International Journal of Biology Research
ISSN: 2455-6548, Impact Factor: RJIF 5.22
www.biotechjournals.com
Volume 1; Issue 3; July 2016; Page No. 18-21

An overview of world energy scenario & its conservation

[1] Anoop Singh, [2] Janardan Mishra, [3] Naveen Gaurav, [4] Rekha Verma

[1, 2] Jaiprakash Associates Ltd. Jaypee Sidhi Cement Plant, Madhya Pradesh, India
[3] S G R R P G College Dehradun, Uttarakhand, India
[4] Govt P.G. Girl's College, Satna, Madhya Pradesh, India

Abstract
Energy is a critical foundation for economic growth and social progress. Higher is the economic growth, higher is the requirement of energy, depleting fossil fuels and its pollution on the environment has given rise to the ever-serious contradiction among energy providing, environment protection and economic development. Renewable energy, with the availability of its renewability and non-pollution, will prove to be an effective and practical choice to guarantee the future development of the world. Utilization of fuels has to be done in sustained way so that upcoming generation can get benefit of natural resources. Enhancement & proactive use of CDM (Clean Development Mechanism) projects is another optimistic way towards sustainable development.

Keywords: Energy, Pollution, Clean Development Mechanism (CDM), Sustainable Development & Fuels

1. Introduction

Defined as the ability to do work, Energy is one of the major inputs for the economic development of any country. The consumption of energy is increasing at fast pace while available resources limited. Global need for energy is increasing on an average by about 1.5% every year.

Out of total amount of primary energy, around 80% comes from fossil fuels. The current consumption of fossils fuels, particularly oil, is not sustainable in long term. Energy consumption has a significant impact on our natural environment.

This is clear evidence that climate change is caused by human activity, mostly related to the use of energy. As India is among the largest developing countries in the world, with richly endowed renewable energy potential (India is fifth largest wind energy producer just after US, Germany, China & Spain).

Developing renewable energy is its inevitable choice for sustainable economic growth. Renewable energy has been categorized as traditional and new. The former includes large hydropower, biomass burnt directly etc; the latter includes small hydropower, solar energy, wind energy, biomass energy, and geothermal energy etc.

Classification of Energy

- Primary Energy & Secondary Energy.
- Commercial & Non Commercial Energy

1. Primary Energy & Secondary Energy

a- Primary energy refers to all type of energy extracted or captured directly from Natural Resources.

It is further sub divided into two groups.

- **Renewable (Solar, wind, Geothermal, tidal, biomass)**

Obtained from natural sources, which are in exhaustible, e.g Solar, wind power, geothermal, tidal power & hydro electric power – No pollutant in this case.

- **Non- Renewable (Fossil Fuels, Crude oil, Coal, Natural Gas, Nuclear Etc.)**

Natural resources such as coal, oil & natural gas are example of non –renewable energy.

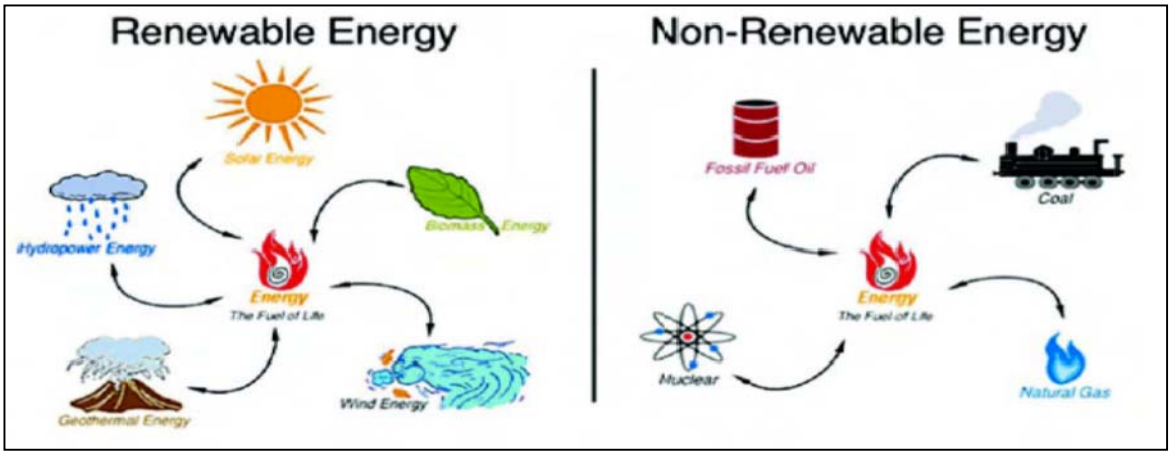
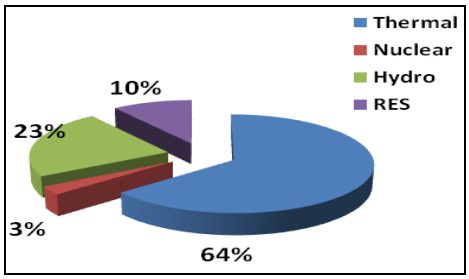


Fig 1: Renewable & Non –Renewable Energy Sources

Table 1: Potential Energy Resources Sources in India

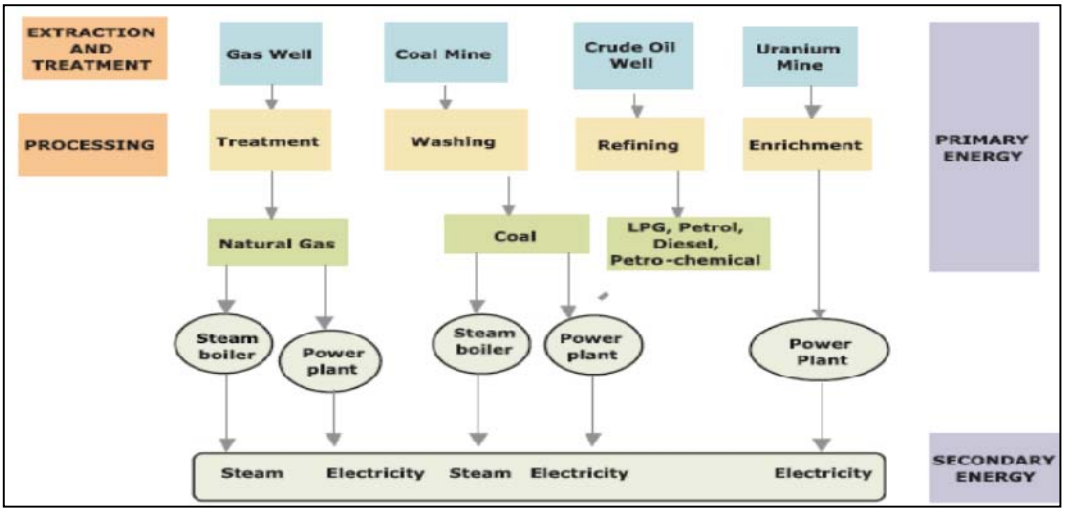
S. No	Source	Potential (MW)	Installed Capacity(MW)
1.	Wind	45000	12000
2.	Biomass	17000	900
3	Small Hydro (<25 MW)	15000	2700
4	Cogeneration Bagase	5000	1400
5	Waste	2700	72
6	Solar	>100000	12

Source: Ministry of New & Renewable Energy (MNRE)



The National Action Plan of Climate Change (NAPCC) has set the target of 5% renewable energy purchase for FY 2009-10 which will increase by 1% for next 10 years.
The NAPCC further recommends strong regulatory measures to fulfill these targets.
Technology-wise distribution of installed capacity in India (Source: CEA - June, 2010)

b. Secondary Energy
Primary Energy sources are mostly converted in industrial utilities into secondary energy sources
e.g. Coal, oil or gas converts to steam & electricity.



Major Primary & Secondary Energy Sources

2. Commercial & Non Commercial Energy
a. Commercial: Energy available in market e.g., electricity, lignite, coal, oil, natural gas etc.

b. Non Commercial
Fuels such as firewood, cattle dung, and agricultural waste;

Primary Energy resources
Coal
World wide-826 billion tones of proven coal reserves.
The coal reserves will lost in 122 years the current rate of production.

Coal reserve

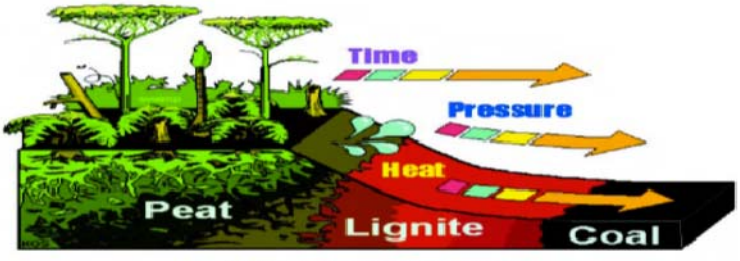


Figure 1.3 Formation of Coal

Reserves/Production (R/P) - If the reserves remaining at the end of the year are divided by the production in that year, the result is the length of time that the remaining reserves would last if production were to continue at that level.

1. USA-29%
2. Russia -19%
3. China – 14%
4. Australia -9%
5. India-7%
6. Rest part of world-22%

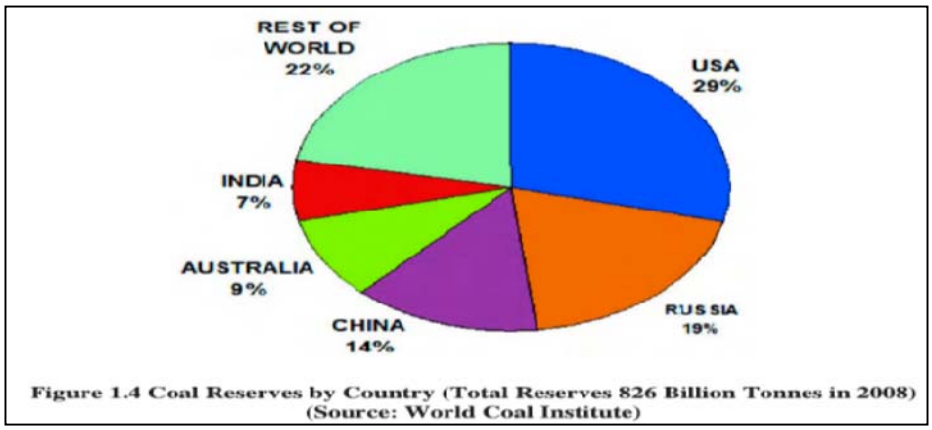


Figure 1.4 Coal Reserves by Country (Total Reserves 826 Billion Tonnes in 2008) (Source: World Coal Institute)

India Coal reserve 58.6 billion tones likely to last in 114 years

Oil

Oil worldwide (Conventional Crude oil reserve-1258 Billion barrels.)

60% of the oil reserves are in Middle East, 21% in Saudi Arbia. At current R/P ratio, world oil reserve is estimated at just 42 years. India oil reserve 5.8 billion barrlels (800 million tones)

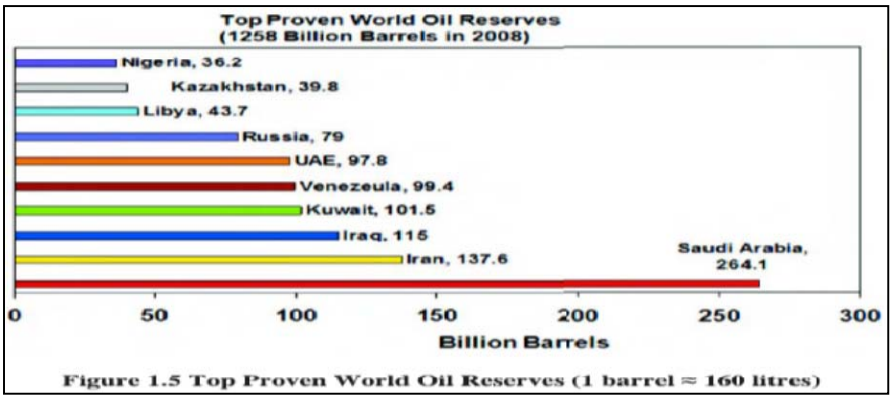


Figure 1.5 Top Proven World Oil Reserves (1 barrel ≈ 160 litres)

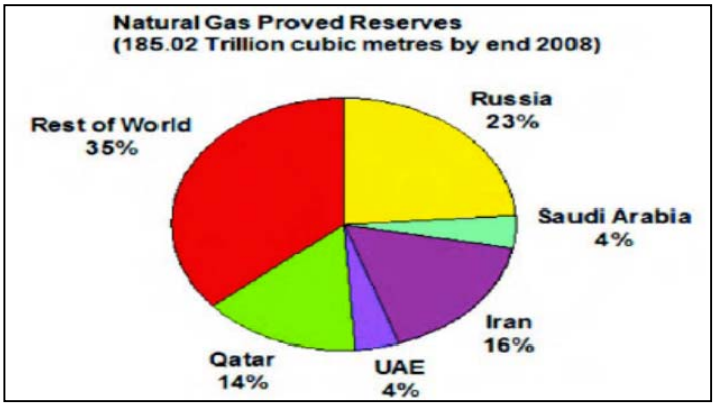
Natural Gas

Natural gas is a gaseous fossil fuel consisting primarily of methane. Global proven gas reserve is estimate to be 185 trillion cubic meters. The reserves are estimated for 60 years worldwide.

Russia – 23%
Iran – 16%
Qatar-14%
Saudi Arabia%--4%
UAE-4%
Rest of World-35%

India gas reserves are estimated at 1.09 trillion cubic meters

Reserve estimated for 36 years.



Energy Conservation

Fast depletion of precious resources of energy is quite alarming & hence their conservation is imperative. Following are some simple tips emphasizing upon use of efficient and energy saving equipment and practices, which would certainly benefit all of us.

Illumination

1. Switch off tube lights, lamps, fans etc. When not required.
2. Prefer task lighting instead of uniform one all over.
3. Use energy efficient lamps & luminaries.
4. Optimize use of natural lighting.
5. Prefer electronic ballast instead of conventional chokes.'
6. Prefer CFL/LED

Computers

1. Turn off your home office equipment when not in use. A computer that runs 24 hours a day, for instance, uses - more power than an energy-efficient refrigerator.
2. If your computer must be left on, turn off the monitor; this device alone uses more than half the system's energy.
3. Setting computers, monitors, and copiers to use sleep-mode when not in use helps cut energy costs by approximately 40%.

In The Kitchen

1. Keep the entire cooking material ready before lighting the stove.
2. Let cold materials attain room temperature before cooking.
3. Soak the grains & cereals before you cook them.
4. Avoid use of excessive water in cooking.
5. Use utensil having broad base, Use lid on cooking utensils.
6. Prefer small burner & light flame.
7. Ensure Stable, bright & blue flame.

Microwave Ovens & Electric Kettles

1. Microwaves save energy by reducing cooking times. In fact, one can save up to 50 percent on your cooking energy costs by using a microwave oven instead of a regular oven, especially for small quantities of food.
2. Remember, microwaves cook food from the outside edge toward the centre of the dish, so if you're cooking more than one item, place larger and thicker items on the outside.
3. Use an electric kettle to heat water. It's more energy efficient than using an electric cook top element.

Room Air Conditioners

1. Use ceiling or table fan as first line of defense against summer heat. Ceiling fans, for instance, cost about 30 paisa an hour to operate - much less than air conditioners (Rs.10.00 per hour).
2. You can reduce air-conditioning energy use by as much as 40 percent by shading your home's windows and walls. Plant trees and shrubs to keep the day's hottest sun off your house.
3. One will use 3 to 5 percent less energy for each degree air conditioner is set above22°C (71.5°F), so set the thermostat of room air conditioner at 25°C (77°F) to provide the most comfort at the least cost.
4. Using ceiling or room fans allows you to set the thermostat higher because the air movement will cool the room.
5. A good air conditioner will cool and dehumidify a room in about 30 minutes, so use a timer and leave the unit off for some time.
6. Keep doors to air-conditioned rooms closed as often as possible.

Conclusion

We must promote proper conservation of energy, use of renewable sources of energy & development of market in electricity, leading to the sustainable development of the country. Recognizing that, like other resources the renewable resources are also not evenly distributed across the country, encourages setting up of larger generation capacities at resource rich locations. Enhancement & proactive use of CDM (Clean Development Mechanism) projects is another optimistic way towards sustainable development.

References

1. www.mnre.gov.in
2. www.cea.nic.in
3. Bureau of Energy Efficiency
4. www.wikipedia.com