## APPENDIX: SQL queries:

### VIEW TABLE

```
CREATE VIEW forestation AS
SELECT f.country_code,
    f.country_name,
    f.year,
    f.forest_area_sqkm,
    l.total_area_sq_mi,
    r.region,
    r.income_group,
    f.forest_area_sqkm/(l.total_area_sq_mi*2.59)*100 AS percent_of_land_is_forest
FROM forest_area AS f
JOIN land_area AS l
ON l.country_code = f.country_code
AND l.year = f.year
JOIN regions AS r
ON r.country_code = f.country_code
WHERE forest_area_sqkm IS NOT NULL AND total_area_sq_mi IS NOT NULL
```

### What was the total forest area (in sq km) of the world in 1990?

```
SELECT sum(forest_area_sqkm)
FROM forestation
WHERE year = '1990' AND country_name = 'World'
```

### What was the total forest area (in sq km) of the world in 2016?

```
SELECT sum(forest_area_sqkm)
FROM forestation
WHERE year = '2016' AND country_name = 'World'
```

### What was the change (in sq km) in the forest area of the world from 1990 to 2016?

```
SELECT y1990.forest_area_sqkm - y2016.forest_area_sqkm AS Difference
FROM (SELECT * FROM forestation WHERE year = '1990') AS y1990
JOIN (SELECT * FROM forestation WHERE year = '2016') AS y2016
USING (country_code)
WHERE y1990.country_name = 'World' OR y2016.country_name = 'World'
```

### What was the percent change in forest area of the world between 1990 and 2016?

```
SELECT ((y1990.forest_area_sqkm - y2016.forest_area_sqkm)/y1990.forest_area_sqkm)*100 AS Difference_percentage
FROM (SELECT * FROM forestation WHERE year = '1990') AS y1990
JOIN (SELECT * FROM forestation WHERE year = '2016') AS y2016
USING (country_code)
WHERE y1990.country_name = 'World' OR y2016.country_name = 'World'
```

### To which country's total area in 2016 is it closest to?

```
SELECT country_name, total_area_sq_mi*2.59 AS area_same_like
FROM forestation
WHERE total_area_sq_mi*2.59 < 1324449 AND year = '2016'
ORDER BY 2 DESC
```

### What was the percent forest of the entire world in 2016?

```
SELECT ROUND(((SUM(forest_area_sqkm)/(SUM(total_area_sq_mi)*2.59)*100) :: NUMERIC), 2)
AS total_area_forest, year
FROM forestation
WHERE year = '2016' AND region = 'World'
GROUP BY 2
```

### Which region had the HIGHEST percent forest in 2016, and which had the lowest?

```
SELECT ROUND(((SUM(forest_area_sqkm)/(SUM(total_area_sq_mi)*2.59)*100) :: NUMERIC), 2) AS total_area_forest, year, region
FROM forestation
WHERE year = '2016'
GROUP BY 2, 3
ORDER BY 1 DESC /*lowest = without DESC*/
```

### What was the percent forest of the entire world in 1990?

```
SELECT ROUND(((SUM(forest_area_sqkm)/(SUM(total_area_sq_mi)*2.59)*100) :: NUMERIC), 2) AS total_area_forest, year
FROM forestation
WHERE year = '1990' AND region = 'World'
GROUP BY 2
```

### Which region had the highest percent forest in 1990, and which had the lowest?

```
SELECT ROUND(((SUM(forest_area_sqkm)/(SUM(total_area_sq_mi)*2.59)*100) :: NUMERIC), 2) AS total_area_forest, year, region
FROM forestation
WHERE year = '1990'
GROUP BY 2, 3
ORDER BY 1 DESC /*lowest = without DESC*/
```

### Based on the table you created, which regions of the world decreased in forest area from 1990 to 2016?

```
SELECT y1990.f1990 AS per_1990, y2016.f2016 AS per_2016, y1990.region
FROM (
    SELECT region, ROUND(((SUM(forest_area_sqkm)/(SUM(total_area_sq_mi)*2.59)*100) :: NUMERIC), 2) AS f1990
    FROM forestation
    WHERE year = '1990'
    GROUP BY region
) AS y1990
JOIN (
    SELECT region, ROUND(((SUM(forest_area_sqkm)/(SUM(total_area_sq_mi)*2.59)*100) :: NUMERIC), 2) AS f2016
    FROM forestation
    WHERE year = '2016'
    GROUP BY region
) AS y2016
USING (region)
WHERE y1990.f1990 > y2016.f2016
ORDER BY 1 DESC
```

### Which 5 countries saw the largest amount decrease in forest area from 1990 to 2016?

```
SELECT y1990.forest_area_sqkm - y2016.forest_area_sqkm AS Difference, y1990.country_name, y1990.region
FROM (SELECT * FROM forestation WHERE year = '1990') AS y1990
JOIN (SELECT * FROM forestation WHERE year = '2016') AS y2016
USING (country_code)
ORDER BY 1 DESC
LIMIT 6
```

**Which 5 countries saw the largest percent decrease in forest area from 1990 to 2016?**

```
SELECT ROUND((((y1990.forest_area_sqkm - y2016.forest_area_sqkm) / y1990.forest_area_sqkm )*100):: numeric), 2)
AS Difference_percentage, y1990.country_name, y1990.region
FROM (SELECT * FROM forestation WHERE year = '1990') AS y1990
JOIN (SELECT * FROM forestation WHERE year = '2016') AS y2016
USING (country_code)
ORDER BY 1 DESC
LIMIT 5
```

**If countries were grouped by percent forestation in quartiles, which group had the most countries in it in 2016?**

```
SELECT Q2016.quartiles, COUNT(Q2016.quartiles) AS Count_Country
FROM (
    SELECT country_name,
        CASE
        WHEN percent_of_land_is_forest >= 0 AND percent_of_land_is_forest < 25 THEN '1'
        WHEN percent_of_land_is_forest >= 25 AND percent_of_land_is_forest < 50 THEN '2'
        WHEN percent_of_land_is_forest >= 50 AND percent_of_land_is_forest < 75 THEN '3'
        WHEN percent_of_land_is_forest >= 75 AND percent_of_land_is_forest < 100 THEN '4'
        END AS quartiles
    FROM forestation
    WHERE year = '2016'
) AS Q2016
GROUP BY quartiles
ORDER BY Q2016.quartiles
```

**List all of the countries that were in the 4th quartile (percent forest > 75%) in 2016.**

```
SELECT country_name, region, ROUND((percent_of_land_is_forest) :: NUMERIC,2) AS Percent
FROM forestation
WHERE year = '2016' AND percent_of_land_is_forest > 75
ORDER BY 3 DESC
```

**How many countries had a percent forestation higher than the United States in 2016?**

```
SELECT COUNT(*) AS count_country
FROM forestation
WHERE year = '2016' AND percent_of_land_is_forest > (
    SELECT percent_of_land_is_forest
    FROM forestation
    WHERE country_name = 'UnitedStates' AND year = '2016'
)
```