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 in 1990. As of 2016, the most recent year for which data was available, that number had fallen to 39958245.9, a loss of (1324449), or 3.21 %.

The forest area lost over this time period is slightly more than the entire land area of 16389949.9918 for the year 2016 (which is 23568295.9082).

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	Percent Differ
Latin America & Caribbean	51.03	46.16	-4.87
Sub-Saharan Africa	30.67	28.79	-1.89
World	32.42	31.38	-1.05
Middle East & North Africa	1.78	2.07	0.29
North America	35.65	36.04	0.39
East Asia & Pacific	25.78	26.36	0.58
Europe & Central Asia	37.28	38.04	0.76
South Asia	16.51	17.51	0.995

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 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 increased in forest area from 1990 to 2016 by 527229.1(33.55%) . 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 79200(2.62%) 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 American & Caribbean	(541510)
Indonesia	East Asia & Pacific	(282193.98)
Myanmar	East Asia & Pacific	(107234)
Nigeria	Sub-Saharan Africa	(106506)
Tanzania	Sub-Saharan Africa	(102320)

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 American & 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 American & 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
0-25%	85
25%-50%	72
50%-75%	38
75%-100%	9

The largest number of countries in 2016 were found in the 0-25%. 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:

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

4. RECOMMENDATIONS

I. Focus on Regions with High Deforestation Rates:

Given that Latin America & the Caribbean and Sub-Saharan Africa experienced the most significant decreases in forest area, it's advisable to focus efforts on these regions. Collaborating with local governments and organizations to implement sustainable forestry practices and conservation initiatives can help combat deforestation in these areas.

II. Study the Chinese Model:

Since China demonstrated substantial success in increasing its forest area, conduct in-depth research into the policies and practices that contributed to this positive outcome. These insights could be applied in other countries facing deforestation challenges.

III. Target Countries with High Deforestation Rates:

Prioritize countries like Brazil, Indonesia, Nigeria, and Tanzania, which have experienced substantial absolute decreases in forest area. Implement targeted reforestation and conservation programs in these nations.

IV. Collaborate with Sub-Saharan African Nations:

Given that Sub-Saharan Africa contains a significant number of countries with high percentage decreases in forest area, ForestQuery should actively engage with these nations to address deforestation issues. Developing partnerships and initiatives specific to this region is essential.

V. Raise Awareness in Low Quartile Countries:

Countries in the 0-25% quartile have relatively low forestation percentages. ForestQuery should consider awareness campaigns and initiatives in these regions to highlight the importance of forest conservation and sustainable land use practices.
By focusing on these recommendations, ForestQuery can make a more targeted and impactful effort to combat global deforestation, promote reforestation, and raise awareness about the importance of preserving our forests for a sustainable future.

5. APPENDIX: SQL Queries Used

Deforestation SQL Query