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 sq km in 1990. As of 2016, the most recent year for which data was available, that number had fallen to39,958,245 sq km, a loss of 1,324,449 sq km or 3.2%.

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 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 & The Caribbean, with 46.16%, and the region with the lowest relative forestation was the 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 & The Caribbean, with 51.03%, and the region with the lowest relative forestation was the 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% |
| Sub-Saharan Africa | 30.67% | 28.79% |
| World | 32.42% | 31.38% |
| Middle East & North Africa | 1.78% | 2.07% |
| North America | 35.65% | 36.04% |
| East Asia & Pacific | 25.78% | 26.36% |
| Europe & Central Asia | 38.04% | 37.28% |
| South Asia | 16.51% | 17.51% |

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**

### 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 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. Iceland increased in forest area by 213.66% from 1990 to 2016.

### 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 | 282,194 |
| 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 | -59.13% |
| Mauritania | Sub-Saharan Africa | -46.75% |
| Honduras | Latin America & Caribbean | -45.03% |

When we consider countries that decreased in forest area 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.

### QUARTILES

Table 3.3: Count of Countries Grouped by Forestation Percent Quartiles, 2016:

|  |  |
| --- | --- |
| Quartile | Number of Countries |
| 1st | 84 |
| 2nd | 74 |
| 3rd | 38 |
| 4th | 9 |

The largest number of countries in 2016 were found in the 1st 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 | 98.2576939676577% |
| Micronesia, Fed. Sts. | East Asia & Pacific | 95.390209805045% |
| Palau | East Asia & Pacific | 90.976301185625% |
| Gabon | Sub-Saharan Africa | 90.0376418700565% |
| Seychelles | Sub-Saharan Africa | 88.4111367385788% |
| American Samoa | East Asia & Pacific | 87.5000875000875% |
| Guyana | Latin America & Caribbean | 83.9014489110682% |
| Lao PDR | East Asia & Pacific | 82.1082317640861% |
| Solomon Islands | East Asia & Pacific | 77.8635177945066% |

## 5. RECOMMENDATIONS

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

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

Looking through the data I’ve learned that most of world’s deforestation is taking place in primarily two regions, Sub-Saharan Africa and East Asia & Pacific. With the top countries for deforestation residing in Sub-Saharan Africa and East Asia & Pacific it makes me think that there is something specific to these regions that is causing this to happen, perhaps regional political reasons. That’s simply a loosely educated guess and further analysis is needed to identify exactly what those reason(s) are though.

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

I think the companies that we should be focusing on the most are the ones that have seen the most significant declines in their total forest area. We should be looking to identify the biggest and strongest factors that have led to such significant declines in forest area in each country as well any and all common factors that of deforestation.

From there on we should draft a plan outlining what impactful measures we can enact in order to slow the deforestation in each country, figure out who we need to communicate with to achieve certain milestones, and what personnel we can deploy to achieve the goals we set. Certainly, each country will pose different challenges that need to be addressed on a country-by-country basis but we do need to employ a framework to efficiently deploy our campaign initiatives.