GOVERNOR'S OFFICE OF DORNOD AIMAG

INCEPTION REPORT ON CONSULTING SERVICE FOR SOUM LAND DEVELOPMENT PLAN OF BULGAN SOUM, DORNOD AIMAG

Client: GOVERNOR'S OFFICE OF DORNOD AIMAG

Contractor: land management specialized company - "GEOBOTANIC" LLC

2022

Soum's overview

Bulgan soum shares borders with Bayantumen to the east, Matad soum and Sukhbaatar soum of Sukhbaatar aimag to the southeast, Khulunbuir soum to the west and Tsagaan-Ovoo to the northwest. Bulgan soum is located 600 km away from Ulaanbaatar city and 50 km from Choibalsan city. Bulgaan soum has 1775 population with 510 households in a total area of 711.1 thousand ha. Livestock husbandry and agriculture dominates in this soum's living with 42.8 thousands livestock.

Center of Bulgan soum, Undur khoshuu, is located 590 km away from Ulaanbaatar city and 60 km from Choibalsan city and is connected to Choibalsan city's power supply.

Geographical location

has a harsh continental climate. The average temperature in January is -21°C - -24°C and in July +22°C-+26°C, and average annual precipitation is 160-210 mm. The Kherlen River flows along the northern border. There are many small lakes and ponds. It has small steppe shrubs, variegated grasses, sagebrush, and steppe grasses. There are steppe animals such as Mongolian gazelle, wolf, fox, corsac fox and marmot. Wild and water birds are abundant.

Natural zones

There are two sub regions and six belts in the steppe natural zone. Territory of Bulgan 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 north of Kherlen River (T-6). 223400.6 ha or 58.8% rests in the Baruun-Urt hill belt in the south of Kherlen River (T-3).

There are relatively high elevations around the soum center. The average altitude is 800-1200 m above sea level. In the northern part of the soum, the Kherlen River flows from west to east.

SOUM'S LAND INVENTORY REPORT-2021

Agricultural areas

Soum's Land Inventory Report-2021 indicated that 671850.2 ha or 95% of agricultural areas is pasturelands, 24568.7 ha or 3.5% was hayland, 3134 ha or 0.4% was cropland, 121.9 ha or 0.01% was fallow lands, and 954.9 ha or 0.05% was agricultural construction areas.

Urban and settlement areas

Settlement area covers 23.8667 ha or 1.2%.

Road and network areas

Of the total area of road and network lands, 3841.3 ha or 85% are roads and 689.98 ha or 15% are network areas.

Water bodies

Of the total area of water bodies, 1527.8 ha or 38% are rivers, 2440.7 ha or 62% are lakes and ponds.

State special needs areas

Of the total area of state special-need lands, 0.00493 ha is the area for scientific and technological testing and environment and weather conditions observation.

NATURE, CLIMATE AND RESOURCES

The territory of Bulgan 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 Bulgan soum is +0.6°C which indicates that it belongs to the cooler zone in terms of air temperature; its temperature is + 0.1°C cooler than the aimag's average. In the coldest month of the year, air temperature is -22.3°C in January, and in

the spring, temperature increases more than 0°C in the last ten days of March. The warmest annual temperature of 21.0°C occurs in July.

Temperature change

In Bulgan soum of Dornod aimag, annual average temperature data show that it was relatively stable from 1920 to 1960, and it has been rapidly increased since 1960. Average daily temperature was recorded highest in 1960-1980 and lowest in 1980-2000.

In terms of changes in precipitation, annual average precipitation increased in 1960 and decreased in 1970 to 1980. Rainfall. It was stable from 1920 to 1940, fluctuated since 1940 and declined since 2000.

Moisture and precipitation

Due to its harsh climate conditions and precipitation, Bulgan soum's area is considerably humid. The amount of precipitation is the highest (71%) in winter and summer (January and August), lowest (44%) in spring and autumn (May and October), and average annual precipitation is 58%.

Wind

In Bulgan soum of Dornod aimag, average annual wind speed is 1.0m/s higher than aimag's average with 4.5m/s, and the maximum wind speed is 20m/s between from February to July, indicating that weather is unstable.

Soil types

The following characteristics of soil are spread in Bulgan soum: mollic leptosol 332856.23 ha or 46.96% with highest dominance, aridic kastanozem 205347.59 ha or 28.97%, meadow phaeozems 78598.08 ha or 11.09%, leptic kastanozems 43001.97 ha or 6.07%, meadow soil 9246.53 ha or 1.30% with lowest spread, fluvisol meadow 18492.71 ha or 2.61%, solonetz 11706.98 ha or 1.65%, and other types of soil may occur such as brown chernozem, meadow regosol gleyic soil, steppe meadow, histosol clay, cryic histosol clay, fluvisol meadow, salic fluvisol, steppe solonetz and leptic arenosols

Status of Pasture Vegetation

More than 20 types of vegetation were identified in the soum. The most common of these are 47.61% of steppe pasture of mollic leptosol, sometimes kastanozem, 29.86% of steppe pastures of loamy kastanozem in plain and hilly valley, 15.17% of steppe pastures of sandy loam in plain valley, 3.59% of salic meadow pastures of steppe meadow and fluvisol, and 3.46% of meadow pastures of leptic fluvisol and steppe meadow, 0.32% of dry steppe pastures of leptic sandhill.

Groundwater resources

Territory of Bulgan soum belongs to the Kherlen river basin and in general, water distribution is relatively low in terms of hydrogeology. Surface water runoff only occurs temporarily during heavy rainfalls. It is located in an area where groundwater is difficult to find.

According to some information of wells and springs, water preservation depth is 2.5-4.5 meters, and water spurting out at least 1.0 l/s and at most 2l/s.

Groundwater

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

Geomorphological formation

In terms of geomorphological formation, territory of Bulgan soum consists of flat surfaces, intermountain depressions, eroded surface rocks, remaining mountains with surface on the rock from the Middle and New ages, formed, dry and flat mountains, slopes and hills and river sedimentary surfaces.

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 decreased by 3.85%, the amount of areas with stable conditions increased by 3.08%, and the amount of areas with decreased productivity decreased by 0.12%.

Changes in land cover

Compared to 2001-2010, in 2010-2020, the amount of areas with increased land cover decreased by 12.8%, the amount of areas with stable land cover increased by 0.23%, and the amount of areas with decreased degradation decreased by 0.06%.

Changes in soil organic carbon

Between 2010 to 2020, the amount of areas with increased soil organic carbon decreased by 0.03%, the amount of areas with stable carbon increased by 0.06% and the amount of areas with decreased degradation increased by 0.09%.

Areas damaged by mining activities

Survey result showed that in Bulgan soum of Dornod aimag, a total 13 parcels with 55,979 ha were damaged due to illegal mining activities. Most of these areas were damaged due to common mineral mining for road construction.

Soum's Social and economic overview

Demography

As of 2020, Bulgan soum has a population of 1927, of which 55% are men and 45% are women.

Population Density

Population density data showed that it was constant in the last five years with 0.3. In terms of demographic load, it has been constantly increasing in 2016-2018, decreased by 8.2% in 2019 and increased by 11.7% in 2020. Mortality rate decreased in 2017, 2018, and 2020.

Poverty level

As of 2011, poverty coverage of Bulgan soum was 70.9%, depth of poverty was 20.6%, poverty sensitivity was 8.5%.

People with disabilities

The number of people with disabilities in Bulgan soum is higher than that of other soums of Dornod aimag.

In 2020, the number of registered employees in the soum increased by 19% compared to 2019 and decreased by 45% compared to 2021. In general, it decreased by 0.15%. The number of registered unemployed is 8 in the soum. There are 108 people with disabilities in Bulgan soum, which is 5.2% of the total resident population.

Health

As of 2020, the number of doctors in bag, nurses and other health workers has decreased by 1 each while the number of doctors, dentist, midwives, and lab-workers has increased.

A total number of deaths in the soum is 12 in 2020, the lowest rate is recorded in 2017 and the highest is in 2016. As for morbidity, 51% was deaths, 24% was cardiovascular disease, 8% was fracture, poisoning and other external diseases, 3% was gastrointestinal diseases, 14% was cancer and 3% was respiratory diseases.

Education

There is 1 kindergarten and 1 secondary school with 125 children in Bulgan soum. Number of children in kindergarten has constantly increased compared to previous year.

In 2020, a total of 18 staff in the education sector including 4 full-time teachers, 4 assistant teachers, and 10 other staff.

Livestocks

As of 2020, the soum had 221617 livestock, including 31076 horses, 19667 cattle, 413 camels, 106488 sheep and 63973 goats

Agriculture

In terms of cultivated area of vegetation, the largest area cultivated was 1111.3 ha in 2016, while the lowest captivated was 11.8 ha in 2018.

Compared to 2016, household crops decreased in Bulgan soum: grain by 503 tons, wheat by 525 tons, turnips by 14.3 tons, herbs by 15 tons, while potatoes increased by 390.4 tons,

vegetables by 14.1 tons, cabbages 4.5 tons, carrots 12.8 tons, cucumber by 10.9 tons, tomatoes by 8.1 tons, peppers by 1.2 tons and hays by 3176 tons.

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 6.95% or 49247.3 ha of the total area of the soum is highly suitable for cropland, 85.33% or 604837.0 ha is suitable, 5.85 % or 41443.6 ha is moderate suitable, and 1.87% or 13266.1 ha is constraint area.

The result of the factor analysis of land suitability analysis for winter-spring pasturelands show that 12.36% or 87603.21 ha of the total area is suitable for camel grazing, 56.02% or 397100.68 ha is suitable for horses, 24.38% or 172838.7 ha is suitable for cattle, 40.80% or 289206.92 ha is suitable for sheep and 46.38% or 328766.85 ha is suitable for goats.

The result of the factor analysis of land suitability analysis for summer-autumn pasturelands resulted that 32.22% or 228403.64 ha of the total area is suitable for camel grazing, 26.63% or 188754.44 ha is suitable for horses, 63.11% or 447298.3 ha is suitable for cattle, 32.93% or 233437.73 ha is suitable for sheep and 27.35% or 193877.80 ha is suitable for goats.

The results of the land suitability analysis for urban and settlement area shows that 66.9% of the total area of Bulgan soum is suitable for settlement area, 323264.69 ha or 45.61% is moderate suitable, and 351738.33 ha or 49.62% is unsuitable and 7992.70 ha or 1.13% is highly unsuitable.

The result of the land suitability analysis for tourism land shows that 63342.41 ha or 8.94% is moderate suitable for tourism, 616871.58 ha or 87.03% is unsuitable, 87.25 ha or 0.01% is highly unsuitable and 28492.75 ha or 4.02% is for other land use.

According to the land suitability analysis for forest areas, the result shows that 256.41 ha or 0.04% is unsuitable, 3916.93 ha or 0.05% is highly unsuitable, and 704620.64 ha or 99.41% is for other land uses.

The result of the factor analysis for establishing ponds shows that 50118.15 ha or 7.07% 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.

Subtracting basic land use conditions of the current land use from the results of the land suitability analysis for urban development area, the result of the analysis show that 30.7% of the total area of Bulgan soum is suitable for settlement area, 64.0% is moderate suitable, and 5.3% is unsuitable.