Renewable Energy useage

Case-Study

Analyzed by: Morad Moqbel in 22/12/2024

Purpose of case-study: Analyzing the adoption trends of renewable energy across different regions.

Tools that have been used: MySQL and Tableau

1- Data Source: <https://www.kaggle.com/datasets/hajraamir21/global-renewable-energy-usage-2020-2024>

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2- Data Validation:

Our data contains 11 columns respectively:

A- Household\_ID: A unique identifier for each household.

B- Region: The geographical region where the household is located (e.g., North America, Europe, Asia).

C- Country: The specific country of the household. (Unfortunately it did not include all countries, just 25 ones).

D- Energy\_Source: The type of renewable energy being used by the household (e.g., Solar, Wind, Hydro).

E- Monthly\_Usage\_kWh: The monthly energy consumption in kilowatt-hours.

F- Year: The year the data was recorded (2020-2024).

G- Household\_Size: The number of people living in the household.

H- Income\_Level: The income bracket of the household (Low, Middle, High).

I- Urban\_Rural: Whether the household is in an urban or rural area.

J- Adoption\_Year: The year the household first adopted renewable energy.

K- Subsidy\_Received: Whether the household received any government subsidies for renewable energy (Yes/No).

3- Data Prepare

After we discovered and explored our data, it’s time to clean and prepare our data in order to perform our analysis.

- First: we will delete columns that are useless in our study,

and we just removed the Household\_ID, Year, Country, Monthly\_Usage\_kWh and Household\_Size columns.

- Second: we need to validate out data to figure out whether or not there are outliers or abnormal values and to remove any duplicates or null errors -if an:

a- No duplicates

b- No null values

c- No outliers and all values in right consistency

4- Data analysis

After we analyzed our data, we figured out the follow:

1- Europe is the highest user of energy, while Asia is the lowest.

2- The most source used is “Wind”, and the lowest one is “Geothermal”. The reason behind that is because the “Wind” saves about $59,046 annually.

3- People who live in rural ,urban renewable source more than those who live in urban.

4- For income levels, those in the low and middle income range prefer wind energy over others, while those with high income prefer biomass and solar energy.

5- Regarding the total consumption of all energy source in 2024, all source recorded a sharp decline. (The likely reason is the data is the lack of available data)

5- Conclusion

After we analyzed our data we figured out that:

People often tend to prefer Wind energy source then a solar source and the reason is because they saving money more than the others, and the rural people usually use the renewable energy more that the urban ones and the likely reason behind that (according to my research, is the limited access to electricity in their zone )

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I hope you have enjoyed in my case-study about Renewable energy and please keep an eye on my github profile to see more case-studies that I am up to create by using a diverse set of analysis tools

Kind Regards

Morad Moqbel