# Feasibility Study for a World Heritage Nomination of the Eastern Mongolian Steppes

Prepared by

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Federal Agency for Nature Conservation

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Title photos by Gankhuyag Purev-Ochir and Hans D. Knapp: The Eastern Mongolian Steppes – “Ocean of grass”, habitat of wildlife and home of livestock

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G – MBCC Second field survey, June 03-12, 2020, Short Report.

**List of abbreviations**

AAP - Advisory Assistance Program, German Federal Environment Ministry
BfN - Federal Agency for Nature Conservation
BMU - German Federal Ministry for Environment, Nature Conservation and Nuclear Safety
CMS - Convention on Migratory Species
EMPAA - Eastern Mongolian Protected Area Administration
EIC - Environmental Impact Assessment
FS - Feasibility Study
GIS - Global Information System
IBA - Important Bird Areas
IUCN - International Union for Conservation of Nature
MAS - Mongolian Academy of Sciences
MBCC - Mongolian Bird Conservation Center
MEGDT - Ministry of Environment, Green Development and Tourism
MET - Ministry of Environment and Tourism, Mongolia
METT - Management Effectiveness Tracking Tool
MNET - Ministry of Nature, Environment and Tourism, Mongolia
MSF - Michael Succow Foundation
MSS - Michael Succow Stiftung
MP - Management Plan
NR - Nature Reserve
OG - Operational Guidelines
OUV - Outstanding Universal Value
PAs - Protected Areas
SPA - Strictly protected Area
SPAA - Special Protected Areas Administration
UBA - German Environment Agency
WH - World Heritage
WWF - World Wide Foundation

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## Summary

Mongolia is the only country all over the world where temperate grasslands and nomadic tradition survived and remained in large scale. They represent Central Asian types of the Eurasian steppes. Steppes and nomadic culture are symbol and core of the national heritage of Mongolia. Eastern Mongolia is a huge territory covered by steppes till today. Structure, biodiversity and functions of the ecosystem are mainly intact and the nomadic culture is also practiced.

The “Eastern Mongolian Steppes” have been on the Tentative List for World Heritage since 2014 (Annex A). Based on long term German-Mongolian cooperation in nature conservation and financed by the German Federal Ministry for the environment, Nature Conservation and Nuclear Safety (BMU) the Michael Succow Foundation (MSS) started 2019 the project “Feasibility study for the World Heritage nomination of the Eastern Mongolian Steppes”.

It was carried out in cooperation with the Mongolian Bird Conservation Center (MBCC), and supported administratively by the Federal Environmental Agency (UBA) and technical by the Federal Agency for Nature Conservation (BfN). The Mongolian Ministry of Environment and Tourism, the Mongolian National Commission for UNESCO and Mongolian and international experts were consulted.

The project started with a Kick-off Workshop in the Ministry of Environment and Tourism in Ulaanbaatar in August 2019 (Annex B), followed by a first joint field mission to Eastern Mongolia (Annex C). One of the results of the field study was that almost all steppes have been grazed by herds of nomads for millennia. Untouched, “wilderness” steppes don’t exist. Therefore the question of a mixed Natural/cultural nomination was considered and in an Expert Workshop at the International Academy for Nature Conservation Isle of Vilm in January 2020 discussed (Annex D). Further work was significantly hindered by the corona pandemic. Visits and direct contact were impossible and communication was only online. A meeting MBCC representatives with cultural experts in Ulaanbaatar in May recommended a natural nomination under consideration of cultural aspects (Annex E). In a second field mission by MBCC in June 2020 information about vegetation structure, wildlife and birdlife such as socio-economic data were collected. Authorities of Dornod Province and Protected Area administration were involved in the survey (Annex G).

The data of field studies and surveys, workshops and discussions as well as studies of literature are summarized in the here presented “Feasibility assessment for a World Heritage Nomination of the Eastern Mongolian Steppes” that contains seven chapters. Finally the following recommendation is given as result of the project:

The Eastern Mongolia steppes have the potential to meet the criteria (ix) and (x) of the Operational Guidelines of the World Heritage Convention as a serial property. It could meet also criterion (v), but the data base is not enough for a nomination as a mixed site.

The five protected areas that are proposed for nomination by the Tentative List represent a good basis. They should be complemented by four additional component parts (table 8, figure 55). It is highly recommended to start the nomination as soon as possible on the basis of the feasibility study presented here.

Provided that the work can be continued in the spring and field work to collect further required information will be possible in the summer of 2021, completion of the nomination dossier by the end of 2022 seems to be realistic. Submission to UNESCO could then take place in January 2023.

# 1 Problem Statement, Objectives and Approach

## 1.1 Temperate grasslands – a globally threatened biome

**Grasslands** in the wider sense are one of the major biomes in the global biosphere. They occur in polar, temperate, subtropical and tropical latitudes and cover about 46 million km², amounting to about 27% of the Earth's terrestrial surface. Historically, they were one of the most productive and diverse terrestrial ecosystems (IUCN 1998). Grassland is defined as "area in which the vegetation is dominated by a nearly continuous cover of grasses" (Encyclopedia Britannica). The Oxford Dictionary of Plant Sciences gives the following definition:*"Grassland occurs where there is sufficient moisture for grass growth, but where environmental conditions, both climatic and anthropogenic, prevent tree growth. Its occurrence, therefore, correlates with a rainfall intensity between that of desert and forest and is extended by grazing and/or fire to form a plagioclimax in many areas that were previously forested."* (Sutti et al. 2005).

**Temperate grasslands** comprise about 20% of all global grasslands. They are one of the major ecosystems with global importance for natural history and evolution, for the development of humankind, and for biodiversity. Originally, they were natural ecosystems of semi-arid regions of temperate climate zones: of the nemoral zone in the Northern Hemisphere and of the austral zone in the Southern Hemisphere. They are very different from tropical and subtropical grasslands, and in the past they covered nearly ten percent of the terrestrial surface of our Earth.

They occur in three large regions of the World: in the Euro-Siberian and the Mongolian-Manchurian steppe region of Eurasia, in the Great Plains and prairies of North America, and the pampa in South America. Smaller grasslands also occur in South Africa. All four are characterized by dominance of grasses in the vegetation structure, as well as by great diversity of perennial herbs, adapted to harsh environmental conditions of pronounced seasonal change (short summer / long and cold winter). The grasslands of these four regions are markedly distinct in species composition, because they are located in different biogeographical realms.

For thousands of years huge herds of large herbivores have migrated in co-evolution through the "oceans of grass" on seasonal migrations: Bisons in the prairies, guanacos in the pampas, gazelles, antilopes, kulans and wild horses in the steppes of Eurasia. Armies of small mammals populate the ground, insect fauna and birdlife are very rich in species within these complex ecosystems, linked in functioning food webs and regeneration cycles. Temperate grasslands are also a major and ongoing carbon sink by seasonal photosynthesis and soil building, and a permanent storage of carbon, especially in humus rich soils.

But today "*no grassland is entirely natural, and there are many degrees of interference: fire, whether spontaneous or lit by man, has influenced, and continues to influence, large areas; and grazing by livestock and, in some continents, by large herds of wild herbivores*." (Reynolds in Suttie et al. 2005). The Eurasian steppes are the cradle of ancient nomadic cultures, adapted to the special life conditions of grasslands. And the prairies of North America were once the homeland of nomadic first nations.

Regrettably, most of the World's natural grasslands have been converted to agricultural land or degraded by overgrazing and other human impacts (IUCN 1998, Suttie et al. 2005, Squires et al. 2018). From a global perspective, temperate grasslands are the threatened biome with the lowest level of protection of all 15 recognized biomes of the global biosphere (IUCN 1998). The land use change from fully adapted traditional mobile pastoralism to agriculture has destroyed most temperate grasslands over the last two centuries, including the rich associated cultures, lifestyles and knowledge systems. It has destroyed the soils by deflatation and erosion, it degraded ecosystem functions and reduced biodiversity, and it converted vast areas of a globally significant carbon sink and storage to a carbon source.

Large herbivores like bisons and wild horses were nearly exterminated in the past, and the remaining habitats are shrinking due to human activities. The destruction and degradation of temperate

grasslands over the past two centuries is a tragic chapter of human history, as Manning (1995) has shown using the example of the American prairie.

Today Mongolia is the only country globally where relatively intact grasslands maintaining their ecological functions and supporting traditional mobile herding continue to exist at a very large scale. From the Altai Mountains in the West to the wide plains in the East, diverse types of steppes and desert steppes cover more than two thirds of the territory of the Central Asian country. The semi-natural grassland of Mongolia has been used for millennia by mobile pastoralists.

However, today also in Mongolia vast grasslands are degraded and threatened by desertification because of overgrazing as a result of excessive levels of livestock and climate change. As a consequence of socio-economic changes and the degradation of the steppes the traditional mobile pastoralism has been declining (Sutti et al. 2005, Stolton et al. 2019).

The Daurian and Eastern Mongolian Steppes are in better conditions, because of comparatively low population pressure and longstanding nature protection measures. There are several extensive protected areas at national, provincial and local level. The most intact and protected representations of the Daurian Steppes in north-eastern Mongolia and the Russian Federation are one of the three main ecosystems underpinning inscription of the transnational serial World Heritage Site “Landscapes of Dauria” in 2017.

The Daurian Steppes transition into the Eastern Mongolian Steppes to the south. The latter are an exceptional ecoregion within the vast Eurasian Steppes spanning from the European Pannonian Steppe to the Mongolian-Manchurian Grasslands; the largest remaining intact temperate grasslands on Earth. They cover thousands of square kilometers, characterized by treeless flat steppes, gently rolling hills, and wetlands. They are like an „Ocean of Grass“. Herds of an estimated 5.7 million of Mongolian white-tailed gazelles (*Procapra gutturosa*) are an inseparable element of the ecosystem both inhabiting and shaping it (Assessment report 2010).

Following a thorough selection process, the Eastern Mongolian Steppes were added to the Mongolian Tentative List in 2014 as a promising World Heritage candidate site. The Tentative List description proposes a serial approach under criteria (ix) and (x) encompassing five component parts (see Annex A). The added layer of visibility and protection afforded by the World Heritage Convention might be the last chance to save these last great steppes on earth from further loss and degradation. It could be also a chance for survival of mobile pastoralism as *“a key management element in semi-natural ecosystems. […] It can also sometimes actively support the survival of wild biodiversity”* (Stolton et a. 2019, p. 9). *“Mobile herders have been coexisting with the diverse flora and fauna in harsh environmental conditions for thousands of years without degrading the productivity, resilience and diversity of the basin“* is one conclusion in the technical evaluation report to the transboundary serial World Heritage Site Uvs Nuur Basin in Western Mongolia and Republic of Tuva in Russian Federation (IUCN 2003, Stolton et al. 2019).

Using the example of 10 World Heritage Sites across the World, Stolton et al. (2019) demonstrate, that the World Heritage Convention can be an effective framework to save grasslands of highest conservation value along with mobile pastoralism. These examples include natural sites, as well as mixed sites and one cultural landscape*. “Careful use of World Heritage could help mobile pastoralists to build a viable future in key sites, which might also provide positive examples of co-management that could be applied more widely. The role of World Heritage in these situations is primarily to draw attention to the issues and provide a platform, with some limited authority, for ensuring that mobile pastoralism is treated equitably and positively within sites where it occurs.“* (Stolton et al. 2019, p. 64).

## 1.2 Background and objectives

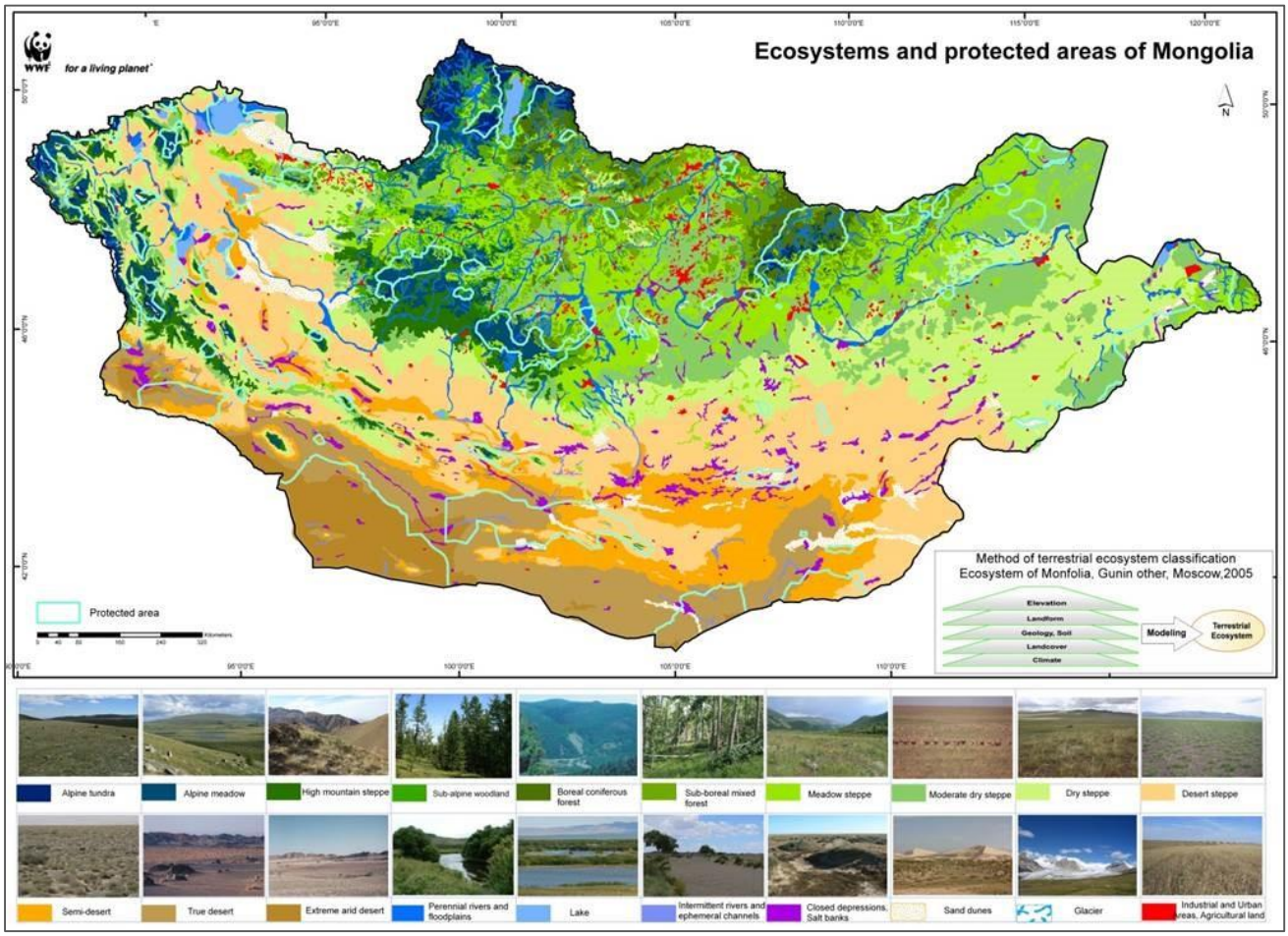
### 1.2.1 Mongolia – State Party to the World Heritage Convention

In the framework of longstanding scientific and cultural cooperation and friendship between Germany and Mongolia German writers and scientists described Mongolia as the „Country of the green-golden mountains“ or as „Country between taiga and desert” (Neumann 1986, Barthel 1971).

Mongolia is located between the Russian Federation and the People’s Republic of China, in the heart of Central Asia and it spans across the southern edge of the Siberian taiga, Eurasian steppes and the Gobi desert of Central Asia and many forms of transition between these major systems. It is situated in the watersheds of the Arctic and Pacific Oceans, and of Central Asian Internal Drainage basins. Mongolia is of global conservation significance because of its location at the convergence of the Siberian taiga and the Central Asian steppe and deserts that form a rich diversity due to the transitional ecosystems that occur nowhere else and unique assemblage of species. Mongolia hosts a range of globally important biodiversity areas, recognized for example by way of two WWF Global 35 priority eco-regions (the Amur-Heilong in Eastern Mongolia and the Altai-Sayan in Western Mongolia), 2 natural World Heritage properties, 11 Ramsar sites and 70 Important Bird Areas (IBA). Mongolia boast large tracts of habitats for emblematic and globally endangered mammal species and subspecies such as the Takhi wild horse (*Equus ferus przewalskii*), the Bactrian Camel (*Camelus ferus*), Asiatic wild Ass (*Equus hemionus*), Gobi bear or Mazaalai (*Ursus arctos gobiensis*), Saiga antelope (*Saiga tatarica mongolica*). Biodiversity was an integral feature of Mongolia’s intact ecosystems until the mid-20th century (MNE 1998, Knapp & Tschimed-Otschir 1999, WWF 2002).

Since 1990 Mongolia has been a State Party of the World Heritage Convention. There are currently three cultural and two transboundary natural World Heritage Sites: Uvs Nuur Basin, transboundary natural site together with Russian Federation (2003), OrkhonValley Cultural Landscape (2004), Petroglyphic Complex of the Mongolian Altai (2011), Great Burkhan Khaldun Mountain and its surrounding Sacred Landscape (2015), and Landscapes of Dauria as transboundary serial site together with Russian Federation (2017). The 2014 revision of the Tentative List of Mongolia resulted in a total of 12 candidates sites, including the Eastern Mongolian Steppes as one of only 3 natural site (see Annex A).

Mongolia’s globally significant biodiversity necessitates the conservation of vast landscapes. Mongolia contains 19 main ecosystem types within its borders, which have been consolidated into four ecoregions, namely the Daurian steppe (28.2% of total area), Khangai (16.4% of total area), Central Asian Gobi Desert (16.4% of total area), and the Altai-Sayan (23.1% of total area) (Figure 1), in order to increase integration between national conservation and development policies and plans (Chimed-Ochir et al. 2010).



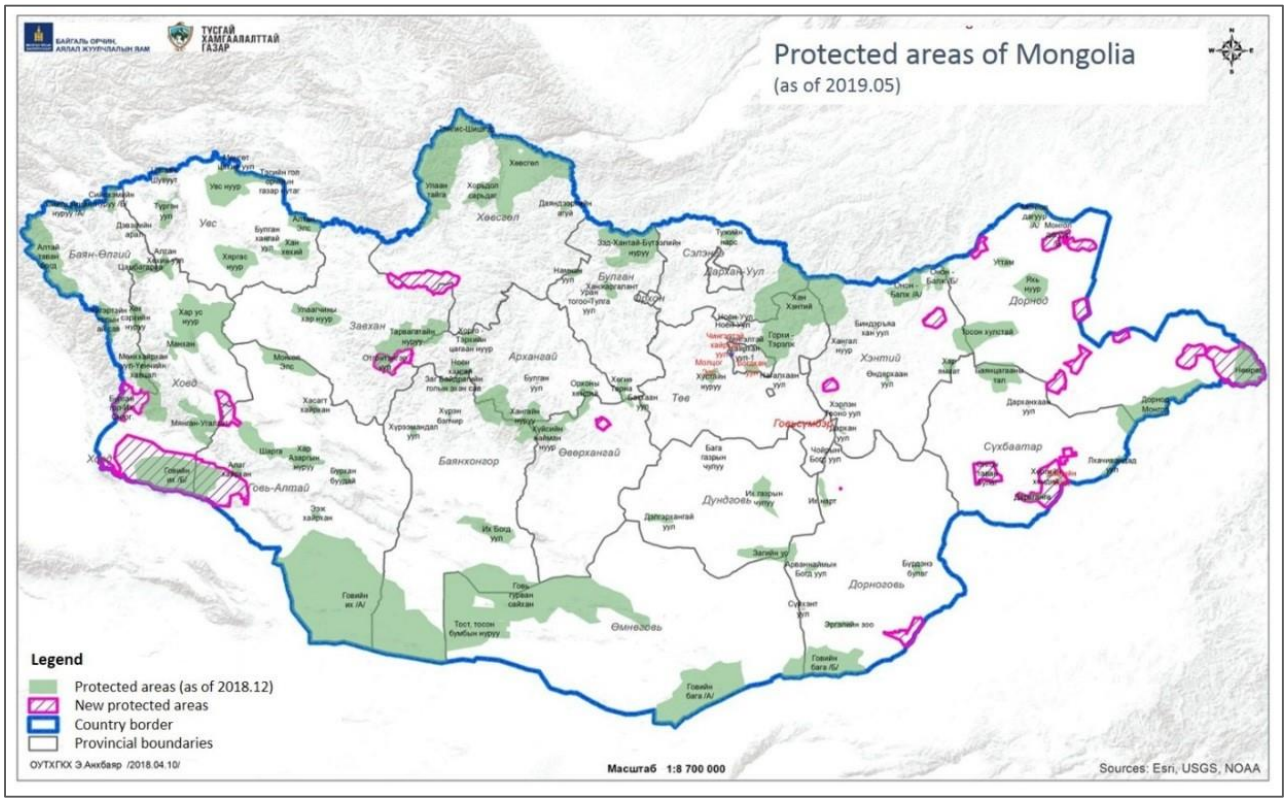

*Map 1*: *Ecosystems in Mongolia (Chimed-Ochir et al. 2010)*

However, due to climate change and negative human activities, 72.3 percent of the total territory has deteriorated; soil nutrients have been lost; desertification has become an increasing threat; over 70 percent of pastureland has been overgrazed; plant growing rates and compositions have been reduced; hundreds of rivers, streams, natural springs, lakes, and ponds have dried up; the forest resource has decreased by 2 million ha; and about 300 species of fauna and flora are threatened with extinction. Therefore, the need to upgrade conservation management to international standards has become a priority (Batjargal 2016).

Largest ecosystem in Mongolia is grassland. All grassland covers an area of 1,034,737,38 km2 or 66,12% of total country territory. Mongolian grassland composes 2,6% of world grassland and 12% of Eurasian grassland (Tuvshintogtokh 2014). More than 80% of grassland in Mongolia are used as pastures.

Mongolia has committed by its state policies to gradually designate areas of a size of minimum 30% of its total territory in the Protected Area Network based on numerous considerations including the vast territorial size, and fragile and specific ecosystem conditions, the pace of its economic development, social needs, the state of protection and use of natural resources, as well as the alteration of the environment.

During 2016-2019, Parliament of Mongolia has approved 18 new Protected Areas (PAs) and expanded 7 existing PAs. The area under the PA Network has increased by 4.4 million hectares. After this increase the total number of PAs in Mongolia is 115 sites of which 20 sites are gazetted as Strictly Protected Areas, 34 sites as National Parks, 47 sites as Nature Reserves and 14 sites as National Monuments (MET 2019). As of September 2019, Mongolias Protected Areas cover a territory of 30.27 million hectares, which constitutes 20.1 percent of the total country territory.




*Map 2: Protected Area network in Mongolia (MET 2019)*

Furthermore, in the recent years the institutional developments at the level of the Ministry of Environment and Tourism (MET) and the Administration of Special Protected Areas show increased efforts in improvement of protected area management, which creates a solid foundation for potential nomination and management of World Heritage sites in the country.

Most recently, the „Landscapes of Dauria" transboundary World Heritage Site was inscribed in the World Heritage List in 2017 on the basis of criteria (ix) and (x). However, while it contains steppes, it is based on the complexity of the Daurian landscape. It is a complex of grassland, woodland, wetland and the large Torej lakes (Butorin et al. 2013).

Mongolian authorities included the Eastern Mongolian Steppes on Mongolia's Tentative List in 2014, along with two other natural sites. Proposed as a serial property, the preliminary thinking suggests five component parts with a total surface area of some 2 million ha, which are located in the Dornod Aimag[1] and partly in Sukhbaatar Aimak.

According to §122 of the Operational Guidelines for the Implementation of the World Heritage Convention (OG), State Parties are encouraged to "*carry out initial preparatory work to establish that a property has the potential to justify Outstanding Universal Value, including integrity or authenticity, before the development of a full nomination dossier which could be expensive and time-consuming. Such preparatory work might include collection of available information on the property, thematic studies, scoping studies of the potential for demonstrating Outstanding Universal Value, including integrity or authenticity, or an initial comparative study of the property in its wider global or regional context, including an analysis in the context of the Gap Studies produced by the Advisory Bodies*." (UNESCO 2016). In order to move ahead and nominate the above mentioned sites of Tentative List to the World Heritage List, it is essential to carry out relevant feasibility and scoping studies.

The urgent need for a Feasibility Study was recognized by all stakeholders, including the Government of Mongolia. This was affirmed by a support letter, which was sent in July 2019 from the Ministry of

[1] In Mongolia, an aimag is the first-level administrative subdivision. The country currently has 21 aimags. The capital Ulan Bator is administrated as an independent municipality.

Environment and Tourism of Mongolia to the German Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU). In spring 2019, the Michael Succow Foundation proposed a feasibility study project in support of a possible nomination. The proposal was approved under BMU's Advisory Assistance Programme (AAP) for environmental protection in the countries of Central and Eastern Europe, the Caucasus and Central Asia and other countries neighbouring the European Union. Supervised by the Federal Agency for Nature Conservation (BfN) and the German Environment Agency (UBA), the project started in August 2019.

### 1.2.2 Objectives of the study

The overarching **goal** of the study and of the potential nomination is to contribute to the conservation of the extraordinary cultural and natural values of the Eastern Mongolian Steppes by strengthening the national and international recognition, visibility and accountability for the protection of the globally last intact large-scale temperate grasslands.

The **purpose** of the study project is to take stock of and inform decision-making as regards both the feasibility and the most promising approach and steps required for a possible World Heritage nomination. .In addition, the project will contribute to awareness raising in Mongolia and particularly around the proposed property and the advantages of a World Heritage Site for the region.

The specific ***objectives*** of the study are reflected in its structure:

- The necessary baseline information on the physical environment, ecosystem and biodiversity of potential component areas for a proposed serial World Heritage property "Eastern Mongolian Steppes" is available to decision makers;

- The most adequate and promising World Heritage approach and nomination criteria are identified and their integrity is assessed, which also implies a recommendation regarding the overall feasibility of a possible nomination;

- Core elements of a possible nomination dossier including a draft Statement of Outstanding Universal Value and draft Global Comparative Analysis are developed and can be presented to decision-makers;

- Potential needs for protection and management regimes are identified and possible solutions discussed;

- Critical information gaps and open question marks are identified and options to address them are described.


*Map 3: The Provinces of Mongolia and the location of Dornod Aimag*

(source:https://www.bing.com/images/search?q=mongolia+maps&qpvt=Mongolia+Maps&form=IQFRML&first=1&scenario=ImageBasicHover)

### 1.2.3 Geographical scope – Focus on Eastern Mongolia

The Eastern Mongolian Steppes are an exceptional ecoregion within the vast Eurasian Steppes spanning from the European Pannonian Steppe to the Mongolian-Manchurian grasslands, and home to the largest remaining intact temperate grasslands on the Earth across thousands of square kilometers, characterized by treeless flat steppes, gently rolling hills, and wetlands.

The main distinctive characteristic of this landscape compared to other steppe ecosystems is that it is dominated by *Stipa* grasslands contiguous over thousands of square kilometres like an „Ocean of grass“. The herds of an estimated 5.7 million of Mongolian white-tailed gazelles *Procapra gutturosa* are an inseparable element of the ecosystem both inhabiting and shaping it.

This study focuses on the entire Dornod Aimag and on protected areas located within the aimag borders. The Dornod Aimag is located in the eastern part of Mongolia, bordering China from South-East and Russia from the North. The targeted protected areas have either national protection status or they are protected on the local, aimag level.

The study mainly focuses on existing PAs because only PAs are considered sufficient to meet the integrity and management requirements set out in the Operational Guidelines, and no new PAs are planned in Mongolia until the envisaged nomination of the Eastern Mongolian Steppes.
Although the study doesn't go beyond aimag borders this does not mean that a potential extension of the property during the nomination process of after possible inscription is not possible, provided that the additional areas meet the OUV requirements.

### 1.2.4 History and steps of the project

2012 In the regional working meeting “Daurian steppes” as a potential transnational World Heritage Property, February 15-16, 2012, in Chita/Russian Federation the Mongolian representatives announced, that they would submit the Eastern Mongolian steppes as a separate nomination. Following the focus of the Daurian nomination was changed from steppes to the complexity of landscape. **2013** the nomination dossier “Landscapes of Dauria” has been finalized (Butorin et al. 2013) and submitted 2014 to UNESCO. The nomination was evaluated by the advisory body (IUCN 2015, 2017), and **2017** the “Landscapes of Dauria” were inscribed in the World Heritage List by decision of the World Heritage Committee in its 41st Session in Cracow/Poland as transboundary serials World Natural Heritage Site based on criterion (ix) and (x) (WHC 2017, Decision 41 COM 8B.6).

2013 The international “Workshop on Minimizing Conflicts between Migratory Wildlife and Mining in Central Asia”, 20-24 of June, at the International Academy for Nature Conservation Isle of Vilm also dealt with the threat to large herbivores in the Mongolian steppes. It was followed by the international Workshop “Implementing wildlife friendly measures in infrastructure planning and design in Mongolia”, 25-28 of August **2015**, in Ulaanbaatar. Both workshops were organized in cooperation of the International Academy in cooperation with the CMS secretariat and the Mongolian Ministry for Environment with financial support of the German Federal Ministry for Environment, Nature Conservation and Nuclear Safety as well as the nomination of the Landscapes of Dauria before.

2014 As a result of international expert meetings the Eastern Mongolian Steppes were placed on the **Tentative List** for a serial nomination with 5 component parts (size in total 2.1 Mio ha), under criteria (ix) and (x) (see Annex A). It was supported by recommendations of Mongolian and international scientists, e.g. Batsaikhan, N. et al. (2014): Conserving the World’s Finest Grassland Amidst Ambitious National Development. Conservation Biology.

2017 With reference to above activities MSS discussed opportunities for nomination of the Eastern Mongolian Steppes to the World Heritage List, and Gankhuyag elaborated a background analysis February **2018** in Greifswald. On this basis, MSS 2019 submitted an application for funding of a “Feasibility Study for the World Heritage Nomination of the Eastern Mongolian Steppes” to UBA.

2019 It was granted, and the project started in August 2019. It is done in the following steps and contributions:

- MSS Mission to Mongolia with first field survey to Eastern Mongolia, 23 August to 2 September, 2019. (Short Report with Annex A-K, 12 September, 2019) (Annex C).
- MSS/MBCC/MET Kick-Off Workshop of the project, Ulaanbaatar, 26 August, 2019. (Short Report) (Annex B).
- Namkhai, Overview on the World Heritage Natural Sites in Mongolia. Mscr. 10 p.

2020
- MSS/MBCC, Expert Workshop Isle of Vilm, 26-28 January, 2020 (Report) (Annex D).
- Cultural meeting of the “Feasibility study for the World Heritage Nomination of the Eastern Mongolia Steppes”, Ulaanbaatar, 20.05.2020 (Brief Summary) (Annex E).
- Enkhbat & Tsolom, Cultural Heritage Survey necessary in the registration of “Eastern Mongolian Steppes” on the World Heritage List. Mscr. (Annex F).
- MBCC, Second field survey to Eastern Mongolia, 3-12 June, 2020 (Report) (Annex G).
- MSS/MBCC, Online meeting, 11 November, 2020.

2021
- Finalizing of the Feasibility study and the Road map for nomination process.

- MSS/MBCC/MET/NatCom online workshop.

*Figure 1: Participants of the Expert Workshop Isle of Vilm visiting the Succow Foundation in Greifswald, 28 January 2020 (Photo by H. D. Knapp).*

## 1.3. Methods and steps

### 1.3.1 Field visits

This study is based on field visits, workshops, consultations with experts and stakeholders combined with a literature review. .

The first visit to the Eastern Steppes was conducted from 27 to 31 August 2019 by representatives of the Michael Succow Foundation (MSF) and the Mongolian Bird Conservation Center (MBCC). The visit included meetings and discussions with protected area staff, Aimag authorities, local community representatives and other stakeholders. An additional field visit was organized from 03 to 12 June 2020 by MBCC together with the senior expert Chimed-Ochir to identify of additional component parts of the possible nomination (see Appendices C and G for details.

### 1.3.2 Expert workshops

The Kick-Off-Workshop of the project took place on 26 August 2019 in Ulaanbaatar at the Ministry of Environment and Tourism – Special Protected Areas Administration premises. The meeting was organized by the MSF and the MBCC. The workshop was attended by 14 participants, representing the government, including the National Commission for UNESCO and NGOs. The main objective of the meeting was to consult and inform the key stakeholders about the launched project and planned activities, to raise awareness on importance of steppe ecosystems and the World Heritage nomination perspectives and to agree on planned steps and cooperation mechanisms within the project (see Appendix B for details).

From 26 to 28 January 2020, an expert workshop was organized in Germany by MSF and MBCC at the International Academy for Nature Conservation Isle of Vilm, Germany. Mongolian delegates from the Ministry of Environment and Tourism of Mongolia, the Ministry of Education, Culture, Science and Sports of Mongolia, the Mongolian National Commission for UNESCO and other relevant institutions together with German experts participated in the workshop. The main objective of the workshop was

to consult with the key stakeholders about opportunities and challenges of the World Heritage nomination of the Eastern Mongolian Steppes (see Appendix D).

### 1.3.3 Expert and stakeholder interviews and meetings

The study team also conducted interviews and discussions with experts and stakeholders from relevant institutions, including the Mongolian National Commission for UNESCO.

On 20 May 2020 a meeting was held at the Ministry of Education, Culture, Science, and Sports of Mongolia to discuss a possible mixed nomination approach under both natural and cultural criteria. Various experts from the National Cultural Heritage Center of Mongolia, National Heritage of Cultural Heritage of Mongolia (NHCH) and Mongolian National Commission for UNESCO participated in the meeting (see Appendix E).

Discussions took place with the ongoing MORE STEP project partners. Feasibility study project and future plans were presented at an online meeting on 19 June 2020. The project partners agreed to exchange relevant scientific data and to have regular communication.

During the field surveys, representatives of the province and of protected area administrations as well as herders in the steppe were interviewed.

### 1.3.4 Literature review

The study team compiled and analyzed literature, data and information about the proposed property including biodiversity, integrity and management between August 2019 and June 2020. Information about inscribed properties and other protected areas deemed relevant for the Global Comparative Analysis were also assessed (see list of references).

### 1.3.5 Geographical analysis and mapping

Maps of the study area and of all proposed component areas were produced based using GIS. Thematic maps and figures are used as copies from literature or internet sources. For a first assessment of landscape integrity also satellite images of Google Earth Pro have been used.

# 2 Description of the potential

## 2.1 Semi-arid climate as prerequisite for temperate grassland

The climate primarily determines the main formations of vegetation on Earth. Under humid and semi-humid climate conditions all over forests would cover the surface of the Earth, when annual temperature and the length of vegetation period would be suitable. With decreasing precipitations and change to semi-arid climate conditions forests reach zonal boundaries or transition into forest steppes, as is the case in the landscapes of Dauria. Under semi-arid climate conditions of the temperate zone (nemoral zone after Schroeder 1998) grassland (in Eurasia “steppe” from the Russian “stjep”) is the natural vegetation. Semi-arid means, insufficient precipitation for growth of trees but enough for shaping a more or less closed plant cover of grasses with intensive root system.

The climate of entire Mongolia is shaped by cold winters under Northern impact from Siberia and as so called “East side climate” (of Eurasia) by summer monsoons from the Pacific Ocean, which bring rainfall far into the continent. The macro-climate of Eastern Mongolia is semi-arid and strongly continental. This means that there are extreme temperature contrasts between day and night, as well as between summer and winter.

Eastern Mongolia is located in the rain shadow of Great Khingan Mountains. The only one available climate diagram of the region is from Choibalsan (figure 6). It demonstrates the general climate situation of Eastern Mongolia. Starting in October, the mean daytime temperature drops below freezing point; mean temperatures are down to below -20°C for some six months of the winter season with hardly any noteworthy precipitation. Despite increasing rainfall the spring is physiologically dry because of simultaneously increasing temperature. The vegetation period of only three months starts in June only. In the short summer moderate high temperature corresponds with the maximum of precipitation. With the onset of night frosts, the more or less green plant cover of the steppe is frost-dried.

The mean annual temperature is around 0°C with an annual amplitude exceeding 40°C. Precipitation is less than 300 mm per year and even less than 250 mm across vast areas, peaking during the short summers.

There are two major similar climate types in Eastern Mongolia. III3 moderate dry, cool summer and IV3 dry moderate cool summer, both with moderate strong winter (National Atlas of Mongolia 1990, p. 58).

Climate is a dominant factor in the steppes, which is why they are particularly sensitive to climate change. The highly continental climate results in relatively rapid changes, which have immediate effects on the “open-air” land use system of nomadic pastoralism (Lkhagvadorj et al. 2013a).

The temperate grassland reflect global macroclimatic factors and it is heavily influenced by altitude, seasonality of precipitation, substrates, fire history, and herbivores (Bond et al. 2003; Faber-Langendoen & Josse 2010).

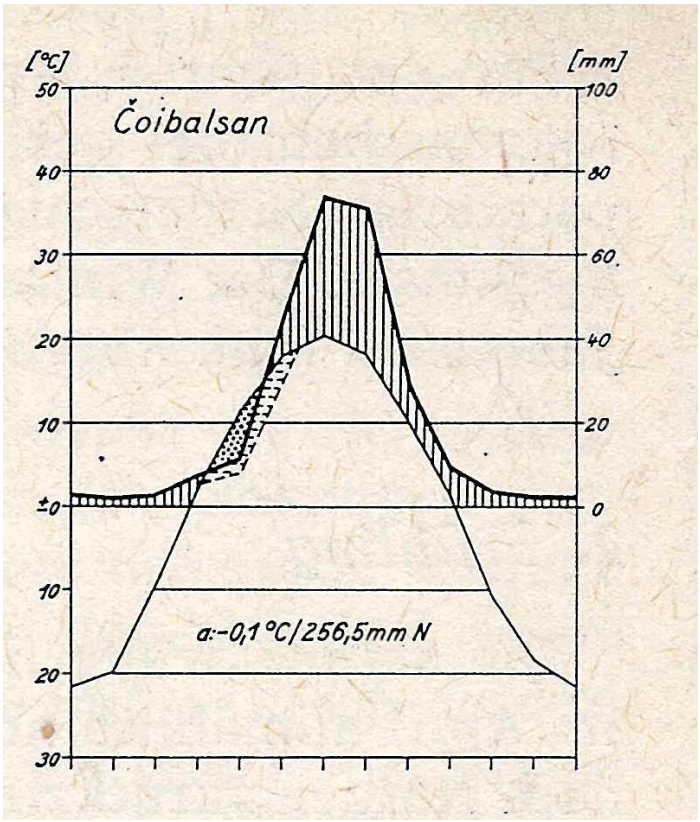



*Figure 2: Climate diagram of Choibalsan (Barthel 1971)*

## 2.2 Landscapes and ecosystems

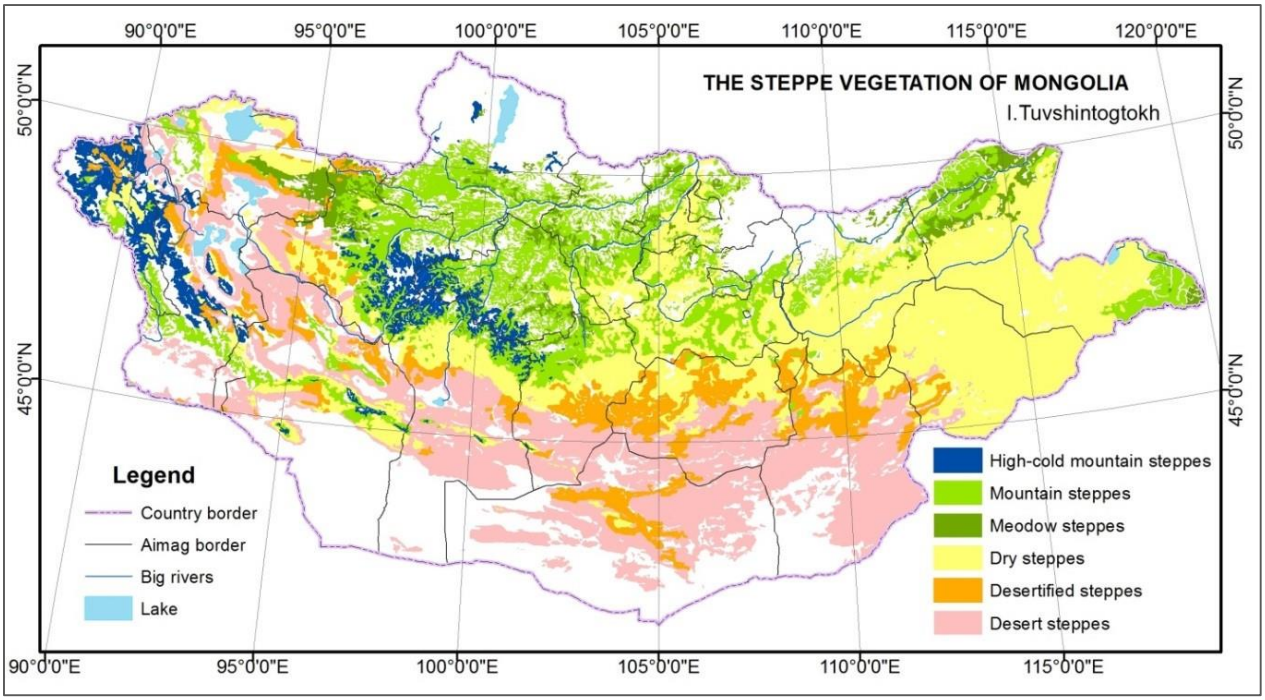
Eastern Mongolia is a wide, mainly flat to undulating landscape at an altitude of mostly less than 1,000 m.a.s.l. The Matad Uul rises up to 1,246 m a.s.l., Cagaan Uul up to 1,099 m.a.s.l., and Modtoi Khooloi at the Chinese border has an altitude of 1,290 m.a.s.l. The Eastern Mongolian plains also include same depressions, the largest one being Tamsagiin Khooloi. Floury carbonate chestnut soils and dark floury carbonate chestnut soils are the absolute dominating soil types in the region. In depressions alkali soils occur, and locally also open sands (see National Atlas 1990). The only permanent rivers are the Kherlen Gol, one of the largest rivers with floodplains in Mongolia, and the Khalkhin Gol in the far east of the country. Galyn Gol and few other small streams carry water only seasonally. Buir Nuur and Yakh Nuur are only two larger flat lakes with surrounding wetlands. However, numerous small (temporary) lakes occur in the wideness of the plains. Many of them became salty and dry out.

The Eastern Mongolian Steppes are home to the largest remaining intact temperate grasslands of the Earth (Batsaikhan et al. 2014; Wesche et al. 2016) and an exceptional ecoregion within the vast Eurasian Steppes spanning from the European Pannonian Steppe to the Mongolian-Manchurian grasslands due to its intactness, relatively high altitude and northern latitude.

Mongolian population has passed three million humans according to 2019 estimate and once the vast majority of the population, herders now comprises less than 50 percent of the people in Mongolia's sparsely populated territory. With an average population density of about 1.5 people per square km, the country ranks as one of the most sparsely populated of the World, and population density even decreases to 0.3 people per square km in the steppe and gobi region.

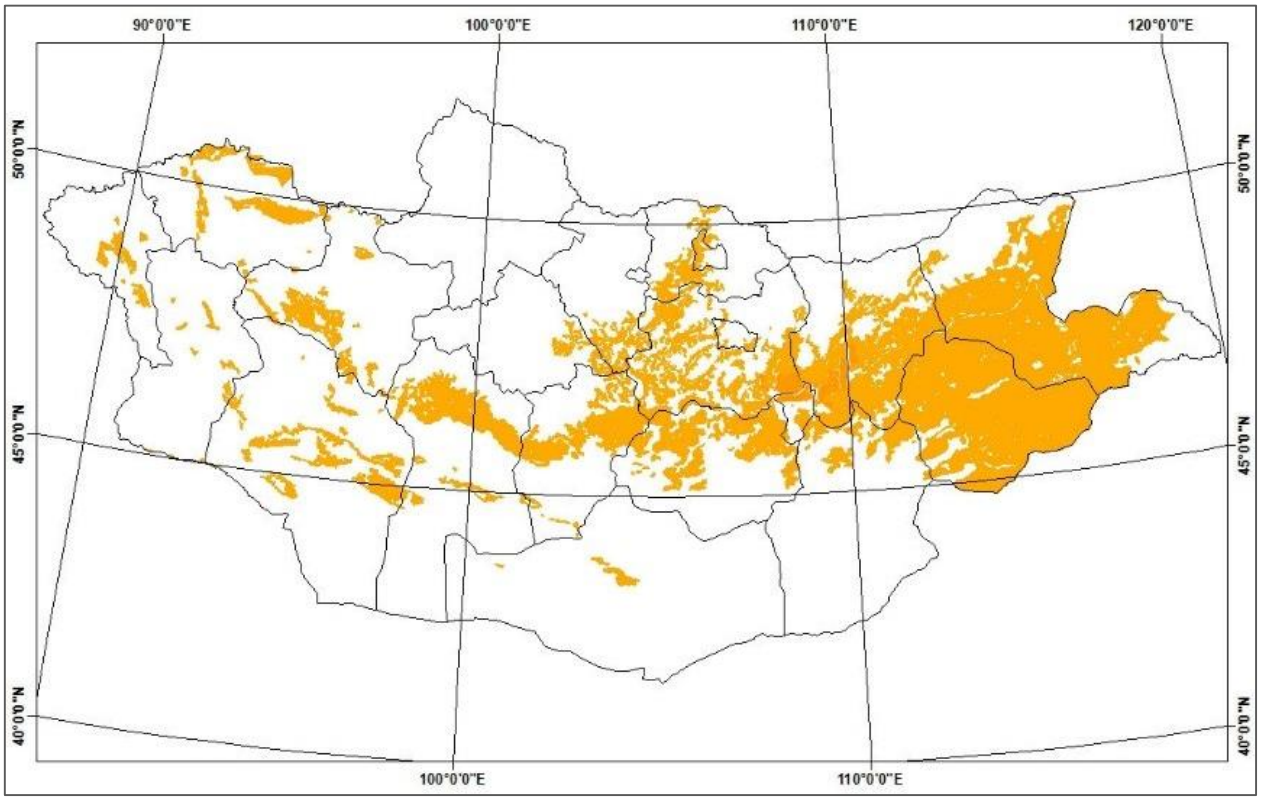
Mongolia's largest ecosystem is a steppe grassland characterized by treeless flat steppes, gently rolling hills and salty wetlands in depressions (Hilbig 1995). All steppe grassland covers an area of 1,034,737.38 km² or 66,12% of total country territory. Mongolian grassland composes 2,6% of the

World‘s grassland and 12% of Eurasian grassland. The researchers have classified the Mongolian steppe vegetation type into 6 sub-types (Figure 7), along the gradient of mean annual precipitation (MAP, from 400 mm to 100 mm) the following steppe sub-types are distinguished: high-cold mountain steppes, meadow steppes, mountain steppes, dry steppes, desertified steppes and desert steppes (Tuvshintogtokh, 2014). The Eastern Mongolian steppes are dry steppes after this classification, their distribution corresponds with the distribution of carbonate chestnut soils.




*Map 4: In Mongolia six main sub-types of steppe vegetation can be distinguished (Tuvshintogtokh 2014)*

In total the dry steppes of Mongolia span an area of 345,134 km² (Tuvshintogtokh 2014), that is bounded by the Gobi Desert to the south, the Khyangan Mountains to the west, the Chinese border to the East and the Russian border to the North (Map 5).




*Map 5: Dry steppe distribution in Mongolia (Tuvshintogtokh 2014)*

Within the Eastern Mongolian dry steppes several types can be distinguished. In the Vegetation Map of Mongolia shown below (Lavrenko et al. 1979), the eastern plains are mapped mainly as grass steppes on dark chestnut soils (castanosem) with dominance of the high grass *Stipa krylovii*, shorter grasses like *Koeleria cristata, Cleistogenes suarrosa, Leymus chinensis and Agropyron cristatum.* Typical perennials are *Artemisia frigida, A. scoparia, Heteropappus altaicus, Bupleurum bicalaule*. Small shrubs *Caragana microphylla* and *C. stenophylla* are widely distributed.

Special variants of this common basic dry steppe type (no. 40 in the map) are described as grass steppes on sandy chestnut soils (no. 41), as petrophytic herb-grass steppes on stony chestnut soils and rocky slopes in the few hilly areas (no. 42) and onion-grass-sedge steppes on salty soils on the edge of depressions (no. 46).

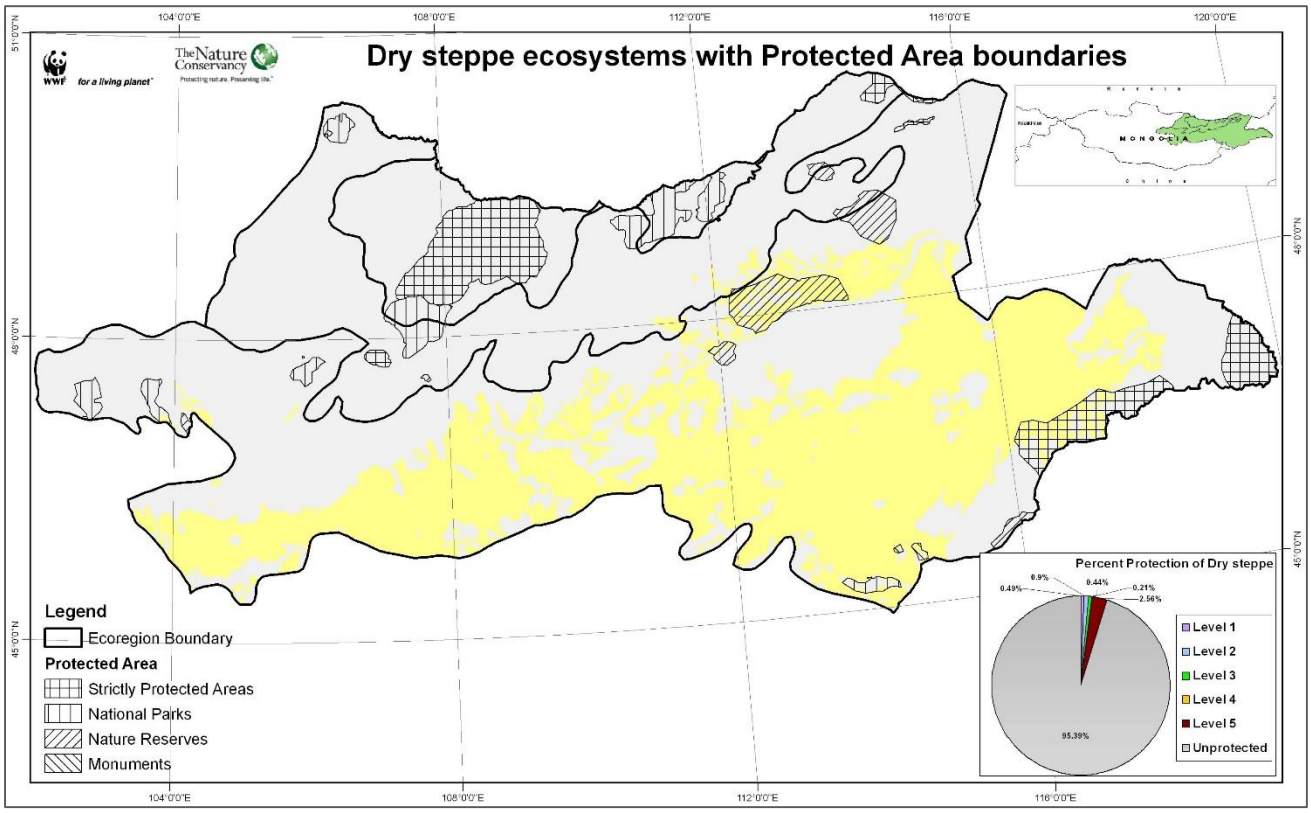
The landscape complex also includes the river floodplain of Kherlen River with grass-sedge vegetation on swampy soils in complex with willow shrubs (no.87), herb-grass steppe of *Achnatherum splendens* on salty soils in depressions (no.94) and *Puccinellia-Suaeda* salt vegetation on wet salty soils in depressions (no. 96). The grasslands in the foothills of Great Khingan Mountains are more herb-rich meadow steppes in several types (see figure 9).

The vegetation map in the National Atlas of Mongolia (1990) demonstrates a similar picture. Several authors describe the Eastern Mongolian steppes more in detail (Dashnyam 1974, Lavrenko et al. 1979, Karamysheva & Khramtsov 1995, Hilbig 2003, Narantuya 2012, Hilbig & Narantuya 2016). The outcome is in general the same, the Eastern Mongolian steppes are characterized as more or less dry herb-rich high grass steppes of *Stipa krylovii* with a lawn of shorter grasses and in mixture with many, mostly perennial herbs. This is confirmed by the results of our own field trips in 2019 and 2020 (see Annex C and G).

While globally, the Temperate Grasslands biome is the most converted and least protected (Hoekstra et al. 2005), the temperate grasslands of Mongolia are largely unconverted to this day and continue to support the full assemblage of native species and the livelihoods of almost half of Mongolia's

population engaged in mobile pastoralism, which is the key element of the ecosystem, both inhabiting and shaping the grassland (Batsaikhan et al. 2014). However, the wildlife and indigenous livelihoods of this area are threatened by overgrazing, climate change and rapid growth in mining and oil development.

The biodiversity GAP Analysis for Eastern Mongolian Steppe (Moore et al. 2011) identified two main steppe ecosystems (Figure 10 and 11). It has estimated total 310,915 km² (31,1 Million ha) of Mongolian-Manchurian Steppe in Central and Eastern Mongolia. However, only 6.6% of the all estimated Mongolian-Manchurian Steppe was included within the protected areas in Eastern Mongolia.




*Map 6: Dry steppe ecosystem in eastern Mongolia (Moore et al. 2011)*

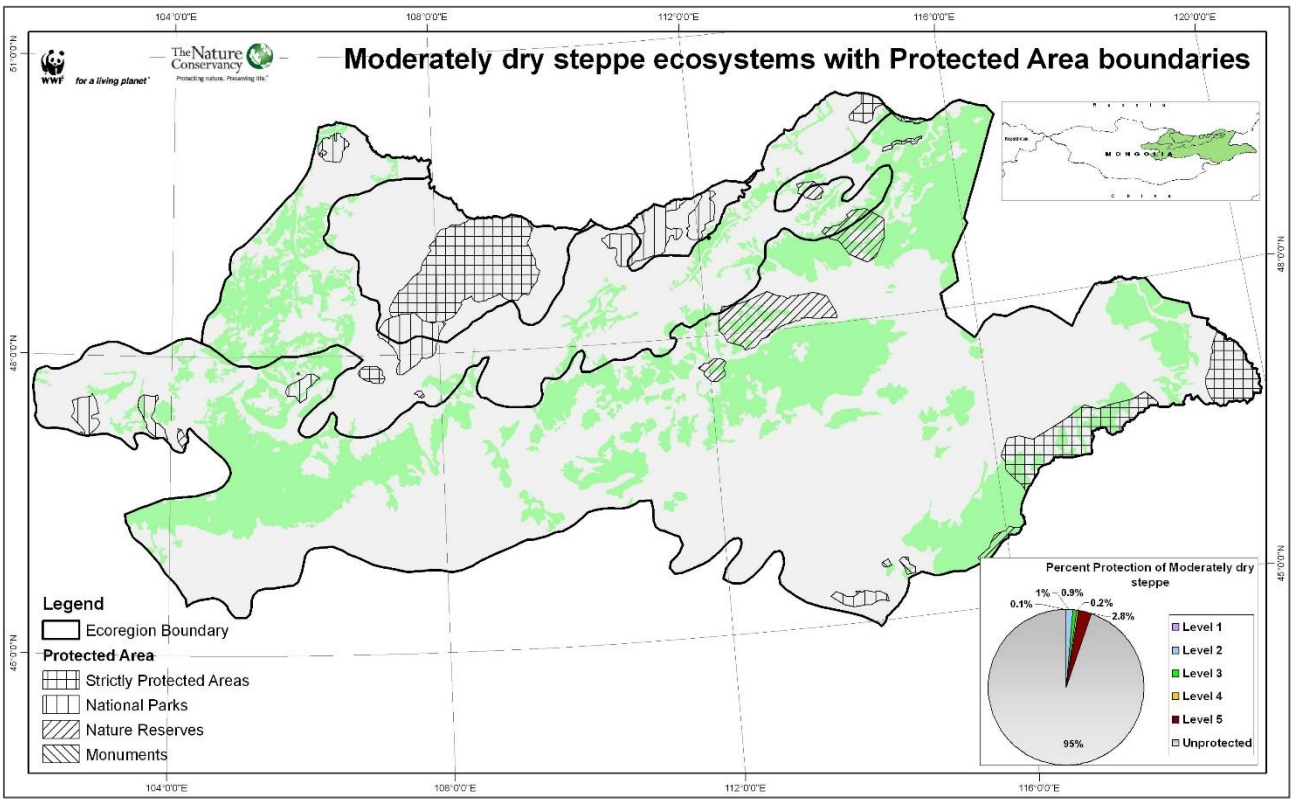
The areas specifically included in this report and their recommendations are the priority areas that are to be immediately placed under state and local protection as they are greatest threat from the mining sector's rapid development. For instance, there is an immediate need to take areas under state and local protection, upgrade status of exisiting protected areas, and establish "ecological corridors" between protected areas in the eastern steppes in Mongolia.

Grasslands support unique wildlife and human communities that are rapidly disappearing as a result of increased habitat fragmentation and land conversion.

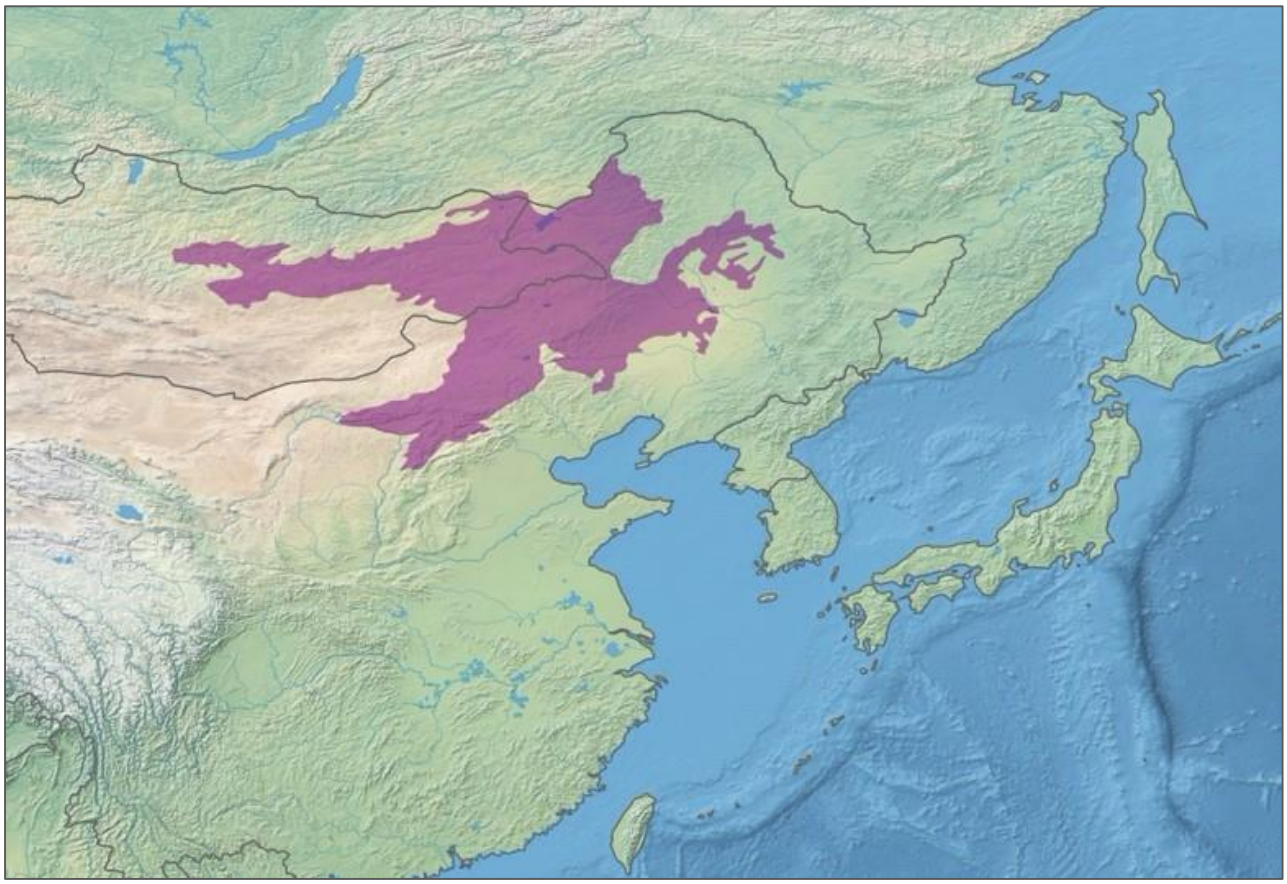
Eastern Mongolia holds two large grassland Ecoregions in the World and one of them is Mongolia-Manchurian Steppe Ecoregion which is partially located in Mongolia. This large ecoregion includes more than one million square kilometers of temperate grasslands on the inland side of Manchuria's coastal mountain ranges and river basins (Figure 10). However, in the Chinese Provinces of the Ecoregion most of former grassland is converted to arable land or degraded by wind erosion or overgrazing.

According to the assessment on management effectiveness of the protected areas, the highest threats are pasture use, over use of the nature resources, wildfire, mining activities, unsustainable infrastructure, and climate change most impacted to the biodiversity loss, its habitat degradation

fragmentation in Ecosystem of the protected areas. In addition, most threated key species of the steppe are Mongolian gazelle and Mongolian marmot (MNET 2016).




*Map 7: Moderately dry steppe ecosystem in eastern Mongolia (Moore et al. 2011)*



*Map 8: Mongolian-Manchurian grassland ecoregion (source: wikimedia.org)*

**Lakes and rivers** are extremely valuable ecosystems within the spacious landscape complex of the Eastern Mongolian Steppes. The Kherlen River is the biggest and longest river in Eastern Mongolia and runs through one proposed component part, Tosonkhulstai Nature Reserve. This part of the river provides suitable habitat for nesting White-naped Cranes and molting non-breeding cranes. A total of 20 breeding and non-breeding pairs have been recorded during July along this part of the river (MBCC 2019). The large human population and huge livestock economy of the region depends on the Kherlen River. The total population in the Kherlen river basin in Mongolia is 110,000 people. Settlements, camps and follow the course of the Kherlen River. Livestock overgrazing coupled with changing climate also contributes to decrease in water quality and quantity as well as to degradation of the steppe ecosystem. Water eutrophication and turbidity increases manifold as Kherlen flows through the dry steppe. Integrated pasture management is needed to protect its ecosystem, water and cranes habitat along the river valley. This great river with tiny flow volume is an important lifeline for biodiversity and socio-economic stability of the steppe landscape.

In the absence of overgrazing by domestic livestock or physical disturbance by natural flooding or scouring, succession to riparian Salix shrubs is likely. Soils are generally cryic fluvisols and gleysols, with kastanozems that have developed in coarse and fine alluvial sediments on the lower terraces away from river banks.

## 2.3 Biodiversity – Flora and Fauna

### 2.3.1 Species richness and composition of flora and fauna

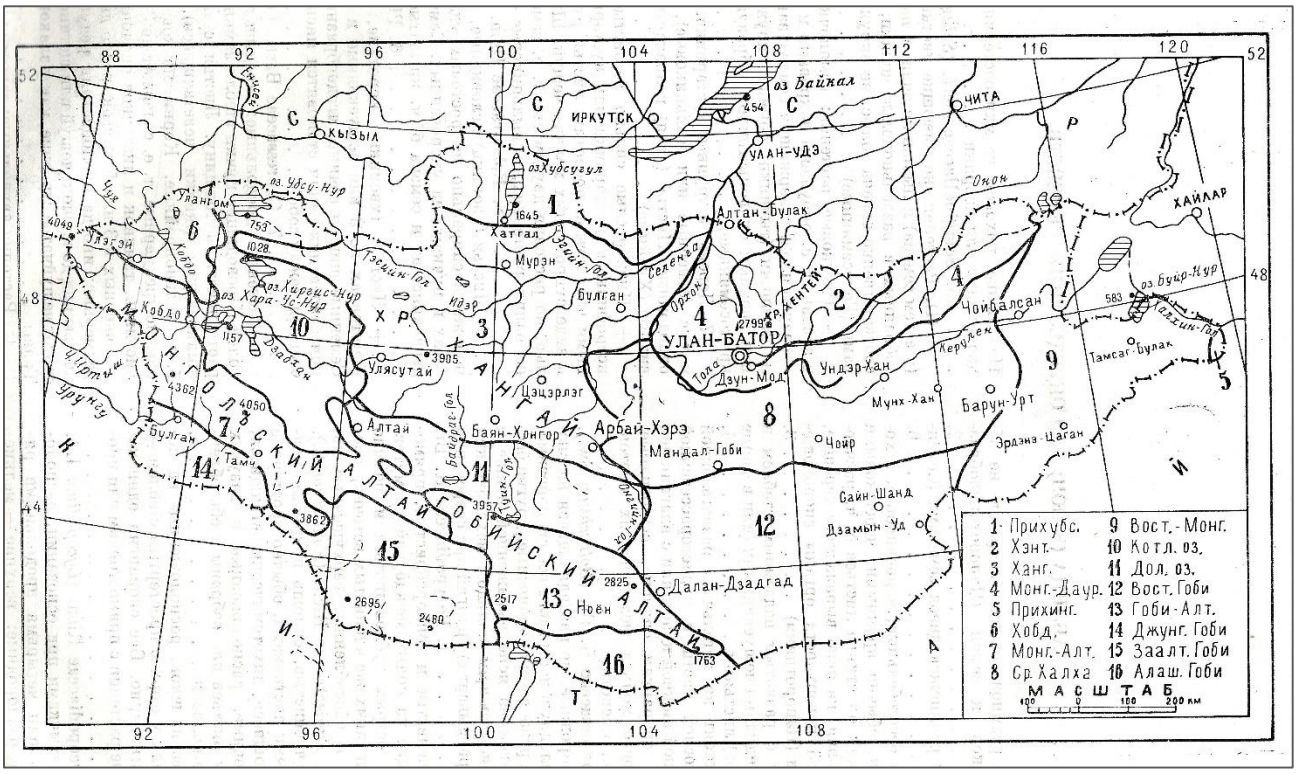
The Flora of Mongolia consists of 3,160 vascular plants that belongs to 684 genera, and 108 families (Urgamal et al. 2014; 2016). Vegetation studies in the Eastern Mongolian Steppes by Dashnyam (1974), Hilbig (1990, 1995, 2003), Hilbig et al. (2012) among others confirmed high floral species richness. Neuffer et al. (2012), for example, recorded 750 plant species (Oyuntsetseg, Wesche et al. 2019).

According to Grubov (1982), Eastern Mongolia is divided into four phytogeographical districts: Mongolian Dauria in the North, Foothills of Great Khingan in the East, Middle Khalkha in the West, and East Mongolia (figure 13). The proposed component parts are mainly located in the Eastern Mongolia district and in the eastern part of Middle Khalkha district.

Middle Khalka district: Totally 793 vascular plant species are recorded which is 25.09 percent of total vascular plants in Mongolia (Urgamal et al. 2016; Oyuntsetseg et al. 2019). The main characteristic plant species of this typical steppe district are *Caragana microphylla, Ulmus japonica, Amygdalus pedunculata, Polygonum divaricatum, Corispermum orientale, Agriophyllum pungens, Corispermum mongolicum, Bassia dasyphylla*, *Euphorbia kozlovii, Atriplex sibirica, Chenopodium hybridium, Oxytropis klementzii, Artemisia changaica*, *Taraxacum collinum*.

Eastern Mongolian steppe district: Totally 972 vascular plants species are recorded which is 30.76 percent of the total vascular plants in Mongolia. Typical plant species are e.g. *Stipa krylovii*, *Stipa baicalensis*, *Festuca litviniovii*, *Astragalus dahuricus*, *Caragana stenophylla*, *Potentilla chinensis*, *Clematis aethusifolia, Androsacea longifolia*, *Euphorbia mandschurica*, *Potentilla semiglabra*, *Sophora flavescens*, *Armeniaca sibirica*, *Thermopsis przewalskii, Olgaea lomonossowii*, *Senecio argunensis*, Serratula centauroides.

The proposed five component parts of the Eastern Mongolian Steppes are situated in the steppe vegetation zone of the general zonation classification of Mongolia (Grubov 1982) in the Middle Khalkha and Eastern Mongolian plant-geographical districts.




*Map 9: Plant-geographical division of Mongolia in districts (Grubov 1982). 4 – Mongolian Dauria, 5 – Foothills of Khingan, 8 – Middle Khalkha, 9 – Eastern Mongolia*

According to the management plans of the three PAs, total number of 858 vascular plant species have been recorded from which 209 plant species are in the Toson Khulstai NR, 110 plant species in the Yaki Lake Nature Reserve, and 539 plant species in Dornod Mongol SPA . For the Jaran Togoo NR and Bayantsagaan Tal NR, there are no vegetation data available until now. Respective comprehensive studies should be completed within the nomination process.

The vegetation communities are mostly dominated by the following plants:*Stipa krylovii, Stipa grandis, Stipa baicalensis, Festuca lenensis, Cleistogenes squarrosa, Leymus chinensis, Agropyron cristatum*, *Artemisia frigida, Saposhnikovia divaricate, Astragalus mongolicus, Allium condensatum, Carex duriuscula, Poa parentensis, Thalictrum petaloideum, Filifolium sibiricum, Convolvulus arvense, Clausia aprica, Puccinellia tenuiflora, Puccinellia hauptiana, Suaeda corniculata, Caragana microphylla, Caragana stenophylla.* Other plant communities include*: Kalidium gracile* in areas of saline soils and salt marshes dominated by *Scirpus rufus, S. planifolium, Ranunculus cymbalaria,* and *Phragmites communis*. Disturbed vegetation cover leaves soil vulnerable to erosion and desertification.

In dry steppe mainly dominate the perennial grasses with 50-90 cm high vegetation cover (Tuvshintogtokh 2014). Most dominant plant grass species is *Stipa krylovii* in steppes with moderate and light grazing intensity in Mongolia, but under the higher grazing intensity *Stipa* decreases and the *Leymus chinensis* and *Carex duriuscula* become dominant (Hilbig 1995; Fernandez-Gimenez & Allen-Diaz 2001). Some areas in steppes of Mongolia are overgrazed where decrease the vegetation cover, productivity of plant species richness, while heavily degraded areas the grasses have disappeared and replaced by *Artemisia* species (MNE 1996).

The Eastern Mongolian Steppes are very sensitive to biotic and abiotic factors. Main threats to the flora and fauna in the steppes are increasing transportation infrastructure, resource extraction and excessive livestock levels, putting at risk outstanding natural values as well as a traditional and formerly sustainable form of livelihood (see chapt. 5).

**Vertebrates:** Despite the immense ecological impact, steppes and rangelands of Mongolia are still home to large herds of freely migrating Mongolian gazelle in the steppes and dry lands, and regionally highly threatened due to hunting, habitat change and diseases.

Lakes, ponds, and wetlands provide stopovers and nesting sites for globally-endangered waterbirds including Swan goose, Relict gull, and several species of cranes (Nyambayar & Tsevenmyadag, 2009). The herds of an estimated 1.5 to 2 million of Mongolian white-tailed gazelles *(Procapra gutturosa)* are an inseparable element of the ecosystem, both inhabiting and shaping it. The steppes are also home to numerous other remarkable vertebrates' species, such as the raccoon dog *(Nyctereutes procyonoides)* and manchurian zokor *(Myospalax psiluru)*. The Eastern Mongolian Steppes also represent the most eastern range of the habitats for a number of species including, Mongolian marmot *(Marmota sibirica)*, Great Bustard *(Otis tarda),* Steppe Eagle *(Aquila nipalensis),* Upland Buzzard *(Buteo hemilasius)*, Short-eared Owl *(Asio flammeus)*, Asian particolored bat *(Vespertilio sinensis),* five-toed pygmy jerboa *(Cardiocranius paradoxus)*, Kozlov's pygmy jerboa *(Salpingotus kozlovi)* and Daurian hedgehog *(Hemiechinus dauricus)*.

**Invertebrates:** Eastern Mongolian Steppes are an important habitat for the invertebrates. There are few surveys of scientists such as Bayartogtokh (2005) who investigated soil biodiversity and ecology, and found 51 species of the very small beetle mites (Oribatida), a very special order of spiders (Arachnida). However, generally there is a lack of studies on invertebrates in Mongolia particularly in the steppe ecosystems.

### 2.3.2 Examples of threatened species

**Plants:** *Saposhnikovia divaricata* [Turcz.] Schischk - This typical steppe plant is a perennial herb from the umbellifer family (Apiaceae), it is glabrous and the rootstock thick (2 cm). It is a medical plant and its root has been widely used in traditional medicine for the treatment of headache, pain, inflammation, and arthritis in China and Korea (Khan et al. 2013; Kong et al. 2013). In addition, it includes anti-inflammatory, analgesic, antipyretic, and antiarthritic properties in pharmacological effects (Khan et al. 2013; Wang et al. 1999). The important role of this species in steppe ecosystem is to balance the soil water and protect against desertification. *Saposhnikovia divaricata* is an endangered species nationally and is listed in the Mongolian Red Book (MEGDT 2015). This species is distributed mainly in Eastern Mongolian Steppes and in north Mongolia (Urgamal 2006), and globally distributed in some parts of the East Asian countries. The main threats are exporting to China for medical products, steppe firing and overgrazing. Currently, species are rapidity decreased in Eastern Mongolia and it is expected to move to the near threatened status nationally. This species is not yet included in the IUCN Red List.

*Euphorbia fischeriana* Steud. (Syn. *E. pallasii* Turcz.) is listed as regionally vulnerable and is recorded in only two regions of Eastern Mongolian Steppes and Khingan Mountain (Urgamal et al. 2014). The species occurs in typical dry steppe and mountain slopes with shrubs (Grubov 1982). It can be found between 600 m and 1000 m at only a few localities in Khalkh River at 1000 m and in the surrounding of Numrug SPA. The species is under numerous threats, especially drought, fires, overgrazing, random cutting, and anthropogenic impact including grazing, tourism, hay-making (Oyuntstseg et al. 2019).

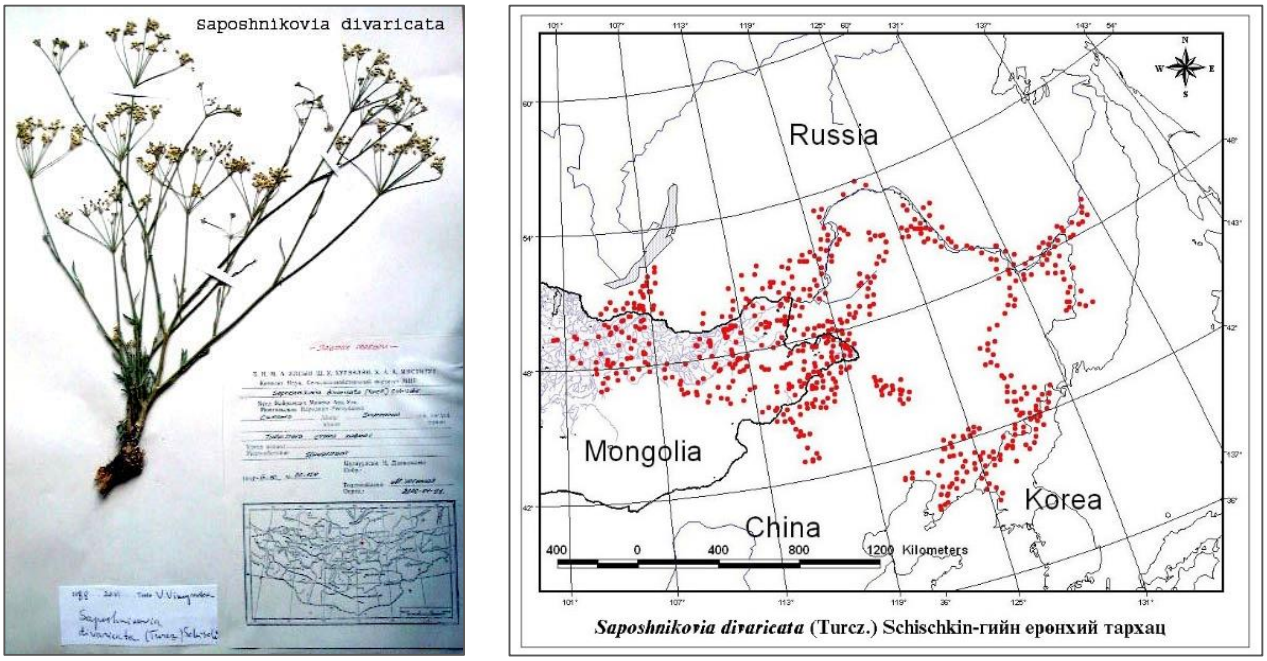



*Figure 3: Saposhnikovia divaricate and its distribution (Source: Urgamal 2006)*

**Vertebrates:** Unlike most other remaining steppe ecosystems the Eastern Mongolian Steppes, compared still cover many thousands of square kilometres supporting massive wildlife populations. Globally and regionally threatened species occurring in the eastern landscape include mammals such as Mongolian gazelle, Pallas's cat, gray wolf, Corsac fox, red fox, as well as birds such as white-naped crane, great bustard, steppe eagle, saker falcon, cinereous Vulture, swan goose, Japanese quail, black-tailed gadwit, Asian Dowitcher and Yellow-breasted Bunting (Table 1).

Two globally significant species of birds and one regionally endangered species of mammal have been identified as being in highest need of conservation activities in the project target soums. These are species that are highly dependent on the steppe ecosystem in Eastern Mongolia, and are threatened by current development. The Mongolian gazelle (*Procapra gutturosa)*, a regionally endangered and restricted range species, is a key mammal species within the entire proposed serial property and conservation actions are needed for the species. The Great Bustard (*Otis tarda dybowskii*)is a globally threatened species and one of the unique species in the dryland landscape. The western part of the target area with river valleys supports the breeding habitat for White-naped Crane (*Antigone vipio)* in Eastern Mongolia.

*Table 1. List of threatened species in target dry landscape in Eastern Mongolia*

| | **Species** | | **Mongolian Red book** | **IUCN status*** | | **Occurrence Status** |
|---|---|---|---|---|---|---|
| **№** | **English** | ***Latin*** | | **Global** | **Regional** | |
| | **Mammals** | | | | | |
| 1 | Mongolian Gazelle | *Procapra gutturosa* | Rare | LC | EN | Breeding |
| 2 | Grey Wolf | *Canis lupus* | | LC | NT | Breeding |
| 3 | Red Fox | *Vulpes vulpes* | | LC | NT | Breeding |
| 4 | Corsac Fox | *Vulpes corsac* | | LC | NT | Breeding |
| 5 | Pallas Cat | *Otocolobus manul* | Rare | NT | NT | Breeding |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Birds | | | | | |
| 6 | White-naped Crane | *Antigone vipio* | Rare | VU | VU | Breeding |
| 7 | Cinereous Vulture | *Aegypius monachus* | - | NT | VU | Breeding |
| 8 | Steppe Eagle | *Aquila nipalensis* | Rare | EN | LC | Breeding |
| 9 | Saker Falcon | *Falco cherrug* | - | EN | VU | Breeding |
| 10 | Asian Dowitcher | *Limosa semipalmatus* | Rare | NT | VU | Breeding |
| 11 | Black-tailed Gadwit | *Limosa limosa* | - | NT | LC | Breeding |
| 12 | Great Bustard | *Otis tarda* | Rare | VU | VU | Breeding |
| 13 | Swan Goose | *Anser cygnoides* | - | VU | NT | Breeding |
| 14 | Japanese Quail | *Coturnix japonica* | - | NT | LC | Breeding |
| 15 | Yellow-breasted Bunting | *Emberiza aureola* | Rare | VU | NT | Breeding |

IUCN status* - List of threatened species of The World Conservation Union (IUCN) Red List Categories and criteria.

Endangered (EN) - A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU) - A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

Near Threatened (NT) - A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

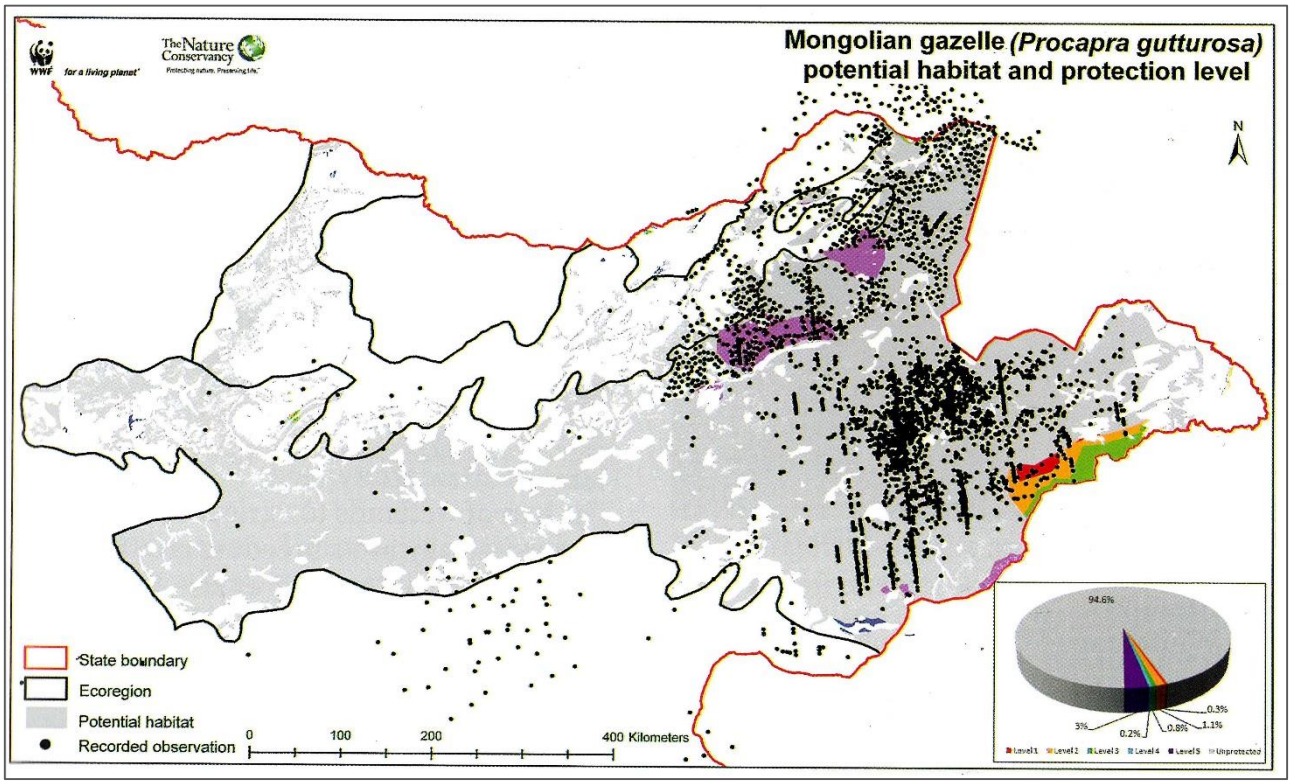
Least Concern (LC) - A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

In the following 3 particularly important species are presented in more detail.

1) Mongolian Gazelle *(Procapra gutturosa)*

**Conservation status:** The Mongolian Gazelle is listed as least concern species (IUCN 2010) and as an endangered species according to the regional assessments (Clark et al. 2006). The species is also included in the Convention on Migratory Species (CMS) Appendix II.

The Mongolian Gazelle is endemic to the Daurian Forest Steppe and the Mongolian-Manchurian Grassland ecoregions and plays a major ecological role in the grasslands (Olson 2009). In the past 50 years, the geographical range of the Mongolian Gazelle has been reduced by about 76% (Figure 14). The vast majority of Mongolian Gazelles are now found within Mongolia, and the species is found in large numbers in only four provinces in eastern Mongolia: Dornod, Khentii, Sukhbaatar and Dornogobi (Lhagvasuren & Milner-Gulland 1997).




*Map 10: Recorded observations of Mongolian gazelle (source: Chimed-Ochir et al. 2010)*

*Figure 4: Mongolian Gazelle in Jarag Togoo NR, Autumn (photo by Gankhuyag.P)*

**Population estimation:** The first scientific report on population numbers was mentioned by A.G. Bannikov, the Russian explorer, and there were about one million individuals of Mongolian gazelle in the territory of Mongolian People's Republic in 1950s (Bannikov 1954).

According to the latest research findings and results, there are 5,724,885 individuals recorded in Mongolia (MAS 2010). Their numbers likewise have declined from, possibly, 18 million to between 1 and 5.5 million (Olson 2005).

**Threats**: The dependence of grassland ungulates on movement and access to forage across large distances increases their vulnerability to habitat fragmentation and exposure to hunting, livestock competition and disease (Berger 2004). Human disturbance associated with increasing resource extraction (particularly oil extraction) constitutes a threat in parts of its range, and areas of high human and livestock density has lead to competition for resources and exposure to diseases such as foot-and-mouth disease and foot rot.

Although harvesting in large numbers and mortality are high in Mongolian gazelle populations, a main cause of its population decrease is intensively developed livestock husbandry and unsustainable use of pastureland.

**Protection:** According to a 2008 study (Mueller et al. 2008), only about 5% of the dry steppe ecosystems in Eastern Mongolia where the Mongolian gazelle population constantly grazes were protected, and only about 3% of the steppe lakes where a large number of Gazelle groups come to drink were protected by State level. In the case of gazelle, because available forage is constantly shifting, annual gazelle movements are nomadic and irregular, covering large distances to follow vegetation growth that follows precipitation (Mueller et al 2008).

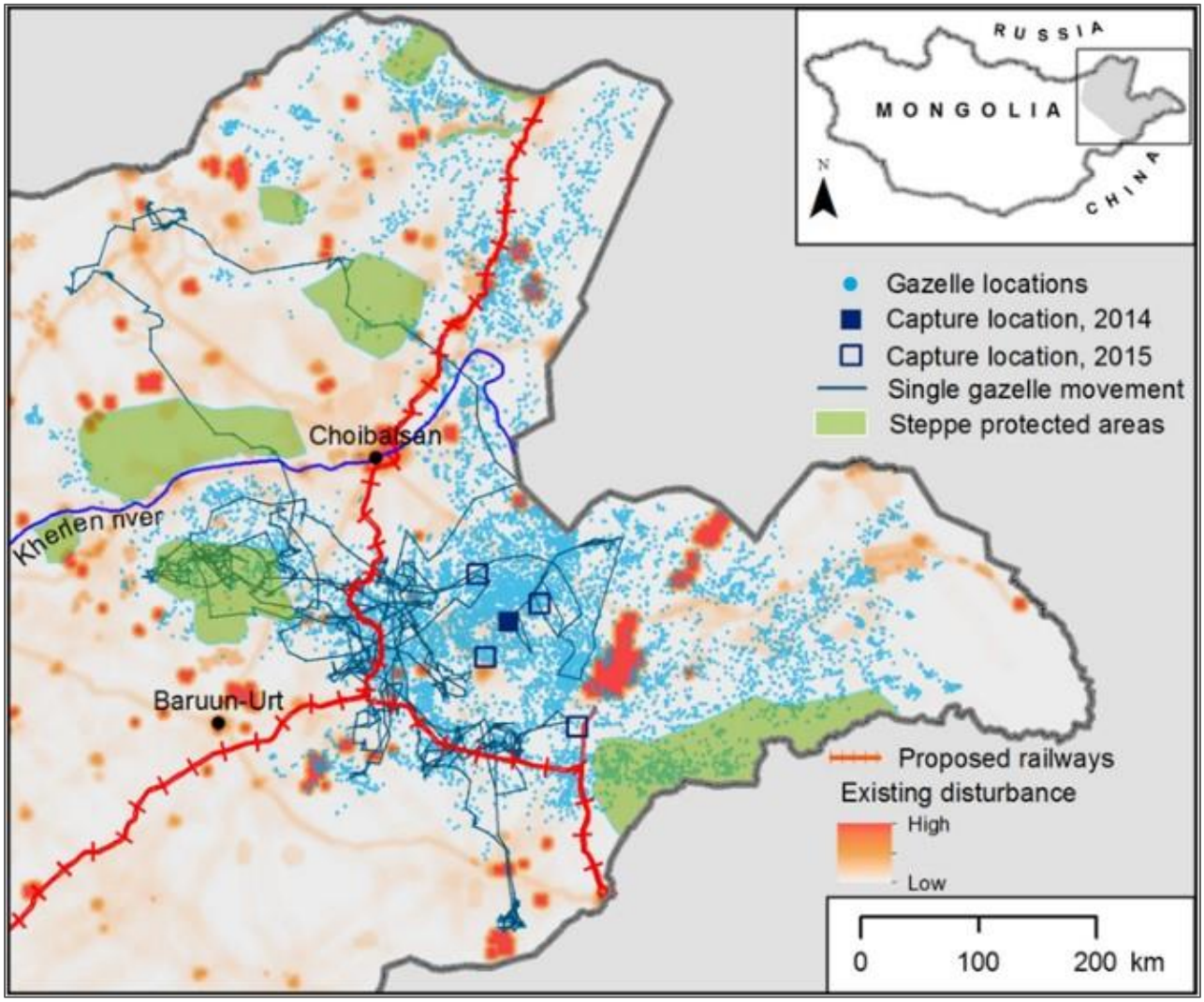
In the target areas, there are 5 protected areas established to protect the grasslands and its biodiversity. The Mongolian Gazelle is one of the key species in the justification of the designations. Those target protected areas are isolated from each other such as Tosonkhulstai, Bayantsagaan and Jaran Togoo NR's. But, for wide-ranging species such as the endangered Mongolian Gazelle, isolated protected areas alone may not effectively conserve the current population (Heiner et al. 2011). One of the key lessons from scientific studies of ecological connectivity is that functional connectivity is a species-specific and a landscape-specific property (Noss & Daly 2006).

Both historically and today, the Mongolian gazelle has had one of the longest migrations among terrestrial animals (Berger 2004). Until the 1930s, this species had a distribution that occupied most of the grasslands in northern China, Mongolia, and southern Russia, but since then its distribution has been reduced to the eastern half of Mongolia and to areas close to the border between Mongolia, China, and Russia. The gazelle distribution is getting more restricted due to infrastructure development. For instance, railway bisects Mongolia's Gobi-Steppe Ecosystem; each part of the ecosystem is still vast. The seasonality of the ungulates' location is a key to evaluate how the railway influences the animals restricted to one side of this barrier.

**Current movement:** In the most recent study (Nandintsetseg et al. 2019) the researchers tracked 22 gazelle individuals for 1–3 years with GPS and used the resulting movement patterns to evaluate conservation strategies associated with their nomadic movements in the intact open plain grasslands of Mongolia and the individuals exhibited a high degree of variability in space use within and between years, often using different wintering areas in different years.

The individual range size varied as much as threefold between years, with an estimated average annual individual range size of ~19,000 km² and a lifetime range of ~100,000 km² (Figure 15).

Comparing simulated and empirical GPS trajectories for the Mongolian gazelle showed that they avoided disturbed areas (e.g. oil fields) and did not prefer protected areas. **Importantly, no single protected area in the region was large enough to cover the annual range of any of the tracked gazelles.**




*Map 11: Distribution and movement of the gazelle in eastern Mongolia (Nandintsetseg et al. 2019)*

**2**) Asian Great Bustard *(Otis tarda dybowskii)*

**Conservation status:** The Great Bustard is classified as globally and regionally "Vulnerable" by the IUCN criteria, based on a declining population and a reduction in habitat occupancy and included in appendix I of the Convention on Migratory Species (CMS) and appendix II of CITES. Hunting in Central and East Asia results in high rates of adult mortality, and land-use changes in Eastern Europe, Russia, Central Asia and Morocco may have a significant impact on this species's population and the extent of its remaining habitat, such that it is likely to decline at a rapid rate over the next three generations. It therefore qualifies as Vulnerable (Birdlife International 2019).

*Figure 5: Asian Great Bustards in the steppe (photo by Gankhuyag.P)*

Asian Great Bustard (*Otis tarda dybowskii)*, this race, disjunct from *O.tarda tarda*, breeds in Mongolia, south-east Russia and north east China, wintering almost entirely in China. Given the large territory over which Asian great bustards range annually, the variety of threats they face, their use of human-dominated landscapes and nomadic behavior outside of the breeding season, it is clear that the conservation of Asian great bustards will require a broad-scale strategy and the integrated management of habitat between governmental agencies across provincial and international boundaries as well as the cooperation of local stakeholders (Boyd et al. 2008).

**Population estimation:** Mongolia has estimated the own bustard population 3 times in 2003-2017. In 2003, the national population was estimated at 1,500-1,700 (Tseveenmyadag 2003) due to livestock grazing pressure in breeding areas reduced cover for nesting birds. In 2011, it estimated as 1,000 mature adults remaining and declines ongoing, therefore it is listed as regionally vulnerable by IUCN criteria (Gombobaatar & Monks 2011). In 2017, national and international experts assessed the Mongolian population and it is estimated as less than 1,000 individuals (Collar et al. 2017). Currently, breeding populations remains in eastern Mongolian steppes including Numrug, Mongol Daguur, Khurkh-Khuiten valley, Onon and Ulz River valleys, south-east Khuvsugul, and adjacent Bulgan provinces in Mongolia (Tseveenmyadag 2001).

Today, the estimated breeding Asian population of bustard is about 2,000 individuals (Russia 380-430, Mongolia 1,000, China 600) however, most breeding sites are near international borders, so estimates may include some double-counts (Collar et al. 2017). Based on current population estimation of Asian bustards, Mongolia holds significant proportion of the species distribution and a half population of Asian bustard has been counted within the Mongolian territory.

But since first estimation in 2003, Mongolian population has declined by nearly 40% (from 1,600 to 1,000) and this rapid decline still ongoing due to not any conservation actions taken at the moment. Therefore, systematic approach, comprehensive surveys and respective conservation measures are

needed to secure all breeding and wintering sites. Poaching including poisoning and collision with powerlines must be addressed across the entire range, and agriculture practices on breeding ground need modification.

**Threats:** This highly migratory population faces many threats across the migratory range including illegal hunting, poisoning, collisions with overhead cabling, poor reproductive rates, and increasing isolation of breeding populations, agricultural intensification, and habitat loss. The expansion of road networks can also degrade the species habitat as well as create disturbance for the species and it has been one of the main threats across its range and is expected to intensify as the paved road network in Mongolia expands (Kessler et al. 2013).

**Migration:** Great Bustard is a key species in the steppe of Eastern Mongolia and isolated breeding populations are recorded along the Ulz Rivers (MBCC 2018). During the migration periods, large numbers of Great Bustards observed in the steppe zone in eastern Mongolia landscape, particularly, in the Kherlen River valley and this river supports suitable roosting habitat for migratory individuals. Migratory bustards use the River as first stopover site during the migration (MBCC 2018).

Researchers from MBCC tracked 8 bustards (6 males and 2 females) from Eastern Mongolia and tracking data (MBCC 2018) shows that Kherlen river provides best roost and foraging habitats for great bustards during their migration periods. Effective pasture management is required for securing the habitat for the species along the river, and national and local protected area management plans should be improved for target areas including Tosonkhulstai, Bayantsagaan and Jaran togoo NR's according to Great Bustard migration behavior (MBCC 2018).

*3)* White-naped Crane *(Antigone vipio*)

**Conservation status:** The White-naped Crane (WNC) *Antigone vipio* is classified as globally and regionally "Vulnerable" by the IUCN criteria, based on a declining population and a reduction in habitat occupancy (Birdlife International 2019).

There are two populations of WNC identified through its global distribution and Mongolia provides suitable habitat for western population of the species. The trends in the two populations noted by the crane experts and it may be attributed to White-naped Cranes shifting from the western (Mongolia and Russia) to the eastern flyway (Korea and Japan) (Mirande & Harris 2019). Alternately, the changes in size of the two populations may be due to conditions on the breeding grounds related to rainfall patterns, which have been distinctly different in the western and eastern parts of the range (Simonov & Dahmer 2008).

*Figure 6: A pair of White-naped Crane, Kherlen River (Photo by Yaya)*

The breeding sites for the majority of White-naped Cranes are found in northeastern Mongolia (Mongol Daguur Strictly Protected Area, Onon River Basin, Khurkh and Khuiten River Valleys, and several other locations), northeastern China and wetlands in southeastern Russia (Mirande & Harris 2019). Approximately **50% of the global population of White-naped Crane** has been documented in Mongolia (Wildlife Conservation Society 2013).

Tosonkhulstai and Yahi Nuur NR's provide suitable nesting site for White-naped cranes and all reed lakes within the Tosonkhulstai NR hold 6-8 pairs of the crane every year. It indicates that small lakes with reeds are important breeding spots in the dry steppe in Eastern Mongolia (Amarkhuu pers.com).

**Threats:** Direct threats to the White-naped Crane (WNC) population in Mongolia, identified by national stakeholders and species experts, included "fire" and "habitat loss" resulting from livestock-based agricultural practices (Gombobaatar & Monks 2011).

In 2019, MBCC team has also conducted another survey of breeding WNC along a 310km stretch of the Kherlen River side (from Bayan-Ovoo soum to Choibalsan soum), and found total 25 territorial pairs of WNC's (1 pair per 12.4km) including 7 breeding pairs with chicks and 21 non-breeding pairs (MBCC 2019). Most of pairs have been recorded along the river valley near Tosonkhulstai NR proposed component part in Eastern Mongolia.

It clearly indicates how the breeding population in Eastern Mongolia is declining due to climate change and habitat loss during the dry seasons. The surveys confirm the importance of shallow wetlands, in areas with low human and livestock pressure as breeding habitat for White-naped Cranes. Also almost 70% of the total territorial pairs along the Kherlen River were non-breeding (MBCC 2019). This large number of non-breeding pairs may limit by nesting site due to unmanaged pasture and high density of herder families along the Kherlen River valley.

## 2.4 Grassland and nomadic culture

Originally the Eurasian steppes were natural ecosystems, existing in ongoing seasonal cycle of perennial vegetation of dominating grasses and accompanying herbal plants, mosses and soil lichens. The diverse and productive vegetation cover was the base of very diverse animal life of invertebrates and vertebrates, in the underground of soil, on the surface and in the air. A large variety of small mammals and huge herds of migrating large herbivores consumed biomass of the vegetation. They were regulated by strong winters and by carnivores like wolf and fox, eagle and other raptors as well. Raven and vultures used the fallen wildlife, and microorganisms decompose the dead plant and animal biomass and fertilize the soil with it. These ecological processes, migrations, food webs and networks of life continue to function today in intact steppe ecosystems.

Thousands of years ago, humans began to use and become part of this ecosystem. Fully adapted to the conditions humans were hunters and gatherers in the Palaeolithic and Mesolithic periods. Flint tools and rock art found across the Eastern Mongolian Steppes remind us of its earliest human inhabitants (Novgorodova 1980, Njam-Osoryn 1984). Over time, the hunter-gatherers shifted to a dairy pastoralism economy during the Bronze Age about 3,000 BCE (Jeong et al. 2020). The livestock of cattle and horses, sheep and goats became the life basis of the nomadic people. All products of livestock were used, the milk for several cheese and drinks, the meat for food, hides and skins for leather and clothing, wool for felt to build the yurts. People and livestock lived in close communities, adapted to the extreme living conditions of the steppe.

Nomads founded 200 BCE the first historically documented empire in the steppes of Central and Eastern Mongolia (Jeong et al. 2020). In the following Centuries rider armies of mobile pastoralists with bow and arrow conquered huge areas of steppe and desert zone in Eurasia. ***"****At its greatest extent, the Mongol empire (1206–1368 CE) spanned nearly two-thirds of the Eurasian continent. It was the world's largest contiguous land empire, and the cosmopolitan entity comprised diverse populations that flowed into the steppe heartland."* (Jeong et al. 2020, p.8). For centuries the steppe was the scene of bloody conflicts between different peoples and tribes of nomads (Kunst- und Ausstellungshalle 2005, Baabar 2005).

On the other hand the traditional mobile pastoralism in Mongolia is an example for integration and adaptation of people in a natural ecosystem. For thousands of years humans are part of the steppe ecosystem. "Wilderness" steppes don't exist for long time ago. The natural steppes have been changed to semi-natural steppes with people and herds of livestock. Because of seasonal migrations and of strong regulations for hunting und pasture, rituals of nature religion and later of Lamaism, the traditional culture of mobile pastoralism for long time was more or less in balance with the natural productivity and resilience of the steppe. People and livestock were in coexistence with the ecosystem, natural resources were used without destroying them.

In the late thirteenth century, Marco Polo described the Mongol transhumance and their *gers* as follow: *"They spend the winter in steppes and warm regions where there is good grazing and pasturage for their beasts. In summer they live in cool regions, among mountains and valleys, where they find water and pasturage. A further advantage is that in the cooler regions there are no horse flies and gad flies or similar pests to annoy them and their beasts. They spend two or three months climbing steadily and grazing as they go, because if they confined their grazing to one spot there would not be grass enough for the multitude of their flocks. They have circular houses made of wood that they carry about with them on four-wheeled wagons wherever they go. The framework of rods is so neatly and lightly constructed that it is light to carry. And every time they unfold the house and set it up the door is always facing south. They also have excellent two-wheeled carts - these are drawn by oxen and camels. And in these carts they carry their wives and children and all they need in the way of utensils."* Polo continues with more that is still apposite*: "And I assure you that the womenfolk buy and sell and*

*do all that is needful for their husbands and households. For the men do not bother themselves about anything but hunting and warfare and falconry"* (Suttie 2005).

The centre of the traditional lifestyle is the yurt, in Mongolian *Ger.* It is a brilliant invention, perfect in form and function, adapted to mobility and different seasons, built with natural materials, proven over many centuries. It is a model of sustainable construction, and a symbol of the traditional lifestyle of the Mongols. The ger is the epitome of mobility and at the same time a place of permanence, continuity and cycle (Knapp 2006).

The existential necessity of a considerate behaviour towards nature found its expression early in the law "Ich zasag" by Dshinghis-Khan in the 13th century. The Lamaism, end of 16th Century introduced to Mongolia, supports the nature-based tradition of mobile pastoralism and exhorts to behave respectfully towards all living things (Knapp & Tschimed-Otschir 1999). However, there are also reports of overgrazing and degradation in historical times, e.g. Przevalsky (1883) said, that "all grazing lands were overloaded by livestock" (Suttie 2005). The whole life of the nomads was strictly regulated in the feudal religious system until the communistic revolution, as documented in excellent fashion in pictures, maps and texts by Batsaikhan (2012).

In the 20th Century the traditional ancient system of nomadism with a wide range of seasonal migration was subject of two major breaks, the communist revolution 1921, and the political changes in 1991:
1) After the communist revolution in 1921 the feudal land ownership came to an end, the monasteries were destroyed in the 1930s and the administrative units of "Banners" were changed to "aimags" (provinces), which are divided into "sums" (districts).

In 1950, a fundamental change took place with the collectivization of the livestock. It decreased the range over which herds could travel and thus reduced opportunities for risk-avoidance in times of feed scarcity. The unit of management during the collective period was the „negdel" covering the same area as a single „Sum". The negdel was primarily an economic unit responsible for marketing livestock products, supplying inputs and consumer goods as well as fodder and transport services to members. It also provided health, education and veterinary services. Although livestock was collectivized, each family was allowed to keep two livestock units per person. So about a quarter of the herd was under private control (Suttie 2005).

Despite some changes and adaptations to the socialist system mobile pastoralism survived in the Mongolian People's Republic. In contrast, attempts to introduce agriculture on a larger scale failed, because of a lack of tradition and mainly because of unsuitable climatic conditions.

2) With the democratic revolution 1991, the country opened up to the world market and globalization. In 1991 the negdels were privatized. Thirty percent of negdels' assets were distributed between members; a further 10 percent of the livestock was distributed to sum inhabitants (administrative and health workers, etc.). The remaining 60 percent of assets was formed into a limited liability company; these companies were generally unsuccessful and the livestock husbandary reverted towards its earlier family-based transhumance (Suttie 2005).

The transformation process in the structure of the mobile livestock husbandary in the 1990s was investigated using the example of Western Mongolia by Janzen and Bazargur (1999). It is representative for the development in entire Mongolia.

With the deregulation of proven rules and communities under the conditions of market economy the livestock increased nearly three times in comparison to 1990. The increase over the past ten years is particularly dreary (fig. 30).

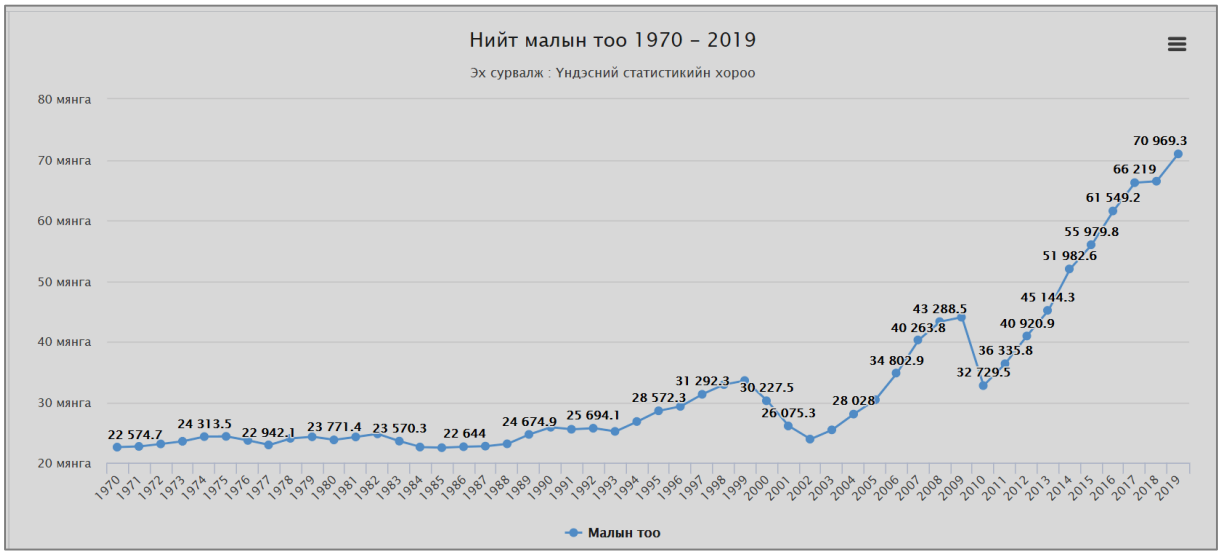



*Figure 7: Development of total livestock in Mongolia from 1970 to 2019 (source: Mongolian statistic databank* https://www.1212.mn/tables.aspx?tbl_id=DT_NSO_1001_021V1&BAG_select_all=0&BAGSingleSelect=_0&TYPE_OF_LIVESTOCK_select_all=0&TYPE_OF_LIVESTOCKSingleSelect=_01&YearY_select_all=1&YearYSingleSelect=&viewtype=columnchart)

Nearly 45% of the total livestock are goats. That are about 30 million animals. The supply cashmere wool, which is in great demand in Chinese and world market. As is well known, goats are particularly damaging to vegetation. The market-driven increase in livestock has led to the dramatic overgrazing and desertification of large parts of Mongolia. Overgrazing ultimately destroys the livelihoods of mobile herders. It is a tragic current development that excessive livestock levels destroys not only the grassland vegetation but also the traditional mobile pastoralism (see chapt. 4).

*„Mobile pastoralism is declining world-wide. But there are still millions of mobile pastoralists; they and their ancestors have faced pressures and opposition for thousands of years and have proven extremely adaptable and resilient. There is no reason to assume that they are going to disappear“* is one conclusion from a global study by Stolton et al. (2019, p. 63).

In Eastern Mongolia the current situation is relatively promising when compared to central and western Mongolia. This offers an opportunity to develop new models to harmonize mobile pastoralism and conservation of steppe ecosystems and their ecosystem functions. World Heritage can be an effective tool to combine the protection of grassland ecosystems with traditional mobile pastoralism, as some examples from all over the World demonstrate. *„Careful use of World Heritage could help mobile pastoralists to build a viable future in key sites, which might also provide positive examples of comanagement that could be applied more widely. The role of World Heritage in these situations is primarily to draw attention to the issues and provide a platform, with some limited authority, for ensuring that mobile pastoralism is treated equitably and positively within sites where it occurs,* (Stolton et al. 2019).

## 2.5 Cultural heritage of Eastern Mongolia

Compared to the Altai Mountains, the vast plains of the eastern Mongolian steppe are poorer in tangible archaeological evidence of the past, but still rich in finds from all periods of early Mongolian history. The intangible heritage is also extraordinarily rich and still alive today in the form of belief systems, rituals, knowledge and practices (Urtnasan 2010).

The close relationship between the steppe as ecosystem and mobile pastoralism as a way of life, the living tradition and the rich cultural heritage were the reason to consider a mixed nomination and to discuss it with the Mongolian cultural heritage experts (Annex E), which made a cultural heritage survey (see Annex F). There general information about Eastern Mongolia, the role of Kherlen River for ancient history and the law on Protection of Cultural Heritage is given. The authors describe archaeological and historical sites with immovable properties, as well as report on ethnographic research and intangible cultural heritage of Eastern Mongolia (Enkhbat & Tsolmon 2020). They come to the following conclusion:

*„The research and survey of cultural heritage necessary for the registration of the Eastern Mongolian Steppes in the World Heritage List, was done on basis of registration and information of historical and cultural immovable properties and intangible cultural heritage elements and its practitioners gathered in the Registration and information state database of cultural heritage at the National Center for Cultural Heritage from the Tsagaan-Ovoo, Khalkhgol, Matad, Gurvanzagal, Sergelen, Kholonbuir soum of Dornod province, Baruun-Urt, Erdenetsagaan soums of Sukhbaatar province, Bayan-Ovoo, Batnorov soums of Khentii province and Barga, Buryat, Dariganga, Uzemchin, and Khamnigan ethnic groups and the specially elaborated survey questionnaire for herder households.*

*The registration and information in the Registration and Information State Database of Cultural Heritage at the National Center for Cultural Heritage proofs that since the ancient time the territory of the Eastern Mongolian Steppe was the cradle of human and it is rich on archeological or historical and cultural immovable properties. Total of 130 historical and cultural immovable properties registered in this area or in the territory of Dornod, Khentii, and Sukhbaatar provinces including 1 historical and cultural immovable property selected for state protection, 6 selected for province protection, 64 selected for soum protection and 59 included in the registration. In addition, a total of 576 ICH practitioners of 159 ICH elements out of 10495 ICH practitioners of 362 ICH elements in the Registration and Information State Database of Cultural Heritage at the National Center for Cultural Heritage were registered from the EMS or Dornod, Sukhbaatar and Khentii provinces.*

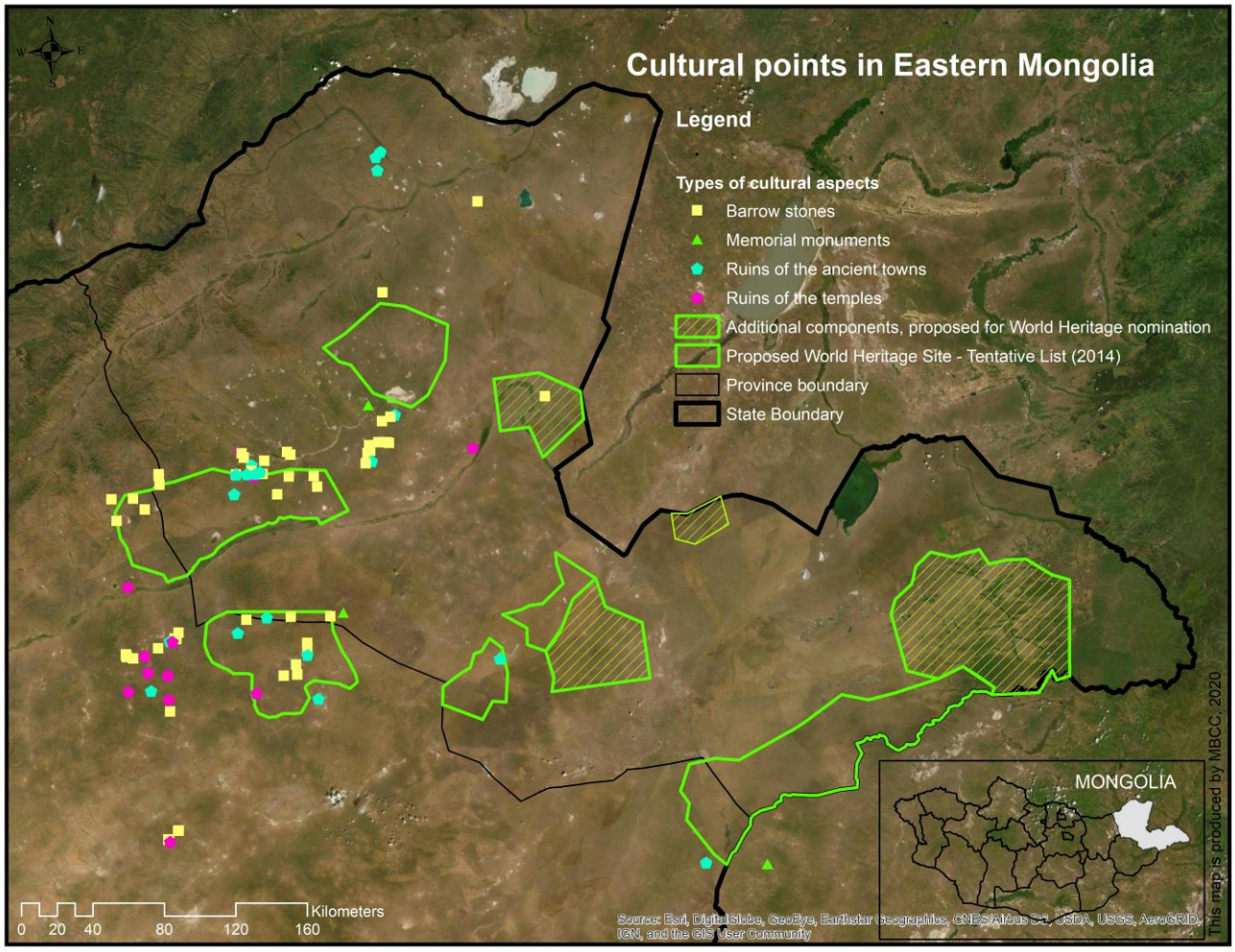
*The field survey was conducted for 4 local administration units and 41 herder households in Matad, Khalkhgol, Kholonbuir soum of Dornod province and Bayan-Ovoo soum of Khentii province for examining the current state and viability of intangible cultural heritage in the EMS, for instance, the traditional technique of making dairy products, traditional knowledge and practice associated with nature and universe, traditional knowledge and practice associated with the herding of livestock and the traditional craftsmanship of harness and fittings for livestock and so on. As a result of the survey, it has clearly seen that the viability of ICH associated with the herding livestock is relatively stable in this area.*
*78 percent of survey attendees (4 local administration units and 41 herder households) highlighted that the most risk factors in their lives and in the ecosystem of EMS are overgrazing, increase of livestock, an increase of gerbil, and migration from other provinces. It was remarkable that 80 percent of survey attendees know the specific characteristics of Eastern Mongolian Steppes that belong to the World Heritage Site and expressed their interest to involve in the protection of this region. Indeed, this survey result shows the potential cooperation with local communities in the protection and research of the Eastern Mongolian Steppes.*

*Although the result of the survey shows that the viability of traditional practices of livestock herding and its associated intangible cultural heritage elements in this region is relatively stable, there are some difficulties observed such as the increase of technics and machines, a decrease of pastureland, and the assimilation of intangible cultural heritage associated with the herding livestock. As of 2020, 4 soums of 2 provinces where the survey has taken have a total of 615749 head of livestock and an additional 64830 head of livestock from other provinces stayed during the winter and most of the livestock are goat, horse, and cattle. In the future, it is necessary to conduct detailed research and survey in this region on the source and capacity of pasture in relation to the head of livestock.*

*In addition, 30 mining exploration licenses and 11 mining exploitation licenses have been issued in 4 soums of these two provinces and it is no doubt that activities related to these mining licenses influence to the ecosystem of the Eastern Mongolian Steppe, the historical and cultural immovable properties in this region, and the viability of intangible cultural heritage and lives of its practitioners. Therefore, it is necessary to conduct additional research and survey on the mining impact in this region.*

*We are confident that this research and survey of cultural heritage, which rooted from the richness of the ecosystem of EMS will make a valuable contribution to the registration of the Eastern Mongolian steppe as a World Heritage Site.*

*The property "Eastern Mongolian Steppes" has the Outstanding Universal Value and provides criteria IX and X as follows, in accordance with the Convention Concerning the Protection of the World Natural and Cultural Heritage (1972) and its Operational Directives. Therefore, the Government of Mongolia has included this property in the National Tentative List in 2014."* (Enkhbat & Tsolmon 2020, p. 39-40).




*Map 12: Distribution of cultural points in Eastern Mongolia (archaeological finds)*

# 3 Potential for Outstanding Universal Value (OUV)

## 3.1 Towards a justification for inscription

### 3.1.1 Outstanding Universal Value (OUV)

"Outstanding Universal Value" (OUV) is a key World Heritage term and concept. Paragraph 49 of the Operational Guidelines defines OUV as follows:

> *Outstanding Universal Value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole. The Committee defines the criteria for the inscription of properties on the World Heritage List.*

OUV has several dimensions, sometimes referred to as the 'three pillars' in the World Heritage arena. All need to be clearly understood, articulated and communicated in any World Heritage nomination. While it is widely known that natural World Heritage candidate sites are expected to feature globally significant nature conservation values, it is less known that this is by no means sufficient. According to paragraph 78 of the OG (see UNESCO / Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage, 2019), "to be deemed of (…) OUV, a property must also meet the conditions of integrity and/or authenticity and must have an adequate protection and management system to ensure its safeguarding."

In other words, there is an unambiguous requirement for any World Heritage candidate site not only to meet one or several World Heritage criteria as defined in the OG, but also to comply with defined conditions of integrity and requirements for protection and management (note that 'authenticity', as understood in a World Heritage context, is not applicable to natural World Heritage nominations).

### 3.1.2 Meeting World Heritage Criteria

The criteria (i) – (vi) are criteria for cultural heritage, criteria (vii) – (x) for natural heritage. The justification can be based on several criteria. They are defined in § 77 of the Operational Guidelines:

> ***77. "****The Committee considers a property as having Outstanding Universal Value (see paragraphs 49-53) if the property meets one or more of the following criteria. Nominated properties shall therefore: […]*
> ***(v)** be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;*
> *[…]*
> ***(vii)** contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;*
> ***(viii)** be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;*
> ***(ix)** be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;*
> ***(x)** contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation."*

For the Eastern Mongolian Steppes three criteria were identified as suitable, one for cultural heritage (v), and two for natural heritage (ix) and (x).

*Criterion (v):* The Eastern Mongolia Steppes are an outstanding example of a traditional human settlement and land-use, which is representative of a culture (mobile pastoralism). They are also an example of human interaction with the vulnerable environment under the impact of irreversible change. The special character of the mobile herding culture in co-existence and co-evolution with the steppe ecosystem is outlined in chapter 2.6. In our opinion the proposed property could meet this criterion also, because of the close relationship between traditional mobile herding and the steppe ecosystem. But it is not mentioned in the Tentative List. In the discussion with cultural experts it was recommended to focus on natural criteria as proposed in Tentative List.

*Criterion (ix):* The proposed area is a comprised of a series of nine large protected areas jointly conserving the best representations of the last intact large-scale temperate grassland ecosystem in the world. The Eastern Mongolian Steppes represent on-going ecological and biological processes of the stipa grassland ecosystem and its native species assemblages that have evolved over thousands of years under pronounced continental climate conditions in interaction between mobile pastoralism and the grassland ecosystem. Adaptation to current climate change, reproduction and migration of large herbivores (Mongolian gazelle) are ongoing biological and ecological processes.

*Criterion (x):* The Eastern Mongolia Steppes are the eastern wing and the last remaining intact part of the largest temperate grassland biome of the Earth, the extensive Eurasian Steppes. They are characterized by large scale, nearly uniform Stipa grassland, which consists of very peculiar steppe species (grasses, perennial herbs, very few woody plants). They support a high diversity of insects, small mammals, birds, large herbivores and predators, which are connected in complex food webs. Most of the species are endemic to the Mongolian-Manchurian Ecoregion. The Eastern Mongolian Steppes are the only remaining natural habitat of the Mongolian gazelle. The protection of undissected large areas of steppe is a condition for the survival of this significant large herbivore species.

### 3.1.3 Integrity

Paragraphs 88 and 90 of the Operational Guidelines define „integrity“ as follows:

***88.*** *Integrity is a measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes. Examining the conditions of integrity, therefore requires assessing the extent to which the property:*

*a) includes all elements necessary to express its Outstanding Universal Value;*

*b) is of adequate size to ensure the complete representation of the features and processes which convey the property's significance;*

*c) suffers from adverse effects of development and/or neglect. This should be presented in a statement of integrity.*

***90.*** *For all properties nominated under criteria (vii) - (x), bio-physical processes and landform features should be relatively intact. However, it is recognized that no area is totally pristine and that all natural areas are in a dynamic state, and to some extent involve contact with people. Biological diversity and cultural diversity can be closely linked and interdependent and human activities, including those of traditional societies, local communities and indigenous peoples, often occur in natural areas. These activities may be consistent with the Outstanding Universal Value of the area where they are ecologically sustainable.*

The proposed component parts include all elements and ecosystem functions of the complex steppe ecosystem. With 9 component parts, which cover around 2.8 million ha, the proposed property is of adequate size to ensure the complete representation of the features and processes which convey the significance of the property. The proposed components of the property are not affected by external impacts like mining, technical infrastructure, and they represent the best remaining temperate grassland in large extension.

### 3.1.4 Protection and Management requirements

Certain parts of the Eastern Mongolian Steppes with extraordinary conservation values have been designated as Specially Protected Areas of Mongolia. They are complemented by many local protected areas at Province level. The parts that have been protected include areas of pristine grasslands that show all characteristics of grassland ecosystems. Currently, in the proposed areas are no major or acute threats to the natural values of the Eastern Mongolian Steppes.

The proposed serial property has preserved the natural characteristics of grassland ecosystems at a very large landscape scale and protects the natural habitat of wild animals where they can migrate and breed freely. There is adequate management and financial resources, and favourable legal environment to continue conserving the various components forming the proposed property.

### 3.1.5 Identification of values

The Eastern Mongolian Steppes boast significant and intertwined natural and cultural values. Natural values of particular note include:

- The vast scale of interrupted grassland with a high degree of naturalness free of technical infrastructure, a true and at this scale unique “Ocean of Grass”,
- The longstanding co-evolution of natural grassland and migratory large herbivores in response to very peculiar and harsh climatic conditions,
- The continued absence of major barriers to seasonal migrations of large herbivores,
- The long-term soil formation and carbon sequestration of grasslands,
- The continuity of all major ecological and biological processes at an exceptionally large scale,
- Vast habitat for the complete assemblage of wildlife adapted to extreme life conditions,
- The resilience to natural disturbances,
- The specific and special adapted biodiversity at all its levels (genetic, species, ecosystems).

Important cultural values include, but are not limited to:

- The origin of ongoing pastoralism in Eastern Central Asia and the longstanding co-evolution of a natural ecosystem and human life, lifestyles, resource use, culture and spiritualism,
- The continuity of many elements of mobile pastoralism with seasonal migrations as a remarkable example for sustainable resource use and way of life,
- The perfect adaptation of rural technologies to both the locally available resources and the requirements imposed by extreme life conditions, e.g. the Mongolian Ger (yurt) serving as the most striking example,
- The rich intangible cultural heritage.

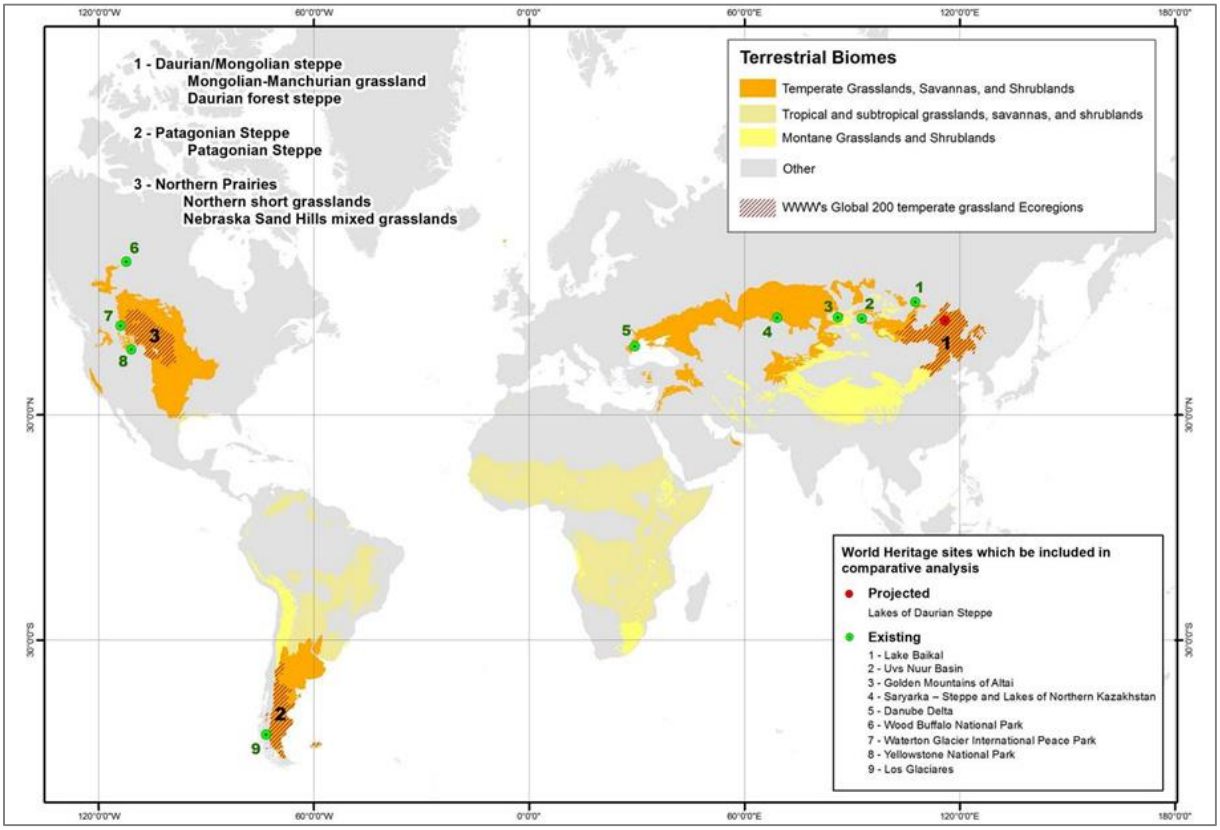
## 3.2 Comparative Analysis

Paragraph 132 of the Operational Guidelines states the following objective for the comparative analysis:

> In section 3.2, a comparative analysis of the property in relation to similar properties, whether or not on the World Heritage List, both at the national and international levels, shall be provided. The comparative analysis shall explain the importance of the nominated property in its national and international context.

### 3.2.1 Temperate grassland regions of the world

The nomination dossier for the Landscapes of Dauria, inscribed in 2017 as transnational serial natural World Heritage property, contains a comprehensive comparative analysis. The subsequent analysis draws on this earlier analysis.




*Map 13: Location of the WH sites that comprise temperate grassland areas, according to the Udvardy classification and WWF Ecoregions (Butorin et al. 2013)*

Map 11 shows the distribution of temperate, tropical-subtropical and montane grasslands of the World. Because of significant differences between this main types, it was considered unhelpful to compare the Eastern Mongolian Steppes with tropical/subtropical and montane grasslands. Rather, this comparative analysis put its focus on the world's temperate grasslands. They cover the semi-arid parts of the nemoral zone in Eurasia ("steppe"), North America ("prairie"), and semiarid part of Austral zone in South America ("pampa").

The vegetation structure of all these temperate grasslands is dominated by grasses and the, great diversity of perennial herbs adapted to harsh life conditions of contrary seasons (short summer / long and cold winter). At the same time, these grasslands sharply differ in terms of species composition, because they belong to different biogeographical realms. A wealth of literature is available about the

ecology, evolution and distribution detailing such similarities and distinctions (e.g. Shantz 1954, Walter 1968, 1974, Archibold 1995, Derbeshire et al. 1997, Schroeder 1998, Suttie et al. 2005, Schultz 2008, Squires et al. 2018, Breckle 2021).

Temperate grasslands are a globally threatened biome. Most of them have been heavily impacted by human activities and have lost their pristine conditions. They have been converted mainly to arable land or were degraded by overgrazing (IUCN 1998, Suttie et al. 2005, Squires et al. 2018). The change of land and resource use from fully adapted traditional mobile pastoralism to more or less intensive agriculture has destroyed temperate grasslands evolved over millennia in just two centuries. Mongolia is the only country in the World with large-scale remaining grasslands., Within the country, the Eastern Steppes boast the most meaningful and intact representation of steppe ecosystems. Within this globally unique steppe extension in Eastern Mongolia, the serial approach - proposed in the Tentative List and confirmed in this study – aims at identifying the areas of highest integrity..

### 3.2.2 Temperate grasslands on the World Heritage List

Grasslands are general underrepresented on the World Heritage List (Thorsell 2003). The above map 11 reminds us that there are very few grasslands inscribed on the World Heritage List. Furthermore, most of them either are located at the boundary of steppe areas or focus on mountain steppes rather than zonal steppes. Often times, such regions and sites have been anthropogenically modified to an extent that they cannot be regarded as true representations of steppes.

There is no World Heritage property fully comparable to the Eastern Mongolian Steppes.
Tropical-subtropical grasslands are represented by four African savannahs: Serengeti National Park and Ngorongoro Conservation Area (mixed) in the United Republic of Tanzania, Garamba National Park in Democratic Republic of Congo, and Manovo-Gounda St. Floris National Park in Central African Republic (https://www.africanworldheritagesites.org/natural-places/savannas.html). They are not comparable with Eurasian steppes. Botswana's Okawango Delta property is as seasonally flooded tropical grassland with important expanses of woodland which is very distinct from temperate grasslands.

There are three properties overlapping with temperate grasslands in in North America: Yellowstone National Park in USA, Waterton Glacier International Peace Park (USA/Canada), and Wood Buffalo National Park in Canada. One property is located in South America (Los Glaciares National Park in Argentina). All encompass temperate grasslands, but it no case does this underpin their inscription.

The following considerations partially draw on the comparative analysis elaborated for the nomination dossier of the Landscapes of Dauria (2013), amended and adapted to the Eastern Mongolian Steppes.

It should be borne in mind that grasslands, prairies, and pampas differ to a significant extent in their climatic and soil conditions, vegetation, fauna, and other parameters, the difference in structure of grassland vegetation being most striking difference. It is therefore obvious that no explicit analogues of the Eastern Mongolian Steppes can be found in North and South America. Moreover, it is obvious that the search for and analysis of possible analogues should be performed within the Eurasian steppe belt and in particular in areas geographically close to Mongolia. Therefore, all above listed grasslands in the Americas were eliminated from the scope of this analysis.

A closer look at Eurasia's temperate zones shows, that grassland vegetation extends over 8000 km as a giant belt roughly from 27° to 127°E and 46° to 55°N), all the way from the lower reach of the Danube River Manchurian Plains in Northeast China. This vast belt boasts a remarkable diversity of types of steppes; each unique and distinct from all others.

The following natural World Heritage properties encompassing or including steppe ecosystems are found in the Eurasian steppe belt: "Danube Delta" (Romania), "Saryarka – Steppe and Lakes of Northern Kazakhstan" (Kazakhstan), "Golden Mountains of Altai" (Russia), "Uvs Nuur Basin"

(Russia/Mongolia), “Lake Baikal” (Russia) and „Landscapes of Dauria“ (Russia/Mongolia) (Table 2). However, as can be seen in Map 13 above, these sites are distributed quite non-uniformly within the steppe belt of Eurasia.

*Table 2: World Heritage Properties in Eurasian Steppe regions (based on https://whc.unesco.org/en/list).*

| World Heritage Site | State Party | Criteria | Year of inscription | Total size [ha] | Steppe type |
|---|---|---|---|---|---|
| Danube Delta | Romania | (vii),( x) | 1991 | 312,440 | Psammophytic steppe of Pontic province / 1% |
| Saryarka | Kazakhstan | (ix), (x) | 2008 | 450,344 | Several steppe types of the west-Siberian – Kazakhstan province 200,000 ha |
| Golden Mountains of Altai | Russian Federation | (x) | 1998 | 1,611,457 | Mountain steppes |
| Uvs Nuur basin | Russian Federation / Mongolia | (ix), (x) | 2003 | 868,064 | Mountain steppes |
| Lake Baikal | Russian Federation | (vii), (viii), (ix), (x) | 1996 | 8,800,000 | Small patches of Siberian mountain steppe |
| Landscapes of Dauria | Russian Federation / Mongolia | (ix), (x) | 2017) | 912,624 | Daurian steppe |

According to the scheme proposed by Lavrenko et al. (1991), the Eurasian grassland region is subdivided into the broad Black Sea – Kazakhstan (Pontic – South-Siberian according to Meusel et al. 1968-1992) and Central Asian (Daurian – Mongolian) subregions based on climatic, floristic and phenotypic differences. The grasslands in the Black Sea – Kazakhstan subregion are influenced by Atlantic west-side climate of Eurasia with main precipitation in winter and spring, and dry summers, whereas Central Asia (in the sense of Russian and German biogeographers) is influenced by Pacific east-side climate of Eurasia. Precipitation mainly occurs in the summer following an extended dry period including spring (Figure 8).

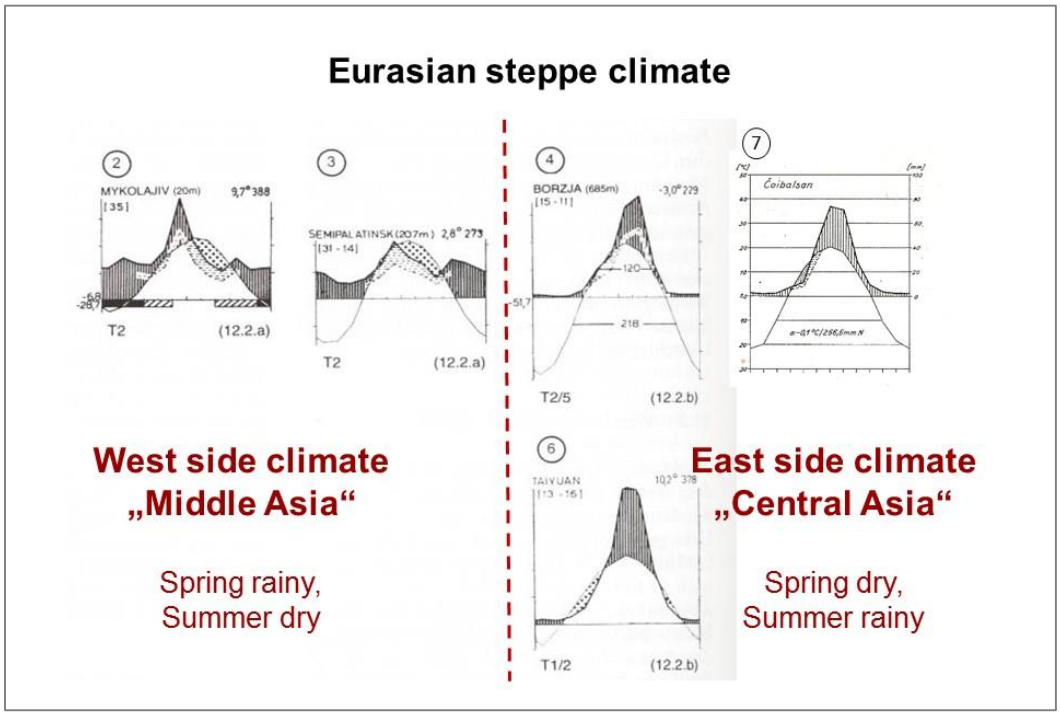
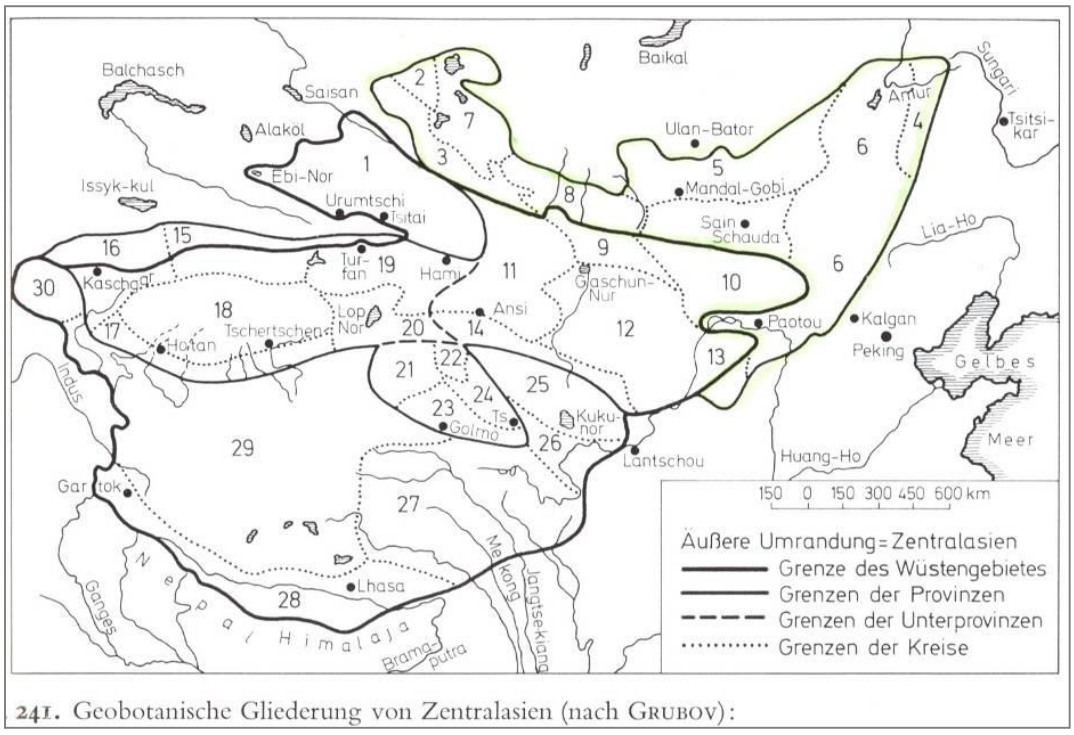



*Figure 8: Eurasian steppe climate, differences between Middle Asia and Central Asia (after Walter 1974, Schroeder 1998)*




*Map 14: Geobotanical division of Central Asia (after Grubov). It is divided in the Mongolian (2-24) and the Tibetian (25-30) provinces (nr. 1 Dsungaria belongs to Middle Asia). The districts 2-8 shape the sub-province of Mongolian steppes (Walter, 1974, p. 299).*

There are two natural World Heritage properties in the Black Sea – Kazakhstan Steppe:

Danube Delta: *"The waters of the Danube, which flow into the Black Sea, form the largest and best preserved of Europe's deltas. The Danube delta hosts over 300 species of birds as well as 45 freshwater fish species in its numerous lakes and marshes"* (https://whc.unesco.org/en/list/588).

The Danube Delta WHS is mainly a wetland area, which includes a small part (1%) of Psammophytic steppes of very special species composition in a forest steppe complex together with oak woodland. It is quite different from the Eastern Mongolian Steppes.

Saryarka – Steppe and Lakes of Northern Kazakhstan:
*"Saryarka - Steppe and Lakes of Northern Kazakhstan comprises two protected areas: Naurzum State Nature Reserve and Korgalzhyn State Nature Reserve totalling 450,344 ha. It features wetlands of outstanding importance for migratory water birds, including globally threatened species, among them the extremely rare Siberian white crane, the Dalmatian pelican, Pallas's fish eagle, to name but a few. These wetlands are key stopover points and crossroads on the Central Asian flyway of birds from Africa, Europe and South Asia to their breeding places in Western and Eastern Siberia. The 200,000 ha Central Asian steppe areas included in the property provide a valuable refuge for over half the species of the region's steppe flora, a number of threatened bird species and the critically endangered Saiga antelope, formerly an abundant species much reduced by poaching. The property includes two groups of fresh and salt water lakes situated on a watershed between rivers flowing north to the Arctic and south into the Aral-Irtysh basin."* (https://whc.unesco.org/en/list/1102/).

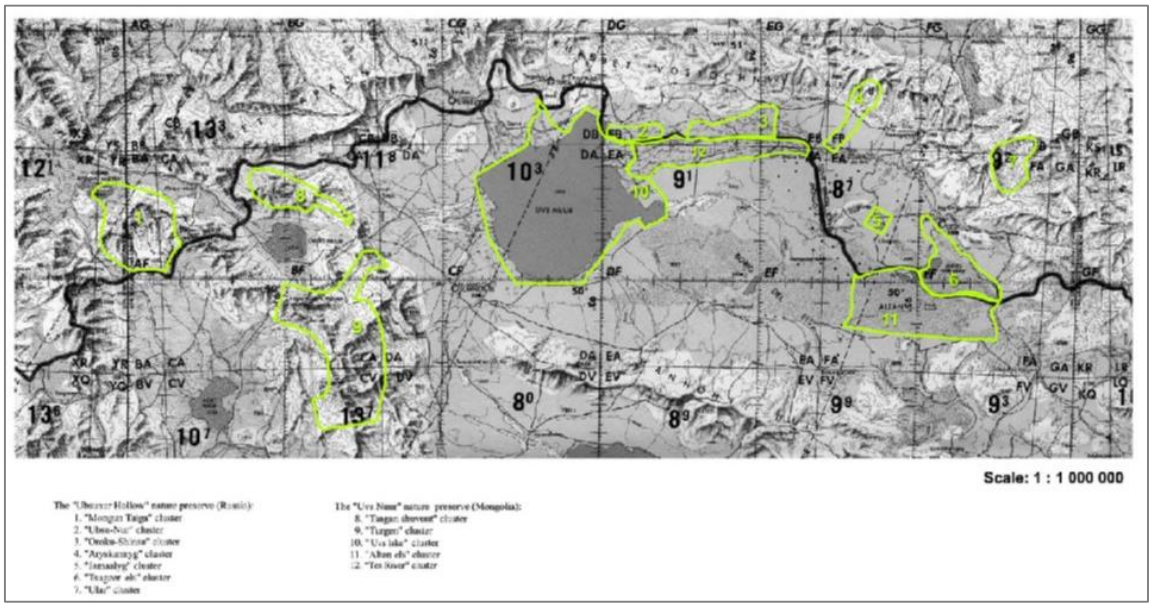
Unlike the Danube Delta, steppe is a principal ecosystem covering nearly the half of the property. The OUV of Sayarka is based on the combination of steppe vegetation, steppe lakes and wetlands with special focus on migratory birds and Saiga antilope. Despite similarities in terms of vegetation structure, it is important to note that the species composition differs significant from the Eastern Mongolian Steppes.

Golden Mountains of Altai: „*The Altai mountains in southern Siberia form the major mountain range in the western Siberia biogeographic region and provide the source of its greatest rivers – the Ob and the Irtysh. Three separate areas are inscribed: Altaisky Zapovednik and a buffer zone around Lake Teletskoye; Katunsky Zapovednik and a buffer zone around Mount Belukha; and the Ukok Quiet Zone on the Ukok plateau. The total area covers 1,611,457 ha. The region represents the most complete sequence of altitudinal vegetation zones in central Siberia, from steppe, forest-steppe, mixed forest, subalpine vegetation to alpine vegetation. The site is also an important habitat for endangered animal species such as the snow leopard."* (https://whc.unesco.org/en/list/768).

This World Heritage property encompasses a complex mountain landscape from the coniferous forest belt of the Siberian Taiga up to alpine tundra of high mountains. Diverse types of mountain grassland cover less than 10% of the property. However, the ecological conditions and the composition considerably differ from the Eastern Mongolian Steppes.

Uvs Nuur Basin: *„The Uvs Nuur Basin (1,068,853 ha), is the northernmost of the enclosed basins of Central Asia. It takes its name from Uvs Nuur Lake, a large, shallow and very saline lake, important for migrating birds, waterfowl and seabirds. The site is made up of twelve protected areas representing the major biomes of eastern Eurasia. The steppe ecosystem supports a rich diversity of birds and the desert is home to a number of rare gerbil, jerboas and the marbled polecat. The mountains are an important refuge for the globally endangered snow leopard, mountain sheep (argali) and the Asiatic ibex."* (https://whc.unesco.org/en/list/769).

The Uvs Nuur Basin is a very complex landscape with extreme altitudinal gradient. It includes a large lake and wetlands, deserts, mountain steppe and high mountain grassland at the western border of Mongolian steppes to the Siberian taiga. Mountain steppes cover up to a quarter of the property. They are quite different from Eastern Mongolian steppes.




*Map 15: Topographic map of Uvs Nuur Basin World Heritage property with 12 component parts.*

Lake Baikal: *„Situated in south-east Siberia, the 3.15-million-ha Lake Baikal is the oldest (25 million years) and deepest (1,700 m) lake in the world. It contains 20% of the world's total unfrozen freshwater reserve. Known as the 'Galapagos of Russia', its age and isolation have produced one of the world's richest and most unusual freshwater faunas, which is of exceptional value to evolutionary science."* (https://whc.unesco.org/en/list/754).

The OUV of Lake Baikal World Heritage property is based on the uniqueness of the Lake. The terrestrial part includes small patches of mountain steppes within Siberian taiga forests. However, these steppes represent extra-zonal inclusions within the taiga forest zone, which can be explained historically, climatologically and by the presence of carbonate rocks. Otherwise, Lake Baikal and the Eastern Mongolian Steppes are distinct to the point that a direct comparison of these landscapes is futile in a World Heritage context.

Landscapes of Dauria: *„Cyclical climate changes, with distinct dry and wet periods lead to a wide diversity of species and ecosystems of global significance. The different types of steppe ecosystems represented, such as grassland and forest, as well as lakes and wetlands serve as habitats for rare species of fauna, such as the White-naped crane, Great Bustard, Relict Gull and Swan goose, as well as millions of vulnerable, endangered or threatened migratory birds. It is also a critical site on the transboundary migration path for the Mongolian gazelle.*

*Shared by Mongolia and the Russian Federation, the Landscapes of Dauria is a transboundary serial World Heritage property of four component parts. It is an outstanding example of the Daurian steppe ecosystem, which covers over 1 million square kilometers, extending from Eastern Mongolia to Russian Siberia and into North-Eastern China. The serial property covers a total of 912,624 ha and comprises several protected areas in the northern part of the Daurian steppe ecoregion which occupy large areas of the transition from taiga to desert, including various steppe ecosystems. The inscribed property includes the nationally designated core and buffer zones of most of the Daursky State Nature Biosphere Reserve and the Valley of Dzeren Federal Nature Refuge (Russian Federation), as well as the core zone and a large part of the buffer zone of the Mongol Daguur Strictly Protected Area and the Ugtam Nature Refuge (Mongolia). Most of this property is surrounded by a World Heritage buffer zone of 307,317 ha, which overlaps with Ramsar sites and UNESCO Biosphere Reserves in both countries (Mongol Daguur in Mongolia and Torrey Lakes in the Russian Federation).*

*The main natural value of the property resides in its intact steppe systems (including forest steppe), interspersed with wet meadows and floodplains, at the convergence of three floristic provinces*

*belonging to three floristic regions. This exceptional ecological context results in a diverse combination of ecological complexes which derive from the cyclic climatic and hydrological variations over the year. The property provides key habitats for rare fauna species such as White-naped Crane, Great Bustard and millions of migratory birds of other species, including vulnerable, endangered or threatened species. The property is also an important area of the migration routes of the Mongolian Gazelle (Dzeren) and the major known place where this species breeds in the Russian Federation at the present time. The property also provides sanctuary to endangered Mongolian Marmots (Tarbagan), as well as to the near-threatened Pallas Cat.*

*The property provides key habitats for rare fauna species such as the White-naped Crane, the Great Bustard and millions of other vulnerable, endangered or threatened species of migratory birds. The property is also an important area on the migration route of the Mongolian Gazelle (Dzeren) and the only place where this species is known to breed in the Russian Federation. The property also provides sanctuary to both endangered Tabargan and Mongolian Marmots, as well as to the near-threatened Pallas Cat.*

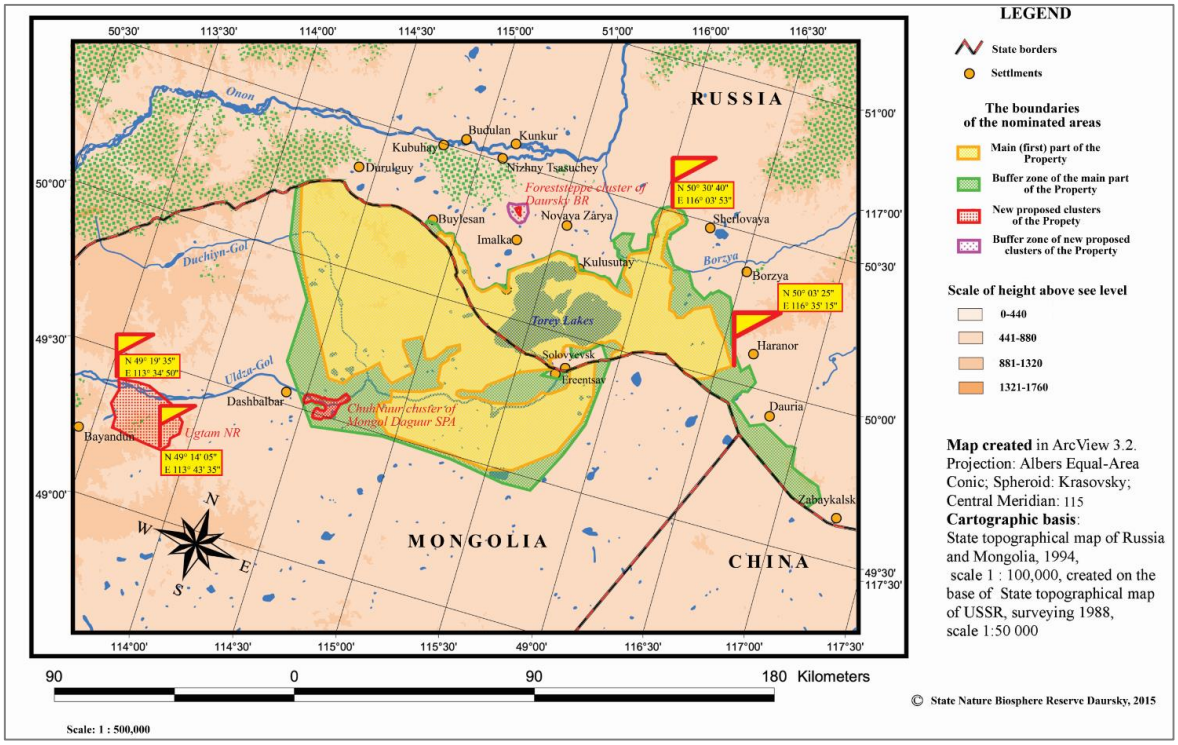
***Criterion (ix):** The Landscapes of Dauria contains substantial and relatively undisturbed areas of different types of steppe, ranging from grassland to forest, as well as many lakes and wetlands. All these habitats host a diversity of species and communities characteristic of the northern part of the vast Daurian Steppe ecoregion. Cyclic climate changes with distinct wet and dry periods lead to high species and ecosystem diversity which is globally significant and offers outstanding examples of ongoing ecological and evolutionary processes. The property also includes key natural habitats for many animal species during their annual migration, some of which also breed in the area. The high diversity of ecosystems, biotopes and their transition-zones in the property is indicative of the many evolutionary adaptive processes undergone by species living in this unique area.*

***Criterion (x):** The transboundary serial property conserves an excellent example of Daurian steppe and its characteristic wildlife including a number of globally threatened bird species (White-naped Crane, Hooded Crane, Swan Goose, Relict Gull, Great Bustard and Saker Falcon) as well as the endangered Tarbagan Marmot. It also provides essential breeding and resting habitat for birds along the East Asian-Australasian Flyway, with up to 3 million birds in spring and 6 million in autumn using the area during migration. The property also provides critical winter grounds and seasonal transboundary migration routes of the emblematic Mongolian Gazelle."* (https://whc.unesco.org/en/list/1448).

The steppes in the Landscapes of Dauria are of course very close and similar to the Eastern Mongolian Steppes. Both are significant representations of the Mongolian-Manchurian steppe ecoregion and they transition into each other. Despite many similarities, however, there are also pronounced differences. The OUV of the Landscapes of Dauria rests on the transitional character of the Daurian region as an ecotone between the vast boreal coniferous forests and the Central Asian steppes and deserts. It is a complex mosaic of a Daurian steppe landscape interspersed with forest patches. The long-time hydrological cycle of the Torey Lakes is a significant phenomenon of the World Heritage property. The Daurian steppes also differ from the Eastern Mongolian Steppes in their floristic composition. The steppes of the Landscapes of Dauria represent only a very small and highly peculiar part of the vast Mongolian-Manchurian steppe ecoregion.

A future separate nomination of the Eastern Mongolian Steppes has already been discussed during the nomination process of the Landscapes of Dauria, as documented in the dossier: "*It should be noted in conclusion that the process of this nomination expansion should take into account the location of a number of steppe protected areas of North-Eastern Mongolia lying further south, in the middle of Manchurian-Mongolian Grasslands - Dornod, Numreg, Toson Khulstai, Yakh-Nur, Lkhanchivadat."* (Landscapes of Dauria 2013). As result a natural meridional cluster "transect", reflecting the transition from the south taiga of Russia into the steppes of Central Asia would be formed in the heart of Eurasia.

In the World Heritage evaluation report (IUCN (2017) encourages the state parties to consider future expansion in order to cover additional areas with critical habitats for migratory birds and those associated with the migration of the Mongolian Gazelle. This recommendation was endorsed by the World Heritage Committee in its decision 41 COM 8B.6 (Kraków, 2017).




*Map 16: The Landscapes of Dauria World Heritage property (https://whc.unesco.org/en/list/1448).*

## 3.3 Nomination Options

### 3.3.1 Serial approach

The Operational Guidelines define serial properties in paragraph 137:

*„Serial properties will include two or more component parts related by clearly defined links:*

*a) Component parts should reflect cultural, social or functional links over time that provide, where relevant, landscape, ecological, evolutionary or habitat connectivity.*

*b) Each component part should contribute to the Outstanding Universal Value of the property as a whole in a substantial, scientific, readily defined and discernible way, and may include, inter alia, intangible attributes. The resulting Outstanding Universal Value should be easily understood and communicated.*

*c) Consistently, and in order to avoid an excessive fragmentation of component parts, the process of nomination of the property, including the selection of the component parts, should take fully into account the overall manageability and coherence of the property (see paragraph 114).*

*and provided the series as a whole – and not necessarily its individual component parts – is of Outstanding Universal Value.“*.

In the Tentative List a serial property is proposed. It is needed to reflect the huge extension and different types of the Eastern Mongolian Steppes and landscape elements within them, and to consider the critical habitats and migration routes of the Mongolian gazelle.

### 3.3.2 Cultural landscape approach

Because of the long-time relationship between the steppes and mobile pastoralism the question of the nomination as cultural landscape has been discussed. The Operational Guidelines define cultural landscapes in paragraph 47:

> *„Cultural landscapes are cultural properties and represent the "combined works of nature and of man" designated in Article 1 of the Convention. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal."*

The Eastern Mongolian Steppes represent an example of "combined works of nature and of man", but the steppe is a natural ecosystem, which existed before humans and could exist without man. The nomads integrated into the steppe ecosystem without fundamentally changing it. The mobile pastoralism depends from ecosystem, but the ecosystem does not functionally depend on use by domestic livestock.

### 3.3.3 Mixed nomination approach

The mixed approach also has been discussed together with experts from cultural heritage (see Annexes E, F). The idea is to link cultural values, such as archaeological sites and the living tradition of mobile pastoralism to the conservation of the steppe ecosystem in the formal nomination approach. The Operational Guidelines define mixed cultural and natural heritage in paragraph 46:

> *„Properties shall be considered as "mixed cultural and natural heritage" if they satisfy a part or whole of the definitions of both cultural and natural heritage laid out in Articles 1 and 2 of the Convention."*

A current example it the nomination of the "Highlands of the Mongolian Altai" which Mongolia submitted in early 2021 under four cultural criteria (ii), (iii), (iv), (v) and natural criterion (x). With thousands of petroglyphs, graves, tombs, deer stones from all periods of Mongolian history the Mongolian Altai is exceptionally rich in substantial cultural heritage as well as living traditions of the nomads.

In the case of the Eastern Mongolian Steppes, the mixed approach could be interesting under criterion (v) in addition to (ix) and (x). However, despite numerous archaeological sites (see fig. 31) and rich threatened intangible heritage, a mixed nomination would be much more complicated and would need much more time. The participants of the cultural expert workshop in June 2020 in Ulaanbaatar endorsed a nomination of the Eastern Mongolian Steppes under natural criteria while strongly emphasizing and fully taking into account the ongoing human history of these grasslands.

### 3.3.4 Natural heritage

Natural heritage is defined in Article 2 of the World Heritage Convention and in paragraph 45 of the Operational Guidelines:

> Article 2
> *„For the purposes of this Convention, the following shall be considered as "natural heritage":*

*- natural features consisting of physical and biological formations or groups of such formations, which are of Outstanding Universal Value from the aesthetic or scientific point of view;*
*- geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of Outstanding Universal Value from the point of view of science or conservation;*

Paragraph 45
*- natural sites or precisely delineated natural areas of Outstanding Universal Value from the point of view of science, conservation or natural beauty."*

Although vast steppes under endless skies and their constantly changing lights and colours undoubtedly have major aesthetic values, it would be difficult to argue that the Eastern Steppes would stand out in this regard. For this reason, the application of criterion (vii) was not deemed appropriate. Criterion (viii), commonly referred to as the "geological criterion" can be excluded because the geology and geomorphology of the Eastern Mongolian Steppes does not stand out globally in any way.

Criteria (ix) and (x) are confirmed as the most suitable and promising natural criteria underpinning the OUV of the Eastern Mongolian Steppes. The nomination under natural criteria (ix) and (x) is therefore recommended in line with the Mongolian Tentative List.

## 3.4 Proposed component parts for a serial property

The property to be nominated will be named **Eastern Mongolian Steppes**. It is a serial property, for which 9 component parts as listed in Table 3 were taken into consideration. The Tentative List already contains five components (I-V). They should be completed by four additional areas (VI-IX). Nearly all proposed component parts are located in Dornod Aimag, Toson Khulstai extends into the Khentii Aimag, Bayantsagaan NR is situated mainly in Sukhbaatar Aimag (see map 26).

The components included in the Tentative List would form the backbone of a coherent regional protected area approach representing a meaningful part of the vast steppe ecosystem. It is important to understand that the already inscribed World Heritage property "Landscape of Dauria", shared by Mongolia and the Russian Federation, is ecologically markedly distinct from the steppes under consideration in this project proposal.

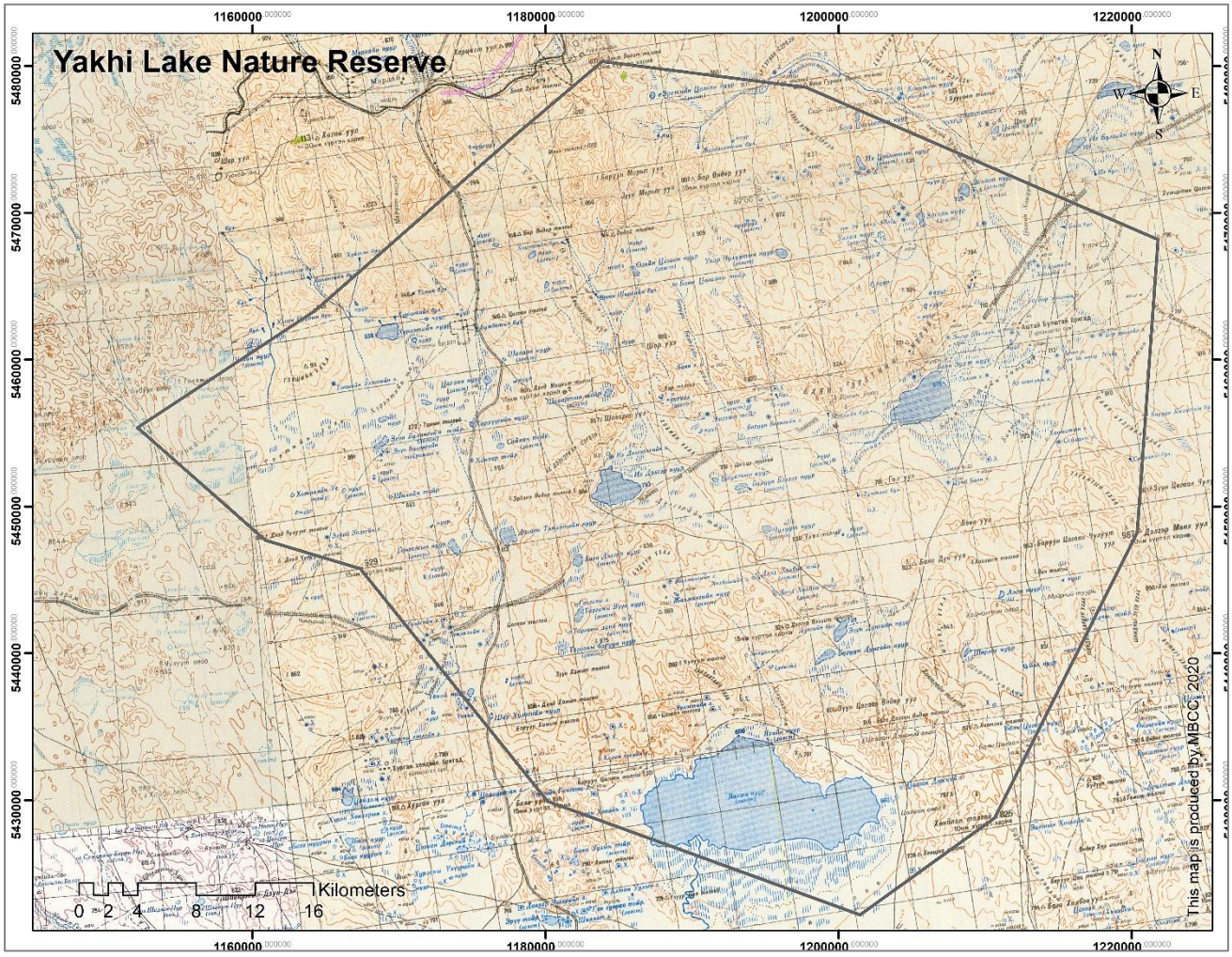
*Table 3: Possible component parts of the proposed property*

| No. | Name | Region | Central coordinates | Size (ha) | Source | Map No. |
|---|---|---|---|---|---|---|
| **I** | Yakhi Nuur Nature Reserve | Located in Sergelen, Gurvanzagal, Choibalsan soums of Dornod province | N48.8186, E114.2061 | 251,388 | MET 2016 | 17 |
| **II** | Toson Khulstai Nature Reserve | Located in Khulunbuir, Bayantumen, Tsagaan-Ovoo soums of Dornod province, BayanOvoo, Norovlin soums of Khentii province | N48.0921, E112.9709 | 469,928 | MET 2019 | 18 |
| **III** | Bayantsagaan Steppes Nature Reserve | Located in Sukhbaatar, Munkhkhaan soums of Sukhbaatar province | N47.3606, E113.3050 | 332,362 | MET 2019 | 19 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **IV** | Jaran Togoo Steppes Natural Reserve | Located in Matad soum of Dornod province | N47.1488, E115.3019 | 188,609 | MET 2019 | 20 |
| **V** | Dornod Mongolia Strictly Protected Area | Located in Matad, Khalkhgol soums of Dornod province, Erdenetsagaan soum of Sukhbaatar province | N46.6294, E117.0883 | 589,906 | MET 2016 | 21 |
| **VI** | Adjacend area of Dornod SPA and Numrug SPA | Located in Khalkhgol soum of Dornod province | N47.114603, E118.380857 | 614,908 | | 22 |
| **VII** | Menengiin tsagaan khooloi NR | Located in the North of Matad soum in Dornod province, along the state boundary | N 47.785806, E 116.526617 | 45,748 | | 23 |
| **VIII** | Adjacent area of Jaran togoo tal NR | Located in the North-West of Matad soum in Dornod province | N47.258331, E115.644692 | 228,973 | | 24 |
| **IX** | Khalkh Tavan Uul | Located in the North-East of Bayantumen soum, small part in the South of Choybalsan soum in Dornod province | N48.492823, E115.483936 | approx. 145,000 | | 25 |
| | Area of proposed components of the Tentative List (I – V)<br>Area of proposed additional components (VI-IX) | | | 1.832 Mio<br>1.034 Mio | | |
| | **Total area** | | | **2.867 Mio** | | **26** |

I. Yakhi Nuur Nature Reserve

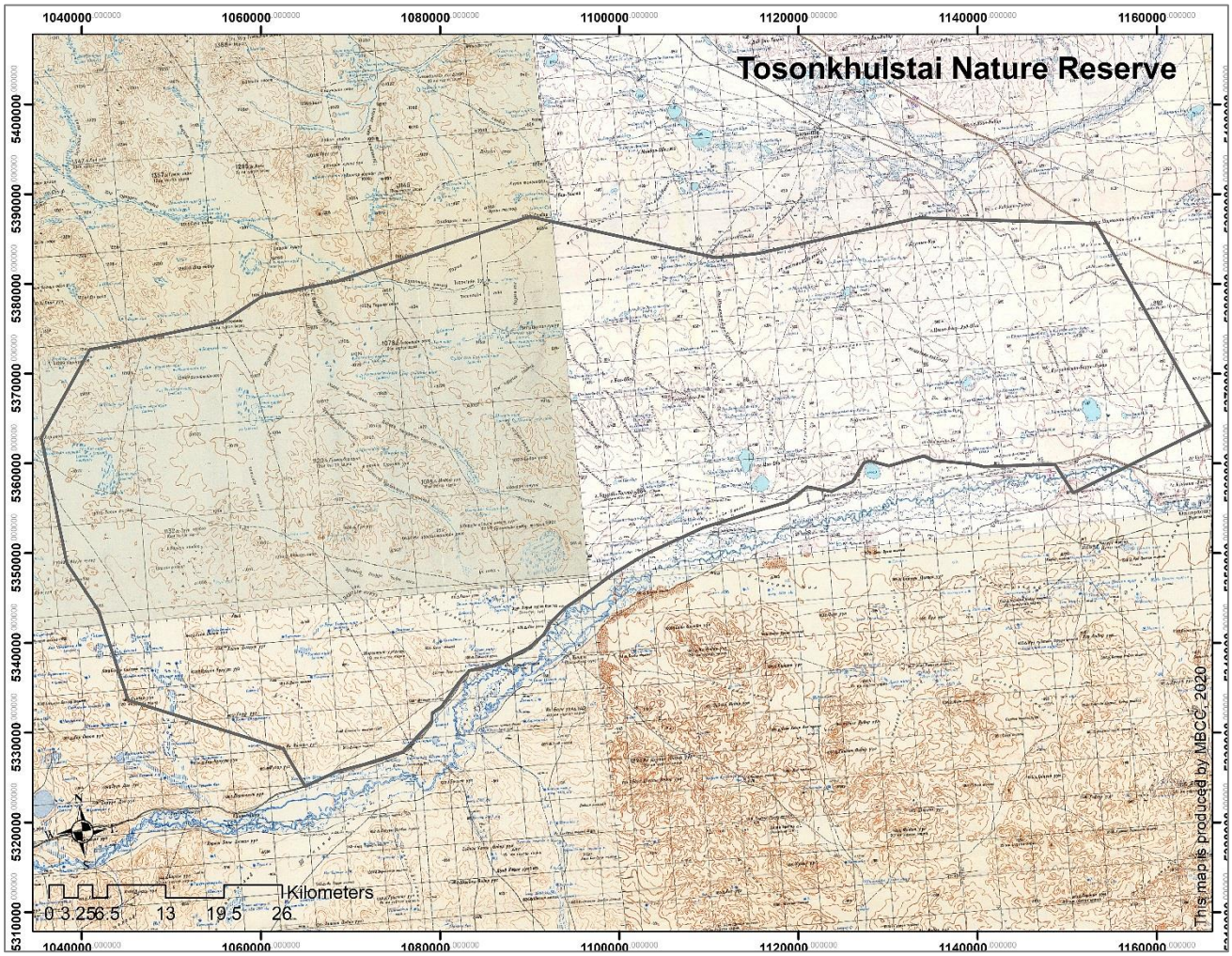
The Yakhi Nuur is a salty lake its surrounding grassland steppes are important feeding sites of migrating birds and dominated the *Stipa* communities including various endangered plant species which is one of the main resting and feeding habitat for Mongolian Gazelles as well as other wildlife.




*Map 17: Component part I. Yakhi Nuur Nature Reserve*

II.Tosonkhulstai Nature Reserve

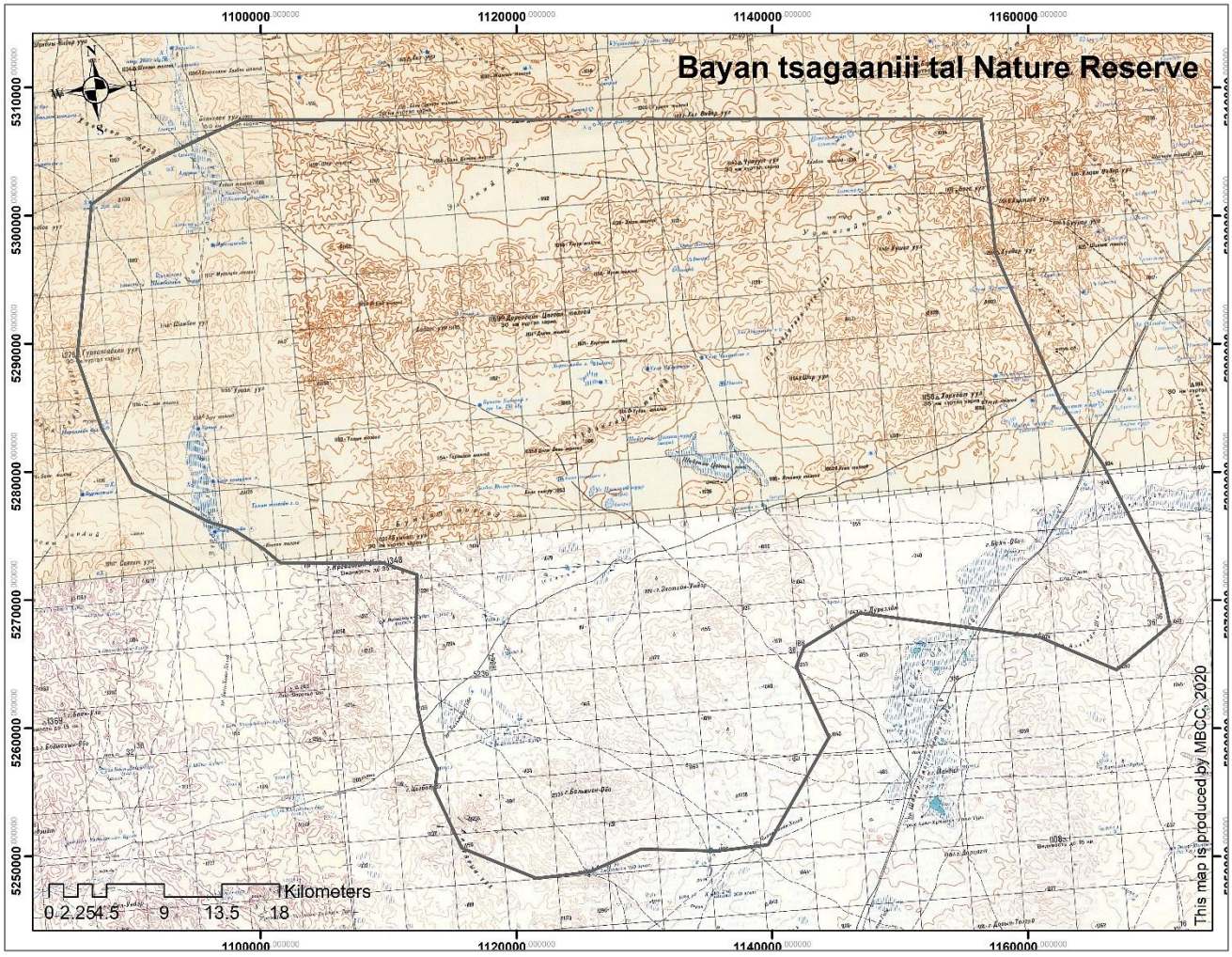
Toson Khulstai Nature Reserve is the largest nature reserve in the country and it provides suitable summer breeding site for Mongolian Gazelles. It is one of the two nature reserves that have management administrations  This NR has it's own local council which is lead by the head of Environmental department of the Province Government. International NGO, The Nature Conservancy, has been supporting the Management Plan since 2008 and still participating and supervising its management and activities.




*Map 18: Component part II.Tosonkhulstai Nature Reserve*

III. Bayantsagaan Nature Reserve

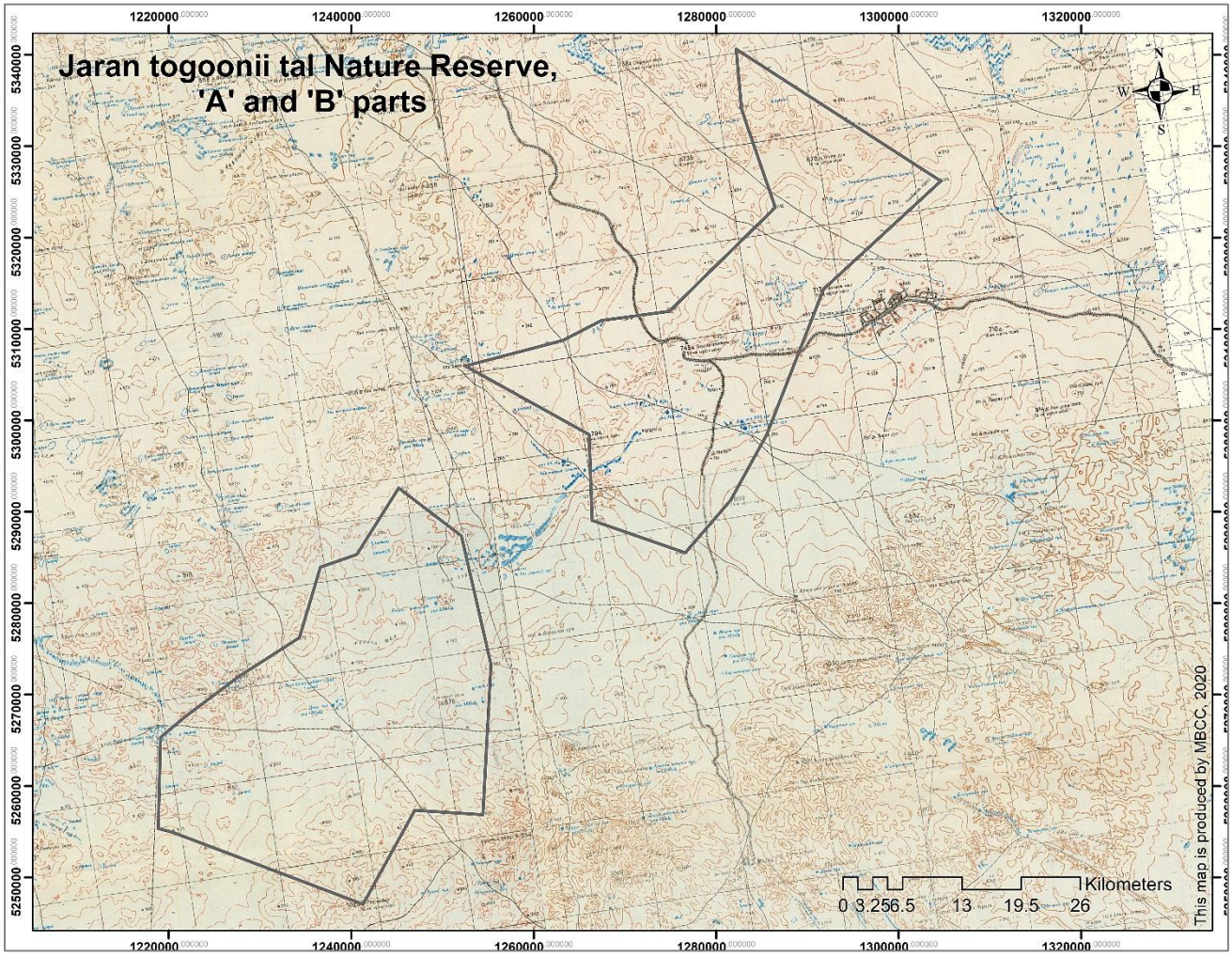
Bayantsagaan tal Nature Reserve is one of the newly established reserves and Governor of Sukhbaatar province is responsible to manage the reserve based on current legislation. The new management plan is underway. Based on the gazelle tracking movement analysis the NR can serve as the most suitable ecological corridor between steppe nature reserves in eastern Mongolia.




*Map 19: Component part III. Bayantsagaan Nature Reserve*

IV. Jaran Togoo “A” and “B” Nature Reserve

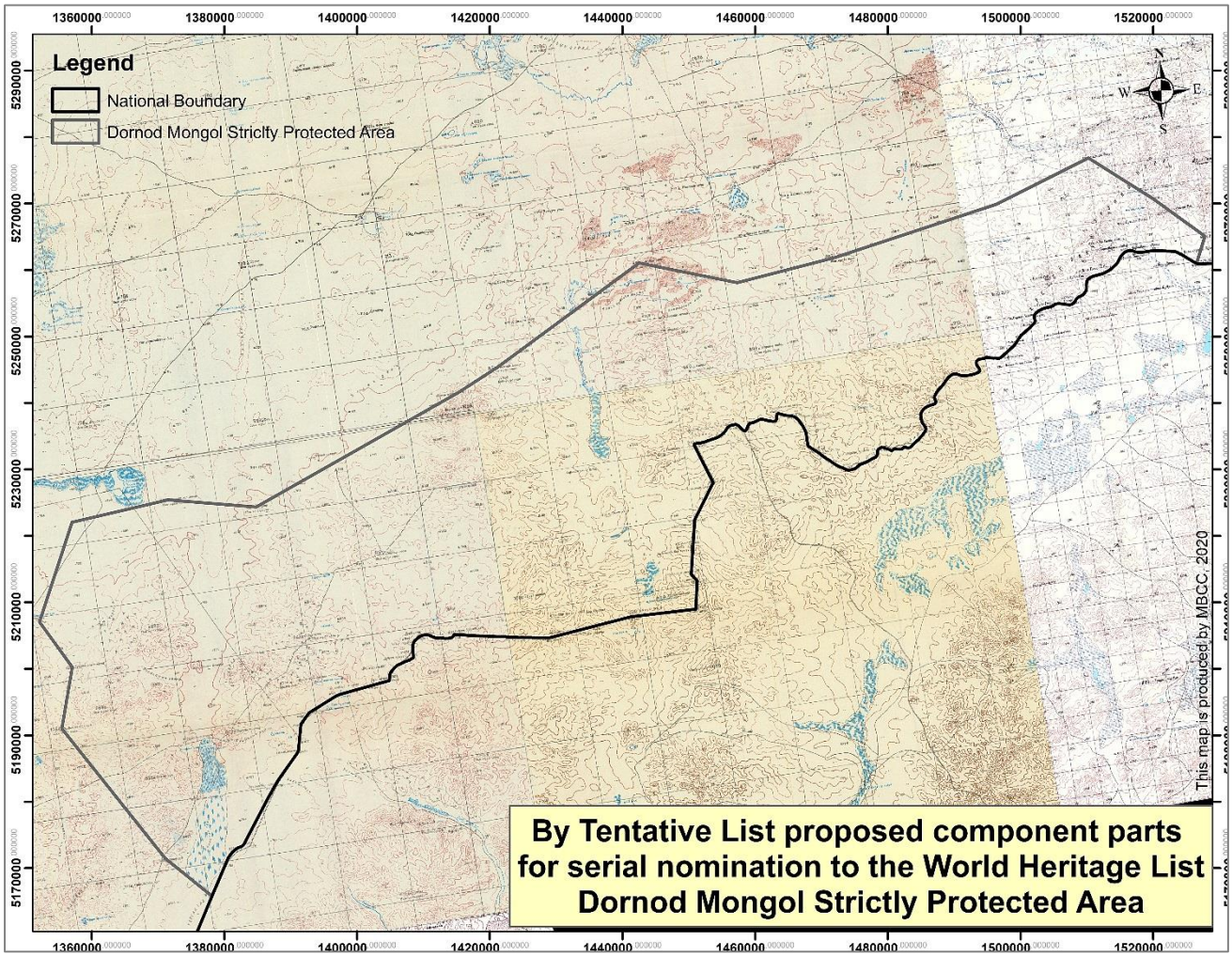
Jaran Togoo tal A and B part Nature Reserve is one of the newly established reserves and Governor of Dornod province is responsible to manage the reserve based on current legislation. It is an important site for wintering of Mongolian Gazelle population. There are very active paved roads around or within the NR and Chinese petroleum company has been mining oil for 20 years, near the NR. Part A covers 97,515 ha, part B 91,095 ha.




*Map 20: Component part IV. Jaran Togoo “A” and “B” Nature Reserve*

V. Dornod Mongol Strictly Protected Area

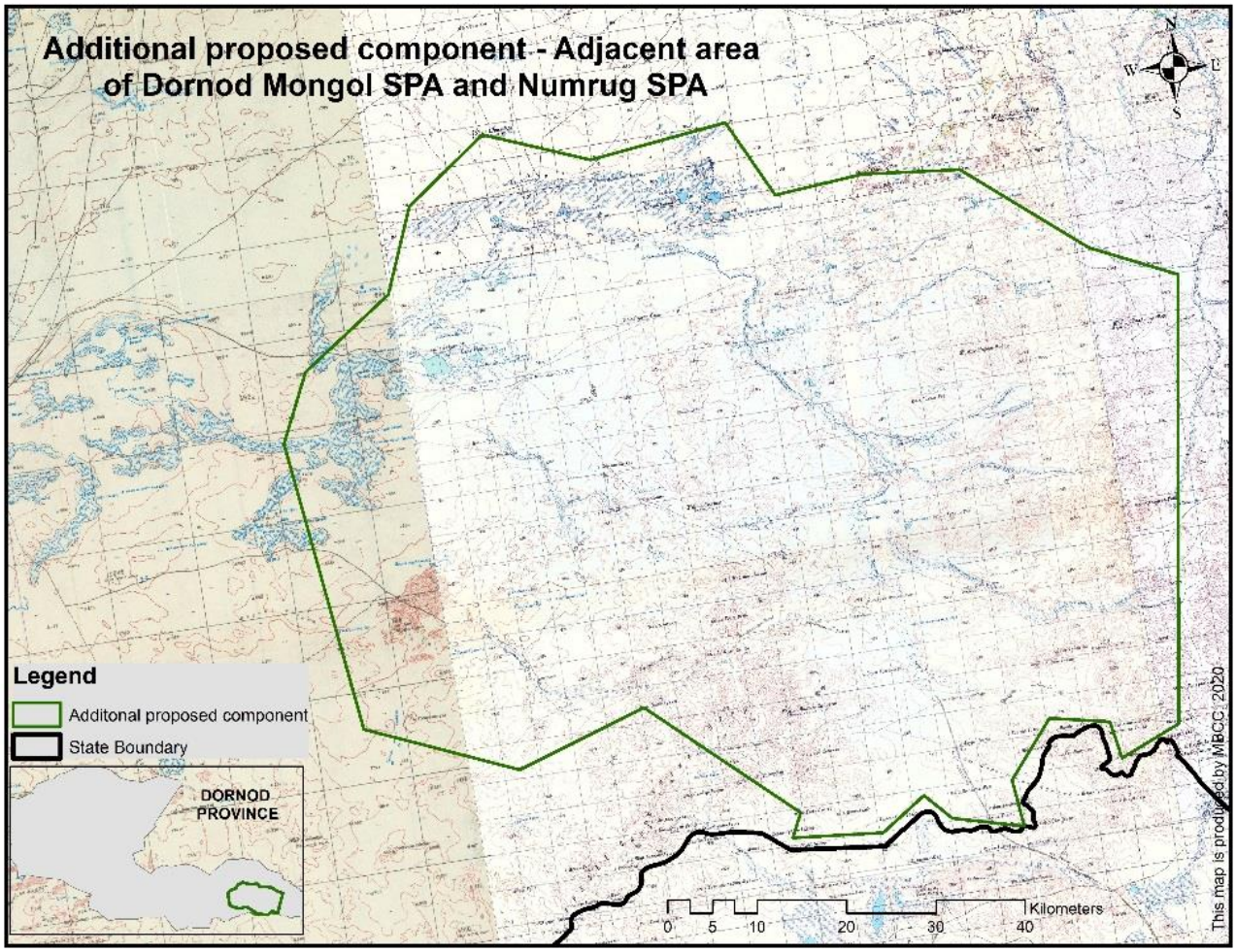
Dornod Mongol SPA was established in 1992 and spreads over 5,705 km² of mainly flat steppe habitat. The area is located along the Mongolian-Chinese border in eastern Mongolia. Elevations range from 750 m to 1089 m in the SE. Dornod Mongol is located about 100 km from Sumber, about 90 km from Matad the next sum centers and 250 km from Choibalsan. The SPA is dominated by *Stipa* communities in typical steppe and it is a main breeding habitat for Mongolian gazelles and other wildlife. Dornod Mongol is a military zone and special entry permits are required from the military headquarter in Ulaanbaatar. There are 4 military bases and multiple small checkpoints within the park. There are no herders or any other civilians in Dornod Mongol SPA. There is only military livestock present. Due to the lack of water, livestock pastures are seasonally restricted to the vicinity of the two access points to open water.




*Map 21: Component part V. Dornod Mongol Strictly Protected Area*

VI. Adjacend area of Dornod SPA and Numrug SPA

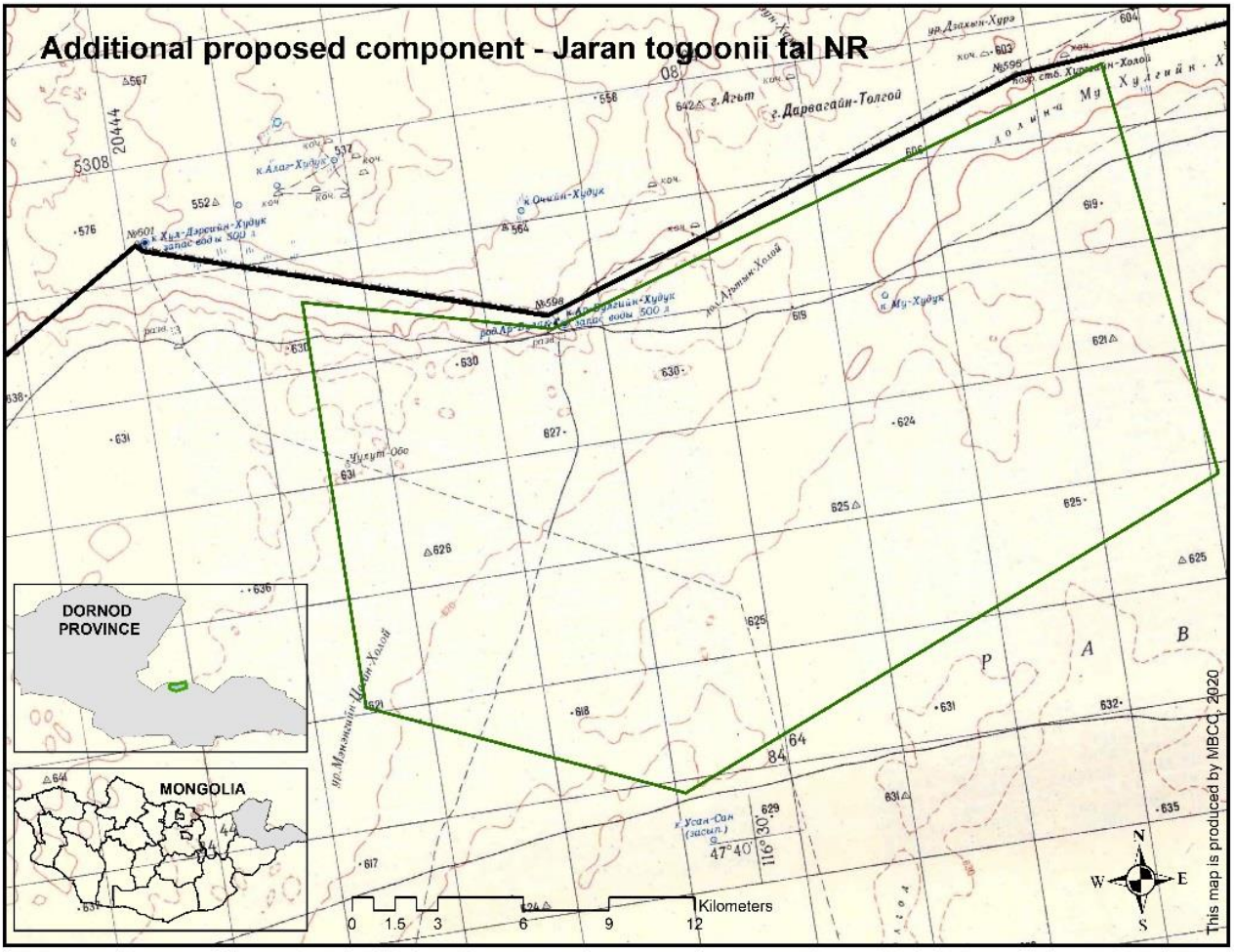
The extensive area includes the transition from the eastern Mongolian plain steppes to the herbrich meadow steppes of the Chingan hill region. The nearly unsettled vast steppe landscape is characterized by diverse steppe types as well as wetlands. It connects the Dornod SPA with the Numrug SPA. It is partly designated as local Protected Area.




*Map 22: Component part VI. Adjacend area of Dornod SPA and Numrug SPA*

VII. Menengiin tsagaan khooloi NR

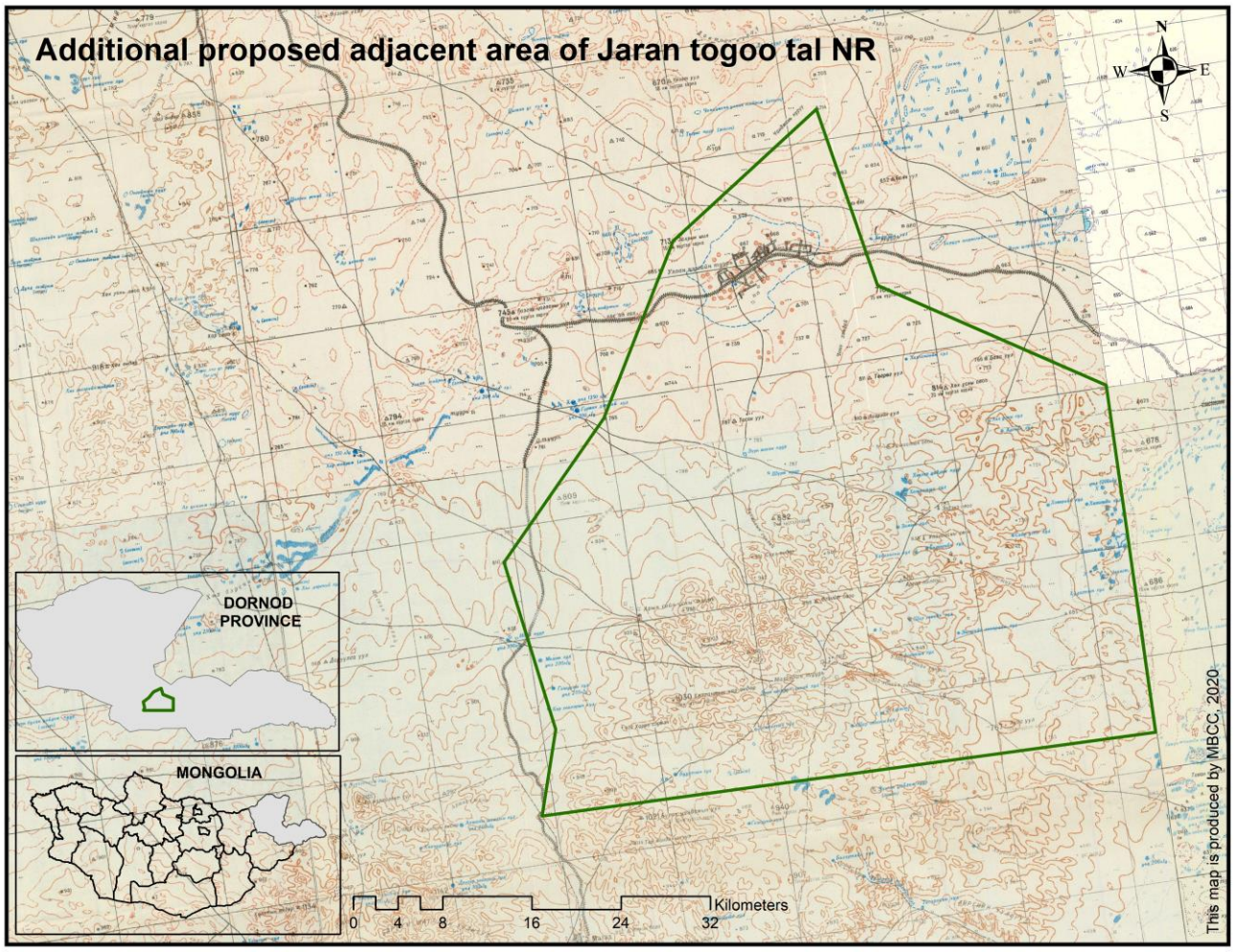
The unsettled area is characterized by extensive plainland grass steppes on sandy castanosem soils. It is designated as local Protected Area.




*Map 23: Component part VII. Menengiin tsagaan khooloi NR*

VIII. Adjacent area of Jaran togoo tal NR

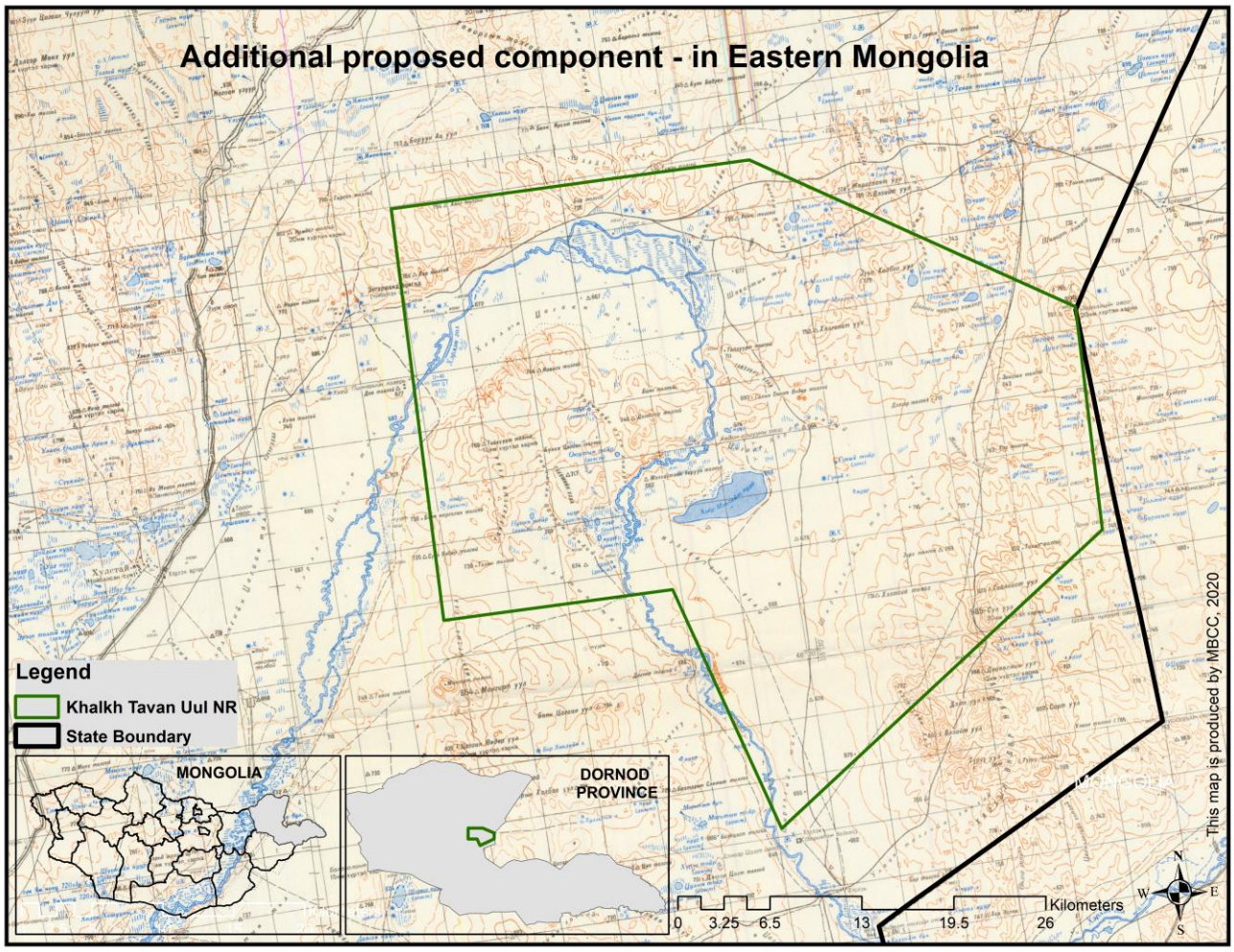
The vast rea is adjacent to part B of the Jaran togoo tal Nature Reserve. Together they form the central piece of the entire series covering about 320,000 hectares. It includes plainland grass steppes on loamy dark castanosems as well as petrophytic herb-grass steppes on stony castanosems and rocky slopes in Zuun Matad Uul hills (up to 1,050 m a.s.l.). The main part is designated as local Protected Area.



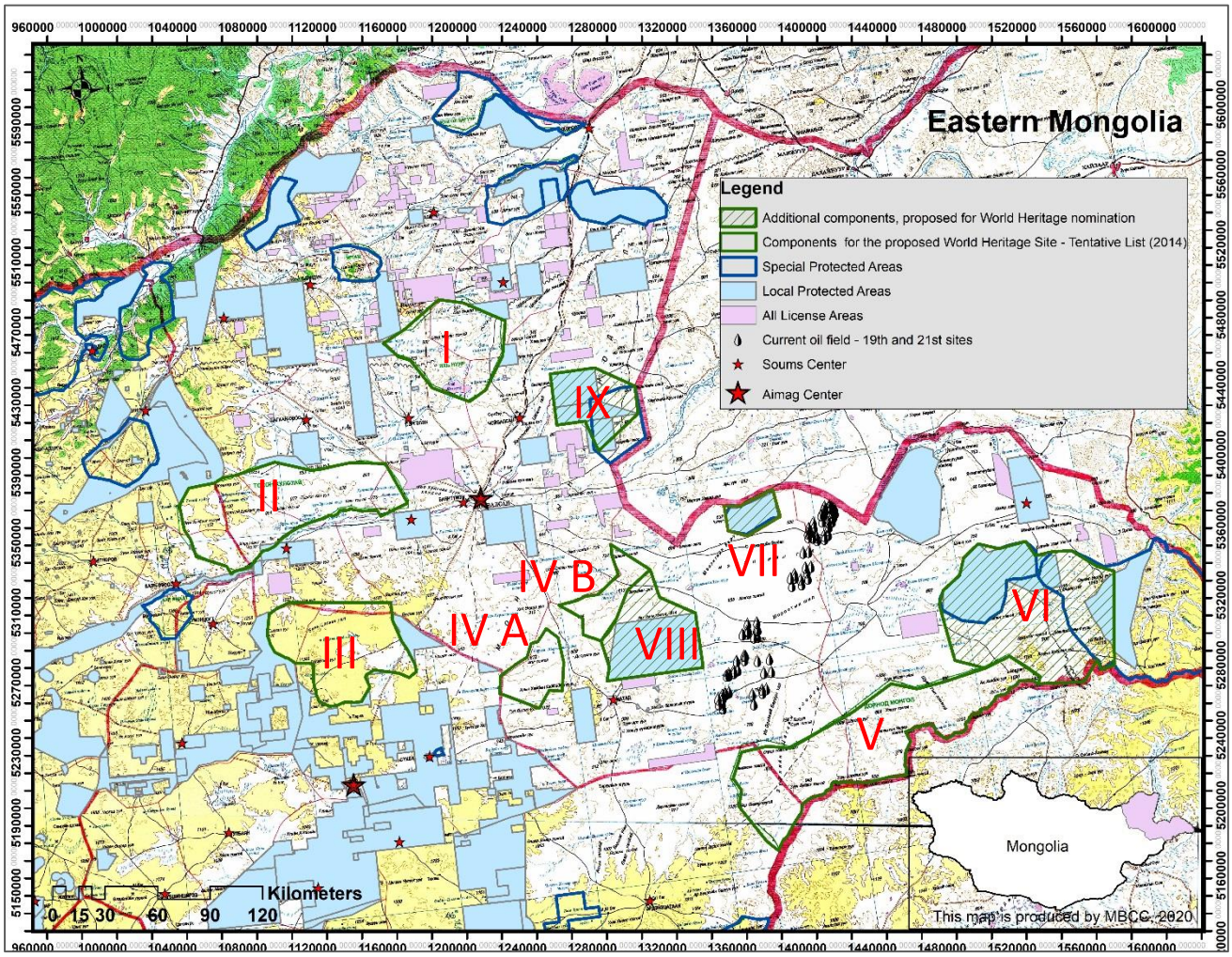

*Map 24: Component VIII. Adjacent area of Jaran togoo tal NR*

IX. Khalkh Tavan Uul

The area forms the north-eastern cornerstone of the entire series. It contains the typical grass steppe of eastern Mongolian plainlands as well as the river floodplain of the Kherleen river and some smaller wetlands as typical elements of the landscape complex. The area is mainly designated as local Protected Area.




*Map 25: Component IX. Khalkh Tavan Uul*




*Map 26: Location of the proposed component parts*

## 3.5 Draft Statement of OUV

### Brief Synthesis

The Eastern Mongolian Steppes are the world's most intact large-scale temperate grassland. Once one of the world's major terrestrial biomes, temperate grasslands have disproportionately suffered from conversion and degradation. Proposed as a serial property, the Eastern Mongolian Steppes are embedded within the largest remaining and mostly intact temperate grasslands on Earth. As such, they stand out both globally and within the vast Eurasian Steppes once spanning from the European Pannonian Steppe to the Mongolian-Manchurian grasslands. Beyond scale and intactness, their relatively high altitude and northern latitude deserves to be noted. They cover thousands of square kilometers, characterized by treeless flat steppes, gently rolling hills and also include perennial and temporary rivers, creeks and wetlands and associated terrestrial and aquatic ecosystems.

The Eastern Mongolian Steppes are an extraordinary example of the biological and ecological adaptation of plant and animal life as well as ecosystem functions to a harsh semi-arid continental climate characterized by a very short vegetation period and long, cold and dry winters. Despite – or perhaps because of - these extreme conditions, the Eastern Mongolian Steppes are highly productive ecosystem, support critically important ecosystem functions and are a haven for all forms of life. A limited number of dominant grass species and a remarkably diverse steppe vegetation cover cover an enormous „Ocean of Grass" from horizon to horizon. The plant biomass supports highly diverse assemblages of invertebrates and vertebrates. Out of the vertebrates, the rich avifauna stands out,

as well as exceptional aggregations of large mammals. Concretely, the large herds of millions of Mongolian white-tailed gazelle (*Procapra gutturosa)* have been an inseparable element of the ecosystem since time immemorial, both inhabiting and shaping it to this day.

For thousands of years mobile herders and their livestock have been co-existing in the steppes with wild herbivores long time without substantially modifying the natural ecosystem. The Eastern Mongolian Steppes are one origin of ancient nomadic cultures and associated knowledge, practices and belief systems, fully adapted to an unforgiving ecosystem and climate. Despite severe changes and disruptions, many elements of this ancient way of life are fully alive today.

The proposed serial property has nine components with a total surface area of approx. 2.8 million ha, all extraordinary representations of the vast ecosystem. All are carefully selected protected areas of high integrity, low grazing pressure and large extension distributed over the entire region and capturing the landscape and ecosystem diversity.

*Table 4: The proposed component parts*

| No | Component part | Size [ha] |
|---|---|---|
| I | Yakhi Nuur Nature Reserve | 251,388 |
| II | Toson Khulstai Nature Reserve | 469,928 |
| III | Bayantsagaan Steppes Nature Reserve | 332,362 |
| IV | Jaran Togoo Steppes Natural Reserve | 188,609 |
| V | Dornod Mongolia Strictly Protected Area | 589,906 |
| VI | Adjacend area of Dornod SPA and Numrug SPA | 614,908 |
| VII | Menengiin tsagaan khooloi NR | 45,748 |
| VIII | Adjacent area of Jaran togoo tal NR | 228,973 |
| IX | Khalkh Tavan Uul | approx. 145,000 |
| | **Total** | **2,866,822** |

## Criteria

*Criterion (ix):* The components proposed for a serial nomination are large protected areas jointly conserving the best representations of the last intact large-scale temperate grassland ecosystem in the world. The Eastern Mongolia Steppes represent on-going ecological and biological processes of the stipa grassland ecosystem and its native species of plants, wildlife and birds that have adapted over thousands of years to the pronounced continental climate, as well as the longstanding interaction between mobile herders and their natural environment. Adaptation to current climate change, reproduction and migration of large herbivores (Mongolian gazelle) are ongoing biological and ecological processes.

*Criterion (x):* The Eastern Mongolian Steppes are the eastern wing and the last remaining intact part of the largest temperate grassland biome of Earth, the extensive Eurasian Steppes. They are characterized by large scale extension of nearly uniform Stipa grassland, which consists of highly peculiar steppe species, grasses, perennial herbs and a very small number of woody plants. They support large populations and a high diversity of insects, small mammals, birds, large herbivores and predators, all of which are connected via complex foodwebs. Most of the species are endemic to the Mongolian-Manchurian Ecoregion. The Eastern Mongolian Steppes are the only remaining natural habitat of the Mongolian gazelle. The protection of undissected large areas of steppe is a condition for the survival of this significant large herbivore species.

**Integrity**

The proposed component parts include all elements and ecosystem functions of the complex steppe ecosystem. With 9 component parts, which cover around 2.8 million hectares, the proposed property is of adequate size to ensure the complete representation of the features and processes which convey the significance of the property. The components of the proposed property are not affected by external impacts like mining, technical infrastructure, and they represent the best remaining temperate grassland in large extension.

**Requirements for protection and management**

Selected parts of the Eastern Mongolian Steppes with extraordinary conservation values have been designated as Specially Protected Areas under applicable Mongolian legislation. They are complemented by numerous local protected areas at provincial level. The protected areas include pristine grasslands that show the full range of characteristics of natural and intact grassland ecosystems. Currently, there are no acute and severe threats to the natural values of the selected protected areas in the Eastern Mongolian Steppes. The proposed serial property has preserved the natural characteristics of grassland ecosystems at a very large landscape scale and will strengthen the protection of natural habitat of wild animals where they can migrate and breed freely. There is adequate management and financial resources, and favourable legal environment to continue conserving the various components forming the proposed property.

# 4 Threats and factors affecting natural and cultural values

## 4.1 Overgrazing and degradation


*Figure 9: The vegetation structure around settlements is considerably degraded by high livestock concentration. But also grassland in remote areas is degraded by grazing pressure. (location of the satellite images see map 31)*

It is obvious that overgrazing is the most important factor for degradation and desertification of Mongolian steppes. *"There can be many causes to desertification, however, in Mongolia overgrazing is often the primary cause, with changes in precipitation being a secondary contributor"* (Hulbert 2019).

The National Action Plan to Combat Desertification in Mongolia stated: *"Mongolia's national herd has remained remarkably constant over the years, even with an annual population growth of about 1.5%. Scientific research suggest that the grazing lands are being exploited at their carrying capacity's level. Small increases in animal populations or changes in land-use patterns may therefore result in localized degradation. Such changes include the tendency to settle for more prolonged periods around infrastructural facilities, herding by salaried herdsmen, and herding by inexperienced herdsmen fleeing the cities where employment opportunities have been greatly reduced after the socialist era."* (MNE 1997, p. 3). Conclusions from satellite observations demonstrate that there is a clear connection between increases in animal population and decline in vegetation density (Hilbert 2013, Hulbert 2019).

Figure 30 illustrates the dramatic threefold increase in livestock numbers since 1990. Goats make up the lion's share of this. It is known that goats graze particularly intensively and contribute to the destruction of the steppe vegetation. *"With the transition to a market economy, the number of livestock—the main source of food and income for herders — has been increasing and has reached its highest level to date. This has in turn pushed areas of pastureland to their limits, leading to overgrazing and increasing the area covered by desert. One example can be seen in the situation of cashmere, the valuable properties and limited supply of which give it a relatively high international price, encouraging an increase in cashmere goat herds in Mongolia, which in turn has a detrimental effect on pastureland. Policy decisions or countermeasures to protect pastureland should be taken in order to prevent this process before it has disastrous consequences for Mongolia and the whole of Asia"* (Dashnyam 2003, p. 287).

In comparison with steppes in Central and Western Mongolia the structure of Eastern Mongolian Steppes are much more intact, especially in the selected component parts. However, the current trend could increase the risk of degradation. Because pastures in Central Mongolia are overgrazed and

thus degraded, rich absentee livestock owners in the capital or abroad send large herds of horses with employed herders to the East and increase the grazing pressure there.

*Figure 10: Strong degraded steppe in Tov Aimag, Central Mongolia. The green areas consist of Artemisia adamsii, indicator for degradation (photos H. D. Knapp, 2019)*

*Figure 11: Herds of rich owners, living in UB, increase the grazing pressure to intact steppes in Eastern Mongolia (photo H. D. Knapp, 2019)*

## 4.2 Land use change


3 - Destruction of steppe ecosystem by agriculture. Industrial farmland SW of Khalkhgol sum


4 – Industrial agriculture in Khalkhgol. Each field covers 400 ha ( 2 x 2 km) , the complex in total approx. 41,000 ha

*Figure 12: New industrial agriculture is a real threat for the Eastern Mongolian Steppes. An area of 41,000 ha of steppe have been converted to large crop fields of 400 ha.*

*„During socialist times, large scale transformation of range lands into croplands has taken place. Insufficient attention was given to the marginal conditions for crop growing in Mongolia. Land tillage at springtime for instance has led to massive wind erosion. Also, with the transition to a market economy, the large scale farms - whether privatised or still state-owned - lack the funding needed for investment into their enterprises. As a result, a larger proportion of the farmlands has been abandoned, while on the existing farmlands yields are still on the decline“* (MNE 1997, p. 3).

Beyond the border to China, the sobering consequences of agriculture on the steppe can be seen particularly well: Abandoned farmland, eroded by wind. New industrial complexes waste freshwater for irrigation and increase the drying of lakes and wetlands (fig. 13).


5 - Industrial agriculture with irrigation in devastated steppe landscape.
Nartyn sum SE of Dalay nuur, Inner Mongolia Province, China


6 - Devastated steppe east of Dalay nuur. Inner Mongolia Province, China

*Figure 13: Degraded steppe landscape in Dalay nuur region (China), a consequence of agriculture.*

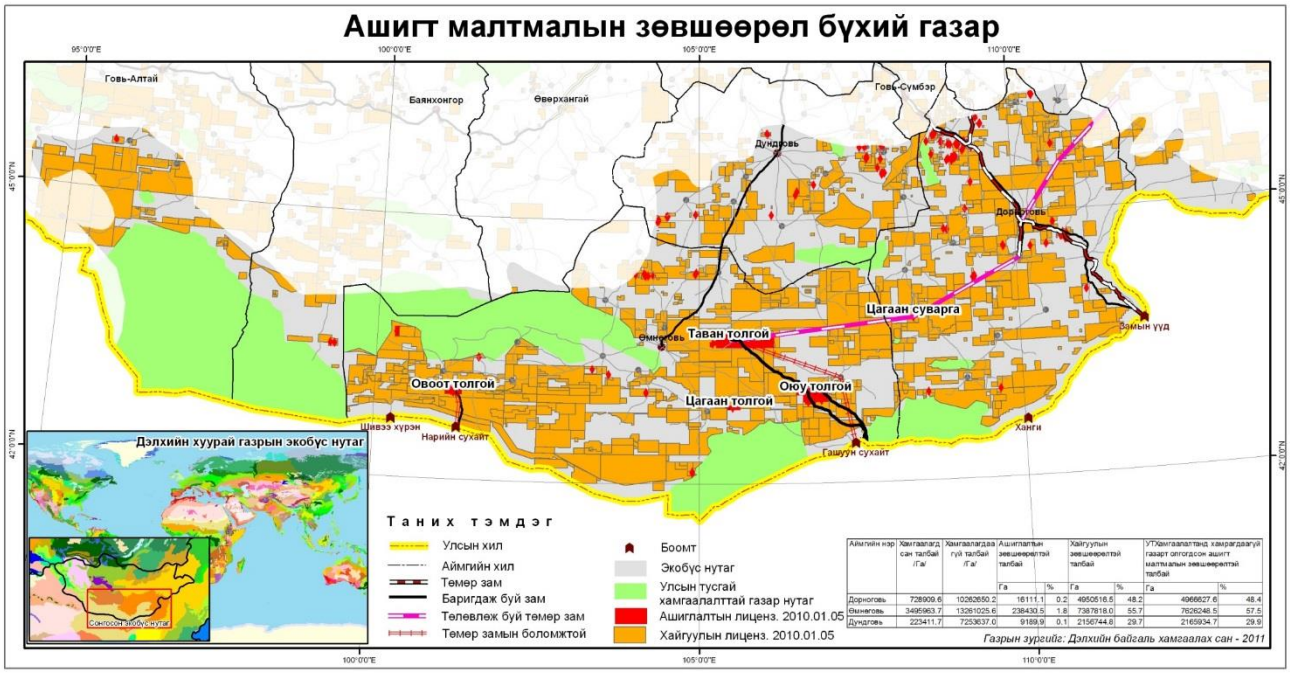
## 4.3 Mineral exploration and extraction


7 - Mining area N of Choibalsan city. Devastated steppe, destroyed landscape


8 - Oil field NE of Matad sum. Davastated steppe, drying lakes

*Figure 14: Active mining area N of Choibalsan City and oil field NE of Matad sum, destroyed landscapes.*

Mining is one of the most destructive factors in landscapes all over the world, including in Mongolia. It was developed in the socialistic period with support by the Soviet Union. Russian and German geologists prospected for mineral resources. After the transition to a market economy mining started to boom in Mongolia also because the opening of borders coincided with a soaring demand, including from neighboring China. International corporations acquired licenses from the government and staked claims across the country, especially in southern Gobi but also in Eastern Mongolia (see fig. 50, 29). The country appears as if in a gold rush.




*Map 27: Mining licenses (yellow) and active mining areas (red) in southern Gobi*

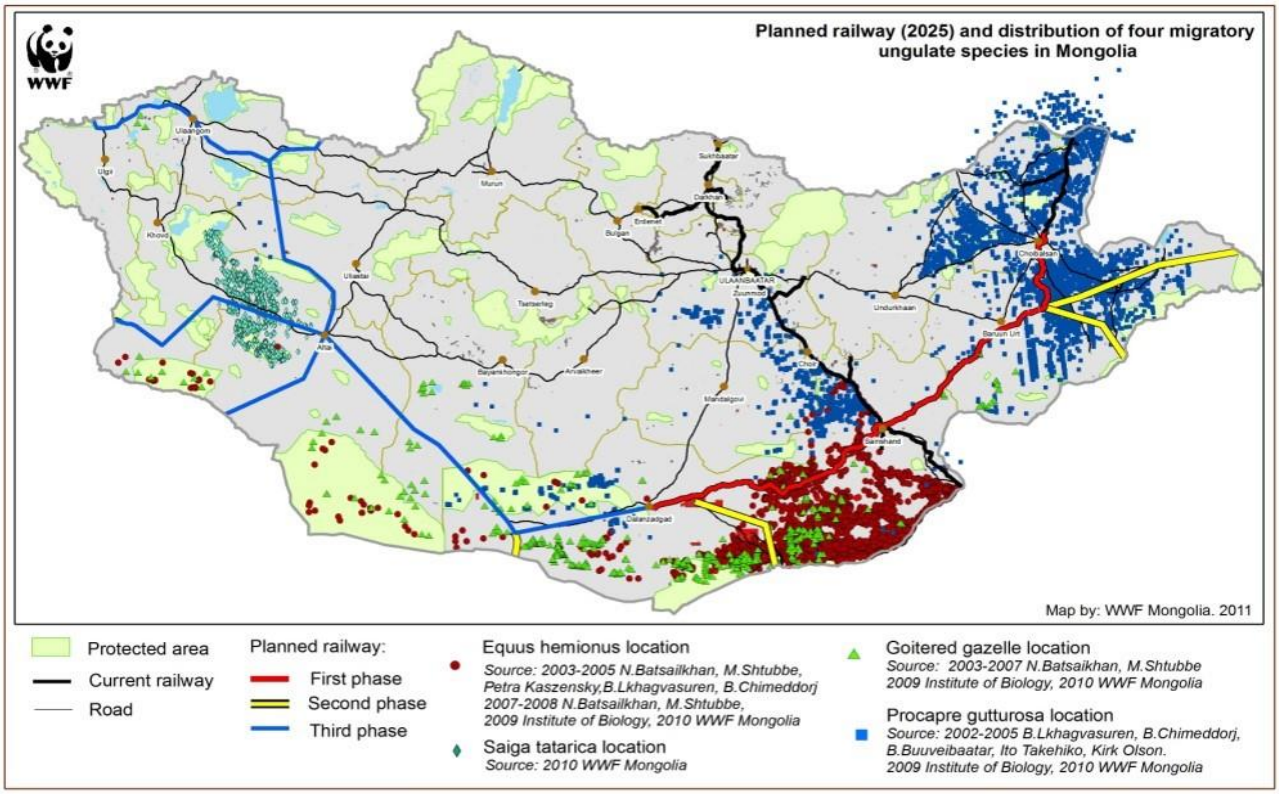
Protected areas have become islands between the license areas. May be the conservation status is the only legal obstacle to selling licenses. In Eastern Mongolia exploitation sites are still rare to this day despite licenses being granted. However, two extensive oil fields affect the steppe landscape (e.g. see figure 14 right).

Exploration and extraction of mineral resources have some destructive impact to landscape and environment:

- Mining requires a lot of water. It has to come from somewhere, and that is a serious problem in drylands;
- Mining is a source of water and air pollution;
- Mining has huge energy demand. It needs to be powered and that creates additional problems (coal plants, transmission infrastructure);
- Mining requires road access. Roads facilitate access for poaching and trade etc. but also invasive species.

## 4.4 Infrastructure development

The long migrations of the ungulates were interrupted by the construction of the railway from Ulan-Ude to Beijing in the 1950s. The fenced railway crosses the entire country of Mongolia from North to Southeast forming a major barrier to migrating wildlife. Studies have confirmed the separation and decline of affected populations. If existing plans for transportation infrastructure will materialize, they would undoubtedly affect many species, including the Mongolian gazelle.



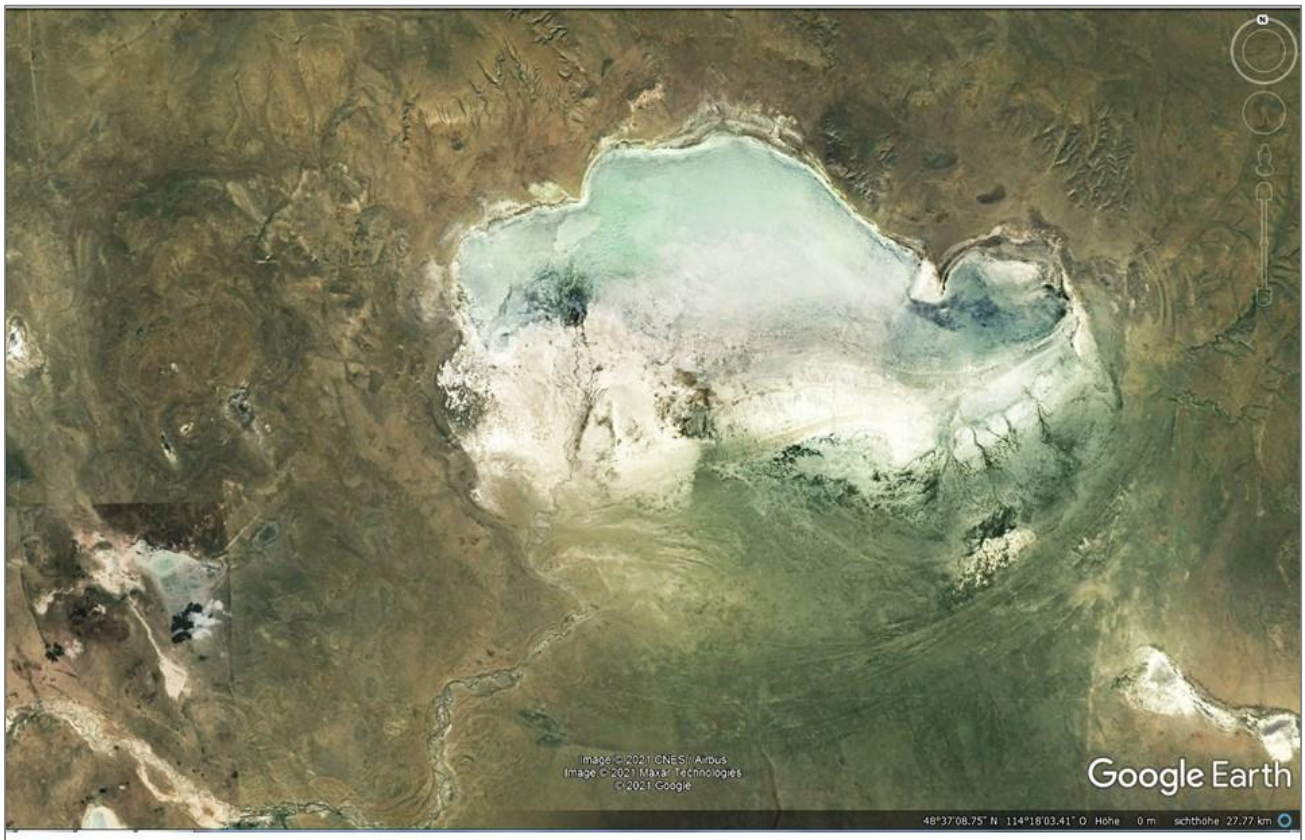

*Map 28: The effect of transportation infrastructure on migratory ungulate species and planned railway corridors in Mongolia*

## 4.5 Poaching

Both legal hunting and poaching have a longer tradition in Mongolia, and both affect wildlife populations including migratory ungulates. From the 1960s to the 1990s Dornod Aimag every year 30,000 gazelles, 60,000 marmots, 3,000 foxes and other wildlife were hunted according to official statistics (Mix 2000). In the winter of 1977, about 70,000 Mongolian gazelles were shot, but as many as 250,000 specimen were killed illegally in 2004 (MNET 2012). Mass killings of gazelles for commercial purposes, reported by Mix (2000) has since been restricted.

## 4.6 Climate change and desertification

Mongolia is a country particularly affected by global **climate change** (fig. 20). The future scenario of the climate change in Mongolia estimated by an average of ten global models involve steady growth of the air temperature in all four seasons by some 2.2 °C against a base line from 1986 to 2005 (MEGDT 2014). Such modelling suggests a further increase for 2081 to 2100 by 2.5 °C, 3.5 °C or even 6.0 °C according to various scenarios. Figure 18 shows possible future winter and summer air temperatures according to the three different scenarios.




9 - Drying Yakhi nuur

*Figure 15: Impacts of climate change are visible on drying and salinizing lakes all over the steppe zone of Mongolia. Yakhi nuur in Eastern Mongolian Steppes.*

Modelling suggests increased winter precipitation by 12 percent and increases by 9 percent in spring, 3 percent in summer and 7 percent in autumn in the near future. By the end of the century, current scenarios anticipate increased precipitation by 15 to 50 percent in winter, 12 to 28 percent in spring, 5 to 8 percent in summer and 8 - 24 percent in autumn. Figure 39 depicts the future changes in precipitation according to three different scenarios.

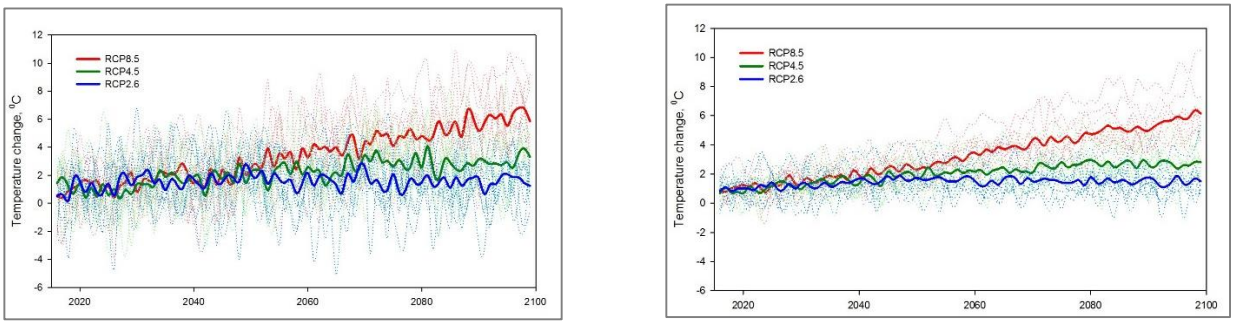



*Figure 16: Tendency of air temperature change (°C) compared with the average of 1986-2005: a) winter; b) summer, (Source: MEGDT 2014)*

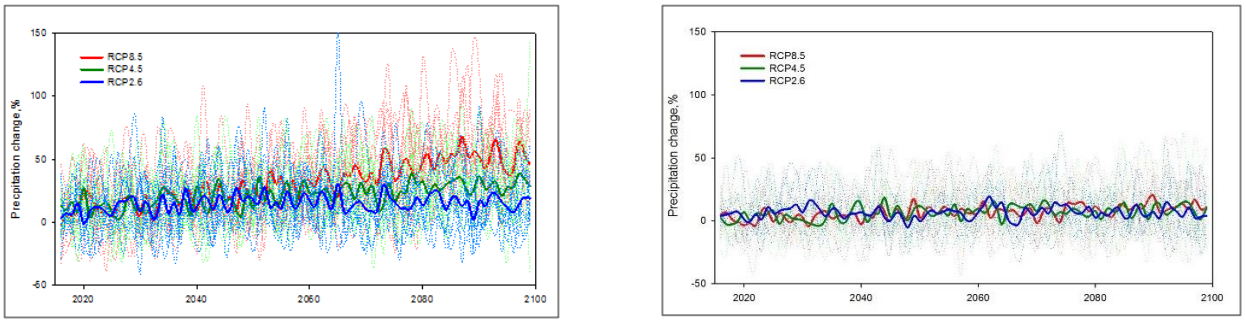



*Figure 17: Tendency of change in precipitation (percentage), in comparison with the average of 1986-2005: a) winter b) summer (Source: MEGDT 2014)*

A climate change vulnerability assessment carried out based on the vulnerability index by Byambakhuu et al. (2019) classified Eastern Mongolia as highly vulnerable to climate change and suggested that biodiversity conservation of landscape, and adaptation policy to climate change should be considered. For example, in the summer of 2017,, large numbers of Mongolian gazelles died of dehydration throughout Eastern Mongolia.

The frequency of disaster events over the last 2 decades shows that there were 75 disaster events during the first decade, and twice as many during the second decade. The frequency of sudden and quick showers, mudflows, continuous winds, hails and thunderstorms have increased drastically doubling the socio-economic damages. There is a tendency of increase in the frequency of droughts and "dzud", as exceptionally harsh winters are known in Mongolia. When a summer drought are followed by "dzuds" (such as in 2009/10, 1944/45), the livestock losses can reach 20-30%. The increasing number of extremely hot days (above 26 °C) decelerates photosynthesis in the vegetation resulting in decreased productivity and harvest (MEGDT 2014). Changes are observed across 90% of the grassland including the proportion of species in the pasture vegetation, retreat of plant population, increase of drought persistent species and changes in the soil fertility characteristics (Batjargal 2016).

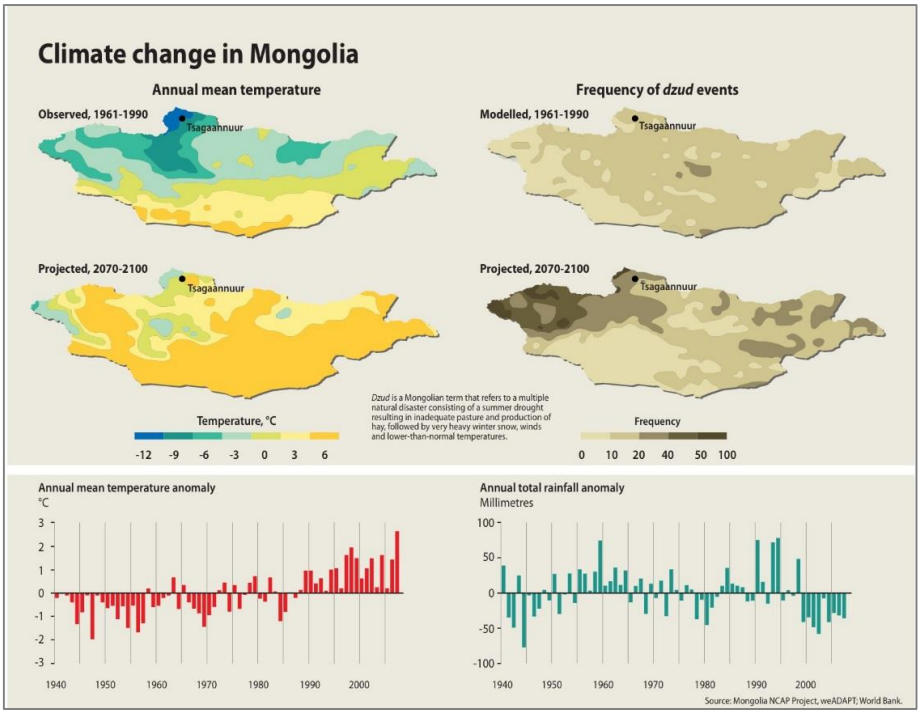
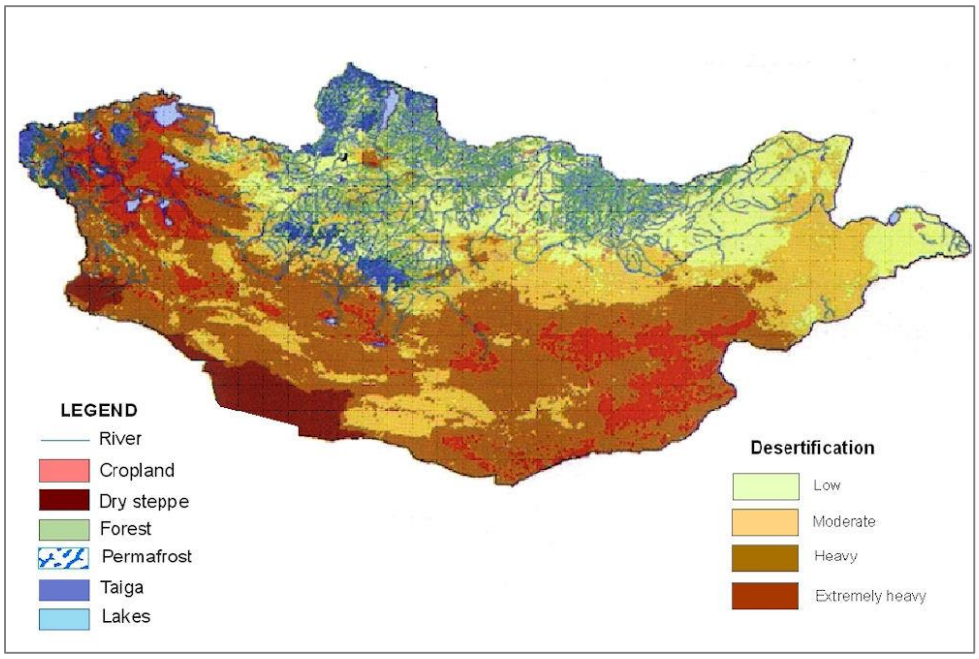
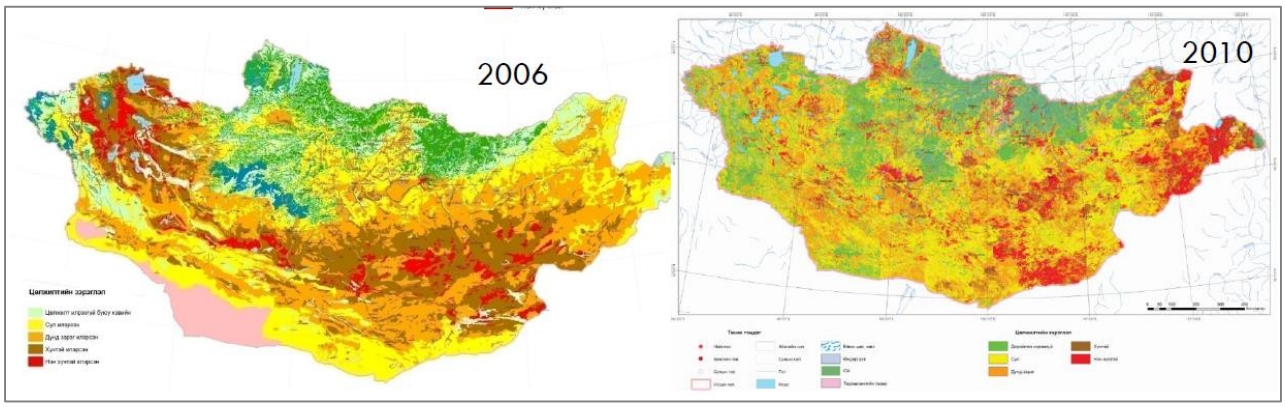



*Figure 18: Affects of climate change to Mongolia. Increasing temperature, irregular precipitation, increase of „dzud"* (https://www.grida.no/resources/8290)

**Desertification** has affected 77.8 % of the territory of Mongolia to various levels (EIC 2013). Desertification is defined by the UN Convention on Desertification (1992) as: „Land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variation and human activities.“ Following this definition, 90 % of Mongolia is vulnerable to desertification. In Mongolia, these areas are, almost exclusively used as range lands, supporting about 29.3 million head of livestock: sheep, goats, cattle, horses and camels (Tsesed 2011).



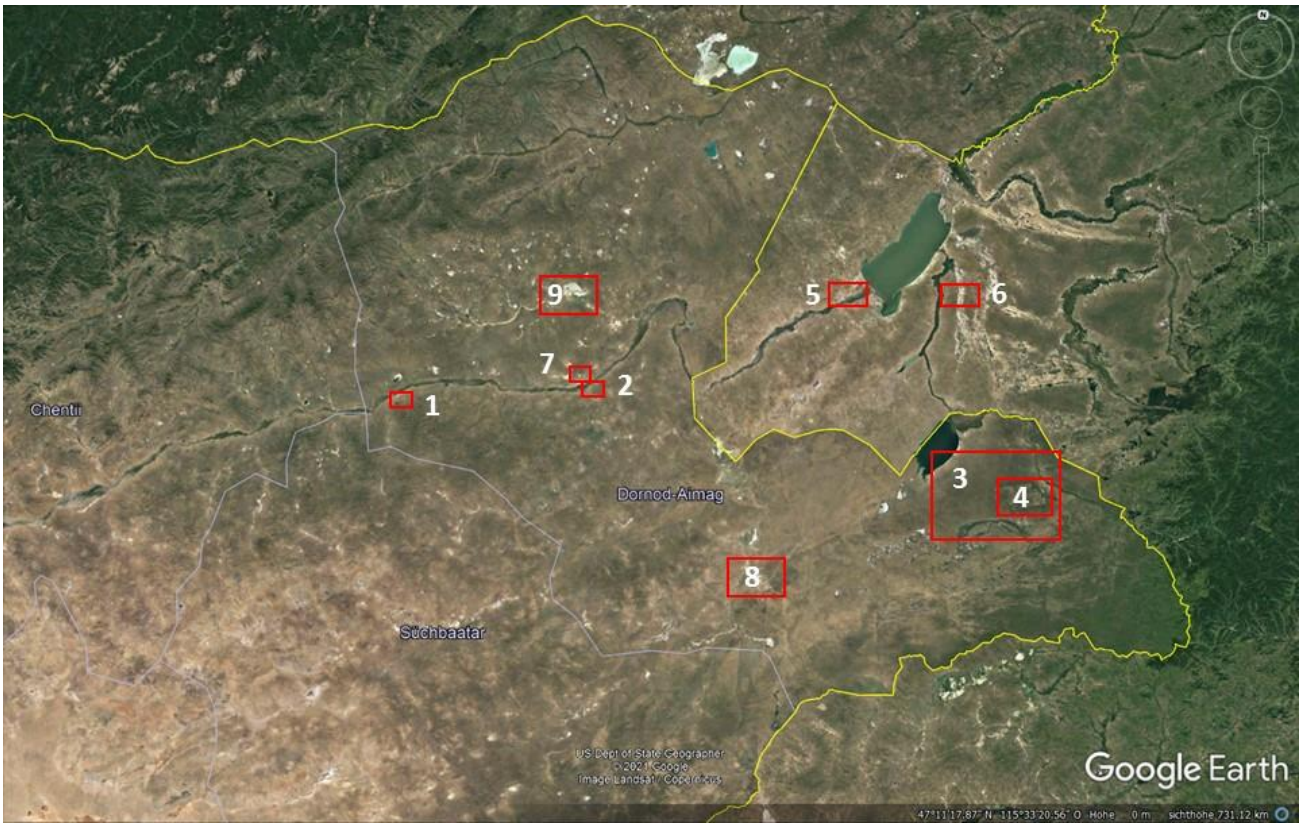

*Map 29: Desertification in Mongolia (Tsesed 2011, p. 114)*




*Maps 30: Development of desertification from 2006 to 2010 (Nyamtseren 2013)*
(http://neaspec.org/sites/default/files/1.2%20Ms.%20Mandakh%20Nyamtseren.pdf)

While the risk to the Eastern Mongolian Steppes from desertification was considered low for a long time (fig. 21), more recent analysis reveals vulnerability (fig. 22). Climate change and desertification are major factors in steppe degradation in Mongolia, including the Eastern Mongolian Steppes. But the main reason for desertification is overgrazing by too much livestock (see 4.1).

## 4.7 Change of awareness




*Map 31: Location of exemplary changes and damages of steppe ecosystems in this chapter (satellite images in figures 9, 12, 13, 14, 15)*

As noted, the traditional mobile pastoralism was more or less in balance with the steppe ecosystem for a very long time. Traditional pastoralism was based on the awareness of the vulnerability of nature and full dependence on a functioning ecosystem. Behavior within the limits of natural systems was codified in social, cultural and religious rules, including Lamaism over the past four centuries. Profound local knowledge was cultivated and passed on by the Lamaist monasteries.

There were two fundamental interruptions of this tradition in the 20th century. First, the communist revolution with the subsequent destruction of the monasteries, collectivization of herders, development of agriculture and industry. Results included better formal education, higher standards of living and medical care on the one hand, but also loss of local knowledge, decentralization and urbanization.

Second, the democratic revolution in 1991 with the transition from socialistic planned economy to market economy and a rushed opening to global market coinciding with unprecedented demand for resources. The privatization of herds and new business opportunities changed the mindset of parts of the Mongolian society. The semi-subsistence economy of the nomads based on cooperation gave room to a market and profit-oriented business economy with major implications for social relations, awareness and practices also of the still large proportion of the population engaged in mobile herding. The partial abandonment of traditional practices, seasonal changes of pasture grounds to regenerate the steppe and the drastic increase in livestock, especially by absentee livestock owners have a direct impact on the steppe ecosystem (see 4.1).

*"The degradation of Mongolia's grasslands and those of western China has been thought to stem from cultural and economic factors. A comparison of Tibetan and Mongolian communities herding on grasslands found that Mongolians imposed a greater grassland pressure from keeping more sheep as they are 'more market oriented"* (Hulbert 2019).

# 5 Protection and management of the proposed property

## 5.1 Legal protection status

All of the component parts proposed for the serial nomination according to the Tentative List are state-owned protected areas, designated and gazetted under applicable Mongolian law (Table 5). Additional protected areas have been proposed under sub-national protection status, likewise on state-owned land.

*Table 5: Protected area designations and zones (according to PA management plans and Zonation maps) of the proposed component parts under consideration of their buffer zones*

| No. | Proposed component part | Legal protected area status | PA Management responsibility | Objective of the protected areas | Buffer zone(s) of the protected areas |
|---|---|---|---|---|---|
| 1 | Yakhi Lake | Nature Reserve | - Governor's Office of Dornod province (by PA law)<br><br>- since 1998 Eastern Mongolia Protected Area Administration EMPAA | To protect steppe ecosystem, Mongolian gazelle habitat and migratory waterbird/shorebird species' habitat | Not determined |
| 2 | Toson Khulstai | Nature Reserve | - since 1998 Governor of Dornod province<br>- since 2000 EMPAA and 5 soum Governors<br>- since 2008 comanagement council | To protect steppe ecosystem and Mongolian gazelle habitat | Core area-469,928ha<br>Buffer zone-205,655ha<br>Transition area-334,773ha |
| 3 | Bayantsagaantal | Nature Reserve | Governor's Office of Sukhbaatar province | To protect the breeding area for Mongolian gazelle | Not determined |
| 4 | Jaran Togootal A, B parts | Nature Reserve | Governor's Office of Dornod province | To protect steppe ecosystem and Mongolian gazelle habitat | Not determined |
| 5 | Dornod Mongol | Strictly Protected Area | - since 1993 EMPAA | To protect and preserve Manchurian steppe/grassland ecosystem and habitat of Mongolian gazelle | Buffer zone determined by MAB which is designated in 2005<br><br>Core zone: 589,906 ha |

## 5.2 Boundaries

The Operational Guidelines for the Implementation of the World Heritage Convention (UNESCO 2019) define inter alia the requirements for the boundaries of proposed properties:

**99.** The delineation of boundaries is an essential requirement in the establishment of effective protection of nominated properties. Boundaries should be drawn to incorporate all the attributes that convey the Outstanding Universal Value and to ensure the integrity and/or authenticity of the property.

**101.** For properties nominated under criteria (vii) - (x), boundaries should reflect the spatial requirements of habitats, species, processes or phenomena that provide the basis for their inscription on the World Heritage List. The boundaries should include sufficient areas immediately adjacent to the area of Outstanding Universal Value in order to protect the property's heritage values from direct effects of human encroachments and impacts of resource use outside of the nominated area.

**102.** The boundaries of the nominated property may coincide with one or more existing or proposed protected areas, such as national parks or nature reserves, biosphere reserves or protected cultural or historic districts or other areas and territories. While such established areas for protection may contain several management zones, only some of those zones may satisfy requirements for inscription.

## 5.3 Buffer zones

**103.** Wherever necessary for the proper protection of the property, an adequate buffer zone should be provided.

**104.** For the purposes of effective protection of the nominated property, a buffer zone is an area surrounding the nominated property which has complementary legal and/or customary restrictions placed on its use and development in order to give an added layer of protection to the property. This should include the immediate setting of the nominated property, important views and other areas or attributes that are functionally important as a support to the property and its protection. The area constituting the buffer zone should be determined in each case through appropriate mechanisms. Details on the size, characteristics and authorized uses of a buffer zone, as well as a map indicating the precise boundaries of the property and its buffer zone, should be provided in the nomination.

**105.** A clear explanation of how the buffer zone protects the property should also be provided.

**107.** Although buffer zones are not part of the nominated property, any modifications to or creation of buffer zones subsequent to inscription of a property on the World Heritage List should be approved by the World Heritage Committee using the procedure for a minor boundary modification (see paragraph 164 and Annex 11). The creation of buffer zones subsequent to inscription is normally considered to be a minor boundary modification5

## 5.4 Protection and management system

### 5.4.1 Management system in the Operational Guidelines

The management requirements to World Heritage properties are defined in the Articles 108-118 of the Operational Guidelines (UNESCO 2019).

For the nomination of the Eastern Mongolian Steppes paragraph 119 referring to sustainable use will be of special interest:

**119.** World Heritage properties may sustain biological and cultural diversity and provide ecosystem services and other benefits, which may contribute to environmental and cultural sustainability. Properties may support a variety of ongoing and proposed uses that are ecologically and culturally sustainable and which may enhance the quality of life and well-being of communities concerned. The State Party and its partners must ensure their use is equitable and fully respects the Outstanding Universal Value of the property. For some properties, human use would not be appropriate. Legislation, policies and strategies affecting World Heritage properties should ensure the protection of the Outstanding Universal Value, support the wider conservation of natural and cultural heritage, and promote and encourage the effective, inclusive and equitable participation of the communities, indigenous peoples and other stakeholders concerned with the property as necessary conditions to its sustainable protection, conservation, management and presentation.

### 5.4.2 Protected areas management system in Mongolia

The Special Protected Area Administration (SPAA), a department within the Ministry of Environment and Tourism (MET), is responsible for providing overall management, coordination, supervisions of national protected areas through setting policy directions, enforcement of applicable laws and regulations, as well as the organization and coordination of programs and projects, expansion of the special protected areas network, and measures to improve the management of conservation and protection capacities of protected area administrations (Government of Mongolia 2015).

To date 34 PA Administrations operate under the direct supervision of the SPAA. 30 PAs are funded by the state budget and four PAs are fully or partially managed by NGOs or through public private partnerships (MET 2018). The latter management schemes are in place for Khustai National Park, Ikh Nart Nature Reserve Khar Yamaat Nature Reserve and Tost Toson Bumba Nature Reserve, serving as innovative examples of options to mobilize funding and capacity for Mongolia's protected areas.

The standard administrative structure set by the Ministerial Directive A-06 of 4 January 2013 and size of areas designated per ranger which set by Government Directive 87 of 19 April 2006. Both are a function of state budget allocations rather than a reflection of determined needs. As of 2019, the 30 PAs financed from the state budget employ 547 staff, of which 390 are rangers. Some 25 percent of all staff are female (MET 2019).
The zonation regime is violated mainly because the local people were not involved in the zonation process and information on the zone boundaries and significance of each zone is not communicated fully to the local people. Some traditionally used livestock pastures, winter camps and spring camps of herding households were enclosed within the high conservation value zones of protected area. It has become the main condition to break the zone regime and depreciate value of the protected areas. Therefore, it is required to study possibilities for changing the internal zone boundaries in close collaboration with local people and to raise awareness about the value of each zone in protected areas.

### 5.4.3 Institutional set up and status

Table 6 summarizes general information on the legal status and institutional set up of the 5 protected areas:

*Table 6: General information to the proposed component parts*

| Name of Protected Areas | Rangers / Budget by MNT | Location | Established year | Area by ha |
|---|---|---|---|---|
| **Yakhi Lake NR** | 1 ranger<br><br>(permanent) | Located in Sergelen, Gurvanzagal, | Was taken under state protection by Mongolian Parliament | Total:251,388 ha<br><br>Sergelen: |

| | | | | |
|---|---|---|---|---|
| | | Choibalsan soums of Dornod province<br><br>(3 soums of 1 province) | Resolution 67 dated May 6th, 1998 as a Nature Reserve | 107,300<br>Guvanzagal: 110,786<br>Choibalsan: 33,302 |
| **Toson Khulstai NR** | In 2019, budget was 17 mln MNT<br><br>6 rangers (permanent) | Located in Khulunbuir, Bayantumen, Tsagaan-Ovoo soums of Dornod province, Bayan-Ovoo, Norovlin soums of Khentii province<br><br>(5 soums of 2 provinces) | Was taken under state protection by Mongolian Parliament Resolution 28 dated April 09th, 1998 as a Nature Reserve. The same year on May 6th, the boundaries for the Nature Reserve were determined by the Government Resolution 67 | Total:469,928 ha<br><br>Bayan-Ovoo: 72,110<br>Norovlin: 57,216<br>Tsagaan-Ovoo: 192,522<br>Khulunbuir: 119,340<br>Bayantumen: 28,740 |
| **Bayantsagaantal NR** | Budget was 10 mlm MNT in 2019<br><br>Soum Governor's office:<br>- State Environmental Inspector-1<br>- Ranger-2 | Located in Sukhbaatar, Munkhkhaan soums of Sukhbaatar province<br><br>(2 soums of 1 province) | Was taken under state protection by Mongolian Parliament Resolution 41 dated 02 May 2019 as a Nature Reserve. On 21 February 2014, the boundaries for the Nature Reserve were determined by the Government | Total:332,362.3 ha |
| **Jaran togootal NR**<br><br>**(A,B part)** | -Budget not located yet<br>Soum Governor's office:<br>- State Environmental Inspector-1<br>- Ranger-1 | Located in Matad soum of Dornod province<br><br>(1 soums of 1 province) | Was taken under state protection by Mongolian Parliament Resolution 41 dated May 02nd, 2019 as a Nature Reserve | Total:188.609,43<br><br>A part: 97.514,15<br>B part: 91.095,28<br><br>(Although it is stated on the justification of State Protected areas, it has not been approved by the Mongolian government) |
| **Dornod Mongol SPA** | 5 rangers:<br>4 rangers (permanent)<br><br>1 ranger (temporary) | Located in Matad, Khalkhgol soums of Dornod province, Erdenetsagaan soum of Sukhbaatar province<br><br>(3 soums of 2 provinces) | Was taken under state protection by Mongolian Parliament Resolution 11 dated 1992 and it was included in the category as a Strictly Protected Area in 1995. | Total: 589.906 |

### 5.4.4 Management of the proposed component parts according to METT

The proposed PAs were assessed through the METT methodology. METT means “Management Effectiveness Tracking Tool”. The assessment was conducted for Dornod Mongol SPA and Yakhi

Lake NR by WWF in 2016; and Toson Khulstai NR, Bayantsagaan tal NR, Jaran Togoo tal A, B part NR had been conducted by MBCC in 2019. The following sub-chapters summarize the results of the assessment.

Based on METT assessment reports, in all protected areas, pasture use induced threats affecting strongly on the biodiversity are caused by pasture degradation due to the increase of livestock number, encroachment of many herding families in an area due to the lack of water resource and abandoning the traditional livestock herding (METT, MBCC 2019). Overgrazing is particularly common in PAs, because of overstocking; herders usually have interests in residing in the protected area temporarily or permanently to seek better pasture for their herds. Most of assessed NRs were aimed to protect the steppe grassland and its keystone species such as Mongolian gazelles. But some threats stemming from climate change and pasture use were covered among most of the nature reserves. Threats caused by residential, commercial development are increasing along the steppe nature reserves due to climate change and droughts. Regarding the Protected Areas, ecosystems and biodiversity in Jaran togoo tal A, B part NR, Dornod Mongol SPA are most affected by the threats induced climate change, pasture use and natural system modification. Besides, assessment results show that, wetland ecosystems and keystone species of steppe/grassland such as Mongolian gazelle are most affected by threats.

- *Environmental legislation and its implementation*

All PAs were established and control mechanisms were put in place under the applicable laws but there are important obstacles to implementation on the ground. Besides, lack of legal coordination and conflicts between Law and regulations on PA and other newly revised Environment related Laws are commonly identified in NRs. Boundaries of the two PAs were demarcated, but boundaries of other 3 protected areas were not marked as per the standard requirements. Therefore, cooperation between the park administration and governmental organizations in charge of land and water use is poor and should be improve and implement the current regulations for controlling land and water use.

- *Management Plans and their implementation*

Currently, 3 PAs – Toson Khulstai, Dornod Mongol and Yakhi nuur NR have developed the management plans and already started implementation of them. For the Bayantsagaan tal the management plan has been developing since 2018 by team of Eco-Asia University. Jarantogoo tal A and B part have no management plans.

Most protected area management plans in Mongolia still have some weaknesses such as not clearly stated outcome, lack of supporting baseline data etc. Implementation of the plans is not systematically assessed against the specially developed criteria. Meanwhile, the activities specified in management plans are not implemented because operational costs are not fully reflected in annually approved budget. The management authorities did analyze and discuss performance of their annual plan at the end of the year but have not assessed management plan implementation. The management authorities also could not analyze implementation of the management plan objectives and goals because of the lack of research and information on values selected to be protected. It can be concluded that the management authorities are failing to objectively link the management plan and annual work plan, to assure respective budget for the implementation of the management plan.

- *Resources*

<u>Human resource</u>

According to the current Mongolian Protected Area Law, local authorities are responsible for managing the nature reserves. Because of this situation there is no staff for PAs and soum

environmental inspector and rangers of Governors' Office are responsible for the management of the whole area of the soum. Although, in the Mongolian PA Law, one ranger is responsible for an area of 100,000 ha, there are many overlaps in terms of their duties and responsibilities when reviewed them against their job descriptions. Approved and planned training programs on PA for rangers are very limited and highly required.

Nature reserves are better managed by international or national conservation NGO's, because those NGO's have stronger capacities and more qualified human resources. PA financing must be provided by local governments budget or environmental funds. In order to manage the PA network effectively, skilled and devoted staff are required. Different areas demand different skills; some areas need more intensive and active management while other areas necessitate only few people and low presence.

Equipment

Governors' office's staff has been provided with some equipment and soum rangers have only been supplied with uniforms, motorbikes and self-defense equipment. Some of the needed equipments is still missing. For example, communication equipments in the event of detecting serious breaches on the spot. Facility and vehicle maintenances are done on a regular basis. Maintenance and repair of the rangers' motorcycles are not done.

Finance

There is no specific and sustainable budget for newly established PAs – Jaran Togoo tal A, B part, and Bayantsagaan tal.

For Dornod Mongol SPA 80% of the budget is spent on salaries of the staff as well as running expenses of the administration and the remaining 20% is spent on operations The remaining budget for the implementation of the management plan has not been sufficient. The budget breakdowns are not done in compliance with the management plan. Therefore, it is impossible to fulfill activities which require a large amount of budget. If there is an outside funding and entrance fees are collected, they are put into the state budget and make no contribution to the protected area or its surroundings. The available budget is inadequate and presents a serious constraint to the capacity to manage the PA. Budget management is also poor which leads to reduced management effectiveness. It is required to objectively plan the financing of protected areas, increase financial sources, create a sustainable financing mechanism, provide a possibility to the administration to spend its generated incomes on management activities and improve the legal environment to support these.

- *Management Programs*

Patrolling

PA's in eastern Mongolia cover wide ranging area and there is insufficient number of rangers for patrolling. Usually patrolling is done using the motorbikes but often there is also lack of petroleum. Particularly NR's, such as Dornod Mongol, Bayantsagaan, Tosonkhulstai, Jaran Togoo are large grassland areas and systematic patrolling is required. Volunteer rangers do work irregularly because no incentive system is in place for them in some PAs. In order to improve the protection system, it is needed to develop patrolling plans for each PA, to increase number of rangers, to create posts for rangers, to increase number of check points, foster multi-lateral intervention or involvement, and to provide rangers with equipment and working premises.

Public awareness

Public awareness and advocacy works of the protected areas were assessed with the lower scores. Only Tosonkhulstai NR staff carry out the public awareness raising and advocacy works through its

information centres in warm seasons. Due to the heating system problems, the information center could not work in cold seasons. Other protected areas carry out the public awareness raising and advocacy works through rangers on an irregular basis. No budget is allocated to the public awareness raising and advocacy works. Therefore, wide-ranging and staged public awareness works have not been arranged to improve knowledge and attitude of the local people. Awareness raising works over significance and value of the protected areas to the local people and decision makers have been insufficient. Therefore, the partners do not have sufficient understanding about the protected areas and do not well participate in the PA management. Ecological and economic assessments of the protected areas have not been performed in detail and as a result, partners do not have enough understanding about it. It is required therefore to have this type of research within the scope of a network of protected areas of Mongolia and widely share the findings with all stakeholders.

Research

There is no systematic research plan on keystone species such as Mongolian gazelle and White-naped crane. therefore research and database provision received the lower score in the protected areas. In general, some research works have been conducted in the past with the participation of experts and scientists within the scope of medium and short-term projects and programs. There are many articles and report resulting on Mongolian Gazelle from the eastern Mongolia but these data is not collected in the local environmental departments, which means that there is no cooperation between researchers and local environmental departments, who work in this region. However, protected areas have insufficient research on the changes of biodiversity, which are required to plan appropriate activities that are in line with the primary objectives of putting these areas under special protection. The most threats to degrade biodiversity are appraised as fire induced ecosystem change, improper pasture use and climate change. However, there is not enough information, which defines in scope and severity of threats. In other words, there is not enough information about which impacts the relevant threat causes on biodiversity of the relevant protected area and not appropriate planning to reduce the impact. Besides, there is a lack of professional specialists to carry out the research and monitoring. Research works and databases of the protected areas in the same regions are not integrated. This is a reason of why an integrated system has not been created on biodiversity and threats facing them. A special management has not been performed due to the lack of socio-economic, historical and valuable cultural heritage researches and detailed research and database of very rare and rare animals and plants on the international and regional levels. There is a need to have professional organizations carried out a survey on endangered species at the international and regional levels.

Participation

At the Tosonkhulstai NR have been established co-management council has been established since 2013. Other PAs do not have any councils. In order to expand cooperation, the actual results of the activities need to be jointly discussed and predicted. An insufficient work is done to improve knowledge on values and ecological benefits of PA among the local stakeholders such as community based organizations and business entities, as such, they are not involved in the management implementation.

Tourism

One of the objectives to establish PAs into the special protection is to develop tourism and provide sustainable development of the region. Around 80% of the foreign tourists visit the protected areas and a number of domestic tourists to the areas have been increasing in recent years in Mongolia. Tourism management was evaluated as the weakest management direction of the protected areas due to the insufficient legal environment, human resource and capacity. There is a lack of tourism infrastructure in the current nature reserves such as Bayantsagaan, Jaran togoo and nearby, which is one of the main preconditions to develop the sustainable tourism. Tosonkhulstai NR, has been taking few groups of tourists every year, especially from USA, supporting by TNC (Tosonkhulstai MP, 2014-2018) and other NR's should learn and share the experiences from Tosonkhulstai. The

management authorities cooperate closely with tourism operators under contracts and make environmental impact assessments, because of the species such as gazelle, that is very sensitive migratory species.

- *Monitoring and evaluation*

Information on biodiversity of the protected area, biodiversity targets and threat analyzes is one of important aspects for making a management plan of the protected areas. A monitoring and evaluation system is required to be introduced to appraise results of activities, let the parties know about the gained successes, provide financing organizations with necessary information, and determine mistakes and achievements of the current activities. Currently, monitoring and evaluation over the PAs objectives, achievements and their outputs is limited. The overall appraisals of the PA objective achievements show that although some of the biological, ecological, and cultural values under protection have deteriorated main parts of these values are under protection. The management authorities do annually review of its performance with the stakeholders and reflect the recommendations and comments into next year's work plan. However, due to lack of financing many activities are never implemented. The monitoring over the Management plan implementation status is not conducted. The MET does enter into performance-based contract with the management authorities and reviews the performance annually and rank the PAs (METT assessment-Eastern Mongolia, 2016). It is therefore recommended that Mongolia develop a single methodology for assessing the PA management effectiveness, and performance. At the same time, one should take into account the fact that no assessment is perfect and hence carry out assessments using different tools and at different stages. There are neither assessments nor research works conducted concerning the values and benefits of PA in Mongolia resulting little understanding the latter. Therefore, it is recommended to carry out work to establishing the value and benefits of PA among the PA network of Mongolia.

### 5.4.5 Stakeholder participation and shared understanding of the proposed property

Dornod Mongol Strictly Protected Area: Although all the stakeholders have a good relationship with local people and developed a multi-stakeholder management plan, but they are not involved in its implementation. There is a Buffer zone council which is established in 2013 and they developed a Buffer zone management plan. It was approved by Citizen's Representatives of Matad soum (district), but very lack information about their implementation. Multi-stakeholder engagement needs to be evaluated and monitored.

Tosonkhulstai Nature Reserve: The main responsible authority of Toson Khulstai is the Governor of Dornod Province since 2000. By Protected Area law, the Eastern Mongolian Protected Area Administration (EMPAA) had been response their management. The Co-Management Committee had been established by the Head of the Environmental Department of the Province Government and cooperating with EMPAA, an Environmental department of Governor offices in Khentii and Dornod provinces and the soum governors in nature reserve and international NGO The Nature Conservancy (TNC) Mongolia in 2008. The Co-Management Committee has a participatory management structure including all related authorities. TNC has been supporting the management plan (MP) since 2008 and is still participating and supervising its management and activities. The committees meeting organize once a year to evaluate result of the annual work plan and plan next year plan for NR.

Main local stakeholders are closely cooperating with the co-management Committee. There used to have triple contract with herder families on land use management since 2015 but it is not stable now. In 2019, the new regulation is developed and all herder families living inside the NR need to make a contract with co-management council.

Jaran Togoo A and B parts, Nature Reserve: Jaran Togoo tal A and B parts were newly established in May 2019 by Mongolian Parliament Resolution, and the main management authority is the

Governor's Office of Dornod province by Protected area law. According to the law, Governor of the Province has established a new local park administration called “Baigal” in 2020. Several regulations about nature reserve within the soum area was approved. But, local people and soum stakeholders have very lack of knowledge about protected area regulation. There is no management plan yet and a new administration has planned to produce the management plan collaborating with International conservation NGO’s such as TNC etc. In the decision making to establishment of NR, local people were participated and they were initiated. Involvement of local communities in planning and management process is a critical necessity, however there is no participation of the local people in the PA management currently. It needs to ensure local people participation in the PA management.

Bayantsagaanii tal Nature Reserve**:** Bayantsagaan tal Nature Reserve was newly established in May 2019 by Mongolian Parliament Resolution, and the main management authority is the Governor's Office of Sukhbaatar Province by the current Protected Area law. Bayantsagaan tal has no Protected Area Administrations by Mongolian Protected Area Law, so local authorities are responsible for the management in accordance to the Law. Soum environmental inspectors and rangers are responsible for the whole area of the soum. Except them, there is no staffs for PA. Several regulations about nature reserve within the soum area was approved. But, local people and soum stakeholders have very lack knowledge about the protected area regulation.

Yakhi Lake Nature Reserve**:** The main management authority is the Eastern Mongolian Protected Area Administration (EMPAA) since 1998, when it was designated as Nature Reserve. Although all the stakeholders have a good relationship with local people and developed a multi-stakeholder management plan, they are not involved in its implementation. The management plan has not improved for many years and it needs improvement urgently.

### 5.4.6 Ongoing initiatives to develop management capacities

Dornod Mongol Strictly Protected Area: Capacity building training for protected area specialists is not regular, organized by the Ministry of Environment and Tourism (MET) is being established involved in training. Specialists attend training to conclude that it has improved impossible, training low frequency, non-systematic with bad methods and techniques do not meet the requirements. Capacity building training for rangers insufficient, very few are organized.

Tosonkhulstai Nature Reserve: There is no approved educational or public awareness initiatives. Some activities organize according to the annual work plan, but unsustainable. Specialists participate some training organized by MET regarding their annual plan.

Jaran Togoo A and B parts, Nature Reserve: There is no approved/ planned education and public awareness program at the moment.

Bayantsagaanii tal Nature Reserve**:** There is no approved/ planned education and awareness program. The soum administrator is lack of knowledge on protected area's regulation and it needs to train the local stakeholders and rangers to improving knowledge on protected area regulation and management.

Yakhi Lake Nature Reserve**:** Capacity building training for protected area specialists is not regular, organized by the Eastern Mongolian Protected Area Administration (EMPAA) is being established involved in training. Specialists attend training to conclude that it has improved impossible, training low frequency, non-systematic with bad methods and techniques do not meet the requirements. Capacity building training for rangers insufficient, very few are organized. Currently, only one ranger is responsible to patrolling whole reserve which is not sufficient.

### 5.4.7 Monitoring of the component parts

Dornod Mongol Strictly Protected Area: There is no regular research work from the Protected Area Administration, except marmot survey in summer season. Although other surveys such as plants,

mammals and avian surveys had been conducted severally in SPA regarding some kind of projects, there is not enough communication with management authority.

Tosonkhulstai Nature Reserve: Monitoring and research for conservation targets of the NR are being conducted as indicated in the management plan such as monitoring of carnivore, marmot and vegetation have been conducted. There is a list of fauna and flora of the NR. TNC Mongolia do biodiversity monitoring and created database.

Management effectiveness tracking tools and The Nature Conservancy's Parks in Peril Program (PiP scorecard) are applied and biological monitoring are conducted to assess and evaluate the results.

Jaran Togoo A and B parts, Nature Reserve: Monitoring activities are not sustainable and unplanned. Soum rangers' monthly patrol is an only one monitoring activity in the whole NR.

Bayantsagaanii tal Nature Reserve**:** Monitoring activities are not sustainable and unplanned. Soum rangers' monthly patrol is an only one monitoring activity in the whole Nature reserve. An International organization such as WWF Mongolia conduct Mongolian gazelle migration survey in Eastern Mongolia. It needs to plan in Management plan. No data collected on its Biodiversity.

Yakhi Lake Nature Reserve**:** There is no regular research work from the Protected Area Administration, except some gazelle survey in winter season. Although other surveys such as plants, mammals and avian surveys had been conducted severally in nature reserve regarding some national projects, there is not enough communication with management authority.

## 5.5 Feasibility and options for coordinated management of the entire series

Only one of the five proposed properties is managed by Eastern Mongolian Protected Area Administration, which is established and reports directly Ministry for Nature, Environment and Tourism while other four of them will be managed by newly established local Protected area administration by Governor's order of Dornod province, which will be also responsible local Protected areas within Dornod province.

At the moment, conservation organizations and biodiversity researchers who have been working in eastern Mongolia are developing new management plans for total of 8 nature reserves including Jaran togoo NR, Tosonkhulstai NR, Yakh Lake NR and Bayanztsagaan NR, and planned to be produced the plans by early March, 2021.

One of the suitable options to protect and manage the proposed properties is to integrate all the management plans and create one governing body of all nature reserves to local protected areas collaborating with local Government bodies in eastern Mongolia. Because there is a total of 40 local protected areas identified in the eastern Mongolia and most of them is located between proposed properties.

During the nomination procedure, it is essential to organize the all parties meeting to discuss about potential integrated management plan compiling both State nature reserves and Local protected areas.

One of the main threats that identified in the Eastern Mongolia Steppe is a pasture degradation due to heavy grazing by large number of livestock. Therefore, well modified pasture management is needed to implement among the proposed properties to protect the integrity of the properties in eastern Mongolia. Therefore, it is important to integrate into regional development concept.

# 6 Questions to be answered during nomination process

The overall information - regarding the Eastern Mongolian Steppe ecosystem, flora and fauna, integrity, existing and potential threats - is well understood and respective condition of several areas within the proposed property are assessed. As a result, desirable scenario and feasibility of a World Heritage nomination was defined. At the same time, due to the enormous size of the proposed property there are still knowledge gaps that should be closed within the nomination process.

Considering also ongoing trends in increase of the livestock numbers, expansion of the mining sector and infrastructural development, additional assessments, including field surveys should be carried out for updating the information and closing the information gaps. This would strengthen the nomination and subsequent management and provide the final configuration of the property. In terms the formal structure of the nomination dossier, questions to the following topics need to be clarified:

**1) Questions regarding the configuration of the property**

- How many component parts shall be nominated finally? The five suggested on the Tentative List, the nine that are proposed here or more or others?
  It is to decide by the responsible authorities.
- Where should be the exact boundaries of the buffer zones delineated?
- How the buffer zone shall be outlined, as separate buffer zone around each component part or as joint buffer zone connecting all components and covering the nearly entire region as large model region for sustainable pasture management?
- What about the Nomrog SPA? Should it be included in the nomination despite different types of steppe vegetation and different landscape character?

**2) Questions regarding the description**

- What is the current state of the steppes regarding species composition, height, cover, and biomass of the plant cover within each proposed component part and what is the degree of integrity? To answer this question further field surveys to all proposed component parts is needed.
- Which species of plants, birds, mammals and vertebrates occur in each component part? What is known about insect fauna? Field surveys as well as expert discussions and literature review are needed.
- What is the number of livestock and its development from 1990 in the sums where the component parts are located? To be requested from the responsible authorities.
- What about hunting / poaching statistics? To be requested from the responsible authorities.

**3) Questions regarding the Justification**

- How the proposed component parts are connected and complementary to each other, and how they do contribute to the OUV?

**4) Questions regarding the state of conservation and factors affecting the property**

- How and in which category are the previously unprotected parts of the components to be designated as protected areas?
- Would it be needed to unify the protection status within the single component and between all component parts?
- How will be threats addressed arising from the mining or infrastructure sector development?
- What about the protection status of buffer zone?
- How the number of livestock can be restricted?

**5) Questions regarding Protection and Management**

- How can the protection regime of existing PA be strengthened?
- How can management capacities of the protected areas staff be strengthened?
- How can integrated management of the component parts be ensured?
- Do all protected areas including local protected areas have management plans?

- How will it be possible to demarcate the areas so that local land users can easily identify the borders of the nominated property?
- How will be the management of the buffer zones carried out?

**6) Questions regarding Monitoring**

- Which indicators are suitable for an ongoing assessment of the integrity of the desired property and the state of conservation?
- Who is responsible for the monitoring and which scientific institutions are able to carry out the monitoring?

**7) Questions regarding practical aspects of the nomination**

- Who will be the responsible lead authority of the State Party?
- How could additional field surveys as well as stakeholder workshops and meetings for the preparation of the nomination dossier be conducted under current restrictions imposed by COVID-19?
- What political, financial and technical support the State Party could provide in the nomination process?

# 7 Conclusions and recommendations

1) “Temperate grasslands” are one of the World’s major biomes that once covered extensive regions in Eurasia, North and South America. As natural ecosystems they reflect strong continental semi-arid to semi-humid climate conditions in the nemoral and austral zone. They are dominated by grasses and perennial herbs and support rich and diverse plant and animal life, including globally significant aggregations of large, migratory herbivores.

2) Temperate grasslands are also the origin and ongoing home of ancient cultures of mobile pastoralism based on a mostly self-sufficient way of life that that developed diverse and rich knowledge and intangible heritage in longstanding interaction with a harsh and unforgiving environment without substantially modifying it over long periods of time.

3) Temperate grasslands and their nomadic cultures have been largely destroyed or heavily by conversion to agricultural use, overgrazing or other human activities over the past two hundred years. Because of the multiple direct and indirect impacts and also because of the longstanding interaction with mobile herders, there are no “pristine” temperate grasslands in the strict sense of the term. Nonetheless, the degree of naturalness can vary fundamentally.

4) Mongolia is the only country in the world where temperate grasslands and nomadic traditions survived and remained at a large scale. They represent Central Asian types of the Eurasian steppes. Steppes and nomadic culture epitomize the national identity and heritage of Mongolia.

5) Because of profound economic and societal changes large parts of the Mongolian steppes are today heavily degraded by overgrazing and threatened by desertification. There has been a three-fold increase in the number of livestock compared to 1990 in addition to reduced mobility and changed composition of livestock species.

6) Eastern Mongolia is a huge territory covered by steppes to this day. Despite structure, biodiversity and functions of the ecosystem are mainly intact and the nomadic culture is also practiced.

7) However, the Eastern Mongolian Steppes are threatened by degradation stemming from overgrazing, change to agriculture, destruction by mining, fragmentation by transportation infrastructure and poaching among others.

8) National programs and the existing network of protected areas at national and local level shall ensure the steppes as a functioning ecosystem underpinning regional and local livelihoods.

9) The Eastern Mongolian Steppes are of major national but undoubtedly also of international importance, as illustrated also by the designation of two UNESCO biosphere reserves and two Ramsar sites.

10) The Eastern Mongolia steppes have the potential to meet World Heritage criteria (ix) and (x). It could meet also criterion (v), but the data base is not enough for a nomination as a mixed site.

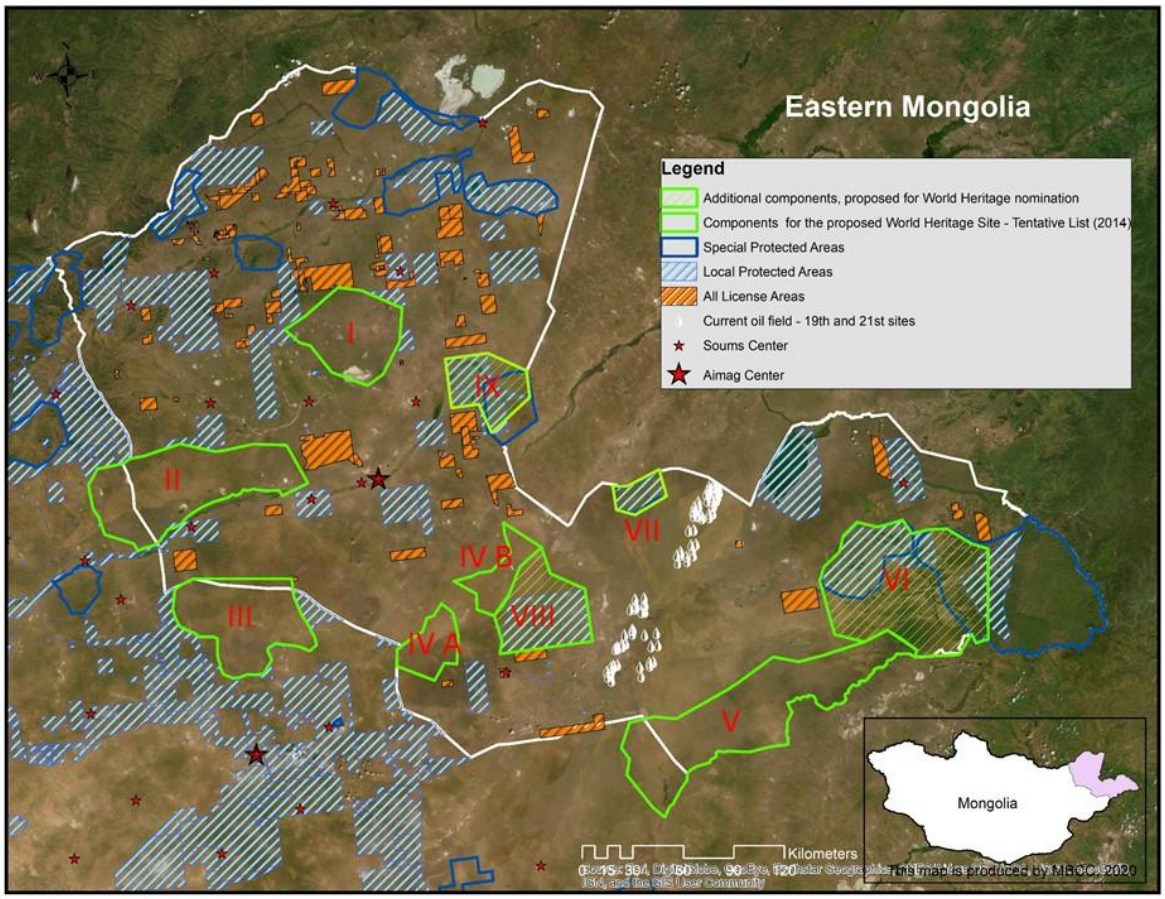
11) The five protected areas suggested in the current Tentative List represent a strong basis. They should be complemented by four additional component parts (table 8, figure 55).

12) A successful nomination is a realistic target and could in principle be initiated immediately, while the particular circumstances of the ongoing COVID-19 related restrictions are difficult to predict and need to be taken into account. Provided that the work can be continued in the spring and field work to collect further required information will be possible over 2021,

completion of the nomination dossier by the end of 2022 seems to be feasible. Submission to UNESCO could then take place by 01 February 2023.

*Table 7: The proposed component parts for the serial nomination*

| No | Component part | Size [ha] |
|---|---|---|
| I | Yakhi Nuur Nature Reserve | 251,388 |
| II | Toson Khulstai Nature Reserve | 469,928 |
| III | Bayantsagaan Steppes Nature Reserve | 332,362 |
| IV | Jaran Togoo Steppes Natural Reserve | 188,609 |
| V | Dornod Mongolia Strictly Protected Area | 589,906 |
| VI | Adjacent area of Dornod SPA and Numrug SPA | 614,908 |
| VII | Menengiin tsagaan khooloi NR | 45,748 |
| VIII | Adjacent area of Jaran togoo tal NR | 228,973 |
| IX | Khalkh Tavan Uul | 145,000 |
| | **Total area** | **2.867 million** |




*Map 32: The green outlined form the geographic scope for nomination as a serial World Natural Heritage under criteria (ix) and (x)*

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