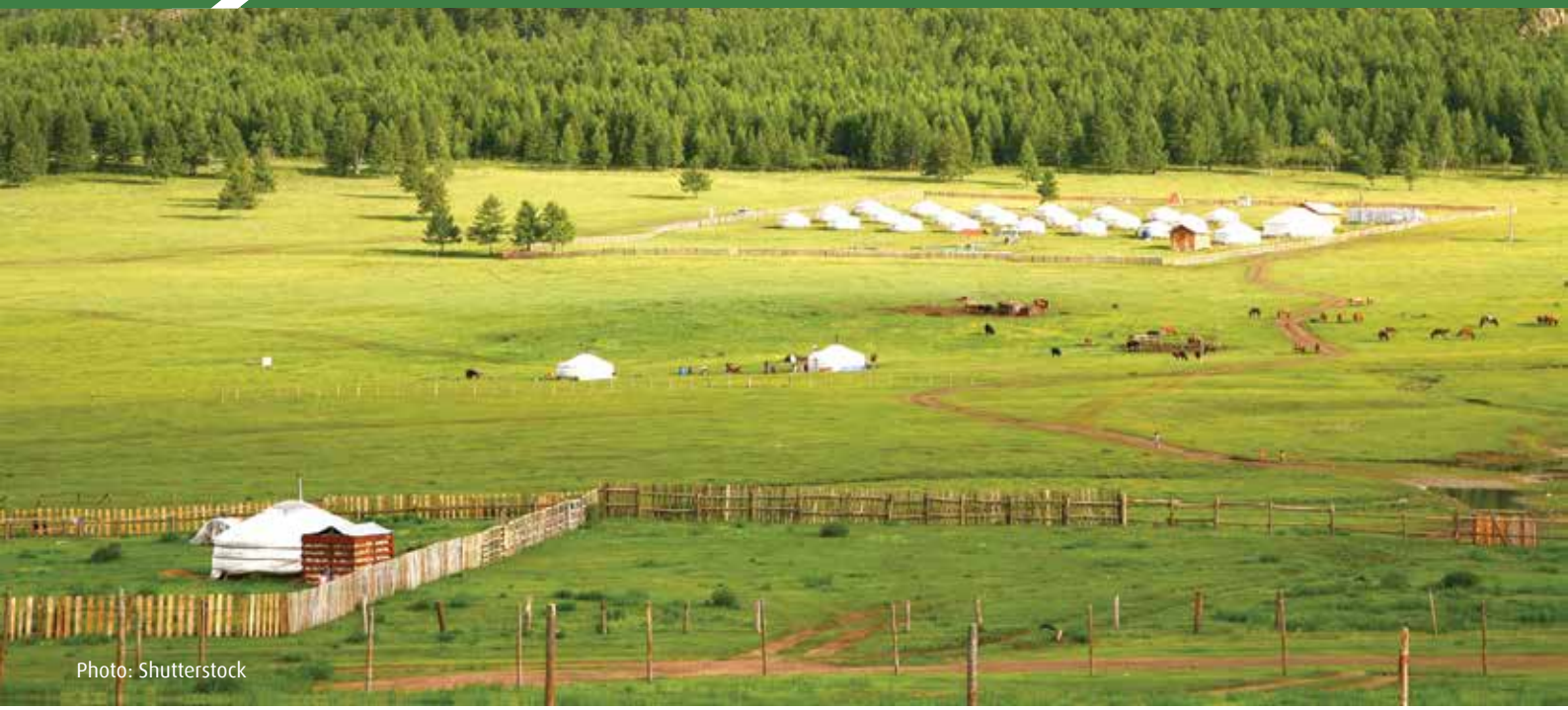
GOAL 13

# Take urgent action to combat climate change and its impacts



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*SDG 13 addresses both climate adaptation and mitigation. As well as strengthening people's resilience and reducing their vulnerability to climate-related risks and hazards, it aims to better operationalise actions to mitigate climate change. Efforts to enhance climate change education, awareness, capacity-building and mainstreaming into policy and planning form an integral part of this goal.*

## How do ecosystems and biodiversity support this SDG?

Ecosystem-based approaches make an important contribution to both climate change adaptation and mitigation. These measures integrate the sustainable management, conservation, and rehabilitation of biodiversity and natural habitats into climate-proofing and climate-compatible development efforts. Ecosystems provide a set of valuable services that increase the resilience of socio-economic and natural systems and support people to adapt to the adverse impacts of climate change. Forests, wetlands, mangroves, coral reefs and other habitats serve as natural buffers against climate extremes and other disasters. They also supply the basic products, inputs and services which help sustain production and consumption in the face of climatic change, and act as safety nets for the poorest and most vulnerable members of the community. Ecosystem restoration is also an effective way of reducing greenhouse gas emissions. The vegetation and soils found in forests, grasslands, peat lands, wetlands, tidal marshes, mangroves, seagrass beds and other natural habitats function as carbon sinks that sequester carbon from the atmosphere. Further, actions to reduce the pressures that result in ecosystem fragmentation, degradation, over-exploitation and pollution helps reduce emissions by avoiding the release of stored carbon.

## How does UNDP's work **support** this SDG?

### Case study: Implementing UN-REDD in Mongolia

Mongolia is very sensitive to climate change due to its geographic location, socio-economic conditions and fragile ecosystems. More than 80% of the country has been defined as highly vulnerable to climate extremes. The impacts of climate change are already apparent, with an increase in average annual temperature of more than 2°C experienced over the past 70 years, resulting in increased glacier melt, decreased snow cover and reduced precipitation in most regions of the country. Future climate scenarios predict escalating water shortages and reductions in both pasture and arable land, desertification and land degradation, coupled with an increase in the incidence and severity of both droughts and *dzuds* (extreme snow events). The agricultural sector (both crop and livestock) is considered to be particularly sensitive to climate change and vulnerable to these effects. This is of particular concern as the vast majority of Mongolia's population depends on semi-nomadic pastoralism for their livelihoods.

Since becoming a party to the United Nations Framework Convention on Climate Change (UNFCCC), the Government of Mongolia has made significant efforts to formulate policies and measures to mitigate its greenhouse gas emissions and prepare for adaptation to some of the expected impacts of climate change. Reducing emissions from deforestation and forest degradation (REDD+) through sustainable forest management has been identified as a critical mitigation action to maintain. Forest covers approximately 13 million hectares in Mongolia, predominantly boreal forest in the north of the country (more than 10 million ha). Boreal forests represent a substantial carbon stock, yet are being lost at a steady rate. This ongoing

Photo: UN-REDD

deforestation and forest degradation results in significant greenhouse gas emissions.

**PROJECT:** Targeted support from the UN-REDD Programme to Mongolia
**MAJOR DONORS:** UNDP, FAO, Government of Mongolia, Government of Japan
**LOCATION:** Mongolia
**DATE:** 2011-ongoing
**WEBLINKS:** http://www.unredd.net/index.php?option=com_country&view=countries&id=32&Itemid=591

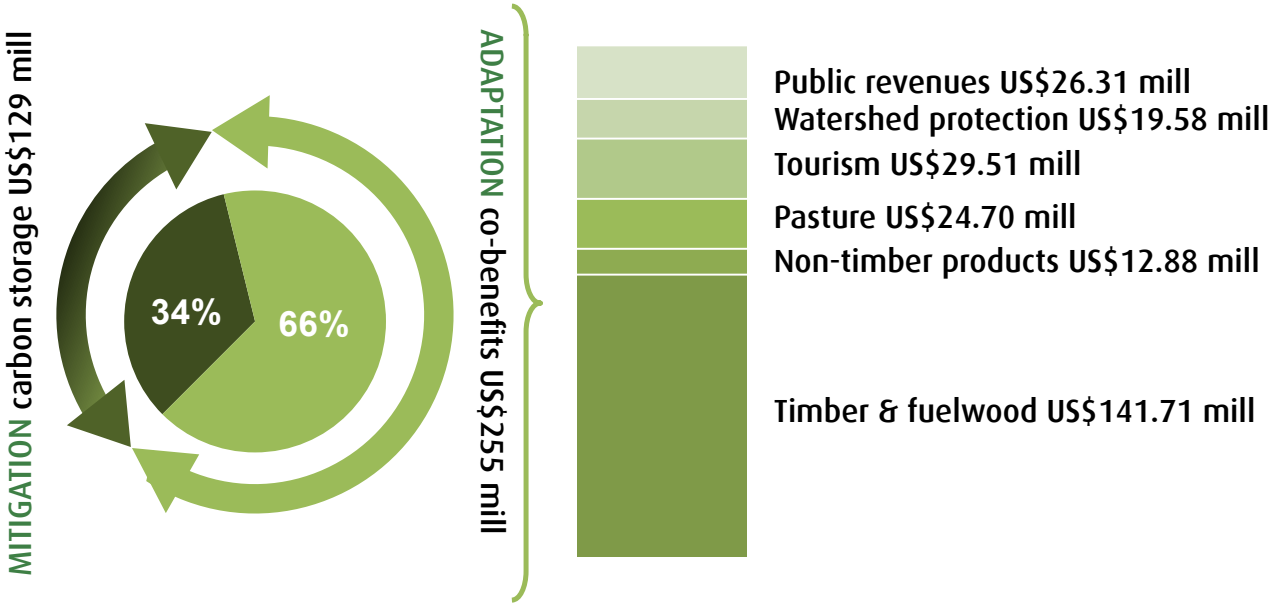
REDD+ aims to mobilize finance to compensate the costs of measures to reduce and avoid deforestation, providing an incentive for sustainable forest management, which could—in addition to its primary goal of climate change mitigation—generate substantial adaptation and development co-benefits for the wider economy. More than half a million people or around a third of the rural population live in and around boreal forests, and almost all aspects of the economy depend in some way on forest goods and services. A well-designed REDD+ programme could make a significant contribution to sectoral strategies designed to support the country's green development agenda, including for water, energy, tourism, mining and agricultural sectors.

Mongolia joined the UN-REDD Programme in June 2011 and is presently in the early stages of REDD+ readiness and preparedness. A national REDD+ Readiness Roadmap was developed and sets out how Mongolia will implement its REDD+ Readiness activities and develop a comprehensive National REDD+ Strategy in Phase 1 of REDD+. A framework for strengthening both functional and technical capacities of relevant national institutions is prepared to support the implementation of the Roadmap. Two key preliminary studies—"Drivers of Forest Change" and "Institutional Capacity and Arrangement Assessment for REDD+"—were completed, with the involvement of a broad range of stakeholders. These studies highlight strategic issues and entry points for further consideration during the design of candidate REDD+ Policies and Measures (PAMs), which will feed into the preparation of the National REDD+ Strategy. Work is being initiated on compiling the data and baselines required to measure, monitor, report and verify forest carbon stocks and emissions, including the development of forest reference emissions levels, forest reference levels and a national forest monitoring system. To support the implementation of the national REDD+ Roadmap, decision support tools for REDD+ planning is being developed to enhance potential benefits from REDD+ and to reduce potential risks, through map-based analysis and technical capacity building on these issues, further informing the creation of a sustainable forestry sector and green development.

Photo: UN-REDD

# Nature count$: Key impacts of the project on climate change mitigation and returns

While UN-REDD activities in Mongolia are targeted at climate mitigation, they also generate substantial adaptation benefits for urban and rural populations. One important outcome of the REDD+ programme will be to significantly reduce the greenhouse gas emissions resulting from deforestation and forest degradation. Mongolia's boreal forests store carbon worth almost US$130 million a year. Further, the sustainable forest management approaches in the national REDD+ strategy will help to secure goods and services (e.g. watershed protection, shelter and food) that are key to strengthening local people's adaptive capacity and resilience in the face of climate change, along with the adaptive capacity of local economies. These adaptation benefits are worth almost twice as much as mitigation, providing more than $3,500 per hectare of forest, including local livelihood values that contribute as much as 12.6% of per capita GDP.




This project is helping to strengthen resilience and adaptive capacity to climate related hazards and natural disasters (✓SDG Target 13.1), integrate climate change measures into national policies, strategies, and planning (✓SDG Target 13.2), improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning (✓SDG Target 13.3), implement UNFCCC commitments to mobilise finance for mitigation in developing countries (✓SDG Target 13.a) and promote mechanisms for raising capacities for effective climate change related planning and management (✓SDG Target 13.b).

## How the economic impacts were calculated:

Sustainable management of Mongolia's forests provides a key strategy for climate mitigation through carbon stock contributions and avoided emissions. Mongolia's boreal forests constitute an important carbon sink. The total stock of forest carbon was estimated at 583 million tonnes in 2010 (FAO 2010). It is however worth noting that this figure represents a significant underestimate as it does not include the pools of

Photo: UN-REDD

soil carbon, litter or deadwood which are estimated to contain approximately 60% of the forest carbon in boreal forests (MEGD 2013). Globally, the net carbon uptake of boreal forests is estimated to range between 0.34-0.56 tonnes of carbon per hectare per year (tC/ha), including both above- and below-ground storage (Griffiths and Jarvis 2004, Kasischke and Stocks 2000, Pan et al 2011, Shivdenko & Apps 2006). An average of 0.42 tC/ha (aiming to take into account standing mature forest as well as reforested areas) has been applied to the 10.898 million hectares of boreal forest in Mongolia. Although it is difficult to find an accurate figure for the economic value of carbon sequestration, most studies use the market price of forest carbon as a proxy for people's willingness to pay. Applying an average voluntary over-the-counter forest carbon price of $7.6 per tonne of carbon dioxide equivalent ($CO_2e$) (Peters-Stanley et al 2013)—equivalent to $27.89 per tonne of carbon—suggests a total annual value of $129.16 million or 79.64 billion Mongolian Tögrög (MNT) for forest carbon sequestration services.

REDD+ investments in sustainable forest management, avoided deforestation and forest degradation also yield a wide range of co-benefits to Mongolia's economy in addition to climate mitigation. These are received as products and income for land and resource users as well as contributing to government earnings via fees, taxes and other public revenue streams.

> Some of the most important co-benefits associated with REDD+ activities are those relating to rural livelihoods and climate adaptation, which strengthen local people's resilience and adaptive capacity, and reduce their vulnerability to climate change. Forests provide energy, shelter, food, medicine, livestock fodder and watershed protection benefits worth almost $200 million or MNT276.60 billion a year (UN-REDD 2013b). The annual net added value of these goods and services can rise as high as $1,655 or MNT2.3 million per household per year, equivalent to some 12.6% of per capita GDP (IMF 2016 records per capita GDP in Mongolia as $3,494, translating into a per household GDP of $13,089).

The total value added from the sustainable management of boreal forests may be in the range of $384 million or MNT534 billion a year (UN-REDD 2013b), including timber and fuelwood, non-timber products, pasture and grazing, tourism, watershed protection and carbon storage. This translates into an average of $3,522 or MNT4,900 billion per $km^2$ when calculated across the 10.898 million hectares of boreal forest in Mongolia.

Photo: UN-REDD

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**United Nations Development Programme**
Bangkok Regional Hub
3rd Floor United Nations Service Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
http://www.asia-pacific.undp.org/




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