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Global oil industry and Indian economy : An analyses from 1970s upto global recession (1970-2008)

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Abstract:

Oil accounts for a large percentage of the world's energy consumption, ranging from a low of 32% for Europe and Asia, up to a high of 53% for the Middle East. This paper focuses on the state of the global oil industry and its implications on the Indian economy. The paper begins with the description of the current global oil market in terms of the major producers and consumers of oil. The supply is described in terms of crude oil supply which is dependent on the availability of oil reserves and the supply of petroleum products for which the refining capacity is also a contributing factor. On the demand side the paper focuses on the key sectors in terms of end use of oil and has looked at the current and projected future values of demand for oil in these sectors. The paper further looks at how imports are used to cover the trade gap and what are the major sources of these imports. Finally, the paper proceeds to look at the likely effect of future demand supply gap on the future balance of trade and the various monetary policy measures to be taken to mitigate the effect on India's economy.

Key Words: Oil demand, cartelization, oil supply, oil reserves, Indian economy

1. Introduction:

The Indian oil and gas (O&G) sector is projected to touch US\$ 139,814.7 million by 2015 from US\$ 117,562.9 million in 2012. The sector provides a lot of opportunities for investors. The New Exploration Licensing Policy (NELP) of 1997–98 was looked at to deal with the growing gap between demand and supply of gas in India. It has successfully attracted both foreign and domestic investment, as attested by the presence of Cairn India and Reliance Industries Limited in the country. India's economic growth, like the other countries is closely linked to energy demand. The need for oil which is among the primary sources in meeting energy requirements, is thus projected to grow further. To meet this demand, the government has adopted several policies, like allowing 100 per cent foreign direct investment (FDI) in several segments of the sector, including petroleum products, natural gas, pipelines, and refineries. In 2011, India's O&G sector witnessed one of the biggest FDI deals in the country, with British Petroleum (BP) formalising a US\$ 7.2 billion partnership with Reliance Industries, for exploring offshore gas reserves. At the end of FY 2011–12, India had total reserves of 1330 billion cubic metres (bcm) of natural gas and 760 million metric tonnes (mt) of crude oil. The present paper examines the various possible reasons for fluctuations in the oil prices in the past and looks at the current and past oil prices with an emphasis on the effect of cartelization of supply on the global crude oil prices, how successful has OPEC been in keeping prices above competitive level and how successful it is likely to be in future in doing so. This is followed by delineating the market structure for oil in India in terms of demand and supply. The effect of these imports on India's balance of trade is then examined along with the implications it has on the various macroeconomic parameters.

2. Price Trends:

A review of the trends of oil prices shows that oil displays quite wide price swings when markets suffer from scarcity or oversupply. From 1948 to 1970, oil prices remained stable at around \$3 per barrel. A major development was the formation of OPEC in 1960; consisting of Iraq, Iran, Saudi Arabia, Kuwait and Venezuela. If we look at various periods as explained below it becomes quite clear as to how various factors whether it be political or economic have a tremendous effect on the pricing decisions of oil.

Oil Crisis (1973-1978)

Oil prices quadrupled from \$3 in 1972 to \$12 in the later half of 1974. This was triggered by the Yom Kippur War, when Israel was attacked by Egypt and Syria. The US and some other Western countries supported Israel. Out of anger, Arab nations imposed an embargo on these countries by putting off oil production by 5 million barrels per day. The control on oil prices shifted from the US to the OPEC nations during the 'Arab Oil Embargo.' This clearly shows how political reasons affected the pricing decisions.

Oil Crisis (1979-1980)

In 1979, the Iranian revolution sent oil prices soaring. The country's oil production came down drastically to 2.5 million barrels a day. The 1980 Iraqi invasion worsened the situation that was already not satisfactory. The combined production of both the countries reduced to just one million barrels per day (from 6.5 million barrels in 1978). This lowered the global oil production by 10% and oil prices rocketed to \$35 per barrel.

Figure 1. in the appendix shows crude oil pricing vs production which has been taken from the report on trends in crude oil pricing and production being published by government of India.

Oil Glut (1980-1986)

The energy crises of the 1970s slowed down the economic activity across the industrial nations. This resulted in oil conservation and overproduction, pulling down consumption and prices of crude oil drastically. The import of oil by the US reduced from 46.5% in 1977 to 28% in 1982-1983. Oil prices which had peaked to \$35 in 1980 fell to \$10 within six years.

Oil Spike (2003-2008)

Inflation-adjusted oil prices post-Gulf War remained below \$25. However, oil prices began escalating in 2003 due to: Dwindling petroleum reserves and 'peak oil' concerns, Tensions in the Middle-East and Oil price speculation. Oil price crossed \$30 in 2003 and reached \$60 in August 2005. Oil price reached a historic high of \$147.30 in July, 2008 amidst global economic recession.

An analysis of historical oil prices exhibits that oil price determination is no longer solely dependent on the OPEC countries.

3. World Oil Market Structure:

Oil Demand:

The demand for crude oil has been always been a derived demand. Oil is not used for direct consumption. It is mainly used as a fuel for transportation, aviation, synthetic fibres and electricity. So the demand for oil is large in strong economies. Also another significant contribution to global oil demand is from developing economies like China and India.

Table 1 given in the appendix shows the major oil consumers which shows that US consumes maximum barrels of oil per day. Second rank is of China and India stays ahead too with fourth rank. Oil importing governments

influence the petroleum market by means of fiscal instruments, antitrust policies, and public funds for alternative energy research. In addition, some governments like China, own a majority stake in the country's main oil companies.

Oil Supply:

The power of the producing countries is, in general, rooted in the oil characteristics. Producers incur no storage costs, since petroleum is simply left in the ground, while consuming countries have to cover the technical costs of building storage facilities, interest on the value of oil stocks and various environmental risks. Supply of Oil has more or less been governed by OPEC, whose members have formed a semi-cartel (Oligopolistic form of market structure). Although the reserves with the OPEC for crude oil are 2/3rd of the world's reserves for crude oil however they produce only 2/5th of their capacity thereby putting pressure on the world supplies of crude oil. Also, since they have an oligopolistic market, and after forming the cartel, they are able to exercise their monopoly power. The impact of cartelisation is discussed in detail later.

Table 2. again given in appendix throws light on the major oil producer countries. Here too India tops the chart but India is nowhere. While India is the fourth largest consumer when it comes to production it lags behind.

Other important factor affecting oil supply is the risk introduced by geopolitical instability in many OPEC, as well as non-OPEC countries. Oil production is not labour intensive and, hence the oil supply can be controlled easily by reducing depletion rates without affecting the labour market. Also, as there are no short term substitutes for petroleum, changes in supply are very effective. The Demand for crude oil is highly insensitive to price changes.

4. The impact of cartelisation on oil markets:

A cartel is an agreement among competing firms. It is a formal organization of producers that agree to coordinate prices, marketing and production. Although there are other organisations of producers in the oil industry such as the OECD, the Organization of Petroleum Exporting Countries (OPEC) is the only one that fits the above definition of a cartel. The primary goals of OPEC include: Safeguarding the cartel's interests, individually and collectively Ensuring the stabilization of prices in international oil markets with a view to eliminating harmful and unnecessary fluctuations Securing a steady income to the producing countries An efficient and regular supply of petroleum to consuming nations, and Providing a fair return on capital to those investing in the petroleum industry The production policy of OPEC is the result of a high price strategy in an oil market under pressure from rising demand. When faced with increasing demand, instead of increasing production (which leads to competitive prices) OPEC has maintained or cut production so as to ensure a high price.

The two charts shown in the appendix below in **figure 2** depict the effects of the production policy followed by OPEC over the past three decades. While the non-OPEC production has almost doubled, the increase in OPEC production has not been up to pace with the rest of the world. It is to be noted that over the same period of 35 years the global economic output also doubled. Thus, while OPEC controls almost three-fourths of the proven oil reserves in the world, the growth in the global economy over the past three decades has been fuelled almost entirely by non-OPEC oil.

The market power of OPEC has not just economic benefits to the members. It also has a political importance because oil is a commodity having strategic importance. This is mainly due to the indispensable nature of oil in

the transportation industry (the importance of oil for power generation has become questionable in the current scenario due to increasing reliance on alternative sources of energy).

The monopolistic pricing has led to inefficiencies in the oil market and an accompanying economic rent that has been beneficial to the cartel members. However they are not the only ones who derive the benefits. In recent times, non-commercial players such as financial market players including hedge funds have acquired an equally important role in determining oil prices. This has led to increasing fluctuations in oil prices and the ability of OPEC to maintain stability in oil markets has come into question. Moreover, the ability of OPEC to control oil prices has decreased to some extent owing to discovery of large resources of oil in regions like Alaska, North Sea, Russia and Canada. The future market power of OPEC depends on further such discoveries and the role of financial market players.

5. Market Structure for Oil in India

India is the fourth largest consumer of crude oil in the world. In this section I have looked at the production and consumption of crude oil and petroleum products (POL) in India. Then we explore the nature of demand for oil in India i.e. the key areas which are driving the demand for oil in India. The graph in the **figure 3** from appendix shows the relation between crude oil production and consumption in India since 1972-73. As can be seen from the graph the production is almost constant but the consumption has been continually increasing. So the gap between production and demand is being fulfilled by increasing imports which aggravates deficit situation. India has over 3,600 operating oil wells, according to OGJ. Although oil production in India has slightly trended upwards in recent years, it has failed to keep pace with demand and is expected by the EIA to decline slightly in 2009. According to Oil & Gas Journal (OGJ), India had 5.6 billion barrels of proven oil reserves as of January 2009, the second-largest amount in the Asia-Pacific region after China. India produced roughly 880 thousand bbl/d of total oil in 2008, of which approximately 650 thousand bbl/d was crude oil, with the rest of production resulting from other liquids and refinery gain. India has over 3,600 operating oil wells, according to OGJ. Although oil production in India has slightly trended upwards in recent years, it has failed to keep pace with demand and is expected by the EIA to decline slightly in 2009. India's oil consumption has continued to be robust in recent years. In 2007, India consumed approximately 2.8 million bbl/d, making it the fifth largest consumer of oil in the world. Demand grew to nearly 3 million bbl/d in 2008. EIA anticipates consumption growth rates flattening in 2009 largely due to slowing economic growth rates and the recent global financial crisis.

The graph in the **figure 4** shows the relation between crude oil production and consumption in India since 1972-73. As can be seen from the graph the production and the consumption have been moving almost in tandem. Owing to the deregulation post 1991 in India, the industrial expansion grew drastically for the past two decades. Hence the demand for petroleum products increased rapidly. Since the domestic consumption was more than the production, the import of POL increased gradually. After the entry of new private players and other international oil companies due to deregulation, the production of POL increased. Hence after 2000, the percentage of import of POL decreased gradually. Due to the increase of crude oil price in 2007-08, the private players were unable to sustain the competition because of the subsidisation of public sector oil companies. Hence the private players exported the Petroleum Oil, Lubricants as they suffered loss in the domestic market, as a result of which the exports of POL increased since 2007. Owing to the increase in the exports, the imports of POL also increased thereafter.

6. Nature of Oil Demand in India:

Since data for India in terms of the breakup of sectors as regards oil source is not available, we take the corresponding measures for non-OECD countries in Asia available with the United States department of energy, as surrogate estimates. This is justified because the demand growth in India is likely to be similar to the rest of the non-OECD Asia which is dominated by China. We also point out the special conditions driving demand in India. (Note: OECD refers to the Organisation for Economic Co-operation and Development which is a grouping of developed nations).

The key areas where oil is used as a source of energy are transportation, industrial, domestic, commercial and agriculture sectors as shown in the chart below. The chart shows the projected values for increased global demand in the future in these sectors. These values as those of the rest of the US DOE's international energy outlook 2009 report are policy neutral in the sense that they are objective estimates under the assumption that major legislative and economic policy changes do not take place in the given time frame.

World liquids consumption is slated to increase from 85 million barrels per day in 2006 to 107 million barrels per day in 2030. Although world demand for liquids is dampened in the near term as a result of the global economic recession that began in 2008 and continues into 2009, a return to trend growth is expected over the long term as national economies recover. In particular, the developing economies of non-OECD Asia and the Middle East are expected to return to strong economic growth, accompanied by growing demand for energy to fuel transportation and industrial activity.

Figure 5. in the appendix shows global consumption of liquid fuels in quadrillion BTU. Strong expansion of liquid fuel use is projected for the non-OECD countries, due to a return to robust economic growth, burgeoning industrial activity, and rapidly expanding transportation use. Of the five non-OECD regions studied the largest increase in regional non-OECD consumption between 2006 and 2030 is projected for non-OECD Asia, at 14.1 million barrels per day. By country, China (8.1 million barrels per day) and India (2.0 million barrels per day) show the largest increases in demand in the region. Thus it becomes clear that India is going to remain a major contributor to the global growth in demand for oil in the medium to long term. We will now focus on two major sectors that are going to be the prime drivers of demand for oil in India, that is the transportation and the industrial sectors.

Figure 6. in the appendix shows the consumption of liquid fuels in quadrillion BTU by end-use sector in OECD (left) and non-OECD countries (right). The transportation sector relies heavily on liquid fuels to meet demand for travel. Worldwide, the non-OECD nations are expected to account for 87 percent of the total increase in transportation energy use. Growing demand for transportation services in the non-OECD countries is the most important factor leading to increased demand for world liquid fuels consumption. In 2006, the OECD nations consumed 81 percent more liquid fuels for transportation than the non-OECD nations.

In 2030, however, the totals for OECD and non-OECD liquids consumption for transportation are approximately equal at 61 quadrillion Btu. For the OECD countries, the transportation share of total liquids consumption increases from 57 percent in 2006 to 61 percent in 2030. For the non-OECD countries, the transportation share of total liquids consumption increases from 42 percent in 2006 to 52 percent in 2030.

Growth in the demand for transport of both people and freight is correlated with robust economic growth likely in the non-OECD countries, especially India and China.

Figure 7 shows the energy consumption for passenger transportation per capita in million BTU for India and energy consumption for public and private transport in non OECD countries in 2006 and 2030 (projected).

Turning to the industrial sector which is again a major driver of the demand for oil, **Figure 8** further shows the industrial sector energy consumption in quadrillion BTU.

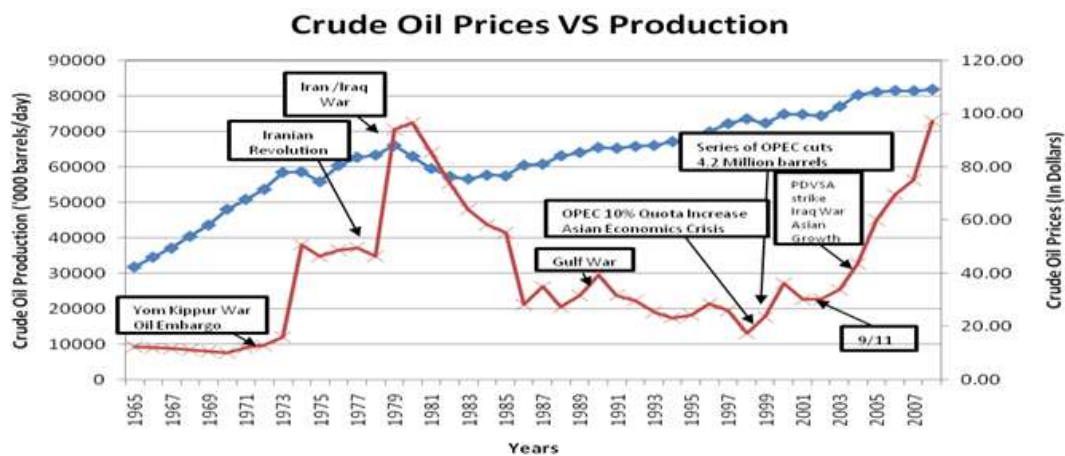
7. Concluding Views: In India most of the energy requirements of the industrial sector are met with sources other than oil. Also Indian industry is less energy intensive as explained below. India has been successful in reducing the energy intensity of its industrial production over the past 20 years. A majority of its steel production is from electric arc furnaces, and most of its cement production uses dry kiln technology. A major reason is the Indian government's public policy, which provides subsidized fuel to citizens and farmers but requires industry to pay higher prices for fuel. The quality of India's indigenous coal supplies also has contributed to the steel industry's efforts to reduce its energy use. India's metallurgical coal is low in quality, forcing steel producers to import more expensive metallurgical coal from abroad. As a result, producers have invested heavily in improving the efficiency of their capital stock to lower the amount of relatively expensive imported coal used in the production process. The Indian government has facilitated further reductions in industrial energy use over the past decade by mandating industrial energy audits in the Energy Conservation Act of 2001 and mandating specific consumption decreases for heavy industry as part of the 2008 National Action Plan on Climate Change. These measures contribute to a reduction in the energy intensity of India's GDP.

References:

- Bentley et al (2000), R.W., Booth, R.H., Burton, J.D., Coleman, M.L., Sellwood, B.W., Whitfield, G.R., 2000. Perspectives on the future of oil. In: Energy Exploration and Exploitation, Vol. 18, Nos. 2 and 3. Multi-Science Publishing, Brentwood, pp. 147–206.
- Bookout, J.F., 1989. Two centuries of fossil fuel energy. Episodes 12/4, 257–262.
- Campbell, C.J., 1991. The Golden Century of Oil 1950–2050: The Depletion of a Resource. Kluwer Academic Publishers, Dordrecht, 1991.
- Davies, P., Weston, P., 2000. Oil resources: a balanced assessment. Paper for Presentation at The Energy Forum: Running on Empty? Prospects for World Supplies. Rice University, Houston, May 19, 2000.
- Howell, D.G., Bird, K.J., Gautier, D.L., 1993. Oil: When will we run out? Earth, March, 26–33.
- International Energy Agency, 1998. World energy outlook. November 1998; ISBN 92-64-16185-6.
- Ivanhoe (1996) International Energy Agency, 2000. World Energy Outlook.
- www.ibef.org/industry/oil-gas-india.aspx
- www.indiastat.com

APPENDIX:

Figure 1.



Source: Report on trends in crude oil pricing

and production, GOI.

Table 1. Major Oil Consumers:

Country	Consumption ('000 Barrels/Day)
US	19419
China	7999
Japan	4845
India	2882
Russian Federation	2797

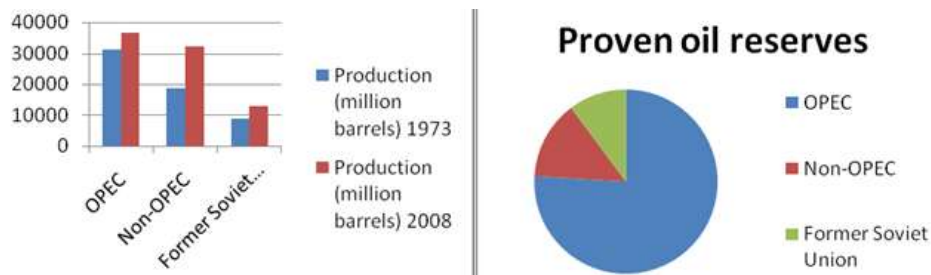
Source: en.wikipedia.org/wiki/List_of_countries_by_oil_consumption

Table.2. Major Oil Producers:

Country	Production ('000 Barrels/Day)
Saudi Arabia	10846
Russian Federation	9886
US	6736
Iran	4325
China	3795

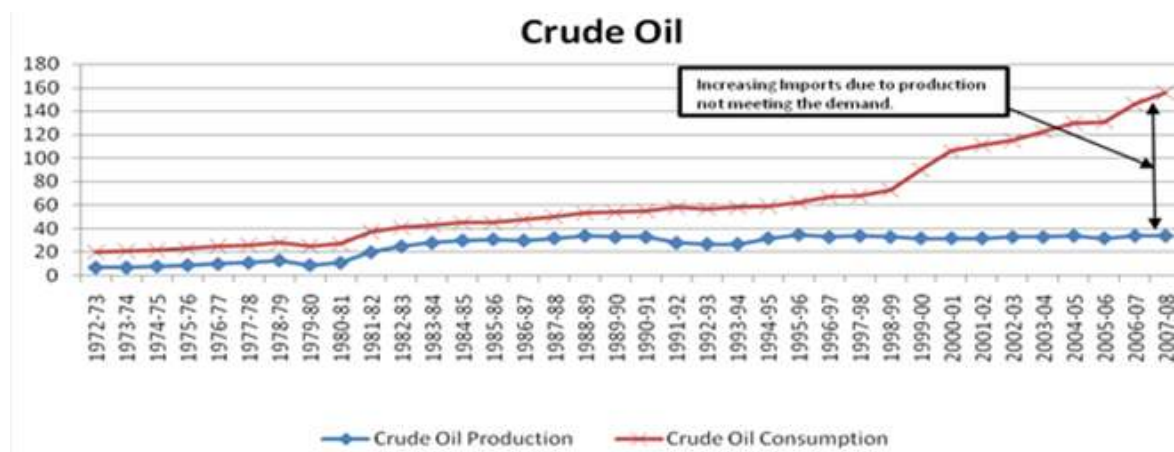
Source: en.wikipedia.org/wiki/List_of_countries_by_oil_consumption

Figure 2.



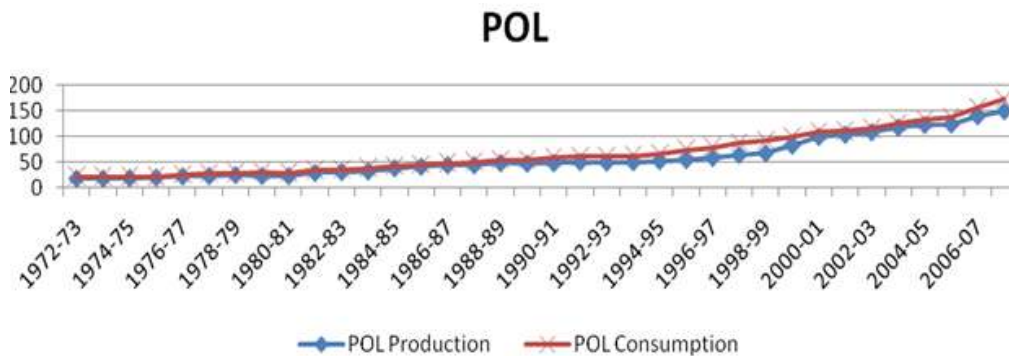
Source: Author's Figure through excel, data from wikipedia

Figure 3.



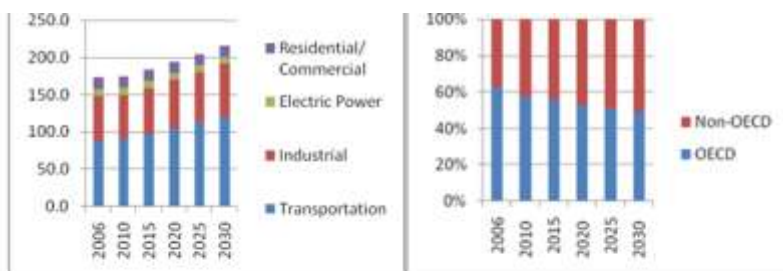
Source: Author's figure drawn on excel, data from www.indiastat.com

Figure 4. Petroleum, oil and Lubricants (POL):



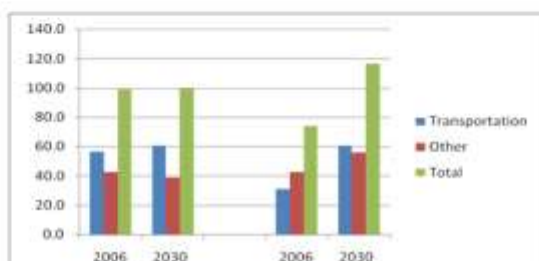
Source: Author's figure drawn on excel, data from www.indiastat.com

Figure 5. Global consumption of liquid fuels in quadrillion BTU



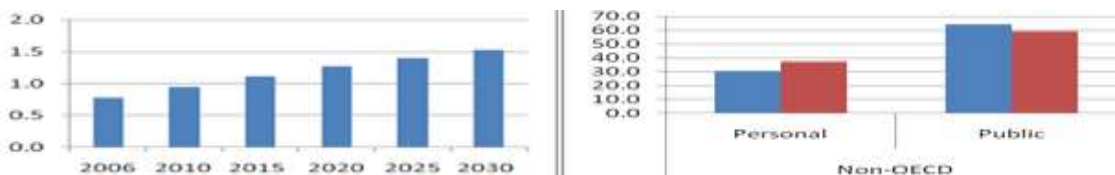
Source: US Department of Energy

Figure 6. Consumption of liquid fuels in quadrillion BTU by end-use sector in OECD (left) and non-OECD countries (right)



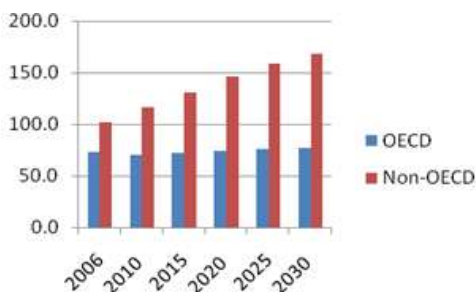
Source: US Department of Energy

Figure 7. Energy consumption for passenger transportation per capita in million BTU for India and energy consumption for public and private transport in non OECD countries in 2006 and 2030 (projected).



Source: U.S Department of energy

Figure 8. : Industrial sector energy consumption in quadrillion BTU



Source: U.S Department of energy