

# Ranking World Governments by Stage of Development and Impact on Nature

By The Governance Progress Imperative

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## Background:

### Problem Statement:

With the global population and resource consumption increasing, there is more demand on our natural resources than ever before. This October's report from the Inter-Governmental Panel on Climate Change highlights the issue, stating that 70% of emissions come from just 20% of citizens, most of which are from developed countries. For example, when comparing electrical consumption, a country that provides a large number of citizens with electricity will be more developed. However, that country must then produce more electricity by either burning fossil fuels or using green energy. How does one compare the global effect of a country that by providing electricity to its citizens increases the social development, but also by doing so increases the harm done to the environment? The problem, especially with unequal consumption of these resources, is that it may lead to improperly praising a country's progress without regard to how it treats the environment. Can there be a systematic way to identify which countries are both socially and environmentally progressive?

### Justification:

By creating 3 separate indices (equality, consumption, quality of life) and a final map, we will be able to compare the quality of governments by factoring this inequality of resource use into how we view the countries of the world. We will compare each country's level of development to its impact on the environment in terms of its consumption, equality, and quality of life. It is important to quantify each country's impact on the environment since each country impacts the environment in different ways. By doing so we will be able to see which country

leads in each category, what are they doing well, and how are they doing it. This will give us an opportunity to identify where other countries need to improve. We are a global community and need to remember that our neighbor's actions impact us.

## Scope:

The scope of this research project is global. Therefore, the data we obtained comes from worldwide databases, such as NATO and the World Data Bank. By using primary data from global databases, this research project incorporates a global scope. Countries from all corners of the world will be compared regardless of government type or physical size.

## Objective:

Our goal behind these maps and rankings is to create an overall data set which showcased how well each country did in that specific indicator group. In order to see each country's impact on nature, we had to create criteria and a scale on which we would rank each country on. For this project, we set our scale to range from 0-14. Each country was ranked based on the data that was either provided to us or generated ourselves.

- A score of 0 was given to countries with no data in a certain index point for instance: Bolivia received a 0 on the "Responsibilities of the Government" map.
- A score of 1 was given to a country which ranked at the bottom compared to other countries in a criteria.
- A score of 14 was given to a country which ranked at the top compared to other countries.

- Important to note that each category was approximately equal; for instance, a country can have a low energy consumption but still can score low because there are other countries with lower energy consumption.

After completing the data collection process, each ranking was then multiplied by its level of importance. For instance, the ranking of “Life Expectancy” was multiplied by 1.5 for each country because of its overall importance, whereas “Population Density” was only multiplied by 1. We planned on observing this following data on three different scales.

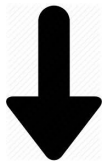
- First, a map and chart for each individual dataset were generated and ranking accordingly.
- Second, an indicator map with all the individual datasets and their rankings compiled together to get a mean value.
- Third, a final map of all the 3 indicator maps and datasets put together to generate an overall value.

Our focus behind this was to see which country has developed the most while being having the least amount of impact on nature.

Methodology:

# 1. Input Primary Data Collected into GIS Maps

- Convert Excel Data to GIS
- Quality of Life**
    - Life Expectancy
    - Education
    - Infant Mortality
    - Human Development Index
    - Population Density
  - Equality**
    - GINI
    - % of Women in Government
    - Portion of Women in Workforce
    - Income held by top 10%
    - Female to Male Literacy
  - Consumption**
    - CO2 per Capita
    - Meat per Capita
    - Plastic Waste
    - Renewable Energy
    - Total Energy



# 2. Create Secondary Data Using the Data from Each Group

Using Spatial Analyst Function In ArcGIS (raster with weighted values)

## Quality of Life

Life Expectancy	1.5
Education	1.4
Infant Mortality	1.3
HDI	1.1
Pop Density	1

## Equality

GINI	1.5
% of Women in Government	1.4
Portion of Women in Workforce	1.3
Income held by top 10%	1.3
Female to Male Literacy	1

## Consumption

CO2 per capita	1.5
Meat per capita	1.4
Plastic Waste	1.3
Renewable Energy	1.3
Total Energy	1.5
Water	1



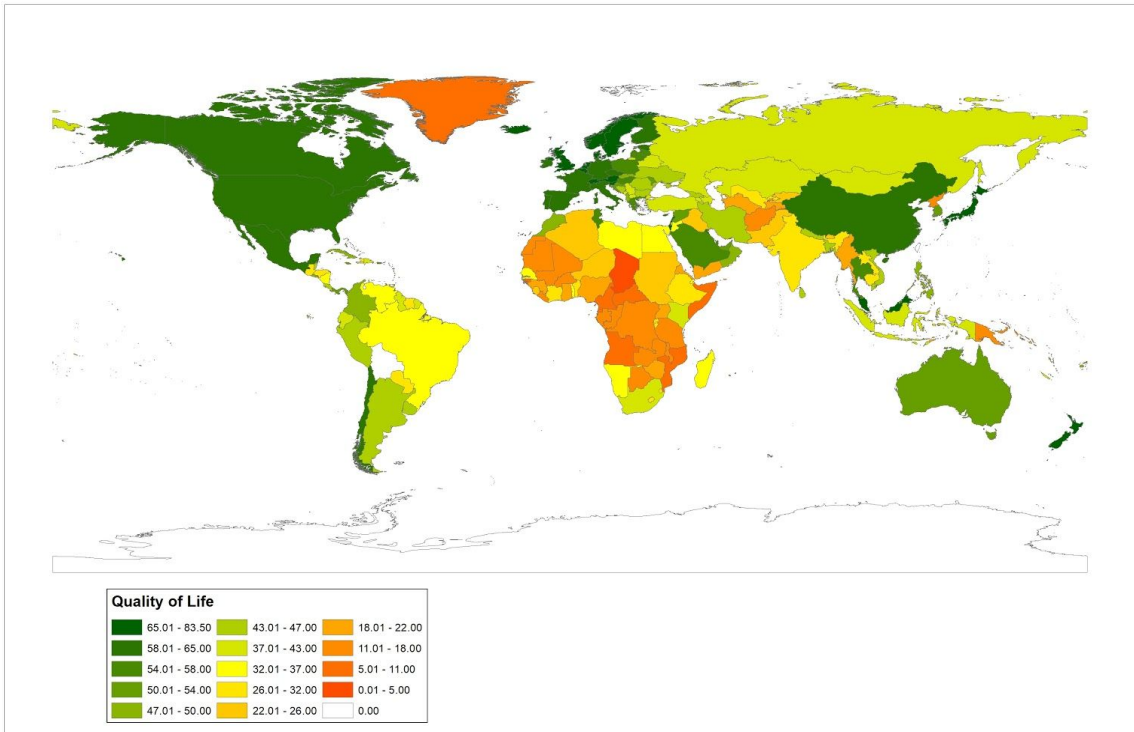
# 3. Create Final World Government Responsibility Map

Using Spatial Analyst Function In ArcGIS (Adding the Values from Group Maps)

# Results

The results of our research shows the following maps:

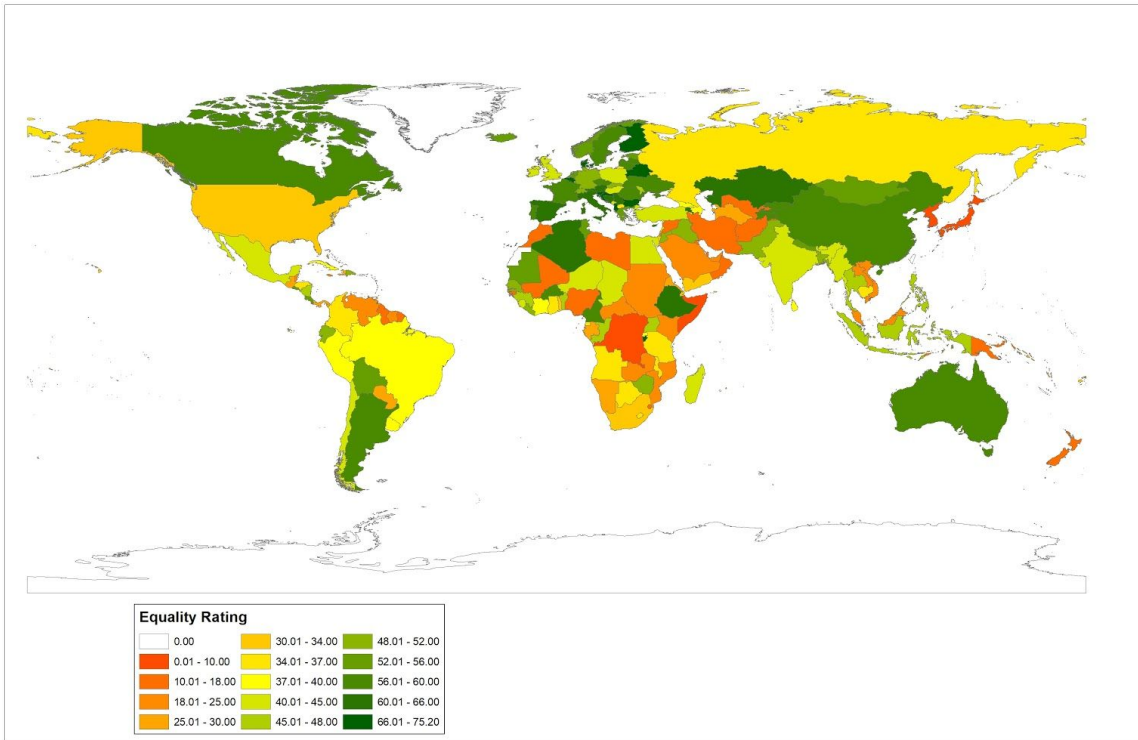
Quality of Life:



Top 10 Countries in terms of Quality of Life:

1	Singapore	83.5
2	Switzerland	72.80000305
3	Denmark	72.69999695
4	United Kingdom	70.59999847
5	New Zealand	70
6	Netherlands	69.80000305
7	Israel	69.69999695
8	Iceland	69.59999847
9	Norway	69.59999847
10	Belgium	69.30000305

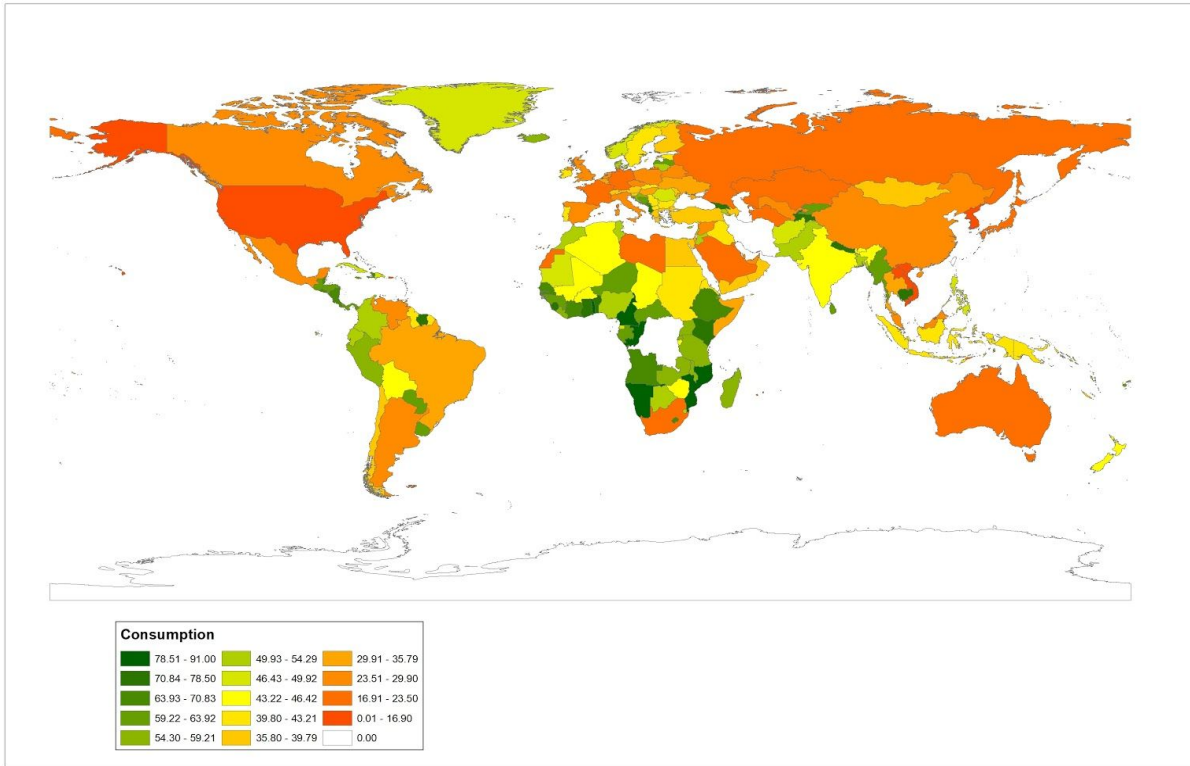
## Equality Rating:



## Top 10 Countries Equality Rating

1	Belarus	75.19999695
2	Finland	71.69999695
3	Croatia	70.80000305
4	Denmark	70.30000305
5	Albania	69.80000305
6	Belgium	69.09999847
7	Bulgaria	67.90000153
8	Slovenia	67.59999847
9	Burundi	67.40000153
10	Ethiopia	65.59999847

Consumption:

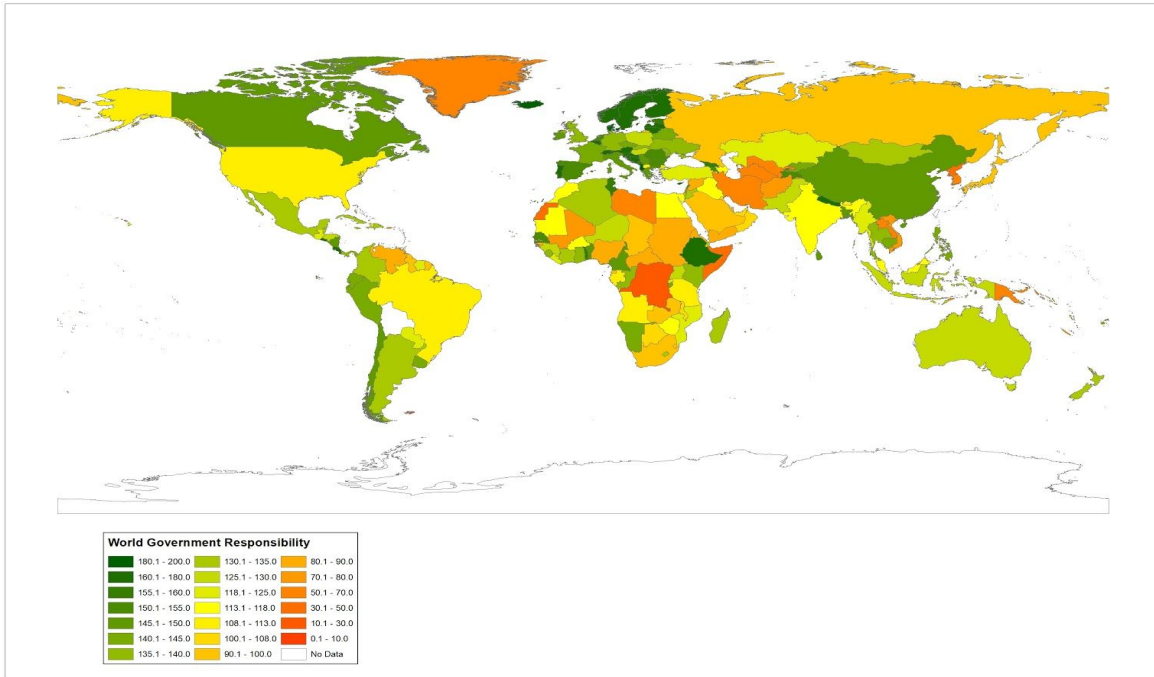


Top Consumers/ Polluters in the World:

1	American Samoa	1.299999952
2	Korea	1.5
3	Vietnam	4.5
4	Korea	7.5
5	Brunei Darussalam	10.5
6	United States	12.10000038
7	Reunion	13.5
8	Netherlands Antilles	13.5
9	Puerto Rico	14.10000038
10	China	15



Final Map:



### Top 20 Countries for World Government Responsibility

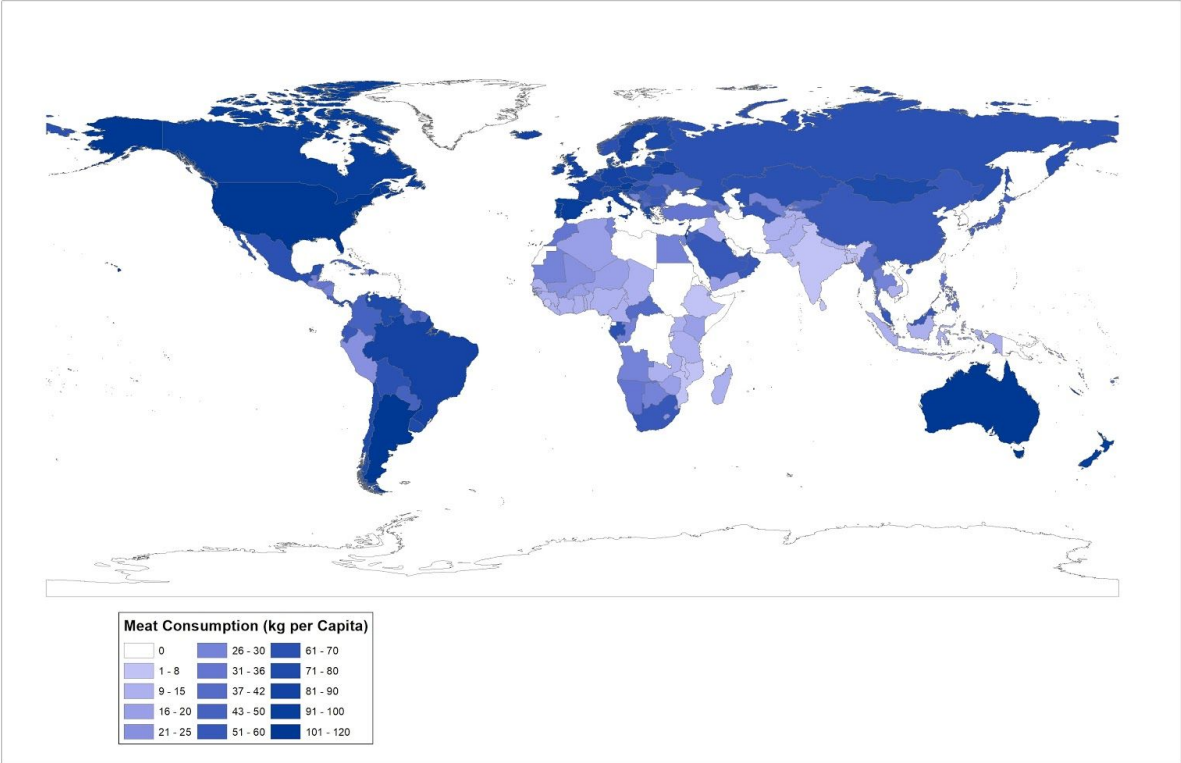
1	Denmark	196
2	Albania	193.3999939
3	Iceland	184.8000031
4	Cyprus	182.3999939
5	Croatia	178
6	Norway	175.3000031
7	Nepal	173.1999969
8	Belgium	172.8999939
9	Slovenia	172.3999939
10	Finland	171.3999939
11	Latvia	170.8999939
12	El Salvador	170.3000031
13	Austria	168.1000061
14	Ethiopia	167.8000031
15	Bosnia and Herzegovina	167.3999939
16	Lithuania	166.8999939
17	Sweden	166.8000031
18	Costa Rica	165.1000061
19	Mauritius	164.6000061
20	Switzerland	161.6000061

## Conclusion:

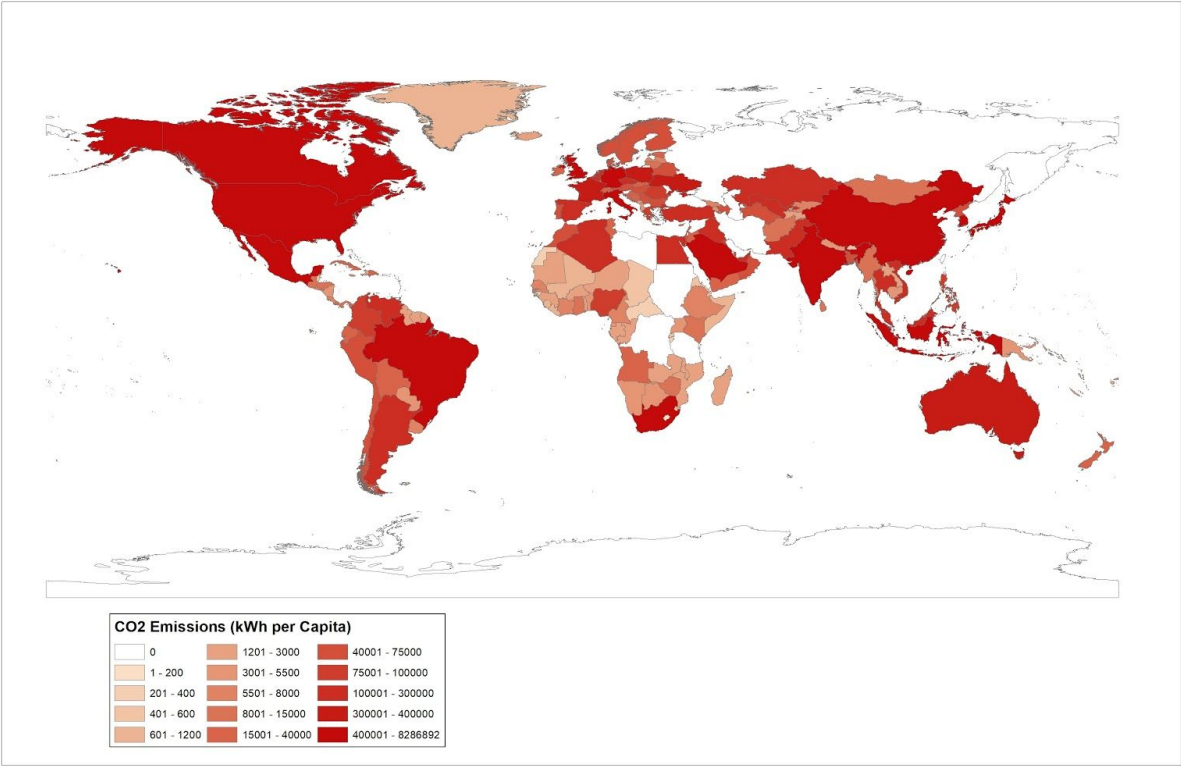
The hardest part of tackling the project was determining the 16 indicators which fit our project scope, followed by determining the weighted index points which would weigh those indicators. After figuring out what our 3 group categories were (Quality of life, Consumption, and Equality), we set out to organize our 16 indicators which would fit within these 3 group categories. Our goal was to measure each country's overall impact on nature by looking at different things. We made sure to keep our overall focus broad instead of focusing on the negative environmental impacts of each country. Therefore, we incorporated index points which focused on how progressive a country is by giving each country based on its overall ranking from data we found. We looked at the following data points to determine how progressive a country was; GINI, the percentage of Women in Government positions, the percentage of women in the workforce, female to male literacy rate, and income held by p10%.

The following connection and interpretation can be made from the final data collection. We see that countries with low "Consumption" ranking are typically the ones which have a higher "Quality of Life" ranking along with an "Equality" ranking as well. These countries have been progressive enough to know what action they must take in order to make sure that their impact on nature was very minimal. We should take note of and try to emulate countries that rank in the top 20 in our final map. By doing this we hope to reduce the environmental impact that each country does to our global community.

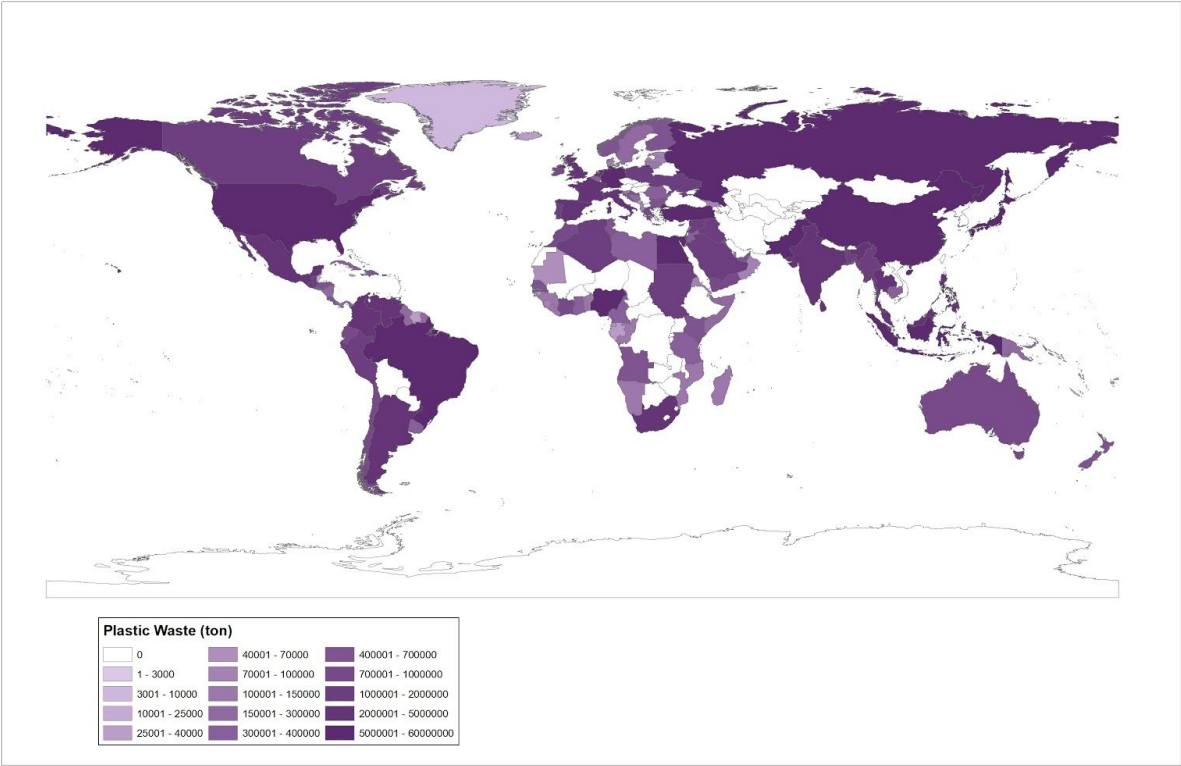
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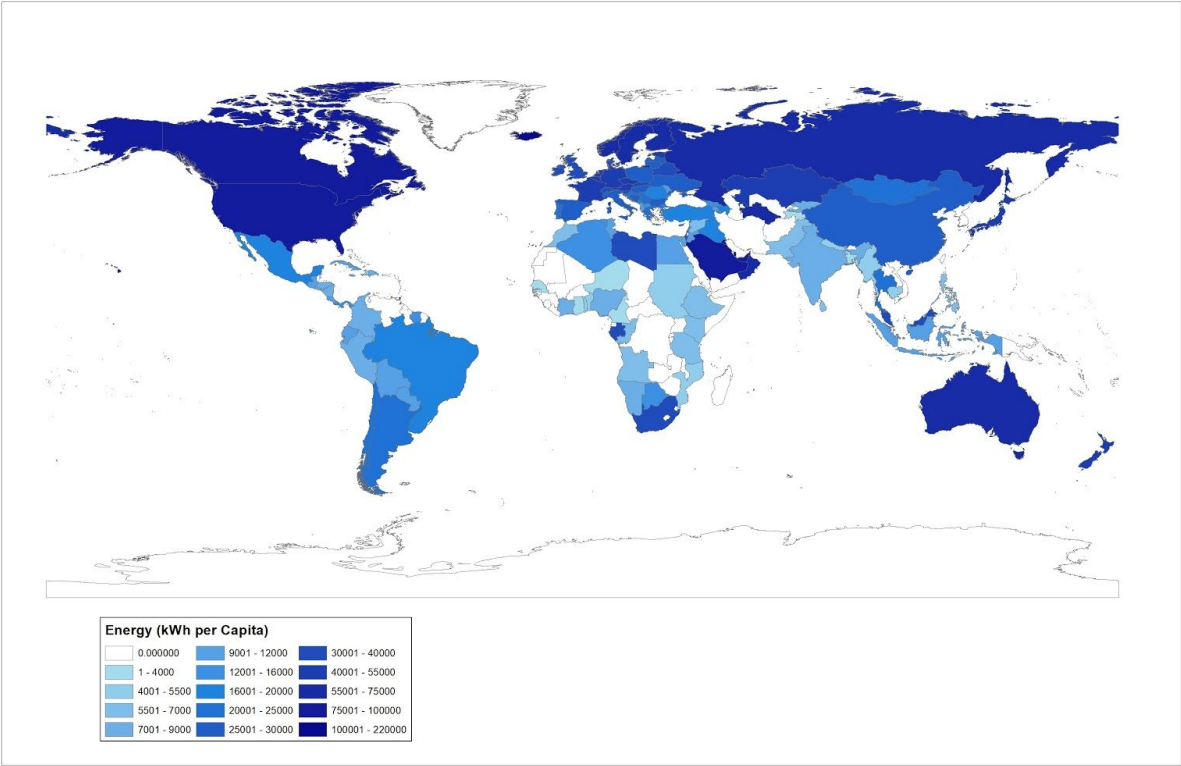
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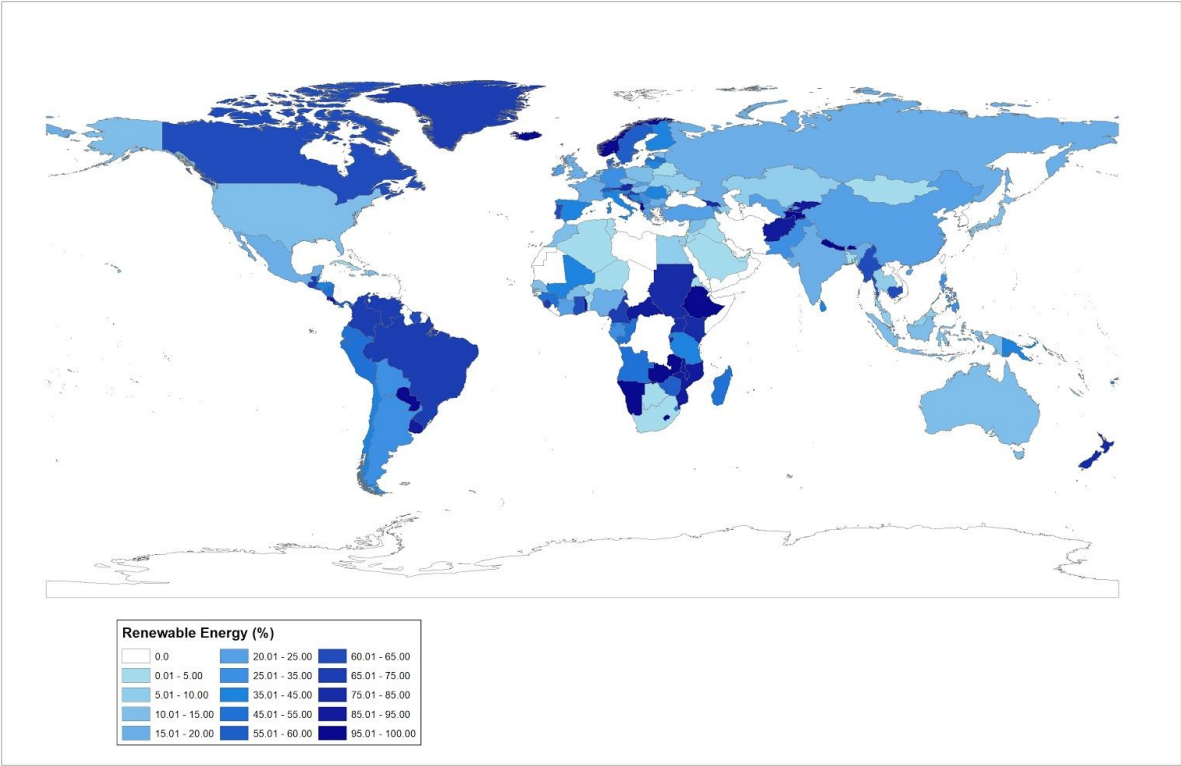
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