

# Countering climate changes of Brazil

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## BRAZIL

### CURRENT ENVIRONMENTAL MILEAU

The **Climate of Brazil** varies considerably from the mostly tropical North (the equator traverses the mouth of the Amazon) to temperate zones below the Tropic of Capricorn ( $23^{\circ}27'$  S latitude), which crosses the country at the latitude of the city of São Paulo. Brazil has six climatic regions: equatorial, tropical, semiarid, highland tropical, temperate, and subtropical.

Temperatures along the equator are high, averaging above  $25^{\circ}\text{C}$  ( $77^{\circ}\text{F}$ ), but not reaching the summer extremes of up to  $40^{\circ}\text{C}$  ( $104^{\circ}\text{F}$ ) in the temperate zones. There is little seasonal variation near the equator, although at times it can get cool enough for wearing a jacket, especially in the rain.

At the country's other extreme, there are frosts south of the Tropic of Capricorn during the winter (June-August), and in some years there are snowfalls on the high plateau and mountainous areas of some states.

Precipitation levels vary widely. Most of Brazil has moderate rainfall of between 1,000 and 1,500 mm a year, with most of the rain falling in the summer (between December and April) south of the Equator. The Amazon region is notoriously humid, with rainfall generally more than 2,000 mm per year and reaching as high as 3,000 mm in parts of the western Amazon and near Belém. It is less widely known that, despite high annual precipitation, the Amazon rain forest has a three- to five-month dry season, the timing of which varies according to location north or south of the equator.

High and relatively regular levels of precipitation in the Amazon contrast sharply with the dryness of the semiarid Northeast, where rainfall is scarce and there are severe droughts in cycles averaging seven years. The Northeast is the driest part of the country. The region also constitutes the hottest part of Brazil, where during the dry season between May and November, temperatures of more than  $38^{\circ}\text{C}$  ( $100.4^{\circ}\text{F}$ ) have been recorded. However, the sertão, a region of semi desert vegetation used primarily for low-density ranching, turns green when there is rain. Most of the Centre-West has 1,500 to 2,000 mm of rain per year, with a pronounced dry season in the middle of the year, while the South and most of the East is without a distinct dry season.

## **CURRENT CHALLENGES**

The main environmental issue in BRAZIL is **deforestation**. Brazil once had the highest deforestation rate in the world and as of 2009 still has the largest area of forest removed annually. Since 1970, over 600,000 square kilometres (232,000 square miles) of Amazon rainforest have been destroyed.

**Despite reductions in the rate of deforestation in the last ten years, the Amazon Rainforest will be reduced by 40% by 2030 at the current rate. Between May 2000 and August 2006, Brazil lost nearly 150,000 square kilometres of forest, an area larger than that of Greece.**

**Impact of deforestation on climate** - In deforested areas, the land heats up faster and reaches a higher temperature, leading to localized upward motions that enhance the formation of clouds and ultimately produce more rainfall. In the Amazon when we compare the cloud cover in deforested areas and that with areas not affected by deforestation we see, areas still unaffected by deforestation found a significant increase in cloud cover and rainfall during the August-September wet season where forest had been removed. The height or existence of plants and trees in the forest directly affects the aerodynamics of the atmosphere, affecting precipitation. **The Massachusetts Institute of Technology** developed a series of detailed computer simulated models of rainfall patterns in the Amazon during the 1990s and concluded that the removal of the forest also leaves the land exposed to the sun naturally increasing the land temperature near the surface, enhancing evaporation and more moisture in the atmosphere.

**George Bush says that ethanol will save the world. But there is evidence that biofuels may bring new problems for the planet.**

Ethanol, which can be made from corn, barley, wheat, sugar cane or beet, is a green panacea - a clean-burning, renewable energy source that will see us switch from dwindling oil wells to boundless fields of crops to satisfy our energy needs. Ethanol is nothing new in Brazil. It has been used as fuel since 1925. But the real boom came after the oil crisis of 1973 spurred the military dictatorship to lessen the country's reliance on foreign imports of fossil fuels. The generals poured public subsidies and incentives into the sugar industry to produce ethanol.

But there is a darker side to this green revolution, which argues for a cautious assessment of how big a role ethanol can play in filling the developed world's fuel tank. The prospect of a sudden surge in demand for ethanol is causing serious concerns even in Brazil. The ethanol industry has been linked with air and water pollution on an epic scale, along with deforestation in both the Amazon and Atlantic rainforests, as well as the wholesale destruction of Brazil's unique savannah land.

Some of the cane plantations are the size of European states; these vast monocultures have replaced important eco-systems. The size of the plantations in the state of Sao Paulo they are oceans of sugar cane, in order to harvest these plantations are burned which creates a serious air pollution problem in the city. Despite its leading role in biofuels, Brazil remains the fourth largest producer of carbon emissions in the world due to deforestation.

A study has indicated that **biofuel carbon debt** is created when Brazil converts land in undisturbed ecosystems, such as rainforests, savannas, or grasslands, to biofuel production, and to crop production when agricultural land is diverted to biofuel production. **This land use change releases more CO<sub>2</sub> than the annual greenhouse gas (GHG) reductions that these biofuels would provide by displacing fossil fuels.** The study's conclusion is that the net effect of biofuel production via clearing of carbon-rich habitats is to increase CO<sub>2</sub> emissions for decades or centuries relative to fossil fuel use.

### **FUTURE COURSE OF ACTION**

It is clear that to diminish deforestation in the Brazilian Amazon would require enormous financial resources to compensate the loggers and given them an economic incentive to pursue other areas of activity. The World Wide Fund for Nature (WWF) has estimated that a total of approximately US\$547.2 million (1 billion Brazilian reais) would be required from international sources to compensate the forest developers and establish a highly organized framework to fully implement forest governance and monitoring, and the foundation of new protected forest areas in the Amazon for future sustainability. Such a huge amount can't be handled by Brazil alone due it's already pending international debt obligations. Other international organizations such as WWF (which is already lending a hand), has to join their forces to accumulate a part of the monetary funds required to reverse the process of

deforestation. The biggest buyer of ethanol from Brazil is USA, and a lot of deforestation has taken place due to this ethanol production, so USA also has to shoulder a part of the burden of Brazil.

So in order to accomplish this the government of Brazil needs to form a team which will look after this issue. The team will consist of government officials as well as non government officials such as environmentalists etc. This team will be contacting, governments of other countries who are dependent on the ethanol supply from Brazil, other NGO's from different countries whose main field of work is ecological balance and also holding press conferences. The main aim of this team is going to be to spread the word of CO<sub>2</sub> emissions in the atmosphere and its effects so that people from different countries also become aware.

In order to produce ethanol huge parts of the Amazon rainforest has been removed for the cultivation of sugarcane. We understand that the exporting of ethanol has a huge significance in the economy of Brazil but at what cost? We are destroying the ecological balance of nature by doing this, and as we have already mentioned that burning of these sugarcane fields produce lot of air pollution. As it is not possible to stop the ethanol production but let's stop the clearing of rainforests now. The cleared areas which are nearer to the cities, needs to be replanted and this sugarcane production needs to be done as far away from the cities as possible so that we are not affected by the air pollution. 2<sup>nd</sup> of all we need to produce sugarcanes at only 1 place because reusing of soil for diff crops increases CO<sub>2</sub> emissions.

In order to boost our economy we can shift our attention to coffee, which was primarily our most exported substance. Cultivating coffee does not lead to air pollution as we don't burn the coffee fields.

So by following the above steps we can bring down the levels of CO<sub>2</sub> in the atmosphere as well the drastic effects of deforestation.