COUNTRY REPORT
COURSE TITLE "202311627-J001 ENERGY POLICY"
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GENERAL INFORMATION

a) **Country Profile**

▶ Country Name : ISLAMIC REPUBLIC OF PAKISTAN

▶ Geographic Location: South Asia

▶ Capital: Islamabad
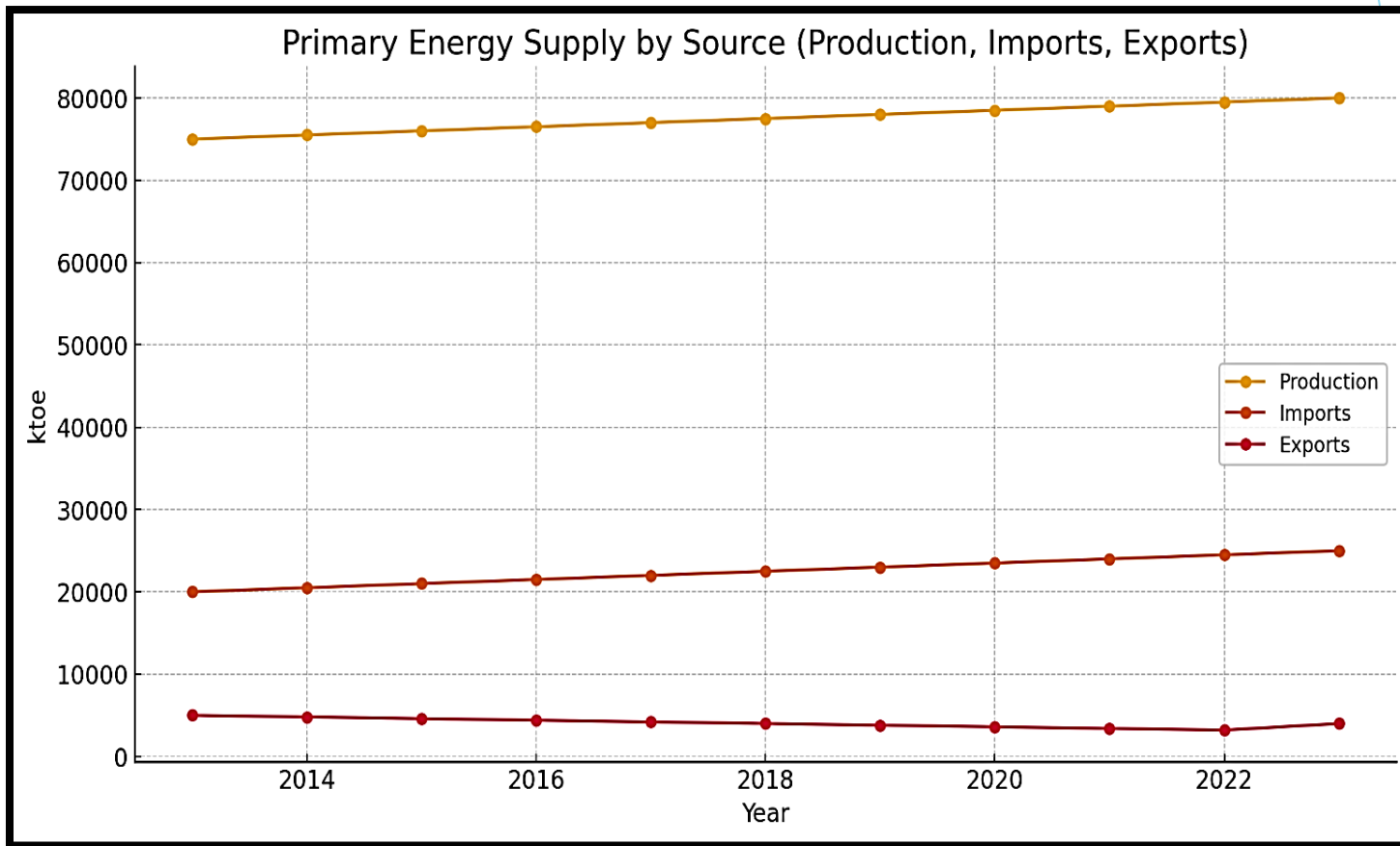
▶ National Language: Urdu

▶ Area: 881,913 sq km

b) **Economic Indicators**

▶ GDP Growth Rate: 2.38%

▶ Population Growth Rate: 2.5%
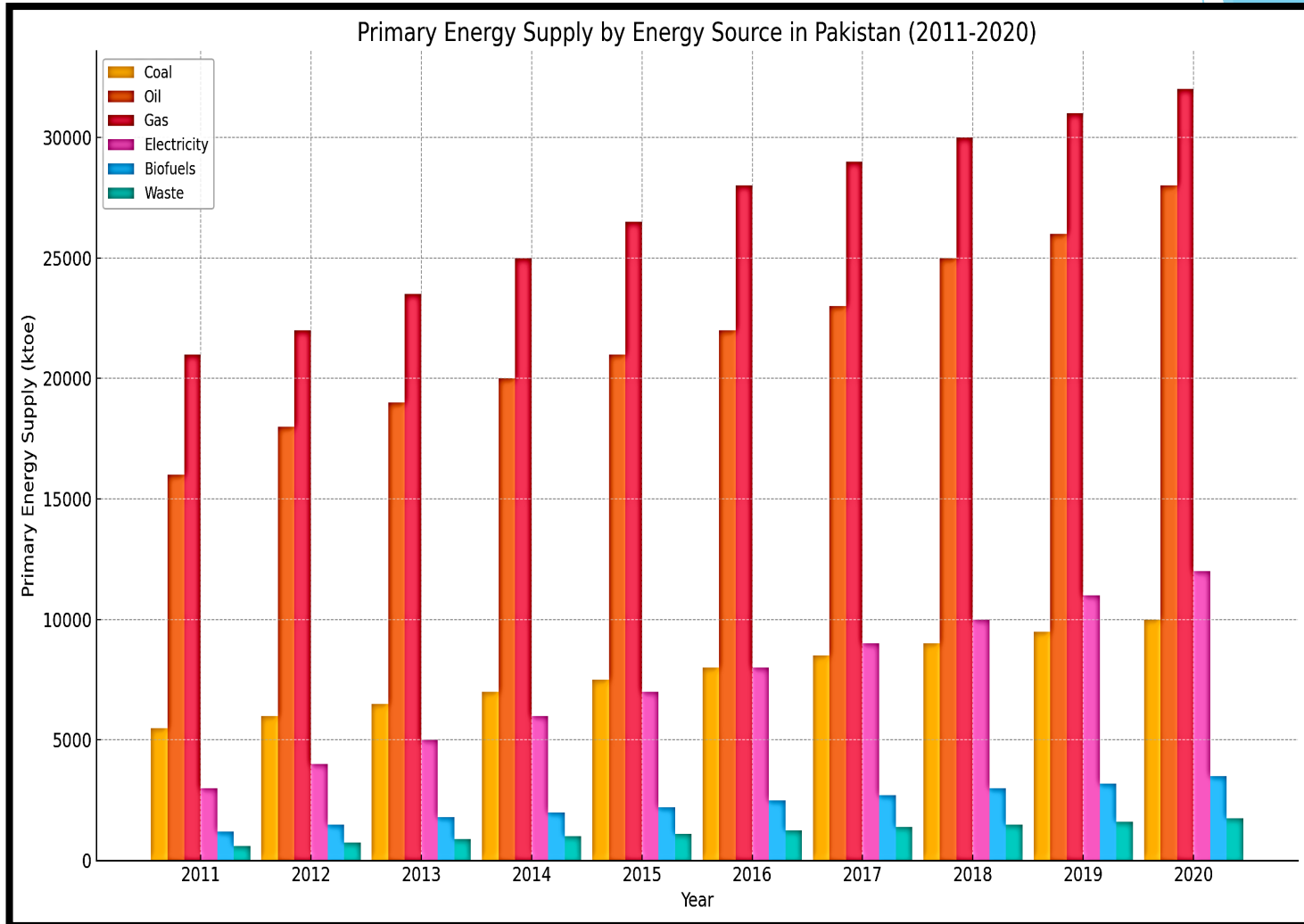
▶ Number of Households: Approximately 40 million

c) **Organizational Structure Related to Energy**

▶ Government Ministry: Ministry of Energy (Petroleum Division & Power Division)

▶ Government Agencies: National Electric Power Regulatory Authority (NEPRA), Oil and Gas Regulatory Authority (OGRA)

▶ Research Institutes: Pakistan Council of Renewable Energy Technologies (PCRET), Alternative Energy Development Board (AEDB)
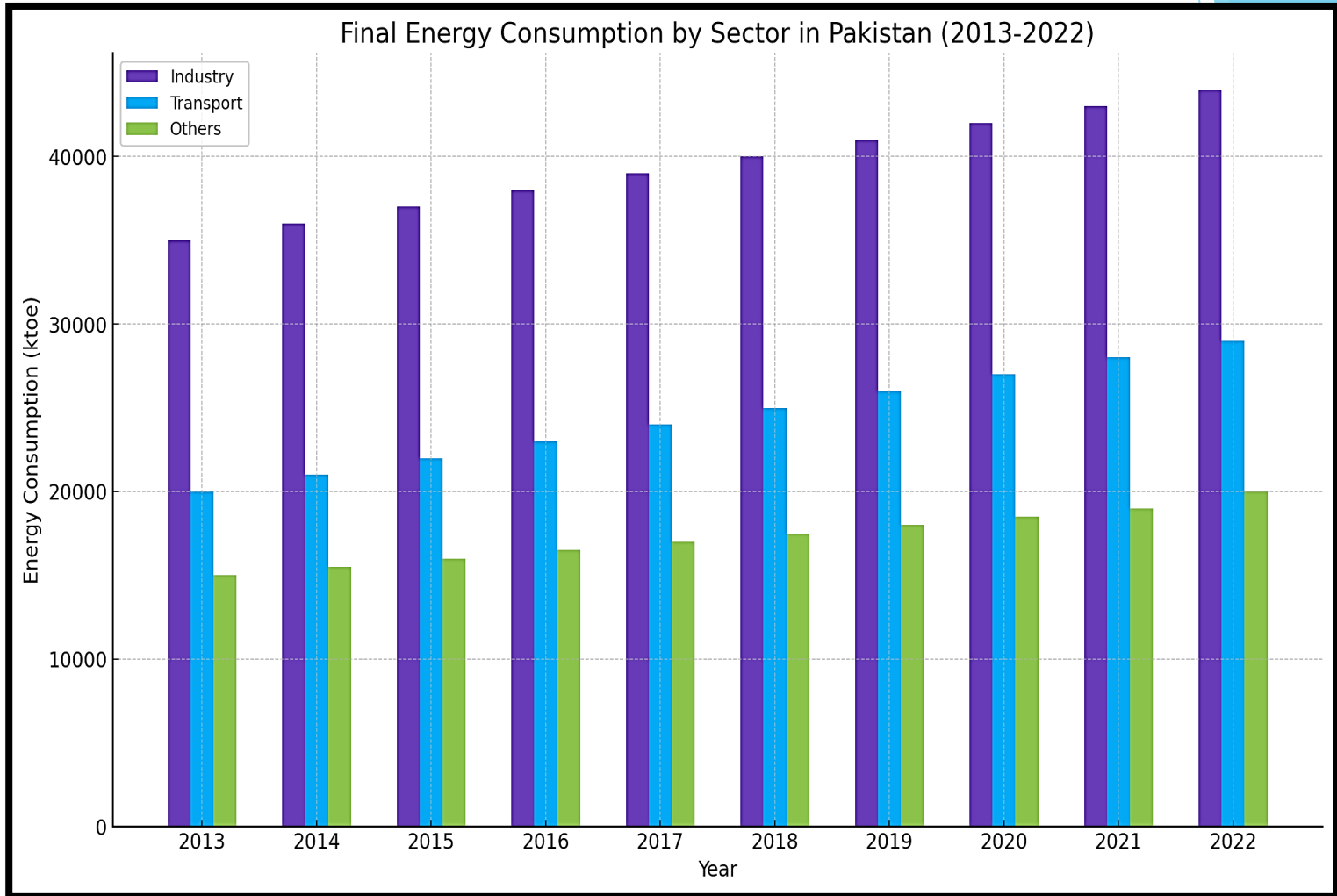
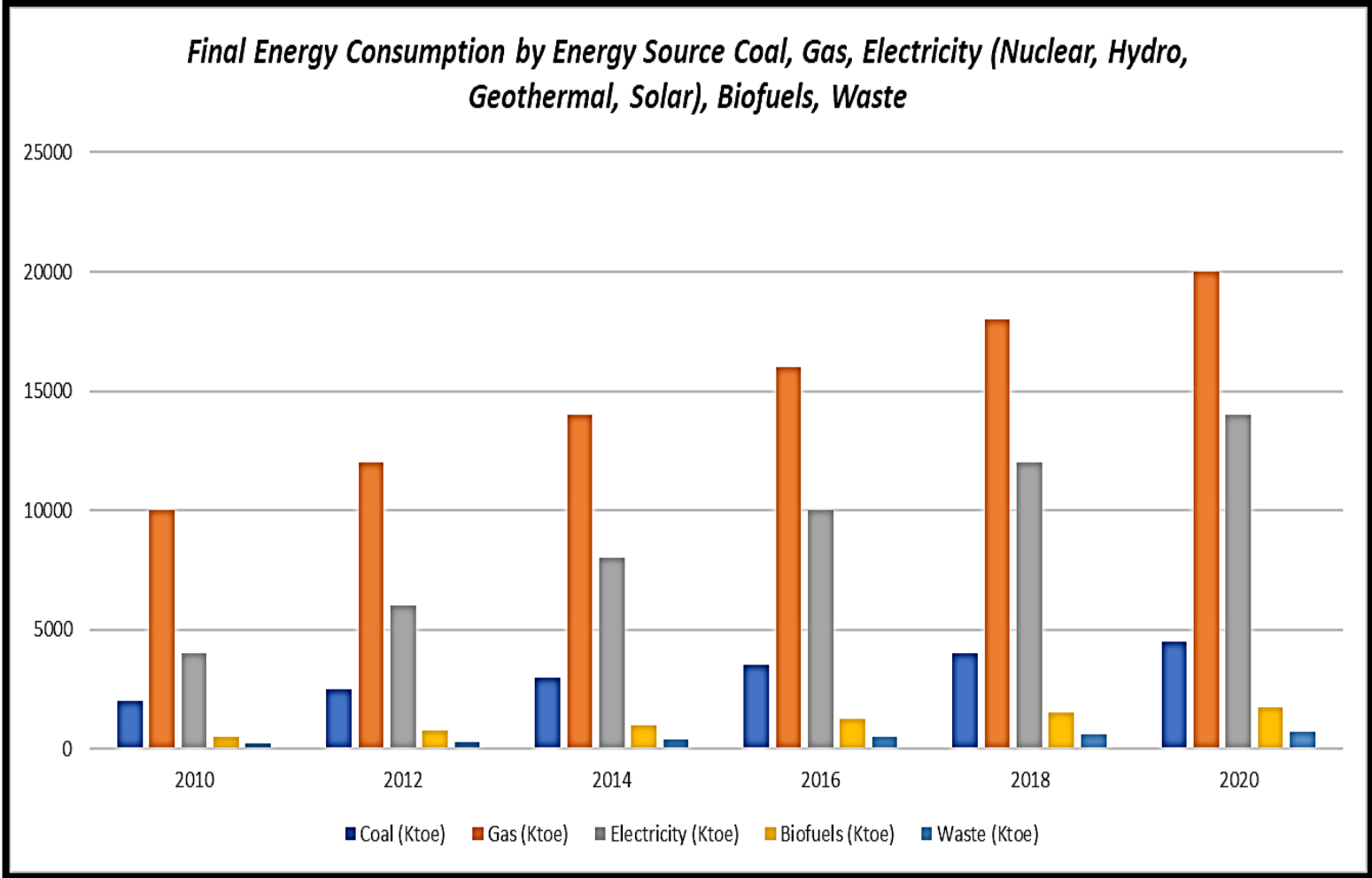# ENERGY DEMAND & SUPPLY FOR PAST 10 YEARS

Primary Energy Supply by Source (Production, Imports, Exports)

ENERGY DEMAND & SUPPLY FOR PAST 10 YEARS

Primary Energy Supply by Energy Source in Pakistan (2011-2020)

ENERGY DEMAND & SUPPLY FOR PAST 10 YEARS

Final Energy Consumption by Sector in Pakistan (2013-2022)

ENERGY DEMAND & SUPPLY FOR PAST 10 YEARS

Final Energy Consumption by Energy Source Coal, Gas, Electricity (Nuclear, Hydro, Geothermal, Solar), Biofuels, Waste

ENERGY DEMAND & SUPPLY FOR PAST 10 YEARS

Electricity Generation by Energy Source Coal, Oil, Gas, Nuclear, Renewable Sources
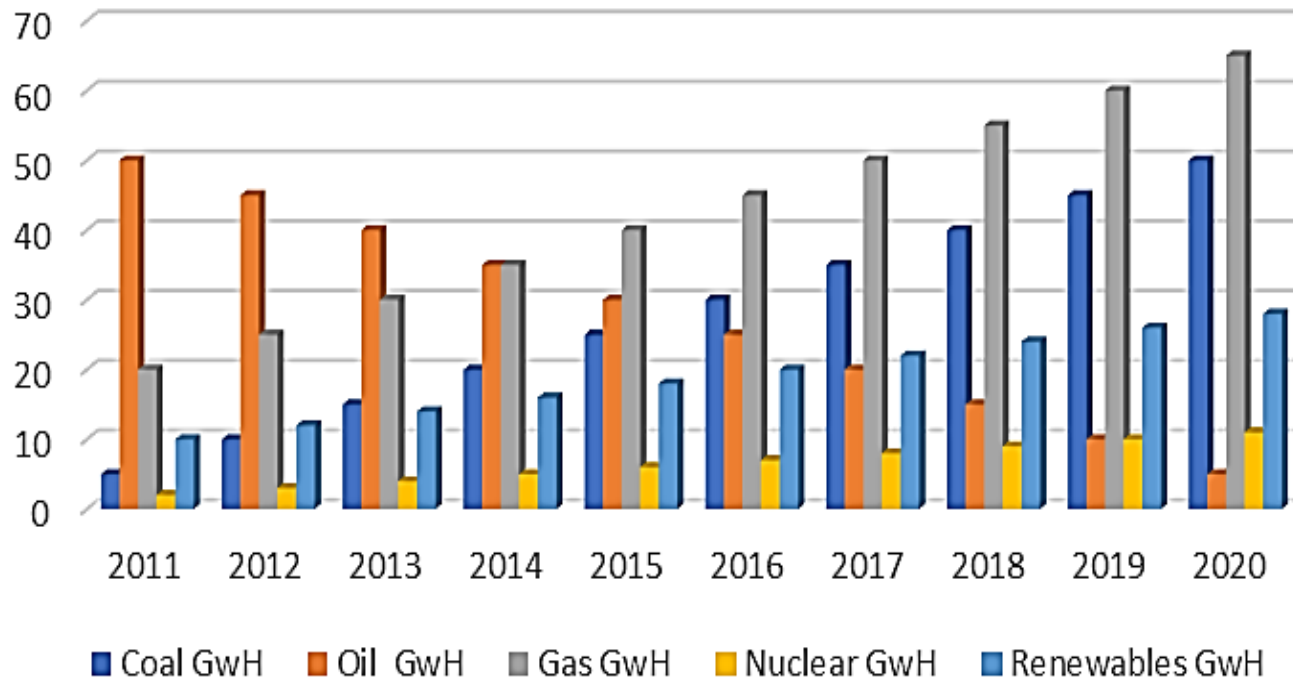
ENERGY DEMAND & SUPPLY FOR PAST 10 YEARS

Co2 emission (unit : Mt CO2) by sector (industry, transport, others (residential, commercial and public services, others) and energy source (coal, oil, gas, others)
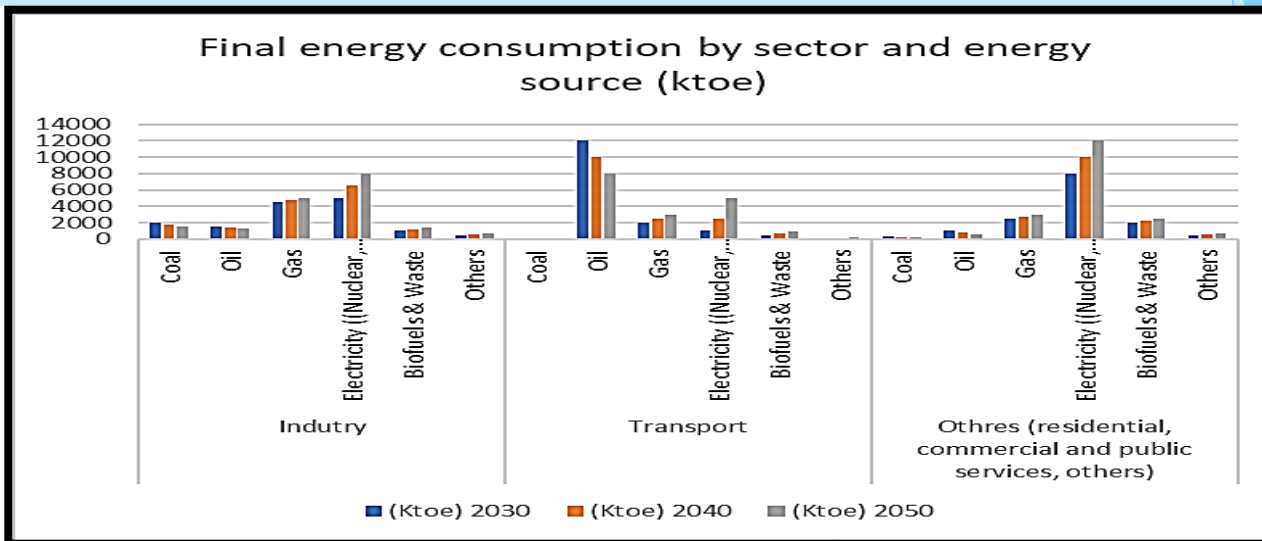
OUTLOOK OF ENERGY DEMAND AND SUPPLY (2030, 2040 & 2050)

Primary Energy Supply by Source and Energy Source (Ktoe)
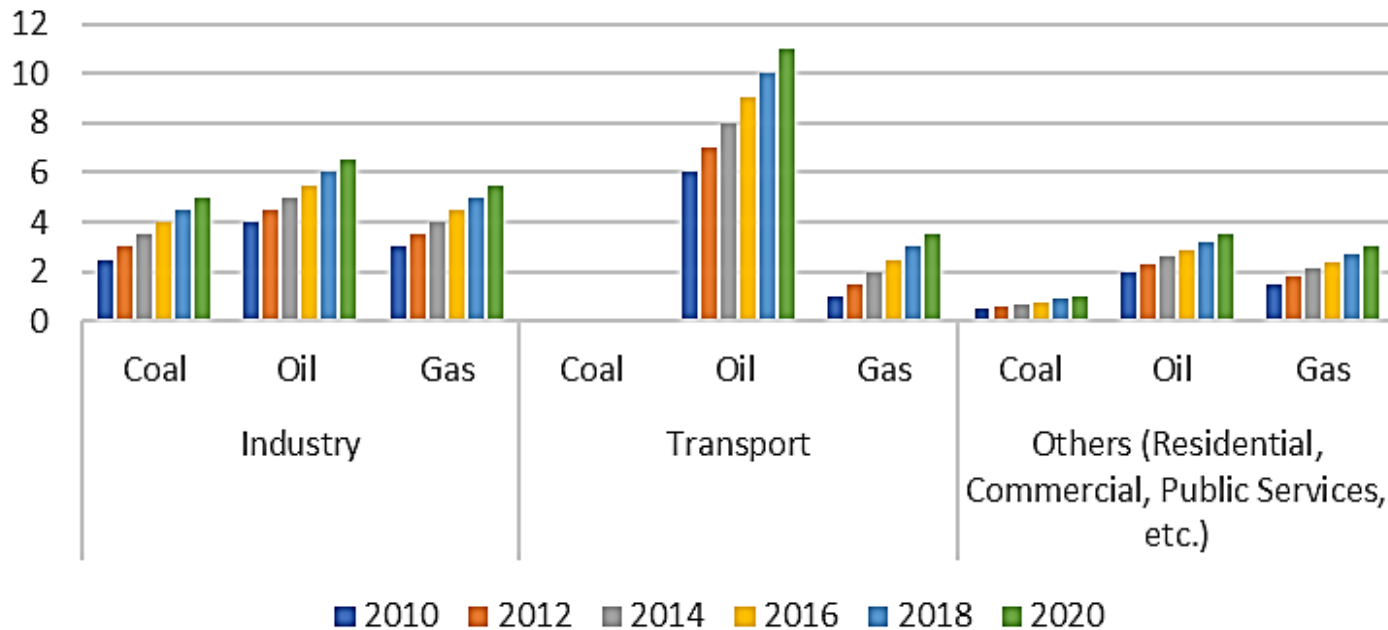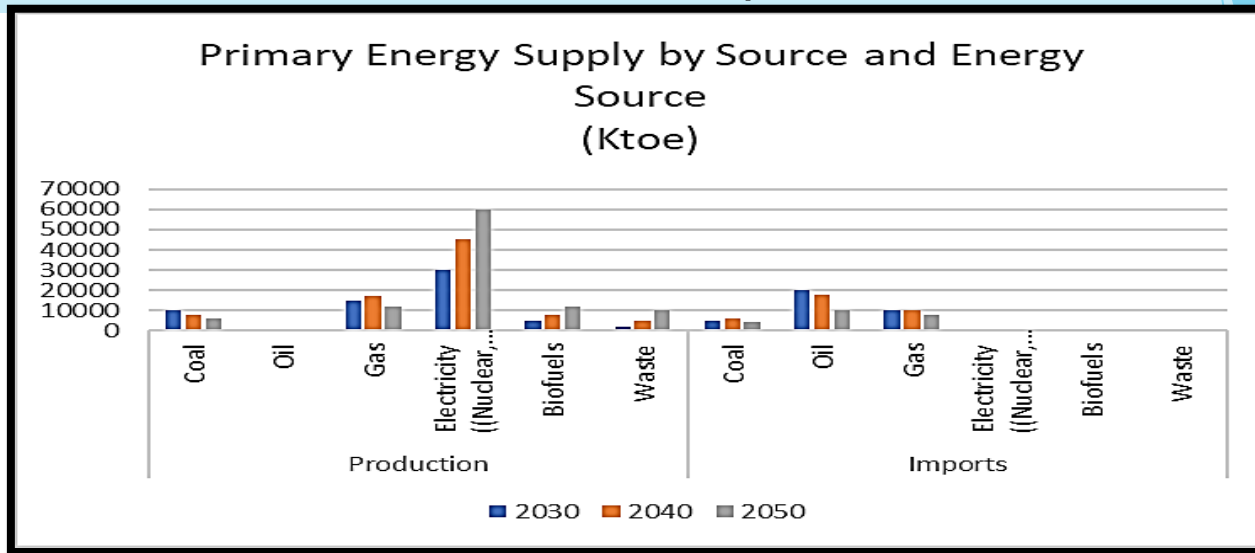
		(Ktoe)		
	Year	2030	2040	2050
Production	Coal	10000	8000	6000
	Oil			
	Gas	15000	17000	12000
	Electricity ((Nuclear, Hydro, Geothermal, Solar)	30000	45000	60000
	Biofuels	5000	8000	12000
	Waste	2000	5000	10000
Imports	Coal	5000	6000	4000
	Oil	20000	18000	10000
	Gas	10000	10000	8000
	Electricity ((Nuclear, Hydro, Geothermal, Solar)			
	Biofuels			
	Waste			

OUTLOOK OF ENERGY DEMAND AND SUPPLY (2030, 2040 & 2050)

Final energy consumption by sector and energy source (ktoe)

|		(Ktoe)		
Year		2030	2040	2050
Indutry	Coal	2000	1800	1500
	Oil	1500	1400	1300
	Gas	4500	4700	5000
	Electricity ((Nuclear, Hydro, Geothermal, Solar)	5000	6500	8000
	Biofuels & Waste	1000	1200	1400
	Others	500	600	700
Transport	Coal	100	80	50
	Oil	12000	10000	8000
	Gas	2000	2500	3000
	Electricity ((Nuclear, Hydro, Geothermal, Solar)	1000	2500	5000
	Biofuels & Waste	500	700	900
	Others	100	150	200
Othres (residential, commercial and public services, others)	Coal	300	250	200
	Oil	1000	800	600
	Gas	2500	2700	3000
	Electricity ((Nuclear, Hydro, Geothermal, Solar)	8000	10000	12000
	Biofuels & Waste	2000	2200	2500
	Others	500	600	700

OUTLOOK OF ENERGY DEMAND AND SUPPLY (2030, 2040 & 2050)

OUTLOOK OF ENERGY DEMAND AND SUPPLY (2030, 2040 & 2050)

CO2 Emission (mt Co2) by scetor & Energy Source
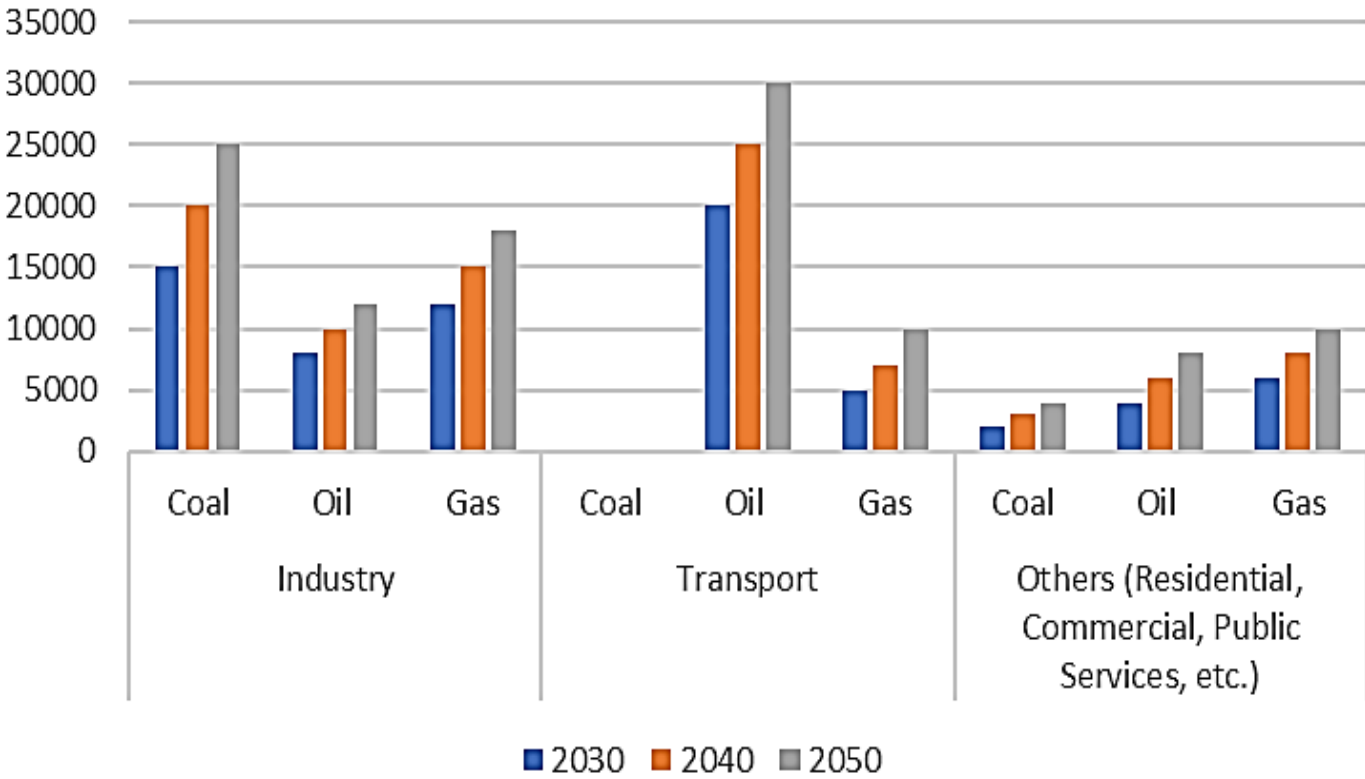
CURRENT ENERGY POLICY AND MEASURES

Energy Policy

Diversification of Energy Sources:

Pakistan is focusing on diversifying its energy mix to reduce dependency on imported fuels. This includes increasing the share of renewable energy sources such as wind, solar, and hydroelectric power. The government has set ambitious targets to achieve a significant percentage of energy generation from renewables by 2030.

Energy Infrastructure Development:

The policy emphasizes the development and modernization of energy infrastructure, including upgrading the transmission and distribution networks to reduce losses and improve efficiency. Investments are being made to enhance the grid's capacity to integrate renewable energy sources and to ensure reliable and uninterrupted power supply.

Energy Conservation and Efficiency:

Pakistan is implementing measures to promote energy conservation and efficiency across various sectors. This includes introducing energy-efficient technologies, encouraging industrial and commercial sectors to adopt best practices, and raising public awareness about energy-saving practices. The aim is to reduce overall energy demand and improve sustainability.

CURRENT ENERGY POLICY AND MEASURES

Issues & Bottlenecks

1) Financial Constraints

- Limited Funding
- Investment Risks

2) Technical and Infrastructure Challenges

- Aging Infrastructure
- Grid Integration Issues

3) Regulatory and Policy Inconsistencies

- Policy Continuity
- Bureaucratic Hurdles

4) Energy Supply-Demand Gap:

- Power Shortages
- Fuel Supply Issues

5) Environmental and Social Concerns:

- Sustainability
- Public Opposition

SUBJECTS TO LEARN

➢ **Energy Economics**

➢ **Energy Technologies**

➢ **Environmental Policy and Sustainability**

➢ **Energy Law and Regulation**

➢ **Energy Management and Efficiency**

➢ **Energy Markets and Finance**

➢ **Global Energy Politics and Security**

➢ **Sustainable Energy Systems**

➢ **Policy Analysis and Design**

➢ **Research Methods in Energy Policy**

Q & A

Appendix - 1

Energy Prices

Electricity Prices:

Residential Tariffs:

Approximately $0.07 to $0.12 per kWh

- Commercial Tariffs:

Approximately $0.12 to $0.18 per kWh.

- Industrial Tariffs:

Approximately $0.10 to $0.15 per kWh.

Natural Gas Prices:

- Domestic Consumers:

Approximately $1.2 to $6.0 per MMBtu

- Commercial and Industrial Consumers:

Approximately $8.0 to $10.0 per MMBtu.

Fuel Prices

- Petrol (Gasoline):

Approximately $0.90 to $1.00 per liter.

- Diesel:

Approximately $0.95 to $1.05 per liter.

- LPG (Liquefied Petroleum Gas):

Approximately $0.75 to $1.00 per kg.

Appendix - 2

<u>**Energy related Investment for domestic and overseas**</u>
<u>**Domestic Investment Opportunities**</u>
Renewable Energy:
Pakistan has substantial potential for renewable energy, especially in solar and wind power. Initiatives are in place to attract investment in these areas, with multiple companies showing interest in setting up wind turbine and solar panel manufacturing facilities within the country.
Infrastructure Development:
There is a strong emphasis on improving the energy infrastructure. This includes reducing line losses, upgrading distribution networks, and enhancing the capacity of existing power plants. Private sector participation is encouraged through frequent bidding rounds for new projects.
Energy Efficiency Programs:
Programs aimed at improving energy efficiency across various sectors offer lucrative investment avenues. This includes initiatives to modernize outdated systems and integrate smart grid technologies.
<u>**Overseas Investment Opportunities**</u>
Public-Private Partnerships (PPPs):
The government is promoting PPPs to attract foreign investment in large-scale energy projects. These include the development of new power plants, transmission lines, and renewable energy projects.
Policy Reforms and Incentives:
Recent reforms, supported by international bodies like the Asian Development Bank, aim to create a more favorable investment climate. These reforms include the introduction of cost-reflective tariffs, better governance practices, and streamlined regulatory frameworks to enhance investor confidence.
Export-Oriented Projects:
Investment opportunities also exist in projects geared towards exporting energy, particularly through leveraging regional trade agreements and initiatives under the China-Pakistan Economic Corridor.