

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 km^2** in 1990. As of 2016, the most recent year for which data was available, that number had fallen to

39,958,245.9 km^2 , a loss of **1,324,449 km^2** , or **3.20 %**.

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 **1,279,999.9891 km^2**).

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 |

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 **527,229.062 km^2** . 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 km^2** , much lower than the figure for **China**.

China and **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 in 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 | 541,510 |
| Indonesia | East Asia & Pacific | 282,193.9844 |
| Myanmar | East Asia & Pacific | 107,234.0039 |
| Nigeria | Sub-Saharan Africa | 106,506.0098 |
| 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 | 59.13 |
| 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 | 85 |
| Second | 72 |
| Third | 38 |
| Fourth | 9 |

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

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 |

4. RECOMMENDATIONS

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

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

The total amount of world forestation decreased by 3.20 % from 1990 to 2016. 5 out of the 7 regions have more forest in 2016 than they had in 1990. But 2 regions have less in 2016 compared to what they had in 1990. These regions are Latin America & Caribbeans and Sub-Saharan Africa. These 2 regions and East Asia and Pacific region have more countries in them which lost more forest than others.

The data shows that top countries in 4th quartile for their percent of forest land are countries with smaller total land area.
- Which countries should we focus on over others?*

Brazil, Indonesia, Myanmar, Nigeria, Tanzania, Togo, Uganda, Mauritania and Honduras are the countries that we should focus on more. These countries lost their forests from 1990 to 2016 more than other countries as either the percent forest land or amount of forest land. Nigeria may need more attention because it is in both lists' top 5. It is worth investigating why Togo lost 75% of his forests, or Brazil 541,510 km² of his forest land.