One event follows another; but we never can observe any tie between them. They seemed conjoined, but never connected. And as we can have no idea of any thing which never appeared to our outward sense or inward sentiment, the necessary conclusion seems to be that we have no idea of connexion or force at all, and that these words are absolutely without meaning, when employed either in philosophical reasonings or common life. - David Hume,1737

The Impact of the Biofuel Boom on Global Rainforest Deforestation:

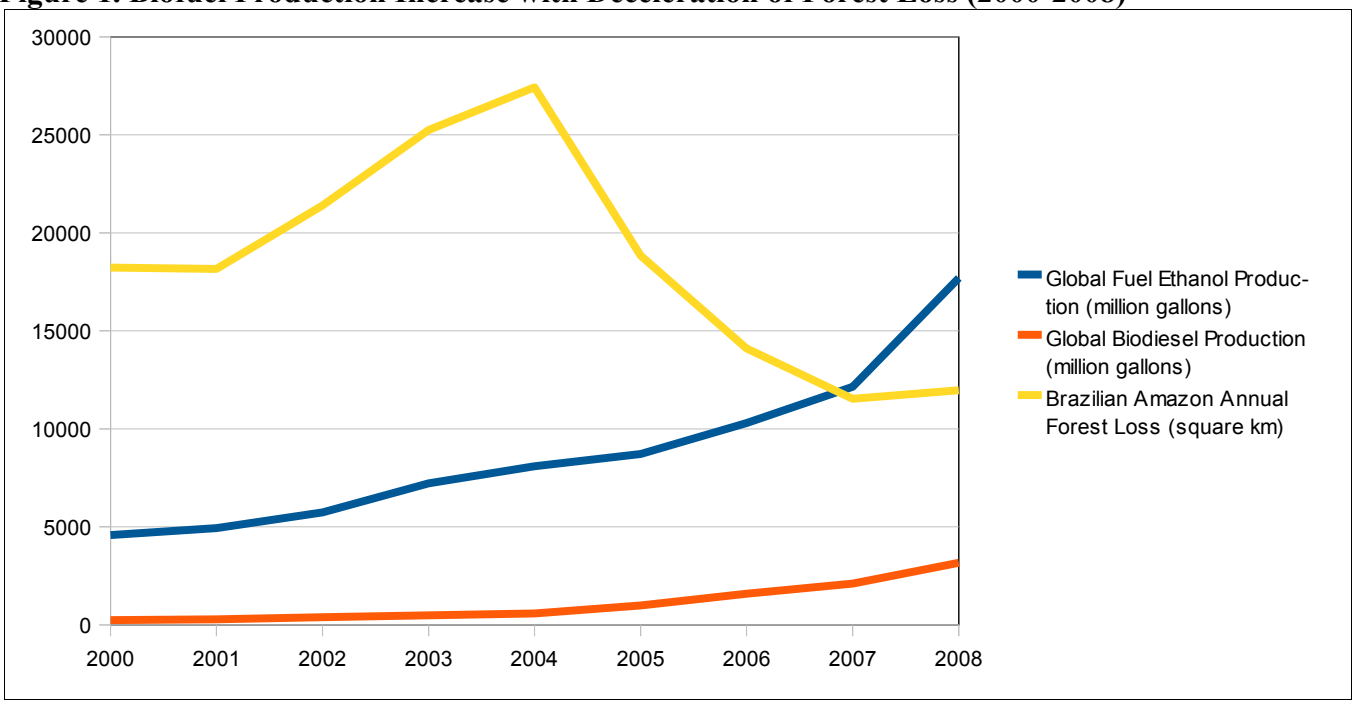
Preliminary Research Report

Table 1. Global Fuel Ethanol/Biodiesel Production and Brazillion Amazon Forest Loss (2000-2008)

Year	Global Fuel Ethanol Production (million gallons)	Global Biodiesel Production (million gallons)	Brazilian Amazon Annual Forest Loss (square km)
2000	4574	236	18226
2001	4934	282	18165
2002	5736	393	21394
2003	7220	484	25247
2004	8092	580	27423
2005	8717	994	18846
2006	10302	1585	14109
2007	12151	2113	11532
2008	17699	3170	11968

Sources: 2000-2005 data: Earth Policy Institute; 2006-2008 data and estimates: Renewables Global Status Report, 2009; forest loss estimates: Brazilian National Institute of Space Research and the United Nations Food and Agriculture Organization.

Figure 1. Biofuel Production Increase with Deceleration of Forest Loss (2000-2008)



According to the collective data above (see Table 1 & Figure 1), gleaned from estimates provided by the Brazilian National Institute of Space Research and the United Nations Food and Agriculture Organization, the rate of deforestation of the Amazon rainforest (which represents an area of over half of the Earth's rainforests) has actually dropped sharply by roughly 56% from 2004 – 2008. In contrast, according to figures provided by the Earth Policy Institute and the Renewables Global Status Report, global fuel ethanol production from 2004-2008 has actually increased by approximately 119%, and global biodiesel production has increased by approximately 447% - an increase in production volume of almost 5 times in only four years. According to the World Resources Institute, biofuel production is increasing at a rate of 15% annually, a boom which began in 2000 and

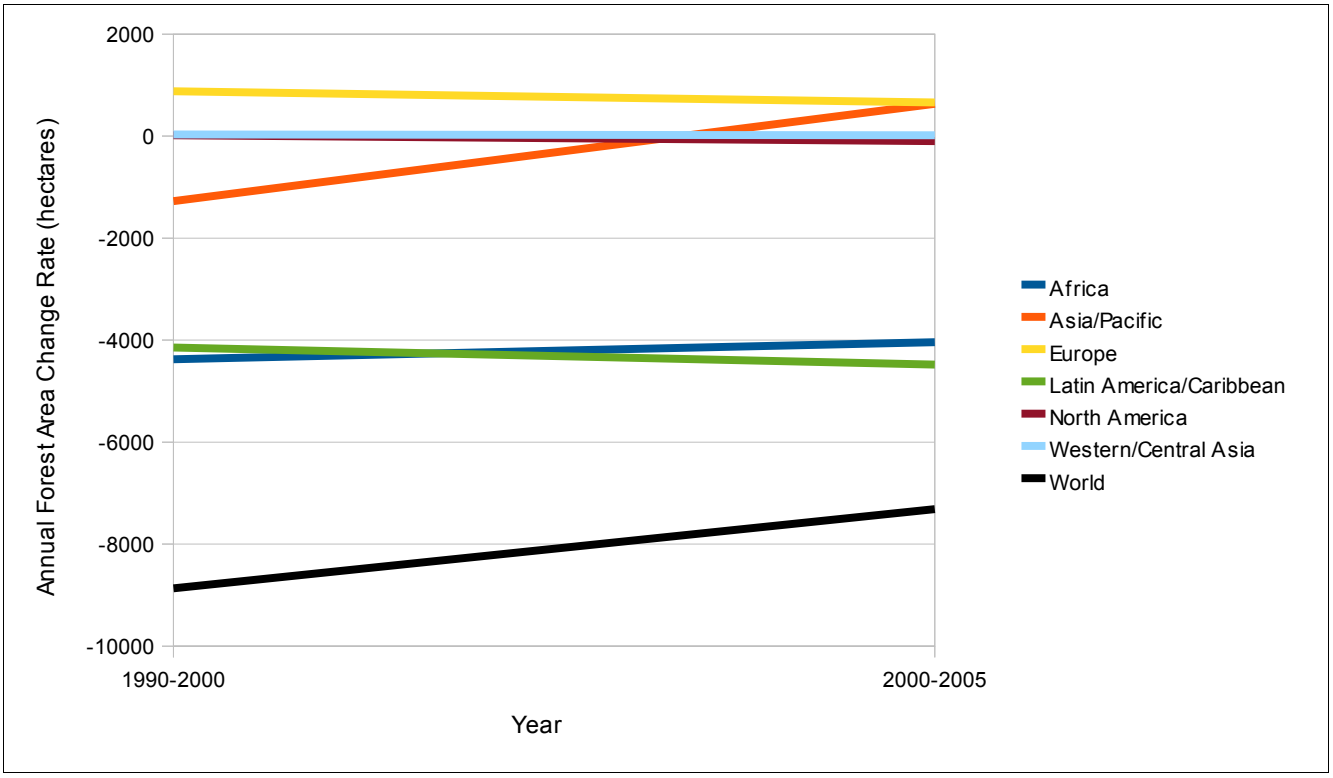
promises to continue well beyond 2012. Rainforest deforestation, on the other hand, has actually *decreased* in parallel with an *increase* in Biofuel demand and production.

Table 2. Global Annual Forest Area Change Rate (1990-2005)

Region	1990-2000	2000-2005
Africa	-4375	-4040
Asia/Pacific	-1275	633
Europe	877	661
Latin America/Caribbean	-4147	-4483
North America	17	-101
Western/Central Asia	34	14
World	-8868	-7317

Source: Food and Agriculture Organization of the United Nations (FAO), State of the World's Forests 2009 report.

Figure 2. Global Annual Forest Area Change Rate By Region (1990-2005)



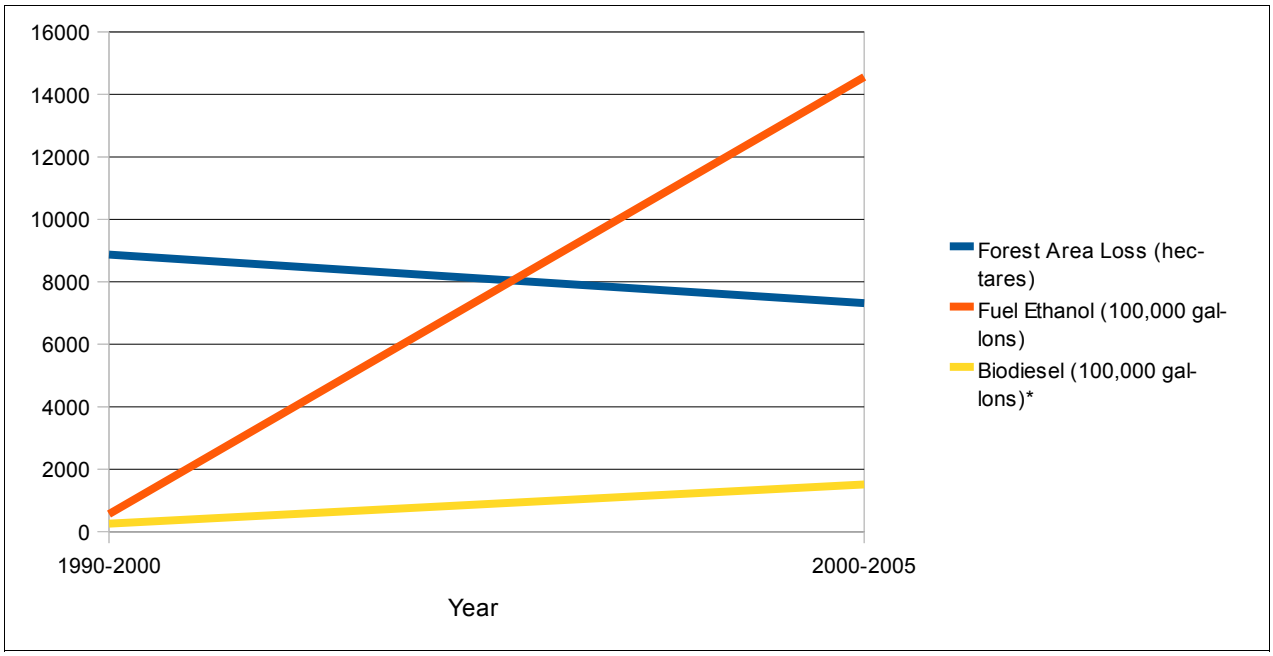
According to data (represented by Table 2 & Figure 2) provided by the Food and Agriculture Organization of the United Nations (FAO) in their State of the World's Forests 2009 report, the rate of global forest decline has decreased by almost 18%. As shown in Figure 2, in areas such as Africa and the Asian/Pacific region, forest growth has actually increased dramatically, whereas in the other areas of reported deforestation, the decline has been marginal. This indicates that in the 15 years from 1990 to 2005, forest loss has slowed, corresponding precisely with the time period of the growth of the biofuel industry in the world market and its subsequent boom.

Table 3. Average Annual Global Biofuel Growth and Forest Loss Deceleration Rates (1990-2005)

Average Annual Global Rates	1990-2000	2000-2005
Forest Area Loss (hectares)	8868	7317
Fuel Ethanol (100,000 gallons)	561	14562
Biodiesel (100,000 gallons)	259*	1516

*Sources: biofuel production estimates: Earth Policy Institute; forest area estimates: Food and Agriculture Organization of the United Nations (FAO).**This number was calculated from average annual global biodiesel growth between 1991 and 2000 as, prior to 1991, the biodiesel industry had negligible presence in the global eco-economic market.

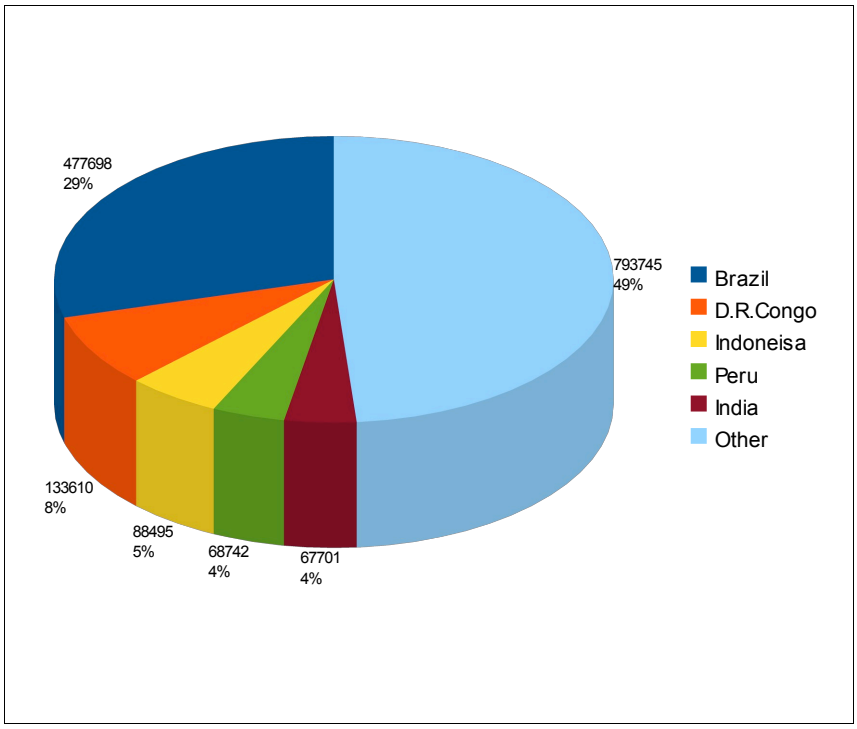
Figure 3. Global Biofuel Production Acceleration and Deforestation Decline (1990-2005)



*This data was derived from average annual global biodiesel growth between 1991 and 2000 as, prior to 1991, the biodiesel industry had negligible presence in the global eco-economic market.

The collective data above (Table 3 & Figure 3), compiled from FAO and Earth Policy Institute statistics, illustrates that annual global deforestation decelerated by a factor of almost 18%, while annual global fuel ethanol and biodiesel production increased by a staggering 2500% and 485% respectively in the same time period. Global forest loss slowed markedly in tandem with a significant boom in the biofuel industry.

Figure 4. Global Distribution of Tropical Forest, 2005



Source: Food and Agriculture Organization of the United Nations (FAO), Forest Resources Assessment, 2005

As indicated in Figure 4 (above), the combined forest area of only five countries combined accounts for just over half the world's total tropical forest area. Of these nations, Peru and India are the only two of comparable forest size, each accounting for 4% of global tropical forests.

As of 2006, according to data provided by the Earth Policy Institute and the Renewables Global Status Report 2007, India was the world's fourth leading nation in terms of fuel ethanol production, and its sixth leading nation in overall biofuel production. In contrast, Peru, a nation that accounts for the same percentage of global tropical forest area, was not engaged in the biofuel industry according to the International Energy Agency (IEA). However, a comparison of forest area loss and biofuel production between the two countries from 1990-2005 (Figures 5&6 below) shows that while tropical forest area in India was actually increasing in parallel with a significant growth in its biofuel industry, forest area was decreasing in Peru, a nation that does not produce biofuel.

Figure 5. Indian Forest Area Change and Biofuel Production, 1990-2005

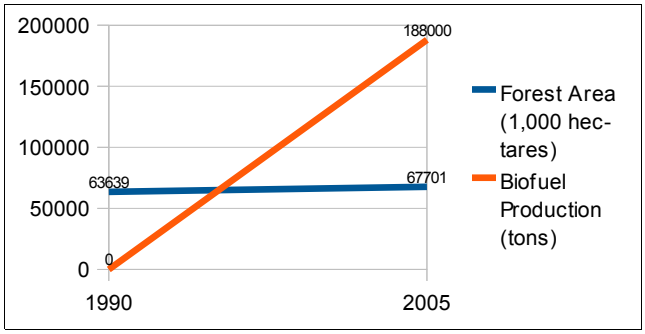
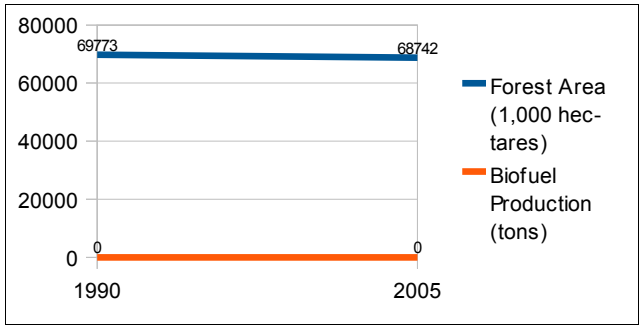


Figure 6. Peruvian Forest Area Change and Biofuel Production, 1990-2005



Sources: forest area change data: Food and Agriculture Organization of the United Nations (FAO), State of the World's Forests Report, 2009; biofuel production figures: International Energy Agency, Renewables Data Statistics, 2006.

Over the course of 15 years, in two nations of near equal forest size, forest area increased in India, a world leader of biofuel production, while deforestation occurred in Peru, where biofuels are not produced.