GOVERNOR'S OFFICE OF DORNOD AIMAG

INCEPTION REPORT ON

CONSULTING SERVICE FOR SOUM LAND DEVELOPMENT PLAN OF MATAD SOUM, DORNOD AIMAG

Client: GOVERNOR'S OFFICE OF DORNOD AIMAG

Contractor: land management specialized company - "GEOBOTANIC" LLC

2022

Soum's overview

Matad soum is 720 km from Ulaanbaatar city in the east and is located in Menen steppe in eastern part of Mongolias. It borders China to the southeast and north, Erdenetsagaan and Sukhbaatar soums of Sukhbaatar aimag to the south and west, and Bulgan, Bayantumen and Khalkhgol soums to the rest.

The entire territory of this soum belongs to the Eastern Mongolian Steppe zone.

Natural zones

There are two sub regions and six belts in the steppe natural zone. Territory of Matad soum rests in both Middle Khalkha and Eastern Mongolian Steppe sub regions of Steppe zones and in Khukh lake belt in north of Kherlen river (T-2) and in Baruun-Urt hill belt in south of Kherlen River (T-6).

SOUM'S LAND INVENTORY REPORT-2021

Agricultural areas

Soum's Land Inventory Report-2021 indicated that 1707522 ha or 93% of agricultural areas is pasturelands, 112141.48 ha or 6.1% is hayland, 70.52 ha or 0.03% is fallow lands, and 954.9 ha or 0.05% is agricultural construction areas.

Urban and settlement areas

Settlement area covers 49.7 ha or 1.4% of the area.

Road and network areas

Of the total area of road and network lands, 2041.2 ha or 82% are roads and 448.59 ha or 18% are network areas.

Water bodies

Of the total area of water bodies, 61.512 ha or 1.1% are rivers, 5322.688 ha or 98.9% are lakes and ponds.

State special needs areas

Of the total area of state special-need lands, 81% is the state special protected area, 0.03% is the areas for defense and security purposes, and 1.4% is the areas for scientific and technological testing and environment and weather conditions observation.

NATURE, CLIMATE AND RESOURCES

The territory of Matad soum, as well as the territory of Dornod aimag, is located in eastern part of Mongolia, belongs to the Pacific Ocean Basin and Kherlen river basin of Mongolia.

Climatic contitions

Although Dornod aimag, like other parts of Mongolia, has harsh continental climatic conditions, is located in an area with relatively cool conditions.

In general, Dornod aimag is located in cold and dry condition zones where winters are long (less snowfall), summers are short (hot, low precipitation, and occasional extreme cold), and springs and autumns are characterized by frequent stormy days.

Air temperature

The long-term average temperature of Matad soum is + 0.9°C which indicates that it belongs to the cooler zone in terms of air temperature; its temperature is + 0.2°C warmer than the aimag's average. In the coldest month of the year, air temperature is -21.1°C, and in the spring, temperature increases more than 0°C in the last ten days of March. The warmest annual temperature of 20.6°C occurs in July.

Changes in Temperature

In Matad soum of Dornod aimag, annual average temperature data show that it was relatively stable from 1920 to 1980, and it has been rapidly increasing from 1980 to 2000. However, from 2000 to 2020, temperature has decreased. Mean daily temperature was recorded highest in 1960 and lowest in 1960-1990.

Humidity and precipitation

In Matad soum, a total annual precipitation is 229.7mm according to the climatic norm. This indicates that Matad soum's area is considerably humid in terms of precipitation. In winter (November-March), an average of 9.7 mm of precipitation falls. The amount of precipitation during spring-months gradually increases, with a sharp increase in June, and the highest precipitation falls in July and August (126.5 mm). During the warm season, 84.8% of the total

annual precipitation falls, of which 65.2% falls in July-August. From September onwards, the amount of precipitation decreases sharply, and from November onwards, it shifts to winter mode.

Wind

In Matad soum of Dornod aimag, average annual wind speed is 0.7m/s higher than aimag's average with 4.2m/s, and the maximum wind speed is 20-25m/s during spring and autumn, indicating that weather is unstable. Number of dust storm days per year is 11 days and the number of snow storm days is 2 days.

Soil types

The following types of soil are spread in Matad soum: aridic kastanozem 1317528.66 ha or 57.55%, mollic leptosols 331484.89 ha or 14.48%, leptic kastanozems 284674.72 ha or 12.43%, chernozem 139254.81 ha or 6.08 %, solonetz 50521.83 ha or 2.21%, kastanozem 45854.73 ha or 2.00%, mollic leptosol 13741.65 ha or 0.60%, meadow phaeozems 19337.11 ha or 0.84%, Aridic kastanozem 460.08 ha or 0.02%, meadow soil 11334.29 ha or 0.50%, Steppe meadow 553.23 ha or 0.02%, solonchak 22903.65 ha or 1.0%, salic histosol 10854.83 ha or 0.47%, gleysol solonchak 6115.18 ha or 0.27% and other types of soil may occur such as steppe solonetz, sandhill, arenosol.

Soil particle composition

Soil particle composition: 61.19% loamy sand soil, 33.75% loamy soil, 4.76% medium clay loamy soil, 0.26% clay loamy soil, 0.01% silty clay loamy, 0.02% loamy sand.

Water reserve

In terms of groundwater resources, Matad soum rests in the area of coarse sediments (river valleys, water accumulation) with 1l/s/km water reserve. Soil water can be found in depths of 3 m. Natural water supply is decent. Fresh water supply is 473.0 thousand m^3/year, freshwater per capita is 519.6 l/day, and even though water supply is relatively decent, quality is poor.

Status of Pasture Vegetation

More than 20 types of vegetation were identified in the soum. The most common of these are 35.6% of steppe pastures of sandy loam in plain valley and 34.7% of steppe pastures of loamy kastanozem in plain and hilly valley, 22.4% of steppe pasture of mollic leptosol, sometimes kastanozem, 5.56% of salic meadow pastures of steppe meadow and fluvisol, and 1.76% of meadow pastures of steppe meadow solonchak.

Groundwater resources

Water supply is poor in Matad soum. In the territory of the soum, there are a lots of lakes formed by tectonic movements, such as Shavar khur lake and Lag lake. Small sized (less than 5 sq.km)lakes exist in western part of the soum, there are lots of There is a spring called Naranbulag located in Lat 46°54'N, Lon 115°03'E and 1975 m above mean sea level in 2nd Bag of Matad soum. A total area of surface water is 5470.5 ha.

Groundwater

In terms of hydrogeologic regions, territory of Matad soum belongs to the groundwater resource flow system and is part of the eastern part of Mongolia with a moderate seasonal resource sub region.

Land degradation and changes in land productivity

Trends Earth tool:

Land degradation analysis has been carried out using the Trends Earth tool provided by Conservation International NGO. According to 15.3.1 of UN Sustainable Development Goals, land degradation has been estimated by 3 factors. Within the framework of the UN Convention of Combating Desertification, their degradation indicators were calculated.

Compared to 2001-2010, in 2010-2020, the amount of areas with improved productivity increased by 1.96%, the amount of areas with stable condition decreased by 6.05%, and the amount of areas with decreased productivity increased by 8%.

Changes in land cover

Compared to 2001-2010, in 2010-2020, the amount of areas with increased land cover decreased by 0.85%, the amount of areas with stable land cover increased by 0.74%, and the amount of areas with decreased degradation increased by 0.11%.

Changes in soil organic carbon

Between 2010 to 2020, the amount of areas with increased soil organic carbon increased by 0.03%, the amount of areas with stable carbon increased by 0.07% and the amount of areas with decreased degradation increased by 0.0%.

Areas damaged by mining activities

Survey result showed that in Matad soum of Dornod aimag, a total 13 areas in Khargan Tsar, Bayankhoshuu, Asgat Am, Soum Center, Khargan Tsar and Khuut areas of 2nd bag of Bayankhangai were damaged due to illegal mining activities. Most of these areas have 1-4 m deep ditches along the ravine. Area of those abandoned areas was 60.54 ha in total.

Soum's Social and economic overview

Demography

As of 2020, 8.12% was men and 6.42% was women in Jargalant bag, 8.43% was men and 7.53% was women in Bayankhangai bag, 14.7% was men and 11.8% was women in Tumenkhaan bag, 10.2% was men and 5.33% was women in Buyan-Undur bag, 3.87% was men and 2.05% was women in Menen bag, and 15.2% was men and 6.39% was women in Erdenebadrakh bag.

Population Density

Population density data showed that it was constant in the last five years with 0.1. In terms of demographic load, it has been declining since 2016, with the highest number of births recorded in 2016 and 2020 while the number of deaths increased since 2018.

Poverty level

As of 2011, poverty coverage of Matad soum was 68.9%, depth of poverty was 21.5%, poverty sensitivity was 9.5%.

People with disabilities

There are 139 people with disabilities including 19 with visually impaired, 9 with speech-impaired, 16 with hearing disabilities, 38 with mental disorders and 25 with other types of disabilities in Matad soum, which is 4.3% of the total resident population.

Health

As of 2020, the number of doctors and nurses has decreased by 1 and 2 respectively, while the number of other health workers were stable.

The total number of deaths in the soum is 20 in 2020, the lowest rate is recorded in 2017 and the highest is 2018. As for morbidity, 62% was cardiovascular disease, 20% was fracture, poisoning and other external diseases, 11% was gastrointestinal diseases, 5% was cancer and 2% was respiratory diseases.

Education

The number of children who attend secondary school is reduced by 21 in 2020 and by 14 in 2019.

Livestocks

As of 2020, the soum had 208945 livestock, including 36590 horses, 29193 cattle, 599 camels, 82660 sheep and 59903 goats.

Agriculture

In terms of cultivated area of vegetation, the largest area cultivated was 8.93 ha in 2018, while the lowest captivated was 4.5 ha in 2020.

Compared to 2016, household crops decreased: potatoes by 2.9 ha, vegetables by 0.6 ha, beets by 0.3 ha, onions by 0.1 ha, garlics by 0.3 ha, tomatoes by 0.3 ha, watermelon by 0.4, while cucumbers increased by 0.5 ha.

LAND SUITABILITY ANALYSIS

Subtracting basic land use conditions of the current land use from the results of the land suitability analysis for cropland area, the result of the analysis show that 1.81% or 41454.10 ha of the total area of the soum is highly suitable for cropland, 76.8% or 1758120.58 ha is suitable, 14.37% or 329051.19 ha is moderate suitable, and 7.02% or 160682.9 ha is constraint area.

The result of the factor analysis of land suitability analysis for winter-spring pasturelands show that 10.76% or 246360.87 ha of the total area is suitable for camel grazing, 65.95% or 1509708.65 ha is suitable for horses, 4.42% or 547745.0 ha is suitable for cattle, 7.40% or 916584.57 ha is suitable for sheep and 7.86% or 972598.3825 ha is suitable for goats.

The result of the factor analysis of land suitability analysis for summer-autumn pasturelands resulted that 25.87% or 592218.19 ha of the total area is suitable for camels grazing, 43.16% or 988089.20 ha is suitable for horses, 9.83% or 1217695.30 ha is suitable for cattle, 41.44% or 948756.08 ha is suitable for sheep and 41.44% or 948756.08 ha is suitable for goats.

Subtracting basic land use conditions of the current land use from the results of the land suitability analysis for urban and settlement area, the result shows that 66.9% of the total area of Matad soum is suitable for settlement area, 31.2% is moderate suitable, and 1.8% is unsuitable.

The result of the land suitability analysis for tourism land shows that 621.87 ha or 0.03% is moderate suitable for tourism, 2133842.68 ha or 93.21% is unsuitable, 274.34 ha or 0.01% is highly unsuitable and 154569.88 ha or 6.75 % is for other land use.

The result of the land suitability analysis for network area shows that 633008.41 ha or 27.65% is normal, 1513389.46 ha or 66.11% is difficulty, 137388.08 ha 6.0% is high difficulty.

According to the land suitability analysis for forest areas, the result shows that 95975.81 ha or 4.19% is unsuitable, 2170489.51 ha or 94.81% is highly unsuitable, and 22843.46 ha or 1% is for other land uses.

The result of the factor analysis for establishing ponds, 11575.53 ha or 0.51% of the total area of the soum is suitable for ponds.

The result of the factor analysis of land suitability analysis for hay land, 267354.64 ha or 38.08% of the total area of the soum is suitable for hay land.