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Global Energy Consumption Paradigm: Future Trends and Trajectory

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Abstract

The energy debate and its discourse have changed drastically in the 21st century. The paradigm will go on changing with the coming time. This phenomenon will be in context of the consumers and producers; as well as the environment alike. Unlike the earlier times, today energy stands critical not just for the west but also for other consumer markets. This paper intends to address the energy consumption pattern and its changing paradigm. The new parameters of the global growth and development has been impacting the levels of energy consumption, thus, the changing statistics and fluctuating markets will see a tremendous increase and shift in the consumption pattern. The central theme of the paper is that, with the globalization process, the high income pockets have become largely vulnerable. The paper analyses the increased energy consumption and its future speculation. The paper also discusses the long term consumption trajectory.

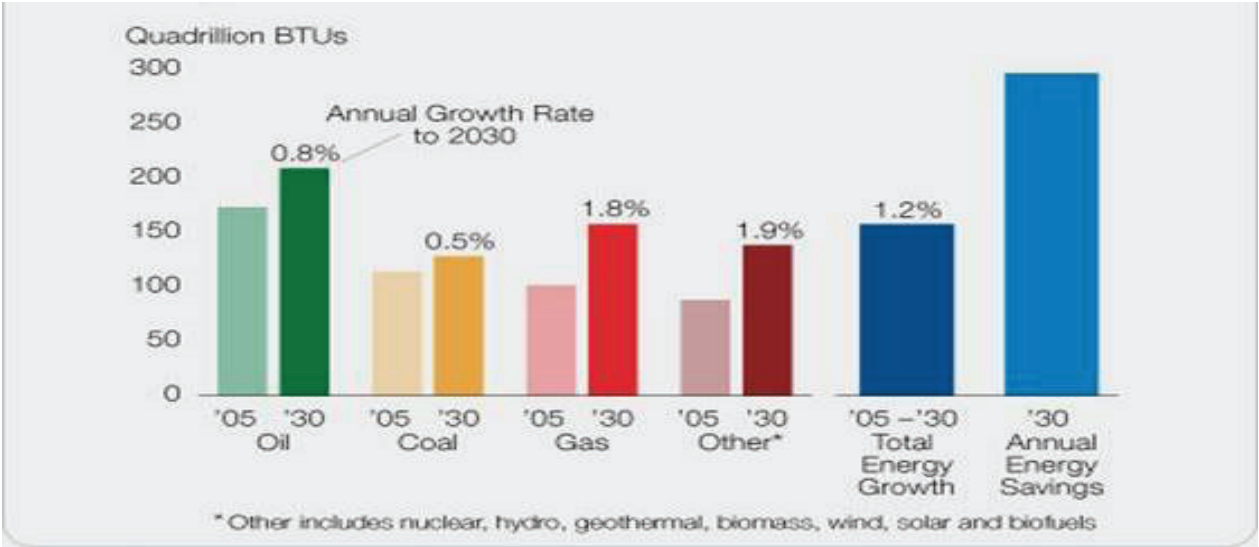
Keywords: energy consumption; globalization; changing paradigm

1. Changing energy paradigm

Energy industry today has become very versatile and is expanding as time passes. However, fossil fuels will continue to be an important source of energy for the world. "Oil and natural gas alone will still make up almost 60 per cent of global energy supplies in 2030. The fastest - growing fossil fuel will be natural gas, because it is abundant, affordable and the cleanest - burning. By 2030, global demand for natural gas will be more than 55 per cent higher than in 2005"¹. "With the United Nations predicting world population growth from 6.6 billion in 2007 to 8.2 billion by 2030..... The global electricity demand is increasing twice as fast as overall energy use and is likely to rise 76 per cent to 2030. Nuclear power provides about 14 per cent of the world's electricity, almost 24 per cent of electricity in OECD countries, and 34 per cent in the EU. Nuclear power generation is an established part of the world's electricity mix providing in 2007 some 15 per cent of the world's electricity (cf. coal 42 per cent, oil 6 per cent, natural gas 21 per cent and hydro & other 18 per cent)"². As the renewable and alternative sources of energy are escalating their influence at the global level, the world will remain dependent on oil and gas for most of its usage.

The chief factors that are driving the global energy demand are expanding globalization process, where today, the people are connected globally through inter – connected roads and highways. This has also led to intense Industrialization process, where factories and manufacturing businesses require a huge amount of energy to run. At the same time, the rise of the middle class

globally, which “..... has also raised the needs of the people, aspiring for a better and luxurious life”⁴.



Graph 1. ExxonMobil, “Energy Demand”.

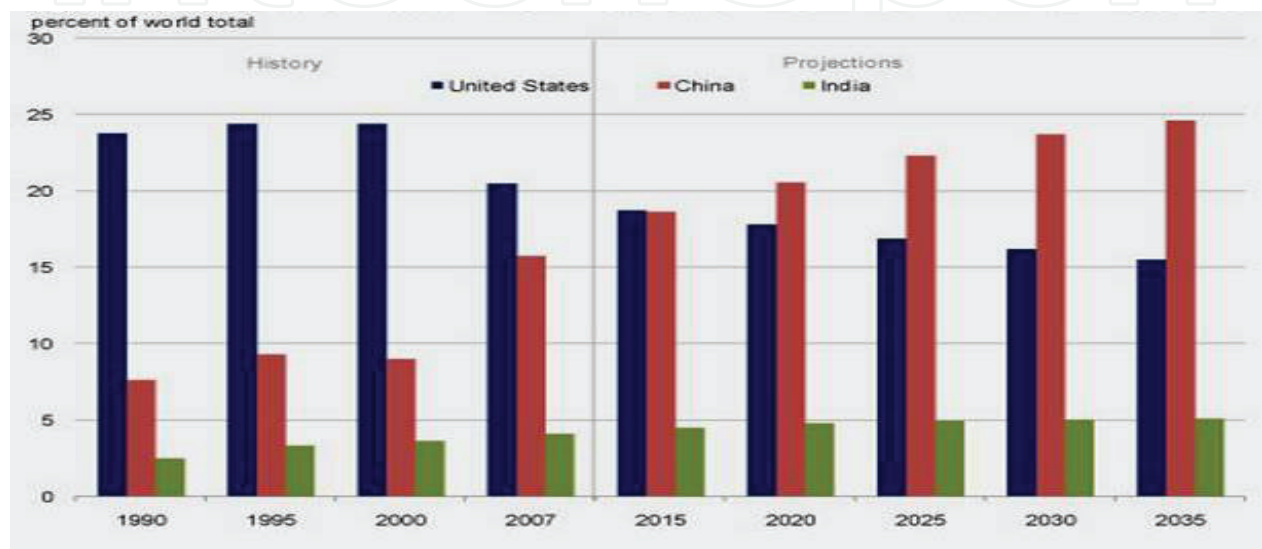
2. New consumption markets

Worldwide energy markets have witnessed increasing activity by the energy consumers. Now, this presence could be divided into old and new players. In addition to the old players in the market, the new stakeholders are Asia. The new players are clearly defined as the energy consumers, which have experienced a drastic increase in its energy consumption due to the higher economic growth. Thus, the 21st century sees a new competition from the new energy rivals. As time passes, these energy consumers do see a stiff competition for hydrocarbon resources. Gradually, the competition is also carried out in other areas where there are huge reserves of oil and gas such as, Europe & Eurasia and Africa. With this, the competitors also face the challenge to contribute for regional security and development of these societies.

Post - Second World War, saw the emergence of hydrocarbon as a basic factor in the development of the world. Thus, the major oil producer i.e., the Middle East became the centre of attraction for the global powers. Oil, therefore became the basic factor for the powers involvement in many energy rich countries of the world. The Middle East especially, where there are the largest reserves of oil in the world, became the centre stage. Many of the energy rich states today are majorly dependent on income from oil exports. Some countries are dependent upto 90 per cent. This clearly identifies the space energy holds in the economic development of a country. However, the oil exports made the producers completely dependent on the revenues, with no development whatsoever. This made the producers a rentier economy. Although, the enormous wealth that was incurred as oil revenues, made the producing countries rich and powerful, and helped them in the development of their country. Thus, over a period of time, the intensity of competition has increased and become more complex.

In the last few years, the global energy demand has increased mainly due to the economic surge and the rise of global middle classes. The energy demand of the producers has also increased.

“Energy demand in the Gulf has more than doubled in the past 10 years and is forecast to increase by 85 per cent by 2030 compared with 2008 levels, a Wood Mackenzie report said. An energy demand surge in the Arabian Peninsula will be largely met by oil - fired generation, removing about 1.5 million barrels of oil equivalent per day (boepd) otherwise available for export.....”⁶. The rise of new energy suppliers outside OPEC have also impacted on the Middle East exports. Due to the instability in the region, the consumers are looking for other sources, which happen to be Europe & Eurasia and Africa. Thus, the consumer market has shifted to new energy supplies, however, the oil finds are cheaper in the Middle East, which will be a major attraction for the consuming countries.



Graph 2. Energy Information Administration (EIA), “International Energy Outlook 2010”.

2.1. China

China is the second largest oil consumer after US. From the net exporter of oil in the 90s, China has emerged a net importer of oil, and also consumes a large amount of natural gas. China imported its first shipment of LNG in the summer 2006, and the country has quickly ramped up imports since then, importing about 730 MMcf/d in 2009 and 1,120 MMcf/d in the first half of 2010⁷. Natural gas plays an important role and its usage for domestic purpose has increased lately, also due to the fact that China plans its growth in all sections such as construction business, transportation sector, industries, agriculture, etc. the overall demand has grown up. “Coal supplied the vast majority (71 per cent) of China’s total energy consumption of 85 quadrillion British thermal units (Btu) in 2008. Oil is the second - largest source, accounting for 19 per cent of the country’s total energy consumption. While China has made an effort to diversify its energy supplies, hydroelectric sources (6 per cent), natural gas (3 per cent), nuclear power (1 per cent), and other renewables (0.2 per cent) account for relatively small amounts of China’s energy consumption mix”⁸. China’s energy strategy is a complexity of hydrocarbon constraints and environment friendly energies⁹. Apparently, the Chinese energy demand exceeds supply bringing other stakeholders (producers) into picture.

2.2. India

In 2009, India was the fourth largest oil consumer in the world, after the United States, China, and Japan. "Oil accounts for nearly 24 per cent of total energy consumption, natural gas six per cent, hydroelectric power almost 2 per cent, nuclear nearly 1 per cent, and other renewables less than 0.5 per cent. Although nuclear power comprises a very small per centage of total energy consumption at this time, it is expected to increase in light of international civil nuclear energy co - operation deals"¹⁰.

A safe and secure supply of energy resources to the end consumer is a major challenge for both the producers and the consumers. Today's consumers face tremendous challenges in terms of a safe passage of oil and gas through pipelines or tankers. "About two – thirds of the world's oil trade (crude oil & refined products) moves by tanker. Oil transported by sea flows through fixed routes, the most important being the Strait of Hormuz and Strait of Malacca. External threats like piracy and terrorism have threatened the secure transit of energy supplies in the straits"¹¹. Any threat to these supplies would create a worst scenario for the global economy. "....., the worst hit would be the Gulf states, unable to export their oil and their main source of income would come to an end"¹². The significance of the Middle Eastern countries such as, Saudi Arabia, producer of spare capacity of oil should be recognized¹³. Thus, today's energy business has become more complex, where any instability in the market will affect the producers and the consumers alike.

3. Speculative Trajectory

As the global energy demand increases, the energy rich areas specifically the countries which are benefitted by the oil wealth such as Saudi Arabia and UAE, their domestic demand has also taken an upswing. To meet the increased consumption, the Middle Eastern states need huge proportion of energy. Countries like Saudi Arabia, Qatar and UAE are known to be the economic powerhouses of the region. "Saudi Arabia is the largest consumer of petroleum in the Middle East, particularly in the area of transportation fuels. Domestic consumption growth has been spurred by the economic boom due to historically high oil prices and large fuel subsidies. In 2006, Saudi Arabia was the 15th largest consumer of total primary energy, of which 60 per cent was petroleum - based. The remainder was made up of natural gas, the growth of which has been limited by supply constraints. In 2008, Saudi Arabia consumed approximately 2.4 million bbl/d of oil, up 50 percent since 2000, due to strong economic and industrial growth and subsidized prices. According to independent analysis quoted in industry reports, demand is expected to rise by eight to 10 percent through 2010, mostly in the area of electricity and NGLs for petrochemical production. Saudi Arabia also does direct burn of crude oil for power generation during summer months"¹⁴.

Energy today, has become a indispensable support- system of development and growth, for the western and the developing nations alike. Apparently, energy being the backbone of the global expansion and progress; it is fundamental in the onward industrial movement. With the energy supplies in other regions getting scarce, the demand has become ever more critical.

4. Conclusion

Looking at the current scenario and the future trajectories, the global competition and militarization of these resources is inevitable. The rapid growth of the 'rising' Asian economies will set its own repercussions for the world. China and India's rapid growth will facilitate the future growth of the hydrocarbon industry as its demand rises. Under these circumstances, it becomes vital for Asia to look out for alternative / renewable sources of energy, which are costly, unsafe and will take some time to be produced on a commercial scale, while simultaneously, developing the indigenous resources. Serious competition for the resources, will lead to lesser shares for individual stakeholders, hence the hike in the oil prices, also affecting the taxation policy of the countries. Apparently, the process of globalization has been efficient in integrating the global economies and connecting the producers and the consumers. With the oil politics expanding, the stakeholders involved will have to redefine their interest.

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