PROJECT:

GLOBAL ENERGY TRENDS COMPREHENSIVEANALYSIS OF KEY REGIONSS AND GENERATION MODES USING POWER BI

Abstract: -

This abstract outline a Power BI-based analysis of global energy trends, focusing on visualizing and interpreting data to understand production, consumption, and trade patterns, ultimately aiding in identifying key insights and trends within the energy industry.

- **Focus:**

The study uses Power BI, a business intelligence tool, to analyze global energy data, aiming to transform raw data into actionable insights.

- **Data Scope:**

The analysis covers global energy production, consumption, and trade, examining historical trends and identifying patterns.

- **Key Objectives:**

- **Understanding Global Energy Dynamics:** The report aims to provide a comprehensive overview of global energy production, consumption, and trade.
- **Identifying Key Trends:** By analysing historical data, the report seeks to uncover trends and patterns in global energy production and consumption.
- **Visualizing Data for Insights:** Power BI's interactive features and visualizations are leveraged to present the data in a user-friendly and intuitive way, enabling users to drill down into specific areas or time periods.

- **Examples of Analysis:**

- **Production Trends:** Analyse how global energy production has changed over time, highlighting significant shifts and patterns.
- **Top Producers:** Identify countries with the highest energy production volumes, providing insights into global energy dynamics.
- **Energy Source Analysis:** Examine the major energy sources utilized globally and how their usage has changed over the years.

INTRODUCTION: -

Global energy trends are characterized by increasing demand, a shift towards renewable energy sources, and efforts to decarbonize the energy sector, with fossil fuels still dominating but facing increasing pressure from renewables like solar and wind. Record prices, fuel shortages, rising poverty, slowing economies: the first energy crisis that's truly global. Energy markets began to tighten in 2021 because of a variety of factors, including the extraordinarily rapid economic rebound following the pandemic.

Here's a more detailed overview:

1. **Rising Global Energy Demand:**

Global energy demand is steadily increasing, driven by population growth, rising living standards, and industrialization, particularly in emerging economies.

2. **Dominance of Fossil Fuels:**

Despite the growing trend towards renewables, fossil fuels (coal, oil, and natural gas) continue to be the primary source of global energy supply, accounting for over 80%.

3. **Shifting Energy Mix:**

There's a noticeable shift towards renewable energy sources, with solar and wind power becoming increasingly competitive and cost-effective.

4. **Renewable Energy Growth:**

Renewable energy sources like solar and wind are experiencing rapid growth, with solar PV and wind power generation expected to surpass hydropower and nuclear power by 2030.

5. **Decarbonisation Efforts:**

There's a growing global focus on decarbonizing the energy sector, with efforts to reduce carbon emissions from the energy supply and end-use sectors.

6. **Energy Efficiency:**

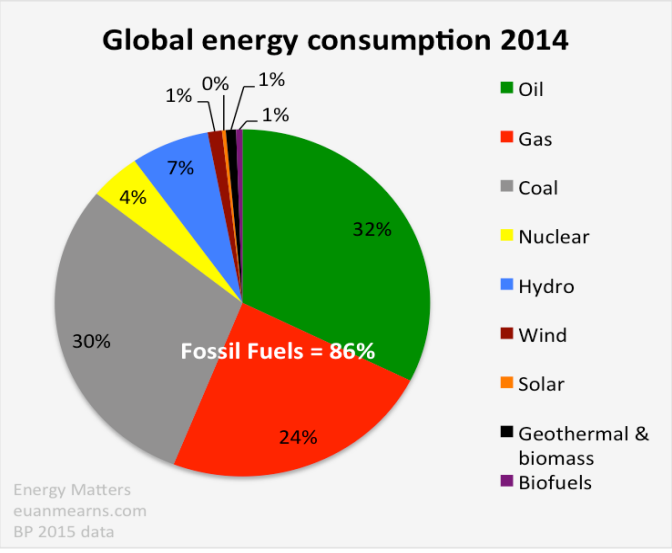
Improving energy efficiency is crucial for reducing energy consumption and emissions, with ongoing efforts to enhance energy efficiency in various sectors.

7. **Electricity Sector Transformation:**

The electricity sector is undergoing a transformation, with renewables playing an increasingly important role in meeting global electricity demand.

8. **Specific Trends: China's Energy Consumption:** China's energy consumption is growing rapidly, playing a significant role in global energy demand and consumption.
   BRICS Energy Consumption: The BRICS (Brazil, Russia, India, China, and South Africa) countries are experiencing significant energy consumption growth, accounting for a large share of global energy demand.

   OECD Energy Consumption: In contrast to the BRICS, energy consumption in the OECD (Organization for Economic Cooperation and Development) countries has declined in recent years due to factors like moderate economic growth and weak industrial activity.



Renewable Energy Growth:

- **Rapid Expansion:**

  Renewable energy sources like solar and wind are expected to grow at record rates, with global solar capacity projected to double by 2025.

- **Overtaking Coal:**

  Renewables-based electricity generation is projected to overtake coal-fired electricity generation by 2025.

- **Meeting Demand:**

  Clean electricity supply, including renewables and nuclear, is forecast to meet all of the world's demand growth through 2026.

- **Increased Capacity:**

  Global renewable power capacity additions need to reach an average of 1,066 GW per year from 2023 to 2050 under the 1.5°C scenario.

- **Electrification:**
  A high rate of electrification in sectors like transport and buildings will require a twelve-fold increase in renewable electricity capacity by 2050, compared to 2020 levels.
  Fossil Fuels Decline:

- **Coal Decline:**
  The combined share of coal, natural gas, and petroleum liquids is projected to decrease significantly by 2050.

Cost and benefits of energy transition:-

- Front-Loaded Spending:

  The initial years of the transition will likely see the highest spending, with the next decade being crucial.

- Uneven Impacts:

  The transition's effects will vary significantly across countries and sectors, requiring tailored policies and strategies.

- Risks:

  The transition is not without risks, including energy supply volatility and the potential for job displacement in fossil fuel industries.

Benefits of the Energy Transition:

- Reduced Carbon Emissions:

  Transitioning to renewable energy sources and improving energy efficiency is crucial to mitigating climate change and avoiding its worst impacts.

- Improved Air Quality: Shifting away from fossil fuels leads to cleaner air, benefiting public health, particularly in urban areas.

- New Economic Opportunities:

  The energy transition creates new industries and jobs in renewable energy technologies, energy efficiency, and related sectors.

- Reduced Energy Dependency:

  Diversifying energy sources and promoting energy independence can enhance a country's economic resilience.

- Health Benefits:

  Cleaner air and water resulting from reduced pollution from fossil fuels can improve health outcomes, especially for vulnerable populations.

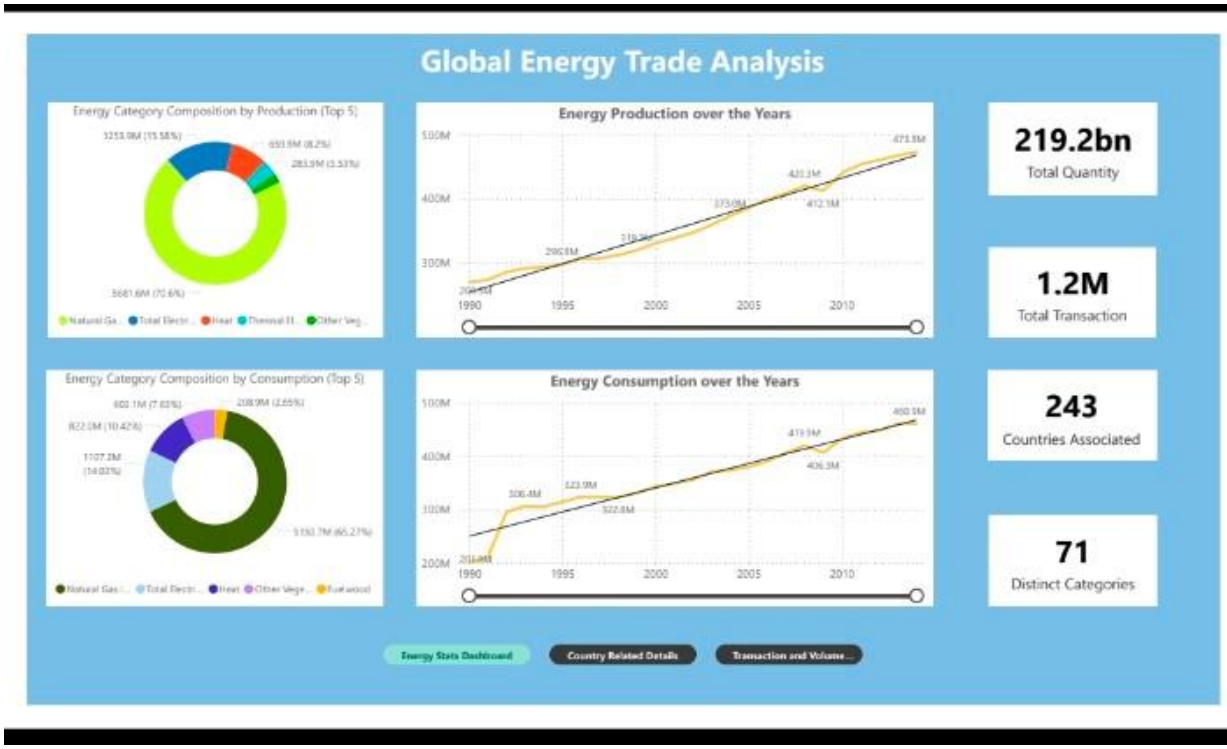
- Improved Energy Efficiency:

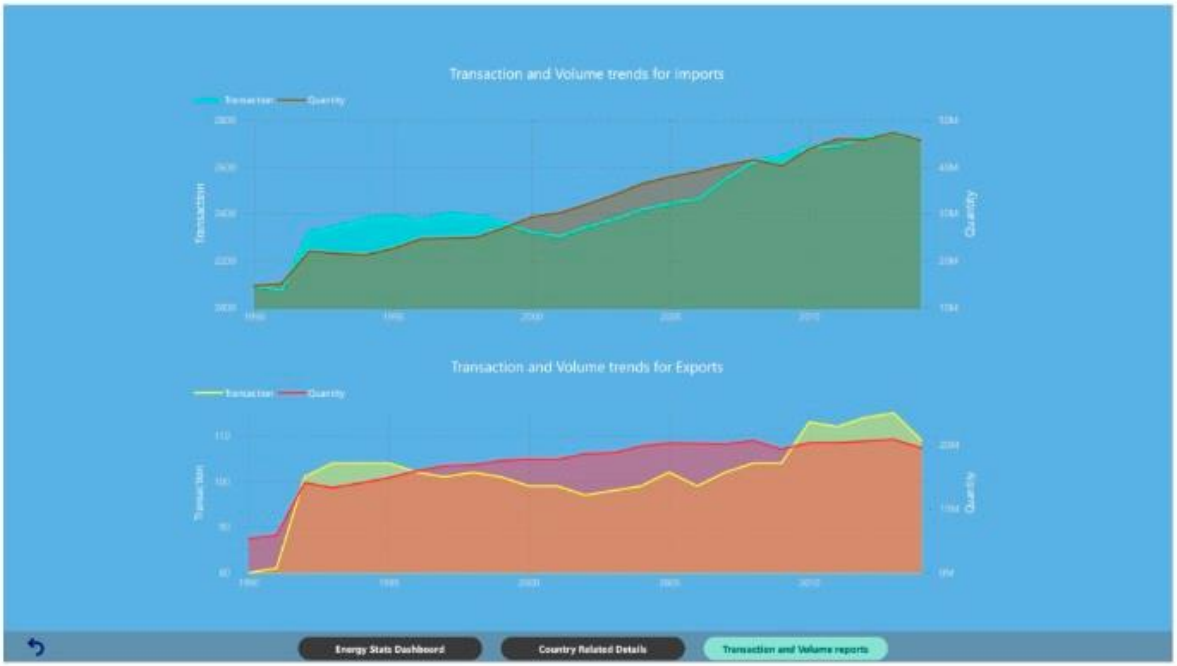
  Focusing on energy efficiency can reduce energy consumption and costs, benefiting consumers and businesses.

- Global GDP:

  McKinsey estimates that the global GDP will double every 25 years post-1970, which suggests that the costs of the energy transition are manageable.

Output:





Conclusion: -

In conclusion, global energy trends point towards a significant shift towards renewable energy sources and a growing demand for energy efficiency, driven by climate change concerns and economic factors, with emerging economies playing a key role in this transformation. An increasing number of indicators point to an accelerating energy transition that can have profound implications for energy supply and demand in the coming decades.

As the analysis shows, rapid innovation is taking place that facilitates the ongoing transition through falling costs of renewable technologies and also enabling technologies such as batteries. Along with the new policy imperatives, innovation strengthens the momentum of energy transition. As technology improvements are

permanent, they reduce the risk of policy volatility. The progress for solar and wind technology is a prime example that the future can be steered in a certain direction through technology policy.

The share of renewable energy can grow from 15% in 2015 to 63% of total primary energy supply in 2050 as this paper shows. Such renewables growth in combination with higher energy efficiency can provide 94% of the emissions reduction that is needed to stay within the limits of the Paris Climate Agreement. While absolute numbers vary there is consensus across recent scenario studies that renewable energy and energy efficiency is the most feasible direction to meet climate objectives.