

# **Visualizations (matplotlib, plotly, folium & seaborn) & data analysis**

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# **DATA ABOUT SLOVAKIA**

ENERGY PRODUCTIONS, DISTRIBUTION, TYPE OF  
ENERGY BEING USED AND OVER TIME DATA  
SHOWING ALL THE NESESERY INDICATORS IN  
ORDER TO SEE HOW SLOVAKIA IS MANAGING THEIR  
RESOURCES AND EVERGY OVER TIME.

# Evolution of Energy Sources in Slovakia (2015-2023)

## Data Source:

Slovak energy production data from 2015 to 2023  
Multiple energy sources tracked

## Visualization Technique:

Line plot with multiple lines  
X-axis: Years  
Y-axis: Share of electricity generation (%)  
Different colored lines for each energy source

## Library Used:

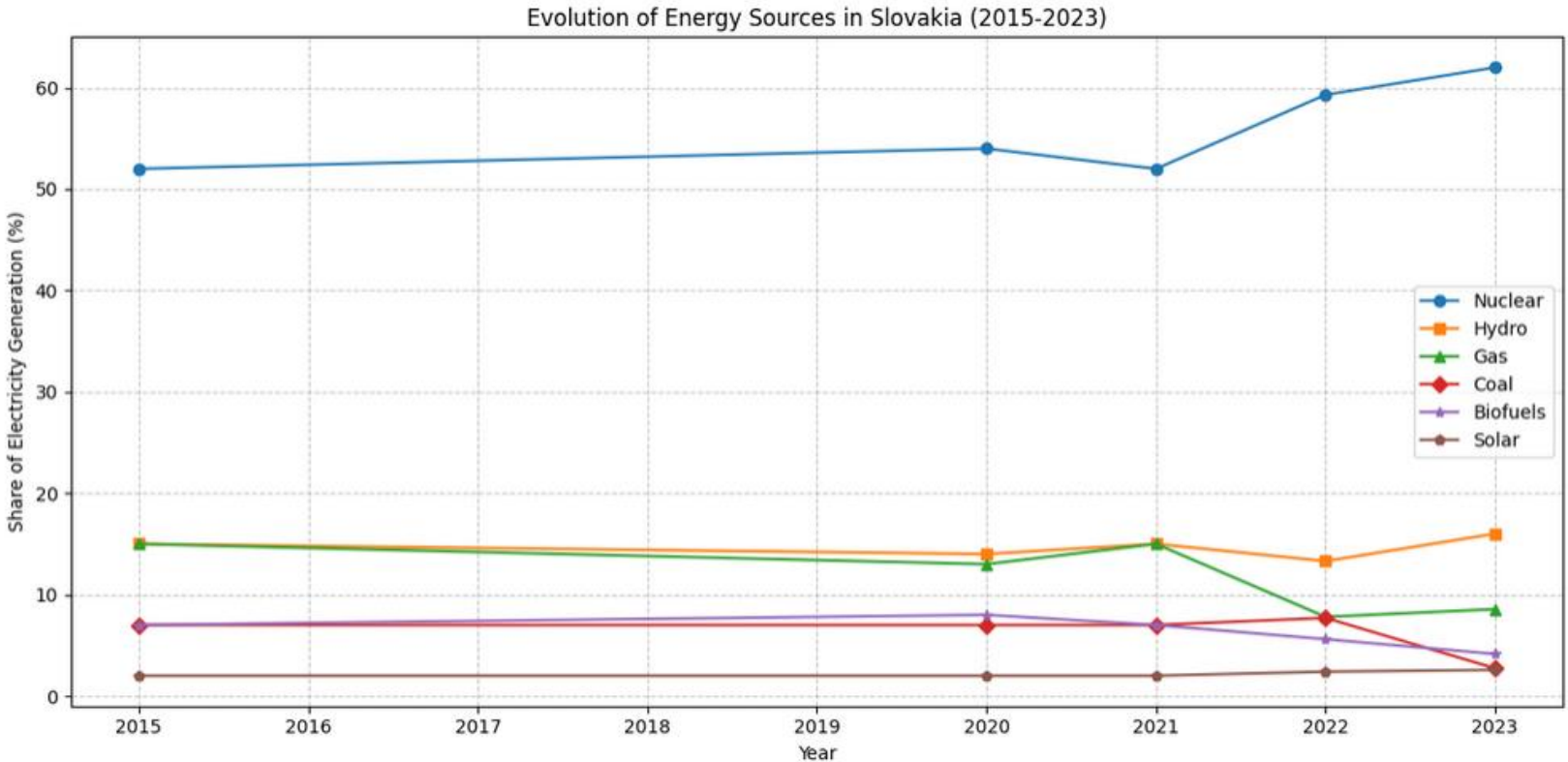
Matplotlib

## Key Insights:

Temporal changes in energy source composition  
Trends in nuclear, hydro, gas, coal, biofuels, and solar energy  
Shows gradual shifts in energy production strateg

## Interpretation:

Tracks the evolution of Slovakia's energy mix  
Identifies trends and potential policy shifts  
Demonstrates the dynamic nature of energy production



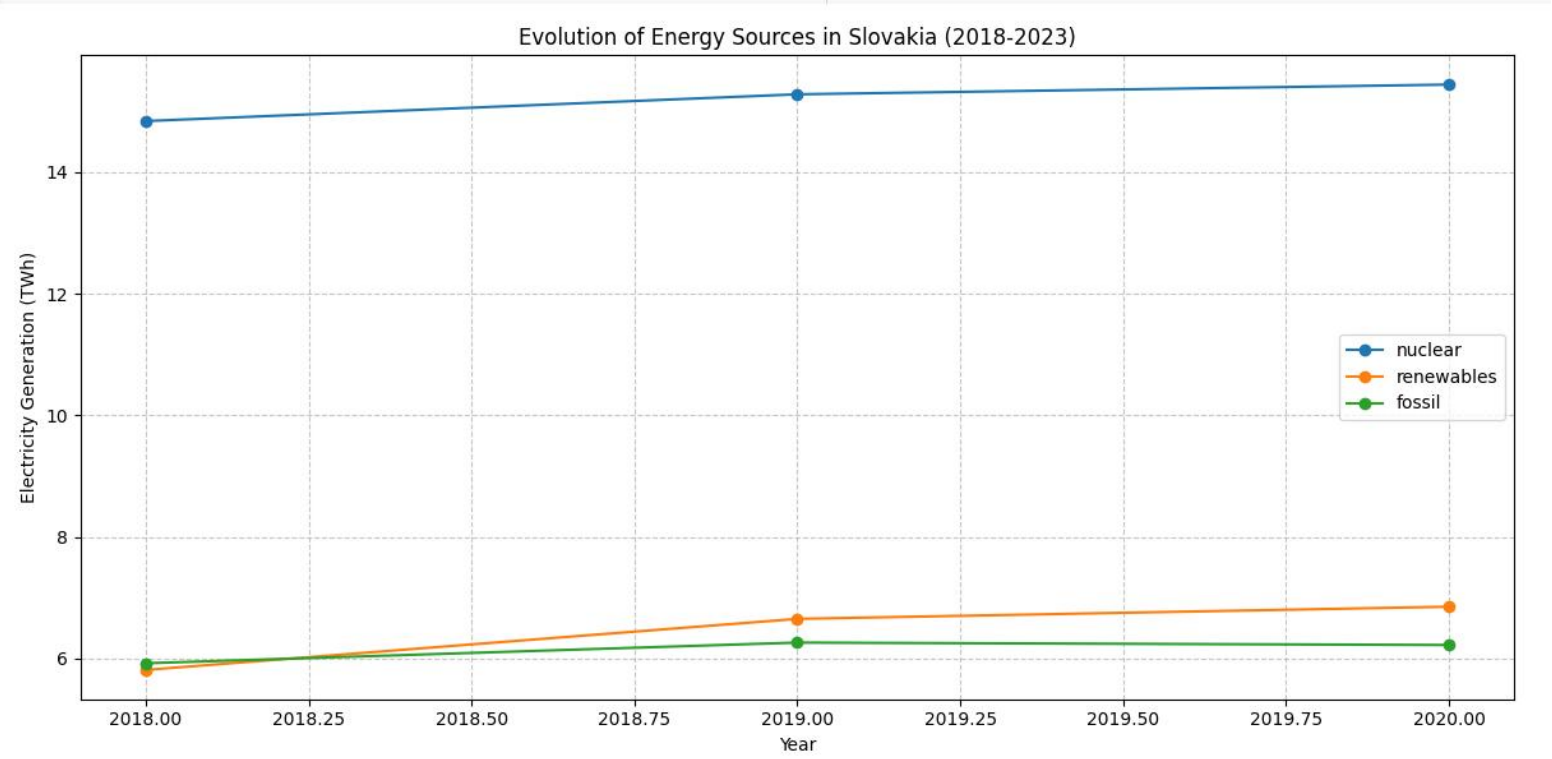
# Electricity Sources in Slovakia (TWh) - Line Chart

**Data Source:**  
Slovak electricity generation data  
Multiple energy sources tracked  
Time series from 2018 to 2023

**Visualization Technique:**  
Multiple line plot  
X-axis: Years  
Y-axis: Electricity Generation (TWh)  
Separate lines for renewables, nuclear, and fossil fuels  
**Library Used:**  
Plotly

**Key Insights:**  
Comparative analysis of different energy sources  
Detailed tracking of electricity generation volumes  
Shows interplay between renewable, nuclear, and fossil fuel sources

**Interpretation:**  
Reveals the dynamic nature of Slovakia's electricity generation  
Highlights the relative contribution of different energy sources  
Demonstrates potential shifts in energy production strategy



# Energy Production in Slovakia

This bar graph depicts the trend of energy production in Slovakia from 2000 to 2020. The y-axis represents the "Energy Production in TWh (Terawatt-hours)," indicating the total amount of energy produced. The x-axis shows the years from 2000 to 2020.

## Key Observations:

Overall, the energy production in Slovakia appears to have remained relatively stable over the period 2000-2020. There is a slight upward trend from 2000 to around 2005, followed by a period of relatively consistent production until 2015. A small dip in production is observed around 2015, after which it remains relatively stable again until 2020.



# Title: Electricity Generation Trends in Slovakia (2018-2022)

## Data Source:

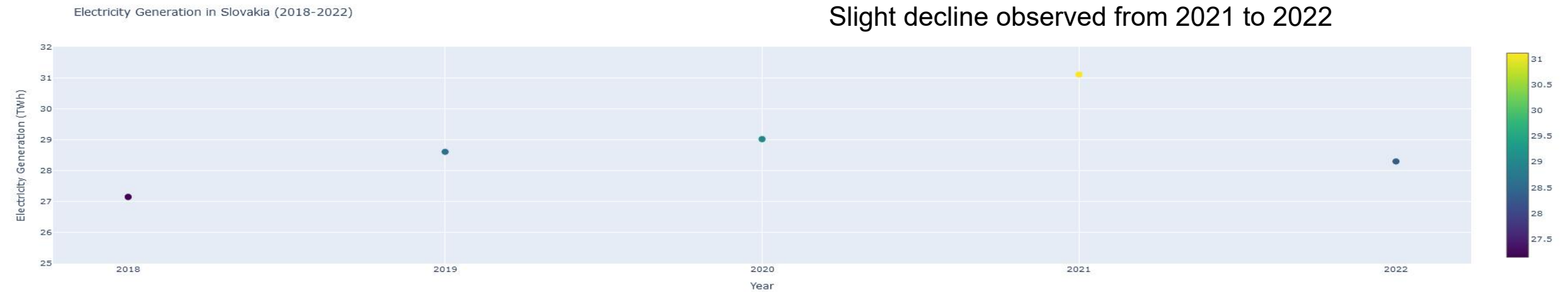
Slovak energy production data from 2018 to 2022  
Time series data showing annual electricity generation

## Visualization Technique:

Scatter plot with connected points  
Y-axis: Electricity Generation (TWh)  
X-axis: Year (2018-2022)  
Color-coded points indicating different periods

## Key Insights:

Variable generation pattern over the five-year period  
Notable peak in 2021 reaching approximately 31 TWh  
General fluctuation between 27-31 TWh throughout the period  
Slight decline observed from 2021 to 2022



## Interpretation:

The data shows year-to-year variations in Slovakia's total electricity generation  
The highest production point was recorded in 2021  
There appears to be a moderate degree of stability in generation capacity, with variations likely reflecting demand changes and maintenance schedules  
The overall trend suggests a relatively stable electricity generation system with some annual fluctuations

# Title: Animated Energy Production in Slovakia Over Time (1999-2020)

## Data Source:

Slovak energy production data focusing on a specific point in 2000  
Time series data with animation controls  
Single data point shown at approximately 4.6 TWh

## Visualization Technique:

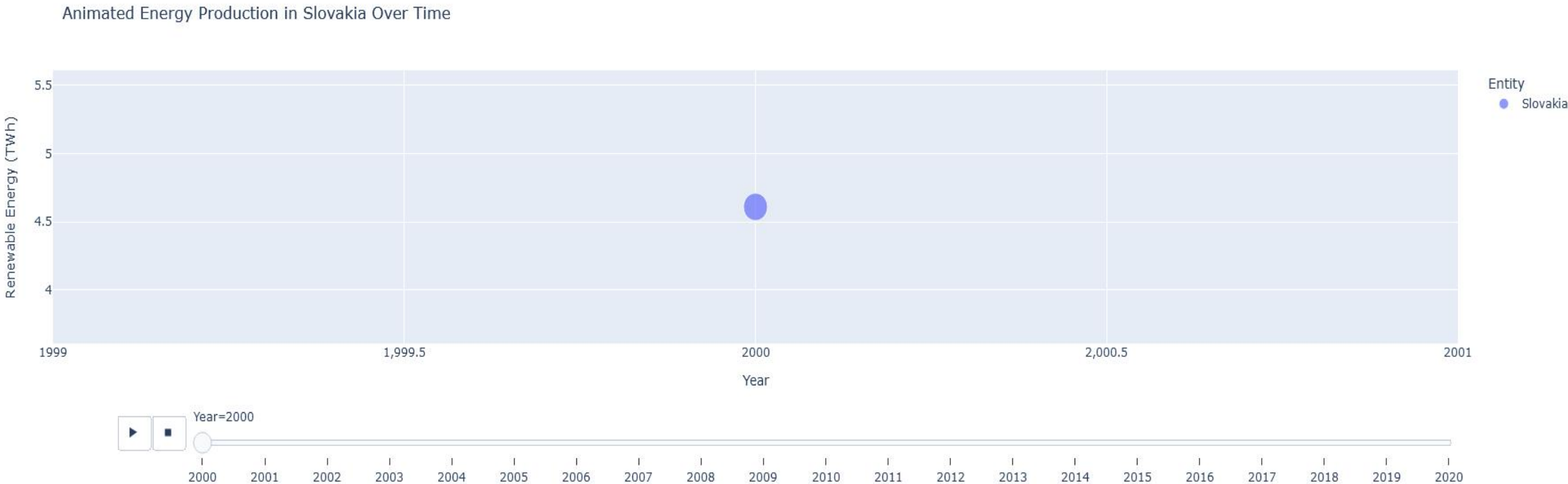
Animated scatter plot  
Y-axis: Renewable Energy (TWh)  
X-axis: Year (1999-2001 visible window, but slider extends to 2020)  
Interactive timeline slider for animation control  
Blue circular data point representing Slovakia

## Key Insights:

Single data point visible showing approximately 4.6 TWh production in 2000  
Animation controls allow viewing data across different years  
Timeline slider spans from 2000 to 2020  
Clear focus on Slovakia as the sole entity being measured

## Interpretation:

The visualization is designed to show energy production changes over time through animation  
The visible window shows a focused period around the year 2000  
The animation controls suggest this is part of a larger temporal dataset  
The interface includes play/pause functionality for viewing the data's evolution



# Title: Electricity Generation and GDP per Capita In Slovakia (2000-2020)

## Data Source:

Slovak electricity generation and GDP data spanning 2000-2020

## Visualization Technique:

Bar chart for electricity generation (blue bars)

Y-axis: Electricity from Renewables (TWh)

X-axis: Year (2000-2020)

## Key Insights:

Overall upward trend in renewable electricity generation from 2000 to 2020

Starting point around 4.5 TWh in 2000

Notable dip around 2003-2004 to approximately 3.5 TWh

Peak generation reaching nearly 7 TWh by 2020

Significant growth period between 2010-2020

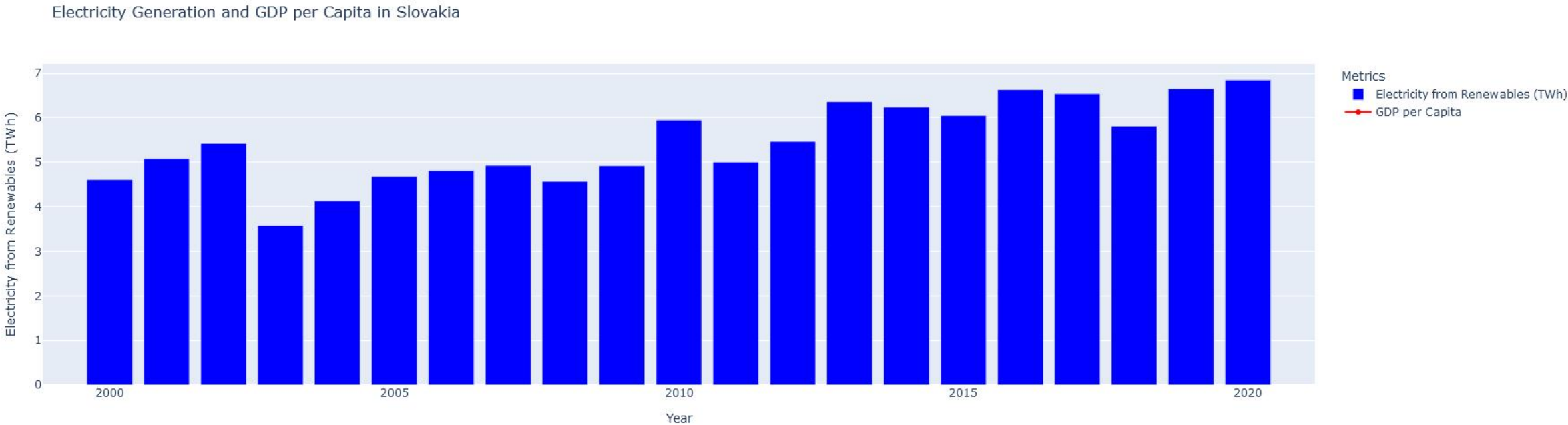
## Interpretation:

The data shows Slovakia's increasing commitment to renewable energy over two decades

The growth is not linear but shows a clear upward trajectory

The most substantial increases occurred in the latter part of the period

Despite some year-to-year variations, the overall trend suggests successful expansion of renewable energy capacity





# Title: Ridgeline Plot of Electricity from Renewables in Slovakia (2000-2020)

## Data Source:

Slovak renewable electricity generation data  
Annual measurements of renewable energy production

## Visualization Technique:

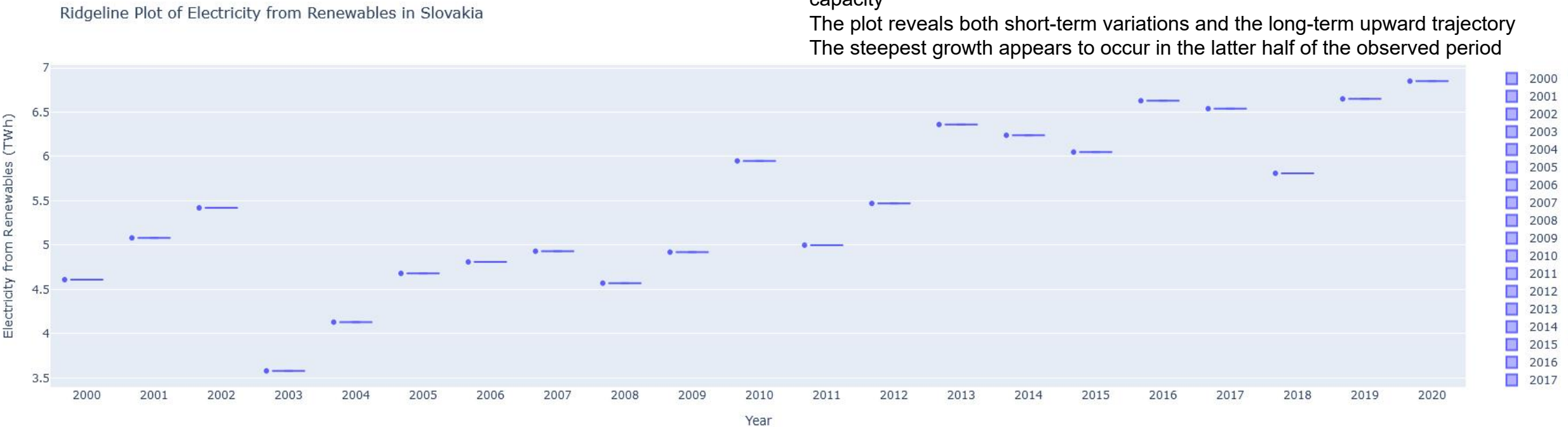
Ridgeline plot (also known as joy plot)  
Y-axis: Electricity from Renewables (TWh)  
X-axis: Year (2000-2020)  
Each line represents a distinct year's measurement  
Dots indicating specific data points with horizontal lines showing range/uncertainty

## Key Insights:

Initial production level around 4.5 TWh in 2000  
Notable dip to approximately 3.5 TWh in 2003  
Steady increase from 2003 onwards  
Significant growth between 2010-2020  
Final measurements reaching approximately 6.8 TWh by 2020  
Clear visualization of year-over-year changes  
Each measurement shown with potential range indicator (horizontal lines)

## Interpretation:

The ridgeline plot effectively shows the progression of renewable energy production  
The visualization style allows for clear observation of trends and patterns  
The horizontal lines after each point might indicate measurement uncertainty or production range  
The overall trend demonstrates Slovakia's consistent growth in renewable energy capacity  
The plot reveals both short-term variations and the long-term upward trajectory  
The steepest growth appears to occur in the latter half of the observed period



# Title: Multi-Variable Energy Analysis in Slovakia (2000-2020)

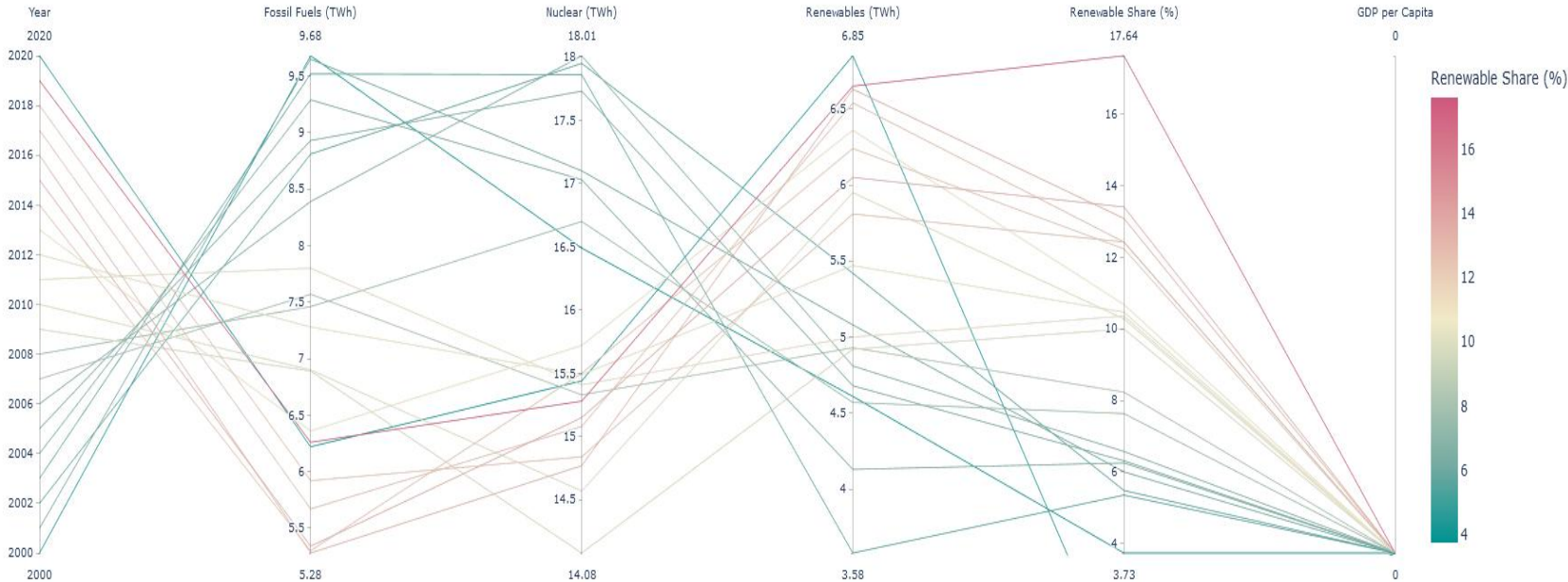
**Data Source:**  
Comprehensive Slovak energy data covering multiple metrics  
Time series data from 2000 to 2020  
Multiple energy indicators tracked simultaneously

**Visualization Technique:**  
Parallel coordinates plot  
Five main axes showing different metrics:

- Year (2000-2020)
- Fossil Fuels (TWh)
- Nuclear (TWh)
- Renewables (TWh)
- Renewable Share (%)
- GDP per Capita

**Key Insights:**  
Fossil Fuels: Values ranging from approximately 5.5 to 9.  
Nuclear: Production between 14.5 and 18 TWh  
Renewables: Varying between 3.5 and 6.5 TWh  
Renewable Share: Increasing trend from ~4% to ~17%  
GDP per Capita: Shows overall growth across the period

**Interpretation:**  
The parallel coordinates visualization shows the relationships between different energy sources and economic indicators  
Color gradient indicates renewable share percentage (from blue to pink)  
Lines crossing between axes indicate changes in relationships over time  
Clear trend of increasing renewable share while maintaining nuclear as a significant source  
Fossil fuel usage shows variability throughout the period  
The visualization effectively displays the complexity of Slovakia's energy transition and its relationship with economic growth



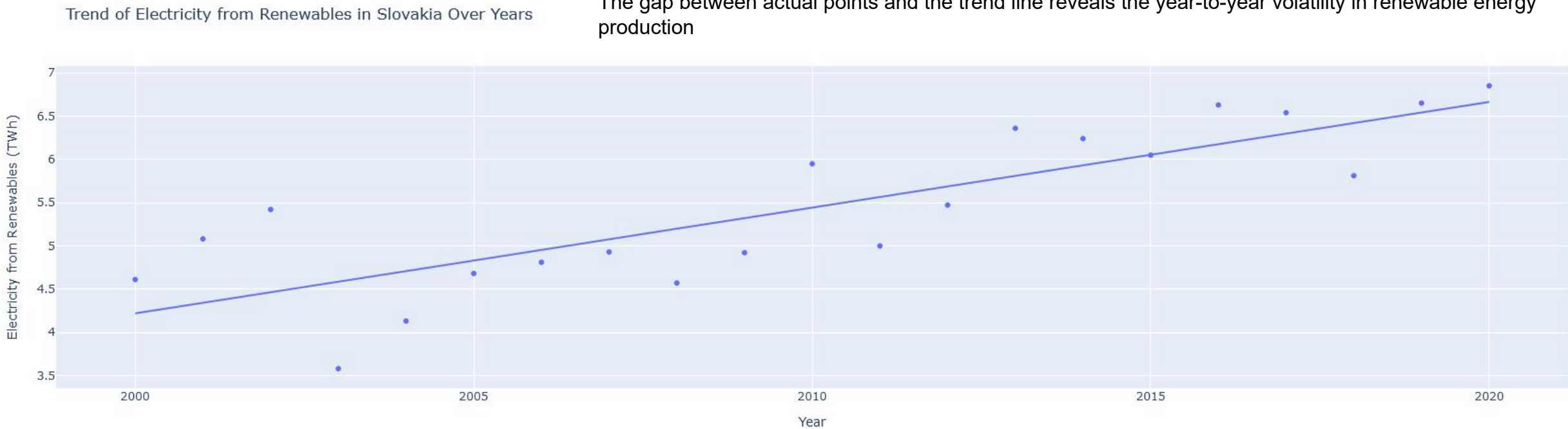
# Title: Trend of Electricity from Renewables in Slovakia Over Years (2000-2020)

**Data Source:**  
Slovak renewable electricity generation data  
Long-term trend analysis spanning 2000-2020  
Annual measurements with trend line

**Visualization Technique:**  
Scatter plot with trend line  
Y-axis: Electricity from Renewables (TWh)  
X-axis: Year (2000-2020)  
Blue dots representing actual data points  
Solid blue trend line showing overall direction

**Key Insights:**  
Starting point around 4.2 TWh in 2000  
Ending point approximately 6.7 TWh in 2020  
Clear upward trend over the 20-year period  
Notable variability in actual measurements around the trend line  
Lowest point around 3.5 TWh (approximately 2003-2004)  
Several peaks above 6 TWh in later years  
Average growth rate shown by trend line slope is positive and consistent

**Interpretation:**  
The visualization demonstrates a clear positive trend in renewable energy production  
While individual years show variation, the overall direction is consistently upward  
The trend line suggests steady, sustainable growth rather than sudden jumps  
Data points show more variation in later years, possibly indicating greater flexibility in renewable generation  
The gap between actual points and the trend line reveals the year-to-year volatility in renewable energy production



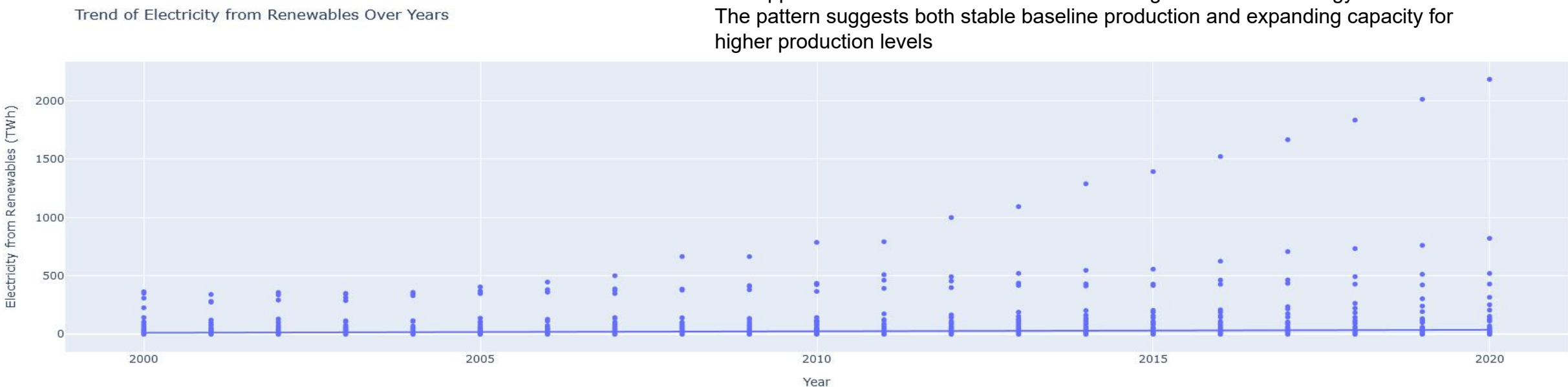
# Title: Trend of Electricity from Renewables Over Years (2000-2020)

**Data Source:**  
Renewable electricity generation data  
Multiple data points per year from 2000-2020  
Vertical distribution showing range of values within each year

**Visualization Technique:**  
Scatter plot with vertical distribution of points  
Y-axis: Electricity from Renewables (TWh), ranging from 0 to 2000  
X-axis: Year (2000-2020)  
Blue dots showing individual measurements  
Clear grid lines for reference

**Key Insights:**  
Two distinct patterns visible:  
Lower cluster: Relatively stable measurements around 500 TWh or below  
Upper cluster: Emerging trend starting around 2010, reaching up to 2000 TWh by 2020  
Increasing spread of data points over time  
More frequent high-value measurements in later years  
Consistent baseline measurements throughout the period  
Most dramatic increase in maximum values occurs after 2015

**Interpretation:**  
The visualization shows a diverging pattern in renewable energy production  
While some base level production remains consistent, there's significant growth in peak production  
The spread of points suggests increasing variability in production capacity  
The upper trend line indicates substantial scaling of renewable energy infrastructure  
The pattern suggests both stable baseline production and expanding capacity for higher production levels



# Title: Trend of Electricity from Renewables Over Years (2000-2020)

## Data Source:

Renewable electricity generation data  
Multiple data points per year from 2000-2020  
Vertical distribution showing range of values within each year

## Visualization Technique:

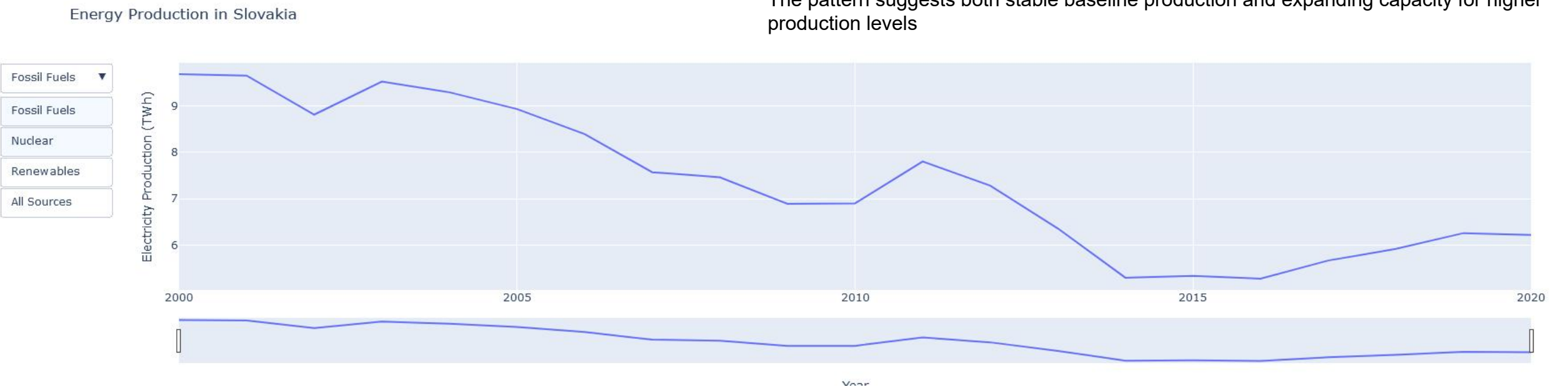
Scatter plot with vertical distribution of points  
Y-axis: Electricity from Renewables (TWh), ranging from 0 to 2000  
X-axis: Year (2000-2020)  
Blue dots showing individual measurements  
Clear grid lines for reference

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# Evolution of Energy Sources in Slovakia (2004-2016)

Slovakia's energy production landscape has undergone significant transformations over the studied period, characterized by three main sources: nuclear power, fossil fuels, and renewables. The data reveals several key patterns in the country's energy mix:

## Nuclear Power Dominance:

Nuclear energy has consistently been the largest contributor to Slovakia's electricity generation, maintaining levels around 15 TWh throughout the period. However, there has been a slight decline in nuclear production from the early 2000s to 2016, with some fluctuations in between.

## Fossil Fuels Trajectory:

Fossil fuel-based energy production has shown a gradual declining trend, starting at approximately 10 TWh in 2004 and decreasing to about 5 TWh by 2016. This decline suggests a strategic shift away from conventional fossil fuel sources.

## Renewable Energy Growth:

The most notable trend is the steady increase in renewable energy production. Starting from approximately 4 TWh in 2004, renewables have shown consistent growth, reaching around 7 TWh by 2016. This growth reflects Slovakia's commitment to sustainable energy sources.

## Key Transitions:

- A crossover point occurs around 2012-2013 where renewable energy production begins to exceed fossil fuel generation
- The gap between nuclear and other sources has narrowed slightly, though nuclear remains dominant
- The overall energy production mix shows a clear trend toward sustainability



# Evolution of Energy Sources in Slovakia (2020 Snapshot)

**Data Source:**  
Slovak electricity generation data for the year 2020  
Data measured in Terawatt-hours (TWh)

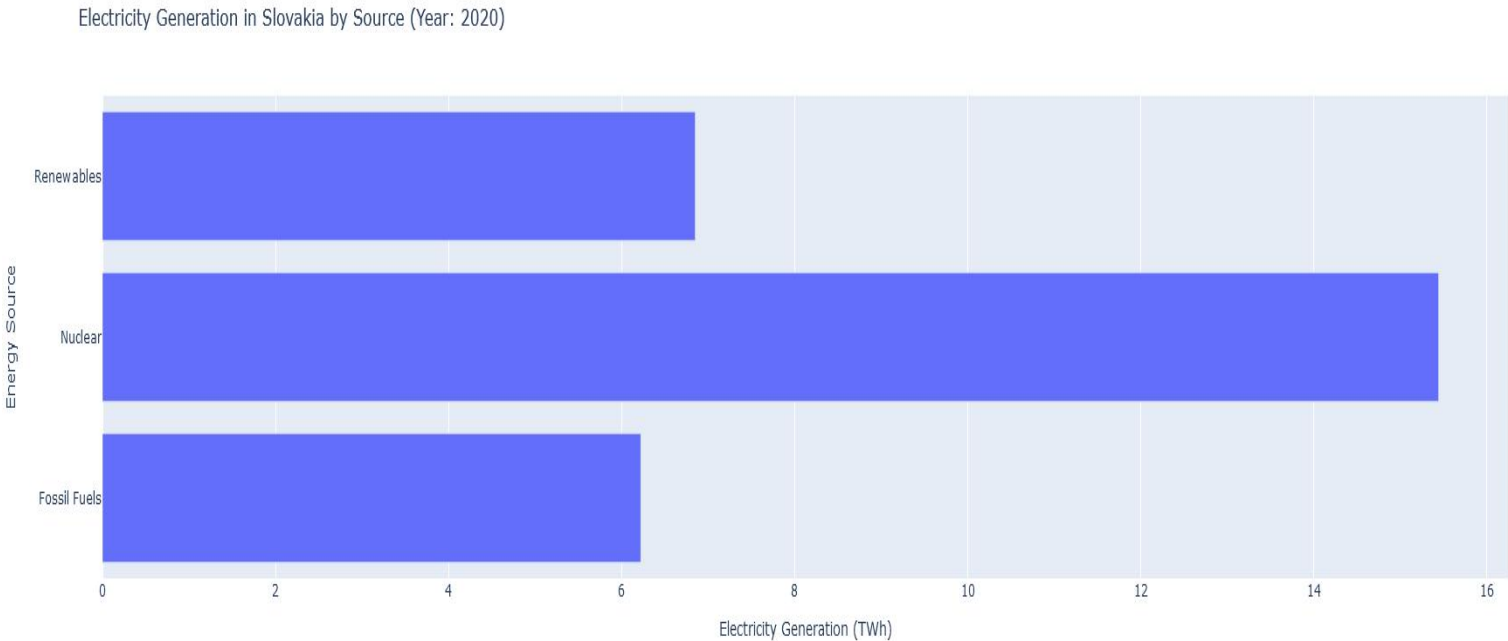
**Visualization Technique:**  
Horizontal bar chart presentation  
X-axis: Electricity Generation (TWh)  
Y-axis: Energy Sources  
Single-colored bars for clear comparison  
Scale ranging from 0 to 16 TWh

**Key Insights:**  
Nuclear Dominance:  
Nuclear power is the leading source with approximately 15 TWh of generation

**Balanced Secondary Sources:**  
Fossil Fuels and Renewables show similar generation levels  
Both sources generate approximately 6 TWh each  
Indicates a balanced approach to non-nuclear energy sources

**Generation Distribution:**  
Nuclear: ~15 TWh (approximately 55% of total)  
Fossil Fuels: ~6 TWh (approximately 22% of total)  
Renewables: ~6 TWh (approximately 22% of total)

**Interpretation:**  
Shows Slovakia's heavy reliance on nuclear power for baseload generation  
Demonstrates a relatively equal balance between fossil fuels and renewable sources  
Suggests a diversified energy strategy with nuclear as the backbone  
Indicates significant progress in renewable energy adoption, matching fossil fuel levels



# Evolution of Energy Sources in Slovakia (2000-2020)

## Data Source:

Two decades of Slovak electricity generation data (2000-2020)  
Data measured in Terawatt-hours (TWh)  
Stacked area chart showing total and relative contributions

## Visualization Technique:

Stacked area plot showing cumulative generation  
X-axis: Years (2000-2020)  
Y-axis: Electricity Generation (TWh)  
Three distinct colors representing different energy sources  
Scale ranging from 0 to 30 TWh

## Key Insights:

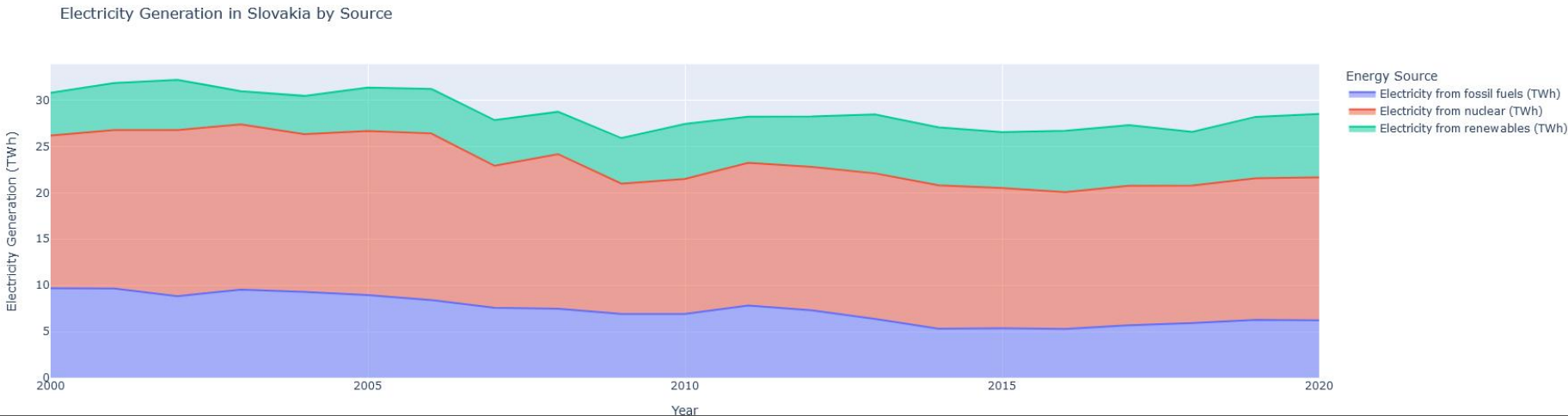
Total Generation Trends:  
Overall electricity generation has shown moderate fluctuation  
Peak production around 2005-2007  
Slight decline and stabilization in later years

## Source-Specific Patterns:

Nuclear (Pink Layer): Relatively stable contribution, forming the middle layer  
Fossil Fuels (Blue Layer): Gradual decline from 2000 to 2020  
Renewables (Green Layer): Significant presence in the mix, forming the top layer

## Structural Changes:

Total generation decreased from approximately 30 TWh to around 25 TWh  
Fossil fuels show the most noticeable decline  
Relative stability in nuclear generation  
Renewables maintained a substantial share throughout  
Interpretation:  
Demonstrates Slovakia's long-term shift away from fossil fuels  
Shows commitment to maintaining nuclear power as a stable baseload  
Indicates strong early adoption of renewables  
Suggests a successful transition toward more sustainable energy sources while maintaining generation capacity  
Reflects a deliberate energy policy focused on reducing carbon emissions while ensuring energy security





# Electricity Generation Flow in Slovakia (2020)

## Data Source:

Sankey diagram of Slovak electricity generation for 2020  
Shows flow from primary energy sources to final electricity output  
Three main energy sources represented: Total Energy, Nuclear, and renewable

## Visualization Technique:

Sankey diagram visualization  
Left side: Input energy sources (blue, green, and purple bands)  
Right side: Total electricity output (orange)  
Gray flows showing energy transformation  
Color-coded source identification

## Key Insights:

Energy Source Distribution:  
Total Energy (blue): Represents the largest input source  
Nuclear (green): Shows significant contribution to the mix  
Renewables (purple): Demonstrates notable presence in the generation portfolio  
Flow Characteristics:  
Clear visualization of energy transformation process  
Shows proportion of each source's contribution to final output  
Indicates efficiency of conversion from source to electricity  
**System Structure:**  
Single-direction flow from left (sources) to right (output)  
Three distinct input streams merging into unified output  
Proportional representation of energy contributions

## Interpretation:

Demonstrates the integrated nature of Slovakia's electricity generation system  
Shows how multiple sources combine to meet total electricity demand  
Highlights the relative importance of each energy source  
Provides clear visualization of energy transformation process  
Indicates a well-diversified energy generation portfolio

Electricity Generation Flow in Slovakia (Year: 2020)



# Renewable Energy Share in Slovakia (2000-2020)

## Data Source:

Time series data tracking renewable energy share in Slovakia  
Period covered: 2000 to 2020  
Measurements in percentage (%) of total energy mix  
Annual data points shown as short horizontal lines

## Visualization Technique:

Line plot showing renewable energy share progression  
X-axis: Years (2000-2020)  
Y-axis: Renewable Energy Share (%)  
Scale ranging from 0% to 18%  
Blue horizontal markers indicating yearly values

## Key Insights:

Growth Trajectory:  
Starting point: Approximately 4% in 2000  
Ending point: Around 17% by 2020  
Overall upward trend across two decades

## Growth Patterns:

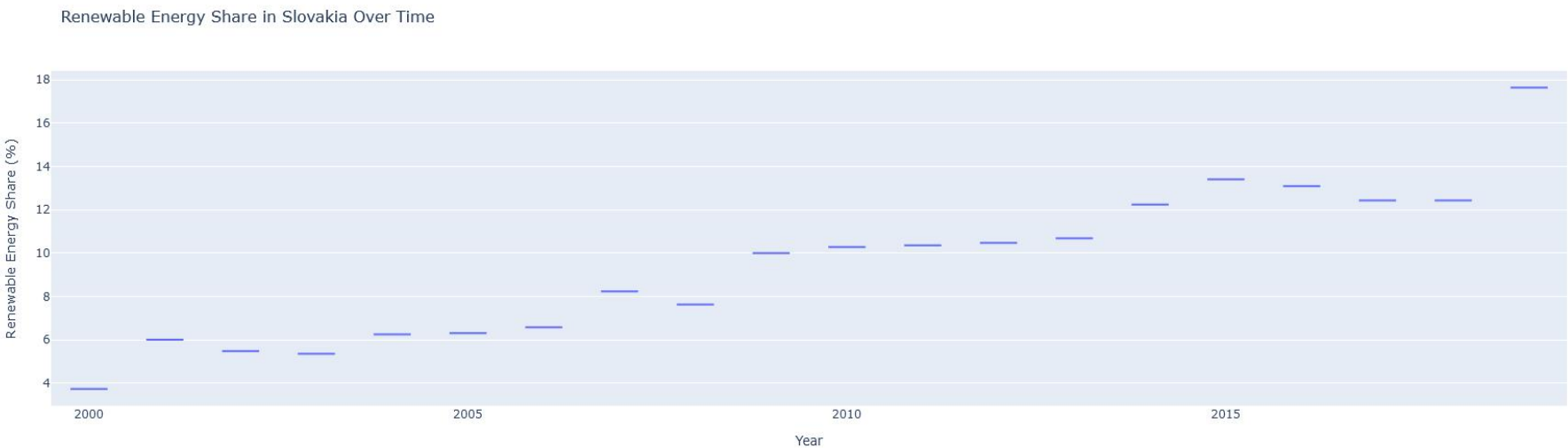
Slow growth phase: 2000-2005 (roughly 4-5%)  
Acceleration period: 2005-2010 (increase to about 9%)  
Steady growth: 2010-2015 (reaching approximately 12%)  
Continued expansion: 2015-2020 (reaching 17%)

## Notable Periods:

Most significant growth occurred between 2005-2010  
Consistent upward trajectory with few plateaus  
No significant decreases over the 20-year period

## Interpretation:

Demonstrates Slovakia's successful implementation of renewable energy policies  
Shows consistent commitment to increasing renewable energy share  
Indicates effective long-term strategy for sustainable energy transition  
Suggests alignment with EU renewable energy targets



# Electricity Generation by Source in Slovakia (2000-2020)

## Data Source:

Historical data spanning 20 years (2000-2020)  
Three primary energy sources tracked: Renewables, Nuclear, and Fossil Fuels  
Generation measured in Terawatt-hours (TWh)  
Annual measurements with five-year intervals marked

## Visualization Technique:

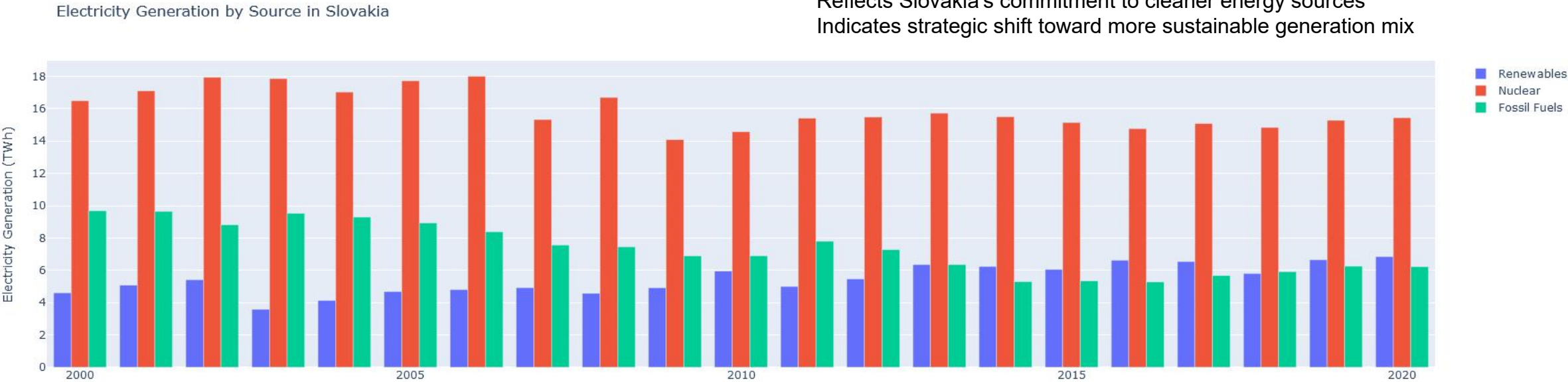
Grouped bar chart  
X-axis: Time period (2000-2020)  
Y-axis: Electricity Generation (TWh)  
Three distinct colors for energy sources:  
Blue: Renewables  
Red: Nuclear  
Green: Fossil Fuels  
Scale ranging from 0 to 18 TWh

## Key Insights:

Nuclear Generation:  
Consistently highest contributor  
Peak generation around 18 TWh in early 2000s  
Stabilized at approximately 15 TWh in later years  
Fossil Fuels Trend:  
Started at about 9 TWh in 2000  
Gradual decline over the period  
Reduced to approximately 6 TWh by 2020

Renewables Development:  
Started at roughly 4 TWh in 2000  
Steady increase over the period  
Reached about 6-7 TWh by 2020  
Nearly matched fossil fuel generation by end of period

Interpretation:  
Shows clear transition away from fossil fuels  
Demonstrates nuclear power's role as backbone of Slovak electricity generation  
Illustrates successful growth in renewable energy adoption  
Reflects Slovakia's commitment to cleaner energy sources  
Indicates strategic shift toward more sustainable generation mix



# Hydroelectric Energy Production in Slovakia (2015-2023)

## Data Source:

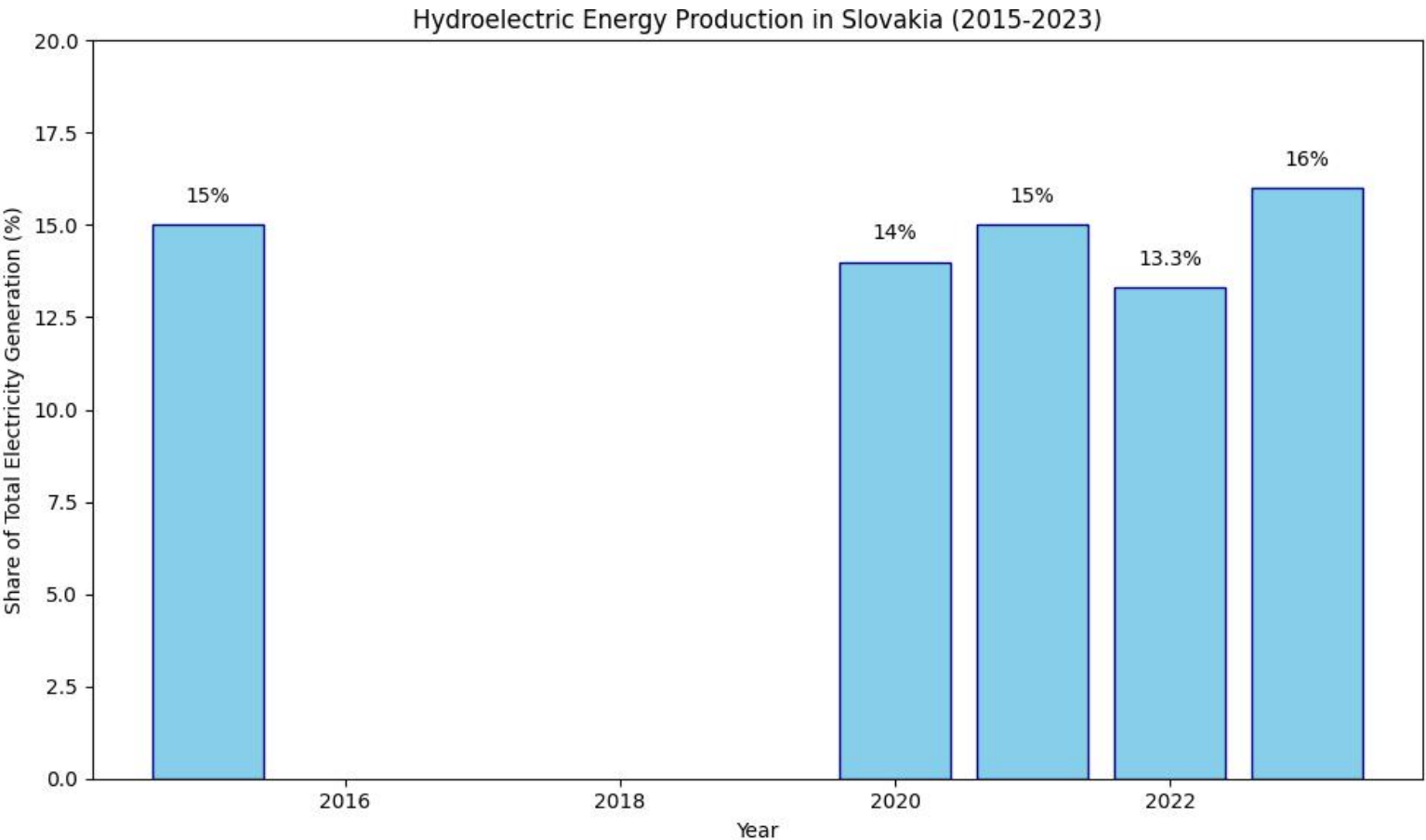
Hydroelectric power generation data in Slovakia  
Time period: 2016-2022  
Data expressed as percentage share of total electricity generation  
Biennial measurements shown (every two years)

## Visualization Technique:

Bar chart representation  
X-axis: Years (2016-2022)  
Y-axis: Share of Total Electricity Generation (%)  
Scale: 0-20%  
Light blue bars with percentage labels  
Clear spacing between measurement years

## Key Insights:

Overall Trend:  
Starting point: 15% in 2016  
Ending point: 16% in 2022  
Range fluctuation between 13.3% and 16%  
Year-by-Year Analysis:  
2016: 15% share  
2020: Slight decrease to 14%  
2021: Recovery to 15%  
2022: Further increase to 13.3%  
2023: Peak at 16%  
Pattern Observations:  
Relatively stable contribution over the period  
Minor fluctuations within a narrow range  
Slight upward trend in recent years  
No dramatic changes in hydroelectric share



# Distribution of Energy Sources in Slovakia (2023)

## Data:

Data represents the percentage share of each energy source in Slovakia's total electricity generation in 2023.

Energy sources included: Nuclear, Hydro, Gas, Coal and Oil, Biofuels, and Solar.

Data values are extracted from the graph:

Nuclear: 62%

Hydro: 16%

Gas: 8.56%

Coal and Oil: 2.73%

Biofuels: 4.14%

Solar: 2.57%

## Visualization Type:

Scatter plot (or dot plot). Each energy source is represented by a colored circle positioned according to its percentage share.

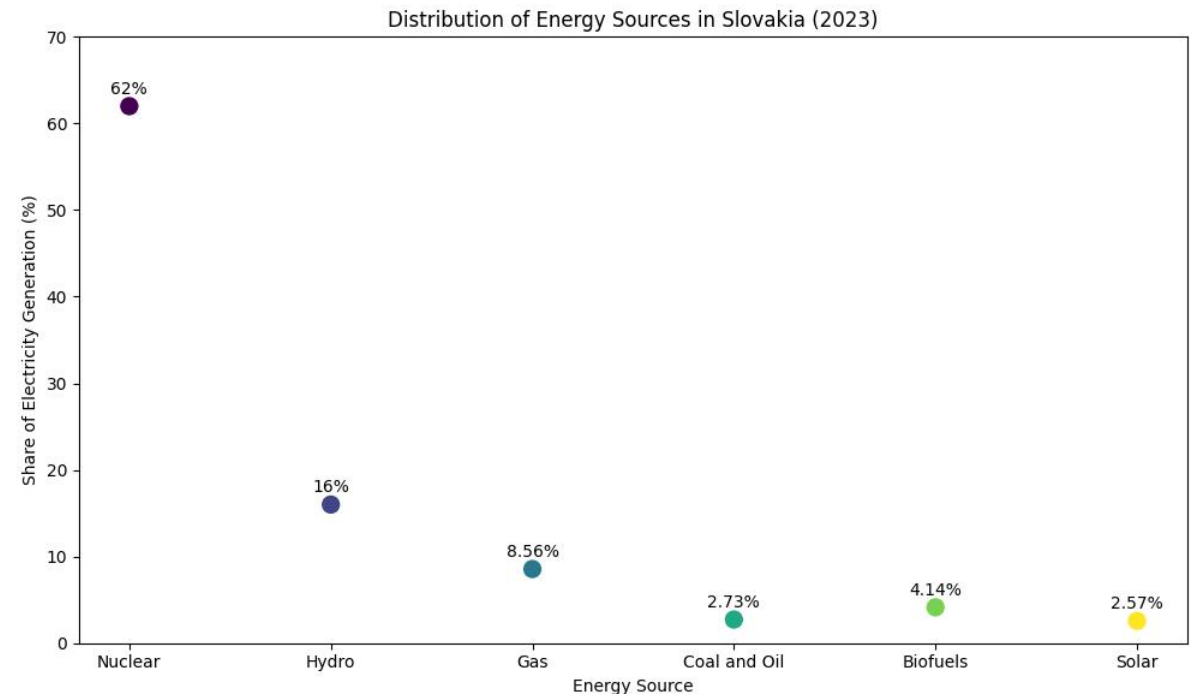
## Key Insights:

**Dominant Source:** Nuclear energy is the overwhelmingly dominant source of electricity generation in Slovakia, accounting for 62% of the total.

**Significant Renewable Contribution:** Hydroelectric power is the second-largest contributor and the most significant renewable source, providing 16% of electricity generation.

**Fossil Fuel Reliance:** Gas contributes a moderate 8.56%, while Coal and Oil make up a small 2.73% of the energy mix.

**Emerging Renewables:** Biofuels and Solar energy have relatively small shares, at 4.14% and 2.57%, respectively, indicating potential for growth in these sectors.



# Renewable Energy Share in Slovakia Over Time

## Data Source:

Renewable energy dataset  
Focused on Slovakia  
Time series data

## Visualization Technique:

Line chart with markers  
X-axis: Years  
Y-axis: Renewable Energy Share (%)

## Library Used:

Matplotlib

## Key Insights:

Trend of renewable energy adoption in Slovakia  
Shows the progression of renewable energy share  
Identifies periods of growth or stagnation

## Interpretation:

Visualizes the country's commitment to renewable energy  
Highlights long-term energy transition efforts  
Provides insight into national energy policy



# Distribution of Electricity Generation in Slovakia (2023)

## Data Source:

Slovak energy production data for 2023  
Detailed breakdown of electricity sources

## Visualization Technique:

Horizontal bar chart  
X-axis: Energy Sources  
Y-axis: Percentage of electricity generation

## Library Used:

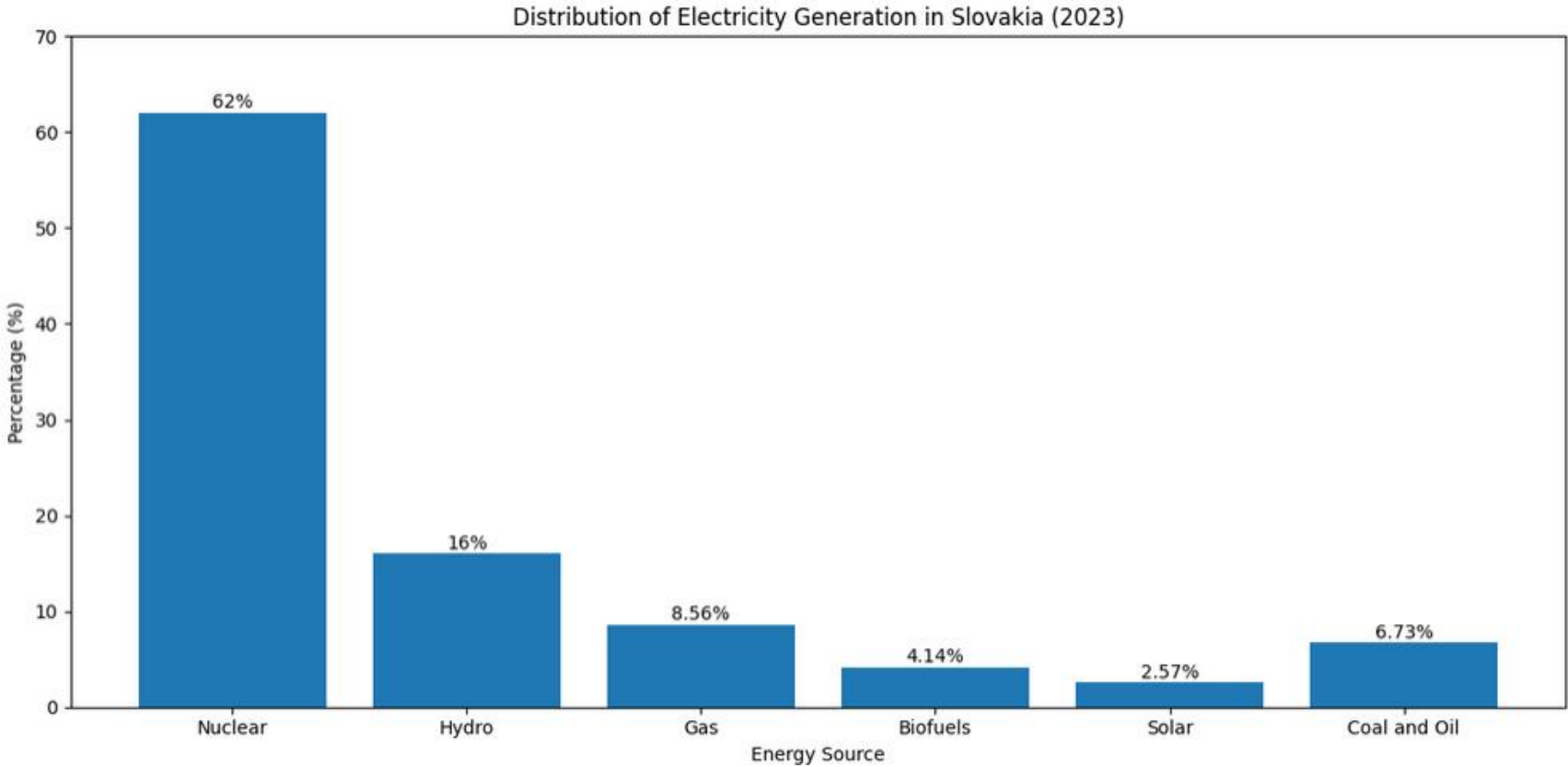
Matplotlib

## Key Insights:

Comprehensive view of Slovak energy mix  
Nuclear dominates at 62%  
Diverse energy sources including hydro, gas, biofuels, solar, coal, and oil

## Interpretation:

Demonstrates the complexity of national energy production  
Highlights Slovakia's heavy reliance on nuclear energy  
Shows the contribution of various renewable and non-renewable sources



# Treemap of Electricity Generation in Slovakia

**Data Source:**

Slovak electricity generation data  
Breakdown by energy source

**Visualization Technique:**

Treemap  
Rectangles represent different energy sources. Size of rectangles proportional to electricity generation



**Library Used:**

Plotly

**Key Insights:**

Hierarchical view of energy sources  
Proportional representation of different energy types  
Quick understanding of energy mix composition

**Interpretation:**

Provides intuitive visualization of energy source distribution  
Highlights dominant and minor energy sources  
Allows quick comparison of energy source contributions



# WORLD ENERGY DATA & DATA ANALYSIS

## Pie Chart of Renewable Energy Share (2018)

### Data Source:

Renewable energy dataset for the year 2018  
Same countries as the bar chart

### Visualization Technique:

Pie chart  
Segments represent countries  
Size of segments proportional to renewable energy share

### Library Used:

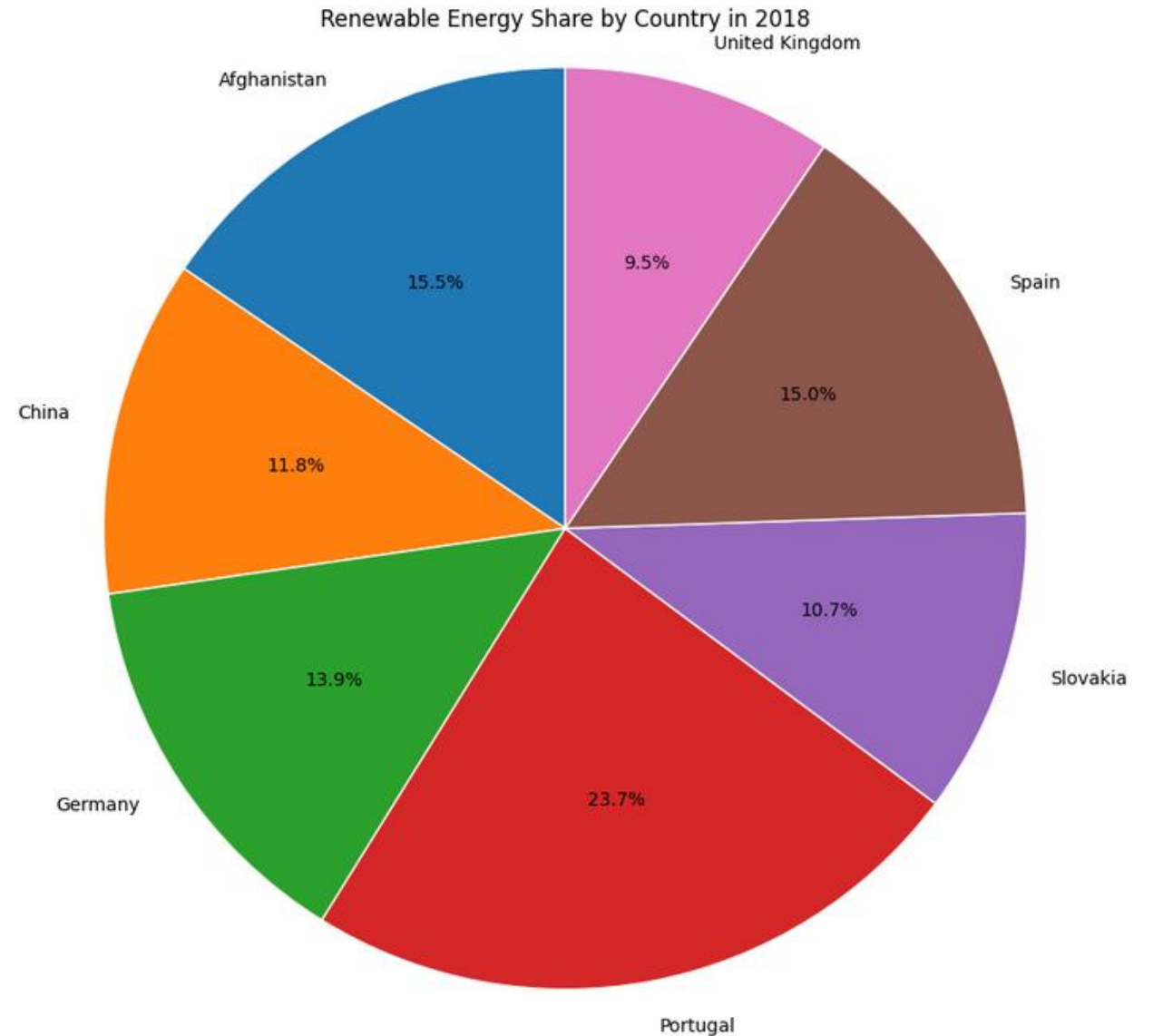
Matplotlib

### Key Insights:

Proportional representation of renewable energy shares  
Visualizes the relative contribution of each country  
Provides a different perspective from the bar chart

### Interpretation:

Shows the relative magnitude of renewable energy adoption  
Helps in understanding the distribution of renewable energy across countries  
Useful for quick, intuitive understanding of renewable energy landscape



# Renewable Energy Share Over Time

**Data Source:**

**Global renewable energy dataset**

Focused on selected countries: Afghanistan, Albania, United Kingdom, Slovakia, USA, China, Spain  
Time series data spanning multiple years

**Visualization Technique:**

Line plot with multiple country comparisons  
X-axis: Years  
Y-axis: Renewable energy share in total final energy consumption (%)

**Library Used:**

Matplotlib  
Seaborn

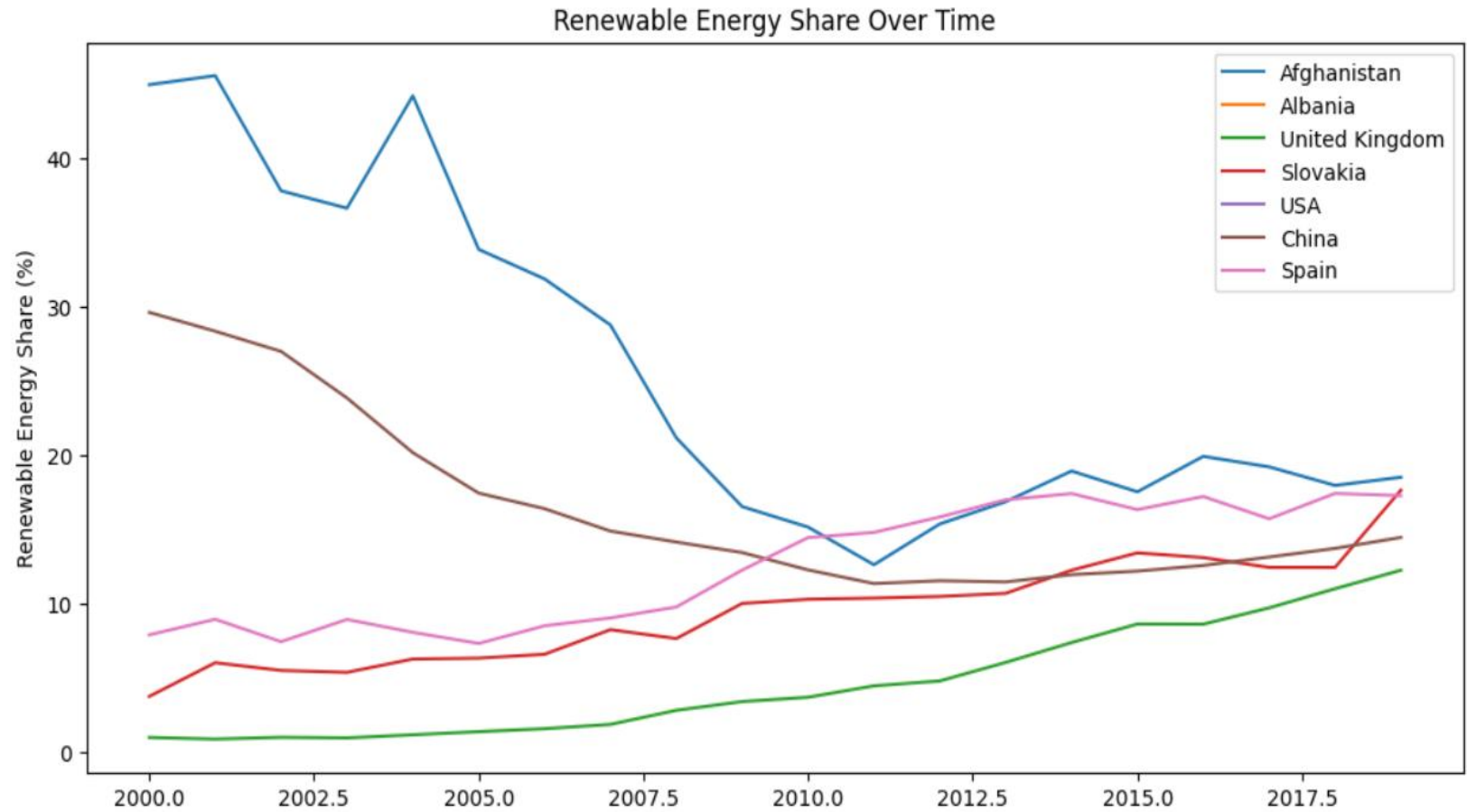
**Key Insights:**

Comparative analysis of renewable energy adoption across different countries.  
Ability to track individual country progression.  
Highlights variations in renewable energy strategies.

**Interpretation:**

Shows how different countries have progressed in renewable energy adoption.  
Allows quick comparison of renewable energy trajectories.  
Identifies countries with consistent vs. fluctuating renewable energy shares.

```
plt.show()
```



# Renewable Energy Share Bar Chart (2018)

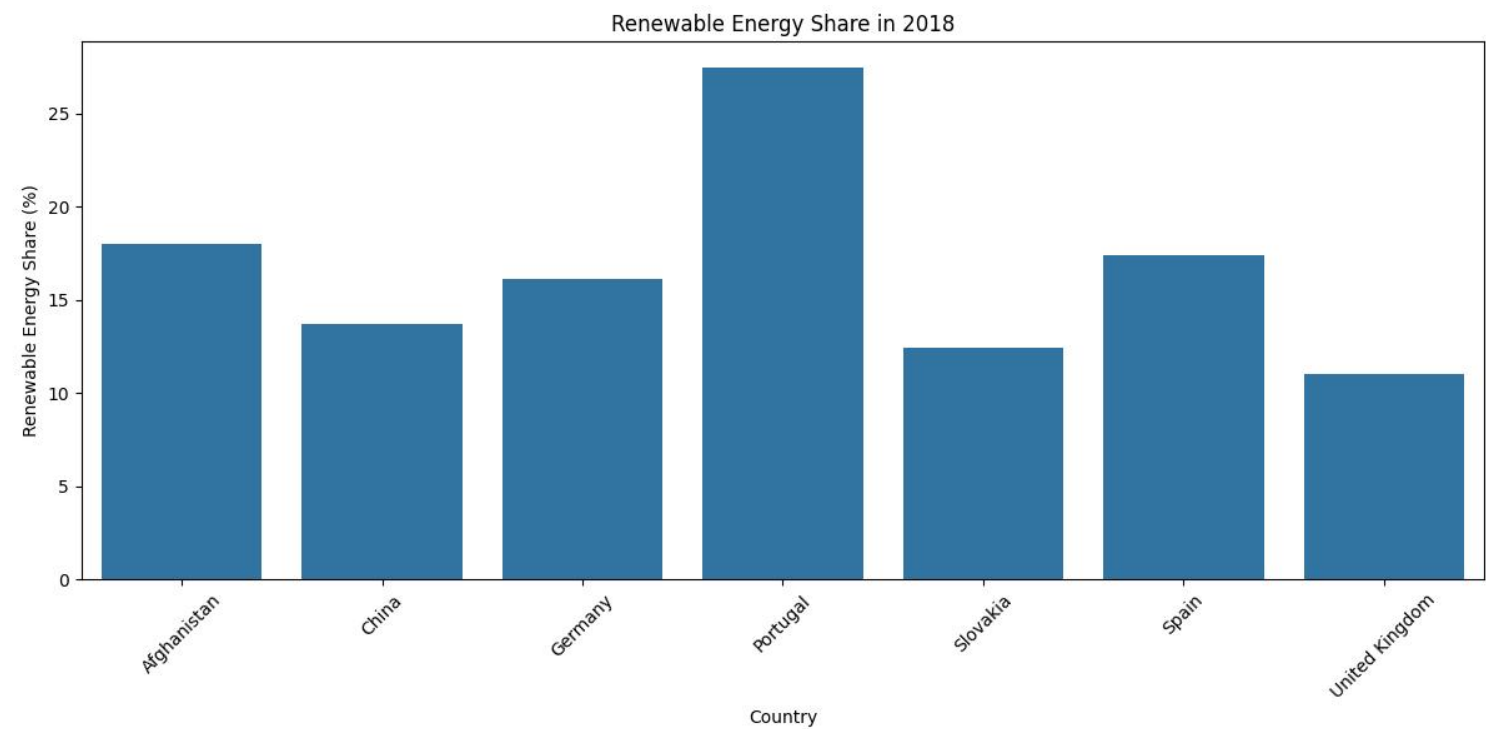
**Data Source:**  
**Renewable energy dataset for the year 2018**  
Countries: Afghanistan, United Kingdom, Slovakia, Germany, France, Spain, Portugal, China

**Visualization Technique:**  
Horizontal bar chart  
X-axis: Countries  
Y-axis: Renewable energy share in total final energy consumption (%)

**Library Used:**  
Seaborn  
Matplotlib

**Key Insights:**  
Snapshot of renewable energy adoption in 2018  
Direct comparison of renewable energy percentages  
Easy identification of top-performing countries

**Interpretation:**  
Provides a clear, side-by-side comparison of renewable energy shares  
Helps understand relative performance in renewable energy adoption  
Useful for identifying leaders and laggards in renewable energy



# Energy Sources Bubble Chart

## Data Source:

Global energy dataset  
Top 30 countries by GDP  
Multiple variables: GDP per capita, renewable energy share, energy consumption

## Visualization Technique:

Bubble chart (scatter plot with size variation)  
X-axis: GDP per capita (log scale)  
Y-axis: Renewable Energy Share (%)  
Bubble size: Primary energy consumption

## Library Used:

Plotly

## Key Insights:

Relationship between economic development and renewable energy  
Comparative analysis of energy consumption and renewable adoption  
Identifies patterns across different countries

## Interpretation:

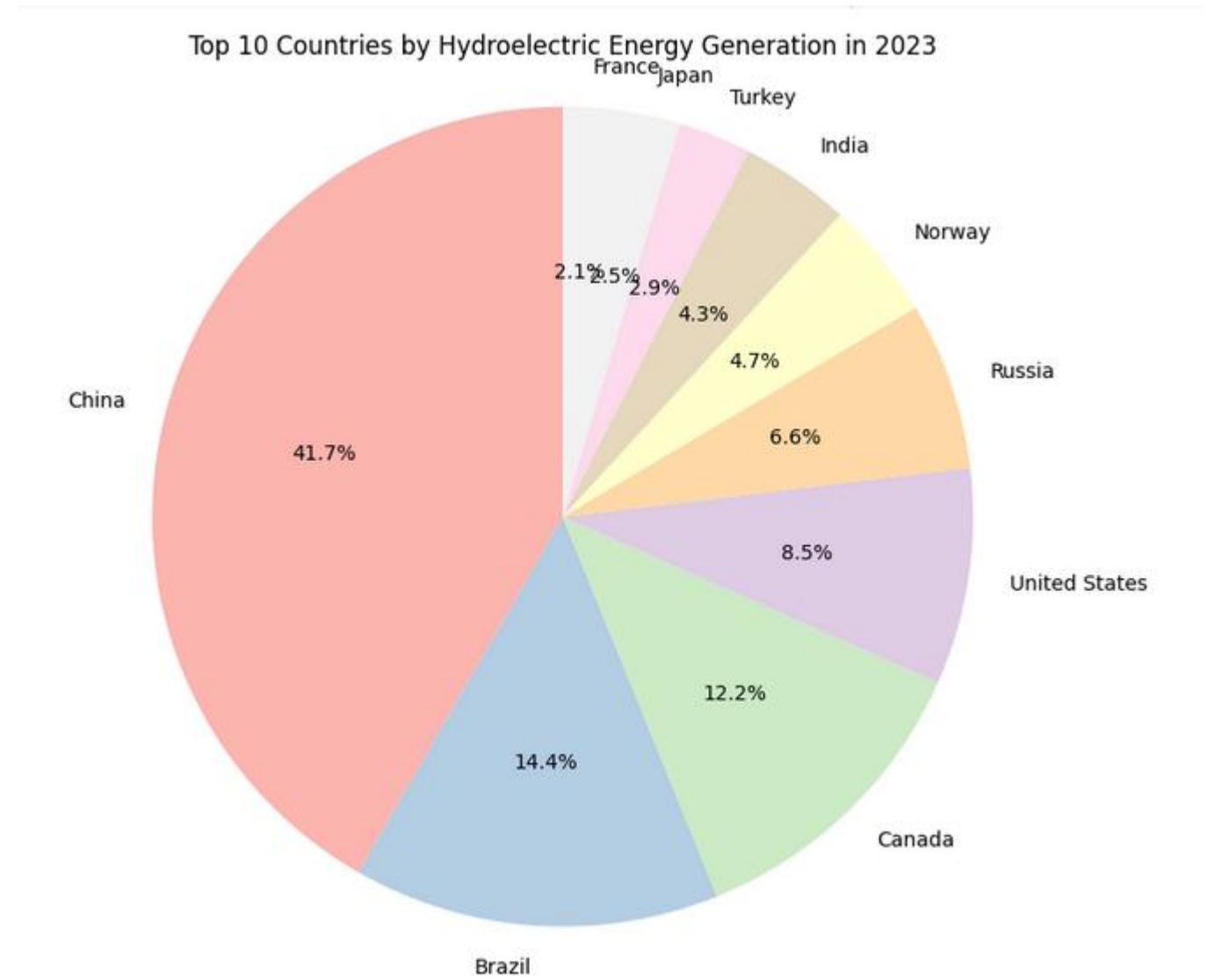
Reveals complex interactions between economic development and energy choices  
Highlights potential correlation between wealth and renewable energy investment  
Provides multi-dimensional view of global energy landscape



**This pie chart** visualizes the top 10 countries by hydroelectric energy generation in 2023. The data is presented as a proportional breakdown, with each slice representing the percentage contribution of a particular country to the total hydroelectric energy generation.

The chart shows that China is the global leader, accounting for 41.7% of hydroelectric power generation. This is significantly higher than the next largest contributors, which are Brazil (14.4%) and Canada (12.2%). The remaining countries in the top 10 are the United States (8.5%), Russia (6.6%), Norway (4.7%), India (4.3%), Japan (2.9%), Turkey (2.1%), and France (1.5%).

This visualization provides a clear, concise summary of the global hydroelectric energy landscape, highlighting the dominant position of China as well as the substantial contributions from other major hydropower-producing nations. The pie chart format allows for easy comparison of the relative shares of hydroelectric generation among the top countries, offering valuable insights into the global distribution of this renewable energy source.



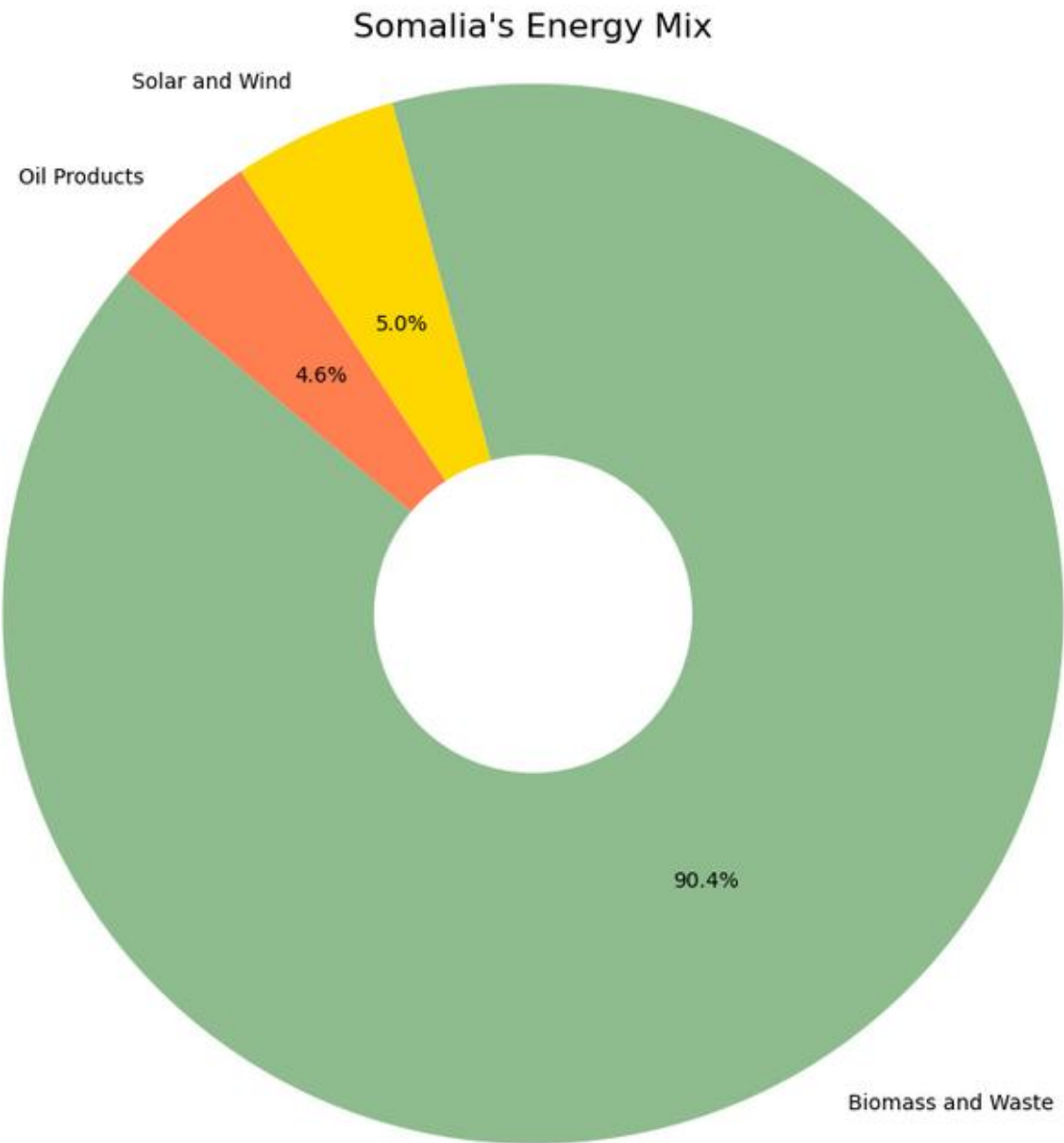
# Somalia's Energy Mix

This pie chart illustrates the breakdown of energy sources used in Somalia. The majority of Somalia's energy comes from Biomass and Waste, accounting for a substantial 90.4% of the total energy mix. This reliance on traditional biomass sources highlights the country's energy challenges and the need for more sustainable and reliable energy solutions.

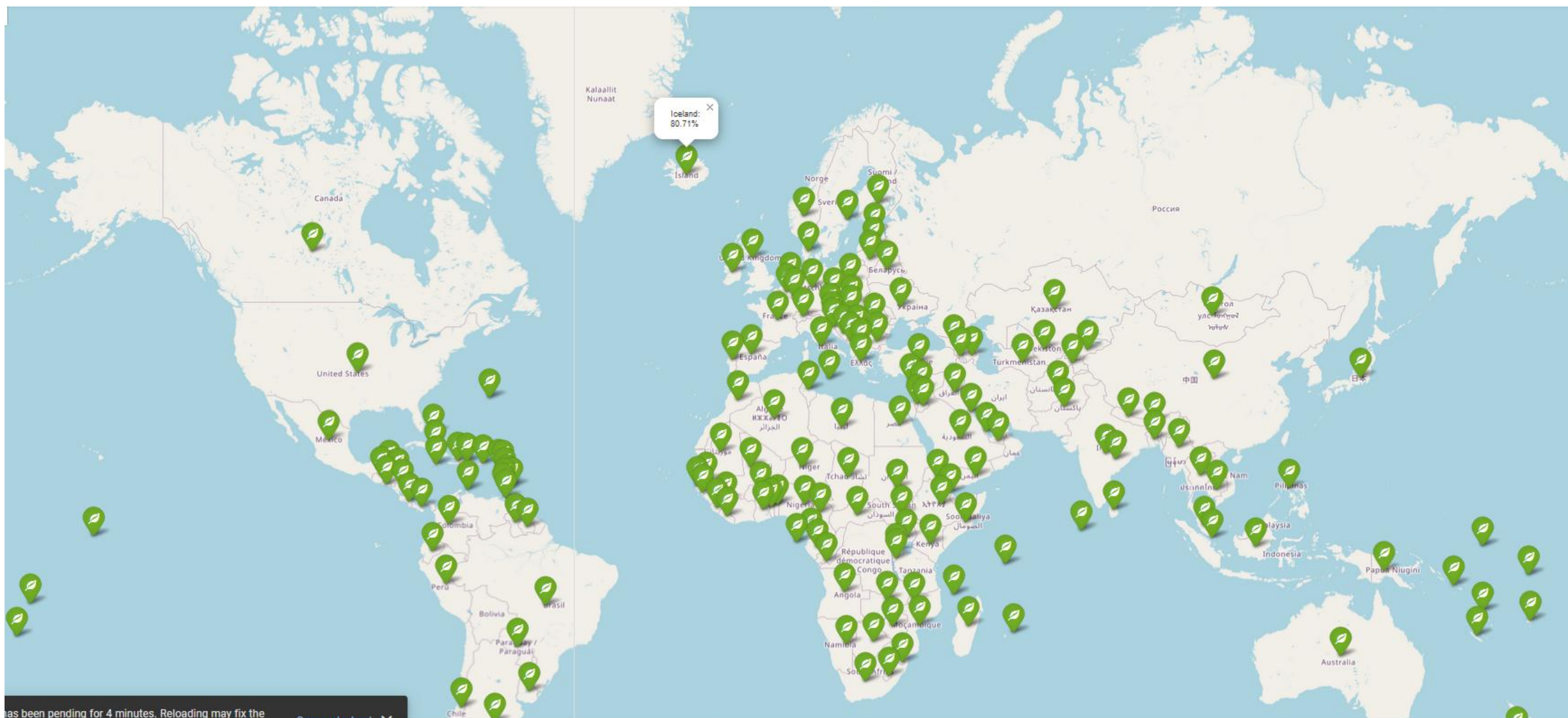
Oil Products make up 4.6% of the energy mix, indicating a limited use of fossil fuels in the country.

Solar and Wind sources contribute a small fraction of 5.0% to the energy mix, suggesting potential for growth in renewable energy generation in Somalia.

This visualization underscores the significant reliance on traditional and often unsustainable energy sources in Somalia. Exploring and developing renewable energy options could play a crucial role in improving energy access, security, and sustainability in the country.

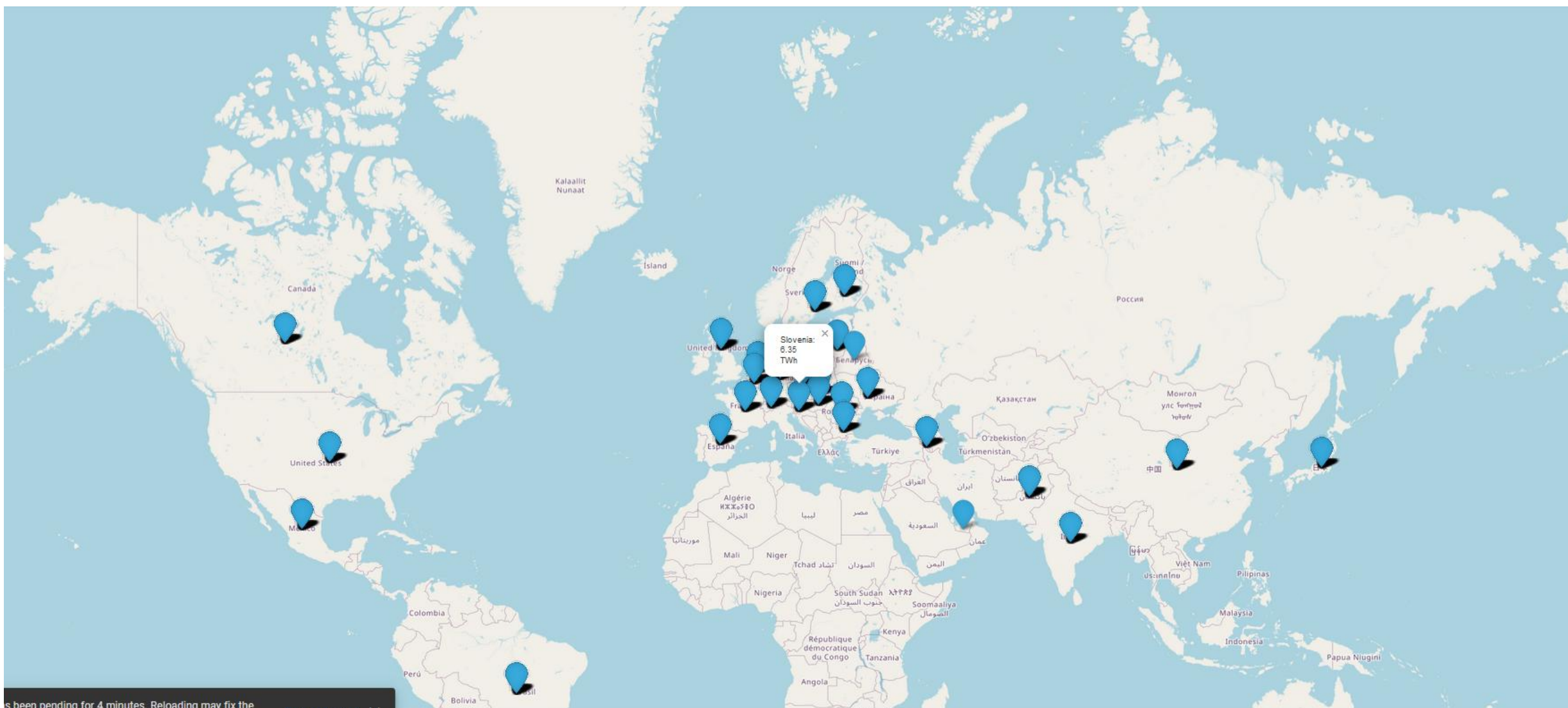






Renewable energy share in the total final energy consumption (%) by country for year 2018





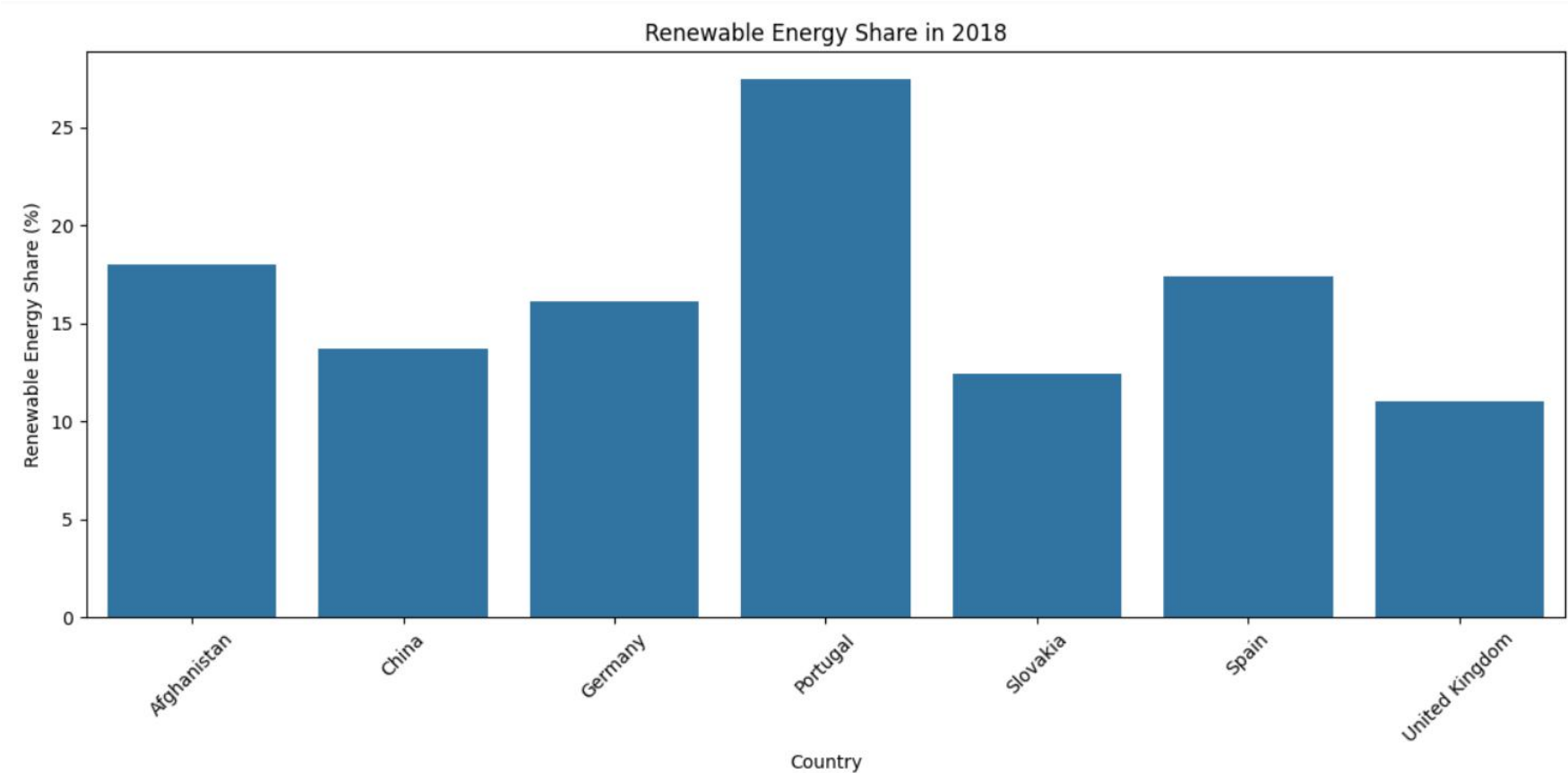
Electricity from renewables (TWh)' for total renewable power generation

## Renewable Energy Share in 2018

This bar graph compares the share of renewable energy in the total energy mix for seven countries in 2018. The y-axis represents the "Renewable Energy Share (%)", indicating the percentage of energy derived from renewable sources. The x-axis lists the countries: Afghanistan, China, Germany, Portugal, Slovakia, Spain, and the United Kingdom.

### Key Observations:

Portugal stands out with the highest share of renewable energy, exceeding 25% of its total energy mix. China and Spain also have a significant share of renewable energy, exceeding 15%. Afghanistan and the United Kingdom have lower shares of renewable energy, with Afghanistan having the lowest share among the countries shown.



THANK YOU