



MONGOLIAN FOREST ECOSYSTEMS

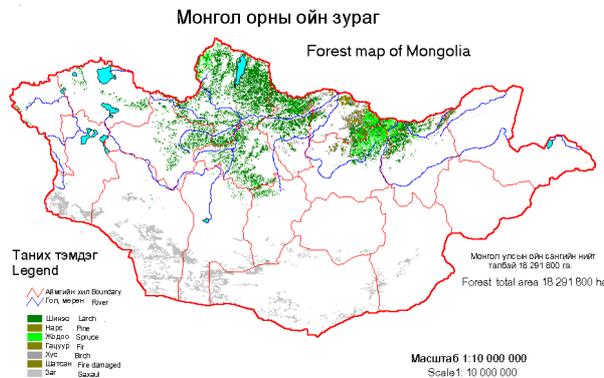
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Mongolia has relatively low forest cover (FAO) with just over 8 percent of the country covered by closed forests. The forests are mainly located in the north-central parts of the country, forming a transition zone between the Great Siberian boreal forest and the Central Asian steppe desert. In Khentii and Khovsgol, the mountain slopes are clothed with boreal taiga forest. Due to a brief warm period, the growing season is not long enough for many plant species. It forms the most southern extension of the east Siberian taiga and consists mainly from Siberian Larch (*Larix sibirica*) and Siberian Pine (*Pinus sibirica*) and rich in mosses and lichens. Here are found a number of ungulates typical of Eurasian forests, among them Musk Deer (*Moschus moschiferus*), Elk (*Alces alces*), Roe Deer (*Capreolus pugargus*), and Reindeer (*Rangifer tarandus*). In northern Mongolia, a small number of families still

herd reindeer in the traditional manner reminiscent of the Lapps of northern Europe. Forest predators include the grey wolf (*Canis lupus*), brown bear (*Ursus arctos*), wolverine (*Gulo gulo*), and Eurasian lynx (*Felis lynx*). Typical birds of these forests include great grey owl (*Strix nebulosa*), boreal owl (*Aegolius funereus*), black-billed capercaillie (*Tetrao parvirostris*) and pine grosbeak (*Pinicola*



enucleator). At yet lower altitudes, a high degree of biodiversity occurs in areas where taiga forest meets the steppes. Here mixed conifer and broadleaf forests intermingle with lush grasslands, and it is in this zone that the most heavily populated areas are found. The fauna includes species characteristic of both taiga and steppe. Due to the relatively harsh Central Asian climate: predominantly dry and windy weather with a short growing season, the Mongolian forest's rate of growth is slow. Mongolia's forests provide a multitude of mitigative functions with respect to climate change and other environmental problems, carbon sinks, watershed protection, playing important role in preservation of permafrost in its ecologically important form and reduction of harmful emissions.

There are also significant areas of arid forest and shrub land in the south-southwest deserts. An important desert plant is saxaul (*Haloxylon ammodendron*), an almost leafless woody shrub that can grow up to 4m high. Saxaul “forests” cover large areas of southern Mongolia, protecting the fragile desert soils from wind erosion.

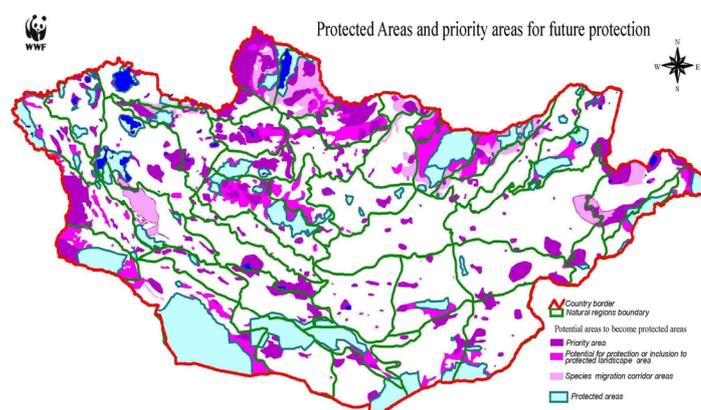
CURRENT SITUATION AND CONSERVATION STATUS

All forests and land in Mongolia are State-owned. Since 1990, the institutional and legal framework of the forestry sector has changed several time. The “Law on Forest”, the “Law on Protection from Forest and Steppe Fires”, the “National Forestry Policy” and the “National Forest Master Programme” have provided the legal foundation for the protection and proper use of forests.

According to the Mongolian Law on forest, the forests are functionally classified as strictly protected forests (8.4 million ha), protected forests (7.9 million ha) and utilization forests (1.2 million ha). Extent of utilization forests has been progressively reducing during the recent years (i.e. since 1992) by transferring areas to the category of strictly protected and protected forests. In addition, the National Forest Council was formed in 2001 to revitalize the wood industry and support the social functions of forestry.

Faced with the problem of dwindling forests and its ecological consequences, the Government has been giving emphasis to forest conservation in the recent (post 1990) years, with the objectives to: protect wildlife, conserve bio-diversity, maintain ecological balance, enhance beneficial influences of forest and control desertification. Some 17.1 million ha, about 10.9% of the Mongolian territory, have so far been declared as protected areas. [Of this, some 8.4 million hectares are designated forest lands].

According to researchers and scientists, approximately 40 percent of the habitats of rare and endangered species of animals and plants of Mongolia are included in the Protected Areas system.



Conditions of most PAs are not satisfactory due to lack of proper management. Efforts are yet to be made to tap their potential to earn revenue through non-destructive uses such as eco-tourism and wildlife-based recreation. Management of the large system of PAs would require considerable investment. Without a regular and

adequate source of revenue, it will be difficult to manage the PAs, and there are limits to donor support.

The Government has had a programme of tree replanting for 30 years. However, quality of forest plantations is generally poor mainly due to lack of adequate

maintenance and care, and partly due to the influence of the harsh climate. The area successfully replanted represents only 5 percent of the total forest lost, mostly due to low survival rates of the seedlings. At present, 150,000 ha of forest need to be restored; however, only 5,000 ha are being restored annually.

THREATS

The major causes for deforestation and forest degradation are forest fire, overgrazing, mining, improper management, poor enforcement of forest legislation, damage by pests and diseases and the ever increasing climate change impacts.

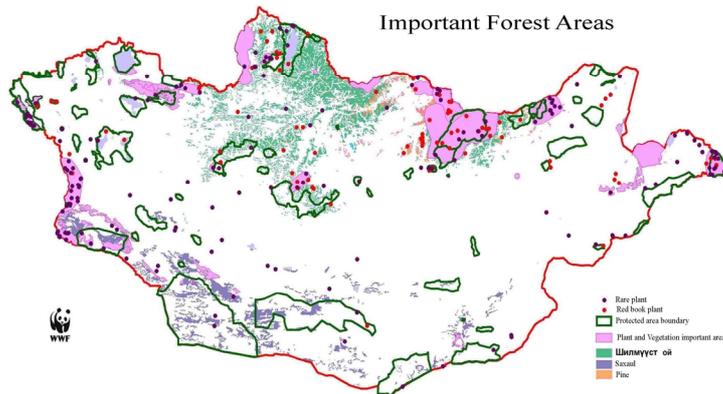
1. Forest fire. 684,000 ha have not regenerated after fire damage and 250,000 ha after clear-cutting; 1,737,000 ha of coniferous forests have been replaced by birch and poplar, 159,000 ha by *steppe* and sand/stones, and 1,230,000 ha by low quality coniferous forests. Cold-resistant *taiga* forest has been shrinking. 16% of forest eco-system has been replaced by non-forest eco-system. Reports indicate that between 1974 and 2000 forest cover over an area of about 1.6 million ha has been lost.

Forest fires, by far, have the most serious impact on the forests of Mongolia. Forest fires are mostly incendiary, caused by herders and collectors of antlers. Between 1990-2000 about 7.52 million ha of forest experienced fires.

2. Improper management, institutional inadequacies and weaknesses. Management of forest resources in Mongolia suffers from unregulated use and inadequate protection. According to a survey on human impact on ecosystems in Mongolia during the last 100 years, some 40% of all forests in Mongolia have been impacted at some level or other: So in arid regions, shrubs and bush from sparse woodlands are used for fuel wood without any long-term management. Woodlands are cleared at increasing distances from the settlements.

Institutional inadequacies and weaknesses appear to be the most serious (and the root) of all problems facing forestry in Mongolia. During the last 10 years the institutional base and structure of forestry changed several times and it has lost its identity as a sector. Responsibility for forestry has been split, fragmented and scattered in different ministries, agencies and departments. Wood industry is with the Ministry of Industry and Trade. Research related to forestry is undertaken by 2 or 3 different entities under the Mongolian Academy of Sciences. Planning and implementation of forestry programmes, forest management, afforestation, and inspection are handled by different Departments and Agencies of MNE. But no Agency or Department of MNE has forestry as its prime or major responsibility, nor do they have adequate staff with experience or expertise in forestry. In fact, the percentage of the personnel with forestry education/expertise/experience in MNE is miniscule, less than 5%. Responsibility for forestry field activities has been delegated to the local governments which do not have the wherewithal (i.e. funds, facilities, skilled human resource or institutional mechanism). Before these changes started, forestry and wood industry together had “full ministry status” (National Forest Programme Development, Final report, 2001)

3. Climate change impacts. Climate change is expected to have significant effects on the re-growth and productivity of forests. Climate scenarios indicate that the forest area might decrease due to expansion of the steppe and desert zones. The high mountains, tundra and taiga regions are expected to decrease by 0.1-5% in 2020 and 4-14% in 2050. The area of the forest steppe may decrease by as much as 3% in the first quarter and 7% in the second quarter of the 21st Century (MAP 21, 1999).



The forest gap model (FORET) was used to estimate future changes in the species composition and productivity of specific sites. Biomass dynamics of the main species in northern forests, larch, cedar, pine and birch, were calculated according to the GCM climate change scenarios, in which carbon dioxide would be doubled. The result shows that the total biomass might decrease by 27.2% for larch, 5.1% for birch, 35.3% for Siberian pine, and 4.2% for Scotch pine.

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REFERENCE:

1. MAP-21: The Mongolian Action Programme for the 21st century, 1998, Executive summary and strategic analyses, Ulaanbaatar (in English)
2. National Forest Programme Development, Final report, 2001