

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 41,282,694.9 in 1990. As of 2016, the most recent year for which data was available, that number had fallen to 39,958,245.9, a loss of 324,449, or 3.21%.

The forest area lost over this time period is slightly more than the entire land area of Cote d'Ivoire in the year 2016 (which is 317,999.99).

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 East Asia & Pacific, with 50.09%, and the region with the lowest relative forestation was Middle East & North Africa, with 3.19% 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 East Asia & Pacific, with 47.38%, and the region with the lowest relative forestation was Middle East & North Africa, with 2.69% forestation.

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

Region	1990 Forest Percentage	2016 Forest Percentage
East Asia & Pacific	47.38	50.09
Latin America & Caribbean	43.34	41.64
World	32.42	31.38
Sub-Saharan Africa	35.26	31.28
North America	29.95	30.20
Europe & Central Asia	26.33	28.31
South Asia	20.68	21.60
Middle East & North Africa	2.69	3.19

The only regions of the world that decreased in percent forest area from 1990 to 2016 were Latin America & Caribbean (dropped from 43.34% to 41.64%) and Sub-Saharan Africa (35.26% to 31.28%). 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 527,229.06 sq km. 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 79,200 sq km, 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. French Polynesia increased in forest area by 27.32% 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 5 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 (in sq km)
Brazil	Latin America & Caribbean	-541,510
Indonesia	East Asia & Pacific	-282,193.98
Myanmar	East Asia & Pacific	-107,234
Nigeria	Sub-Saharan Africa	-106,506
Tanzania	Sub-Saharan Africa	-102,320

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	-59.27%
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
1	52
2	51
3	51
4	51

The largest number of countries in 2016 were found in the first quartile.

There were 51 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
Papua New Guinea	East Asia & Pacific	74.10
Finland	Europe & Central Asia	73.11
Bhutan	South Asia	72.48
Brunei Darussalam	East Asia & Pacific	72.11
Marshall Islands	East Asia & Pacific	70.22
Guinea-Bissau	Sub-Saharan Africa	69.77
St. Vincent and the Grenadines	Latin America & Caribbean	69.23
Sweden	Europe & Central Asia	68.92
Japan	East Asia & Pacific	68.46
Malaysia	East Asia & Pacific	67.60
Congo, Dem. Rep.	Sub-Saharan Africa	67.17
Congo, Rep.	Sub-Saharan Africa	65.35
Zambia	Sub-Saharan Africa	65.20

Northern Mariana Islands	East Asia & Pacific	63.78
Korea, Rep.	East Asia & Pacific	63.35
Slovenia	Europe & Central Asia	61.97
Panama	Latin America & Caribbean	61.89
Montenegro	Europe & Central Asia	61.49
Samoa	East Asia & Pacific	60.42
Belize	Latin America & Caribbean	59.68
Brazil	Latin America & Caribbean	58.93
Peru	Latin America & Caribbean	57.66
Dominica	Latin America & Caribbean	57.41
Puerto Rico	Latin America & Caribbean	56.29
Fiji	East Asia & Pacific	55.94
Sao Tome and Principe	Sub-Saharan Africa	55.83
Equatorial Guinea	Sub-Saharan Africa	55.49
Costa Rica	Latin America & Caribbean	54.57
Latvia	Europe & Central Asia	53.98
Cayman Islands	Latin America & Caribbean	52.92
Cambodia	East Asia & Pacific	52.85
Venezuela, RB	Latin America & Caribbean	52.74
Colombia	Latin America & Caribbean	52.70
Tanzania	Sub-Saharan Africa	51.58
Bahamas, The	Latin America & Caribbean	51.45
Estonia	Europe & Central Asia	51.34
Bolivia	Latin America & Caribbean	50.29

Ecuador	Latin America & Caribbean	50.21
Grenada	Latin America & Caribbean	49.97
Virgin Islands (U.S.)	Latin America & Caribbean	49.97
Indonesia	East Asia & Pacific	49.86
Russian Federation	Europe & Central Asia	49.76

4. RECOMMENDATIONS

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

- *What have you learned from the World Bank data?*

Worldwide, forestation decreased between 1990 and 2016. The countries with the greatest decrease in forest area were in 2 regions - Sub-Saharan Africa and Latin America & the Caribbean. However, there were several countries that saw an increase in forest area during this time period. It would be interesting to investigate these countries further to discover why the forest area increased.

- *Which countries should we focus on over others?*

It would be interesting to focus on Nigeria, Togo, and Brazil which had the largest percent decrease in forest area and/or the largest total loss of forest area compared to other countries.

It would also be helpful to study French Polynesia, which had an almost 30% increase in forest area, to see what changes were made here to expand the forest area.