**Dashboard Design**

| Date | 1 August 2025 |
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| Team ID | xxxxxx |
| Project Name | Exploring Global Energy Generation |
| Maximum Marks | 5 Marks |

Creating an effective dashboard involves thoughtful design to ensure that the presented information is clear, relevant, and easily understandable for the intended audience. Here are some key principles and best practices and best practices for dashboard design, applied to the Global Energy Dashboard.

**Activity: Interactive Dashboard**

Creating interactive dashboard involves a combination of through design, effective use of

Visual elements, and the incorporation of interactive features. Here are some tips to help you design dashboards that are both visually appealing and engaging for users:

* **Clear and Intuitive Layout**: The dashboard features a clean and logical layout. Key performance indicators (KPIs) like “Total Energy Produced” and “Renewable Energy Contribution” are prominently displayed in the card at the top, allowing for a quick overview. Detailed charts are then arranged below, guiding the user’s eye from high-level summaries to granular data.
* **Use Appropriate Visualizations:** The dashboard effectively uses a variety of visualization types.
  + **Pie charts** are used to show the “Top 20 Countries by Renewable Energy” and “Contribution by Mode of Generation", which is an excellent choice for representing proportions and parts of a whole.
  + **Bar charts**  are used to display trends over time, such as “Energy Consumption by Country Over Years” and “Power Production By Renewable Sources,” which is ideal for comparing values across different categories and time periods.
* **Color and Theming:**  The color palette is professional and consistent. It uses distinct color to differentiate between different energy sources and continents, ensuring that the charts are easy to read and interpret. For Example, the use of different shades of blue and orange helps to clearly distinguish between Hydro and Solar PV production.
* **Interactive Filters and Slicers:** While not visible in the static view, a well-designed dashboard would include interactive filters and slicers. This would allow users to dynamically change the data being displayed, for example, by filtering by a specific country, a particular energy source, or a custom time range. This feature is crucial for enabling self-service analytics.
* **Drill-Down Capabilities:** The dashboard could be further enhanced with drill-down capabilities. A user could click on a country in the "Top 20 Country by Renewable Energy" pie chart to see a more detailed breakdown of its specific energy mix, or click on a bar in the "Energy Consumption by Continent" chart to see the consumption data for individual countries within that continent.
* **Responsive Design:** For a comprehensive design, the dashboard would need to be responsive, adapting its layout and visuals to different screen sizes, from a large desktop monitor to a tablet or a mobile phone. This ensures accessibility and a consistent user experience regardless of the device.
* **Use of Infographics:** The dashboard successfully incorporates infographic-style elements through its use of clear, titled cards at the top. These cards provide at-a-glance, high-impact summaries of key metrics like total TWh production, which is a powerful way to convey essential information quickly.

Here are five major outcomes and insights derived from the dashboard:

* **Global Renewable Energy Leaders:** Among the top 20 countries, China, the USA, and Brazil are the largest contributors to renewable energy generation, wit China holding the most significant share.
* **Dominance of Non-Renewable Sources:**  Coal remains the most dominant source of non-renewable energy, contributing over 50% (50.72%) of the total non-renewable energy production.
* **Rising Solar Power:** While Hydro is consistently the largest source of renewable energy over time Solar PV shows a dramatic and significant increase in production in recent years, highlighting its growing importance in the energy mix.
* **Highest Energy Consumption:**  The United States and China are the world’s top energy consumers, with a clear upward trend in consumption for both nations between 2001 and 2020.
* **Renewable vs Non-Renewable Contribution :** The total renewable energy contribution is measured at 38.90K TWh, which is more than double the non-renewable contribution of 19.45K TWh, indicating a significant shift towards renewable sources.