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Madagascar Forests

Forest Area Key Facts &
Carbon Emissions
from Deforestation

Forest location and brief description

Located off the southeast coast of Africa, Madagascar is the world's fourth largest island (587,000 km²). Its terrain varies widely, from lowland forests along the eastern edge, to desert and high mountain ecosystems.

The island of Madagascar is widely regarded as a top conservation priority due to its extraordinary levels of biodiversity, high rates of deforestation and scarcity of remaining native forest. Madagascar has four times as many palm species as Africa, and has one-quarter as many vascular plant species as does Africa in one-fiftieth the land area.

The eastern side of the island is home to tropical rainforests, while the western and southern sides of the island are covered by tropical dry and spiny forests, thorn forests, and deserts and shrub-lands. Dry forests support hundreds of indigenous plant and animal species – for example, of the 12 species of baobab, seven are present in Madagascar and six of them are endemic to Madagascar, as compared to only one in all of Africa.

Unique qualities of forest area

Madagascar's terrestrial ecoregions are part of the Global 200, a science-based ranking of the world's most biologically outstanding and globally representative areas of biodiversity. There are four Global 200 terrestrial ecoregions in Madagascar, namely Madagascar Moist Forests; Madagascar Dry Forests; Madagascar Spiny Thicket; and Madagascar Mangroves.

The island's plants and animal life have been isolated from the African continent for 165 million years, and have evolved into unique species found nowhere else on Earth. Five per cent of the world's plant and animal species (more than 80 per cent of which are indigenous to Madagascar) can be found on the island.

All 50 known species of the small primates known as lemurs, are found only in Madagascar. These include:

- The indri (*Indri indri*), the largest living lemur, which has a black fur with white patches.
- Black lemurs (*Eulemur macacoma*caco) that feed on ripe fruit, leaves, insects, and flowers.
- The recently rediscovered hairy-eared dwarf lemur (*Allocebus trichotis*).

- Madagascar has already lost 80 per cent of its natural areas, and continues to lose an estimated 200,000 hectares annually to deforestation.

- All of Madagascar's forests will be lost within 40 years if deforestation rate remains at current level. Land-use, land-use change, and forestry (LULUCF) in Madagascar contributes to 21 per cent of national greenhouse gas emissions.

In addition to lemurs, Madagascar hosts the greatest diversity of chameleons on Earth (of the more than 150 species found throughout the world, all 70 species found in Madagascar are native), as well as several tortoise species unique to the island, and the carnivorous fossa (*Cryptocrocta ferox*).

Madagascar is home to approximately 17.5 million people, 75 per cent of whom depend on subsistence farming and rely heavily on the forest for survival.

Deforestation data

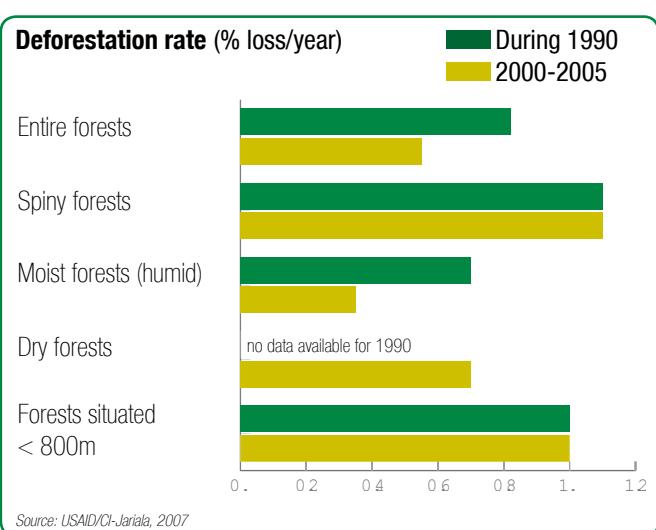
Most of Madagascar's dry forests have been cleared for slash-and-burn agriculture, pasture, firewood, or construction materials. This area is now largely covered by secondary grasslands. Remaining forest areas are being destroyed by burning of surrounding degraded savannas. Mangrove forests are in better condition. However, little has been done to protect these ecosystems which are sensitive to urban development, over-fishing and introduced fish species.

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Recent studies by the Center for Applied Biodiversity Science at Conservation International indicate that if the rate of forest reduction remains at current level i.e. 0.55 per cent per annum, all of Madagascar's forests will be lost within 40 years.

Key threats

The primary threats to Madagascar's biodiversity come from the small-scale, but widespread clearance of habitats, primarily for subsistence agriculture (slash and burn) and bush fire. Secondary threats are caused by firewood and charcoal production, livestock grazing, and invasive species. Every year, as much as a third of Madagascar's forest area is lost due to fires. Fires set



for land-clearing and pastureland spread into adjacent wild-lands, damaging the island's ecosystems.

The island's population has more than tripled since 1950 (UN 2001), and continues to grow at nearly 3 per cent per year (UNDP 2003). Many measures place Madagascar's economy at the bottom 10th of all countries, potentially increasing pressure to use remaining natural forests (Barbier 2001).

The rainforests of eastern Madagascar, particularly on the Masoala peninsula, are also threatened by logging for timber. The high value for Malagasy hardwoods (mostly ebony and rosewood, worth up to US\$2,000 a ton in international markets) makes illegal logging a significant problem in some protected areas.

The endemic spiny forests of Madagascar are being cut at an alarming rate, mainly for charcoal production.

Forest fragmentation is a major problem for biodiversity conservation in Madagascar. The fact that there are

Slash-and-Burn Agriculture

Slash-and-burn agriculture is used for converting tropical rainforests in Madagascar into rice fields. Typically, an acre or two (0.4 or 0.8 hectare) of forest is cut, burned, and then planted with rice. After several years of production the field is left fallow

before the process is repeated. After two or three such cycles, the soil is exhausted of nutrients and the land is likely colonized by scrub vegetation or alien grasses. On slopes, the new vegetation is often insufficient to anchor soils, making erosion and landslides a problem.

Source: www.wildmadagascar.org

many small forest areas separated from the main corridor or forest block indicates that ecological or biological integrity is compromised throughout each ecoregion.

Protection status

During the World Park Congress in Durban in 2003, Madagascar's President committed to tripling the island's protected area coverage from 1.7 million ha to 6 million ha, adding a further 4.3 million ha, and placing more than two-thirds of the country's remaining forest under formal protection.

Carbon emissions from deforestation

Land-use, land-use change, and forestry (LULUCF) in Madagascar contributes to 21 per cent of national greenhouse gas emissions.

Greenhouse gas (GHG) emission in Gigagrams by different sectors in Madagascar

GHG Sources	CO ₂ (42%)	CH ₄ (16%)	N ₂ O	NOX	CO (36%)	NMVOC	SO ₂	Total	%
Energy	1141	33	0	16	489	66	35	1780	64%
Industrial processes	5	0	0	0	0	1	0	6	0%
Agriculture	0	320	42	0	9	0	0	371	14%
LULUCF	0	57	0	14	496	0	0	568	21%
Waste	0	10	0	0	0	0	0	10	1%
National Emission	1146	433	42	30	994	67	35	2747	100%

Source: Government of Madagascar, "Communication Nationale Initiale de Madagascar, 2003

WWF Forest Activities

WWF works closely with the Malagasy Environment and Forest Service in implementing the Durban vision to set up new protected areas.

One area WWF seeks to protect is the humid Anjozorobe corridor, which contains the largest surviving area of Madagascar's diverse high plateau forest. WWF staff are carrying out a range of actions including biodiversity assessments, developing a strategic plan for land tenure security, and finding tax strategies for conservation.





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In other places, such as the Fandriana-Marolambo landscape, WWF's efforts are directed at restoring the ecological services and socio-economic values of the forest. The project puts restoration strategies into practice, in partnership with local authorities and communities.

WWF is also a pioneer in the remote forested areas of Madagascar where not many have dared to venture. In Midongy du Sud – Madagascar's south east – the administrative authorities and various other environmental groups, have started working in the area following and building on WWF's success in forest conservation, management and restoration there.

Sources/References

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Notes

According to the definition by the Intergovernmental Panel on Climate Change, LULUCF includes aggregated emissions of CO₂, CH₄, and N₂O from deforestation, biomass and burning, decay of biomass from logging and deforestation, decay of peat and peat fires. This is broader than deforestation, which is a subset, and does not include carbon uptake (removal of carbon from the atmosphere).