

Chapter 8

Findings and Recommendations.

Chapter 8. Conclusion

8.1 Summary

The advent of modern societies ushered in the era of energy driven economies. World over nations compete with each other to secure energy assets for the present and also for the future. Trade and civil wars have raged across the globe for control over energy resources. They not only represent commercial interests but also the very existence of the present day societies.

What we are talking here is a very, very serious business.

Can we even think of a day without any form of power like electricity, coal, petrol or diesel?

It is so basic that most of us may not have even thought of it.

Yes, this is why the governments world over are concerned and are ensuring energy security for their societies.

Energy resources are classified broadly in two categories

- Renewables – Solar, Hydro, Tidal, Wind, Bio Mass and Geo Thermal.
- Non-Renewables – Fossil Fuels and Nuclear energy.

The renewables with present technologies have limited capacity to address the current and future energy requirements. The world is mainly dependent on Fossil fuels to meet its current energy demand. The available resources of fossil fuels are limited and hence we are witnessing a surge in their prices.

The Indian economy is also not insulated from these global trends. Being predominantly dependent on imports in the energy front, the economic growth of the nation is greatly influenced by the volatility of energy prices worldwide. At present the Indian economy has one of the lowest per capita energy consumption standards in the world (21 times less than USA). As we progress and develop, our per capita consumption will increase at a very fast pace. As of 2010, India was the fourth largest importer of Petroleum Products after U.S.A, China and Japan. The future energy security of the country needs to be addressed urgently with sincerity and radical thinking.

Petroleum Products are the most important energy resource currently in the world market. They are derived from Crude oil which is the basic raw material found as a natural resource and is commercially extracted. This product is then refined to produce different grades of petroleum products suited for different fuel applications. Diesel (Gasoil) and Petrol (Gasoline) are the most widely used petroleum fuel with versatile applications. The primary application is as transport fuel. They constitute

more than 90% of total transport fuel worldwide. The same trends are seen in Indian economy also.

Crude and Finished Petroleum Products are traded worldwide as major commodities with separate established markets. The trades are in physical form and in futures. The pricing methods followed globally are Import Parity and Export Parity pricing both for crude and finished products. The trade is basis spot market, long term contracts and hybrids.

India till early 2002 before price reforms and decontrol in petroleum sector, followed cost plus pricing in crude and administered pricing in finished products with built in cross subsidies. This was known as Administered Pricing Mechanism (APM). After April 2002, the sector was decontrolled and global practices of Import Parity and Export Parity pricings established. However with global volatility in petroleum pricing, the reforms in the sector was halted and controlled pricing was re-introduced. This resulted in huge under-recoveries to government oil companies which had a major impact on the budget and off the budget.

The government oil companies are stricken and the sector is reeling under financial uncertainty. The private sector oil majors have withdrawn from retail marketing of petroleum in the country and only government oil companies are conducting the business, if it can be so called.

The impact on economic front is already being felt with high inflation rates from supply side, major outflow of foreign exchange on high petroleum import bills and slowing down of exports. The growth rate of the economy has still not been impacted, however signs of slow down are already visible.

The situation is precarious and needs urgent attention and action. However the political leadership in the country is dithering on the matter, postponing the call with a hope that international prices will stabilize and the bitter pill of high energy prices may not be administered to the economy.

World over high energy prices and recession triggered by financial crisis in U.S.A have slowed down growth. In the OECD nations which comprises of the developed countries of the world, the growth has been negative.

This trend was not seen in India and China because of the high domestic demand and insulated energy markets in the respective economies.

It is very pertinent to note here, that in spite of recessions and negative growth in OECD countries who are the major oil consuming nations, the petroleum prices did not stabilize at \$ 50/ Barrel level. They showed wide fluctuation and have remained + \$ 80/ Barrel level most of the time after 2008.

Once the OECD nations are out of recession, the situation on crude price front can only be higher. As economists are confirming, world has to face high energy prices now on. This seems to be a reality.

The Indian economy had been insulated from the oil shock and so was the Chinese economy. This in fact has helped both the economies to grow in spite of the world recession.

However, as India is predominantly import dependent on petroleum products and particularly on crude, fuel subsidy will only lead to structural imbalance in the economy and derail it from the growth path with major implication on infrastructure development. Huge subsidy bills will gobble up the resources and key social sectors suffer leading to higher economic disparity in the society.

The petroleum prices during the last decade particularly of diesel has been controlled. Thus the actual impact of diesel prices could not be studied during the last decade. However the prices showed a colinear relationship when increasing moderately and inverse relationship on sharp changes. Stable fuel prices support the GDP growth curve.

As pricing principles of petroleum sector remain same throughout the country, Gujarat has also witnessed the same trends of pricing on state gross domestic product. The only major difference has been on the fact that, Natural Gas as a fuel has made its presence felt in the power sector, industrial fuel market and to a limited extent in the automotive fuel market. This has changed the fuel product mix in the state industrial sector. However as Natural Gas pricing is administered and currently lower than the other close substitute fuels, there is a huge demand and the product is being allocated rather than being sold. Major shift in the fuel mix has led to major drop in demand of Furnace Oil in the state. The LNG facilities created for import of gas is operating far below capacity due to high prices of the product in international markets and the imports are not economically viable against administered prices of complimentary and substitute fuel products, natural gas, petrol, diesel and electricity.

Petroleum Product prices drive the international prices of energy products as they are the most versatile and widely used product in the energy market. The prices of all energy products like coal, LNG, NG and electricity have followed crude prices internationally.

As prices are insulated and controlled in India, the trend was not seen in Gujarat energy market. The products whose prices were decontrolled and linked to international prices on import parity basis dropped their market share as their demand dropped. The products with controlled prices (subsidized) gained market share as their demand grew due to substitution effect. This phenomenon was witnessed in a major way in industries of Gujarat, where running Captive Power Plants were stopped, scrapped and power from Power Utilities secured.

To study the impact of change in petroleum prices on the state economy, diesel price changes were mapped with freight, WPI and SGDP over the last 10 years.

The findings were quite revealing. Contrary to the view that transport sector increased its freight with a higher proportion than the fuel price hike, it was noted

that they were not able to secure even the full impact of fuel price rise when price rise in fuel were small, which had been the normal case during the decade. However when the price rises were substantial, the transport sector was able to secure more than proportionate increases.

The findings take to an interesting lead, the services sector particularly the traders had profited at the expense of manufacturing and agriculture which added to the inflationary spiral. This aspect may be further studied by planners for effective inflation management of the economy.

Regression analysis was carried out to understand the relationship between diesel prices, freight rates, whole sale price index and state GDP.

The findings were interesting as expected freight rates moved with diesel prices. The regression between diesel and freight displayed value of slope as 0.035 with a R^2 value 0.81 signifying strong relationship between the two parameters. The study conducted on price sensitivity of freight and diesel had a unitary incremental rate of 0.0357 per litre of diesel to a km. This confirms our data and assumption of the freight increments due to price induced changes of diesel.

Similarly the regression between diesel and WPI has also shown strong positive relation with slope of 2.876 and R^2 value 0.87. As diesel is a part of the product basket of WPI index and it impacts overall price change of all other products in the basket, the slope and R^2 value are stronger. This also reinforces our findings and assessment that overall increment of prices are more than proportionate increment in diesel prices due to other economic factors and not just the cascading effect. The market being imperfect, other sectors seek a higher than proportionate increase in cost of input and pass it on to the final price of their products.

To reconfirm the findings regression analysis was carried out with WPI as the independent variable and diesel prices as dependent variable. The R^2 value came out very strong as 0.97 and the slope as positive 0.013. This indicates the overall weight fuel has in WPI index which is very small as compared to the incremental price impact diesel has on WPI.

The correlation equation between diesel and state GDP also shows a positive slope with R^2 value of 0.86 while that of freight and state GDP a positive slope with higher R^2 value of 0.988.

Similar is the case when diesel and freight are analysed with state GDP from manufacturing. The slope is positive and R^2 value 0.887 and 0.960 respectively.

This signifies the fact that freight has a much higher impact on GDP than diesel prices.

Interestingly the R^2 value of diesel is less than freight in all the cases studied. This conforms to the economic reality of freight which signifies transport services is more widely used product in the economy vis-à-vis diesel and thus has more influencing power.

Overall the equations reconfirm the economic reality and the assumption that diesel prices have direct and indirect influence on GDP and its growth.

Diesel prices are representative of the petroleum prices which in turn are the determinant of overall energy prices in the economy. They in turn influence the GDP and its growth.

This is not only true for economy of Gujarat but can be extended to Indian economy as well, being a representative unit of the country.

Gujarat has declared its plans to be a gas based economy. The state has made substantial investment in this area on infrastructure which includes pipeline grids across the state, pumping stations, retail gas stations, and last leg connection to domestic and industrial users. As the state is gas deficit in production, natural gas from Andhra Pradesh has also been sourced for the state. However the supply is limited and since imported gas, LNG is priced very high, further development in the area is in limbo. The state has rightly made the move to broad base energy supply alternatives in the state economy. As price reforms in the sector are in abeyance, the market is witnessing structural demand aberrations due to subsidies in certain products and free market pricing in others. Once the reforms are carried out, price adjustments will show congruence over the alternate energy products and gas will take its due market share at the market determined prices which will make LNG also a viable fuel.

World over natural gas has been a preferred fuel for power stations, feed for fertilizer industry and petrochemical industries. The use of this fuel as transport fuel has been limited due to storage and usage limitations. Advanced nations have used this fuel to run city transport services and city heating systems.

In Gujarat, the planners have also adopted the same model. However with current pricing structure and availability constraints, this model is not functioning to its potential. Fine tuning of the pricing aspect to be undertaken as explained in the chapter VI so as to make the natural gas from imported source price effective to the intra-city transport segment, thereby ensuring proper supplies which are a current constraint.

To conclude, the study undertaken takes a global overview of the energy market, alternate energy options and then narrows down to petroleum pricing. This is to equip the reader with the backdrop of the current energy scenario, how petroleum prices are the prime drivers of energy market prices and then inform them about intricacies of petroleum pricing.

The volatilities of pricing are discussed with reference to the other fuel alternates and then their relevance to Gujarat with the path ahead is discussed.

Gujarat is not only a part of India but is a member of the Global community. It being one of the most industrialized states in India and export oriented economy, it cannot function in isolation in an important area like energy if it has to remain competitive and grow to its potential. Import parity pricing of energy products are

the reality it has to face and the sooner it gears up, the faster will the state economy adjust to current realities and structurally reorient itself to achieve the growth and development targets.

This can only ensure uninterrupted and adequate supplies of energy to the fast developing economy and make Swarnim Gujarat a reality.

8.2 Recommendations

- 1) Petroleum Pricing reforms are need of hour and should be implemented without any further delay. They should be followed up with pricing reforms of power sector, coal and other related energy products. This will enable the energy sector to stabilize and grow as per market demand without structural incongruences. This can only enable the sector to increase capacities and meet the growing energy demand of the economy.
- 2) The pricing principle for the sector has to confirm with international practices as our energy market is import driven. The pricing concept of Import parity has to be applied to all energy products, where we are import dependent. Export parity and trade parity pricing principles should only be applied on need basis with periodic scrutiny and review. Left to market forces they will find their natural equilibrium.
- 3) Energy security of the economy will follow by broad basing our energy basket. Liquefied Natural Gas, LNG is a viable option to support our natural gas initiative at state level. Pricing of the product to be supported in domestic market to eliminate the cyclical swings with fuel cess / taxes on other main fuels like petrol, diesel and electricity. The same should be dynamic, periodic preferably fortnightly and only meant for price stabilization in a transparent manner.
- 4) Natural gas, with the current realities of limited supplies to be restricted as a transport fuel for public and intra city transport only.
- 5) Development of various energy resources like oil and gas explorations, coal reserve explorations, development of renewals and alternatives to be financed directly from the budget and not through the pricing mechanism as it leads to structural demand changes, impacting the entire market.

To summarize, pricing in energy market should be market driven and not administered.

8.3 Limitations of the study

The literature study encompasses a wide horizon. This sometimes leads to time lags and gaps resulting into collating and representing only the significant development during the span of time. While dealing with such a vast subject on a global scale, only significant and published details have been overviewed.

The Petroleum Pricing covers accounting, financial and socio economic parameters. This work deals with the accounting and financial aspects of the subject on a limited scale. The main components of Crude and Finished products have only been detailed in the work. It has been observed that in many markets various permutation and combination are at inter play.

The secondary data has been collected from public domain, governmental sites / reports, various web sites of Oil companies both national and MNCs and world bodies. These are subject to approximation, estimations and aggregations. The details recorded from internet were on the date of downloading and are subject to change.

The primary data has been collected from various private bodies. These are subject to time lag and general limitations. Adequate efforts have been taken to check the authenticity and relevance.

As the subject is very dynamic and evolving over the entire spectrum of socio, political and economic scene, only a limited effort could be made in the study. This work may lead the path for future study and analysis on this important energy source.