World Heritage Nomination
Natural Heritage: CHINA

QINGHAI HOH XIL

Supplemental Materials for World Heritage Nomination Site

The Ministry of Housing and Urban-Rural Development
The People's Republic of China
2017.2

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Content

IUCN
Rue Mauverney 28
1196 Gland
Switzerland

Tel. +41 22 999 0000
Fax +41 22 999 0002

www.iucn.org

H. E. Mr Yang Shen
Ambassador, Permanent Delegate
Permanent Delegation of the People's Republic of China to UNESCO
Maison de l'UNESCO
Bureau M7.21
1, rue Miollis
75732 PARIS Cedex 15
France

20 December 2016

IUCN Evaluation of Qinghai Hoh Xil – Nominated for inclusion on the World Heritage List
Progress report on IUCN evaluation and request for supplementary information

Dear Ambassador,

Further to the above nomination to the World Heritage List, I am writing with information on progress with the IUCN evaluation. As noted in previous correspondence, IUCN seeks to develop and maintain a dialogue with States Parties during the evaluation process of all nominations. As per the Operational Guidelines (paragraph 149 and Annex 6 - *Evaluation procedures of the Advisory Bodies for nomination),* this letter also provides the short interim report outlining the status and any issues relevant to evaluations, which is requested to be sent by IUCN before 31 January 2017.

The IUCN World Heritage technical evaluation mission to Qinghai Hoh Xil was undertaken by Mr Carlo Ossola and Mr Chimed-Ochir Bazarsad from 28 October to 6 November 2016. The evaluators greatly appreciated the excellent support and co-operation provided by your colleagues in the preparation and implementation of the mission, and the kind welcome of the State Party throughout the mission. Please convey our sincere thanks to all of the officials, scientists and contributors that assisted the mission.

The IUCN World Heritage Panel is in the course of examining World Heritage nominations for natural and mixed properties, and cultural landscapes. This process will conclude in March/April 2017, following which the IUCN evaluation report will be issued to the UNESCO World Heritage Centre. At its first meeting held in the week of 5 December 2016, the IUCN Panel examined in detail each nomination dossier, reports and desktop reviews of field evaluators and external reviewers, as well as other references regarding the nominated properties.

The Panel greatly appreciated the efforts that have been made in relation to this nomination, and will be discussing the nomination again at the second meeting of the IUCN World Heritage Panel, to be held in March 2017. At this stage, the Panel noted a number of points where additional information is required, and we would be grateful for the State Party's response on the following points:

1. Please provide the evidence-based rationale (supported with clear updated maps) behind the property configuration (boundary definition, inclusion of areas within the nominated property versus the buffer zone etc.) in regard to its role in providing critical habitats for the endemic and threatened species and to protect other values. As one specific question, please outline the rationale for the exclusion of a significant proportion of the Sanjiangyuan National Nature Reserve, given its very high levels of endemism. Furthermore, the rationale for not including within the nomination areas the adjacent Chang Tang and Altunshan Nature Reserves in adjoining Provinces considering their crucial importance for conservation of endemic and threatened flora and fauna as well as the migration routes and cycles of key species. The IUCN World Heritage Panel noted that in terms of values, there may be case for additional parts of these protected areas to be included in the nominated property, and would wish to hear the State Party's opinion on that possibility.

2. Please clarify the justification of the exclusion of major sections of the transport/development corridor (including the railway, road and powerlines) from the nominated property (and thus included within the buffer zone) along with the future development plans for possible changes in this corridor to ensure and increase connectivity for migratory species in the property, and to prevent damage from activities in the corridor. The World Heritage Panel is particularly interested to have information about plans related to the motorway, which is understood to be proposed for future upgrade.

3. Please would the State Party obtain and share the positions and levels of support from each of the Provincial government authorities of adjacent provinces that are not included in the nomination property, notably Xizang and Xinjiang, in regards to the nomination of the property for World Heritage status. Please also clarify further the situation regarding the northern boundary of the nominated property which has no buffer zone and lies along the Kunlun Mountains Range, specifically to elaborate on why a buffer zone is not considered necessary and also the position of the local government regarding levels of support for the nomination.

4. The Panel noted that concerns had been raised during the mission that there should not be any forced relocation or exclusion of the traditional users of the nominated property, including nomadic pastoralists. Please could you provide a reassurance that the State Party is committed to not displacing or resettling the local pastoralists either before or after the possible inscription of the property on the World Heritage List.

5. Please provide full information on the plans of the State Party to develop an integrated monitoring system to address the impacts of development infrastructure such as the transportation corridor, and also to monitor the impacts of climate change on the values of the nominated property.

6. Please provide full information on the current and future plans and policies to limit the practice of Pika poisoning programmes, as well as further information on anti-poaching programmes within the property, and a confirmation that these plans and policies are being, and will continue to be, implemented effectively.

We would appreciate your response to the above points as soon as possible, in order to facilitate the evaluation process, but **no later than the 28 February 2017**, as per paragraph 148 of the Operational Guidelines. Please note that any information submitted after this date will not be considered by IUCN in its evaluation for the World Heritage Committee. It should be noted, however, that while IUCN will carefully consider any supplementary information submitted, it cannot properly evaluate a completely revised nomination or large amounts of new information submitted at the last minute. So we request to keep your response concise and respond only to the above requests.

Supplementary information should be submitted officially in three copies to the UNESCO World Heritage Centre in order for it to be registered as part of the nomination. An electronic copy of any supplementary information to both the UNESCO World Heritage Centre (a.balsamo@unesco.org) and IUCN Headquarters (christelle.perruchoud@iucn.org) would also be helpful.

Taking into account your response, IUCN will formulate its final recommendation to the World Heritage Committee which will meet from 2 to 12 July 2017 in Krakow, Poland.

In the interest of ensuring full transparency and dialogue regarding the IUCN evaluation process, we are happy to respond to any questions you may wish to raise regarding IUCN's work on the World Heritage Convention, including the above points. I am traveling to Paris on a regular basis and could be available to meet if this would be helpful, or would be pleased to organise a meeting via skype or conference call as an alternative. I would also emphasise that both you or your representatives are also most welcome to visit IUCN's headquarters in Switzerland to meet in person if you wish, on this nomination, or on any other matter of interest.

Please do not hesitate to contact Ms Christelle Perruchoud, World Heritage Evaluations and Operations Officer (Tel: +41 22 999 0358; Fax: +41 22 999 0002; email: christelle.perruchoud@iucn.org) if you have any questions regarding this request, or if you would wish to arrange a meeting or phone call to discuss this request.

Please allow me to reiterate our thanks for your support of the World Heritage Convention and for the conduct of IUCN's recent mission. We look forward to your kind cooperation in furnishing responses to the abovementioned points.

Yours sincerely,

Tim Badman
Director - World Heritage Programme

cc. National Commission of the People's Republic of China for UNESCO, Mr Du Yue, Secretary-General
UNESCO World Heritage Centre, Mr Feng Jing and Mr Alessandro Balsamo
IUCN Asia Regional Office, Ms Aban Marker Kabraji, Regional Director

The evaluators from IUCN, Dr. Carlo Ossola and Mr. Chimed-Ochir Bazarsad, carried out the assessment on the nominated property from Oct. 28th to Nov. 6th, 2016. They travelled over 1,300 km distance during 10 days across the wilderness higher than 4,700 m in altitude. Here we would like to express our sincere appreciation for their dedication and expertise, and the constructive suggestions from the IUCN world heritage group. After receiving the email requiring supplemental materials, we have further investigated the case with the help of experts and government departments. We have prepared the following supplemental material in response to the 6 comments in the email, and we hope that it could further clarify the details as required.

1. Further explanation about the border and scope division of the nominated site

Hoh Xil comprises the most complete planation surface and basin on the Qinghai-Tibet Plateau. Densely distributed lakes demonstrate the inland landscapes at different evolving stages. Around lakes scatter all sorts of wetlands, adding to the diversity of the ecological habitats within the site. Almost unspoiled by human interventions, these habitats combine to form spectacular field views and the most distinguishing feature of Hoh Xil as a nominated site. The vast space of the nominated site reflects the horizontal gradient from alpine meadow, alpine grassland to alpine desert, including key habitats for threatened and endemic species like Tibetan antelope and wild yak. The site is not only an independent geomorphological unit on the Qinghai-Tibet Plateau, but also the most important core area for lamb delivery for Tibetan Antelope, containing a complete population of migratory Tibetan antelope and their migrating routine. The site can thus be deemed a relatively independent and integrated protection unit (see Figure 1).

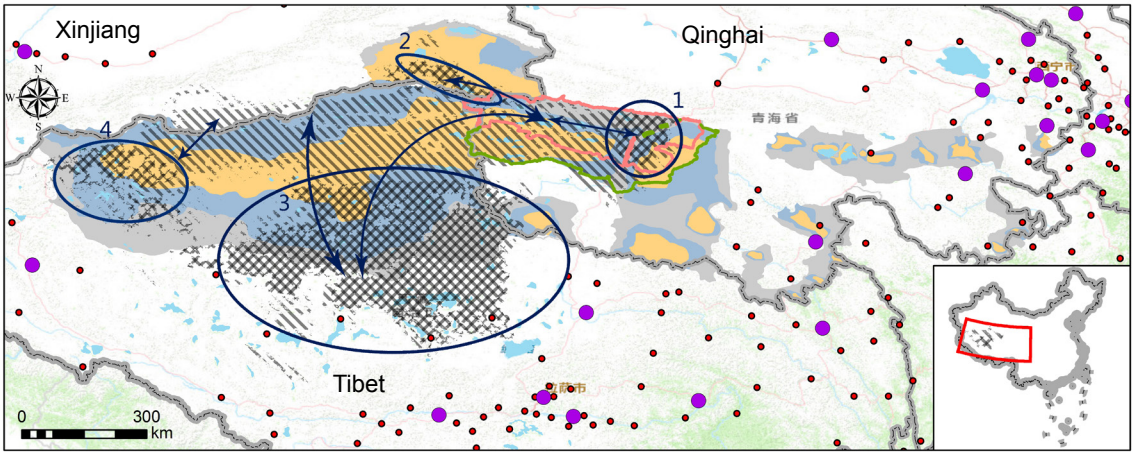


Figure 1. Relationship between the site boundary and Tibetan antelope distribution

(1) Reason for not including the whole area of Sanjiangyuan Nature Reserve

Sanjiangyuan Nature Reserve to the east of the nominated area is more inhabited by local herding communities compared to Hoh Xil (Figure 2). Due to the low productivity of the plateau meadow and grassland ecosystem, domestic animals like domesticated yak and sheep would compete with larger-sized ungulates like Tibetan antelope, wild yak and kiang, causing a reduction of wild animal population. In order to achieve the maximum protection of wild animals without relocating the current settlements or affecting the sustainability of local herding communities, only the less inhabited parts of Sanjiangyuan Nature Reserve were nominated as heritage sites, excluding the densely distributed settlements and pastures .

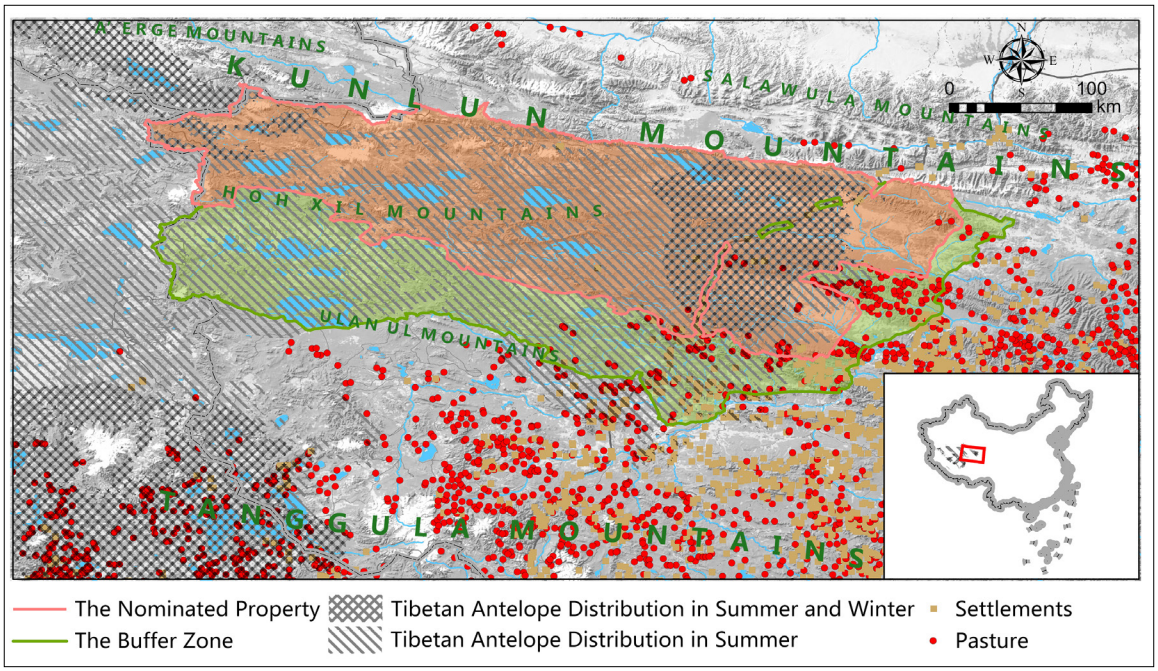


Figure 2. Relationship between the site boundary and settlement distribution

(2) Reason for not including Changtang and Altun Mountains

As shown in Figure 1, the distribution range of the Tibetan antelope roughly coincides with the area less or not disturbed by human activities, which is also the main habitat of wild yaks. In this vast region, the Tibetan antelopes are divided into four populations, including west Changtang population, Changtang population, Altun population and Hoh Xil-Sanjiangyuan population. In summer, the two populations in Changtang mainly migrate towards the north to breed, some migrating into Hoh Xil; the Altun population migrate towards southeast into Hoh Xil to breed; the Hoh Xil-Sanjiangyuan population migrate towards west to breed in the west part of Hoh Xil, completing the life history totally within the Hoh Xil Nature Reserve and Soja-Qumar subzone of Sanjiangyuan Reserve.

Since August 2016, Hoh Xil Nature Reserve (combined with Sanjiangyuan Reserve's Soja-Qumar River subzone to form the Changjiangyuan Zone of Sanjiangyuan National Park) has become the only national protected area covering the complete migration pathway and all the key habitats of one Tibetan antelope population (the Hoh Xil-Sanjiangyuan population). At the same time, the area provides breeding ground for the other populations (the Changtang and Altun populations).

Our first consideration in defining the site boundary is the integrated protection of complete migration pathway and habitat for a Tibetan antelope population.

(3) The possibility of World Heritage nomination for Changtang and Altun Mountains

We have chosen Hoh Xil as the first nominated site on the Qinghai-Tibet Plateau, hoping that it will serve as a “flagship” leading future heritage site application. When conditions permit, Changtang Nature Reserve and Altun Mountains Nature Reserve may be nominated for World Heritage as potential expansion projects of Hoh Xil.

2. Statements on the conservation measures along infrastructures including railway, highway and electricity transmission lines

(1) Conservation measures along the existing infrastructures

The locations of Qinghai-Tibet Highway, Qinghai-Tibet Railway and electricity transmission lines within the nominated site and buffer zone are based on the historical ancient path crossing the Northern Tibetan Plateau from north to south. The highway has been built for over half a century, the railway over a decade, during which large animals like Tibetan antelope, wild yak and kiang have developed their preferred routines of crossing the road and bridge. Based on the frequently visited sections and areas, three protection stations (Budongquan, Sonam Dargye and Wudaoliang) have been set up along the highway, providing corridors for large animals and strengthening the protection and supervision.

Along the Qinghai-Tibet highway, a section of 20 km centered on each of the three stations (totaling 60 km) is included in the nominated site, strictly reserved as the corridors for wild animals (Figure 3). Along the remaining sections of the highway and railway, 2 km wide buffer zones are established for the nature heritage site. The existing highway, railway and electricity transmission lines are not covered by the core zones and buffer zones of the Hoh Xil and Sanjiangyuan Nature Reserves. In the existing management system of nature reserves, areas along the highway are mainly experimental zones. As a result, the nominated site covers the corridors frequently used by the animals, while the buffer zones for the nature heritage site include the remaining sections along the highway and railway, strengthening the protection of the areas not covered by the core zones or buffer zones of the existing nature reserves.The buffer zones along the highway between Kunlun Mountain Pass and Tuotuohe will be managed according to the protection measures of the nominated site.

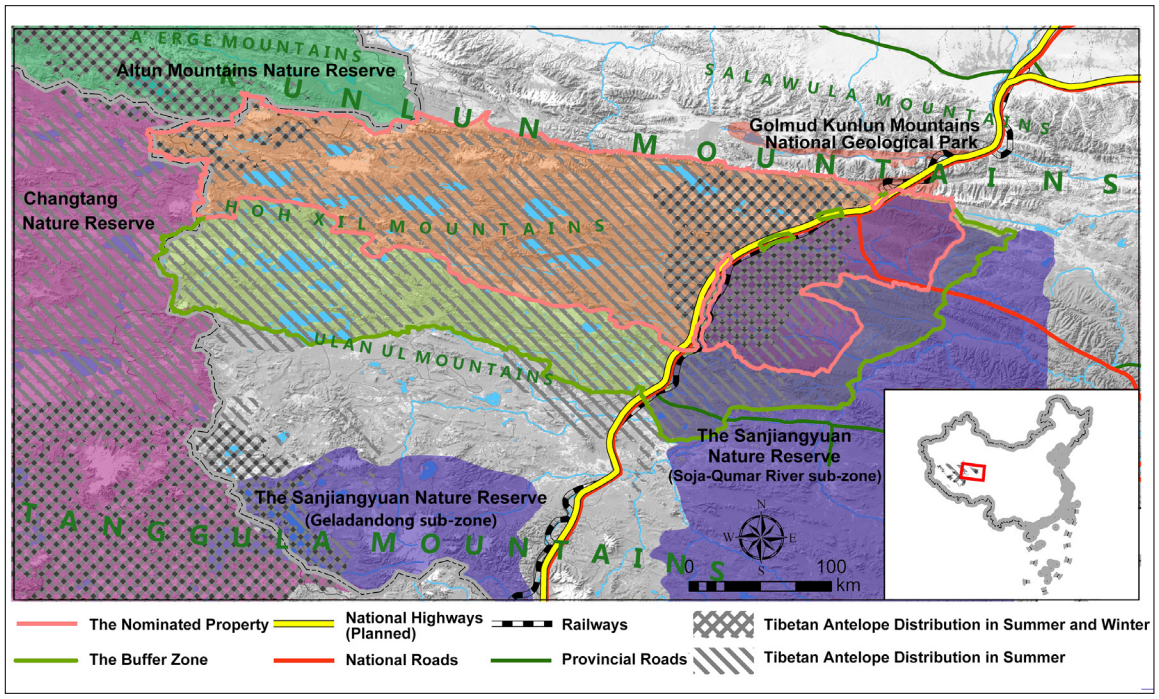


Figure 3. Current status and planning of infrastructure within the nominated site and buffer zone

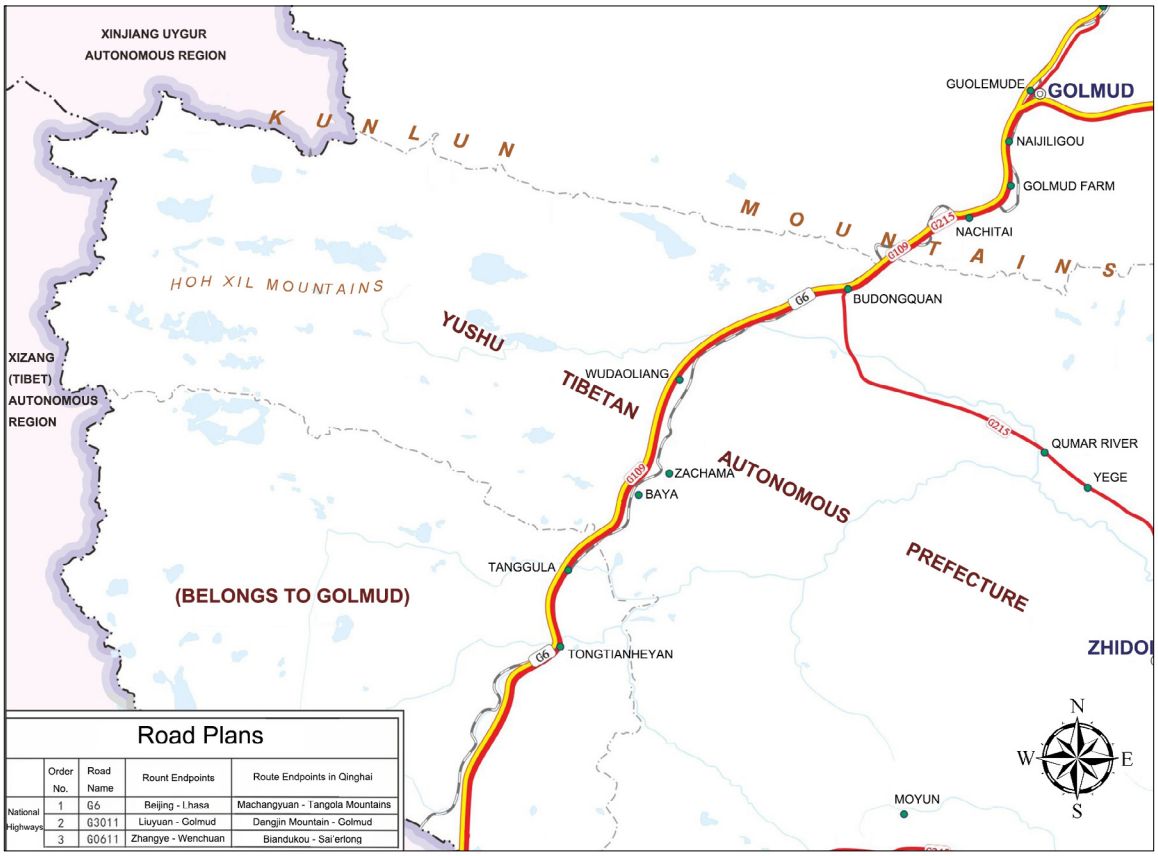
(2) Future development of the infrastructure

According to *National Highway Network Planning (2013-2030)* released by Chinese Ministry of Transport, G6 highway is the only mentioned infrastructure over the nominated site and buffer zone in the near future, and it will be closely along the existing Qinghai-Tibet highway, not penetrating any further into Hoh Xil Nature Reserve, causing little additional effect on the surrounding ecosystem. Currently preliminary feasibility study on the highway construction is being carried out, but no construction work is planned during the 13th Five-Year Plan (2016-2020).

The plan and construction of the G6 highway will be strictly following the Management Plan of Qinghai Hoh Xil, avoiding the nominated site to the largest extent, and corridors will be designed based on the actual needs of the wild animals.

Following the requirements of *Operational Guidelines for the Implementation of the World Heritage Convention* and *Measures for the Nomination, Protection and Administration of World Natural Heritage and World Natural-Cultural Heritage*, the future infrastructure projects in the nominated site

and the buffer zone will be reviewed by the Qinghai Provincial Department of Housing and Urban-Rural Development before being submitted to the National Ministry of of Housing and Urban-Rural Development, and reported to the UNESCO World Heritage Center.



Road Plans

	Order No.	Road Name	Rount Endpoints	Route Endpoints in Qinghai
National Highways	1	G6	Beijing - Lhasa	Machangyuan - Tangola Mountains
	2	G3011	Liuyuan - Golmud	Dangjin Mountain - Golmud
	3	G0611	Zhangye - Wenchuan	Biandukou - Sai'erlong

Figure 4. Road plan of the G6 highway

The infrastructure projects along the Qinghai-Tibet highway are designed and constructed strictly in accordance with the law and regulations, reducing the environmental effects to the lowest level. Communication optical cables and oil pipelines are buried underground, and ecological restoration measures will be taken in time. The high-voltage transmission lines are elevated so that land animals could pass safely. To guarantee the safety of birds, the transmission line spacing is designed according to international standard, and insulation or bird-repelling devices are installed. The completed Gela section of the Qinghai-Tibet railway has been elevated to allow free passage of animals. Years of studies have found no negative effect of Qinghai-Tibet highway and railway on the survival and migration of large animals like Tibetan antelope.

3. Attitudes of neighboring provinces and reason for the absence of buffer zone on the northwest boundary

(1) Attitudes of neighboring provinces

Changtang Nature Reserve in Tibet and Altun Mountains Nature Reserve in Xinjiang are managed and protected strictly in accordance with the national laws and regulations. Since October 2010, a conservation union has been set up among Hoh Xil National Nature Reserve and Sanjiangyuan National Nature Reserve in Qinghai, Changtang National Nature Reserve in Tibet and Altun Mountains National Nature Reserve in Xinjiang. Once or twice cross-region conservation action has been held each year.

Xinjiang and Tibet have provided strong support to the heritage nomination, willing to cooperate on the protection of the nominated area. The governments of Xinjiang and Tibet have also been considering the possibility of applying for World Natural Heritage in case that Qinghai Hoh Xil is inscribed.

(2) The reason for the absence of buffer zone on the northwest boundary

Continuity of natural components, geomorphology and human activities have been considered when determining the boundary of buffer zone. The nominated site adjoins Altun Mountains Nature Reserve (Xinjiang) on the northwest, and Kunlun Mountain World Geological Park on the north. The region north of Kunlun Mountain is distinct from Hoh Xil in terms of geomorphology and ecosystem, with mountain range as a natural barrier, and is thus weakly relevant to the nominated site. Besides, the north of Kunlun Mountain is sparsely populated, posing no major threat to the site. Changtang Nature Reserve, Altun Mountains Nature Reserve and Kunlun Mountain Geological Park, as well as the Kunlun Mountain provide effective peripheral buffer and protection for the nominated site of Hoh Xil.

Qinghai province has issued the Regulation of Qinghai Hoh Xil on Nominated World Natural Heritage Sites and Management Plan of Qinghai Hoh Xil, and set up the Qinghai Hoh Xil National Nature Reserve Administration responsible for protection and management of natural resources of the site.

According to Preparing World Heritage Nominations, “a buffer zone is not always a requirement if, as outlined in the Operational Guidelines, there are also legal, regulatory and other methods available to protect the property from wider threats”. Therefore, no additional buffer zone is set up on the west and north borders.

4. Guarantee of no forced relocation or exclusion of local communities

Only a small number of nomadic pastoralists inhabit the nominated property, mainly distributed in the mountain area east of the Qinghai-Tibet highway. According to a survey in 2015, there were 97 households composed of 455 persons in the nominated site. A larger number of herdsmen, 2,512 households and 13,876 persons, inhabited the eastern buffer zone.

There is no content mentioning forced relocation or exclusion of local communities in the *Regulation of Qinghai Hoh Xil on Nominated World Natural Heritage Sites*, *Management Plan of Qinghai Hoh Xil, Outline of the 13th Five-Year Plan for the National Economic and Social Development of Yushu State*, *Outline of the 13th Five-Year Plan for the National Economic and Social Development of Zhidoi County* and *Outline of the 13th Five-Year Plan for the National Economic and Social Development of Qumarleb County*.

We promise that there will be no forced relocation or exclusion of the traditional users of the nominated site, whether before or after succeeding in the application for world heritage site.

5. Description of the comprehensive monitoring system

(1) Monitoring status of the nominated site

Up to 2016, 35 monitoring stations had been set in and around the nominated site, including 8 grassland monitoring stations, 2 hydrology and water resource monitoring stations, 2 surface water quality monitoring stations, 2 soil quality monitoring stations, 1 ambient noise monitoring station, 2 weather stations and 18 wild animal monitoring stations (see Table 1). Grassland, surface water quality, soil quality and wild animals are monitored using fixed stations (sample regions); hydrology and water resources are monitored using permanent hydrologic stations and patrolling stations; weather is monitored using permanent automatic weather station; noise is monitored using automatic noise monitoring station.

Table 1. List of ecological monitoring stations on ground

S/N	Category	Number of stations	Station
1	Grassland	8	Nieqia Village, Duocai Town, Zhidoi County; Masai Village, Zhahe Town, Zhidoi County; Laiyang Village, Yege Town, Qumarleb County; Hongqi Village, Yege Town, Qumarleb County (Stipa purea-Poa annua grassland); Hongqi Village, Yege Town, Qumarleb County *(Kobresia pygmaea-Stipa purea* grassland); Lingyangtan, Qusay Lake, Duojunqu (some stations may be adjusted according to the reachability of ground monitoring)
2	Hydrology and water resource	2	Tuotuohe, Yanshiping (patrolling)
3	Surface water quality	2	Qusay Lake,Zunai Lake
4	Soil environment quality	2	Qusay Lake,Zunai Lake
5	Ambient noise	1	Sonam Dargye Station
6	Weather	2	Tuotuohe, Wudaoliang
7	Wild animals	18	Budongquan, Qusay Lake, Baozixia, Sonam Dargye Station, Wudaoliang, Duo'ergaicuo, Tuotuohe, Lingyangtan, Zunai Lake, Hoh Xil Lake, Kekao Lake, Taiyang Lake, Lexiewudan Lake, Xijinwulan Lake, Yonghong Lake, Duojunqu, Lemaqu, Sangqia
	Total	35	

The preliminary monitoring results are as follows:

1) Climate change. The rate of increase of the annual average temperature since 1961 is 0.34□/10 yrs, the annual precipitation 4.97 mm/10 yrs. The glaciers, rivers, lakes, wetlands, hot springs and other surface landscapes responding to climate change are the best examples of natural landscape changes and precious records of geomorphologic processes. Over the years, the glacier fronts in the nominated site retreated, the headward erosion of the rivers increased, and the northern source of the Yangtze River expanded to the original inland area; the flow of the largest river in the Qaidam Basin also increased; areas of the lakes and wetlands within the site generally increased, salt lakes transforming into freshwater lakes; new springs emerged. All these phenomena demonstrate the ongoing geophysical processes and have a profound impact on animal habitat.

2) Ambient air quality. In 2015, the average daily concentrations of SO_2 in Qumarleb County and Zhidoi County (the two ambient air quality monitoring stations) were 0.038mg/m^3 and 0.025mg/m^3 respectively, the average daily concentrations of NO_2 0.030mg/m^3 and 0.016mg/m^3, the average daily concentrations of PM10 0.046mg/m^3 and 0.049mg/m^3, all meeting the A-level standard of AAQS (GB3095-2012).

3) Surface water quality. In 2015, the water quality was among category I (representing excellent quality) in all the four monitoring sections: Tongtianhe Tanggula section, Tuotuohe Bridge, lower and upper reaches of Tongtianhe Bridge.

4) Soil quality. In 2012, the Nemerow Pollution Index of soil in the four monitoring stations Wudaoliang, Yaqu Village Pasture, Soja Town, Zhidoi County, Yuegai Town Pasture, Qumarleb County and South Exit, Erdaogou, Tanggula Town was below 0.7, 0.44 on average, with the soil cleanliness (safety) complying with the category-I level of Soil Environment Quality Classification, Soil Environment Quality Standard (GB15618-1995).

5) Ambient noise. In 2016, the ambient noise measured below 40db in Qusay Lake, Sonam Dargye and Zunai Lake.

6) Grassland. According to monitoring, the total coverage of quadrat is 31.82%, and the coverage of dominant species is 11.55%. The production of fresh herbage is 518.03kg/hectare, with the yield of edible herbage of 459.7 kg/hectare on average and edible rate of 87.53%.

7) Remote sensing. The regional eco-environment condition index in

Zhidoi County ranged from -4.83 to 7.17 between 2011 and 2015, indicating a positive, stable ecological environment. The regional eco-environment condition index in Qumarleb County ranged from -4.21 to 5.06 between 2011 and 2015, indicating a positive, stable ecological environment.

(2) Planning of comprehensive monitoring system in the nominated site

According to the monitoring and management system requirements specified in the *Management Plan of Qinghai Hoh Xil*, Qinghai Province developed in 2016 the *Monitoring Program of Ecological Environment in Qinghai Hoh Xil.* The *Program* aims to carry out eight types of monitoring in the nominate site:

1) Biological/ecological monitoring. Fixed sampling area monitoring, remote sensing and radar tracing are used to monitor the distribution and quantity of representative vegetation, as well as the population size, habitat status, epidemic diseases, migration and quality of the feeding ground of key species such as Tibetan antelopes and wild yaks.

2) Environmental conditions. Automatic devices are used to monitor the weather conditions, noise level, surface water quality, bank erosion and soil physicochemical properties.

3) Natural scenery. Fixed point photography is adopted to monitor the changes of the major natural sceneries in the site.

4) Geology and geomorphology. Automatic devices are used to monitor frozen soil condition, geothermal hot spring and glacial activities in key geological feature regions.

5) Seismic activities. Automatic devices are used to monitor the seismic activities in key seismically active areas.

6) Tourism activities. With the support by tourism centers, regular monitoring is carried out on the tourist numbers, traffic status, tourist safety and touristic services.

7) Illegal activities. Patrolling and remote sensing are combined to monitor illegal mining and poaching in the site.

8) Community status. Surveys are conducted to monitor the production and living conditions, construction, population change, livestock change, grazing range and income level of the local herdsmen and residents.

23 improved or new monitoring stations are under planning based on the current protection and management stations. See table 2 and figure 5 for details.

Table 2. List of planned stations

S/N	Division	Station	Type	Indicator	Note
1	Qusay Lake	Budongquan	Biological ecology Environmental conditions	Change of key species population, epidemic diseases of key species, weather conditions and underground water quality and quantity	Improved
2		Qusay Lake	Biological ecology Environmental conditions Natural scenery Tourism conditions	Distribution and quantity of representative vegetation, grassland quality, change of key species population, habitat conditions and epidemic diseases of key species, migration of Tibetan antelope, weather conditions, change in soil physicochemical properties, surface water quality and quantity, bank erosion, change in landscape features, number of tourists, safety of tourists, tourism facility quality , poaching	Improved
3		Baozixia	Biological ecology	Change of key species population	New
4		Kunlun mountains pass	Environmental conditions	Weather conditions	Maintained
5	Yan Lake	Sonam Dargye	Biological ecology Environmental conditions Tourism conditions	Change of key species population, epidemic diseases of key species, migration of Tibetan antelope, weather conditions, noise level, number of tourists, safety of tourists, tourism facility quality and road traffic	Improved
6		Xinsheng Lake	Environmental conditions	Surface water quality and quantity, bank erosion	Improved
7	Duo'ergaicuo	Wudaoliang	Biological ecology Environmental conditions Community conditions	Change of key species population, epidemic diseases of key species, migration of Tibetan antelope, weather conditions, noise level	Improved
8		Duo'ergaicuo	Biological ecology	Change of key species population, epidemic diseases of key species	New

S/N	Division	Station	Type	Indicator	Note
9	Zhaxiuga'er	Tuotuohe	Biological ecology Environmental conditions	Change of key species population, epidemic diseases of key species, weather conditions	Improved
10		Xiushuihe	Geological landform	Frozen soil conditions	Maintained
11		Lingyangtan	Biological ecology	Grassland quality, change of key species population, habitat conditions and epidemic diseases of key species, migration of Tibetan antelope	New
12		Fenghuoshan	Seismic activities	Seismic activity	Maintained
13	Zunai Lake	Zunai Lake	Biological ecology Environmental conditions Natural scenery Illegal activities	Distribution and quantity of representative vegetation and grassland quality, change of key species population, habitat conditions and epidemic diseases of key species, migration of Tibetan antelope, weather conditions, change in soil physicochemical properties, surface water quality and quantity, bank erosion, change in landscape features, poaching	Improved
14		Hoh Xil Lake	Biological ecology	Change of key species population, epidemic diseases of key species	New
15		Kekao Lake	Biological ecology	Change of key species population, epidemic diseases of key species	New
16	Taiyang Lake	Taiyang Lake	Biological ecology Environmental conditions Natural scenery Illegal activities	Distribution and quantity of representative vegetation and grassland quality, change of key species population, habitat conditions and epidemic diseases of key species, migration of Tibetan antelope, weather conditions, change in soil physicochemical properties, surface water quality and quantity, change in landscape features, frequencies of poaching and illegal mining	New
17		Small Taiyang Lake	Environmental conditions Natural scenery Geological landform	Glacial activities, change in landscape feature	New
18		Lexiewudan Lake	Biological ecology	Grassland quality, epidemic diseases of key species, migration of Tibetan antelope, construction of settled communities, herdsman's livestock and income level	New

S/N	Division	Station	Type	Indicator	Note
19	Xijinwulan Lake	Xijinwulan Lake	Biological ecology Environmental conditions Community conditions	Epidemic diseases of key species, migration of Tibetan antelope, number and distribution of herdsmen	New
20		Yonghong Lake	Biological ecology Community conditions	Epidemic diseases of key species, migration of Tibetan antelope, number and distribution of herdsmen	New
21	Chuma'erhe	Duojunqu	Biological ecology Community conditions	Grassland quality, epidemic diseases of key species, migration of Tibetan antelope, construction of settled communities, herdsman's livestock and income level	New
22		Lemaqu	Biological ecology Community conditions	Grassland quality, epidemic diseases of key species, migration of Tibetan antelope, construction of settled communities, herdsman's livestock and income level	New
23	Tongtianhe	Sangqia	Biological ecology Community conditions	Grassland quality, epidemic diseases of key species, migration of Tibetan antelope, construction of settled communities, herdsman's livestock and income level	New

The next step is to establish a system to monitor the impacts of the development of traffic lines, in order to provide evidence for the impacts of infrastructures on the nominated site.

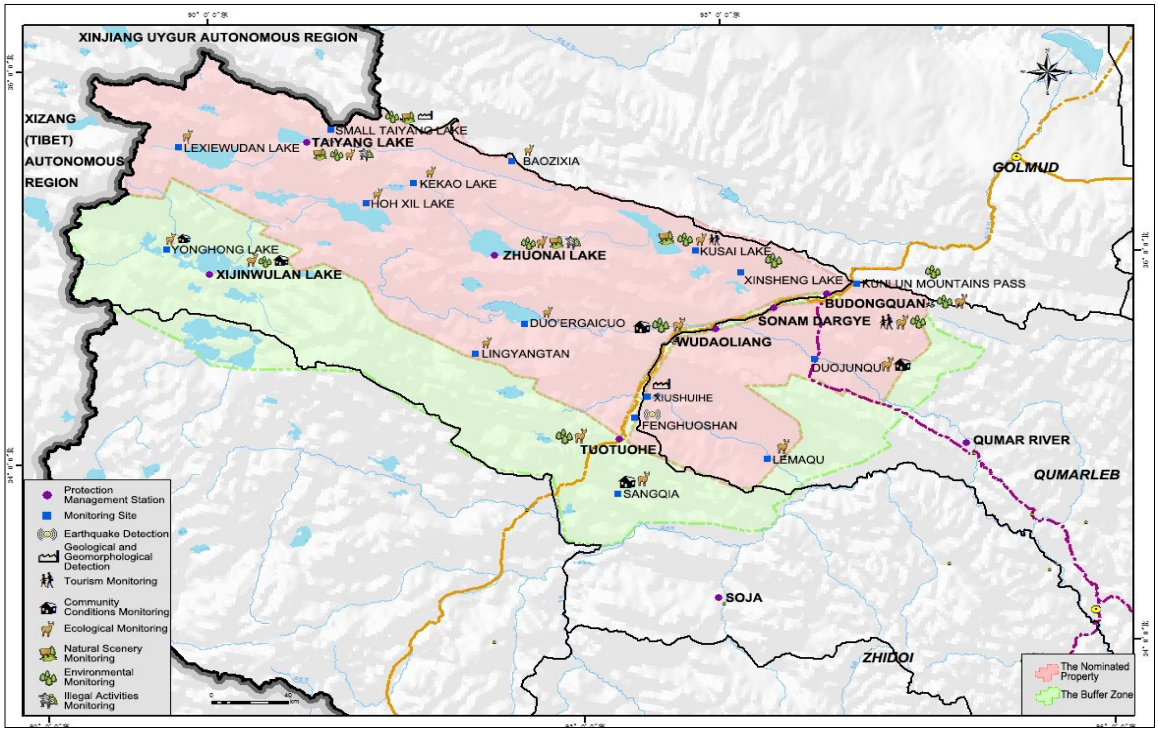


Figure 5. Monitoring stations planned in the nominated site

(3) Implementation of the monitoring plan

Qinghai Province Environmental Protection Bureau is responsible for the implementation of the monitoring work, supported by the institutions of agriculture, water resources, forestry and meteorology. According to the annual monitoring result, annual reports are developed by responsible institutions, reviewed by Qinghai Environmental Monitoring Center and submitted to Qinghai Province Environmental Protection Bureau, and the data on the ecological monitoring platform are updated. The reviewed reports are then submitted to Qinghai World Heritage Management Office.

6. Anti-poaching and restrictions on pika poisoning

(1) Restrictions on pika poisoning

1) Policies and laws In 2002, Chinese government issued the *CPC Central Committee State Council Several Comments on Strengthening the Protection of Grassland,* which states"Biological technologies should be highlighted when dealing with damages caused by pika, to prevent the pollution of the grassland environment and maintain ecological balance." In the *Grassland Law of the People's Republic of China* revised in 2013 and the *Regulations on the Implementation of the Grassland Law of the People's Republic of China in Qinghai Province* promulgated in 2008, it is clearly stated that "Agricultural chemicals with high toxicity, high residue or possibility of secondary poisoning are not allowed to be used on grasslands."

2) Ideas and techniques for pika damage control. Pika control measures are taken only in continuous areas where active pika caves reach more than 150 per hectare, threatening the ecological environment and the livestock. The main idea of pika control is to restore the ecological balance, rather than to eliminate the pika population. Since 1985, physical and biological control measures have been used, mainly by building hawk racks on open area to attract birds of prey (Figure 6).

Figure 6. Hawk racks to attract birds of prey

3) Present and future project planning. No projects related to pika poisoning will be planned in the nominated area and the buffer zone for now and in the future, according to *Outlines of the 13th Five-Year Plan for the National Ecological Conservation, Outlines of the 13th Five-Year Plan for the Agricultural Development of Qinghai Province* and *Project Planning (2nd Phase) for Ecological Conservation and Constructions in Qinghai Sanjiangyuan Reserve.* Pika population in the buffer zone will be monitored

among other ecological monitoring programs.

(2) Anti-poaching activities

1) Laws and regulations. The following laws and regulations have clarified the prohibition of poaching: *Constitution of the People's Republic of China, Criminal Law of the People's Republic of China, Forestry Law of the People's Republic of China, Wild Animal Conservation Law of the People's Republic of China, Regulations of the People's Republic of China on the Protection of Aquatic Wild Animals, Regulations of the People's Republic of China on Nature Reserves and Regulation of Qinghai Hoh Xil on Nominated World Natural Heritage Sites.*

2) Achievements of anti-poaching work. Executive administrations have been established in Hoh Xil and Sanjiangyuan Nature Reserves. A Forest Police Office has been established under Hoh Xil Nature Reserve Administration, responsible for five fixed protection stations in Budongquan, Sonam Dargye, Wudaoliang, Tuotuohe and Zunai Lake. Two fixed protection stations have been set up in Soja and Qumar of Sanjiangyuan Nature Reserve. The protection and management of the natural resources and ecological environment have been greatly improved in both Sanjiangyuan and Hoh Xil Nature Reserves. From 1998 to 2005, 109 poaching cases have been cracked, 354 poachers arrested and furs from 3,982 Tibetan antelope individuals seized, effectively curbing the poaching activities in the nominated sites. No poaching activities have occurred since 2006.

3) Anti-poaching measurements. Firstly, the range, density and frequency of patrolling have been enhanced. Every year the patrol teams are required to accomplish 15 rounds of overall patrol in the whole area, and the protection stations to accomplish over 400 rounds of local patrol to prevent any poaching activity.

Figure 7. Patrolling

Secondly, the safety of migrating Tibetan antelopes has been guaranteed. In every migration season (after May), patrolling are strengthened throughout the region, especially in Wudaoliang and Sonam Dargye Staions. Traffic controls are implemented to guarantee the safety of Tibetan antelopes migrating across the highway.

Figure 8. Tibetan antelopes crossing the Qinghai-Tibet Highway

Thirdly, law enforcement activities have been carried out in accoardance with the collaboration mechanism among the 3 provinces. Since 2003, the National Nature Reserves of Hoh Xil, Sanjiangyuan, Changtang and Altun Mountain have been cooperating with each other in terms of conservation and management under the mechanism established by State Forestry Administration and provincial governments of Qinghai, Tibet and Xinjiang. In October 2010, a conservation union was set up among Hoh Xil National Nature Reserve and Sanjiangyuan National Nature Reserve in Qinghai, Changtang National Nature Reserve in Tibet and Altun Mountains National Nature Reserve in Xinjiang. Thematic conferences were convened consecutively in Xining (Qinghai), Korla (Xinjiang), Ali (Tibet), Xining (Qinghai) during the past years. In July 2015, a memorandum was signed on the *Eco-Environmental Protection Cooperation Conference of the Four Nature Reserves*. The four nature reserves are making joint efforts to enhance capacities in fields such as conservation, ecology outreach, scientific research and community co-management through exchanging information and sharing best practices. This mechanism has proved to be very efficient and effective for the conservation and management of the Nature Reserves.