

## PLUGGING INTO THE FUTURE : AN EXPLOITATION OF ELECTRICITY CONSUMPTION PATTERNS

### Introduction:

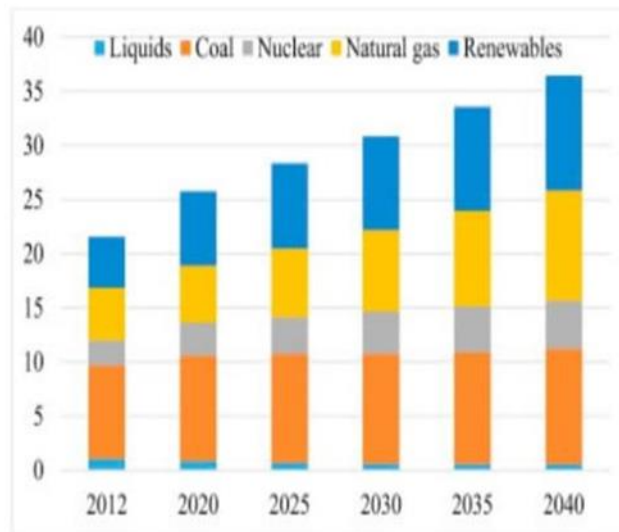
- ❖ In [Conventional Energy in North America](#), 2019
- ❖ Electricity consumption is an essential component of the modern life.
- ❖ It not only provides clean and safe light throughout the day, but also in many countries refreshes homes on hot summer days, and in others warms them in winter.
- ❖ Keeping the North America region energized is actually an amazing feat, a daily miracle.

### Electricity Consumption:

- ❖ Global electricity consumption has continued to go up rapidly at a rate faster than energy consumption.
- ❖ Between 1980 and 2013, the world's annual electricity consumption rose from 7300 TWh to 22,100 TWh.
- ❖ Since the twenty first century, global electricity consumption has seen even faster growth, as evidenced by an average annual increase of 3.4%, 1.2 percentage points higher than average annual growth of energy consumption.
- ❖ Shows global electricity consumption during 1980–2013.

### Electric Power Generation :

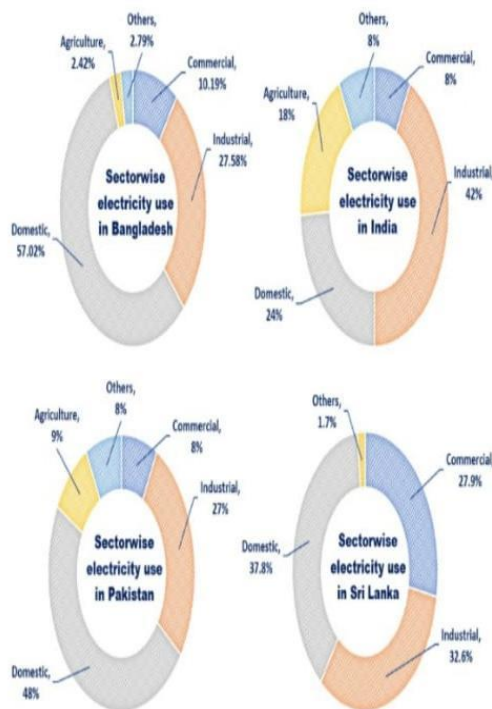
- ❖ Electricity consumption worldwide grows faster than any other energy sources.
- ❖ From 2012 to 2040 the global electricity generation may rises by 1.9%/year on average.
- ❖ Currently coal is considered as the source that has the largest share of energy for world electricity generation in the IEO2016 Reference case .
- ❖ However, this share is expected to decline from 40% of total generation in 2012 to 29% in 2040.
- ❖ The total generation of electricity from liquid fuels share is also expected to decrease from 5% in 2012 to less than 2% in 2040.
- ❖ On the other hand, natural gas and [renewable energy sources](#) are a justification for increasing shares of total generation, with the natural gas share increasing from 22% in 2012 to 28% in 2040 and the renewable share growing from 22% in 2012 to 29% in 2040.
- ❖ By 2040 similar share of global electricity generation is expected from renewables, natural gas, and coal.
- ❖ Electricity generation from nuclear power worldwide is expected to increase from 2.3 trillion kWh in 2012 to 3.1 trillion kWh in 2020 and to 4.5 trillion kWh in 2040 in the IEO2016 reference case.



#### Electricity Generation mix in South Asian Developing Countries:

- ❖ Electricity consumption has been significantly increased over the last few years, particularly in developing countries.
- ❖ Electricity production in developing countries has been largely driven by [coal combustion](#) in traditional coal-powered plants; however, the beginning of the 21st century witnessed more gas usage in electricity production via [steam turbines](#).
- ❖ Almost all developing countries have set their sustainable development goals and intending to shift their [power consumption](#) pattern more into [renewable resources](#) (see Table 2.1).
- ❖ Asia pacific consumed about 47% of global electricity in 2019.
- ❖ The total installed electricity generation capacity in Pakistan reached 35.6 GW in June 2020 (NEPRA, 2021).
- ❖ As of February 2021, the total installed power generation capacity in India was 379.1 GW (MOP, 2021).
- ❖ Bangladesh increased the total installed power generation capacity to 25.2 GW, including captive power and off-grid renewable energy, as of April 2021 (BPDB, 2021).
- ❖ So far, Bangladesh served a maximum demand of approximately 13 GW.
- ❖ India is the largest electricity-producing and consuming country among the south Asian developing countries.
- ❖ The country produced approximately 1342 TWh of electricity in 2020, which was about 2.6% lower than in 2019 (Ritchie, 2020b).
- ❖ On the contrary, Bangladesh experienced a slight increase in electricity production from 2019 (~79.8 TWh) to 2020 (~80.4 TWh).

- ❖ Pakistan produced nearly the same amount of electricity (~145.4 TWh) in 2019 and 2020.
- ❖ Sri Lanka increased their electricity production by 6.6% in 2019 compared to the year 2018.
- ❖ Domestic utilization is the major sector for electricity consumption in Bangladesh, Pakistan and Sri Lanka, followed by the industrial sector (see Fig. 2.3).
- ❖ On the contrary, in India, the industrial sector consumed about 42% of total electricity, followed by the domestic sector (24%).
- ❖ In the fiscal year 2019, Bhutan had the highest per capita electricity consumption of 8664 kilowatt-hours (kWh), followed by Maldives (1173 kWh) and India (1009 kWh), whereas other south Asian countries are far lower than Bhutan (Ritchie, 2020b).
- ❖ In the fiscal year 2020, per capita electricity consumption in Bangladesh was 488 kWh, which was the same as the previous year.
- ❖ However, per [capita consumption](#) for India and Pakistan decreased from 1009 to 972 kWh and from 671 to 658 kWh in 2020 compared to 2019 due to the COVID-19 outbreak, resulting in the slowdown in industrial consumption.



## Conclusion:

- ❖ The Empirical work that we have conducted advances the knowledge on household consumption patterns.
- ❖ Besides of the identification of the factors characterizing selected electricity profiles, this paper discloses the importance of the future widespread use of smart meters, which provide sufficient information to support the design and implementation of energy reduction

policies targeting specific groups of consumers based on their socio economic characteristics and energy use profiles.

- ❖ This knowledge could also be used as a starting point for utilities looking at peak shaving and electricity demand shifting inside households derived from market segmentation.