Rainforest Destruction

Rainforests can provide a variety of benefits to both man and nature. They supply over 20 percent of the planet's oxygen while storing carbon dioxide, methane, and nitrous oxide; greenhouse gases that contribute to global warming. Tropical rainforests also act to protect watersheds, and are critical to maintaining regional supplies of both fresh and drinking water.

Aside from their many environmental services, rainforests contain a vast amount of animal and plant biodiversity while also providing a home for a large number of indigenous people. They also supply both local and global markets with a variety of products, as well as ingredients for many medicines. Nearly half of all medicines used today are linked to discoveries within the rainforests. Finally, tropical rainforests have become a major focus for 'ecological tourism,' which can be beneficial to a local or country's economy, but is dependent upon continuing forest preservation.

[Tropical rainforests](http://www.blueplanetbiomes.org/rainforest.htm) are located in a wide band surrounding the equator, covering over six percent of the earth's total land surface. Scientists estimate that these rainforests contain over half of the world's plant and animal species, with a potential for millions of new, still undiscovered species. Unfortunately, tropical rainforests lose an estimated 93,000 square miles each year due to deforestation, a complex issue with many underlying economic concerns.

Deforestation can occur in a variety of ways, but it is mainly the result of a combination of agricultural and infrastructure expansion. Commercial wood extraction for pulp or timber can also contribute to deforestation if forest regeneration is not allowed. The leading land-use change associated with deforestation is agricultural expansion, which includes forest conversion for permanent cropping, cattle ranching, [shifting cultivation](http://en.wikipedia.org/wiki/Shifting_cultivation), and/or colonization. Oftentimes land conversion occurs out of a shear growth in population that increases the need for food, fuel, and subsistence. This is often a basic way of life for many within tropical countries.

The motivations that result in deforestation are very complex, primarily due to the nature of the countries and regions where tropical rainforests are found. Decisions to convert tropical forests are often encouraged by a number of fiscal incentives, including tax concessions or subsidies. The competitive global economy can also drive the need for income in countries that are economically-challenged. Therefore, deforestation rates in tropical areas are often closely linked to a country's economy. Low income countries often experience deforestation.

In the past, many governments and markets tended to recognize only the cash value of the rainforest, rather than its economic importance in terms of 'unmarketed' benefits, such as the many [environmental services](http://www.enviroliteracy.org/article.php/1320.html) offered and the vast amount of biodiversity that is sheltered. Land rights have tended to favor developers and colonizers, not native peoples; and incentives often encouraged a conversion from forested land to agriculture utilization. Logging concessions were often sold to raise money for specific projects, to pay down international debt, or to further develop industry within a country. A practice of low taxes on income derived from agriculture and rates that favored pasture over forest, made it extremely profitable in some countries to convert rainforests for these purposes. Pro-deforestation economic development policies often lead to an increase in commercial crops and pastures and when combined with an expansion of the road network, further open up the rainforest area.

Part of the challenge in creating more sustainable tropical forest practices is the large number of players that can be involved, including farmers, logging or agricultural companies, the governments of tropical forest countries, and even the international community. The decisions made by each stakeholder group often differ and conflict, where the benefits and costs important for one group are not necessarily important to the others. However, economic efficiency would try to account for all benefits, including how sustainable practices can contribute to greater productivity while limiting environmental impacts ? factors that may or may not be considered by industries that enter the market in order to maximize profits.

There are, however, a variety of measures that can turn the exploitation of tropical rainforests into more sustainable actions. Economic activities can be sustainable as long as the forests are not over-exploited and have enough time to regenerate. One model that can be applied to forest management is [sustained yield](http://en.wikipedia.org/wiki/Sustainable_yield), which aims to maintain or increase the amount of timber in the rainforest. The model is based on the idea that harvesting need not disturb the overall ecosystem, and that the quantity of timber harvested should be less than or equal to the amount of timber regrowth.

Demand-reducing trade measures can also be introduced to help curb tropical deforestation. These measures can be instances where the governments of consumer countries consider increasing [import duties](http://en.wikipedia.org/wiki/Import_tariff) on tropical timber. Selective import duties can also be used, where sustainably-produced timber may be imported duty-free while a tax is placed on timber that is unsustainably produced. Trade bans, such as prohibiting tropical hardwood for specific uses, such as in new home building, can also be put in place. However, such prohibitions should be used carefully and selectively so as not to discourage the entry into the market of sustainably-produced tropical timber.

[Timber certification](http://www.rainforestinfo.org.au/good_wood/tcrt_def.htm) is another method that can be used to promote sustainable forestry practices. It operates on the assumption that consumers are willing to pay a premium on products harvested in a sustainable manner by clearly identifying and verifying that the timber is coming from sustainably managed forests. Current certification systems need further development, however, as the overall acceptance of certified forest management in tropical developing countries thus far has been relatively minor. While certified management is common in developed countries, certified timber products have only been minimally successful. Part of the problem with certification is the absence of market price premiums, even in the more environmentally-conscious markets, such as West Germany, the Netherlands, and the U.K. However, in the tropics much of the problem also relates to the difficulties in establishing viable certification programs in many of the developing countries.

Within the global economy, foreign aid can also be used to decrease the rate of deforestation if the transfers can ease the need for exploitation by enabling a country to cope with problems that require immediate attention rather than exploiting forests to earn much needed foreign exchange. The international community can also use a 'carrot and stick' approach by providing foreign aid or debt reduction, sometimes in the form of debt-for-nature swaps, under the specific condition that a country improve forest conservation or sustainable use practices. To realistically protect the many resources and services provided by tropical rainforests, ultimately a balance must be found between preservation and forest use through sustainable economic practices.