

Global Deforestation Report (1990-2016)

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 sq. km in 1990. As of 2016, the most recent year for which data was available, that number had fallen to 39,958,245.9 sq. km, a loss of 1,324,449 sq. km., or 3.21 %.

The forest area lost over this time period was slightly more than the entire land area of Peru listed for the year 2016 (which is 1,279,999.99 sq. km.).

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
Latin America & Caribbean	51.03	46.16
Europe & Central Asia	37.28	38.04
North America	35.65	36.04
Sub-Saharan Africa	30.67	28.79
East Asia & Pacific	25.78	26.36
South Asia	16.51	17.51
Middle East & North Africa	1.78	2.07

As you can see from this table, nations around the world have made an effort to recover some forested areas, even though the area recovered is small over the past two decades.

The only regions of the world that decreased in forested areas from 1990 to 2016 were Latin America & Caribbean region (dropped from 51.03% to 46.16%) and the Sub-Saharan African region (30.67% to 28.79%) which had both decreased by roughly 5 % and 2 % respectively. 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 of America (USA), but it only saw an increase of 79,200 sq. km., much lower than the figure for China.

China and the USA 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 had doubled their forest area by just over 200 % (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: Brazil, Indonesia and Myanmar.

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

Country	Region	Absolute Forest Area Change (sq. km.)
Brazil	Latin America & Caribbean	541,510.00
Indonesia	East Asia & Pacific	282193.98
Myanmar	East Asia & Pacific	107234.00
Nigeria	Sub-Saharan Africa	106506.00
Tanzania	Sub-Saharan Africa	102320.00

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	Percent 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: Distribution of countries grouped by forestation percent quartiles in 2016:

Quartile	Number of Countries
Q1 (<25)	85
Q2 (25-50)	73
Q3 (50-75)	38
Q4 (>75)	9

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

There were only nine 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: Countries in the top quartile for the year 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	87.5
Guyana	Latin America & Caribbean	83.9
Lao PDR	East Asia & Pacific	82.11
Solomon Islands	East Asia & Pacific	77.86

5. RECOMMENDATIONS

Based on our observations, the regions that were exhibiting sharp decreases in forested areas were in developing nations where these natural resources were being cleared for the benefit of the economy.¹ In regions such as Togo, forests were being cleared and used by the timber industry in the region that has led to the sharp decline in the forested areas in the region. The timber industry earmarked these regions for their purpose and was projected to bring in roughly \$20 billion/ year.² Furthermore, part of the problem is that there are no restrictions/protections in place for these forested areas.² As we have learned in the past, harvesting natural resources that follow unsustainable practices can lead to vast destruction of flora and fauna, and for the industry itself, it is a short-sighted gain and will yield diminishing returns year-over-year.

This is the most common scenario in which we witness where deforestation levels are high -- these regions are economically poor, and no policies or protections are in place to ensure that certain forested regions remain untouched. Regions and countries with high forestation numbers as shown in table 3.4, are a result of restrictions mandated and enforced by their local government and a focus on a sustainable use of their natural resources. It is therefore important to dive deeper into understanding how nations in table 3.4 were able to preserve their forested land and apply what has been learned there to these nations.

However, there are some countries that still have the potential to implement changes that could greatly improve the global situation. We have gathered that the largest loss of forested area occurred in the Latin American & Caribbean regions, there was about a 5% drop in forested area in these regions. The Amazonian rainforest in Brazil is undergoing deforestation at an alarming rate, from our data in table 3.1, we can see that the loss of forested area is above 550,000 sq. km. or 5.5 million hectares and will likely lose more than a quarter of their forested area by 2030 at this rate.³ Heavily industrialized countries such as the ones presented in section 3.A were showing significant strides in reforestation of regions/states in their own country. For eg. China had returned roughly the same amount Brazil had destroyed, policies from their forestry industry can be emulated to help improve the situation in Brazil.

The next most important area would be the Sub-Saharan Africa region. As shown in table 3.1 and 3.2, out of the countries listed there, Nigeria is the country where we can still do some serious work to improve the situation there. There was a decrease of roughly 100,000 sq. km. or ~60% of their forested space and people in this country realize the importance of this natural resource.^{4,5}

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