



Deforestation - A *Greenenergy* perspective

This Perspective presents Greenergy's views on the underlying causes of global deforestation and the impact of biofuel production.



Summary

Greenergy is a significant producer and supplier of petroleum and biofuels into the UK transport fuels market, supplying over 15% of the UK's overall petrol and diesel market and approximately one third of the biofuels market. The company has extensive worldwide sourcing experience, with manufacturing operations in the UK and a blending facility in Rotterdam from which we supply customers across Europe. Greenergy is also a supplier of high percentage biofuel blends, the fastest growth area within the biofuels market, and in particular B50 for commercial usage and E95 for buses.

Greenergy is committed to sourcing its biofuel from sustainable sources and includes sustainability criteria in all its purchase contracts. Cutting down rainforest to make land available for biofuel production is clearly an unsustainable practice and one that both governments and all users of such crops should work to avoid.

Therefore, in countries where deforestation is a possibility, Greenergy seeks confirmation from its suppliers that the biofuel feedstock has been grown on long-term agricultural land.

In this Perspective, Greenergy presents the following:

- The scale and rate of deforestation has accelerated in many areas key for biodiversity in the 20th and 21st centuries, but some parts of the world have seen significant recovery of forests in recent years as a result of preservation projects.
- Food production, logging and the removal of wood for fuel remain the key drivers of global deforestation.
- Producers of biofuels are seeking to reduce the risk of deforestation by adopting international standards that protect valuable ecosystems, especially tropical forests. Where effective certification schemes do not exist biofuel producers should take a lead in assisting their development.
- However, international certification of biofuel can only be effective in helping to prevent deforestation if similar standards are adopted for agricultural production for food and other uses and if it is accompanied by legislation and enforcement on the part of Governments in producing countries, who have a responsibility to develop and enforce clear rules on land use planning and forest protection.

1 Global forests and deforestation

Perspective

Most deforestation occurs in the tropics. According to the FAO¹ tropical deforestation over the past decade has been around 3% – or 12 to 18 million hectares per year.

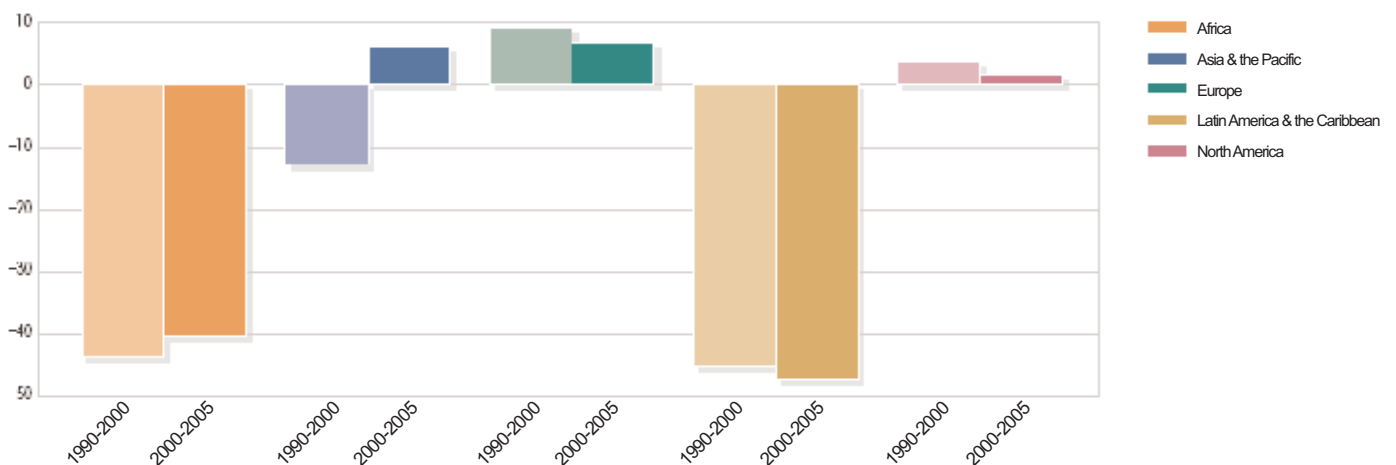
The world's forests are vitally important ecosystems, providing essential functions such as the recycling of fresh water and nutrients and the provision of materials and energy.

- Forests account for about 80% of the annual exchange of CO₂ between the land and atmosphere²
- Forests are estimated to contain half the world's biological diversity and more than four-fifths of many groups of plants and animals are found in tropical forests³
- The value of forest products is approximately \$70 billion per year⁴.

There are approximately 3.8 billion hectares of forest, of which 1.8 billion hectares are tropical forest⁵.

Outside the tropics forests have grown through the establishment of plantations and the abandonment of agricultural land at a rate of approximately 3 million hectares per year, illustrated in figure 1.

Figure 1: Average annual forest change, in thousand km²/yr



Source: UNEP, 2007

1 FAO Global Forestry Resources Estimate, 2005

2 IPCC, 2000, Watson R.T, Nobel I.R, Bolin B, Ravindranath N.H, Verardo D.J, Dokken D.J Land use, Land-Use Change and Forestry

3 CIFOR/Government of Indonesia/UNESCO World heritage forests: The World Heritage Convention as a mechanism for conserving tropical forest biodiversity Bogor, Indonesia, 1999

4 FAO Global Forestry Resources Estimate, 2005

5 ibid

2 Drivers of deforestation

Perspective

Historically deforestation has occurred as a result of increased agricultural production and the need for woodfuel associated with population growth. In recent years some countries around the world have seen significant recovery of forests.

Deforestation trends differ from region to region, with the highest rates in South East Asia, followed by Africa and Latin America⁶ (see figure 1). The following section looks at the most significant forested areas around the world.

Western Europe

In Europe current trends indicate that forest area is increasing in most countries, with positive growth exceeding negative impacts⁷. The UK was virtually deforested by the end of World War 1 but a long-term programme of reforestation has restored forest cover to approximately 12% of land area by 2000.

United States

Since 1963 there has been a steady decrease of forest area with the exception of some gains from 1997. Urban development is now the major cause of deforestation in the US.

China

Evidence of deforestation and associated land degradation in China can be found dating back to around 2500 years ago. Land use change was associated with population growth, the expansion of cities and wars. Even in the mid-20th century China was rapidly exploiting forests in the remote areas of the southwest (Tibet and Yunnan) and northeast (Changbai). China is now implementing a major process of reforestation of over 1 million hectares per year.

⁶ UNEP – WCMC, 2007 <http://www.unep-wcmc.org>

⁷ FAO State of the Worlds Forests, 2007

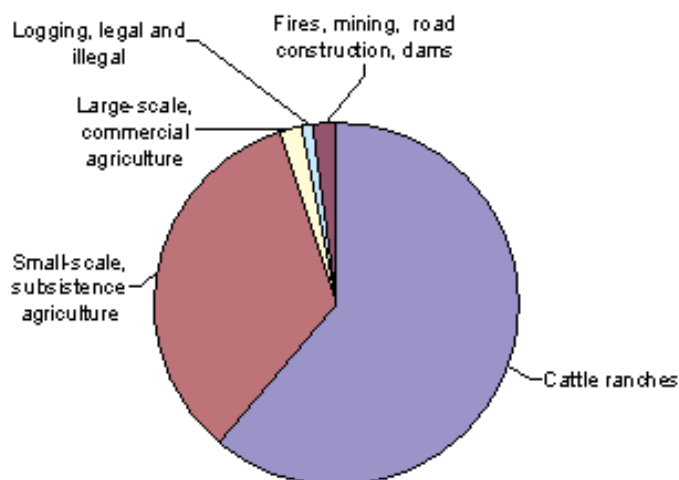
Latin America and the Brazilian Amazonia

Latin America contains over 23% of the world's forests⁸, and is also one of the main areas of global tropical deforestation. 66% of global forest cover loss from 2000– 2005 occurred in Latin America, 73% of this loss occurred in Brazil.

During the 1970's economic development policies and road construction gave rise to a wave of timber exploitation and colonisation from other parts of Brazil. Figure 2 (below) shows the main land uses that have displaced forest. The most important are cattle ranching, followed by small-scale subsistence agriculture. While the contribution of large-scale commercial agriculture such as soybeans is relatively small (around 2%), this may become increasingly important in some areas.

The Brazilian government has approved the Amazon Region Protected Areas (ARPA) program, which aims to ensure comprehensive protection for 12 percent of the Brazilian Amazon by creating a system of well-managed parks and sustainable natural resource management reserves. There is now strong political commitment in Brazil to control deforestation in the Amazon, particularly from the current environment minister, and the rate of deforestation in the Brazilian Amazon reduced significantly from a peak of over 25,000 square kilometres in 2004 to under 15,000 square kilometres in 2006.

Figure 2: Breakdown of land use in deforested areas of Brazilian Amazon.



⁸ FAO Global Forestry Resources Estimate, 2005

Indonesia

Indonesia's tropical rainforest – approximately 1 million square kilometres - is the third largest after Brazil and the Democratic Republic of Congo. As with Brazil, the process of rapid large-scale deforestation is relatively recent.

The main causes of deforestation in Indonesia appear to be legal and illegal logging and the expansion of large-scale agriculture. Figure 3 shows the breakdown of land use change that has occurred since 1990. Specifically, it

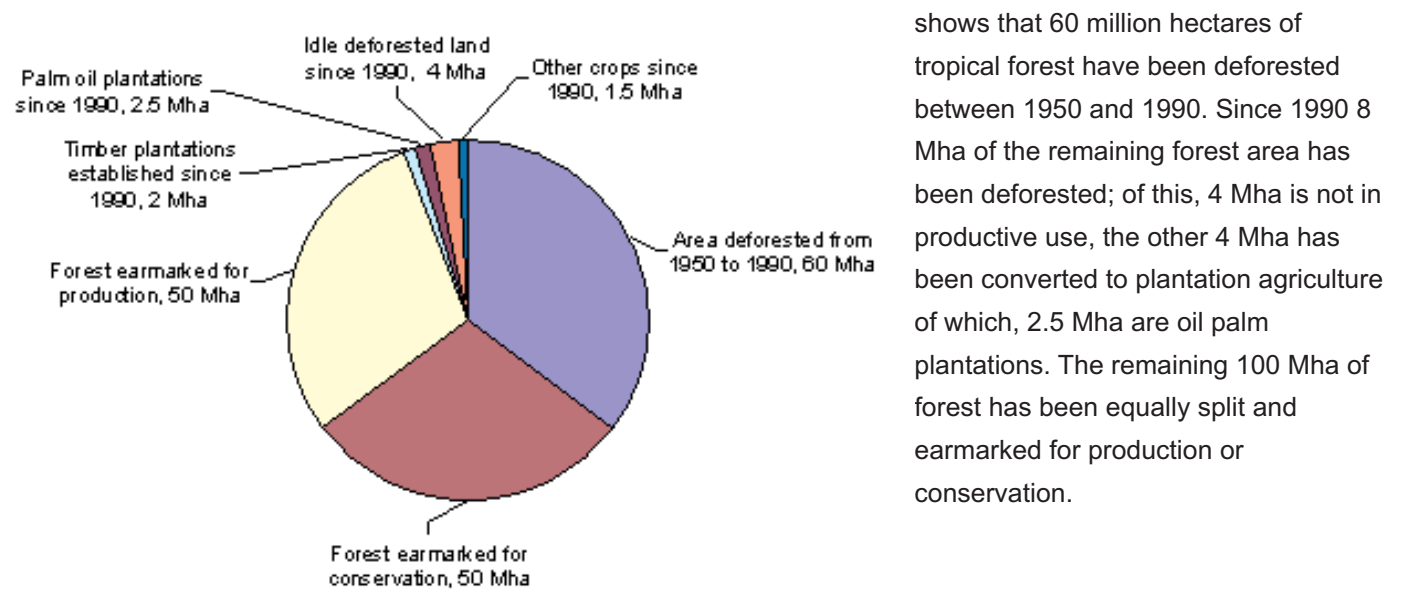


Figure 3: Breakdown of remaining and deforested areas of tropical forest in Indonesia.



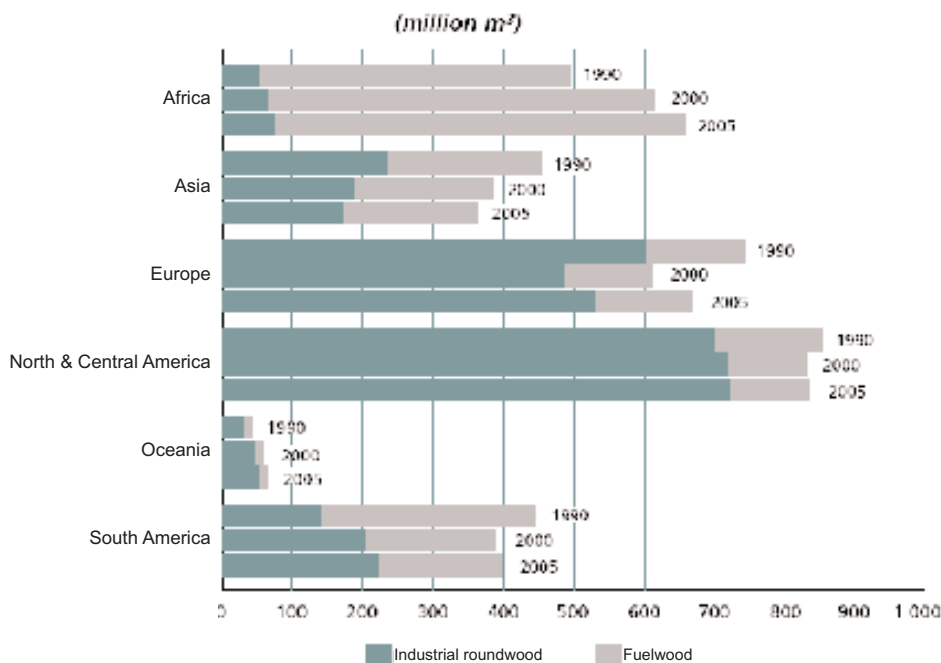
Africa

Africa has the highest deforestation rate of the world's regions. The region loses an estimated 40,000 km², or 0.62 per cent of its forests annually, compared to the global average deforestation rate of 0.18 per cent⁹, but the rate of loss has shown signs of declining slightly since 2000¹⁰.

Deforestation is largely caused by the removal of wood for fuel, wildfires and clearance for agriculture. Woodfuel or charcoal made from woody biomass remains the main source of primary energy in many parts of Africa, providing over 70% of primary energy consumption in Uganda and Tanzania. Most of this woodfuel is not sustainably produced and the FAO estimates that this is a major cause of land degradation. Figure 4 illustrates the trends of forest removal in different regions of Africa, with about half of the removed wood being for woodfuel.

In Africa forests are obtaining increasing political support, with the majority of countries adopting new forest policies and forest laws to improve law enforcement and governance¹¹.

Figure 4: Trends in wood removals 1990 – 2005 (FAO 2005)



9 FAO Global Forestry Resources Estimate, 2005

10 UNEP – WCMC, 2007 <http://www.unep-wcmc.org>

11 FAO State of the Worlds Forests, 2007

12 FAO Global Forestry Resources Estimate, 2005

3 Conservation of forests

Perspective

Countries with long histories of effective forest management and protection include Japan, Germany and Bhutan. Countries that have been successful in recent decades in establishing strong and effective conservation and management institutions include India, UK and the USA.

Wherever populations and economic activity are growing, forests will be under threat unless there are effective control mechanisms. These mechanisms can include:

- *Defined land ownership*: in the absence of clear land tenure forests are often cleared as a means of establishing ownership rights.
- *Clear forest regulations*: laws governing forest use and protected areas need to be strong and based on what is practical in the local context.
- *Strong national or local institutions*: wherever institutions are weakened by corruption or inefficiency there is a strong likelihood that forest resources will be used illegally.
- *Public conservation ethic*: in the absence of a public conservation ethic it will be difficult to maintain effective institutions and to implement forest laws.
- *Sustainable and productive agriculture*: where farmers are living at a subsistence level and where agriculture is causing land degradation there will be a strong pressure to expand cultivation into areas of forest.

Certification of products from sustainable agriculture and forests provide consumers with comfort that specific products are sourced from well managed areas but on their own have little effect on the large scale forces of land use change. Effective land use planning and its enforcement are critical.

4 Impact of biofuels on deforestation

Perspective

Currently most biofuels are produced from crops grown where there is little or no deforestation. However, in a global market increased demand for biofuels from these sources may indirectly drive deforestation elsewhere as former customers look elsewhere to meet their needs. Therefore, it is vital that standards which protect forests are developed and applied to agricultural production for all uses.

Few transport biofuels used today are directly linked to deforestation:

- Over 70% of global bioethanol is produced from corn grown in North America and from sugar cane grown in the central / southern Brazil (not the Amazon region).
- In Europe, biodiesel is predominately produced from rapeseed grown on agricultural land in Europe or North America, where forests are growing rather than shrinking. The remainder is derived principally from soy oil, which is a by-product of the soybean (cultivated primarily for animal feed). Only around 2% of European biodiesel is derived from palm oil and over 92% of the palm oil imported to Europe is used for food, cosmetics or other non-energy related uses.

However, as demand for biofuels grows, even if this is mainly met through products from places where deforestation is not occurring, there may still be indirect impacts through displacement. This occurs because the industries which formerly obtained their products from suppliers now supplying biofuel production have to look elsewhere for their raw material, and some of these may start to buy from areas where deforestation is a problem.

Because of the issue of displacement, it is very important that all sectors work together to ensure that agricultural production is sustainable.

5 How can the biofuel sector help reduce deforestation?

Perspective

By adopting international sustainability measures, the biofuel industry can contribute to reducing the rate of deforestation. However, for there to be a truly effective solution all industries whose products could contribute to deforestation need to adopt similar standards of practice.

The following measures can and are being adopted to minimise the risk of deforestation:

- Encourage the adoption of conservation measures and forest laws to protect remaining forests.
- Ensure biofuels are produced using sustainable methods that do not lead to land degradation.
- Understand how supply chains work in developing countries where land use change is occurring.
- Ensure that any new investments in production incorporate safeguards to avoid deforestation.

Given that deforestation is usually caused by multiple factors it will not be effective to act in isolation. Governments and investment institutions also need to be committed to forest protection. Specific measures can include:

- Governments in biofuel producing countries have a responsibility to develop and enforce clear rules on land use and forest protection.
- Governments in biofuel importing countries can help by encouraging sustainable biofuel production and by supporting developing countries to implement forest protection measures.
- International research institutions can assist by providing forest maps and other information that can be used to plan which areas should be protected for biodiversity and other ecosystem functions.

6 Greenergy and deforestation

Greenergy is committed to ensuring that the biofuels it supplies are derived from feedstocks grown on suitable agricultural land.

Greenergy works within the framework of international standards such as the Roundtable on Sustainable Palm Oil (RSPO), where these exist. Where international standards do not exist, it:

- Includes clauses in purchase contracts to confirm that no recent changes to land use have occurred;
- Carries out independent on-site audits to confirm the origin of its biofuels; and
- Works with ProForest, an independent environmental company, to support the implementation of its sustainability programme.