

# MODULE: 1

## ENERGY SCENARIO UPDATES



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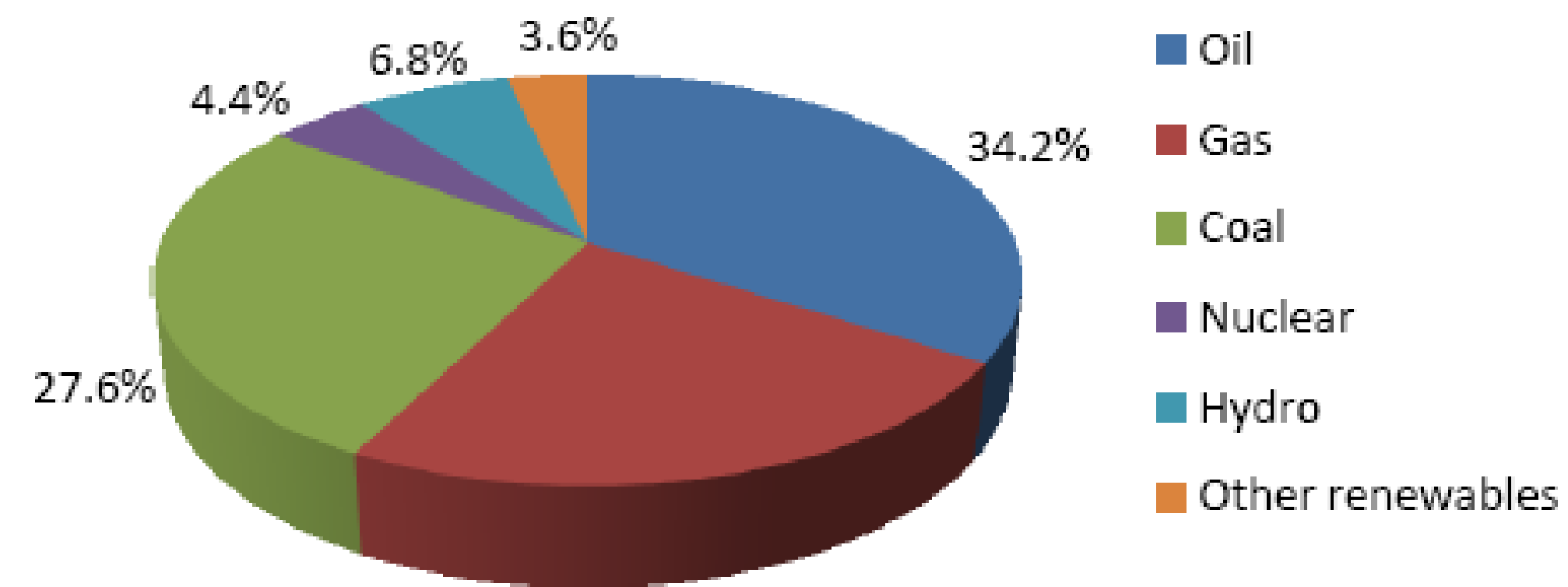
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# INTRODUCTION

**World Primary Energy Consumption - 2017**

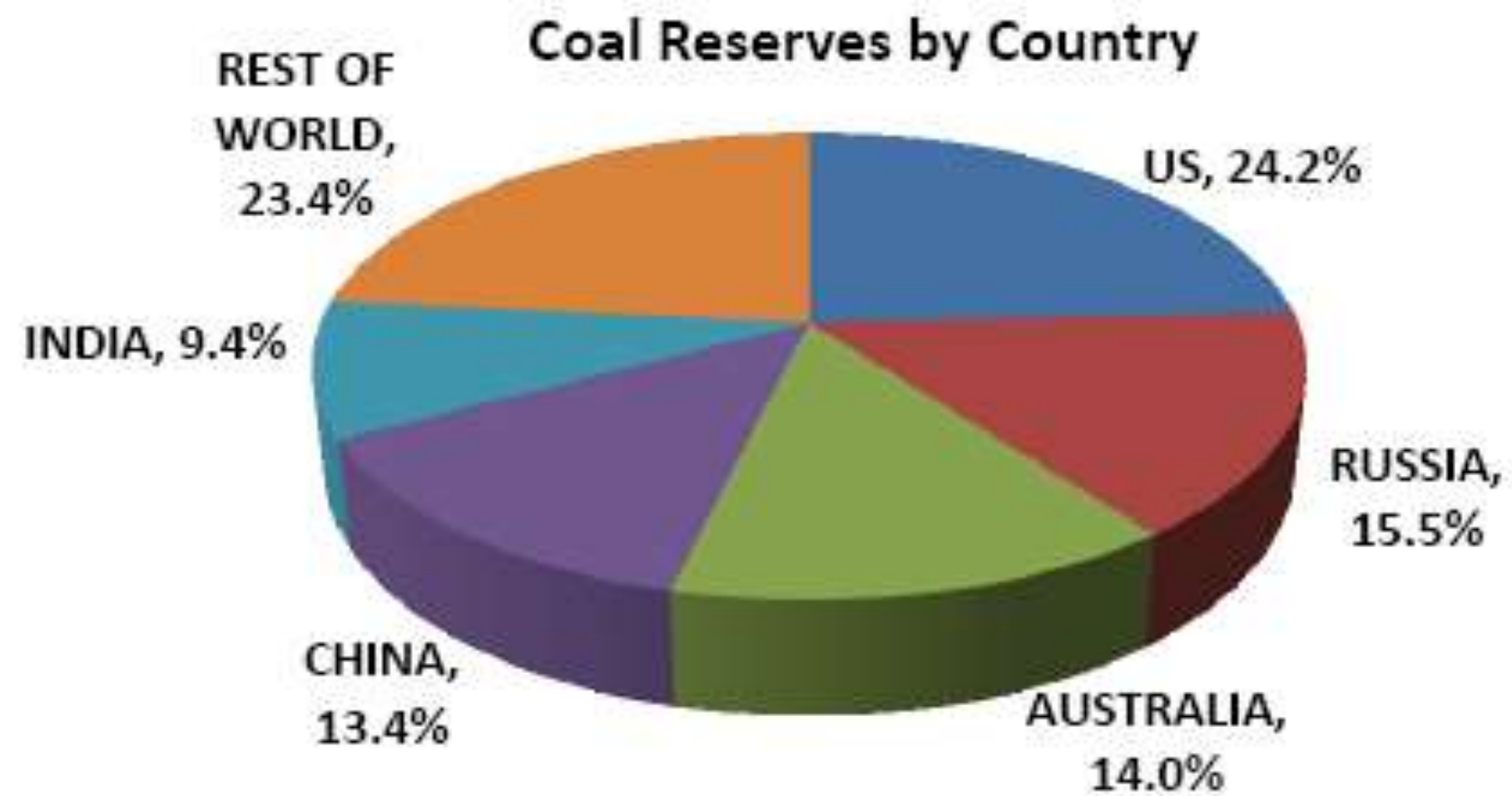


**World Total Primary Energy consumption - 13511.2 MTOE**

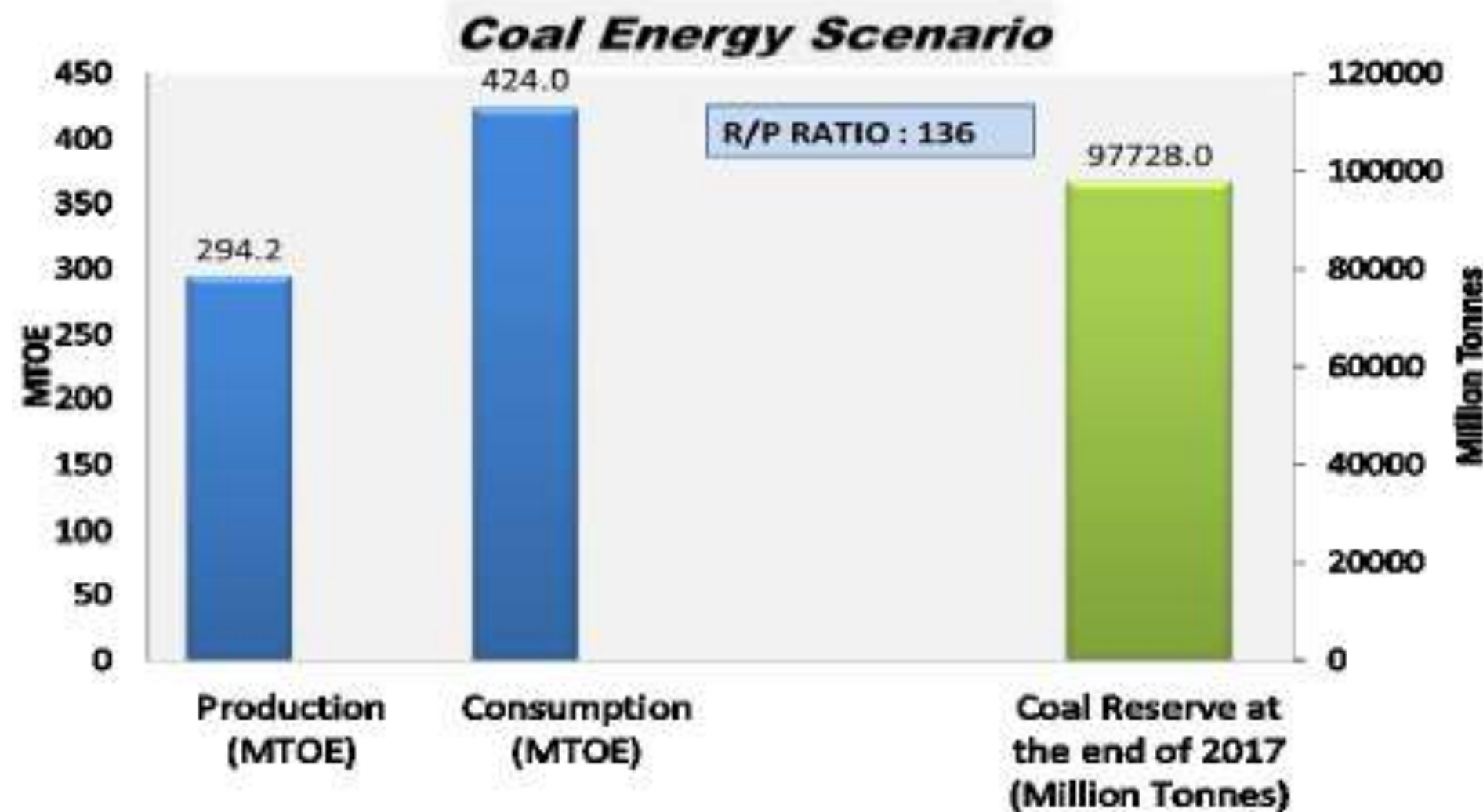
- Fossil fuels such as oil, natural gas and coal supply about 85% of energy to industrial, transportation, commercial and residential sector.
- India's primary energy consumption was 753.7 million tonnes oil equivalent in 2017.
- However, these fossil fuels will be exhausted soon as well as global environment is worsening due to increasing greenhouse gas emissions by fossil fuels.



COAL



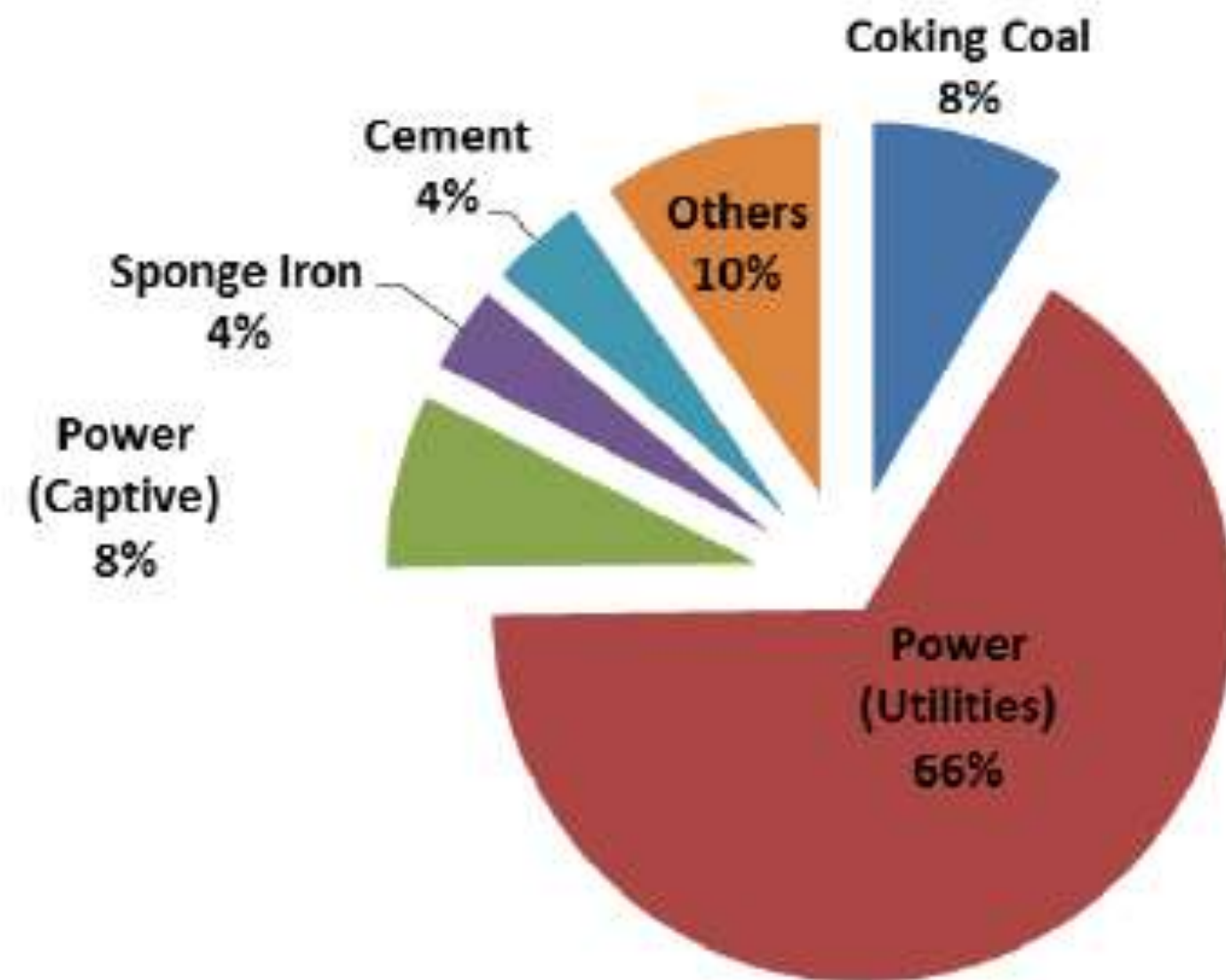
- Coal is the predominant of the three major fossil fuels.
- Have reserves in over 100 countries.
- Reserve/Production (R/P) ratio of coal is much higher than that of oil and gas.



Production – 716 MT, Consumption- 424 MTOE, Reserve 97728 MT

- India has 9.4% of the world reserves (fifth largest coal reserves in the world).
- India is second largest in terms of coal consumption after China.
- Coal used in India comprises 10% coking coal and 90% non-coking coal.





- Coal is mainly used as a fuel for electricity generation and other industrial processes.
- Ministry of Environment, Forest and Climatic Change (MoEFCC) issued a directive in 2016 which requires washing of coal for supplies to stand-alone power plants of 100 MW capacity or above located within 500 and 749 km from pitheads.



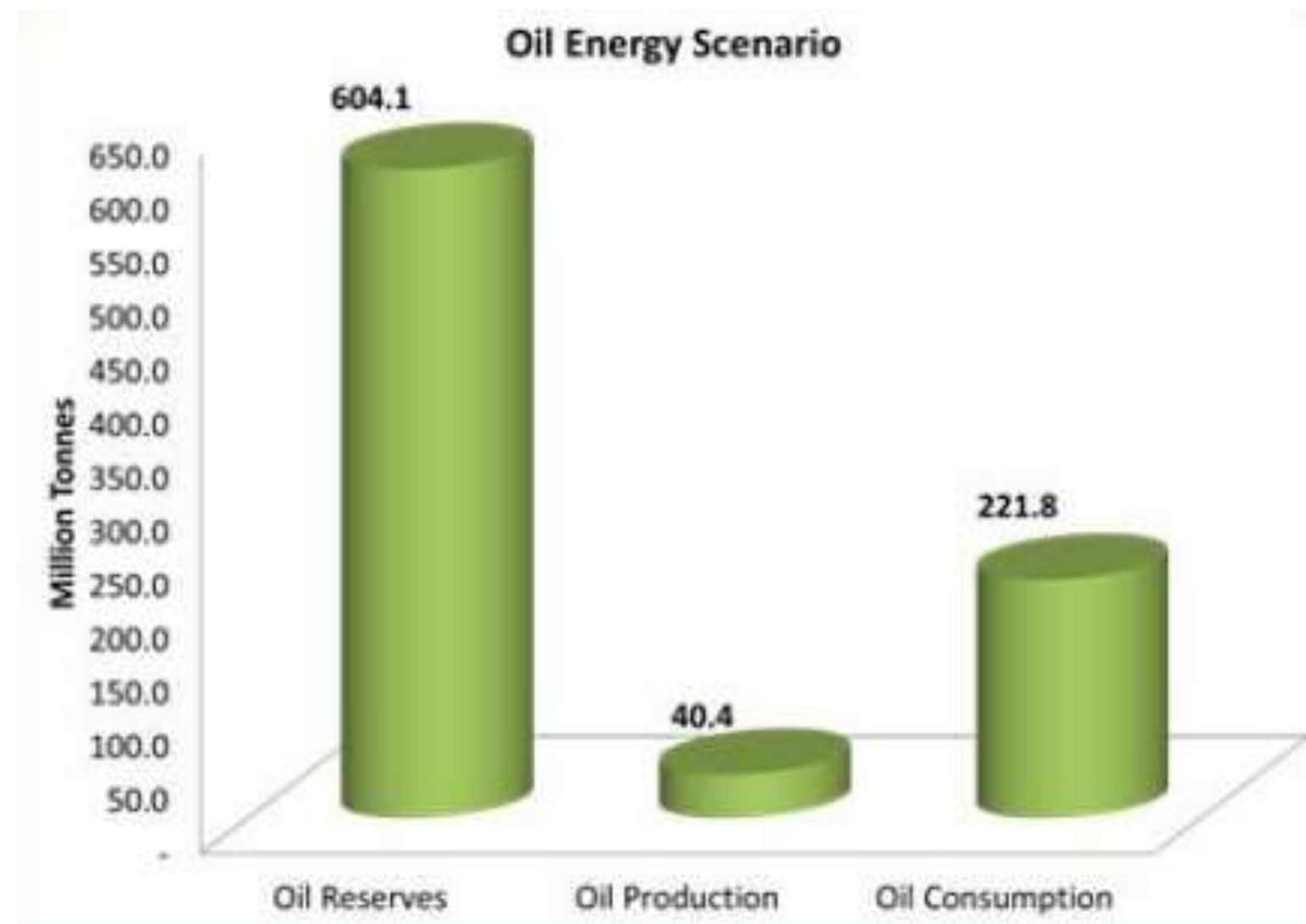


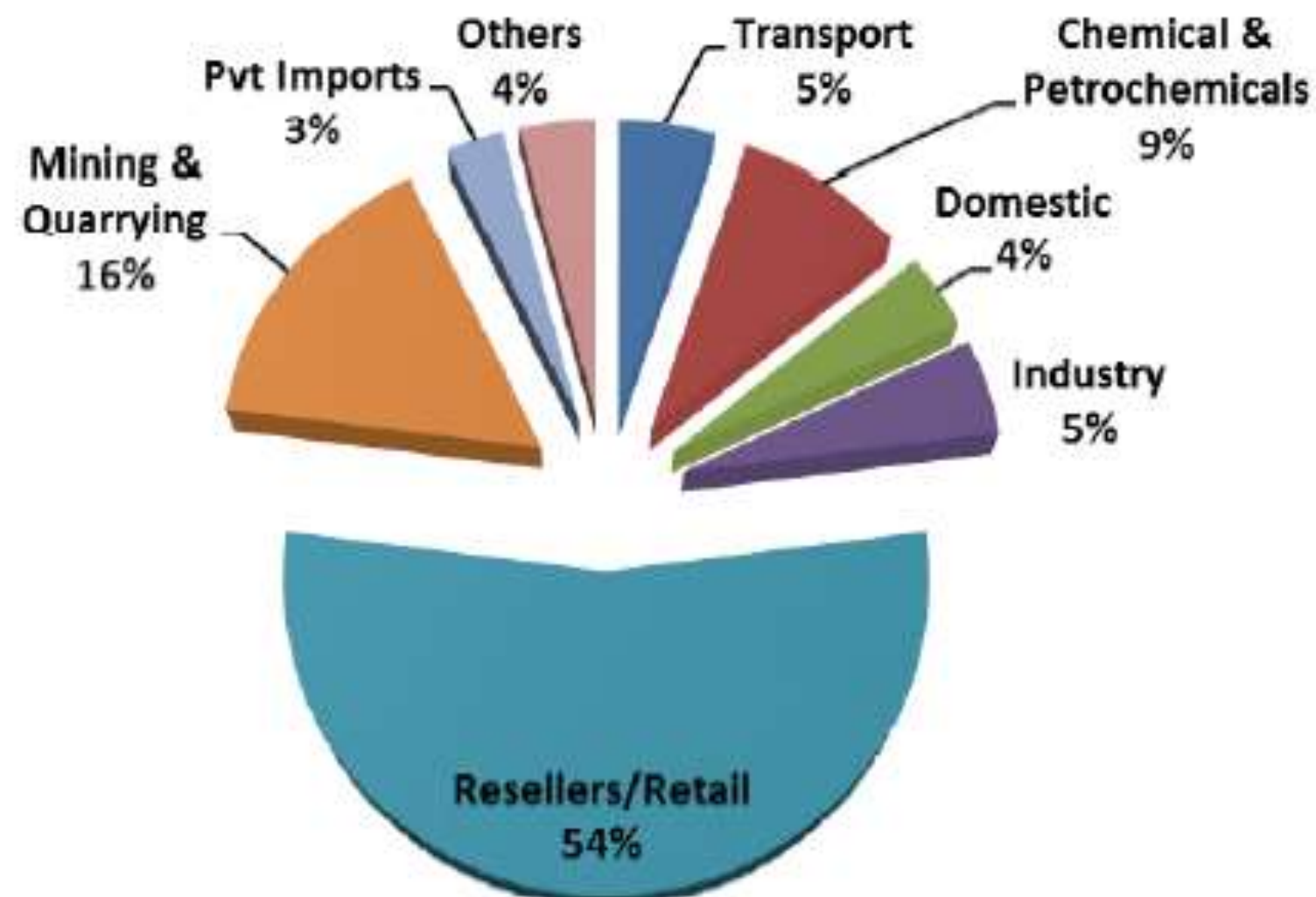
OIL

## 1

## Introduction

- Major demand for oil has come from transportation sector.
- India has only 0.3% of the world reserves with an estimated R/P ratio of only 14.4 years.
- India imports over 80% of its crude oil.





Total Consumption = 123858.823 Th Tonne

- Transport sector is the largest consumer of commercial energy (diesel and petrol).
- The road-based mobility is the dominant mode in passenger transport.





## 4

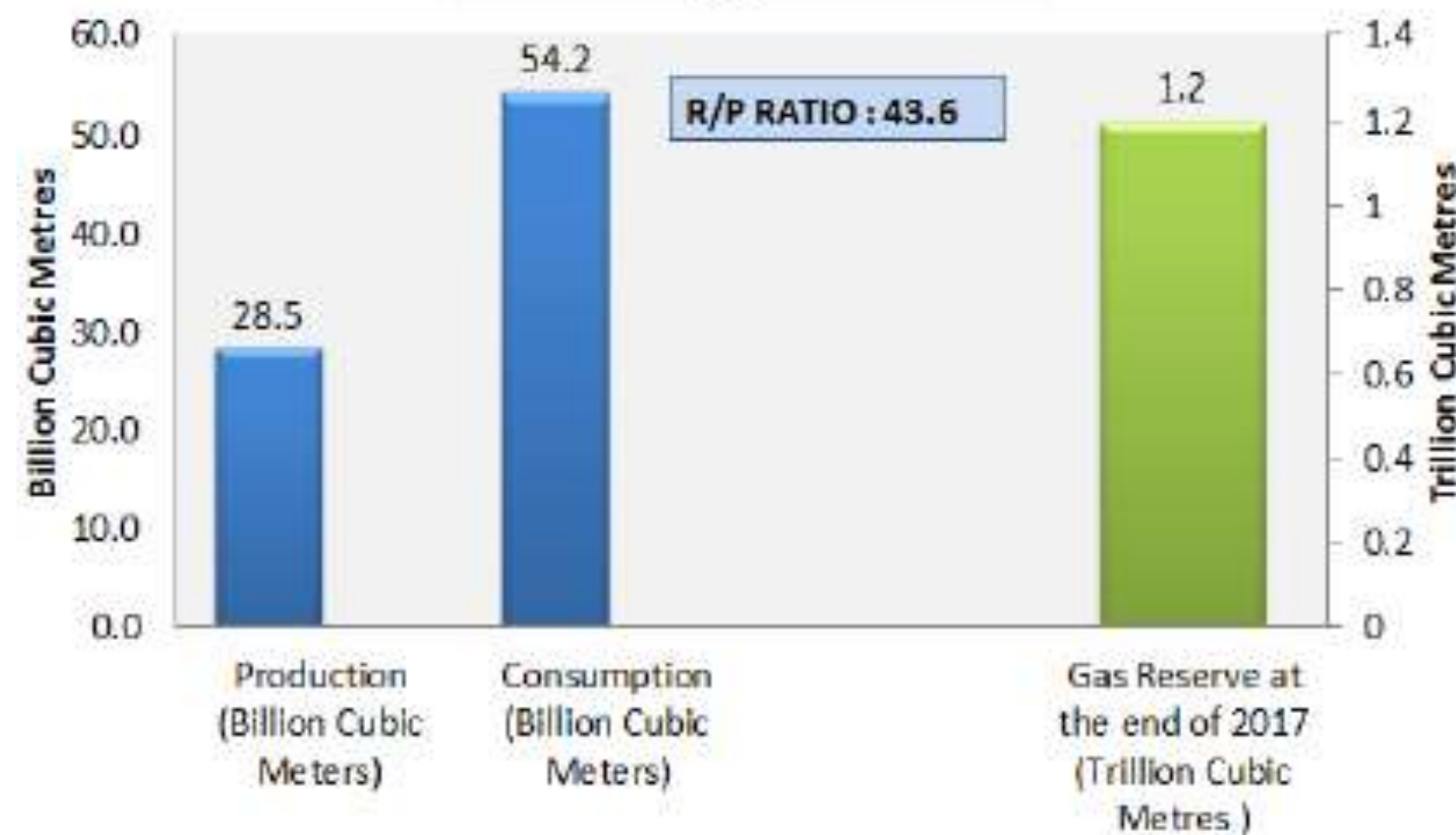
## Role of Government

- Government is promoting non-conventional vehicles.
- India has adopted Euro 6/VI equivalent standards that will go into effect in 2020.
- The government is promoting use of electric and hybrid vehicles.
- Government of India has also proposed methanol and ethanol blending in petrol.

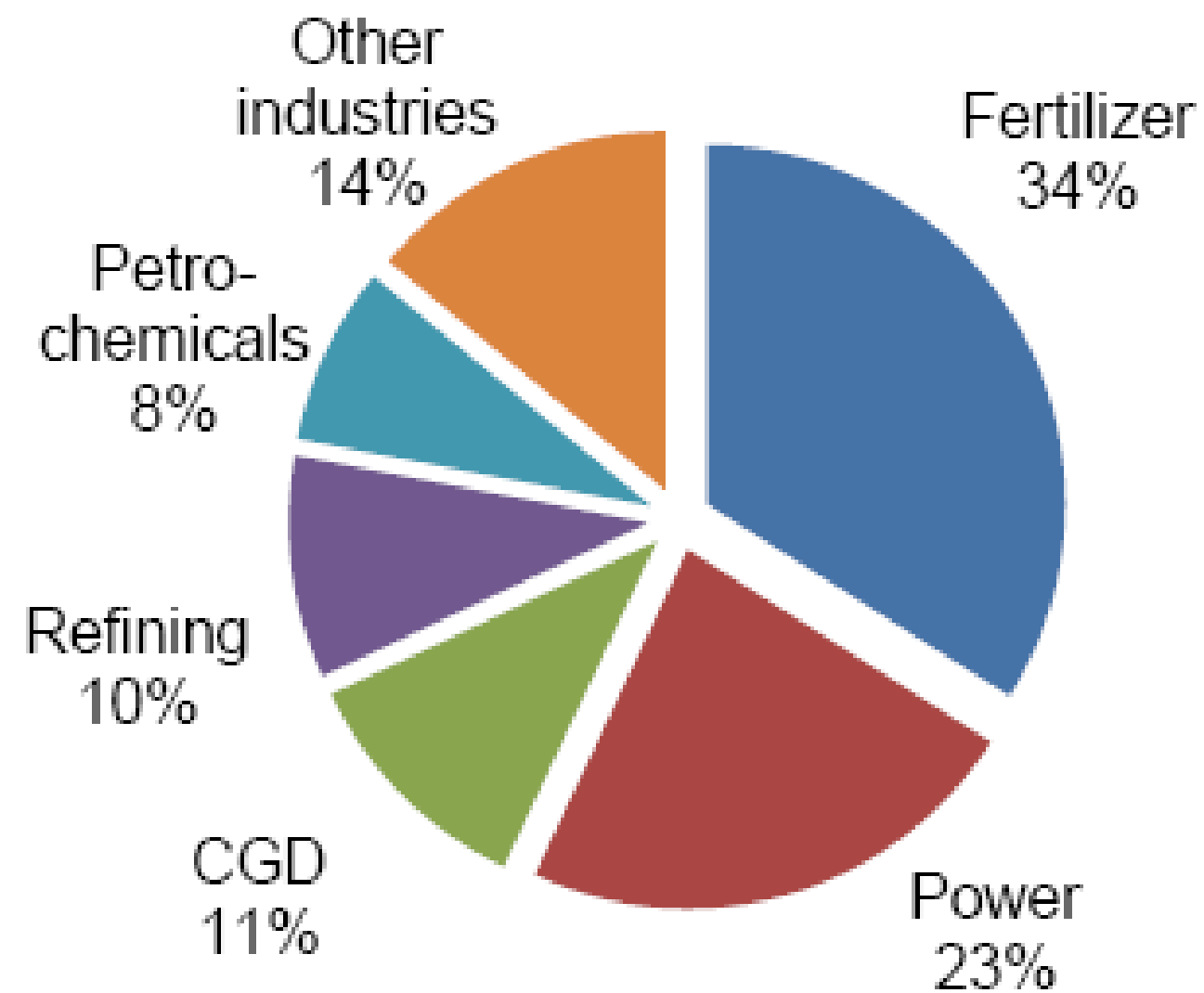


# NATURAL GAS

**Gas Energy Scenario**



- It is contributing 23.4% of global primary energy.
- India has only 0.6% of the world reserves with an estimated R/P ratio of 43.6 years.
- Natural gas is available as:
  - (i) Domestic Natural Gas
  - (ii) Re-gasified Liquefied Natural Gas (R-LNG)



- Used in fertilizer industry ,refineries, city gas distribution and petrochemical industry.
- CGD sector has distinct segments — Compressed Natural Gas (CNG) used as auto-fuel, and Piped Natural Gas (PNG) domestic, commercial and Industrial applications.





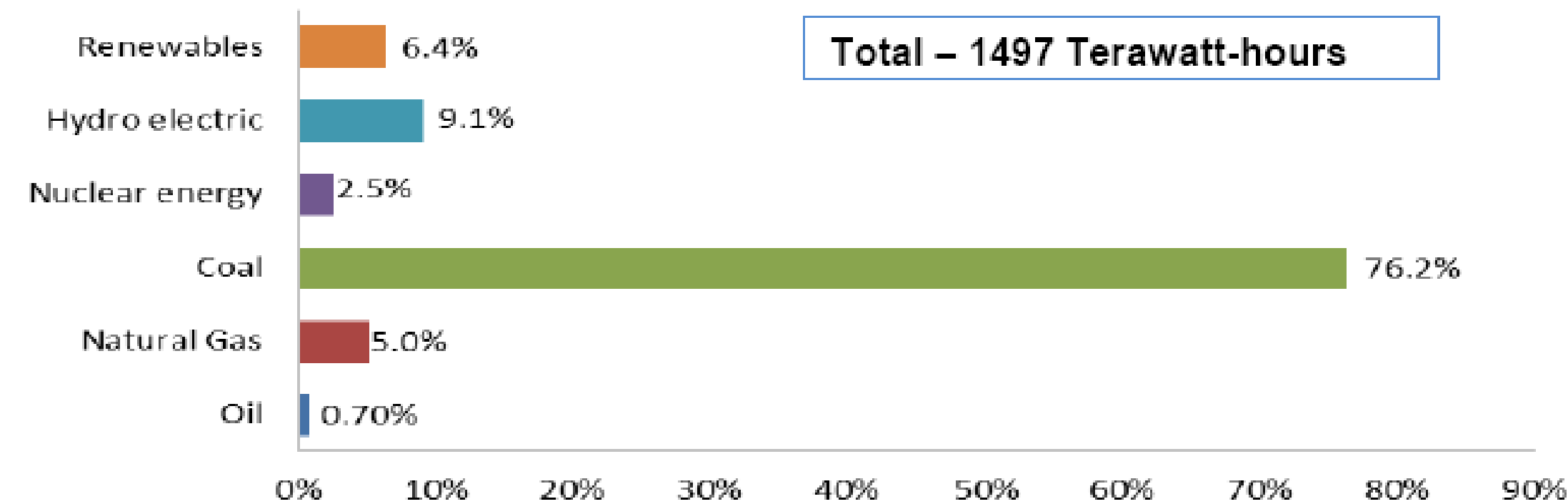
# HYDRO AND NUCLEAR POWER

- Hydropower is renewable source for electricity.
- India has the potential of about 150 GW hydro power and out of which about 43 GW has been installed.
- The development of nuclear power is today concentrated in a relatively small group of countries namely China, Korea, India and Russia.
- The nuclear is increasingly seen as a means to add large scale base load power generation while limiting the amount of GHG emissions.
- India has 22 nuclear reactors in operation in seven nuclear power plants, having a total installed capacity of 6780 MW or nearly 2% of total installed utility power generation capacity.



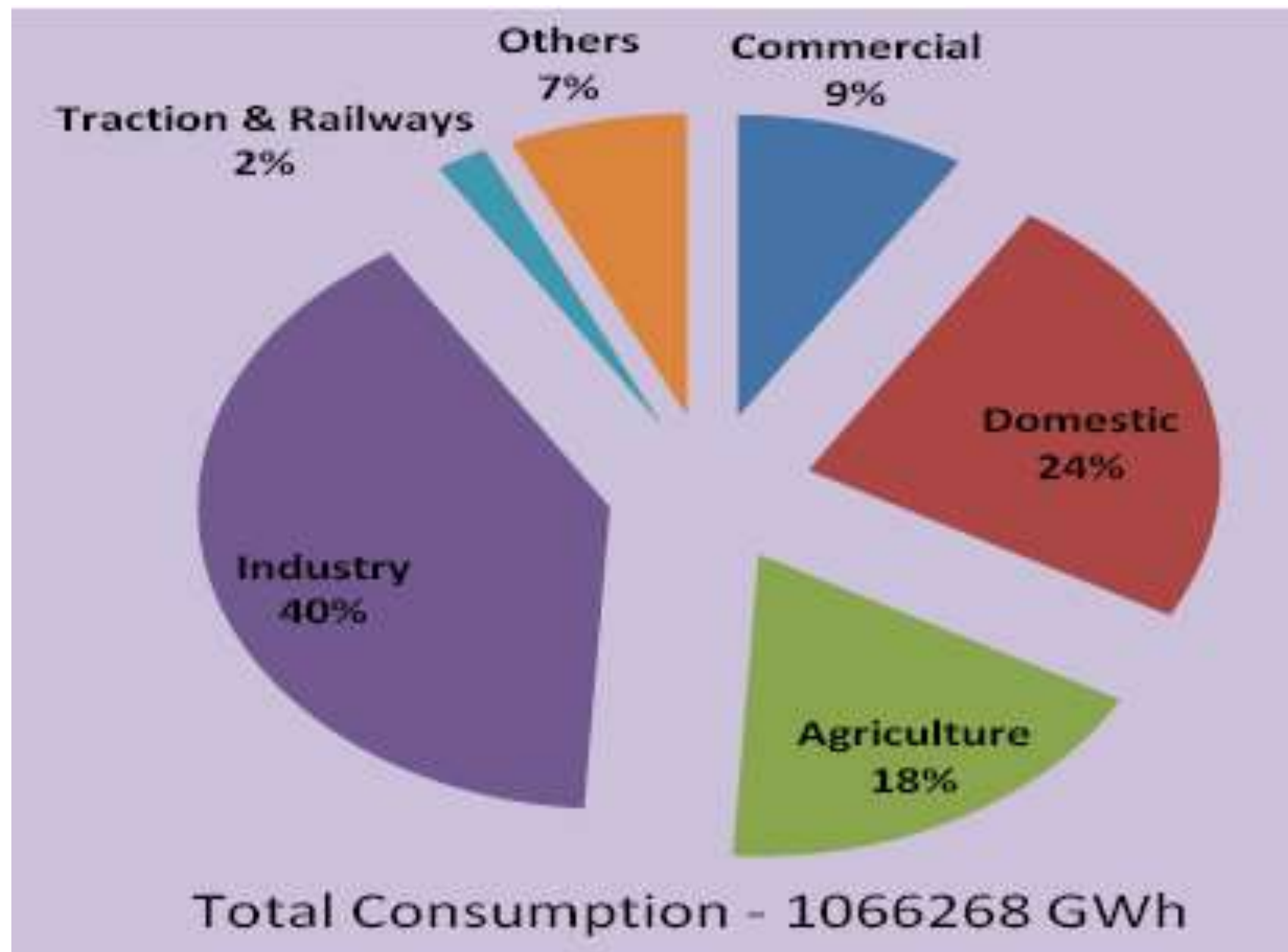
# ELECTRICITY

### Electricity generation by fuel

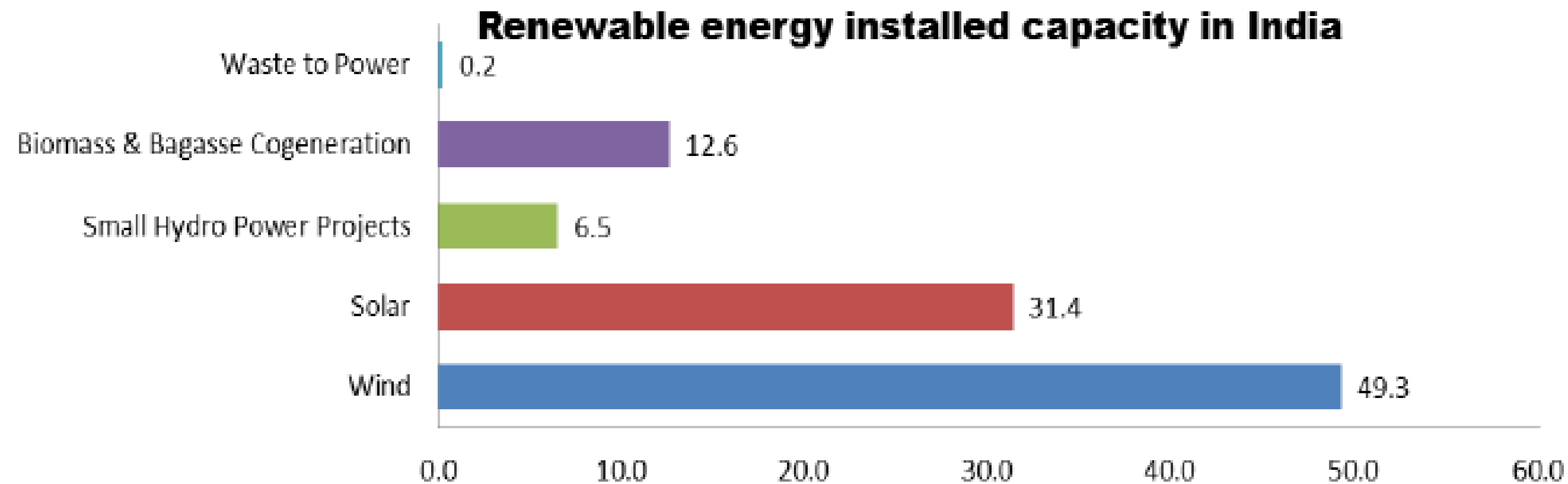


- India is the world's third largest producer and consumer of electricity with capacity of 344 GW as on 31 May 2018.
- India's electricity sector is dominated by coal-based power plant for meeting about 76.2% of all electricity.

- The overall plant load factor (PLF) of all thermal power plants is only about 65%.
- Industry dominates electricity consumption (40%) followed by domestic (24%) and agriculture (18%).



- India is very active in renewable energy development, especially solar and wind electricity generation.





# POLICY INTERVENTIONS



- The Government has adopted an energy policy to provide energy security to all its citizens.
- **The Electricity Act, 2003** : The Act specifies distributed generation and supply through stand-alone conventional and renewable energy systems.
- **The National Electricity Policy notified in 2005** : recommends providing reliable rural electrification system; wherever conventional grid is not feasible.
- **The Rajiv Gandhi Grameen Vidyutikaran Yojna** : provide up to 90% capital subsidy for rural electrification projects using decentralized distributed generation options based on conventional and non-conventional fuels.

## 2

### Paris Agreement on Climatic Change

- Conference of the Parties (COP 21) was held in Paris under the UN Body, UNFCCC in 2015.
- The agreement reaffirms the goal of keeping average warming below 2 degrees Celsius.
- India has submitted its Intended Nationally Determined Contributions (INDC) with plan, policies, measures, actions etc. to combat climatic change.

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# Thank You

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