are not visually dramatic, because they form very extensive almost flat gently sloping desert plains, usually covered by a stony veneer. However, pediplains cover large areas of the buffer zone and are usually found where there is *hamada* (stony desert). Pediments and pediplains are common in most arid to semi-arid landscapes, and those at Lut are considered to be only of regional significance. Similarly comparative information on evaporite landforms such as playas with abandoned salt lake shorelines and other salt features suggests these too are of regional significance.

Parts of the Western Desert of Egypt/Libya display a mix of dunes and yardangs, but they are not as impressive as those of the Lut. The yardangs of high altitude areas in South America also probably deserve conservation, but they occur in very different materials (ignimbrites) and in a very different climatic environment. They do not occur in association with major dunes. The Dunhuang yardangs of China may be the closest in terms of beauty, size and extent.

Noteworthy is the dossier's strong reference to IUCN's 2011 Desert Study which concludes that the Lut Desert ranks as one of the world's most important deserts. This global thematic study comprehensively assessed non-polar deserts around the world to identify places with World Heritage potential concluding that the Lut Desert was one of only six deserts recommended as areas of high potential for listing. The rationale being that the Lut contains some of the largest and best developed yardangs found anywhere on earth. Some of the ridges exceed 60m in

height and run parallel, with superbly developed aeolian streamlining. The study goes on to note that the Lut Desert contains the longest system of yardangs; tallest sand pyramid; hottest point; and biggest nebkhas in the world.

To sum up, many experts consider that the Lut Desert contains the biggest and most perfectly shaped yardangs in the world. They are impressive in terms of their extent (70 x 160 km), spacing and height (up to 155m). The property also contains some very impressive dunes, which are among the very highest in the world, and nebkhas of unusual size. One of the virtues of the nominated property is that it contains both aeolian erosional and aeolian depositional features in close juxtaposition. It is also notable from the climatic point of view, possessing some of the highest desert temperatures ever recorded. There are large yardangs in other parts of the world (e.g. Dunhuang in China and Borkou in the Sahara) but the Lut examples are superb, and no existing World Heritage site has comparably excellent examples. The dunes are not quite so important, but only the Namib Sand Sea contains anything comparable.

It is important to note that a majority of expert reviewers, including from the International Union of Geological Sciences, consider on the basis of global comparisons that the Lut Desert meets criteria (vii) and (viii), although a number noted concerns with management and conservation issues, especially relative to tourism and potential for mining. In summary IUCN considers that the nomination demonstrates the exceptional importance of the values of the property, providing a strong basis for considering the site meets criteria of Outstanding Universal Value.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

Due to its remoteness from major population centres and its extreme environmental conditions, including extreme heat and lack of water, much of the Lut Desert has been largely inaccessible and therefore naturally protected. The nomination reports that, apart from some small private landholdings in villages in the nominated area and buffer zone of western Lut, the majority of the land within the Lut Desert is state-owned. The nominated property is subject to a complex and multi-level protection regime and a range of legislation, regulations and protective mechanisms apply (14 legal instruments). Legal protection and management is provided by state level authorities that work under their specific mandates. Three agencies principally share conservation and management responsibility for the nominated property, namely the Forests, Range and Watershed Management Organization; Iranian Department of Environment; and the Iran Cultural Heritage, Handicrafts and Tourism Organization (ICHHTO).

Protection of non-conservation lands, study and execution of projects of watershed and rangeland management and desertification is under the control of

the Organization of Forests, Range and Watershed Management. This agency is responsible for the prevention of illegal exploitation of deserts. Two protected areas located in the northwest and southeast are under the management and protection of the Iranian Department of Environment. The Darband-e Ravar “wildlife refuge” in the northwest partially overlaps with the nominated area but the Bobolab “no hunting” area in the southeast only overlaps with the buffer zone. In addition to management of the protected area, the Department of Environment is responsible for environmental assessment of development projects. The Lut Desert is also on the national heritage registration list of ICHHTO. The ICHHTO is responsible for the management of tourism, cultural heritage and buffer zone regulation and control.

IUCN’s field evaluation, as well as a number of expert reviewers, raised concerns regarding which agency has the overriding prevailing authority for the management of the nominated property. The nomination states that “all the government states in charge of conservation including Forests, Rangeland, and Watershed Management Organization, Iranian Department of Environment and Iran Cultural Heritage, Handicrafts and Tourism Organization are responsible for management and protection of these natural regions.” Whilst an inter-agency Steering Committee has been established, it is not clear which agency legally has final authority over the site. Additional information provided by the State Party reinforces the strategic importance of this Steering Committee noting that only activities with the approval of this Committee can occur. The response is still ambiguous although it implies that the ICHHTO acts as the lead agency on the Steering Committee, managing the committee, defining its terms and acting on behalf of the State Party. IUCN remains concerned that the multi-agency mandate for the property creates potential weaknesses with respect to reconciling conflicting approaches. This is exacerbated by the rather shallow management plan currently in place for the nominated property (see 4.3 below). The property would thus benefit from a much clearer articulation of accountability and ultimate management authority for the Lut Desert in its entirety.

In conclusion IUCN considers that whilst the legal protective framework is very complex and might benefit from rationalization, it is currently adequate to safeguard the scenic, geomorphological and geological values of the nominated property. The complex set of laws and regulations when taken together appear to be relatively strong in the above areas, however they are considered unlikely to be sufficient for the biodiversity and ecological aspects of the site. The two protected areas which are under the control of the Department of Environment are established to protect biodiversity yet only cover a very small percentage of the nominated area.

Despite concerns regarding the complexity of legal protection and a lack of clarity over which agency is the prevailing management authority, IUCN considers

that the protection status of the nominated extended property meets the requirements of the Operational Guidelines.

4.2 Boundaries

The nominated property is of a significant size and the site’s boundaries have been drawn to include most of the key scenic, geomorphological and geological values. With respect to both criteria (vii) and (viii), all elements and processes are present in order to express the property’s Outstanding Universal Value. The property has a very high degree of integrity, has suffered very few adverse effects, and is unlikely to experience significant adverse effects in the foreseeable future. The large nominated area completely encloses the key landforms: the major yardang field, the sand-sea complexes, extensive hamada, pediplains and salt pans (playa).

IUCN is concerned that the boundary includes a number of areas which in IUCN’s opinion do not add attributes of value and/or detract from the integrity of the site due to the inclusion of degraded areas, developed village areas and associated infrastructure such as roads. The boundary of the nominated area in the northwest, in particular, has been drawn to include a number of villages on the outskirts of Shadad and Anduhjerd. The boundary also incorporates the area of the Gandom Beryan Plateau, a basaltic feature which is not of global significance and does not relate the Lut Desert’s principal geomorphological aeolian features. In response to IUCN’s request to consider amending the boundary in this part of the property, the State Party indicated it would like to retain the boundary because “separation of the villages from the property may weaken the conservation tradition and weaken the participation of local communities in conservation” and for management efficiency (road systems servicing management research and visitors). IUCN is of the view that the conservation tradition could be maintained through other measures than including degraded areas and urban areas in the property (for instance by recognising those areas as buffer zones), and that fundamentally these areas both detract from the integrity of the property, and create unnecessary conservation issues for the remainder of the substantially uninhabited landscape, and potentially for the communities themselves. IUCN further notes that the centres of Shahdad, Dehsalm and Nosratabad from which park activities are organised are outside of the nominated area, yet clearly are connected to and benefit from the park and its activities. IUCN recommends a review of the boundary in this part of the property and would be willing to work closely with the State Party to consider amendments to strengthen the design of the site.

IUCN considers that the boundaries of the nominated property do not fully meet the requirements of the Operational Guidelines, and that developed and degraded areas should not be included within its boundaries.

4.3 Management

The complexity of the Lut Desert's legal protection framework mirrors that of its governance arrangements. Conservation and management of the nominated area and its buffer zone is complex and falls under the responsibility of three agencies, the Iranian Department of Environment, the Cultural Heritage, Handicrafts, and Tourism Organization, and Organization of Forests, Range and Watershed Management.

The site is managed from a headquarters, the "Base of the Lut Desert" located at Shafiabad, on the western margin of the protected site. Housed in the Lut Desert Base is the Steering Committee referred to above and established to coordinate and oversee the activities of the three responsible agencies and their staff. The Steering Committee includes representatives of the state departments, provinces, rural and city councils, tourism agencies and the scientific community and its composition plays a key role in achieving integrated management at a local level. Whilst the supplementary information has provided some additional clarity on the governance arrangements these would nevertheless benefit from greater transparency regarding decision making, accountability and the sharing of power among agencies and other actors.

There are a number of contextual plans on deserts and tourism development however these apply to desert systems across Iran as a whole. For example a 2014 project concentrated upon tourism planning for arid areas in Iran with only some focus on tourism routes in the Lut. IUCN also notes that the ICHHTO has traditionally handled matters related to Iran's cultural heritage and has been responsible for the country's existing 19 cultural World Heritage properties. The Lut Desert is nominated as Iran's first natural nomination and the evaluation mission considered that the needs of natural heritage management are not yet well understood in Iran. The mission witnessed a strong will and considerable latent capacity in Iran to manage natural properties, but concluded that at present the institutional framework is sub-optimal for achieving this.

Only a summary of the content within the management plan was outlined in the nomination dossier including management goals, management strategies and action plans centred on research and education, conservation and tourism. IUCN requested more information and in response the State Party provided a stand-alone management plan (prepared in 2016). This plan of 32 pages is very short and, whilst going into some additional detail, still only provides a bare outline of short (2 years), medium (5 years) and long term (up to 10 years) action plans for the property, with many actions described in just one line. Much greater clarity is needed on the analysis of threats and measures to address these; articulation of coordination arrangements; more nuanced actions to spell out exactly what will be done; and the specification of timeframes, estimated budgets and responsible agencies for implementation.

Some 20 staff from the various agencies operate from Lut Desert Base at Shafiabad and an additional eight staff at the Lut Desert Base at Dehsalm in the north. A third base has recently been established at Nosratabad in the southeast of the property. Pressures on the site are currently low and large areas of the interior are difficult to access and inhospitable; regardless, this level of staffing is modest for a property of this size with its extensive boundary and buffer zone being areas requiring an active management presence.

Information was limited in the nomination dossier on the available finances for the Lut Desert; however, some additional information has been provided by the State Party. Funding comes from government appropriations: national, provincial and local as well as income generated from tourism and public use. Finances are derived from the independent budgets of the three responsible agencies. Adequate funding totalling USD 3 million was made available to the site in 2015 increasing to USD 4 million in 2016; however, there are no details on the breakdown of this funding for capital versus recurrent expenditures nor any guarantee of continuity and ongoing adjustment for inflation.

The management plan for this nominated property is inadequate and IUCN considers the management of the nominated property does not meet the requirements of the Operational Guidelines.

4.4 Community

As noted above, 28 villages are currently included in the western part of the nominated property. These villages have a total population of 6,177; and there are two small towns (largest is Shahdad with a population of 5,942) and 15 villages in the buffer zone with a total population of 12,961. In general, with less than 20,000 people occupying an area of over 4 million ha the area is sparsely populated. Thus, outside of these developed areas and their immediate surroundings, human impact pressures are low, confined to a relatively small area, and are currently mainly associated with visitors. Impacts associated with vehicles extend well into parts of the nominated property. Tourist infrastructure development is confined mainly to existing settlements in the buffer zone, although Dehseyf Camp is located inside the nominated area. A few pilot ecolodges managed by local people, two of them in the village Shafiabad, were initiated recently by the ICHHTO.

Local communities are given grazing rights in some parts of the buffer zone and, although the vegetation cover is sparse, this practice is unlikely to damage the property. Occupation of the land follows very long established traditional rights and practices centred on livestock grazing in nekha areas. As noted above in some areas such practices have caused degradation. Traditional water resources harvesting, known as the "qanat system", still exists within the buffer zone and to a less extent the core, and is a matter of attention by the government in order to protect and restore some of

the qanats (qanats are man-made water harvesting conduits, accessed through wells, and dug as tunnels at the level of the water-table).

The evaluation mission reported a high level of support and commitment for Lut Desert conservation and sustainable use based on interactions with the public and civil society organizations. There appeared to be a good partnership between political authorities and local people and they are regularly involved in decision making processes. Local/rural council members are included on the steering committee, a positive initiative to maintain consultation opportunities with local peoples.

4.5 Threats

Low population density, extreme environmental conditions, remote location and lack of development impacts have helped maintain the Lut Desert in relatively pristine condition. Nevertheless there are a number of more notable threats that require careful and increased attention. Tourism presents the greatest current and potential threat with unregulated off road driving by tour operators, construction of illegal campsites, and self-guided tourists causing vegetation and landform damage and also threatening the integrity of the site. Associated with tourism activity and in particular off road driving is the promotion and execution of desert rallies. Eleven tourist companies operate in the area and require formal permits to do so. Annual visitation has gradually increased with some 77 000 visitors in 2013, just over 3% being international. World Heritage recognition and easing of international geopolitical tension will undoubtedly bring more international visitors to Iran.

The State Party has indicated in its supplementary information that tourism activity is restricted to the peripheries of the site and focused in eight tourism development areas. Access to the interior of the property is strictly controlled and only researchers are permitted to enter. Desert rallies are not permitted within the nominated area by virtue of the management plan. Whilst the management plan provides some guidance on the management of tourism, it is lacking in detail and does not provide a cohesive vision on how the tourism potential of the Lut will be managed. Apart from policing use, the plan does not specify other measures which will be implemented to manage vehicle access impacts. IUCN welcomes the proposals to manage tourism impact, however remains concerned about the adequacy of measures to control demand and use especially in the nominated properties peripheries.

Local people gather firewood and carry out some limited grazing. Monitoring of this should continue in order to ensure the use remains at sustainable levels. As noted above some developed and impacted areas are included within the nominated area. Destruction/removal of vegetation on nebkhas by local residents in some locations threatens natural geomorphic processes.

The State Party has stated categorically that no mining exploitation will be permitted within the nominated area or buffer zone. There are mines located in the region but these are reported as being outside of the nominated property and some distance from it so unlikely to create adverse impact.

In conclusion IUCN considers that the integrity, protection and management of the property do not meet the requirements of the Operational Guidelines.

5. ADDITIONAL COMMENTS

As noted above the Lut Desert region has locally been regarded as a 'no life zone', which is clearly incorrect as is evident from the section on biology in the dossier. IUCN notes the very hot, hyper-arid Lut Desert may be thought of as a climatically extreme 'pole' of life on earth so its biological community and biological processes may be of global significance, even though they may not be visually spectacular. The unspoilt nature of the area also suggests that they will be intact. Therefore, IUCN considers that the area may be internationally important for biodiversity and recommends further assessment of the biological and ecological values within the nominated property.

6. APPLICATION OF CRITERIA

The **Lut Desert** has been nominated under natural criteria (vii) and (viii).

Criterion (vii): Superlative natural phenomena or natural beauty or aesthetic importance

The Lut Desert protects a globally recognized iconic hot desert landscape, one of the hottest places on earth. It is renowned for its spectacular series of landforms namely the yardangs (massive corrugated ridges) in the west of the property and the sand sea in the east. The yardangs are so large and impressive that they can be seen easily from space. Lut is particularly significant for the great variety of desert landform types found in a relatively small area. Key attributes of the aesthetic values of the unspoilt property relate to the diversity and sheer scale of its landforms; a visually stunning mosaic of desert colours; and uninterrupted vistas across huge and varied dune system that transition into large flat desert pavement areas.

IUCN considers that the large majority of the nominated property meets this criterion, but some areas that clearly do not are also included within its boundaries.

Criterion (viii): Earth history and geological processes

The property represents an exceptional example of ongoing geological processes related to erosional and depositional features in a hot desert. The yardang/kalut landforms are widely considered the best-expressed in the world in terms of extent, unbroken continuity and height. The Lut sand-seas are amongst the best developed active dune fields in the

world, displaying a wide variety of dune types (crescentic ridges, star dunes, complex linear dunes, funnel-shaped dunes) with dunes amongst the highest observed anywhere on our planet. Nebkha dune fields (dunes formed around plants) are widespread with those at Lut as high as any measured elsewhere. Evaporite (salt) landforms are displayed in wide variety, including white salt-crusts crystalline riverbeds, salt pans (playa) with polygonally fractured crusts, pressure-induced tepee-fractured salt crusts, gypsum domes, small salt pingos (or blisters), and salt karren. Other dry-land landforms include extensive hamada (stony desert pavements or reg) usually located on pediment surfaces with wind faceted stones (ventifacts), gullied badlands and alluvial fans (bajada).

IUCN considers that the large majority of the nominated property meets this criterion, but some areas that clearly do not are also included within its boundaries.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopts the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC/16/40.COM/8B and WHC/16/40.COM/INF.8B2,

2. Refers the nomination of the **Lut Desert (Islamic Republic of Iran)** in relation to natural criteria, taking note of the strong potential for this property to meet criteria (vii) and (viii), in order to allow the State Party, with the input of IUCN if requested, to:

- a) review the boundary of the nominated property to exclude inappropriate degraded areas and developed and settled areas in the north west from the property, but include them in a Buffer Zone, in order to ensure that the design of nominated property includes all the relevant attributes contributing to Outstanding Universal Value;
- b) revise and elaborate the recently completed initial management plan for the nominated property to improve the level of detail, and to clearly state a set of time-bound management actions for the property;
- c) further clarify and detail the role and function of the property's Steering Committee in particular to unambiguously identify which agency holds the ultimate accountability for the management of the property.

3. Recommends the State Party to:

- a) progressively build technical capacity to manage the natural values of the Lut Desert in light of the intrinsic links between the property's geomorphology, geology and its desert adapted biodiversity and ecology; and
- b) further study and assess the biodiversity and ecological values of the nominated property with a view to considering nomination also under (ix) and/or (x) at some future time.

4. Welcomes the efforts of the State Party of the Islamic Republic of Iran and its partners to nominate the country's first natural World Heritage property.

Map 1: Location of the nominated property in Iran



Map 2: Nominated property and buffer zone

