

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 **41282694.9 sq km (Query 1a)** in 1990. As of 2016, the most recent year for which data was available, that number had fallen to **39958245.9 sq km (Query 1b)**, a loss of **1324449 sq km (Query 1c)**, or **3.2% (Query 1d)**.

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 **1279999.9891 sq km**). (Query 1e)

2. REGIONAL OUTLOOK

In 2016, the percent of the total land area of the world designated as forest was **31.37% (Query 2a)**. The region with the highest relative forestation was **Latin America & Caribbean**, with **46.16% (Query 2b)**, and the region with the lowest relative forestation was **Middle East & North Africa**, with **2.06% (Query 2c)** forestation.

In 1990, the percent of the total land area of the world designated as forest was **32.42% (Query 2d)**. The region with the highest relative forestation was **Latin America & Caribbean**, with **51.02% (Query 2e)**, and the region with the lowest relative forestation was **Middle East & North Africa**, with **1.77% (Query 2f)** forestation.

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

(Query 2g)		(Query 2h)
Region	1990 Forest Percentage	2016 Forest Percentage
East Asia & Pacific	25.77%	26.35%
Europe & Central Asia	37.28%	38.04%
Latin America & Caribbean	51.02%	46.16%
Middle East & North Africa	1.77%	2.06%
North America	35.65%	36.03%
South Asia	16.51%	17.50%
Sub-Sharan Africa	30.67%	28.78%

The only regions of the world that decreased in percent forest area from 1990 to 2016 were **Latin America & Caribbean** (dropped from **51.02%** to **46.16%**) and **Sub-Sharan Africa** (**30.67%** to **28.78%**). 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 **31.37%**. **(Query 2i)**

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 **527229.07 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 **USA**, but it only saw an increase of **79200 sq km**, much lower than the figure for **China**. **(Query 3e)**

USA and **China** 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. **(Query 3f)**

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:

(Query 3a)

Country	Region	Absolute Forest Area Change
Brazil	Latin America & Caribbean	-541510 sq km
Indonesia	East Asia & Pacific	-282193.9844 sq km
Myanmar	East Asia & Pacific	-107234.0039 sq km
Nigeria	Sub-Saharan Africa	-106506.0098 sq km
Tanzania	Sub-Saharan Africa	-102320 sq km

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:

(Query 3b)

Country	Region	Pct Forest Area Change
Togo	Sub-Saharan Africa	-75.44%
Nigeria	Sub-Saharan Africa	-61.79%
Uganda	Sub-Saharan Africa	-59.12%
Mauritania	Sub-Saharan Africa	-46.74%
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:

(Query 3c)

Quartile	Number of Countries
1	85
2	72
3	38
4	9

The largest number of countries in 2016 were found in the **1st and 2nd** quartile.

There were **85** 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 greater than 75%

(Query 3d)

Country	Region	Pct Designated as Forest
Solomon Islands	East Asia & Pacific	77.86%
Lao PDR	East Asia & Pacific	82.10%
Guyana	Latin America & Caribbean	83.90%
American Samoa	East Asia & Pacific	87.50%
Palau	East Asia & Pacific	87.60%
Seychelles	Sub-Saharan Africa	88.41%
Gabon	Sub-Saharan Africa	90.03%
Micronesia	East Asia & Pacific	91.85%
Suriname	Latin America & Caribbean	98.25%