

# Forest losses and gains: where do we stand?

*Forests can undergo changes in various ways. Forest areas can be reduced either by deforestation or by natural disasters such as volcanic eruptions or severe mud slides, which can result in the forest being unable to naturally regenerate. Conversely, forest areas can be increased – through afforestation or by the natural expansion of forests*

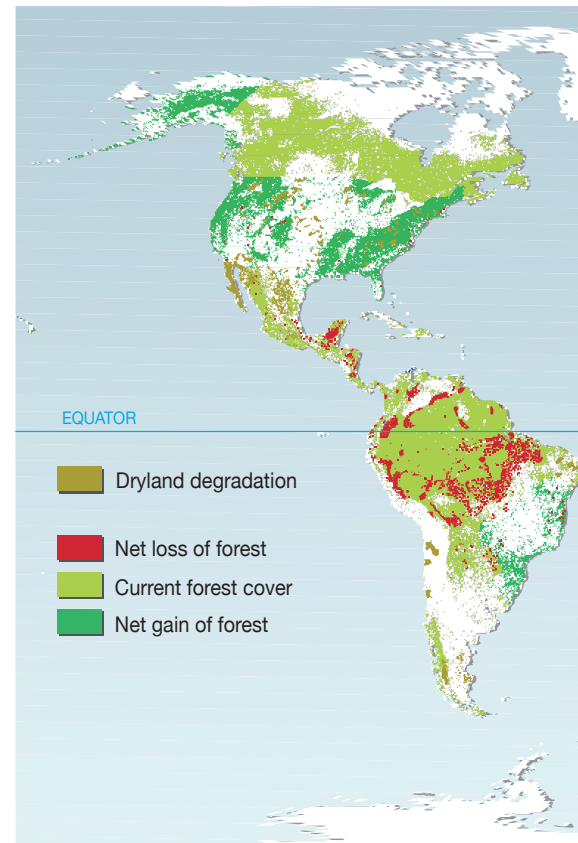
While natural disasters are relatively rare, clearance of forests has been practised throughout documented human history. Prior to the industrial era such clearances were generally part of a relatively slow and steady process (MA 2005) but in recent times the rate of **deforestation** around the globe has increased dramatically. The Food and Agriculture Organization of the United Nations (FAO) estimates that about

13 million hectares – an area roughly equivalent to the size of Greece – of the world’s forests are cut down and converted to other land uses every year (FAO 2006a).

At the same time, planting of trees has resulted in new forests being established while in other areas forests have expanded on to abandoned agricultural land through natural regeneration, thus reducing the **net loss** of total forest area. In the period 1990-2000 the world is estimated to have suffered a net loss of 8.9 million hectares of forest each year, but in the period 2000-2005 this was reduced to an estimated 7.3 million hectares per year – or an area about the size of Sierra Leone or Panama (FAO 2006). In broader terms, this means that the world lost about 3 per cent of its forests in the period 1990 to 2005; at present we are losing about 200 square kilometres of forest each day.

Unfortunately, very few countries have any estimates of the actual rates of deforestation; even **net change** esti-

## Changing global forest cover

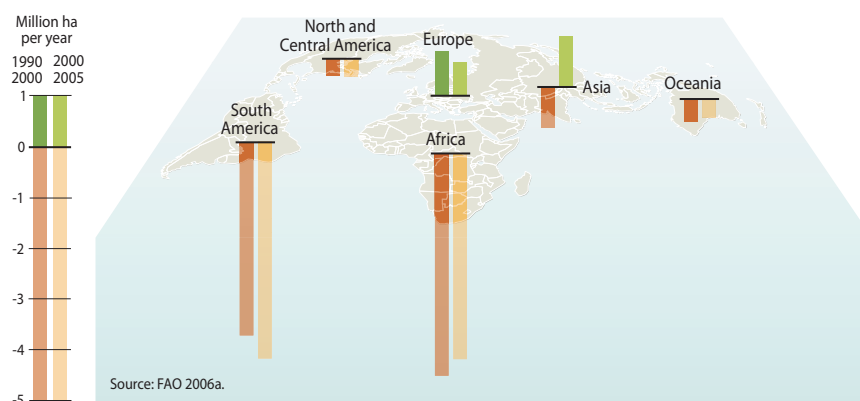


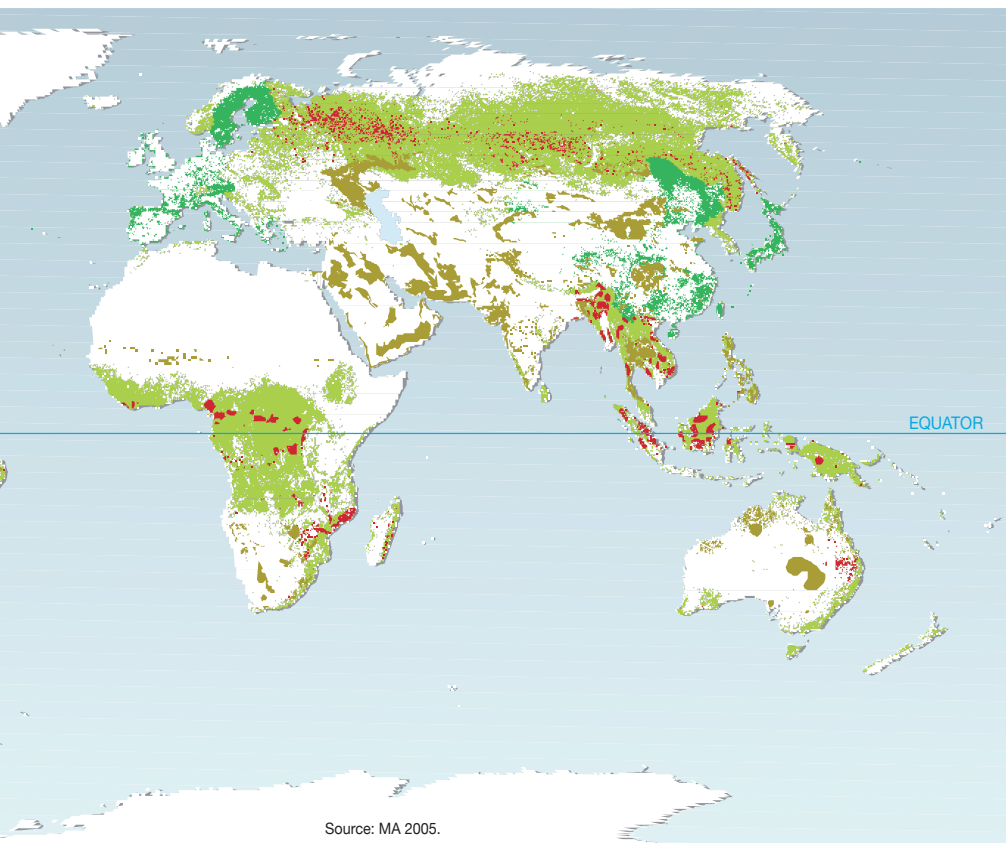
mates are rarely based on regularly conducted assessments – methodologies also differ meaning that estimates have a large degree of uncertainty.

Given the considerable variety in the types of forests and in their characteristics and relative health, the rates of deforestation and net change do not convey the full picture of the changes occurring to forests over time. A net change in forest area may hide the fact that natural forests are being deforested in one part of a country or region while forest plantations are being established in another area. Large scale changes can also happen within the forest area. In some cases natural forests are converted into forest plantations while undisturbed primary forests are being changed into modified or even degraded forests.

For example, forest areas opened by the felling of timber species are likely to be colonised by pioneer tree species, thus changing the forest’s composition. It is therefore important not to focus solely on factors such as deforestation rates or net change, but to

## Annual net change in forest area, 1990-2005





## Glossary

**Deforestation:** Removing the tree cover below the threshold value that defines a forest and converting the land to another use.

**Net change in forest area (loss and gain):** Sum of all changes in forest area over a specific period of time (including reductions due to deforestation and disasters, and increases due to afforestation and expansion of forests during the period).

**Afforestation:** Planting of trees on land which was never forested.

**Reforestation:** Planting of trees on land which was forested before.

**Forest degradation:** Removing part of the vegetation cover leading to reduced capacity of the forest to provide specific goods and services.

**Forest fragmentation:** Splitting of a contiguous forest area into smaller pieces through conversion.

also look at changes in the characteristics, composition and health of forest ecosystems.


Historically, deforestation has been much more intensive in temperate regions than in tropical regions, with Europe being the continent with the least original forest. However, in the last 50-100 years, the situation has changed; rates of deforestation are now highest in tropical developing countries.

In the period 2000-2005, South America reported the largest net loss of forest, followed by Africa. In the 1990s, Asia had a net forest loss of 800 000 hectares per year. In the period 2000-2005 Asia showed a **net gain** of forests of around 1 million hectares per year, despite high rates of deforestation in many countries in the region, in particular in Southeast Asia. This net gain is attributed to large-scale **afforestation**, particularly in China, where there has been an annual increase of more than 4 million hectares. Meanwhile in Europe forest areas continued to expand, although at a relatively slow rate, while North and Central America and Oce-

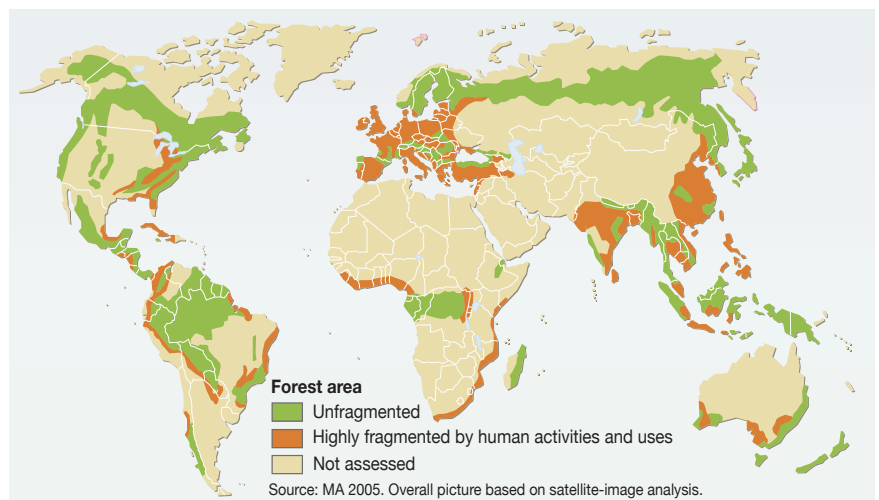
ania registered a relatively small annual net loss of forests over the 1990-2005 period (FAO 2006a).

The five countries with the largest annual net loss of forest area in the period 2000-2005 were Brazil, Indonesia, Sudan, Myanmar and Zambia. The five countries with the largest annual net gain in forest area over the same period were China, Spain, Vietnam, the United States and Italy. Chile, Costa Rica, India and Vietnam are among the countries which have

recently recorded a change from having a net loss of forests to having a net gain in forest area (FAO 2006a).

Although reasons for deforestation differ from region to region, the most direct cause is generally the conversion of forest areas for agricultural uses, in particular agricultural crops, including annual crops and tree crops, such as orchards and palm oil plantations, as well as for livestock grazing areas. Although harvesting of tropical timber is rarely the main cause of 

## ↓ Global forest fragmentation



▶ deforestation, the establishment of logging roads tends to open up previously closed forest areas and facilitate access which then may lead to the conversion of forest areas to agriculture. Underlying causes of deforestation include population increases leading to increases in demand for land, poverty, lack of enforceable property rights and a lack of incentives to establish proper forest management systems.

**Forest degradation** often implies a change in the health and vitality of a forest ecosystem but it can also relate to other factors such as changes in the composition of tree species, a loss of biodiversity, a permanent or long term reduction in the crown cover and changes in timber volumes or carbon retention levels. Degradation is often caused by overexploitation of forest areas by humans, including haphazard and badly executed logging operations. It can also be caused by pests and diseases or repeated forest fires. Degradation does not of itself result in the loss of forest area but it is often the first phase of a process which ultimately

results in deforestation. No reliable data currently exists on the degree of global forest degradation, due in part to different perceptions of what degradation entails and the lack of adequate assessment methodologies with measurable thresholds and/or the resources needed for their implementation.

At times, the condition of a degraded forest can be improved, either through forest or landscape restoration projects or by natural recovery.

**Forest fragmentation** can jeopardize the long-term health and vitality of the forest ecosystem. Forest fragmentation can also result in species loss as the size of a forest becomes too small to support a viable population of a certain plant or animal species, or if migratory routes and corridors cease to exist.

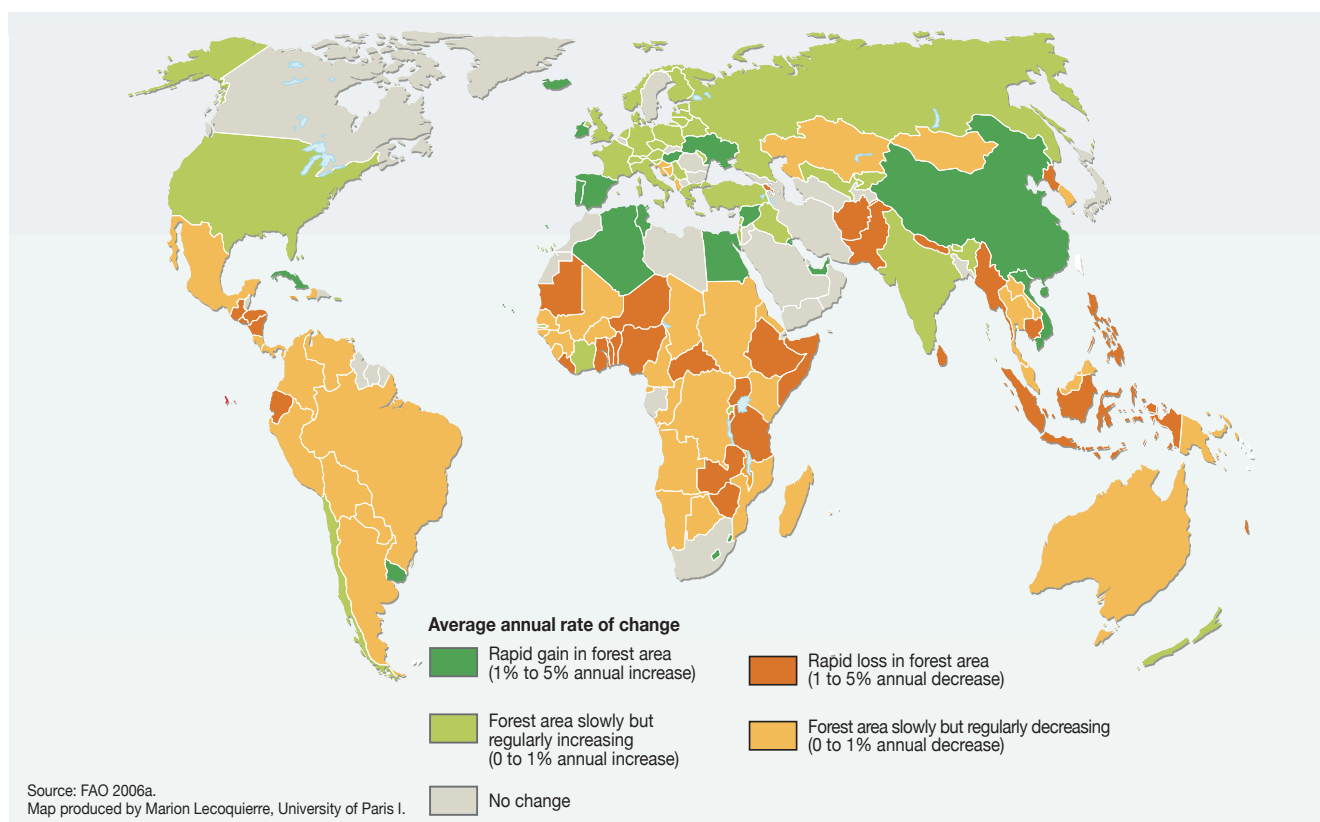
The loss of forests results in the loss of all the resources – such as timber, fuelwood and non-wood forest products – and services – such as conservation of soil, water and biological diversity – that a forest provides. Loss of forest also means that the vital role the forest plays in carbon storage and

sequestration is no longer possible. Removing forests not only means the loss of this carbon carrying capacity but also frequently means that large amounts of greenhouse gas are suddenly released into the atmosphere through wood burning and clearance activities, compounding climate change problems.

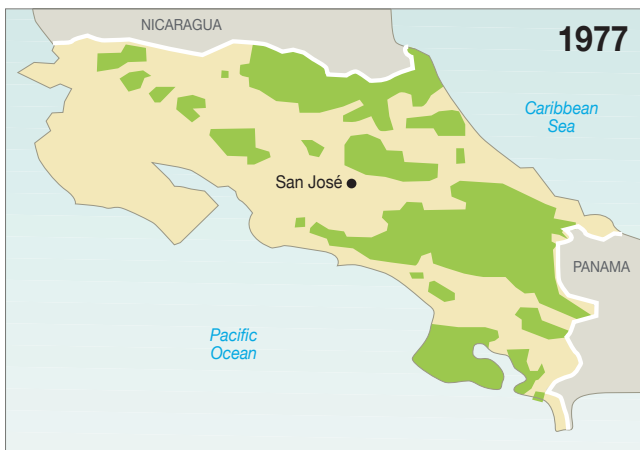
Reducing carbon emissions caused by deforestation and forest degradation in developing countries (REDD) is seen by many as a potentially promising approach in the battle to combat climate change. If the REDD initiative succeeds, it will not only mitigate climate change but also reduce the rate of forest and biodiversity loss while at the same time providing forest-dependent communities with alternative sources of income. On a broader level, it will result in developing countries being paid to conserve and sustainably manage large areas of their forests for the benefit of mankind.

➔ See also pages 6, 20, 30, 40, 42, 44

↓ Changes in area covered by forest, 1990-2005



↓ Decreases and increases in forest area in Costa Rica, 1940-2005



↓ Conversion of original biomes, 1950-2050

