

Report for ForestQuery into Global Deforestation, 1990 to 2016

ForestQuery is on a mission to combat deforestation around the world and to raise awareness about this topic and its impact on the environment. The data analysis team at ForestQuery has obtained data from the World Bank that includes forest area and total land area by country and year from 1990 to 2016, as well as a table of countries and the regions to which they belong.

The data analysis team has used SQL to bring these tables together and to query them in an effort to find areas of concern as well as areas that present an opportunity to learn from successes.

1. GLOBAL SITUATION

According to the World Bank, the total forest area of the world was 41,282,694.9km² in 1990. As of 2016, the most recent year for which data was available, that number had fallen to 39,958,245.9km², a loss of 1324449km², or 3.21%.

The forest area lost over this time period is slightly more than the entire land area of Peru listed for the year 2016 (which is 1279999.99 km²).

2. REGIONAL OUTLOOK

In 2016, the percent of the total land area of the world designated as forest was 31.38%. The region with the highest relative forestation was Latin America & Caribbean, with 46.16%, and the region with the lowest relative forestation was Middle East & North Africa, with 2.07% forestation.

In 1990, the percent of the total land area of the world designated as forest was 32.42%. The region with the highest relative forestation was Latin America & Caribbean, with 51.03%, and the region with the lowest relative forestation was Middle East & North Africa, with 1.78% forestation.

Table 2.1: Percent Forest Area by Region, 1990 & 2016:

Region	1990 Forest Percentage	2016 Forest Percentage
East Asia & Pacific	25.78%	26.36%
Europe & Central Asia	37.28%	38.04%
Latin America & Caribbean	51.03%	46.16%
Middle East & North Africa	1.78%	2.07%
North America	35.65%	36.04%
South Asia	16.51%	17.51%
Sub-Saharan Africa	30.67%	28.79%
World	32.42%	31.38%

The only regions of the world that decreased in percent forest area from 1990 to 2016 were Latin America & Caribbean(dropped from 51.03% to 46.16%) and Sub-Saharan Africa(30.67% to 28.79%). All other regions actually increased in forest area over this time period. However, the drop in forest area in the two aforementioned regions was so large, the percent forest area of the world decreased over this time period from 32.42% to 31.38%.

3. COUNTRY-LEVEL DETAIL

A. SUCCESS STORIES

There is one particularly bright spot in the data at the country level, China. This country actually increased in forest area from 1990 to 2016 by 527229.062km². It would be interesting to study what has changed in this country over this time to drive this figure in the data higher. The country with the next largest increase in forest area from 1990 to 2016 was the United States, but it only saw an increase of 79200km², much lower than the figure for China.

China and The United States are of course very large countries in total land area, so when we look at the largest *percent* change in forest area from 1990 to 2016, we aren't surprised to find a much smaller country listed at the top. Iceland increased it's forest area by 213.66% from 1990 to 2016.

B. LARGEST CONCERNS

Which countries are seeing deforestation to the largest degree? We can answer this question in two ways. First, we can look at the absolute square kilometer decrease in forest area from 1990 to 2016. The following 3 countries had the largest decrease in forest area over the time period under consideration:

Table 3.1: Top 5 Amount Decrease in Forest Area by Country, 1990 & 2016:

Country	Region	Absolute Forest Area Change
Brazil	Latin America & Caribbean	541510.00km ²
Indonesia	East Asia & Pacific	282193.98km ²
Myanmar	East Asia & Pacific	107234.00km ²
Nigeria	Sub-Saharan Africa	106506.00km ²
Tanzania	Sub-Saharan Africa	102320.00km ²

The second way to consider which countries are of concern is to analyze the data by percent decrease.

Table 3.2: Top 5 Percent Decrease in Forest Area by Country, 1990 & 2016:

Country	Region	Pct Forest Area Change
Togo	Sub-Saharan Africa	75.45%
Nigeria	Sub-Saharan Africa	61.80%
Uganda	Sub-Saharan Africa	59.13%
Mauritania	Sub-Saharan Africa	46.75%
Honduras	Latin America & Caribbean	45.03%

When we consider countries that decreased in forest area percentage the most between 1990 and 2016, we find that four of the top 5 countries on the list are in the region of Sub-Saharan

Africa. The countries are Togo, Nigeria, Uganda, and Mauritania. The 5th country on the list is Honduras, which is in the Latin America & Caribbean region.

From the above analysis, we see that Nigeria is the only country that ranks in the top 5 both in terms of absolute square kilometer decrease in forest as well as percent decrease in forest area from 1990 to 2016. Therefore, this country has a significant opportunity ahead to stop the decline and hopefully spearhead remedial efforts.

C. QUARTILES

Table 3.3: Count of Countries Grouped by Forestation Percent Quartiles, 2016:

Quartile	Number of Countries
First (0-25%)	85
Second (25-50%)	72
Third (50-75%)	38
Fourth (75-100%)	9

The largest number of countries in 2016 were found in the first quartile with a total of 85.

There were 9 countries in the top quartile in 2016. These are countries with a very high percentage of their land area designated as forest. The following is a list of countries and their respective forest land, denoted as a percentage.

Table 3.4: Top Quartile Countries, 2016:

Country	Region	Pct Designated as Forest
Suriname	Latin America & Caribbean	98.26%
Micronesia, Fed. Sts.	East Asia & Pacific	91.86%
Gabon	Sub-Saharan Africa	90.04%
Seychelles	Sub-Saharan Africa	88.41%

Palau	East Asia & Pacific	87.61%
American Samoa	East Asia & Pacific	87.50%
Guyana	Latin America & Caribbean	83.90%
Lao PDR	East Asia & Pacific	82.11%
Solomon Islands	East Asia & Pacific	77.86%

5. RECOMMENDATIONS

Write out a set of recommendations as an analyst on the ForestQuery team.

What have you learned from the World Bank data?

- Unfortunately, from this data we can see that the percentage of forest area is decreasing globally, by around 3.21% between 1990 & 2016. While this may seem like a small amount, it is still something that should be recognised and combatted.
- Latin America & Caribbean is the main region that seems to have been affected by deforestation with a decrease of almost 5%. Sub-Saharan Africa also saw a decrease of just under 2%, comparably smaller than Latin America & Caribbean but still an amount to not be ignored.
- There has been some improvements made, notably China has seen a large increase in the reported area of forest in kilometers². Given the large land area of the country, this means the overall percent increase of forest area was not as large as some other countries, with Iceland performing best, showing an increase of forest area by 213% over the years.
- As a region, East Asia & Pacific has the most countries considered to be in the upper quartile of forest percentage, with over half of the countries designated to the upper quartile being from this region (5 out of the 9).
- 83 countries can be found to have 25% or less of their total land area listed as forest area, while only 9 have 75% or over.

Which countries should we focus on over others?

- 3 countries seem to be in the most need of attention in terms of deforestation. Togo in particular has recorded a decrease of 75.45% in forest area between 1990 & 2016, a trend that we would not want to see continuing in the future. Nigeria & Uganda have also seen large drops in their forest area, 61.80% and 59.13% respectively. All of these countries lie in the same region, Sub-Saharan Africa, which potentially shows a worrying trend across the area.
- As a region, Latin America & Caribbean has seen the most deforestation in terms of percentage lost, with Honduras seeing a decrease of almost half of its forest area over the 26 years of data we looked at.

- Brazil has seen a massive drop in the forest area, 541510.00km² in total. While the country itself has a large area, meaning the percentage of forest lost is not as extreme as some other smaller countries, it is still something that should be addressed as we would not want to see this trend either continuing or increasing. We can see that this is almost double the amount of lost forest area recorded by Indonesia, the second country in our table of deforestation (282193.98km²).