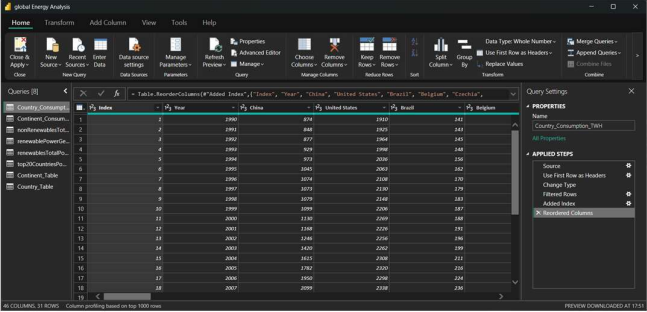


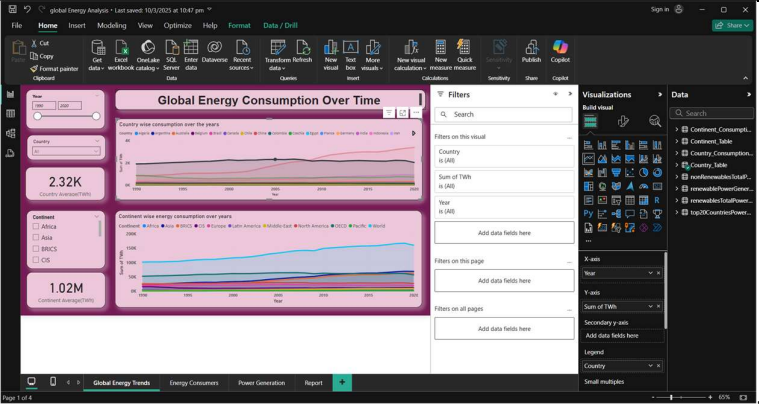
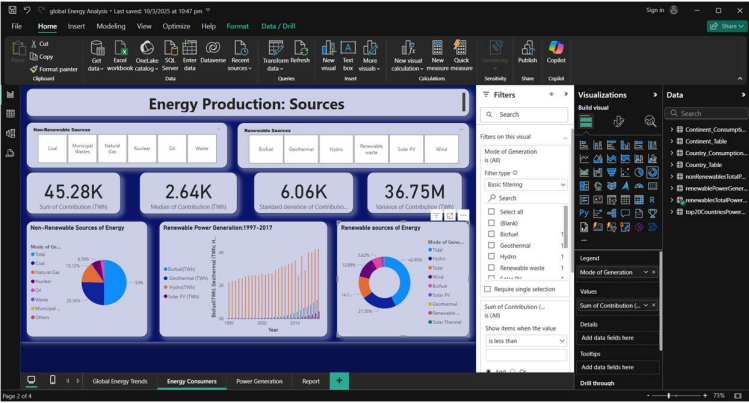
Project Development Phase

Model Performance Test

Date	10 February 2025
Team ID	PNT2022TMID00584
Project Name	Project -Global Energy Trends: A Comprehensive Analysis of Key Regions and Generation
Maximum Marks	

Model Performance Testing:

S.N o.	Parameter	Screenshot / Values
1	Data Rendered	<div><ul style="list-style-type: none"><li>Continent_Consumption_TWH.csv</li><li>Country_Consumption_TWH.csv</li><li>nonRenewablesTotalPowerGeneration.csv</li><li>renewablePowerGeneration97-17.csv</li><li>renewablesTotalPowerGeneration.csv</li><li>top20CountriesPowerGeneration.csv</li></ul></div> <div></div>
2.	Data Preprocessing	<ul style="list-style-type: none"><li><b>Removed Null Values</b> – Ensured data completeness.</li><li><b>Unpivoted Table</b> – Converted wide format data into a long format for better filtering and analysis.</li><li><b>Created Two New Tables from Existing Data:</b><ul style="list-style-type: none"><li><b>Country Consumption Table</b> – Extracted from Country_Consumption_TWH.csv for country-level insights.</li><li><b>Continent Consumption Table</b> – Extracted from Continent_Consumption_TWH.csv for regional comparisons.</li></ul></li><li><b>Added Index Columns</b> – Assigned unique IDs to facilitate merging and analysis.</li></ul>
3.	Utilization of Data Filters	<p><b>Yearly Filter</b> – To analyze trends over time.</p> <p><b>Country &amp; Continent Filters</b> – To compare power consumption at different levels.</p> <p><b>Energy Type Filter</b> – To distinguish between renewable and non-renewable energy.</p> <p><b>Consumption Range Filter</b> – To focus on high-energy-consuming regions</p>

		 
4.	DAX Queries Used	<ul style="list-style-type: none"> <li>• Total Country Consumption = SUM(Country_Consumption_TWH[Total Consumption (TWh)])</li> <li>• Total Continent Consumption = SUM(Continent_Consumption_TWH[Total Consumption (TWh)])</li> <li>• Percentage Contribution = DIVIDE([Total Country Consumption], [Total Continent Consumption], 0) * 100</li> <li>• Rank by Country = RANKX(ALL(Country), [Total Country Consumption], , DESC, DENSE)</li> <li>• Rank by Continent = RANKX(ALL(Continent), [Total Continent Consumption], , DESC, DENSE)</li> <li>• Continent Average(TWh) = AVERAGEX(SUMMARIZE('Continent_Table','Continent_Table'[Continent],"Total",SUM('Continent_Table'[TWh])),[TOTAL])</li> <li>• Country Average(TWh) = AVERAGEX(SUMMARIZE('Country_Table','Country_Table'[Country],"Total",SUM('Country_Table'[TWh])),[TOTAL])</li> </ul>
5.	Dashboard design	<p>No of Visualizations / Graphs –</p> <ul style="list-style-type: none"> <li>• Country-wise energy consumption</li> <li>• Continent Energy Consumption</li> <li>• Continent Average(TWh)</li> <li>• Country Average(TWh)</li> <li>• Non-renewable sources of Energy</li> <li>• Renewable Generation 1997-2017 (TWh)</li> <li>• Cards - Sum, Median, Standard Deviation and Variance of Contribution(TWh)</li> <li>• Renewable Sources of Energy</li> <li>• Cards - Geothermal, Biofuel, Hydro and Solar PV</li> <li>• BRICS, OECD, and CIS Comparison</li> </ul>

		<ul style="list-style-type: none"><li>• Report Narrative</li><li>• Energy Consumption in African countries</li></ul>																																						
6	Report Design	<p>No of Visualizations / Graphs –</p> <ul style="list-style-type: none"><li>• <b>Number of Visualizations:2</b></li><li>• <b>Additional Insights Included:</b></li><li>• Top energy-consuming countries vs. continents.</li><li>• Regional energy consumption trends over the years.</li><li>• Forecasted energy consumption based on past trends.</li><li>• Impact of renewable adoption across regions.</li></ul> <div><h3>Report On Global Energy Trends</h3><p>• The continent with the highest overall energy consumption is Asia, and China continues to be the top consumer of power among all the countries.</p><p>• Hydro electricity has been steadily rising over the last 3 decades and continues to be a promising renewable source.</p><p>• Tidal energy takes up a major share of renewable energy with 42.95% and coal is at the top of non-renewable energy with 50.72%.</p><p>• Across the Top 20 countries, the Sum of Total (TWh) ranged from 12.40 to 1,819.94.</p><p>• Biofuel and total Geothermal energy are positively correlated with each other.</p><p>• In a span of 28 years, Biofuel ranged from 3.88(TWh) to 1,127.31(TWh), Geothermal ranged from 36.42(TWh) to 85.34(TWh), and Hydro ranged from 2,191.67(TWh) to 4,197.29(TWh).</p><div><h4>Consumption: OECD, BRICS and CIS</h4><p>Sum of OECD Sum of BRICS Sum of CIS</p><table><tr><th>Region</th><th>Consumption (TWh)</th></tr><tr><td>Sum of OECD</td><td>~1.8M</td></tr><tr><td>Sum of BRICS</td><td>~1.2M</td></tr><tr><td>Sum of CIS</td><td>~0.4M</td></tr></table></div><div><h4>Energy Consumed</h4><p>Sum of Algeria Sum of Egypt Sum of Nigeria Sum of South Africa</p><table><tr><th>Year</th><th>Sum of Algeria (TWh)</th><th>Sum of Egypt (TWh)</th><th>Sum of Nigeria (TWh)</th><th>Sum of South Africa (TWh)</th></tr><tr><td>1990</td><td>~10</td><td>~15</td><td>~30</td><td>~40</td></tr><tr><td>1992</td><td>24</td><td>34</td><td>72</td><td>88</td></tr><tr><td>2000</td><td>~20</td><td>~25</td><td>~50</td><td>~60</td></tr><tr><td>2010</td><td>~30</td><td>~40</td><td>~70</td><td>~80</td></tr><tr><td>2020</td><td>~40</td><td>~50</td><td>~90</td><td>~100</td></tr></table></div></div>	Region	Consumption (TWh)	Sum of OECD	~1.8M	Sum of BRICS	~1.2M	Sum of CIS	~0.4M	Year	Sum of Algeria (TWh)	Sum of Egypt (TWh)	Sum of Nigeria (TWh)	Sum of South Africa (TWh)	1990	~10	~15	~30	~40	1992	24	34	72	88	2000	~20	~25	~50	~60	2010	~30	~40	~70	~80	2020	~40	~50	~90	~100
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