Working Draft 2022

MONGOLIA

Country Profile and Context

AFoCO
Asian Forest Cooperation Organization

Contents

Abbreviations and Acronyms

AFoCO	Asian Forest Cooperation Organization
BAU	business-as-usual
CBD	Convention on Biological Diversity
COP	Conference of the Parties
CSO	Civil Society Organization
DAC	Development Assistance Committee
EIC	Environmental Information Center
FIS	Forest Information System
FPIC	free, prior, and informed consent
FRA	Forest Resource Assessment
FREL	Forest Reference Emission Level
FRL	Forest Reference Level
FUG	Forestry User Group
GBNP	Green Belt National Programme
GDP	Gross domestic product
GNI	Gross National Income
IMF	International Monetary Fund
INDC	Intended Nationally Determined Contribution
ISO	International Organization for Standardization
IUCN	International Union for Conservation of Nature
LC	Local community
LDC	Least Developed Countries
LULUCF	Land use, Land Use Change and Forestry
MEGD	Ministry of Environment and Green Development
MET	Ministry of Environment and Tourism
MNE	Ministry of Nature and Environment
NAPCC	National Action Programme on Climate Change
NBP	National Biodiversity programme
NEGDT	Ministry of Environment, Green Development and Tourism of Mongolia
NEMA	National Emergency Management Agency
NFM	National forest monitoring and assessment
NGDP	National green development policy
NPD	National Project Director
NPFC	National Programme on Forest Cleaning
NSO	NATIONAL STATISTICS OFFICE
NTFP	non-timber forest products
NTFP	non-timber forest products
ODA	Official development assistance

PFE	Private forest enterprises
Ph.D.	Doctor of Philosophy
PMU	Programme Management Unit
PPP	Purchasing power parity
REL	national forest Reference Emission Level
RL	forest Reference Level
SDG	Sustainable Development Goals
SDV	Sustainable development vision
SIS	Safeguards Information system
SME	small and medium-sized enterprise
SPF	State Policy on Forest
UNDP	United Nations Development Programme
REDD	Reducing emissions from deforestation and forest degradation
WWF	World Wildlife Fund

1. Introduction

Mongolia has an opportunity to establish the foundations for green development using its comparatively well-preserved nature of prevailing land, its rich cultural traditions and customs, geographical location, rich natural resources, and its ability to adapt to nature and the environment. On the other hand, the foundation of green development has been created, as Mongolia is at the starting point of an economic boom backed by natural resources, a young population with 47.2% between the ages of 15-40, and an open democratic government which has a strong commitment to sustainable development. However, Mongolia is facing numerous challenges, including poverty, unequal income distribution, a natural resource-based economic structure, the inefficient and wasteful consumption of energy and other resources, obsolete technology and techniques, and a vulnerability to climate change.[1] Mongolia made significant steps to ensure political stability and to improve the system of checks and balances between state powers by making amendments to the Constitution (1992) in November 2019 after a culmination of several years of debates across three parliaments. These amendments will bring due modification to the number of laws. Additionally, the Government of Mongolia took stringent measures in May 2019 banning the burning of raw coal in the capital, Ulaanbaatar - where almost half of the population reside, as part of efforts to clean up the city's air, which has resulted in a reduction of air pollution in the capital, as well as in the surrounding environment. [highlight on government's efforts in forest sector, and their implications to sustainable development]

This document aims to provide a general overview of Mongolia and relevant contexts and baseline information to assist the designing of the cooperation framework under AFoCO. The information contained in this document has been gathered mainly through desk-based research and review of available national statistics, national laws and policies, technical reports, and other secondary data sources, and subsequently validated by the focal agency of Mongolia. Should there be significant changes in national forest policy or context, they will be reflected accordingly.

[1] "GREEN DEVELOPMENT POLICY," *Sdg.1212.mn*, last modified n.d., accessed Mar 22 2021, http://sdg.1212.mn/EN/Home/Green_development_decision.

2. Country Overview

2.1. Geographic Profile

Mongolia, with a land area of about 1.6 million km^2 and a population of about 3.29 million is the world's most sparsely populated country.

Mongolia Located between the Russian Federation and the People's Republic of China, in the heart of Central Asia. Mongolia spans across the Siberian taiga, Euroasian steppes, and the Gobi and deserts of Central Asia, in the watershed of the Arctic, Pacific, and Central Asian Internal Drainage basins. Arable land is estimated to constitute only 0.8 percent of this vast country.[2]

Mongolia has a latitude of 41° to 52°N and a longitude of 87° to 120°E. The highest altitude is 4,374 meters (West Forest) and the lowest is 518 meters (East Plains). The average altitude is 1,580 meters.

The climate is characterized by high fluctuation and extremes in temperature and precipitation . Temperatures remain below freezing from early October to the end of April and fall below minus 45°C at night in the middle of winter. In summer, it rises to 36°C, and UV rays are strong. The annual mean temperature ranges from -8°C to 6°C across regions and the annual precipitation varies from 50 mm in the Gobi Desert to 400mm in the northern mountainous area. [3] The average atmospheric pressure is 1,036 hPa. [4]

With its unique geography, ancient traditions of nomadic livestock herding, culture and customs, and sparse population, Mongolia is an important focal point in Eurasia for both sustainable and co-existence of human and nature and the conservation of degraded ecosystems and endangered animal and plant species.[5]

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[2] "About Mongolia," *UNDP in Mongolia*, last modified n.d., accessed Mar 22 2021, https://www.mn.undp.org/content/mongolia/en/home/countryinfo/.

[3] *REDD+ COUNTRY BRIEF: MONGOLIA* (Ulaanbaatar: The UN-REDD MONGOLIA NATIONAL PROGRAMME, n.d.), 1.

[4] Ministry of Foreign Affairs, *2016 monggol gaehwang* (n.p.: Ministry of Foreign Affairs (KR), 2016), 13. Korean.

[5] Batbold D. et al, *National Biodiversity Program 2015-2025* (n.p.: Minister of Environment, Green Development and Tourism (MN), 2015), 8.

Figure 1: The Mongolia is highlighted in orange[6]

Table 1: Summary of the Country Profile

Official name (ISO 3166 code)	Mongolia (MN)
Capital	Ulaanbaatar
Population	3.297 million (IMF, 2019)[7]
Language	Khalkha Mongolian (official), Turkic, Russian
Currency (ISO 4217 code)	Tugrik (₮) (MNT)
Land Area	1,553.6 thousand km[28]
Forest Area	124.6 thousand km[29]
GDP per capita (PPP)	12,042.063 current international $ (IMF, 2019)
HDI	0.73, 99th rank (UNDP, 2020) [10]
DAC-ODA Recipients	Lower Middle-Income Countries and Territories which are not LDCs[11]
Time zone	**UTC+08:00 (Standard)**

[6] "Mongolia | Culture, History, & People," *Encyclopedia Britannica*, last modified n.d., accessed Mar 22 2021, https://www.britannica.com/place/Mongolia.

[7] "Report for Selected Countries and Subjects," *IMF*, last modified n.d., accessed Mar 22 2021, https://www.imf.org/en/Publications/WEO/weo-database/2020/October/weo-report?c=514,948,&s=NGDP_R,PPPGDP,NGDPRPC,NGDPRPPPPC,TM_RPCH,TX_RPCH,LUR,LP,&sy=2015&ey=2021&ssm=0&scsm=1&scc=0&ssd=1&ssc=0&sic=0&sort=country&ds=.&br=1.

[8] "THE WORLD FACTBOOK," *Cia.gov*, last modified n.d., accessed Mar 22 2021, https://www.cia.gov/the-world-factbook/countries/mongolia/#geography.

[9] "CountryProfile," *Databank.worldbank.org*, last modified n.d., accessed Mar 22 2021, https://databank.worldbank.org/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b450fd57&tbar=y&dd=y&inf=n&zm=n&country=MNG.

[10] "Human Development Reports," *Hdr.undp.org*, last modified n.d., accessed Mar 22 2021, http://hdr.undp.org/en/countries/profiles/MNG.

[11] OECD, *DAC List of ODA Recipients Effective for reporting on 2021 flows* (n.p.: The OECD, 2021), 1.

	UTC+07:00 (the far western provinces of Khovd, Uvs, and Bayan-Ölgii)
Calling code	+976

2.2. Government and Administration

Mongolia is a democratic republic and a dual executive system with a strong parliamentary cabinet system. On January 13, 1992, the Parliament adopted a new constitution. The Constitution also restructured the legislative branch of the government by creating a unicameral parliamentary legislature. The Constitution was put into force on February 12, 1992, and amended in 1999 and 2001.

Legislative Branch

The Parliament of Mongolia is referred to as the State Great Khural, which is the highest organ of state power. The Parliament consists of 76 members appointed for a term of four years.

The Parliament confirms the appointment of the Prime Minister and Cabinet ministers. The Parliament has the power to draft legislation, enact and amend laws, approve the annual budget, approve foreign and domestic policies, declare states of emergency and war and ratify international treaties and agreements.

President

The President is the head of state, commander-in-chief of the armed forces, and head of the National Security Council. The President is second in authority to the 76-member Parliament. Presidential candidates are nominated by political parties that have at least one seat in the Parliament. Presidents are elected by an absolute majority vote to serve a six-year term and are limited to doing one term. The president has no right to dissolve parliament or appoint a cabinet, and the right to veto legislation is limited. [12]

Executive Branch

The Prime Minister is the head of the executive branch. The Prime Minister and the Deputy Prime Ministers are nominated by the ruling party and confirmed by the President. They are limited to serving a four-year term. The Prime Minister chooses the members of the Cabinet, subject to the Parliament's approval. The Cabinet appoints and removes deputy ministers based on the proposal of the Prime Minister and the relevant Minister.

The Cabinet is the highest executive body of Mongolia. The Cabinet is in place for a four-year term or a shorter-term when it is dissolved upon either resignation of the Prime Minister, simultaneous resignation of half of the Cabinet, or parliamentary vote for dissolution. The Cabinet and its ministries are accountable to the Parliament.

[12] Ministry of Foreign Affairs, *2016 monggol gaehwang* (n.p.: Ministry of Foreign Affairs (KR), 2016), 14-18. Korean.

The main function of the Cabinet is to implement the laws of Mongolia, following with its duties to direct economic, social and cultural development of Mongolia. The Cabinet is currently composed of 16 ministries (Government Resolution No. 62 of 19 August 2020), which carry out the Cabinet's various programs and projects and formulate policies in their relevant areas.[13]

The 16 ministries are as follows, setting the maximum number of staff at 142.

1. Ministry of Environment and Tourism
2. Ministry of Construction and Urban Development
3. Ministry of Defense
4. Ministry of Education and Science
5. Ministry of Road and Transport Development
6. Ministry of Finance
7. Ministry of Mining and Heavy Industry
8. Ministry of Social Welfare and Labour of Mongolia
9. Ministry of Justice and Internal Affairs
10. Ministry of Food, Agriculture and Light Industry
11. Ministry of Health
12. Ministry of Energy
13. Ministry of Culture
14. Ministry of Economy and Development
15. Ministry of Digital Development and Comunications

The Current Government (as of August 2022)

1. President: Ukhnaa KHURELSUKH (Mongolian People's Party)
2. Prime Minister: Luvsannamsrai OYUN-ERDENE
3. Chairman of the State Great Khural (the Parliament of Mongolia): Gombojavin ZANDANSHATAR
4. Chief Justice of the Supreme Court: Tsevegmid ZORIG
5. Member of parliament (total 76 seats)
   A. Mongolian People's Party (62 seats)
   B. Democratic Party (11 seats)
   C. Right Person Electorate Coalition (1 seat)
   D. Our Coalition (1 seat)
   E. Independent (1 seat)

Local Administrative Division

Mongolia's administrative districts consist of a metropolitan administrative district called Aimag and a sub-administrative district called Soum. According to the 2017 data from the

[13] "Government and politics," *Embassy of Mongolia*, last modified May 21 2013, accessed Mar 22 2021, http://mongolianembassy.us/about-mongolia/government-and-politics/#.YFRE8q8zZPZ.

Mongolian National Statistical Office, the administrative district is divided into 21 aimag and 330 soum (Figure 3). Each soum is divided into small administrative units called Bagh. There is 1,613 bagh. [14] Ulaanbaatar, the capital city, consists of 9 Düüregs (district) and each Düüreg is subdivided into Khoroo, of which there are 152. Each head is appointed by the Prime Minister and has a four-year term. [15]

Figure 3: Local Administrative Division illustrating a capital city and 21 aimag

2.3. People and Population

In 2021, the population of Mongolia was 3.4 million, with 870,000 households (3.6 people per household). The population has doubled in the past 40 years. It recorded 1.52 million in 1976, 2.32 million in 1996, and 3.12 million in 2016. Ulaanbaatar has a population of 1.44 million, 46 percent of the total population. This is the result of a doubling of the population in 1990 when it switched to a market economy. In 2016, 68% (2.13 million) of the total population lives in urban areas. And those under 30 make up 57 percent of the total population. [16]

2.4. Sociocultural Context

The Mongol Constitution guarantees religious freedom. According to the 2010 census, the proportion of people aged 15 and older was 53% of Tibetan Buddhism, 39% of irreligion, and 4% of Islam (Kazakh), and the recent trend of Christian population growth. [17]

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[14] Hanmong geurinbelteu saeopdan, *Jisokganeunghan jorimji gwallireul wihan sahoegyeongjejosa gyeolgwabogoseo* (n.p.: Hanmong geurinbelteu saeopdan (KR), 2017), 21. Korean.
[15] Han-mong geurinbelteu saeopdan, *2017 monggol jorim gaideu* (n.p.: Han-mong geurinbelteu saeopdan (KR), 2017), 7. Korean.
[16] Han-mong geurinbelteu saeopdan, *2017 monggol jorim gaideu* (n.p.: Han-mong geurinbelteu saeopdan (KR), 2017), 8. Korean.
[17] Ministry of Foreign Affairs, *2016 monggol gaehwang* (n.p.: Ministry of Foreign Affairs (KR), 2016), 8. Korean.

2.5. Economic Situation

Gross domestic product (GDP) is 23.1 trillion MNT (about $115.7 billion) and GDP per capita is about $3,781. The economic growth rate is 2.3 percent. A representative area of the Mongolian economy is the primary industry represented by mining and livestock farming. According to the industry-specific ratio of GDP, the mining industry accounted for 25 percent of the total production as of 2016, while the agriculture, forestry, livestock and fisheries industries accounted for 14 percent of the total. In other industries, the wholesale and retail business and the transportation sector occupy a large proportion. [18] The Production of major commodities (June 2020) is as follows:

1. Coal 2272.7 thousand ton
2. Milk 3633.3 thousand liter
3. Cement 171.3 thousand ton
4. Electricity 415.3 million kWh
5. Copper cathode 693.2 ton
6. Flour 15873.1 ton
7. Metal steel 3245.91 thousand ton
8. Thermal energy 225.7 thousand Gcal
9. Gold 2247.3 kg
10. Alcoholic beverage 12925.5 thousand liter
11. Sawn wood 691.5 m^3
12. Distribution water 4919 thousand m^3[19]

Key Resource

Mongolia is one of the top 10 resource-rich countries. It is rich in mineral resources such as copper (55 million tons, world 2nd), fluorite (12 million tons, world 3rd), coal (175 billion tons, world 4th), uranium (6,000 tons, world 14th), molybdenum (30,000 tons, world 11th), phosphorus (2.4 billion tons, world 3rd), tungsten (70,000 tons, world 5th), rare earth (16% of world reserves), gold, iron, zinc, and petroleum.

Trade

Of the $84.7 billion in trade, exports amounted to $46.7 billion and imports amounted to $38 billion. Among the major trade items, exports include resources such as coal, iron, copper, and crude oil (87%), cashmere (5%), while imports include heavy equipment and parts (20%), petroleum products (19%), groceries (12%), and automobiles (7%) (end of 2015).

Its major trading partners are China, Russia, the United Kingdom, ROK, Japan, and the United States. [20]

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[18] Hanmong geurinbelteu saeopdan, *Jisokganeunghan jorimji gwallireul wihan sahoegyeongjejosa gyeolgwabogoseo* (n.p.: Hanmong geurinbelteu saeopdan (KR), 2017), 23-25. Korean.
[19] "Industry," *MONGOLIAN STATISTICAL INFORMATION SERVICE*, last modified n.d., accessed Mar 22 2021, https://www.1212.mn/stat.aspx?LIST_ID=976_L11&year=2020&month=6.
[20] Ministry of Foreign Affairs, 2016 monggol gaehwang (n.p.: Ministry of Foreign Affairs (KR), 2016), 18-19. Korean.

2.6. Climate and Biodiversity

2.6.1. Climate

Mongolia has a typical continental climate, cold and long winters, and short summers. There are 256 cloudless days throughout the year.

The average five-year (2012-2016) temperature in Mongolia is 1.15℃, 242mm, and 114 days of precipitation. In 2016, the highest temperature was 41.9℃ (August) in Choibalsan soum of Dornod aimag and the lowest temperature was -47.6℃ (January) in Tosontsengel soum of Zavhan aimag. The maximum wind speed was 29 meters/sec for Govi-Altai aimag Altai Soum. [21]

2.6.2. Biodiversity

Mongolia contains 16 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), to increase integration between national conservation and development policies and plans.

Mongolia is divided into 16 phytogeographical regions based on geographical characteristics. The flora itself contains representatives of endemic to Mongolia plant species, Siberian, Daurian, Manchurian, Central Asian, and Altai Mountain ranges flora species, contributing to a unique vegetation distribution and population. At present Mongolia has 3127 species or subspecies of vascular plants over 39 orders, 112 families, and 683 genera, approximately 1400 species of algae over 105 families and 288 genera, approximately 510 species of moss, 7 species of lycophyta over 10 families and 15 genera; 9 species 556 species of seed plant over 1 order and 1 family, and 22 species of gymnosperm over 4 orders and 6 families. According to the IUCN's Red List criteria, of the 148 species of plant are considered endangered in Mongolia, 74% were assessed regionally threatened, of which 11% were critically endangered, 26% were endangered, 37% were vulnerable, 1% was not applicable for assessment, and 3% were categorized as data deficient. Mongolia's fauna consists of 138 species of mammal, 75 species of fish, 22 species of reptile, 6 species of amphibian, 476 species of bird, over 13 thousand species of insect, and 516 species of mollusk. A total of 110 species of fauna and 192 species of flora were deemed to be endangered and entered into the Mongolian Red Book (an updated version of 2013) as either critically endangered or endangered.[22]

[21] Han-mong geurinbelteu saeopdan, *2017 monggol jorim gaideu* (n.p.: Han-mong geurinbelteu saeopdan (KR), 2017), 4. Korean.

[22] Batbold D. et al, *National Biodiversity Program 2015-2025* (n.p.: Minister of Environment, Green Development and Tourism (MN), 2015), 8-10.

3. Major Trends and Issues in Forest and Forestry

3.1. State of Forest

3.1.1. Land Use and Forest Cover

Forest Inventory

Until recently, most forestry data were compiled using representative sampling techniques, with detailed surveys of some areas produced as needed for specific enterprises. A comprehensive survey by political divisions (Aimak, Soum) has been ongoing since 1996, but the results of this study have yet to be released. Although the Mongolian law on forests requires a complete survey of the nation's forest resources to be conducted every 10 years, current capacities and spending level would allow for such surveys to be completed on average only once every 23 years. [23]

Table 2: Land Use

Categories	Area (in 1,000 hectares)	Proportion (%)
	2016	
TOTAL	156,411.6	100
Pasture and Agricultural land	114,934.9	73.5
special use area	25,228.9	16.1
Forest	14,334.3	9.2
Residence	753.6	0.5
Road, etc.	473.8	0.3
River, lake, etc.	686.1	0.4

Forest Area

Box 1: Definition of Forests by the MONGOLIAN LAW ON FOREST 3.1.1, 3.1.2

3.1.1"Forest" means specific ecological-geographical conditions of a complex (in-situ) environment, where trees, bushes, shrubs, and other plants, lichen, moss, wildlife and microorganisms naturally co-exist;

3.1.2. "Forest fund" means all the forested areas specified in Article 3.1.1 of this Law and non-forested areas amid the forested areas and the environment including the area needed for forest growth;[24]

Mongolia is a forest-poor country (forest fund area was about 12 percent in 2016[25]). Mongolia has a total land area of 157 million hectares. Forest Fund Area comprise 18.46 million hectares,

[23] Hijaba Ykhanbai, *APFSOS II/ WP/ 2009/ 21 MONGOLIA FORESTRY OUTLOOK STUDY* (Bangkok: FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS REGIONAL OFFICE FOR ASIA AND THE PACIFIC, 2010), 8.

[24] MONGOLIAN LAW ON FOREST Article 3.1.1. (2012.5.17).; MONGOLIAN LAW ON FOREST Article 3.1.2. (2012.5.17).

[25] "PROPORTION OF FOREST AREA, by aimags and the Capital," *MONGOLIAN STATISTICAL INFORMATION SERVICE*, last modified n.d., accessed Mar 22 2021, https://www.1212.mn/tables.aspx?tbl_id=dt_nso_2800_029v1&soum_select_all=0&soumsingleselect=_0&yeary_select_all=0&yearysingleselect=_2012&viewtype=table.

with 12.9 million hectares of the forest-covered area; this includes 10.5 million hectares of coniferous and hardwood forests, which is equivalent to 67 percent of the forest reserve. The country spans the major transition zone between the deserts of Central Asia and the boreal taiga of Siberia, which comprises six broad bio-geo-climatic zones - desert, desert steppe, steppe, forest-steppe, boreal forest, and mountain. The forest-steppe, boreal forest and mountain zones all exhibit varying depths, and distributions of permafrost. Mongolia's northern forests – excluding saxual and other shrubs and brush in the south – extend over 11.5 million hectares, of which 10.4 million hectares are considered to be fairly intact (> 30 percent crown closure) and 1.1 million hectares are considered depleted.

The forested areas of Mongolia can be divided into two broad types: the northern coniferous forests of the forest-steppe, boreal forest and mountain zones, and saxaul forests of the southern desert and desert steppe. Mongolia's principal tree species are *Larix sibirica, Pinus sylvestris, Pinus cembra, Picea obovate, and Betula spp*.[26]

Table 3: Forest Fund Area

National categories (in 2020)			Area (in 1,000 hectares)
Forested area	Sub-total		18,075.7
	closed forest	Natural forest	11,851.7
		Shrubs	759.7
		Planted forest	7.9
	Non-closed forest	Sparse forest	3,399.2
		Area to be reforested	25.8
		Natural regeneration	151.7
		Timber harvested forest	130.6
		Forest fire	1,646.2
		Disease and insect	102.2
		Snow injuries and Wind damage	0.4
Non-forest covered Area (Nursery, rivers, pastures, wetlands, etc.)	Sub-total		520.4
TOTAL			**18,596.1**

4.03 million ha is under concessionaire management. 1,281 forest communities manage 3.35 million ha, and 90 corporations manage 680,000 ha.

[26] Hijaba Ykhanbai, *APFSOS II/ WP/ 2009/ 21 MONGOLIA FORESTRY OUTLOOK STUDY* (Bangkok: FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS REGIONAL OFFICE FOR ASIA AND THE PACIFIC, 2010), 8.

The total forest growing stock is 1.2 billion m^3, and the average forest growing stock per hectare is 113.9m^3/ha in 2016.[27] The total forest harvest volume is 755.1 thousands m^3 in 2019.[28]

The forest growing stock by species is shown in the following Table 4.[29]

Table 4: Forest Growing Stock by Species

FRA 2010 category/species name			Growing stock in forest (million m^3)
Rank	Scientific name	Common name	2005
1	*Larix sibirica*	Siberian larch	10,330
2	*Pinus sibirica*	Siberian pine	150.5
3	*Pinus sylvestris*	Scots pine	97.0
4	*Betula platyphylaa*	Betula	89.4
5	*Picea obovata*	Siberian spruce	3.7
6	*Populus spp*	Poplar	3.3
7	*Salix berberifolia*	Willow	0.6
8	*Abies sibirica*	Siberian fir	0.4
TOTAL			1,379

By region, Khuvsgul, Bulgan, and Selenge Aimak are representative forest zones. (Table 5 and 6)[30]

Table 5: Forest Area by Region

	Total Area (in 1,000 hectares)	Total area of forest (in 1,000 hectares)	Forest ratio
TOTAL	156,410	14,422	9.2
Western region	41,530	2,345	5.6
Bayan-Ulgii	4,570	23	0.5
Govi-Altai	14,140	1,221	8.6
Zavkhan	8,250	491	6.0
Uvs	6,960	143	2.1
Khovd	7,610	467	6.1
Khangai region	38,430	7,491	19.5

[27] Han-mong geurinbelteu saeopdan, *2017 monggol jorim gaideu* (n.p.: Han-mong geurinbelteu saeopdan (KR), 2017), 34-38. Korean.
[28] "FOREST HARVEST VOLUME, by national, region, aimag and capital city, by year," *MONGOLIAN STATISTICAL INFORMATION SERVICE*, last modified n.d., accessed Mar 22 2021, https://www.1212.mn/tables.aspx?tbl_id=DT_NSO_2400_006V1&SOUM_select_all=0&SOUMSingleSelect=_0&YearY_select_all=0&YearYSingleSelect=_2019&viewtype=table.
[29] Hijaba Ykhanbai, *APFSOS II/ WP/ 2009/ 21 MONGOLIA FORESTRY OUTLOOK STUDY* (Bangkok: FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS REGIONAL OFFICE FOR ASIA AND THE PACIFIC, 2010), 9.
[30] Han-mong geurinbelteu saeopdan, *2017 monggol jorim gaideu* (n.p.: Han-mong geurinbelteu saeopdan (KR), 2017), 35. Korean.

Arkhangai	5,530	1,083	19.6
Bayankhongor	11,600	331	2.9
Bulgan	4,870	1,905	39.1
Orkhon	80	16	20
Uvurkhangai	6,290	151	2.4
Khuvsgul	10,060	4,005	39.8
Central region	47360	3,125	6.6
Govisumber	550	-	0
Darkhan-Uul	330	43	13
Dornogovi	10,950	159	1.5
Dundgovi	7,470	69	0.9
Umnugovi	16,540	747	4.5
Selenge	4,120	1,534	37.2
Tuv	7,400	573	7.7
Eastern region	28,620	1,387	4.8
Dornod	12,360	175	1.4
Sukhbaatar	8,230	82	1.0
Khentii	8,030	1,130	14.1
Ulaanbaatar	470	74	15.7

Table 6: Detailed Forest Area by Region

	Forest resources(in 1,000 m^3)	Total area of restored forest (in hectares)	Total area covered forest conservation measure (in hectares)	Total area of forest management (in 1,000 hectares)	Total area of green facilities(in hectares)	Number of forest professional organization
TOTAL	1,209,916.9	4,015.8	116,094.6	18,549.3	1,328.5	351
Western region	89,750.1	887.3	24,042.0	3,582.6	233.8	55
Bayan-Ulgii	8,836.1	67.0	-	139.5	10.0	-
Govi-Altai	1,363.6	4.3	1.0	1,674.7	125.0	-
Zavkhan	57,645.5	610.0	912.0	732.0	39.0	51
Uvs	20 962.3	206.0	23,129.0	236.6	27.6	4
Khovd	942.6	-	-	799.8	32.2	-
Khangai region	676,646.6	841.3	46,586.5	8,096.5	186.6	156
Arkhangai	106,725.3	205.8	1,100.0	1,060.0	63.9	33
Bayankhongor	2,612.1	0.5	343.0	820.7	27.3	-
Bulgan	155,942.4	387.0	17,702.5	1,922.2	7.0	35
Orkhon	1,586.1	14.0	3,710.0	17.8	15.1	2
Uvurkhangai	18.891.6	71.0	-	302.0	46.6	15
Khuvsgul	390,889.0	163.0	23,731.0	3,973.8	26.7	71

Central region	317,289.9	1,412.3	43,488.5	4,739.3	437.2	112
Govisumber	0.9	0.0	-	-	20.5	1
Darkhan-Uul	4,753.9	30.0	3,000.0	82.0	102.3	6
Dornogovi	51.8	5.7	-	116.9	74.5	2
Dundgovi	6.6	-	-	32.8	-	1
Umnugovi	939.0	7.5	-	1,170.4	216.3	-
Selenge	164,850.1	1,368.2	20,485.7	1,949.1	16.0	88
Tuv	146.687.6	0.9	20,002.8	1,388.2	7.7	14
Eastern region	114,303.5	818.0	1,977.6	2,014.5	222.4	24
Dornod	4,550.6	398.0	215.6	244.1	-	3
Sukhbaatar	9.6	0.0	-	15.7	152.1	2
Khentii	109,743.4	420.0	1,762.0	1,754.7	70.3	19
Ulaanbaatar	11,926.8	57.0	-	116.3	248.5	4

[31]

3.1.2. Forest Use Categories

All forests and land in Mongolia are state-owned (Table 7).

Table 7: Forest Area by Ownership

Mongolia	Government-administered	Designated for indigenous peoples and local communities	TOTAL
	(in million ha)		
2002	12.9	-	12.9
2007	8.94	3.35	12.29

Forest ownership in Mongolia, 2002 and 2017

Source: Rights and Resources Initiative (2018).

Box 2: Definition of Ownership by the Rights and Resources Initiative

"designation" in this context as situations in which national law recognizes the rights of indigenous peoples and local communities to access and withdrawal, as well as to participate in the management of forests and to exclude outsiders.
"Ownership", on the other hand, refers to situations in which the forest rights of access, withdrawal, management, exclusion, and due process and compensation are legally recognized for an unlimited duration. The right of alienation (whether through sale, lease or

[31] Ariunzaya A.,Bayanchimeg Ch.,Demberel A. et al, *Mongolian Statistical Yearbook 2019,* (Ulaanbaatar, 2019), 284-285.

use as collateral) is not required for communities to be classified as forest owners in this framework. Totals may not sum due to rounding.[32]

The Ministry of Nature and Environment (MNE) has the overall responsibility for the management of forests. The aimag and soum governors are responsible for forest management at local levels. The main objective of forest resource management is to protect and develop the existing forests of Mongolia so that they make maximum contributions to soil and watershed protection, and conservation of existing ecosystems. At the same time, the forests are expected to produce, on a sustainable basis, increased volumes of industrial wood, fuelwood, and minor forest products for the needs of people, and earn foreign currency through the export of wood products. The proper management and utilization of forests would create employment and income for people in Mongolia.

In 2007, natural forest area had declined in comparison with 1990 by a total of 1,019 hectares. However, in the same period forest area under shrubs increased by 388.4 hectares, sparse forest area increased by 2,660.7 hectares, burned forest by 388.1 hectares, and timber harvested area by 191.8 hectares. [33]

For detailed figures on the current forest composition, see Table 3 in [3.1.1] and Table 8 below.

Table 8: Primary designated management objective[34]

FRA 2020 categories	Forest area (in 1000 ha)			
	1990	2000	2010	2020
Production	3,175.52	3,175.52	3,175.52	3,778.00
Protection of soil and water	10,214.02	10,214.02	10,214.02	9,192.08
Conservation of biodiversity	26.31	575.29	578.84	952.77
Social Services	2.02	197.29	215.52	249.93
Multiple use	0.00	0.00	0.00	0.00
Other (specify in comments)	0.00	0.00	0.00	0.00
None/unknown	934.13	101.78	0.00	0.00
TOTAL	14,352.00	14,263.90	14,183.90	14,172.78

Protected Area

28 million hectares (18 percent of the country's total land area) is a protected area. The protection zone is being expanded to 30% of the national territory. Under the LAW OF

[32] FAO. *Forest futures – Sustainable pathways for forests, landscapes and people in the Asia-Pacific region. Asia-Pacific Forest Sector Outlook Study III.* (Bangkok : FAO, 2019), 210.
[33] Hijaba Ykhanbai, *APFSOS II/ WP/ 2009/ 21 MONGOLIA FORESTRY OUTLOOK STUDY* (Bangkok: FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS REGIONAL OFFICE FOR ASIA AND THE PACIFIC, 2010), 9.
[34] FAO, *GLOBAL FOREST RESOURCES ASSESSMENT 2020 Report Mongolia* (Rome: The FAO, 2020), 33-34

MONGOLIA ON SPECIAL PROTECTED AREA(Enacted in 1994), there are four types of protected areas. It stated that the protected area is classified into four categories.

1. national conservation park: 12 million ha in 32 locations
2. natural complex area: 12 million ha in 20 locations
3. natural reserve: 3.5 million ha in 36 locations
4. national monument area: 130 thousand ha in 14 locations[35]

3.1.3. Main Drivers of Forest Changes

As of 2012, 73.7% of the land is being used for agriculture, farming, and grazing, 0.44% for urbanized cities and settlements, 0.27% for infrastructure, 11.79% forested, 0.43% for water bodies, and 16% for strictly national government purposes. Out of this, land use for mining purposes is drawing attention. Although mining is beneficial to a country's development, it is one of the main causes of land degradation. Exploration projects, preparation of building materials, road construction, geological studies, construction of buildings and structures are impacting the landscape by stripping the soil, building up dirt piles and digging trenches, causing technical soil degradation. Along with this, large heavy machinery making branch roads alongside tarmacked roads in the countryside, raising dust and polluting the surrounding environment. There is a lack of restoration projects for these activities as well. and lines and 797.2 ha were caused by infrastructure developments. Based on national statistics on damages to pasture land, 7.8 million ha of pasture land of vegetation cover were damaged in 2012, which makes up 95.6% of damages inflicted on land. If we breakdown the types of damages caused to pasture land, 2.3 million ha were overgrazed, 8.6 thousand ha were caused by wind and water erosions, 384.1 thousand ha were inflicted by sand movements, 2.2 million ha were degraded by rodents and insects, 2.7 million ha caused by desertification, 124.5 thousand ha were degraded by mining activities. There were also 218.7 thousand ha that was damaged by wildfires, 63.2 thousand ha damaged by pests, 147.8 thousand ha of damaged forest, bushes, and saxaul forests, 43 ha of the area damaged by mineral resource exploration, and other 3.5 thousand hectares damaged by other factors.[36]

Another major cause is overgrazing. It made 70 percent of the grasslands degrade. Livestock numbers were controlled rigidly during the era of centrally planned, Soviet-style governance, and this helped ensure that grazing remained within the rangelands' carrying capacity. Livestock numbers shot up, however, with the collapse of central planning and its associated control measures. For example, Mongolia's goat population increased from 5 million in 1990 to more than 27 million in 2017 and the number of cattle increased from 2.7 million to 4.4 million. At least in part, this was due to the increasing demand for cashmere, especially in the rapidly growing Chinese market. Several measures are underway to arrest land degradation but they face an uphill battle because of continued high demand for cashmere as a high-end fashion

[35] Han-mong geurinbelteu saeopdan, *2017 monggol jorim gaideu* (n.p.: Han-mong geurinbelteu saeopdan (KR), 2017), 36. Korean.
[36] CBD, *The 5th National Report of Mongolia* (Ulaanbaatar: The CBD, 2014), 17-18.

product, which enables communities to earn higher incomes and the important role of livestock in mitigating the risk posed by the high frequency of extreme weather events.[37]

3.2. Forest Policy Direction and Strategies

3.2.1. Forest Legislations

Forest legislation Along with the change over from the centrally planned to the market-oriented economy, it became necessary to develop a new system of laws, rules, and regulations to suit the reforms being carried out. Accordingly, since 1993, a large number of laws have been drafted, covering every aspect of Mongolian life and governance. It falls into four groups: land and environmental laws; laws governing natural resources (including forestry); laws on natural resource use fees (to respond to the needs of the market economy); and laws related to natural disasters. Regulatory documents to implement these laws have also been prepared by the government. In case of instances of conflict, where multiple legislative documents are to be construed together, the following priority (or superseding order) will prevail: the constitution of the country, parliamentary laws, parliamentary resolutions, cabinet resolutions, and ministerial resolutions. There are some 27 laws (and more than 200 rules and regulations) falling under the purview of the MNE. At the central level, the Environmental Protection Agency is responsible for guiding the implementation of the laws. Actual enforcement of these laws is the responsibility of the environmental units at the aimag level, the environmental inspectors at the soum level, and the rangers at the bagh level. Forest legislation has a long history in Mongolia. Rules on forestry in Mongolia were first adopted in 1925, which then became the Forest Law in the 1930s. Since 1995, the Mongolian parliament has adopted about 25 environmental laws, covering various aspects of land use, environmental protection, air, plants, animals, forests, toxic substances, environmental impact assessment, wildlife protection, and protected areas, etc.

Mongolian Law on Forests

The Mongolian Law on Forests was adopted on 31 March 1995 and became effective in June of that same year. It is divided into seven chapters covering the possession and use of forests, the various forest types and zones, forest inventories, and protection measures and fines for the violation of the law. The Mongolian Law on Forests is intended to address the basic questions of proper forest use, management of forest protection, and regeneration of Mongolia's forests. According to the constitution of Mongolia, forest resources are the property of the state, which has the power to grant possession of them to local governments. The local governments may then grant citizens, economic entities, and organizations the right to use the forests and forest resources under contract or license. The Mongolian Law on Forests does not indicate how this "ownership" of the resource will affect the rights inherent in land lease contracts, their extensions, or other land-use laws and regulations. The Forest Law of Mongolia, adopted in 1995, consists of seven chapters (and 33 articles):

[37] FAO. *Forest futures – Sustainable pathways for forests, landscapes and people in the Asia-Pacific region. Asia-Pacific Forest Sector Outlook Study III.* (Bangkok : FAO, 2019), 120.

1. general provisions,
2. forests within special zones and protective regimes,
3. forests within protected zones and rules for their protection and usage,
4. industrial zone forests and their usage regimes,
5. protection and regeneration of forests,
6. forest utilisation, and
7. miscellaneous provisions.

In the new law, the protection of forest resources and the environment has been especially emphasized, and clear-cutting of forests is discouraged/disallowed. The central government specifies the annual logging quota to the aimags, and the aimags select the cutting areas. Logging companies are to plant three to five seedlings for each tree felled. Provision has been made for increasing royalties from the present levels. The new forest law implies forest management by private entities. The development of economic relations between the forest owner (government) and forest users is an important element in the transition to a market economy. Leasing forest resources is appropriate when the state owns the forests. However, the lease period, rent, payment schedule, rights, and obligations of the lessor and the lessee have not yet been defined or determined.

21 May 1921	State declaration of land, water and forest resources
11 August 1924	National Forest Rule
26 Sept. 1924	Establishment of Forest Division, Ministry of Economy of Mongolia
27 March 1931	Mongolian Law on Forests
03 Oct. 1934	Revision of Forest Law
14 Dec. 1940	Revision of Forest Law
14 April 1944	Rule of forest fire prevention and fighting
13 March 1957	Revision of Forest Law
06 March 1964	Establishment of forest zones and categories
10 May 1968	Establishment of Forest Fire Fighting Commission
04 July 1970	Rule of Forest Inspection and Control
25 March 1972	Establishment of Ministry of Forestry and Wood Industry
01 July 1974	New Revision of Forest Law
22 Nov. 1974	Rule of Forest Law Enforcement
26 Dec. 1974	New system of forest royalty and stumpage price
1973–1975	Forestry Strategic Plan, 1975–1990
17 Jan. 1975	Re-establishment of forest zones
31 March 1995	New revision of Forest Law
19 May 1995	Law on Fees for Forest Harvesting
28 May 1996	Law on Forest Fire Prevention
15 July 1998	National Forest Policy Statement
26 Dec. 1998	State Policy on Ecological Conservation
31 Oct. 2001	Revised National Forest Policy Statement

Sources: various.

Figure 4: Chronology of forest legislation in Mogolia[38]

Forest zones

[38] Jamsran Tsogtbaatar, *Forest Policy Development in Mongolia* (n.p.: CDR Law, 2020), 62-64.

The Mongolian Law on Forests divides forests into three categories: strict, protected, and utilization zones. This division into three zones is similar to the system the Ministry of Forestry and Forest Industry initially established in 1972 under different names. The first two zones—strict and protected—are further divided into four sub-zones and eight forest types. The utilization zone remains a single classification acting as a default category. All forest areas not specially included in the first two classifications are defined as utilization zone forests. Each zone has a separate protection regime where the most protective category is the first—strict zone—followed by protected and utilization zones. All forest zones require the implementation of fire, pest, and disease protection programmes, and all local citizens are essentially considered community firefighters. The strict zone forest category is the most protective of the three. This zone consists of sub-alpine forests, pristine and conservation zone forests within strictly protected areas, and special zone forests within national conservation parks. The protection regime of the strict zone forests is shown in Table 9. Protection zone forests are the second category. The protected zone category is much broader, consisting of four sub-zones including certain forests within specially protected areas—national conservation parks, nature reserves, and monuments—as well as green zones around towns and villages, prohibited strips along riparian zones, national roads, and railways, and locally protected forests. Locally protected forests may consist of areas containing different forest types, including saxaul forests, oases, forest stands covering up to 100 hectares, forest groves, shrubs, sun-exposed forest areas, and forests on steep slopes over 30 degrees. The purpose of green zone forests is to create recreation conditions and a clean environment for the residents. Prohibited strip forests are those within 5 km of a lake, river, or stream source, 3 km of a riverbank or mineral water source, and 1 km along national roads and railways. Utilization zone forest is the default category. All forests that do not belong to the previous two categories are classified as utilization zone forests. These forests are designated primarily for commercial timber harvest with contracts and the payment of fees required. The first task under the law is the determination of allowable harvest volumes. This is a top-down process. First, the Ministry of Nature and Environment determines the maximum allowable harvest for each aimag and the capital city on an annual basis. Then, the aimag and capital city Khurals decide on the permissible cut, based on the recommendations of the Ministry of Nature and Environment. Finally, the Soum Khurals decide on the permissible cut within their territory based on the Aimag Khural decision. Bids to harvest timber are to be submitted to the soum and capital city governors. Before submission of bids, decision-makers must consider (i) the economic efficiency of harvesting activity, (ii) harvesting techniques, (iii) processing technology, (iv) availability of funding for protection measures and reforestation, and (vi) the permissible cut. After approval of bids, the timber company must enter into a contract with the certification organization stipulating the legal basis for the harvest, species to be cut, standing volume, harvesting removals, duration of the contract, implementation period, forest management measures, border of timber felling, a technology used, and relevant fees. Timber and non-timber forest products may also be harvested for household purposes within this zone, under the appropriate permit obtained from local governors. Permits for fuelwood may be obtained from the local ranger.

Table 9: Protection regimes of strict zone forests.

No.	Classes of strict zone forests	Main functions of forests and protection regime
1.	Strict zone forests	To maintain the forests' natural features and environmental balance. To protect the forest from fire, harmful insects, and disease.
2.	Sub-alpine forests	To maintain environmental balance in watersheds and to prevent soil degradation. To gather fallen trees and branches through cleaning. To use non-timber forest products.
3.	Pristine and conservation zone forests in special protected areas	To preserve the original natural condition and features in certain areas. To conduct observation and investigation for the special purpose of long-term conservation.

Law on Forest Fire Prevention and Control

This law provides detailed requirements for the setting up of forest fire prevention and control organizations at local and central levels. In support of the state's responsibilities in the area of forest fire prevention and control, the possessors of forest land have several responsibilities: • They are required to provide professional technicians or forest rangers to patrol and protect forests. • They must control the use of fire within their areas. • They must undertake fire prevention measures as required. The law should assess civil and criminal penalties for violation of provisions in the law, or causing fires, or creating a risk of fires. These provisions and their efficient implementation are very important to the conservation of the forest environment.[39]

3.2.2. Institutional Settings for National Forest Management

The structure of the Ministry of Environment and Tourism is as follows.

1. Minister of Nature, Environment and Tourism
2. Deputy Minister of Nature, Environment and Tourism
3. Secretary of State
4. Department of Green Development Policy and Planning
5. Public Administration Department
6. Department of Environment and Natural Resources Management
7. **Forest Policy and Coordination Department**
8. Water Policy and Coordination Department
9. Protected Area Authority
10. Climate Change Authority
11. Department of Tourism Policy and Coordination
12. Department of Monitoring, Evaluation and Internal Audit[40]

[39] Jamsran Tsogtbaatar, *Forest Policy Development in Mongolia* (n.p.: CDR Law, 2020), 63-65.
[40] "MINISTRY STRUCTURE," *mne.mn*, last modified n.d., accessed Mar 22 2021, http://www.mne.mn/?page_id=33.

The Forest Policy Coordination Department is one of the nine departments in the Ministry of Environment and Tourism. The main responsibilities of the Forest Policy Coordination Department include the formulation and implementation of forest policy, programme, and legislation, coordination of the implementation work, provision of technical and methodological guidance and advisory services, and development of proposals to improve forest management. More specifically, the Department is in charge of the coordination of the forest inventory and research, reforestation and afforestation, forest insect and pest control, combating illegal logging, forest maintenance, sustainable forest management, forest products, and strengthening "forest governance". Mongolia has four laws which concern the needs of information systems and each information systems contain forest-related data it. These are:

1. Environmental Information database - Law on Environmental Protection and its regulations
2. Forest database and inventory system – Law on Forest and its regulations
3. Unified land inventory system – Law on Land and its regulations
4. National statistical database – Law on Statistics and its regulations.[41]

In 2016, Mongolia's Forest Policy Coordination Department has 9 employees, including the director.[42]

3.2.3. Forest Tenure and Governance

Community-based forest resource management has been introduced and about 20% of the forest area is currently under the protection of community forestry groups, which comprise 74.8% of the total community groups on environmental protection. Multi-purpose forest resource inventory is under the process.[43]

Recognizing the impending threat of forest degradation and deforestation, the Mongolian government in July 2015 adopted a revised forest policy (with a planning horizon until 2030), geared primarily towards forest protection, forest rehabilitation, and sustainable forest management. In 2019, the MET endorsed a midterm action plan (2019-2021) on reducing emissions from forest degradation and deforestation. No government agency is directly in charge of forest management; illegal activities often remain unchecked. Since 1996, provincial forestry land is privately owned and government agencies only indirectly manage forests. Forest management activities are coordinated at four hierarchical levels of the administration and ultimately implemented by FUGs and PFEs (Table 10). The lack of a government agency directly mandated to manage forests is an important reason for widespread illegal activities in and around forests.[44]

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[41] ERDENEBAT ERDENEJAV , *REPORT ON ANALYTIC STUDY ON AVAILABILITY OF FOREST DATA AND NATIONAL C&I SET FOR SFM IN MONGOLIA* (Ulaanbaatar: UN, 2020), 17-18.

[42] Han-mong geurinbelteu saeopdan, *2017 monggol jorim gaideu* (n.p.: Han-mong geurinbelteu saeopdan (KR), 2017), 48. Korean.

[43] UNFCCC, *Intended Nationally Determined Contribution (INDC) Submission by Mongolia to the Ad-Hoc Working Group on the Durban Platform for Enhanced Action (ADP)* (n.p.: The UNFCCC, 2015), 7.

[44] ERDENEBAT ERDENEJAV, *REPORT ON ANALYTIC STUDY ON AVAILABILITY OF FOREST DATA AND NATIONAL C&I SET FOR SFM IN MONGOLIA* (Ulaanbaatar: UN, 2020), 35-36.

Table 10: Institutional framework for forest management in Mongolia

Level	Government institution	Responsibilities
National	Ministry of Environment and Tourism	Provide strategic direction, policies and principles and develop regulations for forest resource management; Establish technical limits of annual allowable cut based on proposals from aimags; Allocate fund for reforestation to the Aimags' environment and tourism departments, and fund for seed and seedlings preparation, forest research activities, forest fire, and insect control, control of illegal logging, capacity-building for forest user groups and inter-soum forest units and monitoring activities through the Forest Research and Development Centre; Approve Aimags and capital city forest management plans; Define the size of the area and allocate fund for thinning work to the inter-Soum forestry units
	Forest Research and Development Centre	Carry out national forest inventory; Conduct forestry research; Identify seed trees and shrubs to develop a seed bank; Maintain forest information database; Designate forest areas for logging, tending and thinning; Develop and revise norms and standards for reforestation; Provide professional guidance and methodological support to forestry units, forest user groups and forest enterprises; Monitor pest management (prevention and control measures).

Aimag	Citizen representative khural	Approve programme, action plan, and budget for forest protection, sustainable use, rehabilitation, tree nurseries, and forest fire prevention.
	Governor's Office	Organize tenders to select private entities to undertake reforestation and rehabilitation work; Distribute annual harvesting quotas to soums; Report to the Ministry of Environment and Tourism on the status of the forest land; Submit proposals from the aimag on the volume of annual harvesting to the Ministry of Environment and Tourism; Approve soum forest management plans.
	Environment and tourism departments (forest units)	Collect proposals for an annual cut from Soums and present them to the Aimag governor; Provide technical and methodological support to inter-soum forest units; Make agreements with inter-soum forest units; Report to the Ministry of Environment and Tourism and Aimag governor.
Soum	Citizen representative khural and governor	Approve budget for forest protection, sustainable use, rehabilitation, tree nurseries and forest fire prevention at Soum level; Estimate volume for annual cut
	Inter-soum/Soum forest unit	Designate areas for logging and thinning; Monitor implementation of forest management plans developed by forest user groups, and forest enterprises; Undertake forest fire prevention measures and mobilize the local population in forest fire suppression.

Each Aimak Environmental department and 38 forest management teams nationwide are executive agencies. The forest management team was formed in 2012 by the revision of the Mongolian Law on Forests.[45]

Table 11: Forest Management Teams

Aimak	Teams	Aimak	Teams
Western region	8	Central region	11
Bayan-Ulgii	1	Govisumber	1
Govi-Altai	1	Darkhan-Uul	1
Zavkhan	2	Dornogovi	1
Uvs	3	Dundgovi	1
Khovd	1	Umnugovi	1
Khangai region	13	Selenge	4
Arkhangai	3	Tuv	2
Bayankhongor	1	Eastern region	5
Bulgan	3	Dornod	1
Orkhon	1	Sukhbaatar	1
Uvurkhangai	1	Khentii	3
Khuvsgul	4	Ulaanbaatar	1
TOTAL		38	

3.2.4. Government Budget Allocation for Forest and Forestry Sector

10 years of national expenditure show that despite the increase in total expenditure, the expenditure of agricultural and forest industries is similar (Table 12).[46]

Table 12: The expenditure of Agricultural and Forest Industries

Type of expenditure	TOTAL EXPENDITURE	Agriculture and forestry	
	Million MNT	Million MNT	Proportion(%)
2010	3,080,685	136,298	4.4
2011	4,997,040	283,932	5.7
2012	6,017,801	107,198	1.8
2013	6,164,685	189,606	3.1
2014	7,144,568	96,318	1.3
2015	7,137,974	89,539	1.3
2016	9,495,333	118,859	1.3
2017	9,017,319	314,927	3.5
2018	9,222,929	105,155	1.1
2019	11,429,392	190,996	1.7

[45] Han-mong geurinbelteu saeopdan, *2017 monggol jorim gaideu* (n.p.: Han-mong geurinbelteu saeopdan (KR), 2017), 48. Korean.

[46] Ariunzaya A.,Bayanchimeg Ch.,Demberel A. et al, *Mongolian Statistical Yearbook 2019,* (Ulaanbaatar, 2019), 583.

The Government of Mongolia provides funding to the forest sector of around MNT 12.5 billion (US$ 9 million) a year. This equates to annual public spending of MNT 125,000/km2 (US$ 90) of boreal forest in total. On average, public spending on the forest sector is almost three times higher than the public revenues earned from timber, fuelwood, and non-timber forest product harvesting.

Public funding to the forest sector has been rising steadily, and more than doubled in real terms between 2008 and 2012. The share of forests in the total environment budget has however declined over the same period, from a third of all spending in 2008 to less than a fifth in 2012.

Core institutional costs account for less than 10% of government forest spending and are dominated by staff costs. More than 90% of the recurrent budget is allocated to on-the-ground forest management activities: pest control, fire management; forest cleaning, thinning and enforcement; reforestation and rehabilitation; inventory and forest organization; nurseries and seedling preparation; and support to Forest User Groups.

In 2017, total financial inflows into forest conservation and utilization were around MNT 440 billion (US$ 220 million). Between 2013 and 2017, around 92% of financial inflows were from private sector investments, 5% from the Government of Mongolia, and 3% from donors. The total revenue generated from forestry in 2017 was around MNT 157 billion (US$ 78 million). The government captures around 26% of this total revenue, the rest is net profit to the private sector. In 2017 the total Government funding for SFM was around MNT 12,808 million (US$6.4 million), compared to Government forest-related revenues of MNT 51,289 million (US$ 25.6 million) suggesting that increased Government funding for SFM is possible through better earmarking of a forest generated revenues. The MET's budget allocations to its departments engaged in forestry and forest conservation in 2017 were MNT 9.6 billion (US$ 4.8 million). Pest control received the largest proportion of the MET's budget for forests, averaging 43% between 2013 and 2017. Forest fires receive around 5% of the MET's budget in comparison despite being the main driver of deforestation and degradation in the country. Forest utilization activities accounted for only 9.1% of MET's forest budget, although this is showing an increasing trend.[47]

International donor assistance plays a relatively minor role in forest funding, at an average of MNT 2 billion (US$ 1.5 million) a year or MNT 21,000 (US$ 15) per km^2. The forest sector accounted for 0.1% of total bilateral and multilateral development assistance between 1990-2010, and just 3% of environmental spending.

Most donor-funded forest sector projects have been initiated since 2005. The vast majority of activities concern on-the-ground forest management, development, and conservation, with a particular focus on supporting community forest management.

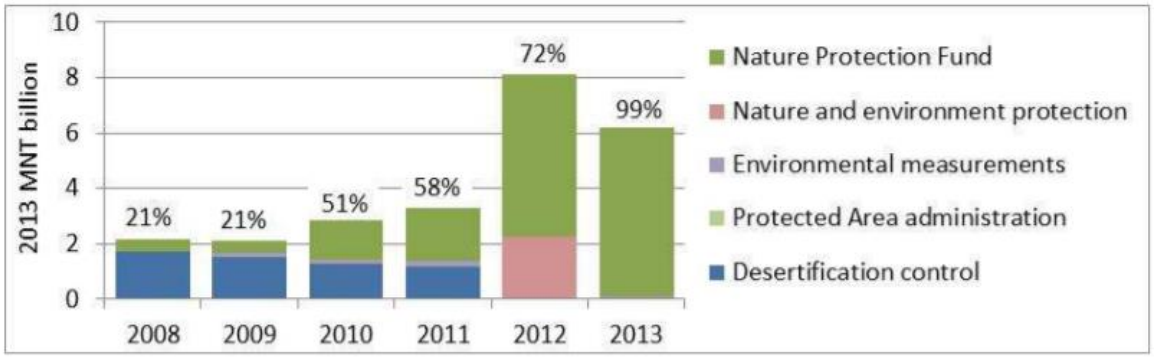
[47] ERDENEBAT ERDENEJAV , *REPORT ON ANALYTIC STUDY ON AVAILABILITY OF FOREST DATA AND NATIONAL C&I SET FOR SFM IN MONGOLIA* (Ulaanbaatar: UN, 2020), 32-33.

Public sector funding flows Public funding to forest sector activities totaled just over MNT 12.5 billion (US$ 9 million) in 2013 (Table 13). Around 5% comes through local-level budgets, and just under half of this funding is contributed by non-forestry agencies in the MEGD.

Table 13: Recurrent funding to the forest sector 2008-13 (2013 MNT billion)

	2008	2009	2010	2011	2012	2013
Current expenditure of Forestry Agency	0.37	0.50	0.42	0.44	0.38	-
Current expenditure of Forestry Department	0.40	0.20	0.16	0.15	0.13	0.14
Current expenditures of Forestry National Committee	0.01	0.02	0.01	0.02	0.02	0.02
Local-level spending on forest staff & activities	0.15	0.32	0.33	0.59	0.23	0.63
Spending on forestry activities	4.05	3.98	6.90	6.28	6.39	5.63
Spending on forestry activities by other agencies	2.18	2.12	2.85	3.31	8.12	6.20
TOTAL	7.17	7.14	10.67	10.79	15.26	12.63

Funding from MEGD non-forestry agencies comes from five main sources: activities carried out in support of desertification control, Protected Area administration, environmental measurements, nature and environment protection, and the Nature Protection Fund (Figure 5). The Nature Protection Fund is by far the most significant source and has been accounting for a steadily increasing share of funding over time. In 2013, "forestry and tree protection" spending made under the Fund totaled more than MNT 6 billion (US$ 4.4 million) or 99% of all funding to forestry activities provided from MEGD non-forestry agencies.

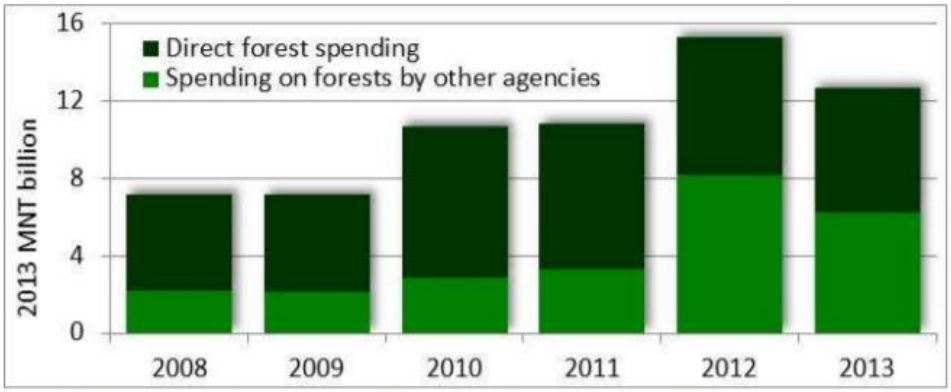


From MOF and MEGD budget data.

Figure 5: Sources of funding to forestry activities from other MEGD agencies

Funding to the forest sector has been rising steadily over the last several years: in real terms, the recurrent budget allocated to forests in 2012 was more than twice as high as that in 2008 (Figure 6). The amount of public budget allocated to forests also remains high as compared to the revenues generated by the sector: between 2008 and 2010, almost three times as much was

spent on forestry activities as was earned from timber and fuelwood. While this presents an encouraging picture, it should however be noted that the share of forests in total environmental spending has been steadily decreasing over the last five years: from a third in 2008 to 19% in 2012 (Figure 7). The contribution of the forest sector to the entire government recurrent budget has stayed fairly stable at between 0.2-0.3% of all public spending.

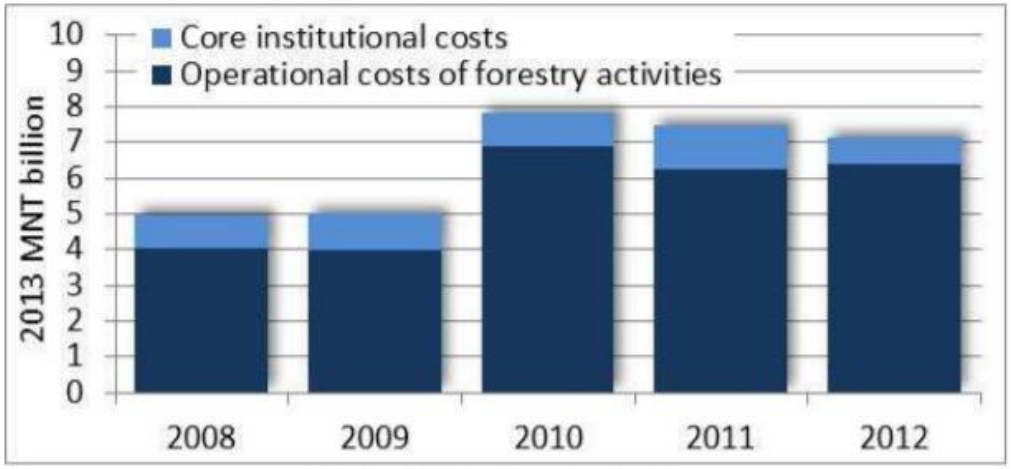


From MOF and MEGD budget data. Direct forest spending includes both core institutional costs and forest management activities. Spending by non-forestry MEGD agencies includes forest management activities only.

Figure 6: Recurrent spending on the forest sector 2008-13

How government budgets to the forest sector are spent

Core institutional costs such as salaries and staffing, office running costs, and maintenance account for only a small share of total forest sector expenditures. More than 90% of the total recurrent expenditures made in 2012 are accounted for by on-the-ground forestry activities – a share that has been growing over recent years (Figure 7).



From MOF and MEGD budget data.

Figure 7: Distribution of forest spending between institutional and operational costs 2008-12

Unsurprisingly, core institutional costs are dominated by staff costs. Over the last five years, salaries, wages, and other employment benefits have accounted for between 70-80% of the Forest Agency's core budget. Relatively little money is allocated to other expenditures such as tools and equipment, routine maintenance and repairs, office running, training, and

communication. Spending on pest control activities dominates forestry operational budgets. Over the last three years, pest control activities accounted for between a third and a half of all forest management expenditures. Other categories of forest management spending include fire management; forest cleaning, thinning and enforcement; reforestation and rehabilitation; inventory and forest organization; nurseries and seedling preparation; and support to FUG. [48]

3.2.5. Key National Forest Policies and Programs

State Policy on Forest (SPF)

In May 2015, the State Great Khural adopted the new State Policy on Forests (2015 Resolution of the State Great Khural No. 49), designed for the period until 2030. The new policy takes a comprehensive approach in integrating the country's socio-economic and environmental issues consistent with the national policies on green development. The State Policy on Forests guides for decision-making on the conservation, use, and restoration of forest resources. The 2015 State Policy on Forests reinforced approaches such as ensuring multi-stakeholder participation in forest management, creating good forest governance, and promoting science/evidence-based forest management. Among the objectives of the policy, implementation are some new elements. In particular, the document states that the number of permits for logging will be gradually decreased and the State will favor wood substitution products. Furthermore, the Policy states that the country will follow the strategy to meet the demand for timber products for industrial purposes from imported sources, while the demand for domestic consumption of wood for individual citizens will be supplied from wood harvested from thinning, cleaning, and selective cutting. The 2015 State Policy on Forests further promotes the creation of agroforestry, expansion of forest infrastructure, the establishment of forest plantations with fast-growing species, production of biofuels and pellets, the establishment of a national standard for certification of forest organizations by 2020 in line with international standards and enforcement of a system of payment for ecosystem services. The goal of the policy is to promote sustainable forest management nationwide in a way, that maintains forest ecosystem balance, halts deforestation and forest degradation, increases forest area through regeneration and afforestation; and ensures proper and sustainable use of forest resources.

The objectives are as follows:

1. Prevent deforestation and forest degradation by establishing management and capacity to protect the forest from fires, pests, and diseases and halt illegal logging.
2. Increase significantly forest area through reforestation and afforestation; build substantial capacity to increase elite tree seed reserve and improve technology.
3. Increase the proportion of forest area in the total territory to 8.3 by 2020 and 9 percent by 2030.
4. Increase range of goods from sustainably managed forest and enhance the economic, social, and environmental values of forests.
5. increase sources to finance sustainable forest management.

[48] UN-REDD PROGRAMME, *Forest sector financing flows and economic values in Mongolia* (n.p.: The UN-REDD PROGRAMME, 2013), 1-5.

6. Enhance good forest governance and legal environment; and strengthen science, education, training, communication, and advocacy of forest sector.

The policy implementation and targets are as follows.

1. The Policy will be implemented in two phases; the first phase shall be implemented from 2015 until 2020 and the second phase shall be implemented from 2020 until 2030.
2. The average forest area disturbed by fire shall be decreased by 30% in 2020 and 70% in 2030.
3. Forest pests, the threat of disease spreads, and epicenters shall be decreased up to 60% by 2020 and in 2030 shall be fully controlled.
4. Conservation and protection of forest ecosystem and biodiversity shall be ensured.
5. Greenhouse gas emissions from deforestation and forest degradation shall be reduced by 2% in 2020 and by 5% in 2030.
6. Forest area shall be increased through natural regeneration and afforestation by 310 thousand ha by 2020 and 1500 thousand ha by 2030.
7. Usage effectiveness of raw wooden materials shall be reached at 80% and domestic demands on wood shall be met.
8. Food security and household income shall be increased through improved utilization of nontimber forest products.
9. A resilient, healthy, and ecologically valuable forest shall be stocked through the promotion of sustainable management into the forest sector of Mongolia and enhancement of quality on forest protection, proper use, and restoration activities.

National Programme on Forest Cleaning (NPFC)

The 2014 National Programme on Forest Tending (2014 Government Resolution No. 30) aims to ensure the supply of a part of the demand for fuelwood and timber for household purposes by carrying out silvicultural operations. These operations include forest cleaning (removal of dead trees and trees affected by fire and insects) and thinning. Also, these silvicultural activities are expected to help to protect forests from a forest fire and forest infestation. The National Programme does not include the concept of the rational use of residues from forest thinning and tending activities. The programme will be implemented in two phases; 2014 - 2016 and 2016 - 2020. The following quantitative targets will be achieved until 2020:

1. 315 thousand ha of forests shall be cleaned.
2. 1.4 million m3 of dead trees and trees affected by fire/insects shall be removed from the forest annually.
3. More than 294 ha will be reforested over cleaned area.

National green development policy (NGDP)

Mongolia committed itself to green growth and defined its development imperatives by adopting the NGDP in 2014. The purpose of NGDP is to ensure that Mongolia evolves as a developed nation that has built conditions for environmental sustainability, and long-term, participatory, and inclusive economic growth based on the green development concept. The

NGDP is developed by other national programmes being implemented, which impact the environmental sector, such as national programmes on climate change, renewable energy, water, combating desertification, etc. Considering this, the policy makers for a landmark initiative that integrates environmental aspects and policy objectives into other sectoral policies, such as industry and agricultural policy. The policy highlights six strategic objectives, building upon the principles of resource use efficiency; consistency with sectoral policies and plans; synergy between economic growth, social inclusiveness, and environmental sustainability. Each of the six objectives is further divided into specific implementation measures, with a total of 14 outcome-level indicators to measure the results of the policy's first (2014-2020) and second (2021-2030) phase. The forest-related objectives of the 2014 Green Development Policy are:

3.1.5. …. establish forest strip to reduce land degradation induced by arable farming

3.2.7. Enhance the carbon sequestration in forests by intensifying reforestation efforts and expanding forest cover areas to 9% of the country's territory by 2030;

3.2.8. Advance community-based natural resource management for the protection and rational use of forests, NTFPs, wildlife, and plant resources, and create sustainable financing systems.

National Biodiversity programme (NBP)

The 2015 National Biodiversity Programme for the period 2015–2025, largely based on and inspired by the CBD Strategic Plan for Biodiversity 2011–2020 and its Aichi Biodiversity Targets (adopted in 2010 at the CBD COP 10), determines 14 goals under four strategies: Goal 7 aims at increasing forest cover to 9 percent by 2025 through the improvement of forest management, "Thereby protecting forest biodiversity". Also, following indicators were set up to monitor progress towards this goal:

1. Forest area as a proportion of the total land area.
2. Forest area under protection status
3. The proportion of forest area under community management
4. Forest area, disturbed by fire, insects, and pests
5. Forest strips around cropland.[49]

3.2.6. Forest Sector's Alignment to National Imperatives

Sustainable development vision 2030 (SDV 2030)

SDV 2030 was adopted in February 2016 and incorporates Mongolia's ambition to be a stable, multisectoral, and leading middle-income economy which both preserves an ecological balance and participative governance. It provides planned guidance for future pathways, bringing Mongolia's national context into consideration with planning the achievement of the SDGs. The plan contains ten key targets which address the three pillars of sustainable development and align with a number of the SDGs. In addition to these ten targets, Vision 2030 also defines the vision for each of the three pillars of sustainable development and identifies key objectives

[49] ERDENEBAT ERDENEJAV , *REPORT ON ANALYTIC STUDY ON AVAILABILITY OF FOREST DATA AND NATIONAL C&I SET FOR SFM IN MONGOLIA* (Ulaanbaatar: UN, 2020), 13-16.

to guide future sustainable development planning. The SDV 2030 and the SDGs overlap significantly. Only SDG 14 (life below water) is not part of the SDV 2030, as Mongolia is a landlocked country. The SDV 2030 directly targets seven SDGs and the remaining nine are contextually consistent or part of the SDV's core principles. The National Development Agency, which is responsible for overseeing and reporting on the SDV 2030 to the Prime Minister and Parliament, is undertaking an exercise to strengthen the link between the SDV 2030 and the SDGs. The goal is to link existing policies to the SDV 2030 and to establish baselines and set targets for its delivery. The SDV 2030 is due for review on a biannual basis. The NSO is the agency responsible for compiling indicators and providing guidance on methodologies to line ministries, which are responsible for gathering the data required to compile indicators.

Mongolia would achieve the following through implementation of the Mongolia Sustainable Development Vision 2030:

1. Increase its GNI per capita to USD 17,500 and become an upper-middle-income country based on its income per capita.

2. Ensure average annual economic growth of not less than 6.6 percent through 2016-2030.

3. End poverty in all its forms.

4. Reduce income inequality and have 80 percent of the population in the middle and upper-middle-income classes.

5. Increase the enrollment rate in primary and vocational education to 100 percent, and establish a lifelong learning system.

6. Improve the living environment of the Mongolian people to lead a healthy and long life; increase life expectancy at birth to 78 years.

7. Be placed among the first 70 countries on the ranking of countries by the human development index.

8. Preserve ecological balance and to be placed among the first 30 countries on the rankings of the countries by the Green economy index in the world.

9. Be ranked among the first 40 countries by the Doing Business Index and among the first 70 countries by the Global Competitiveness Index in the world.

10. Build professional, stable, and participative governance, free of corruption that is adept at implementing development policies at all levels.[50]

The objective of environmental sustainability of SDV 2030 is to ascertain inclusive economic growth and sustainable social development and provide the fundamentals of improving the quality of people's lives by efficiently using natural resources, preserving the sustainability of the ecosystem, and creating opportunities to benefit from natural resources in the long-run. The principles of environmental sustainability:

[50] STATE GREAT HURAL OF MONGOLIA, *Mongolia Sustainable Development Vision 2030* (Ulaanbaatar: The Secretariat of the State Great hura, 2016), 9.

1. Promote participation of residents and people at large to ensure environmental sustainability;
2. Use resource efficiently and effectively;
3. Support clean technology and encourage low-waste and sustainable production and consumption;
4. Develop and enforce environmental rehabilitation at international standard level;
5. Encourage environment-friendly attitude and appropriate behavior.

The environmental sustainability objective of SDV 2030 includes the forest targets (2.3.3. Ecosystem balance) of increasing proportion of forest area in the total territory to:

1. 8.5 % by 2020,
2. 8.7 % by 2025 and
3. 9.0 % by 2030. [51]

Intended Nationally Determined Contribution (INDC)

The Intended Nationally Determined Contribution (INDC) of Mongolia includes proposed measures and additional actions for energy (including transport), industrial processes, agriculture, and waste. Projected emissions by sector for 2010 and 2030 are shown in Figure 8.

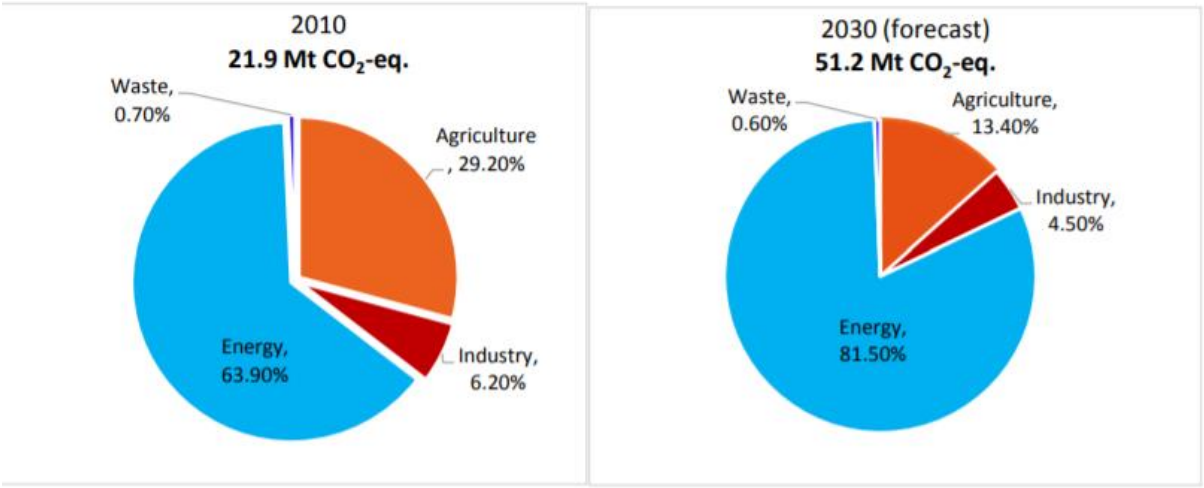


Figure 8: GHG emissions share by sector in 2010 and 2030

GHG emissions reported here, exclude the LULUCF sector, which is currently being estimated through the preparation of a national GHG inventory, within the scope of the responsibility of the Ministry of Environment, Green Development and Tourism of Mongolia (MEGDT).

To facilitate clarity, transparency, and understanding, this section provides an indicative estimate of potential emission reductions for the measures targeting all major GHG gases (CO_2, CH_4, N_2O) in the sectors mentioned. The cumulative impact is estimated to result in approximately an annual reduction of 7.3 Mt CO_2-eq. of economy-wide emissions in 2030, corresponding to a 14% reduction compared to a business-as-usual (BAU) scenario, excluding

[51] ERDENEBAT ERDENEJAV , *REPORT ON ANALYTIC STUDY ON AVAILABILITY OF FOREST DATA AND NATIONAL C&I SET FOR SFM IN MONGOLIA* (Ulaanbaatar: UN, 2020), 15-16.

LULUCF.

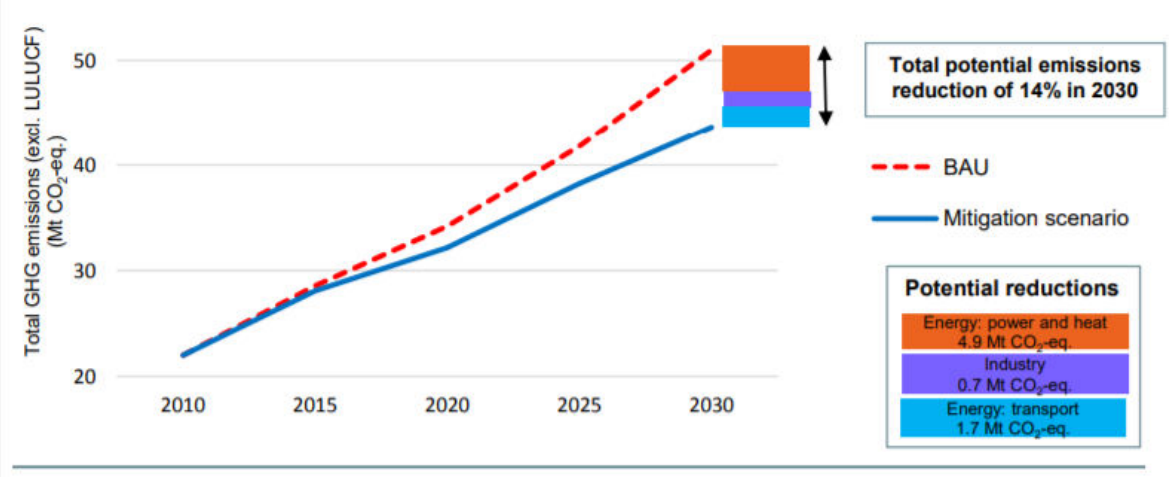


Figure 9: Indicative potential emission reductions of the measures compared to BAU emissions

[52]

3.2.7. International Engagement & commitment to International/Regional Goals

REDD+

Mongolia is the first country with significant boreal forest cover to become a partner country of the United Nations collaborative initiative on Reducing Emissions from Deforestation and Forest Degradation in developing countries (UN-REDD Programme). Mongolia has significant potential to reduce its forest carbon emissions, and enhance and sustainably manage its forest carbon stocks, through the implementation of REDD+ activities. Mongolia became a partner country of the UN-REDD Programme in June 2011 and has quickly taken steps to start implementing REDD+ readiness activities. A Roadmap sets out how Mongolia will implement its REDD+ Readiness activities and develop a comprehensive National REDD+ Strategy in Phase 1 of REDD+. The Roadmap has four main outcomes, as follows:

1. National REDD+ management arrangements established while ensuring improved stakeholder awareness and effective stakeholder engagement;
2. National REDD+ strategy prepared;
3. Forest reference emissions levels and forest reference levels developed; and
4. National forest monitoring system and safeguards information system developed.

The National Programme also counts on key national counterpart institutions and development partners to play active roles and take on specific responsibilities in maintaining the momentum in the REDD+ management processes and prioritizing and implementing those strategic options identified through the Programme. Effective risk management and coordination with key national and development partners throughout the life of the Programme will therefore be critical. The National Programme will contribute to the implementation of the National REDD+ Readiness Roadmap outcomes in the following ways. Under Outcome One of the Roadmap, the National Programme will support the establishment of Mongolia's REDD+ Readiness

[52]UNFCCC, *Intended Nationally Determined Contribution (INDC) Submission by Mongolia to the Ad-Hoc Working Group on the Durban Platform for Enhanced Action (ADP)* (n.p.: The UNFCCC, 2015), 3-4.

management structure to oversee the delivery of the key results described in the Roadmap and to prepare its National REDD+ Strategy. The National Programme will also support Mongolia in engaging a broad range of non-government stakeholders, including the private sector actors, in the REDD+ implementation process. To achieve this, a Civil Society Organisation/Local Community Forum will be established to ensure effective and meaningful consultation and engagement both within the non-government sector and between the non-government sector and government. The National Programme will also prepare and implement a consultation and participation plan, as well as a public awareness-raising plan. Related to these plans, the development of national guidelines on free, prior, and informed consent (FPIC) together with a REDD+ grievance mechanism linked to existing systems will be supported by the National Programme.

Under Outcome Two of the Roadmap, the National Programme will support the preparation of Mongolia's National REDD+ Strategy through which key drivers of deforestation and forest degradation in Mongolia will be analyzed through detailed studies, and specific policies and measures to address those key drivers will be identified. At the same time, the National Programme will support Mongolia in establishing suitable institutional arrangements and undertake institutional capacity development activities to implement the Strategy. As part of this effort, the National Programme will also support the establishment of REDD+ fund management and benefit distribution mechanisms together with a social and environmental safeguards policy framework and procedures. Under Outcome Three of the Roadmap, the National Programme will support the establishment of national forest Reference Emission Level and/or forest Reference Level (REL/RL), with sub-national forest RELs/RLs as potential interim measures. The emphasis of this Component will be the collection of data on historical land use and the analysis of relevant national circumstances, as well as the development of specific capacities to further develop, pilot, and implement RELs/RLs under a full National REDD+ Strategy.

The NPD includes four Outcomes, with associated Outputs as follows:

OUTCOME 1: NATIONAL REDD+ MANAGEMENT ARRANGEMENTS ESTABLISHED and IMPROVED STAKEHOLDER AWARENESS AND EFFECTIVE STAKEHOLDER ENGAGEMENT

- Output 1: A broad-based, multi-stakeholder National REDD+ Taskforce established
- Output 2: UN-REDD Programme Management Unit (PMU) established
- Output 3: CSO/LC forum established
- Output 4: Public awareness raised
- Output 5: Consultation and participation plan developed
- Output 6: National FPIC guidelines developed

OUTCOME 2: NATIONAL REDD+ STRATEGY PREPARED

- Output 7: Barriers to REDD+ identified through:
  1) analysis of drivers of deforestation and forest degradation; and
  2) assessment of legal and policy alignment needs
- Output 8: REDD+ policies and measures identified and prioritized through:
  1) identification of strategies to address barriers to REDD+; and
  2) demonstration activities to test identified strategies for REDD+

Output 9: National fund management and mechanism for distribution of positive incentives designed

Output 10: Capacity-building action plan developed

Output 11: Gender analysis undertaken

Output 12: REDD+ social and environmental safeguard policy framework developed

Output 13: National REDD+ Strategy prepared through the collation of technical outputs from Outcomes 1-4

OUTCOME 3: FOREST REFERENCE EMISSIONS LEVELS AND FOREST REFERENCE LEVELS DEVELOPED

Output 14: Capacity built for the development of FRELs/FRLs

Output 15: FRELs/FRLs methodologies developed and tested

OUTCOME 4: NATIONAL FOREST MONITORING SYSTEM AND SAFEGUARDS INFORMATION SYSTEM DEVELOPED

Output 16: NFMS and Forest Information System (FIS) development process managed

Output 17: REDD+ MRV System developed

Output 18: Safeguards Information system (SIS) established.[53]

REDD+ readiness efforts have added momentum to ongoing efforts to manage forests sustainably. Mongolia has all carried out their first full cycles of national forest inventories, driven in large part by the need for more accurate information on forest extent and forest-related greenhouse-gas emissions.[54]

National Stakeholder Platform

Understanding of Forestry User Group (FUG) has been stated in the Forestry Law of Mongolia (2008) for the first time. Now FUGs are leasing a certain part of the forest on a contract basis. For example, about 3000 ha forestry area is accounted for a FUG. The decision for giving the right to lease a forest is being made by the Citizens Representative Khural at the Soum level. Participatory Forestry Management is the main concept of Mongolia.[55]

3.3. Forestry and Forest Products

3.3.1. Forest Sector Production

Box 3: Definition of Forest Sector

"Forest sector" is conventionally defined only to include formal sector, mainly commercial, activities relating to the extraction, production, processing, sale, and consumption of wood products and sometimes non-timber forest products (NTFP).

The forest sector in macroeconomic and development indicators Official statistics suggest that the forest sector makes only a small contribution to GDP and associated macroeconomic

[53] UN-REDD PROGRAMME, *Mongolia UN-REDD National programme document* (n.p.: The UN-REDD PROGRAMME, 2015), 3-6.

[54] FAO. *Forest futures – Sustainable pathways for forests, landscapes and people in the Asia-Pacific region. Asia-Pacific Forest Sector Outlook Study III.* (Bangkok : FAO, 2019), 138.

[55] FAO, *GLOBAL FOREST RESOURCES ASSESSMENT 2015 Report Mongolia* (Rome: The FAO, 2014), 68.

indicators. The recorded share of the forest sector in GDP was estimated to be just 0.25% in 2009. According to end-of-year statistics for 2012, the share of wood and wood products in gross industrial output was just MNT 15.67 billion (US$ 11.26 million) or 0.8% of total manufacturing output. Something over 1,200 people were recorded as being employed in wood and wood products manufacturing, comprising only 4.5% of all employment in manufacturing. Recorded forestry sector timber, fuelwood, and hunting revenues contributed just 0.2% of central government tax revenues and 0.8% of local government tax revenues in 2010. The low importance of forestry is partly due to the dominance of the livestock and mining sectors in Mongolia's national economy. Forest sector GDP is presented as part of the agriculture sector (including livestock, crops, fisheries, hunting), not as a separate item, meaning that it is hard to discern or separate.

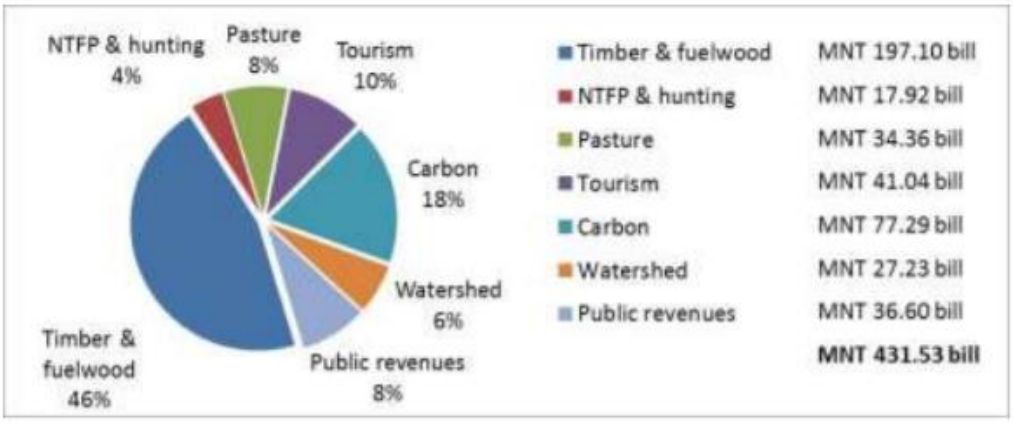


Figure 10: Partial estimate of the economic value of forest goods and services (2013 MNT billion)

Timber Forest Product

While the commercial harvesting potential of the boreal forest was estimated by MEGD at just over 0.8 million m 3 in 2010, actual harvest volumes were somewhat less than this at 0.68 million m 3 – although have been growing steadily over the last decade. The wood generated from thinning and cleaning operations was equivalent to just under 0.4 million m 3 or more than half as much again as the harvest from commercial utilization activities. Total licensed forest harvest volumes from boreal forests reached 0.88 million m 3 in 2011 and 0.83 million m 3 in 2012, of which 15% and 28% respectively were accounted for by timber removals and the rest fuelwood. This figure represents licensed wood utilization. Much of the timber and fuelwood that is harvested each year in Mongolia however takes place on an informal basis, outside the permit system. Unsurprisingly, there are few reliable estimates of the scale of unlicensed wood removal. Just under 5,000 m 3 of illegally-felled timber was recorded by the MEGD as having been confiscated in boreal forest aimags in 2010. This likely represents only a very small proportion of the actual volume of wood removed. It is assumed that all commercial timber is extracted from boreal forests. No round logs or sawn timber are legally exported from Mongolia10 or are recorded as imports, and there seem to be no indications of illegal cross-border timber trade. It can therefore be assumed that all timber harvested from boreal forests is for use within Mongolia and that all domestically-consumed timber is sourced within the country. This yields a figure of just over 2.3 million m 3 of fuelwood consumed in

2013, equivalent to some 3 million m 3 of raw wood removals. Putting these figures together suggests that around 3.7 million m 3 of raw wood a year may currently be removed from boreal forests, of which timber accounts for 0.74 million m 3 or 20% of the total, and fuelwood 2.92 million m 3 or 80% (Table 14). Around a third of the timber and fuelwood consumed is sourced through licensed use, meaning that there is an unlicensed harvest of around 0.47 million m 3 of timber and 1.96 million m 3 of fuelwood. Total removals, both licensed and unlicensed, are worth some MNT 66 billion (US$ 48 million) in earnings to producers and have a retail value of almost MNT 200 billion (US$ 142 million). It should be emphasized that a high proportion of wood extraction – more than half – is unlicensed.

The bulk of commercial harvest values are likely being captured by PFEs and other participants in the timber and fuelwood marketing chain. In addition to the one hundred or more PFEs licensed to harvest timber in production forests, at least as many businesses are registered in boreal forest aimags12 which deal with the processing, marketing, transport, and sale of timber and non-timber forest products. Most of these are small and medium-sized enterprises (SME), employing fewer than ten workers and with an average annual turnover of MNT 20 million (US$ 15,000) or less. The total income generated by registered forest enterprises in boreal forest aimags is recorded as being just over MNT 4 billion in 2012, with a combined operating margin of some MNT614 million. This represents only a small proportion of the total value of the wood harvest in terms of producer operating margins (Table 14). Other unregistered forest businesses also operate, without licenses. Almost 1,000 wood-based industries are thought to exist at the national level, including both timber harvesting and processing/marketing enterprises. Records from 2004 indicate that of the 678 mills and manufacturers operating at that time, 175 were producers of construction materials and components, 207 were producers of other wooden and woven products, 48 were producers of wooden panels, 36 were producers of wooden crates and containers, 123 were producers of timber and 89 were logging companies. Comparing these figures with the estimates provided above indicates that only a tiny proportion of forest values is being captured locally. Timber and fuelwood earnings are spread over a wide range of market participants, and a broad chain of value-addition.

Table 14: timber and fuelwood values

	Timber	Fuelwood	Total
Licensed removals from commercial harvesting (m^3 1,000 raw wood equivalent)	235.10	596.01	831.11
Licensed removals from thinning and cleaning production (m^3 1,000 round log equivalent)	36.00	360.00	396.00
Unlicensed removals (m^3 1,000 raw wood equivalent)	469.32	1,964.39	2,433.71
Total removals (m^3 1,000 raw wood equivalent)	740.42	2,920.40	3,660.82
Operating margins to producers (MNT million)	42,719	23,358	66,077.52
Retail value (MNT million)	93,470	103,628	197,097.38

Non-timber Forest Products

MEGD records show that, in 2010, just over 300 tonnes of spruce and pine nuts, wild berries, and other NTFP were collected under permit in boreal forest aimags (Table 19). At current market prices, these may have a value of between MNT 1.5-2.7 billion (US$ 1-2 million), depending on whether they are home-consumed or sold. As is the case for wood products, a large proportion of NTFP harvesting takes place outside the permit system. It is known that herder communities collect a wide range of plant products. Recent work among FUG has found that members are harvesting fruits, berries, mushrooms, wild vegetables, pine nuts, preserved berries, and medicinal herbs for home consumption and sale on local markets. Extrapolating these findings to the total rural population living in soums with boreal forests suggests that almost 65,000 households may be regularly collecting up to 4,250 tonnes of fruits, berries, wild vegetables, nuts, and medicinal plants, to a total value of almost MNT 16.5 billion (US$ 12.18 million) a year. Just over MNT 12 billion (US$ 9.13 million) or 75% of this value is accounted for by home-consumed products, while MNT 4 billion (US$ 3.05 million) is earned as cash income from sales in local markets or to middlemen. Typically, much of the cash earned from NTFP sales are captured by richer households: while the poor function primarily as laborers, better-endowed households can process products, and through value addition and transport to markets can command much higher prices.[56]

3.3.2. Forest Sector Trade

Trade History

According to official records, the Mongolian forest sector was started in 1924 the with the establishment of the Forest and Wood Division, in charge of Forest and Wildlife management-related issues, under the Ministry of Industry. Since the 1970s, the government has paid more attention to protecting forest resources from both natural and man-made negative impacts including over-cutting, illegal logging, forest fires, and harmful insect distribution in certain areas. Before the 1990s, approx. 2.2 million m^3 of timber were produced annually, and forest products contributed to 6% of Mongolia's GDP. In 1990, Mongolia made a dramatic change in its political and economic system transitioning from a single-party political system to a democratic form of society and market economy. Since this transition, the country has experienced drastic socio-economic changes, leading to an increase in poverty and unemployment, and social stratification within Mongolian society with disparities between rural and urban areas. The current situation puts increasing anthropogenic pressure on natural resources, seriously affecting the forests of northern Mongolia. During economic and political transition years, Mongolia underwent an economic crisis, and large wood harvesting and processing centralized industries and factories collapsed. The majority of wood harvesting and processing private forest entities ceased manufacturing wood products and took to exporting round wood and sawn timber to China. In 1999, environmental concerns led to the parliament passing legislation and halted the export of round wood and sawn material. During recent years, official timber harvesting rates have oscillated around approximately 800 thousand m^3 /year.

[56] UN-REDD PROGRAMME, *Forest sector financing flows and economic values in Mongolia* (n.p.: The UN-REDD PROGRAMME, 2013), 4-5.

Much of this harvest has been met through sanitation cutting or forest cleaning whereby timber is removed from forests affected by fire, pests, and diseases.

From the total, 9.1% were harvested through harvest cutting, 4.6% from thinning, and 86.3% from forest cleaning and sanitation cutting. There is an average of 18.8% of total harvest for commercial wood and 81.2% for fuelwood; the latter is used for householder consumption, charcoal making, and sale to urban areas. Based on NSO data, the GDP of the forestry sector was estimated at MNT 141.8 billion, 0.5% of Mongolia's GDP in 2017. [57]

Hunting and Wildlife Trade

It is thought that more than a third of Mongolians use wildlife in some form, either commercially or for personal consumption. Although most hunting focuses on grassland and steppe species, some birds and animals found in boreal forests are hunted. Much of this is unlicensed, more than quotas, or involves listed species, and so there are few reliable or up-to-date figures on the level of hunting or the scale of the – largely illegal − wildlife trade. Surveys however indicate that the value of the wildlife trade is substantial: it is thought to be worth more than US$100 million a year, supplying meat, skins, fur, medicinal products, live animals, and animal parts both domestically and internationally. As much of this utilization and trade is illegal, it is not considered sustainable, and therefore not included in calculations of the value of the forest sector. Only the income related to licensed hunting is included. The national hunting quota for 2010 includes at least five bird and animal species which depend at least partly on boreal forest for their habitat15. Applying average domestic trade prices and sport hunting values to this offtake suggests that licensed forest hunting may have an annual market value of between MNT 91 million (US$ 65,000) if sold locally and MNT 2.7 billion (US$1.93 million) if hunted for sport. About hunting, it should however be noted that recreational or trophy hunting comprises a significant segment of Mongolia's tourism market. Although it is not possible to quantify this value as distinct from that of forest-based leisure tourism more generally, hunting tourism generates substantial values. A wide range of domestic and international hunting outfitters offer trips in Mongolia, with several advertising "forest specials" targeting species such as maral stag, roe deer, bear, lynx, wild boar, and wolf. This tends to be high-value, high-end tourism: the in-country16 price of a two week hunting trip averages US$5,000 per person (and can be priced as high as US$50,000 if including major trophy animals), plus additional charges of US$1,000 or more for permits, trophy fees, certificates, and ammunition.[58]

[57] ERDENEBAT ERDENEJAV , *REPORT ON ANALYTIC STUDY ON AVAILABILITY OF FOREST DATA AND NATIONAL C&I SET FOR SFM IN MONGOLIA* (Ulaanbaatar: UN, 2020), 31-34.
[58] UN-REDD PROGRAMME, *Forest sector financing flows and economic values in Mongolia* (n.p.: The UN-REDD PROGRAMME, 2013), 5-6.

3.3.3. Forest Sector Employment

The employment to population ratio (% ages 15 and older) is 56.1. Among them, employment in agriculture (% of total employment) is 27.4%.[59]

Due to export regulations in 1999, the number of forestry and logging workers decreased sharply (Table 15). [60]

Table 15: Employment in forestry and logging

FRA 2020 categories	Full-time equivalents (1000 FTE)	
1990	Total	267.00
	Female	93.00
	Male	174.00
2000	Total	77.00
	Female	27.00
	Male	50.00
2010	Total	64.00
	Female	29.00
	Male	35.00

3.4. Forest and Climate Change

3.4.1. Climate Change

Mongolia is susceptible to climate change due to its location, vulnerable ecosystem, and economic system that is dependent on seasonal climates. In the past 40 years, climate change and other anthropogenic activities have had a significant impact on the Mongolian ecosystem, resulting in desertification, increased occurrences of drought, water source depletion, and a decrease in biological diversity as well as affecting the well-being of local communities. The annual average temperature in Mongolia increased by 2.14℃ between 1940 and 2008. When comparing this to the global annual average temperature, which raised 0.85 ℃ during 1880-2012, climate change is occurring rapidly in Mongolia, melting glaciers, and permafrost.

The area under the ice cap on Kharkhiraa, Turgen, Munkhkhairkhan, Tsambagaraw, and the Sair mountains has decreased by 30 percent from 1992 to 2002. The total area of glaciers was approximately 535km in 1940, 490km in 1990, 438 km in 2000, and 386 km in 2010. The area of glaciers has decreased by 12.3% in 1940-1990, a further 9.8% in 1990-2000, and 11.7% in 2000-2010, totaling 27.8% loss in the past 70 years. The melting of glaciers has intensified in the last decade.

The evaporation of surface water has increased by 118.1mm since 1961, while precipitation has decreased by 33.0 mm, resulting in aridity and becoming the main cause of desertification. The spring runoff occurs a month sooner, lengthening the period during which vegetation is without

[59] "Human Development Reports," *Hdr.undp.org*, last modified n.d., accessed Mar 22 2021, http://hdr.undp.org/en/countries/profiles/MNG.

[60] FAO, *GLOBAL FOREST RESOURCES ASSESSMENT 2020 Report Mongolia* (Rome: The FAO, 2020), 50-51

snow cover. This has increased in soil degradation, thus the number of dust storms per day in the countryside has increased by 3-4 times since the 1960s.

In 2006, the total emission of greenhouse gases in Mongolia reached 18,868 (thousand tons of CO_2 equivalent). The net output after taking out absorbents (greenhouse gases, dust particles and other pro greenhouse gas elements that enter the atmosphere) is 15,628 thousand tons of CO_2. Out of the whole greenhouse gas emission, 54.2% are from energy deposition, 34.2% from agriculture, and the rest from private land use, decreased forest areas, industry, and anthropogenic waste.

Furthermore, the occurrences of water and climate-related dangers and other natural disasters in 2011-2012 had grown in number since previous years. In 2011, there were a total of 70 reported dangerous weather warnings, of which 16 were heavy rain, 15 were floods, and 11 were heavy storms. These numbers multiplied in 2012, with 140 reported weather warnings mostly made up of heavy rain, 35 floods, 19 thunder and lightning, 16 gusty winds, 13 storms such as blizzards and sandstorms.

Due to dangerous weather, there were 13 reported human deaths, 1,100 livestock deaths, 2.8 billion MNT (1.6 million USD) worth of damages were reported in 2011, while in 2012, 19 human deaths, 8,444 livestock deaths, and 17 billion 132 million MNT worth of damages were inflicted.

According to forecasts, the annual average temperate in Mongolia is expected to get warmer by 2.1-3.0℃ by 2050 and 3.1-5.0℃ by the end of the century. Precipitation will increase by 6-15% by 2030, 7-15% by 2050 in the winter, and by 50% after that. [61]

3.4.2. Roles of Forest Sector in National Climate Change Policy

Desertification Countermeasures

Mongolia established the Law on Soil Protection and Prevention from Desertification (1996), the Law on Protection of soil from degradation and prevention of desertification (2012), and the National Action Plan for Combating Desertification (2010-2020). A national implementation plan for preventing desertification will be carried out in Phase 2 (Phase 1 2010-2015 and Phase 2 2016-2020). In the first stage, the government implemented system maintenance, strengthening technical skills, education and training, and in the second stage, it implemented a full-fledged project to prevent desertification. [62]

Green Belt National Programme (GBNP)

In 2005, the Government approved the Green Belt National Programme (2005 Government Resolution No. 44), which is still being implemented. The main goal of the Programme is to establish a green belt/forest strip along the Gobi Desert and steppe region in the southern part of the country to slow down the desertification and sand movement. The programme has three

[61] CBD, *The 5th National Report of Mongolia* (Ulaanbaatar: The CBD, 2014), 10-17.
[62] Han-mong geurinbelteu saeopdan, *2017 monggol jorim gaideu* (n.p.: Han-mong geurinbelteu saeopdan (KR), 2017), 27. Korean.

stages (2005–2015, 2016–2025, and 2025–2035). The Government has evaluated the results of the first stage. The Ministry and the local governments allocate a budget to support the implementation of the Programme. At the moment, the Forest Policy Coordination Department is responsible for the Programme's implementation. The following quantitative objectives were set up in the document:

1. Greenbelt, established through afforestation, shall occupy over the territory of more than 150 thousand ha, which will increase of total forest area by 1,6%.
2. 20 thousand seasonal local jobs shall be created. [63]

3.4.3. Forest-based Climate Mitigation

By 2030, Mongolia intends to contribute to global efforts to mitigate GHG emissions by implementing the policies and measures written in INDC of [3.2.6], contingent upon the continuation of international support to complement domestic efforts.

Mongolia's INDC has its conceptual roots in the Green Development Policy of Mongolia, approved by the Parliament in 2014, to which key sectorial action plans at the national level, including the energy sector, are being adjusted. Key indicators for measuring progress in the implementation of the Green Development Policy include, among others, efficient use of energy, GHG emissions, and ecological footprint per unit of GDP. The National Action Programme on Climate Change (NAPCC) endorsed by the Parliament 2011 includes concrete measures in response to climate change covering all principal sectors of the economy. These and other relevant national-level policy documents served as a basis for the development of Mongolia's INDC, which was shaped and finalized through comprehensive consultation exercises with a broad range of stakeholders. Mitigation contribution In its INDC, Mongolia has outlined a series of policies and measures that the country commits to implement up to 2030, in the energy, industry, agriculture, and waste sectors. The expected mitigation impact of these policies and measures will be a 14% reduction in total national GHG emissions excluding Land use, Land Use Change and Forestry (LULUCF) by 2030, compared to the projected emissions under a business as usual scenario. Those and other potentially more ambitious commitments are contingent upon gaining access to new technologies and sources of finance through internationally agreed mechanisms and instruments under the auspices of the UNFCCC.

Adaptation aims to reduce risks and vulnerabilities for the following sectors:

1. Animal husbandry and pasture:
   Every year, around 1.0 million USD is allocated from the Government budget to facilitate scientific, environmentally sound measures against pasture insects and rodents. A monitoring system for pasture and soil has been created and is being strengthened. Existing national policy documents include strategic objectives to protect pasture, which occupy about 80% of the territory. These objectives include improved pasture management, regulation of livestock numbers and herds' composition by

[63] ERDENEBAT ERDENEJAV , *REPORT ON ANALYTIC STUDY ON AVAILABILITY OF FOREST DATA AND NATIONAL C&I SET FOR SFM IN MONGOLIA* (Ulaanbaatar: UN, 2020), 14.

matching with pasture carrying capacities, improved animal breeds, and regional development of intensified animal farming.

2. Arable farming:
   As of 2015, the total cropland has been accounted as 750 thousand ha, and 450 thousand ha is re-used cropland, which was abandoned. Drip irrigation systems have been experimented with since 1997 and are currently used for a limited areas of the vegetable fields.
3. Water resource:
   As of 2015, state-protected area covers 17.4% of the total national land including a certain part of river headwater areas. Integrated river basin management plans have been developed for 7 river basins out of the planned 29.
4. Forestry:
   Community-based forest resource management has been introduced and about 20% of the forest area is currently under the protection of community forestry groups, which comprise 74.8% of the total community groups on environmental protection. Multi-purpose forest resource inventory is under the process(Table 16).[64]

Monitoring of climate change adaptation measures will be conducted in an integrated way as per the existing national programmes. Required funding for adaptation measures, listed in Table 16, could be provided from the State budget, Government special funds, international funds, and through other financial mechanisms. Monitoring will be based on the achievement of adaptation goals and targets. Baselines and targets for indicators will be assessed quantitatively and qualitatively at every phase of its implementation.

Table 16: Adaptation needs (2021-2030) in Forest resource

Sector	Adaptation goals	Adaptation Targets	Needs		
			Capacity	Technology	Financial (international, investments), million USD
Forest resource	-To increase the efficiency of reforestation actions	-Forest area will be increased to 9% by 2030 through reforestation activities	-To build the capacity of community forestry groups to conduct modern technologies for forest seedlings	-To introduce technology to plant seedlings	11.0

[64] UNFCCC, *Intended Nationally Determined Contribution (INDC) Submission by Mongolia to the Ad-Hoc Working Group on the Durban Platform for Enhanced Action (ADP)* (n.p.: The UNFCCC, 2015), 6-7.

			and tree plantations		
	-To reduce the forest degradation rate	-To reduce forest degradation rate caused by human activities, fires, insects, and diseases	-To set up fully equipped stations fighting forest fires and insects outburst and capacity building	-To use airplanes to fight against fires -To introduce biological technologies against insects and pests	13.0
	-To improve the effectiveness of forest management	-To make forests resilient to climate change by improving their productivity and changing their composition and structure	-To provide equipment and machinery to carry out forest cleaning activities -To train human resources for forest management practices	To improve efficiency of forest cleaning technologies	7.0

3.4.4. Climate Change Adaptation and Disaster Risk Reduction in Forest Sector

The number of people killed, missing, or directly affected by a disaster was 2811.5 per 100,000 in 2016, and 363.3 in 2018. [65] What is needed to manage natural disasters is as shown in the following table 17.[66]

Table 17: Adaptation needs (2021-2030) in Natural disaster management

Sector	Adaptation goals	Adaptation Targets	Needs		
			Capacity	Technology	Financial (international,

[65] "MONGOLIAN SDG DASHBOARD," *Sdg.gov.mn*, last modified n.d., accessed Mar 22 2021, http://sdg.gov.mn/Goal?id=13.

[66] UNFCCC, *Intended Nationally Determined Contribution (INDC) Submission by Mongolia to the Ad-Hoc Working Group on the Durban Platform for Enhanced Action (ADP)* (n.p.: The UNFCCC, 2015), 8-10.

					investments), million USD
Natural disaster management	-To enhance and improve early warning and prevention systems for natural disasters	-To strengthen the early warning system for natural disasters	-To establish early detection and prediction system -To conduct disaster risk assessments at local and sub-national levels	-To improve forecast quality through increasing supercomputer capacity -To establish a Doppler radar network covering the entire territory of the country	65.4

Forest Conservation

The most significant forest policy measures for forest conservation at the national level were identified as follows:

1. Organize seed collection based on genetic selection evaluation and set up seed harvesting sites in each forest vegetation zone.
2. Tree seed analysis laboratories with improved facilities and equipment will be renewed.
3. Start the establishment of mother seed tree plantations with a selection of elite and trees.
4. Provide financial support to the establishment of tree breeding nurseries for the greening of settlements, for reforestation, and for the creation of shelterbelts to combat desertification and soil degradation in pasture and croplands.
5. Expand reforestation work annually in 10.0 thousand ha. Mobilize the activity of local citizens, youth, and the public community in seed collection and breeding of tree seedlings.
6. Organize domestic industry to produce simple hand equipment for tree seed collection and seedling breeding.
7. Provide portable equipment for forest nursery and reforestation work and modernize the technology of tree planting and reforestation.
8. Introduce suitable technology in the practice of natural forest regeneration succession and tree plantation activities by forest vegetation zones and regions.
9. Implement regulations for conducting reforestation by project and plan, and develop their monitoring, evaluation, and procedures for financing and transferring to state forest land.
10. Renew the norms of assessment and expenses of seed collection, seedling breeding, reforestation, and the standard amount of seeding and seedlings for forest rehabilitation and tree planting under the steppe and Gobi desert zones.

11. World Environment Protection Day will be celebrated by planting trees for ten days annually in every aimag and settlement.
12. Improve the inventory of tree-planted areas by providing a continuous cycle such as tree planting, tree patching, caring for them, and transferring to state forest land.
13. Actions against desertification in the form of the creation of forest strips and small stands to protect cropland and pasture will be supported and encouraged.
14. In cases of exception of Provision 23 of the second part of the Forest law of Mongolia, a citizen, economic entity, or organization can own forest that they planted by themselves[67]

Forest Fire Monitoring

The 10-year forest fires trend in Mongolia is shown in the following figure 11.

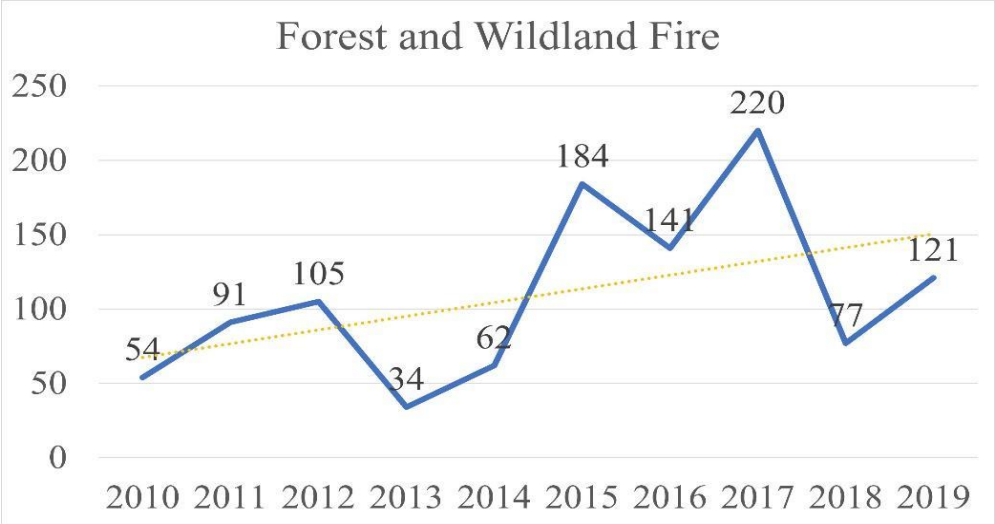


Figure 11: 10-year forest fires trend in Mongolia

To reduce the increased risk of forest fires, SI and NFI gather information on forest fire during the field assessment. Furthermore, under the Law on Forest, National Emergency Management Agency (NEMA) is also responsible for fire prevention and suppression and for evaluating the damages caused by wildfire. Hence, NEMA is leading the fire prevention and suppression efforts in Mongolia. NEMA currently has three main responsibilities:

1. to provide training to firefighters;
2. to dispatch firefighters to current incidents; and
3. to provide suppression efforts and tactics for fighting fires.

Currently, there are 56 fire suppression units located across the forest and steppe lands. These units provide a limited presence and response time with the size of Mongolia. Therefore, the Fire Safety Law of 2015 allows local citizens to voluntarily fight fire. Funds for these volunteers to obtain equipment and tools come from the state budget, and the local governors are

[67] Jamsran Tsogtbaatar, *Forest Policy Development in Mongolia* (n.p.: CDR Law, 2020), 67.

responsible for their training. These volunteers are often the first to detect fire starts, and they are regularly responsible for initial attack. If the volunteers are not able to contain/control the fire, NEMA is contacted and the nearest Fire Suppression Unit is dispatched to assist with the fire. Due to difficult terrain and the vast distance that must be traveled, it can take up to an hour, if not longer, for the responding unit to arrive at an incident. NEMA is the official holder of fire-related information, which is being shared with the EIC and NSO for the data provision guidelines.[68]

3.5. Human Resources and Institutional Capacities in Forest Sector

3.5.1. National Forest Administrative Capacity

The most significant forest policy measures for human resources development at the national level were identified as follow:

1. The significance of forest resources and forest-related legislation will be widely advertised and publicized.
2. Local authorities will be trained and educated in the fields of forest legislation, conducting forest inventories, forest protection, forest resource use, and reforestation.
3. The quality of training in national universities and colleges that train forest specialists will be updated, and their activities to educate highly qualified national experts will be supported.
4. Trained experts who currently work in forestry will be enrolled in short-term and long-term training either in Mongolia or abroad.
5. Forest masters and workers with qualifications to run forest industry processing will be trained and re-trained by a special plan.
6. Inter-governmental agreements on fighting and prevention of transboundary forest fires will be signed with neighboring countries. [69]

3.5.2. Research and Development

Forest Biodiversity Monitoring

The Ministry of Environment and Tourism is responsible for the monitoring of biodiversity and protected areas. In particular, the Institute of Biology of the Mongolian Academy of Sciences has an agreement with the Ministry to provide information on protected areas and endangered, rare, and ecologically important species. Between 1987 and 2010, regular studies of ecologically and economically important species were carried out every four years; however, due to a lack of funding, this ceased in 2014 and no further species inventories have been undertaken since 2010. In 2010, species assessments of three different biomes were carried out by the Academy of Sciences, comprising steppe and desert species, mountain species, and forest

[68] ERDENEBAT ERDENEJAV , *REPORT ON ANALYTIC STUDY ON AVAILABILITY OF FOREST DATA AND NATIONAL C&I SET FOR SFM IN MONGOLIA* (Ulaanbaatar: UN, 2020), 22.
[69] Jamsran Tsogtbaatar, *Forest Policy Development in Mongolia* (n.p.: CDR Law, 2020), 68.

species. These regular species inventories were primarily used to inform quotas for hunting and to inform the national state of the environment report.

Typically, rangers at the Aimag and Soum levels support the fieldwork and observations by completing questionnaires and working with the scientists in the field. The Academy of Sciences is the primary supplier of data to the Ministry of Environment and Tourism with a focus on science. Further data and information are provided by various national and international institutions and research and conservation organizations, the latter groups usually on a project basis. There is also evidence that well-funded projects deliver sound data and information (e.g. on conservation of the Gobi bear), thus allowing informed decision-making on specific issues of national and international interest. Despite the methodological and technical capacities of the Academy of Sciences to monitor biodiversity and produce assessment reports with recommendations, a lack of funding has resulted in the cessation of regular monitoring and reporting. In general, 2010 data are too outdated to inform evidence-based policymaking. While the relevant organizations contributing to biodiversity monitoring maintain their databases, the EIC environmental database makes publicly available databases covering natural flora, fauna, and state and local protected areas and provides a link to a password-protected database managed by WWF on the wild animal and vegetation monitoring. The NSO, through its website and the Mongolian Statistical Yearbooks, provides limited information on forest land and harvest volumes, the number of rare animals allowed to be hunted and caught for "special purpose hunting" and sport fishing, and the maximum limit of wild hunting for domestic purposes. [70]

Research and Institutional Strengthening

The most significant forest policy measures for technology transfer and forestry research at the national level were identified as follow:

1. Scientific investigations will be intensified for the development of modern technology of forest protection, forest utilization, forest regeneration, forest ecosystem sustainability, and its change.
2. Agro-technology and techniques of plantation and selection of species will be developed for use in setting up greenbelts, shelterbelts, and small stands, to improve agricultural yield productivity as well as to protect pasture and cropland from soil degradation and desertification in the steppe and Gobi Desert areas.
3. Scientific outputs will be introduced for the development of special protected areas management, protection of forest biodiversity, conservation of soil, water protection, and combating desertification.
4. Experimental research will be conducted in the field of the creation of new materials from residuals, deep processing of raw wood materials, production of consumer furniture, and development of the forest chemistry industry.
5. Measures will be taken to promote the institutional structure of research institutions of the forestry, forest harvesting, and wood-processing industry.

[70] ERDENEBAT ERDENEJAV , *REPORT ON ANALYTIC STUDY ON AVAILABILITY OF FOREST DATA AND NATIONAL C&I SET FOR SFM IN MONGOLIA* (Ulaanbaatar: UN, 2020), 23.

6. An information system of forestry will be set up and its capacity will be improved.

For institutional strengthening, the following things are carried out:

1. Renewal of the legal environment and implementation and monitoring of legislation by making amendments to forest legislation will be intensified.
2. A unit responsible for forest and related issues will be established in every aimag and the capital to coordinate the activities of professional organizations.
3. Local professional organizations of all types of ownership will be set up.
4. The system of coordinating activities of forest protection, rational use of forest, and reforestation-activities that are included in the duties of the central governmental organization responsible for nature and environment and governors of capitals and aimags will be refined, improved, and regularized.
5. To protect the forest, reforestation that is conducted according to the contract signed by NGOs and the central government organization, local organizations at their expense or budget will be increased. NGOs will be involved in activities such as protecting the interests of domestic manufacturers engaged in forestry, providing them with know-how, machinery, and business information, to assist in project implementation.
6. Protection of forest resources and regeneration activities conducted by a citizen or economic entity that has voluntarily participated will be supported.[71]

3.5.3. Forest Education and Training

The following Table 18 shows the number of students and graduates in agriculture, forestry, and fishery. [72]

Table 18: Students and Graduates of Domestic Universities, Institutes and Colleges, by professional field

agriculture, forestry, and fishery	2011	2015	2019
Students (ratio)	4,902 (2.9%)	5,138 (2.9%)	3,528 (2.2%)
Graduates (ratio)	635 (1.8%)	874 (2.5%)	346 (1.5%)

(Students and graduates of technical and vocational education institutions are excluded.)

Among them, the situation of the graduates is as shown in the following Table 19 and 20.

Graduates find employment related to forest resources in the government agencies, research institutes, and private industries of forest products. They also find jobs in organizations related to conservation of the natural environment and recreation management and adventure tourism, but many of them could not find professional jobs.[73]

[71] Jamsran Tsogtbaatar, *Forest Policy Development in Mongolia* (n.p.: CDR Law, 2020), 68.

[72] Ariunzaya A.,Bayanchimeg Ch.,Demberel A. et al, *Mongolian Statistical Yearbook 2019,* (Ulaanbaatar, 2019), 180.

[73] Nyamosor Batkhuu, Don Lee and Jamsran Tsogtbaatar, "Forest and Forestry Research and Education in Mongolia," *Journal of Sustainable Forestry* 30 (2011): 600-617, DOI:10.1080/10549811.2011.548761.

Table 19: Number of graduates and employment rate

Degrees	2010		2015	
	No. of Graduation	No. of Employment	No. of Graduation	No. of Employment
PhD	5	5	2	2
Master	18	18	8	8
Undergraduate	81	38	168	118
Diploma	29	-	21	-
Total	133	61	199	128

Table 20: Number of graduated students

FRA 2020 categories	2015		
	TOTAL	Female	Male
Doctoral degree	2	1	1
Master's degree	8	4	4
Bachelor's degree	168	57	111
Technician certificate/diploma	0	0	0
TOTAL	178	62	116

The major forestry programmes in Mongolian universities are as follows: [74]

1. Department of Environment, Forest Engineering, National University of Mongolia
2. Department of Ecology, Mongolian University of Life Sciences
3. Darkhan branch of Mongolian University of Life Sciences
4. Department of Wood processing technology, Mongolian University of Science and Technology
5. Department of Horticulture, International University of Ulaanbaatar

[74] FAO, *GLOBAL FOREST RESOURCES ASSESSMENT 2020 Report Mongolia* (Rome: The FAO, 2020), 52-53.-

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