Chapter-6

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The GCC countries are trying to reduce their dependence on the oil economy of the past and are implementing policies for introducing foreign capital and technology with the aim of diversifying their industrial structure. Historically, the European and American oil majors have participated in the oil and gas projects in GCC countries since very beginning. Today, their petrochemical investments are also very large. Japan's dependency on Middle East crude oil reached 84% in 2004. Japanese enterprises' participation in capital and technology transfer to GCC countries are also significant. The Japanese government, recognizing this had set up the Japanese Cooperation Center for the Middle East (JCCME) and is pushing the business of promoting investments in the GCC countries.

Global internal direct investments in 2004 were valued at $ 648.1 billion. With sharply higher crude oil prices as a backdrop, investments in the Middle Eastern oil producing countries are growing rapidly. Internal direct investment in Middle East and North Africa grew from $ 1.2 billion to $20 billion in 2005, of this roughly 54% was invested in GCC countries. One recent study published in industry press estimated that one in every three dollars of project finance raised globally in the first half of 2006 was headed to the GCC.

In this chapter, a comparative study of GCC petrochemical industry has been presented covering different aspects of strategic investment decisions. This comparative study is based on country case studies for petrochemical industry developed in Chapter-5.

For analysis, some of the aspects strategic investment decisions have been treated as *variables* on which the strategic investment decisions in GCC petrochemical sector are dependent. These variables are:

- Structural Changes (S)
- Petrochemical Investment Environments (E)
- Cost Competitiveness (C)
- Drivers for Investment (D)

Or,

SID = f (S,E,C,D)

A comparative analysis of six GCC countries has been carried out for the above mentioned four variables. The result of the analysis have been plotted on a five point scale for each variable to get the forced ranking of GCC countries on these variable.

This analysis will lead to an overall assessment of GCC petrochemical industry and finally find out the favourable destinations of SID in the GCC region on the basis of identified variables. This analysis will also help in identifying the strategic issues that will impact the future development of the GCC petrochemical industry. Finally, it will also substantially contribute in making appropriate recommendation for the industry to insure sustained growth for long term.

6.1 COMPARISON OF STRUCTURAL CHANGES

Compared with Asian countries, the investment environment in the Middle East was generally less politically stable and as government's foreign investment policies and relevant domestic laws were non-transparent, foreign investment has traditionally been at a low level. During the last decade of twentieth century, legislation governing foreign investment has rapidly improved particularly in GCC countries. GCC countries have access to low cost oil and gas resources as feedstock and with this cost

competitiveness the potential for development of petrochemical industry is extremely high.

GCC countries have shown an increasing desire to involve the private sector in the development of their petrochemical industries. The attractions of joint venturing with international petrochemical majors –to gain technical know-how; technology and marketing ability - are obvious. But governments of these countries also want their citizens to be able to share in the wealth created by this industry and to this end there has been a move to offering shares in project enterprises to public through initial public offerings (IPOs).

Landmark deals of recent time include the 2004 IPO of Al-Qurain Petrochemical Industries Company on Kuwait stock exchange (-with investment in Equate, Greater Equate and Kuwait Aromatics projects) and 2005 IPO of Yanbu National Petrochemical Company (YanSab) on Saudi stock exchange.

Details of structural changes for the development of petrochemical industry in each country are given below:

6.1.1 Saudi Arabia

The petroleum sector is the primary driver of the Saudi economy, accounting for 45% GDP ($274 billion in 2005), 75% of budget revenue and 90% of exports. With 22% of world's oil reserves, Saudi Arabia is the key factor in the global oil economy.

Petrochemical industry development was historically the provenance of SABIC. SABIC was created in 1976 to use associated natural gas as feedstock for the production of chemicals, polymers and fertilizers. It is one of the world's largest petrochemical companies with sales of $23 billion (49.1

million tons) in 2006 and net profits of $5.4 billion with total assets of $44.4 billion.

The major structural change in the Saudi petrochemical industry was the government's decision to permit private investment. The decision resulted in the 1999 start up of Saudi Chevron Phillips' plant in Al-Jubail which was the first wholly owned private petrochemical investment in Saudi Arabia followed by Sahara Petrochemicals and SIPCHEM.

A subsequent structural change was the decision in early 2000s to permit Saudi Aramco, the government-owned oil company, to invest in petrochemicals. Saudi Aramco is pursuing a diversification strategy into petrochemicals emphasizing the benefits of integration between refinery and petrochemicals as a means to value addition and maximization of Saudi assets values. In addition, it sees the use of refinery feedstock (naphtha and other heavy liquids, FCC light gases) as potential feedstock for producing olefins and aromatics.

Saudi Ministry of Petroleum finalizes the feedstock allocation for petrochemical production. Many companies ranging from established companies such as SABIC and Saudi Aramco to firms new to chemical business have applied for allocation. As of end of 2006, SIPCHEM has been awarded an allocation of ethane and propane in connection with a planned 1.2 million tons/year steam cracker for completion in by end of 2010.

Investments in Saudi Arabia are being accelerated following membership to the World Trade Organization which confirmed the pricing system for Saudi natural gas supplied to the country's petrochemicals industry. The move makes Saudi Arabia one of the most economically advantageous global locations for developing new petrochemicals ventures.

6.1.2 Kuwait

Kuwait's economy is driven by oil. Its GDP totaled $54 billion in 2005. Kuwait accounts for 10% of global oil reserves but its natural gas reserves are limited. Kuwait Petrochemical industry has been developed through Petrochemical Industries Co. (PIC) - a subsidiary of state owned Kuwait Petroleum Corporation. PIC had a net income of $ 595 million on total assets $2.45 billion in 2005. It developed a 750,000 tons/year joint venture ethane cracker called EQUATE. A second ethane cracker with a capacity of 850,000 tons/year and derivatives units (polyethylene and ethylene glycol) is being developed as a joint venture with Dow and the other partners for completion in 2008. In addition, KPPC is developing an aromatic complex with joint venture with Qurain with annual capacity of 370,000 tons/year of benzene and 770,000 tons /year paraxylene.

The petrochemical industry in Kuwait remains strongly influenced by the state, which has elected to act through joint ventures to utilize foreign expertise. PIC is interested in expanding and geographically diversifying its investment portfolio as evidenced by their participation in MEGlobal and Equipolymers. MEGlobal and Equipolymers are joint venture between PIC and Dow for the manufacturing and marketing of MEG and PET resins globally.

6.1.3 Qatar

Qatar is a gas rich country with GDP of $24 billion in 2005. Qatar's long-term goals feature the development of offshore natural gas reserves to offset the ultimate decline in oil production, diversifying the economy away from crude oil exports. The Qatari's have proven to be wise investors, instead of just seeking the gas thereby performing value addition. The country has employed innovative technology to develop its liquefied natural gas (LNG) and Gas-to-Liquid (GTL) industries.

Greater efforts are also being made to attract foreign investment into the country's non-hydrocarbon and private sectors through liberal market-oriented policies. Petrochemical industry development in Qatar was led by two consortia: *Qatar Petrochemical Company (QPC)* –a joint venture of Industries Qatar (80%) & Total Petrochemicals (20%) and *Q-Chem* - a petrochemical joint venture between QP (51%) & Chevron Phillips Chemical with 49% ownership.

A new olefins project is being developed by Ras Laffan Olefins Company Limited (RLOC). RLOC cracker will produce 1.3 million tons/year ethylene and expected to increase to 1.6 million tons/year in second phase. Two additional 1.3 million tons/year ethylene crackers are under development by Shell and ExxonMobil respectively, both are involved in gas field development at Ras Laffan.

The structural changes in financial sector, FDI norms and state enterprise reform in Qatar has contributed to the development of local economy and

integration of Qatari economy with global economy. The large scale gas and petrochemical projects involved the major oil and petrochemical companies. Recently, 60% government's stake has been given to private sector in creation of newly petroleum marketing company called Qatar International Marketing Company Limited (Tsweeq) which a spin -off of Qatar Petroleum-to take over the local distribution of gasoline and other petroleum products.

6.1.4 UAE

The United Arab Emirates (UAE) was formed as federation of seven emirates (Abu Dhabi, Dubai, Sharjah, Ajman,Ras Al Khaimah, Fujairah, and Umm Al Quwain), which came together as one state in Dec 1971. The federal capital of UAE is Abu Dhabi and it is ruled by the president of the UAE. Its GDP

totaled $ 96 billion in 2005. The UAE possesses the world's fourth largest oil reserves and fifth largest natural gas reserves, but its entry into petrochemicals has been somewhat slow.

Petrochemical development has been through Borouge, a joint venture between ADNOC and Boreasil. The company has an existing 600.000 tons/year ethylene capacity cracker at Ruwis and is planning for a second ethane cracker with capacity of 1.4 million tons/year of ethylene by 2011.
UAE has introduced structural changes in its economy from the very beginning and has been successful in strengthening its position in integrating its economy with the world. Especially, Dubai has been the favorite destination for global business majors to control and expand their Middle Eastern business. UAE has launched several new free trade zones intended to establish itself as a global centre for trade, research & development of technology and financial activities. UAE has embraced upon the utility services privatization embarking new projects through joint ventures with foreign investors and selling some existing assets.

After, well rounded economic reform and development UAE is focusing more seriously on development of petrochemical assets and Abu Dhabi is taking a major lead into it. ADNOC and Boreasil's major expansion in ethylene derivatives are progressing well. The Government of Abu Dhabi, as part of its diversification plan, is in the process of creating an industrial giant Abu Dhabi Basic Industries Corporation (ADBIC)- that mirrors SABIC, and which will develop industries such as steel, aluminium and petrochemicals to spur foreign investment.

6.1.5 Oman

Oman's is a middle income economy dominated by oil and gas. Its GDP totaled $25 billion in 2005. Petrochemical development has been through Oman Oil Company (OOC). Oman petrochemical development was largely

supported by joint venture projects with foreign partners like Dow, LG International, NPC Iran, GTL Resources, UK etc. Aromatic Oman LLC is building a $1.6 billion aromatic project as joint venture between OOC, LG International and Oman Refinery.

As a major initiative, Oman allowed 100% foreign ownership in most sectors and redefined the foreign company as one with more than 70% foreign ownership. The benefit of liberalized economy has started reflecting on the Omani petrochemical projects too. As of March 2006, approximately $8 billion worth of investment in the Omani petrochemical projects have been announced for the further development of the sector. The prominent one is OPIC'S ethylene and HDPE/LDPE plant is Sohar with investment of $ 2.3 billion and project is due to start in 2010.

6.1.6 Bahrain

In common with many other states with limited hydrocarbon reserves, Bahrain has been looking to maximize its earnings potential by developing industries that can utilize petroleum products and natural gas as either fuel or feedstock to produce other higher value added products. Bahrain's first foray into production of petrochemicals came on 5 December, 1979 with the founding of GPIC which is the finest example of inter-regional cooperation. Now Bahrain government is looking for the expansion of GPIC which is very much dependent on the new gas reserves being tapped regionally. Among the options are Saudi Arabia, Iran or Qatar which will further lead to strengthening of the regional cooperation.

Based on the analyses above, the six GCC countries have been plotted on a five point scale for variable *STRUCTURAL CHANGES* adopted by the individual country for the development of their petrochemical industries. The result is placed in Table 6.1

Table 6.1 GCC Countries Ranking on Structural Change:

GCC Countries	Highly Favourable	Favourable	Moderate	Unfavourable	Highly Unfavourable
Saudi Arabia	✓				
Kuwait		✓			
Qatar	✓				
UAE		✓			
Oman		✓			
Bahrain		✓			

From the analysis, it is clearly observed that the structural changes adopted by Saudi Arabia and Qatar are far ahead of other GCC countries in adopting structural changes in their economy for the development of petrochemical industry where as Kuwait, UAE, Oman and Bahrain are also progressing well with their reform programs.

These structural changes in GCC countries are directed towards increasing private sector involvement in economic gain from this sector. Therefore, privatization of the petrochemical industry has been used as a policy of wealth distribution in many GCC countries. The energy sector is characterized by highly profitable and government controlled enterprises which contribute significantly to the economies of those countries. The revenue generated from the energy sector remaining concentrated in government hands. Increasing private sector involvement through privatization is seen as one way that wealth generated from energy sector can be more evenly distributed amongst citizens of Gulf countries, resulting in improving standard of living and enhanced economic development.

6.2 COMPARISON OF THE PETROCHEMICAL INVESTMENT ENVIRONMENTS

The GCC countries have benefited enormously from oil and gas reserves and assets that have generated significant financial liquidity since 2000. A new regional body known as the GCC Economic Development Board progressively develops a coordinated regional economy strategy, according to *IMF Study of Regional Competitiveness 2007*, and aims at encouraging public-private participation, encouraging economic diversification and improving governance through strong and more efficient institutions. There is focus on building the private sector through targeted incentives for domestic and foreign investment, particularly for energy intensive industries such as petrochemicals, aluminium and steel.

In section 1.5 the broad structural reforms in GCC countries with their experience with reforms have been presented. As our study focuses on petrochemicals sector of GCC region, in this section, a comparison of the petrochemical investment environments in GCC countries has been presented covering the following aspects:

1. Foreign Investment Law & Regulation
2. Tax System & Foreign Capital Ownership Regulation
3. Investment Incentives & Infrastructure
4. Financial Structure & Domestic Demand
5. Petrochemical Industry organization & Regulation
6. Petrochemical Feedstock Status

For comparison of the petrochemical investment environments, specific efforts have been made to select those aspects of investment environment which have direct or indirect influence on long term petrochemical investment decisions in the GCC countries.

6.2.1 Foreign Investment Law & Regulation

Foreign investment law and regulation in all the GCC countries has been relaxed to encourage the foreign participation in industrial sectors of the country. GCC countries enacted the new investment law and established the associated investment authority to facilitate foreign direct investment processing, in some case allowed up to 100 % foreign ownership of business in most of the sectors. Table 6.1 presents the comparison of such laws in GCC countries with reference to petrochemical industry.

Table 6.2 GCC Foreign Investment Law & Regulation:

Country	Foreign Investment	
	Service Agency	Law & Regulation
Saudi Arabia	• Saudi Arabia General Investment Authority (SAGIA) is created as gateway to investment in Saudi Arabia in 2000	• Foreign Capital Investment Regulations 1979 (FCIR) was replaced by amendment in 2000.
Qatar	• Ministry of Finance, Economy & Commerce	• Industrial Development Law, 1995 • Regulation of Foreign Capital Investment in Economic Activity, 2000 (not applicable to JVs with public Sector)
Kuwait	• Ministry of Commerce & Industry • Foreign Capital Investment Committee • Foreign Capital Investment Office (FICO) Established in April 2001	• Foreign Direct Investment Law 2001 • Support of National Labour & Encouraging their Employment in the Government Sector 2000
Bahrain	• Bahrain Promotion & Marketing Board (BPMB) • Economic Development Board (EDB)	• Commercial Company Law 2002
UAE	• Abu Dhabi: Abu Dhabi Chamber of Commerce & Industry • Dubai: Dubai Development Board	• Federal Corporation Act 1989
Oman	• Ministry of Commerce & Industry • The Omani Centre for Investment Promotion & Export Development (OCIPED) • Oman Chamber of Commerce & Industry	• Foreign Capital Investment Law 1996 • Commercial Company Law 1974

6.2.2 Tax System & Foreign Capital Ownership Regulation

Tax system and foreign capital ownership regulation have also been revised in all the GCC countries. In fact, 100 % foreign ownership of companies has been allowed in most non-hydrocarbon sectors and corporate income tax on foreign corporations has been reduced substantially. Table 6.2 presents the comparison of these regulations in GCC countries with reference to petrochemical industry.

Table 6.3 GCC Tax System & Foreign Capital Ownership Regulation:

Country	Tax System and Exemption	Share Ownership
Saudi Arabia	• Corporate Tax: 20% flat (April 30, 2004) • Tax holidays: Foreign JVs with 25% or more of Saudi equity were exempt from company tax for the first 10 years of commercial operation (Repealed in April 2000. Vested right are protected)	• A manufacturing company may be established with 100% foreign ownership • Negative list industrial areas are barred to oil upstream, communication (excluding mobile phone) military industries
Kuwait	• Corporate tax: maximum 35% (sliding system) • Custom duty: 5% for all (import from GCC countries are free) Tariff protection of 25% for locally produced goods	• Accepts 100% foreign capital (subject to permission of Minister of Commerce & Industry)
Qatar	• Corporate tax minimum rate: 35% (progressive) • Custom duty: most imports 5%	• With approval of Ministry of Finance, Economy & Commerce, 100% foreign capital is accepted for industrial sector. (in petrochemical sector it has not exceeded 49% yet)
UAE	• Corporate tax: No (except oil & foreign banks) • Custom duty: 4% except daily necessities (import from GCC countries are free)	• Diversification of industrial structure
Oman	• Corporate tax for listed companies • Oman based company (regardless of foreign capital share): 12% (profit should be more than RO 30,000) • Branch of GCC company: maximum 30% (progressive) • Custom duty: 5% for all (import from GCC countries are free)	• Foreign investment is less than 70% and more than RO 1.5 million (max 100% if investment is more than RO 5 million and contribute to the development of Oman)
Bahrain	• Corporate tax and private tax: No taxes • Custom duty: 5% for all (import from GCC countries are free)	• Foreign capital less than 49% (100% is accepted for some sectors)

6.2.3 Investment Incentives & Infrastructure

New incentives schemes have been adopted in all GCC countries to attract foreign direct investment. The restructuring and privatization of utilities and related services have been placed at the top of the agenda in many GCC countries. Table 6.3 presents the comparison of GCC investment incentives and infrastructural developments for petrochemical industry.

Table 6.4 GCC Investment Incentives & Infrastructure:

Country	Incentives for Investment	Infrastructure
Saudi Arabia	• Favourable loans from SIDF for manufacturing sector • PIF loan for big projects which are difficult to be financed by Saudi Arabia commercial bank	• Provided and serviced by government (roads, ports and supply of electricity and water) • Royal Commission for Jubail & Yanbu • Development of Industrial city for petrochemical industries • 6 new economic/ industrial cities announced
Kuwait	• Tax holidays: maximum 10 years after operation • Customs exemption of machinery, equipments & parts for construction, expansion and development and raw materials and necessary goods for production • Free transfer of profit and capital	• Port and land are administered by extra ministerial bureau • Water and Electricity are supplied by Ministry of Electricity & Water
Qatar	• Maximum 50 years land lease • Tax holidays: maximum 10 years after operation • Customs exemption of machinery and raw materials • Free transfer of profit	• Industrial parks (Mesaieed, Ras Laffan) are ready to use • Water and Electricity are supplied by Electricity & Water Corporation
UAE	• Customs exemption of machinery for construction and raw materials for production • Incentives are available for companies located in Free Zone area.	• Industrial areas (Abu Dhabi, Ruwais, Dubai, Jebel Ali) are ready to use • Abu Dhabi: Abu Dhabi Water and Electricity Authority supplies water and electricity (Privatization is planned)
Oman	• Tax holidays: maximum 5 years after operation and renewable for another 5 years (losses of first period are deferrable to renewal period) • Maximum 5 years customs exemption of machinery, & parts for operation • Maximum 10 years customs exemption of raw materials and intermediates for operation	• Industrial parks (Sohar, Rusayl and 4 more) are ready to use • PEIE prepares land, UTT, waste water treatment and other infrastructure
Bahrain	• Customs exemption of machinery and raw materials for enterprises • Custom exemption for maximum 5 years after operation • Free transfer of profit and capital	• Industrial parks are ready to use • Water and Electricity are supplied by Ministry Electricity & Water

6.2.4 Financial Structure & Domestic Demand

The banking systems of all GCC countries have strengthened. Steps have been taken to deepen the financial system through the promotion of capital and equity markets in a number of GCC countries. Table 6.4 presents the comparison of GCC financial structure and domestic demand.

Table 6.5 GCC Financial Structure & Domestic Demand:

Country	Finance	Domestic Demand
Saudi Arabia	• Saudi Industrial Development Fund (SIDF) • Interest free loans are available for up to 50% of the total cost of an industrial project (service charges 2-3%) • PIF loans are available for big project	• Small domestic market of 24.4 million population but largest in GCC countries (Saudi Nationals are 16.5 million)
Kuwait	• State owned banks (middle and long term loan): 3 commercial banks Overseas Banks: 6 • Adopted a foreign investment law allowing foreigners to own and trade shares of joint-stock companies.	• Very small domestic market of 2.9 million (Kuwait number only 0.9 million)
Qatar	• Qatari Banks: 9 Overseas Banks: 6 • Banking industries are under government control • Qatar national Bank holds 50% of governmental enterprise assets • Maximum loan to single customer should be less than 7% of total loans	• Very small domestic market of 0.8 million (Qatari number only 0.2 million)
UAE	• Domestic Banks: 20 Overseas Banks: 27 • Dubai is a financial centre in Arabian Gulf • Established formal stock markets in 2000, and regulatory body for capital markets	• Very small domestic market of 4.9 million (UAE citizens number only 0.7 million)
Oman	• Domestic Banks: 7 Overseas Banks: 9 • Maximum loan to single customer should be less than 15% of total loans • Soft loan from Ministry of Commerce through Oman Development Bank	• Very small domestic market of 2.5 million (Omani number only 1.9 million)
Bahrain	• Largest finance centre in Gulf • Ratified anti-money laundering legislation in 2001; and enforced Bahrain Stock Exchange rules and regulations.	• Very small domestic market of 0.7 million (Bahraini number only 0.4 million)

6.2.5 Petrochemical Industry organization & Regulation

Each GCC country has the administrative organization related to petrochemical industry which provides the policy guidelines and uses the control. There are some prominent petrochemical organizations which have their role and influence in petrochemical industrial projects like SABIC in Saudi Arabia, PIC in Kuwait, QP in Qatar, ADNOC in UAE, PDO in Oman and BAPCO in Bahrain.

Table 6.5 presents the comparison of GCC industrial organization and related regulations.

Table 6.6 GCC Petrochemical Industry organization & Regulation:

Country	Petrochemical Industry	
	Government Organization	Government Policy Law & Regulation
Saudi Arabia	• Ministry of Commerce and Industry • Saudi Basic Industry Corporation (SABIC) • Feedstock are supplied by Saudi Aramco/ Ministry of Petroleum & Mineral Resources)	• Saudi Arabia, with its vast oil and gas resources, is actively continuing to expand its petrochemical production bases with the aim of effectively using these natural resources, diversifying its industry to value added products and creation of job opportunity
Kuwait	• Ministry of Oil • Kuwait Petroleum Corporation (KPC) Petroleum Industries Company (PIC)	• Value added products of petroleum, creation of job opportunity, privatization
Qatar	• Ministry of Energy & Industry • Qatar Petroleum (QP)	• Promoting investment in value added products of abundant natural gas resources
UAE	• Each Emirate control individually • Abu Dhabi: Supreme Petroleum Council (SPC) Abu Dhabi National Oil Co.	• Diversification of industrial structure
Oman	• Oil & Gas Ministry • Oman Oil Co. (OOC) • Petroleum Development Oman (PDO)	• Diversification from oil dependent economy utilizing oil income over limited production period
Bahrain	• Supreme Petroleum Council (SPC) • Ministry of Oil & Bahrain Petroleum Co. (BAPCO)	• Diversification of industrial structure

6.2.6 Petrochemical Feedstock Status

Feedstock sourcing and pricing policies provides a significant cost competitiveness advantage for petrochemical producers in the GCC countries. Table 6.6 presents the comparison of petrochemical source and prices among GCC countries.

Table 6.7 GCC Petrochemical Feedstock Status:

Country	Feedstock for Petrochemical Industry
Saudi Arabia	• Oil reserve ranks first in the world • Low cost feedstock from Saudi Aramco • **NG, Methane, Ethane Price: $0.75/MMBTU** • C3+, NGL: 62-73% Naphtha (C&F Japan Frieght)
Kuwait	• Oil reserve rank 4th in the world • Associated gas based petrochemical industry • **Ethane Price: $1/MMBTU**
Qatar	• Natural gad reserves rank 3rd in the world (north field is largest in the world) • Current: associated gas • Future : non associated gas • **Ethane Price: $1.5/MMBTU**
UAE	• Oil reserve rank 5th in the world • Natural gas reserve rank 5th in the world • Gas based petrochemical industry • **Ethane Price: $1.3/MMBTU**
Oman	• Natural gas reserves ranks 49th in the world • Natural gas based petrochemical complexes planned
Bahrain	• Oil & Gas reserves are small • Oil reserves: 0.06% of Saudi Arabia • Gas reserves: 2% of Saudi Arabia

Based on the analysis, the six GCC countries have been plotted on five point scale for variable *PETROCHEMICAL INVESTMENT ENVIRONMENTS*, on the basis of reforms adopted by the individual country for encouraging the investment in their petrochemical sector. The result is placed in Table 6.8-A and Table 6.8-B.

Table 6.8-A GCC Countries Ranking on sub variables of PETROCHEMICAL INVESTMENT ENVIRONMENTS:

GCC Countries	Foreign Investment Regulation	Tax System	Foreign Capital Ownership Regulation	Investment Incentives	Infrastructure
Saudi Arabia	F	HU	HF	F	HF
Kuwait	F	M	HF	HF	F
Qatar	HF	HU	M	HF	HF
UAE	HF	HF	HF	F	HF
Oman	F	U	M	M	F
Bahrain	F	F	M	M	F

HF: Highly Favorable; F: Favorable; M: Moderate; U: Unfavorable; HU: Highly Unfavorable

GCC Countries	Financial Structure	Domestic Demand	Petrochemical Regulation	Petrochemical Feedstock Status
Saudi Arabia	HF	HF	HF	HF
Kuwait	F	F	F	F
Qatar	M	M	HF	M
UAE	HF	F	F	M
Oman	M	F	M	U
Bahrain	F	M	M	U

HF: Highly Favorable; F: Favorable; M: Moderate; U: Unfavorable; HU: Highly Unfavorable

Table 6.8-B GCC Countries Over all Ranking on PETROCHEMICAL INVESTMENT ENVIRONMENTS:

GCC Countries	Highly Favourable	Favourable	Moderate	Unfavourable	Highly Unfavourable
Saudi Arabia	✓				
Kuwait		✓			
Qatar			✓		
UAE	✓				
Oman				✓	
Bahrain				✓	

From the analysis, it is clearly observed that the reforms adopted by the Saudi Arabia and UAE are highly favourable for the investment in petrochemical sector where as Kuwait is the third attractive destination for investment in petrochemical sector. Qatar is also progressing well with their reform programs and has written the success stories in their gas sector but still more have to be done to make their petrochemical sector equally attractive. The reform programs in Bahrain and Oman are more towards diversification of industrial structure for obvious reasons as their petrochemical sector are not as competitive as others.

6.3 COMPARISON OF COST COMPETITIVENESS

Cost competitiveness is an important determinant of profitability in the petrochemical industry. Production economics show notable disparities both within and between regions of the world. Such disparities prove to influence market behavior, investment and consolidation in the industry.

GCC countries and the other Middle Eastern oil producing countries have been promoting export oriented petrochemical projects intending to export these value added products to Asian and European markets. Japan, South Korea, Singapore, Malaysia, and the United States and other established petrochemical producing countries have traditionally been the major exporters to the Asian region, particularly to China and South East Asia. It is expected that the GCC challengers and the established majors will compete ever more strenuously in Asian markets, which are projected to remain large-quantity petrochemical importers. To survive the coming highly competitive price situation, petrochemical producers are all striving to be as cost competitive as possible.

In this section, the estimated production cost of major petrochemical products ***ethylene, mono ethylene glycol (MEG), linear low density polyethylene (LLDPE), propylene*** and ***polypropylene (PP)*** in competing

countries are calculated and compared in the light of the expected market prices in Asian market.

The selection of countries for petrochemical cost comparison is very crucial for this study. ***Saudi Arabia*** and ***Qatar*** have been selected as representative countries of GCC considering the feedstock availability (mainly the ethane) and future expansion of the petrochemical industry in these countries. In order to create a regional comparison of Middle East with other regions of the world, ***Iran*** has been included here for cost comparison; otherwise, this study is limited to GCC countries. Other countries considered fort the cost comparison are ***USA, Japan*** and ***China.*** USA and Japan have matured petrochemical industry and are major exporters to the Asian region where as China is the major producer as well as consumer of petrochemical products.

Here, the summary of cost calculation analysis has been presented and the data used for the cost calculation has been placed as *Annexure- B* for reference.

6.3.1 Calculation of Production Costs: Methodology and Primary Premises

To compare cost competitiveness, the calculation of cost is carried out for 2005 at hypothetical petrochemical plants assumed that construction started in 2002 and commissioned in 2004.

The production capacity of hypothetical ethane and propane based ethylene plants in GCC countries and Iran is assumed to be 120 MT/y and the production capacity of plants in USA, Japan and China is assumed to be 800 MT/y. A conventional stream cracking process has been considered for estimating fixed and variable costs. Units for extraction of butadiene and

separation of aromatics are excluded from ethylene units and fraction of C4 and heavier are deducted from ethylene cost as by product credits.

The production capacity of the hypothetical MEG plant is set at 600 MT/y or 300 MT/y considering the typical size of country's MEG market. The production capacity for hypothetical LLDPE & PP plants is assumed to be 400 MT/y which is the current standard unit capacity for all countries.

The production cost is calculated for ethylene and propylene starting from the type of feedstock currently prevailing in each country (selected from ethane, ethane/propane mixture, propane, light and full range naphtha). The production costs of the derivatives of ethylene and propylene (MEG, LLDPE and PP) are calculated based on transfer of the full cost of the olefins.

Since 2004, the investment capital required to build petrochemical plants has been soaring because of escalating prices of equipment and machinery because of exploding volume of work in the booming Middle Eastern construction. This important development has been noted but has not been considered in production cost calculation for simple reason that the production cost calculated here is for hypothetical petrochemical plants to cover this aspect for comparative analysis.

6.3.2 Prices of Feedstock for Petrochemicals:

The market price of hydrocarbon feedstock for the production of petrochemicals is tightly linked to the market price of crude oil. The impact of WTI crude oil prices at $20, $35, $50 and $65/ barrel has been considered. But for discussion and comparative analysis, the production cost of petrochemicals is presented for WTI crude oil price of $50 which is more realistic in current cure oil price scenario.

In section -4.5 of chapter -4, a complete analysis of GCC feedstock position and price has been presented. Petrochemical producers in GCC countries and Iran enjoy favorable fixed ethane supply prices, set by the government of each country. These stable prices are hardly influenced by the soaring crude oil prices serve to make the Middle Eastern petrochemical producers more cost competitive.

Saudi Arabia modified its ethane supply price from $0.50/MMBtu in the 1980s to $0.75/MMBtu in 1998 which is still applicable without any change.

In 1980, Qatar started to supply ethane to petrochemical producers operating within its borders, but did not make public the supply price. Iran also did not make public the ethane supply price applicable to the petrochemical projects in Assaluyeh commissioned in 2005 and thereafter.

For this study, an extensive local study, including informal discussion with people involved in these projects, have been done and based on their inputs it is assumed that the price for ethane set by Qatar and Iran in 2005 was $1.6 MMBtu and $1.25 MMBtu, respectively.

Since the 1980s, Saudi Arabia has been unable to fulfill its domestic demand for ethane by ethylene producers and has therefore started supplying propane and /or light NGL (A-180) to some thermal crackers as ethylene feedstock. The government also plans to supply butane. The price of both LPG and light NGL supplied to domestic petrochemical producers was previously determined by the formula "export FOB price of LPG/ light NGL less 30% discount." Since 2002, however, the supply price of propane, butane and light NGL has been decided by the formula average naphtha CIF price at Japanese port less ocean freight less a certain discount rate designated by the government for each respective year and also for each

respective hydrocarbon, which is called naphtha linked pricing. Detail formula is presented in Annexure -B.

The supply price of propane and light NGL to domestic petrochemical producers in Saudi Arabia fluctuate because they are ultimately linked to international crude oil price with a certain rate of discount. Consequently, the production costs of ethylene, MEG and LLDPE go up and down. Such fluctuations in the production costs of ethylene and its derivatives do not take place when fixed –price ethane is used as feedstock.

Qatar does not consume naphtha and light NGL as ethylene feedstock because it is self sufficient in ethane so far. Although Iranian petrochemical producers currently consume mainly naphtha feedstock, the large new petrochemical plants will use ethane as the feedstock. The cost for Iran was calculated based on both ethane and naphtha. The supply price of naphtha is set at the FOB naphtha price at Middle Eastern shipping port less 10%.

6.3.3 Cost Calculation Method:

The production costs of petrochemicals are recognized into: (a) variable cash costs (for main and auxiliary feedstock, chemicals and utilities), (b) fixed cash costs (such as direct manpower and maintenance costs (c) depreciation, (d) *indirect overhead costs / expenses,* and interest accrued on borrowed money.

The production costs of ethylene derivatives (MEG and LLDPE) and propylene (PP) are calculated based on intra-company transfer of the cost of the olefin. These are computed as follows:

- The variable cash costs (A) and fixed cash costs (B) of derivatives are respectively combined with A and B above of the feedstock ethylene or

propylene to transfer the variable and fixed cash components of the olefin.

- The depreciation (C) and indirect overhead cost/expense and interest accrued (D) are respectively combined with C and D above of feedstock ethylene or propylene to transfer fixed cost components of the olefin.

6.3.4 Production Cost Comparison between countries

The production cost of Ethylene, MEG and LLDPE are shown in Figure 6.2 to 6.4 for WTI crude oil prices of $50 per barrel.

6.3.4.1 Production Cost of Ethylene

The figure-6.2 presents a summary of the production cost of ethylene in GCC and other competing countries based on different types of feedstock. Qatar has been able to fulfill the demand for ethane by its ethylene producers, although the ethylene cost is slightly higher than that is in Saudi Arabia or Iran (see Figure 6.2) but it is still very advantageous compared to the costs of its naphtha based and ethane based Asian and ethane-based American competitor. Qatar may continue to occupy an advantageous competitive position in overall ethylene production costs, compared even with Saudi Arabia which is obliged to use not only ethane but also a large quantity of C3 and heavier hydrocarbons for overextended ethylene production. Therefore, advantage of Qatar over Saudi Arabia will remain unaffected even if the ethane supply price in Qatar in increased a certain extent.

In Iran, naphtha has so far been the most common feedstock for ethylene (see Figure 6.2), however, low cost ethane recovered from South Pars gas field will be fed to export oriented petrochemical projects enabling these projects to be ethylene cost competitive with Qatar.

Historically, USA ethane based ethylene was very cost competitive but since 2000, when price of natural gas had gone up, US ethane has been loosing its competitive position (see Figure 6.2).

Based on Ethane feedstock

The production cost of ethylene from ethane in Saudi Arabia is $114, the lowest among the countries studied. The ethylene cost in Qatar and Iran are $190 and $170 respectively, representing second lowest cost. As mentioned earlier, the supply price of ethane in these countries is fixed and not linked to the international price of crude oil. Saudi Arabia, however, is currently not in

position of completely fulfilling its domestic demand for ethane by existing petrochemical producers and those soon to come.

The production cost of ethane based ethylene in Qatar is little higher than in Saudi Arabia or Iran, However, Qatar depends and will continue to depend only on ethane as feedstock for ethylene , therefore, overall, Qatar is the most cost competitive in terms of ethane based ethylene.

Based on Propane and EP mixture feedstock

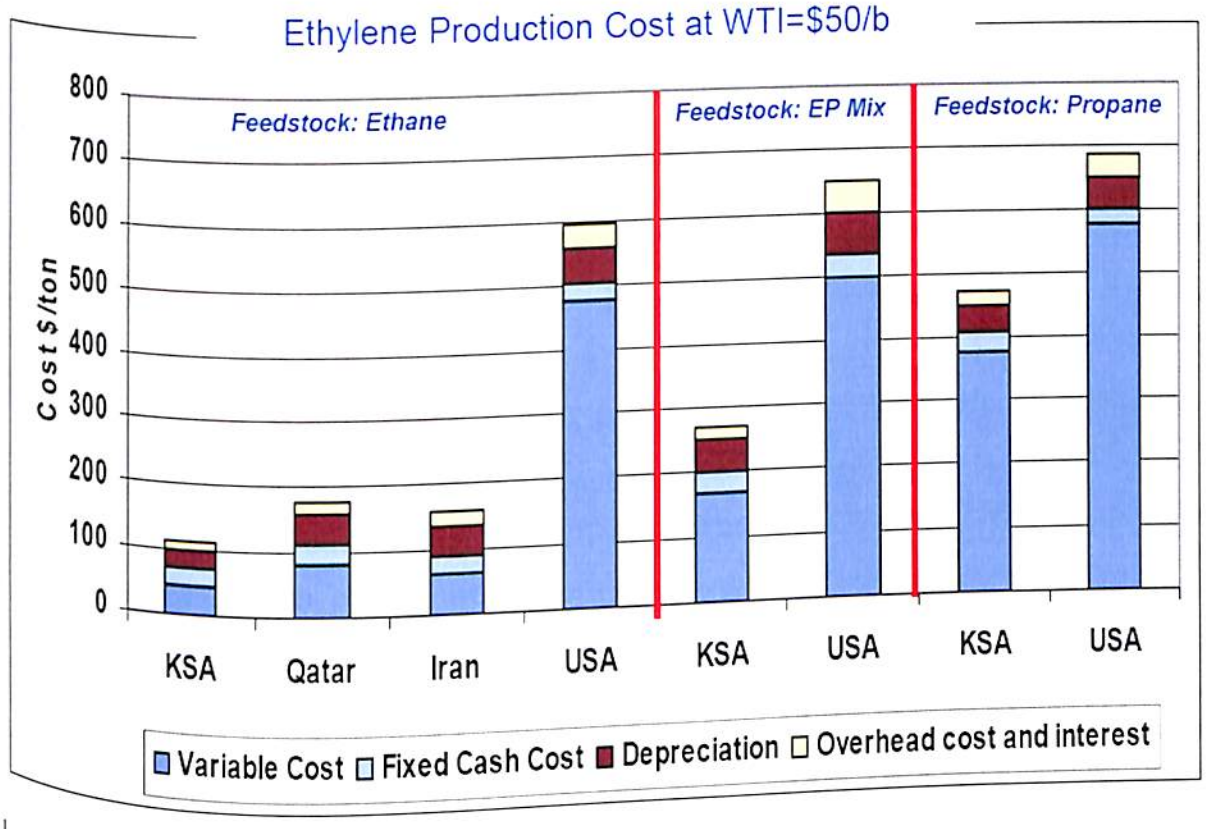
The production cost of Ethane Propane (EP) mixture in Saudi Arabia lies nearly midway between production cost of ethane based ethylene and propane based ethylene. Based on this analysis, one may conclude that Saudi Arabia will feed EP mix to the export oriented petrochemical projects to be commissioned in future. This indicates that Saudi Arabia will be as competitive as Qatar and Iran in terms of the aggregate cost competitiveness of its ethylene derivatives in the export market. However, Saudi Arabia will remain more cost competitive than the ethylene based American and naphtha bases Asian ethylene derivatives in export market.

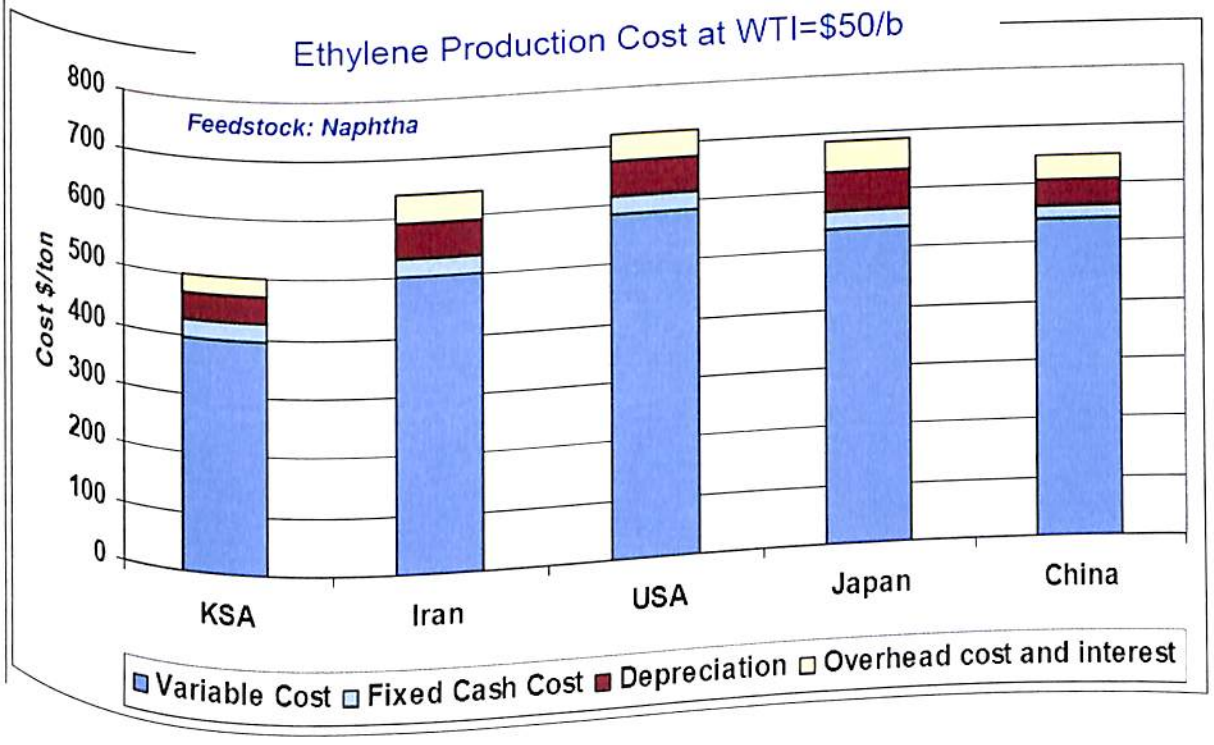
Based on Light and Full range Naphtha feedstock

The production cost of ethylene from A-180 in Saudi Arabia is about equal to that of propane based ethylene. Most of existing ethylene produced in Iran is currently naphtha based. It is assumed that the supply price of naphtha to petrochemical producers is based on formula *"Arabian Gulf port naphtha FOB price, less other charges such as port charges and terminal cost (which is approximately 10% of FOB charges)".* This makes the naphtha price to Iranian ethylene producers much lower than in Asia but it is still not better than to naphtha (A-180) price in Saudi Arabia.

The production cost of naphtha based ethylene in Iran is $640. By carefully examining the data one can notice that ethylene production cost in Iran is slightly lower than that in Asia. This is because the by- product credit is less valued and fixed cost portion is comparatively higher in Iran than its competitors in other regions. Therefore, we may conclude that Iran's cost competitiveness can hardly be superior to American and Asian producers with regards to the ethylene production cost in ethylene derivative export market.

Figure 6.2 Comparison of production cost of ethylene





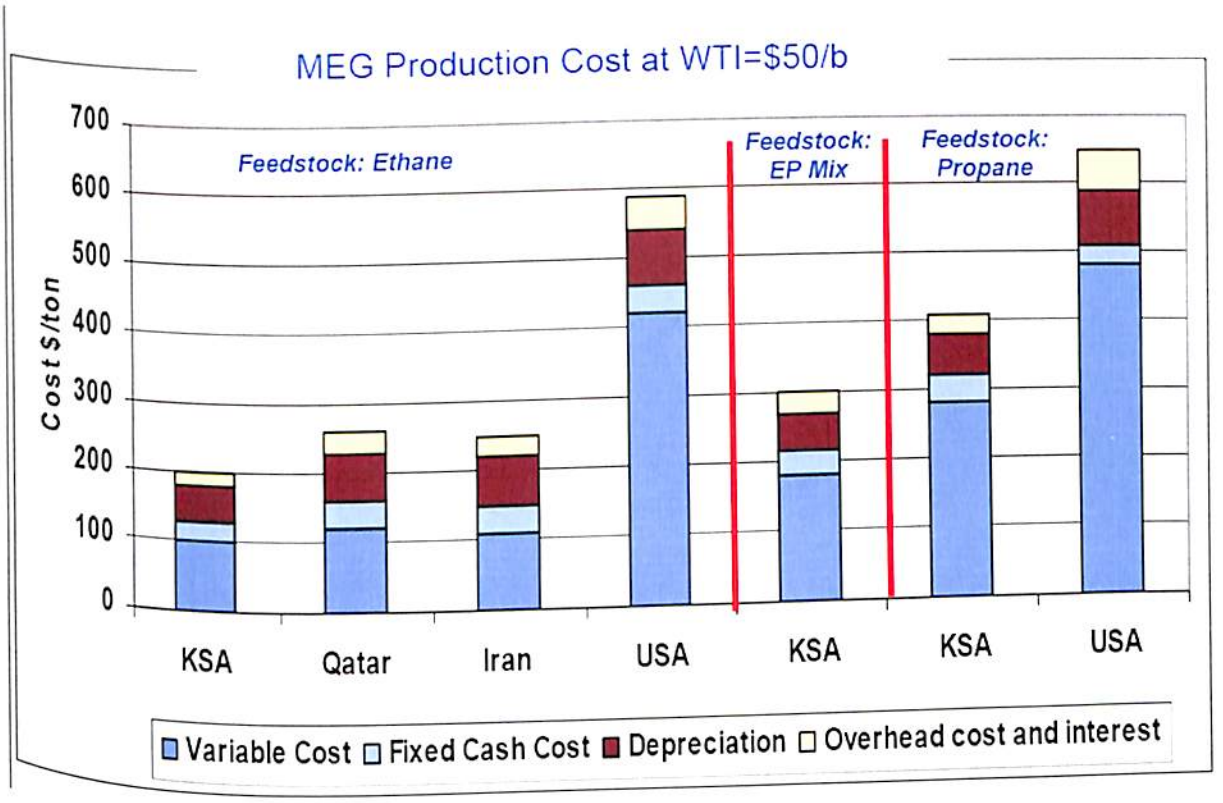
6.3.4.2 Production Cost of MEG & LLDPE

Figures 6.3 and 6.4 respectively presents the summary of production cost of MEG and LLDPE in GCC and other competing countries based on different types of feedstock.

The interesting finding emerging here is different ethylene transfer cost derived from different types of feedstock decisively determines the variable cost of MEG & LLDPE. There are comparatively few advantages/ disadvantages in Middle East, Asian and American producers in the fixed costs of MEG & LLDPE. Such being the case, the production cost of MEG & LLDPE derived from ethane based ethylene produced in two GCC countries is overwhelmingly lower than that of their Asian and American competitors. The LLDPE produced in Saudi Arabia being derived from different propane (A-180) based ethylene has second lowest production cost.

Another interesting observation from the calculated production cost of MEG and LLDPE can be made that the transfer cost of ethylene to MEG or LLPDE decisively and solely determines the production cost of MEG and LLDPE and consequently the cost competitiveness of MEG and. In Asia all the producers of MEG and LLDPE are heavily dependent on naphtha based ethylene as compare to GCC producers who are using ethane based ethylene.

Figure 6.3 Comparison of production cost of MEG



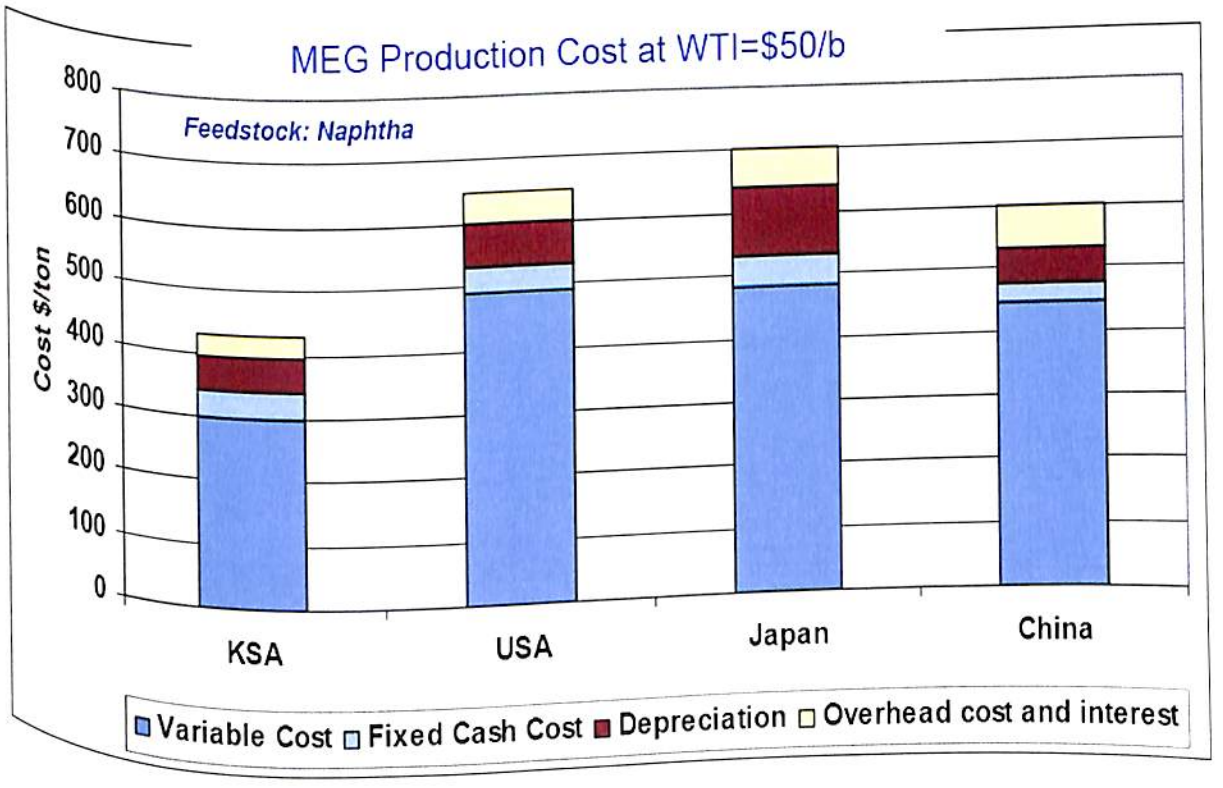
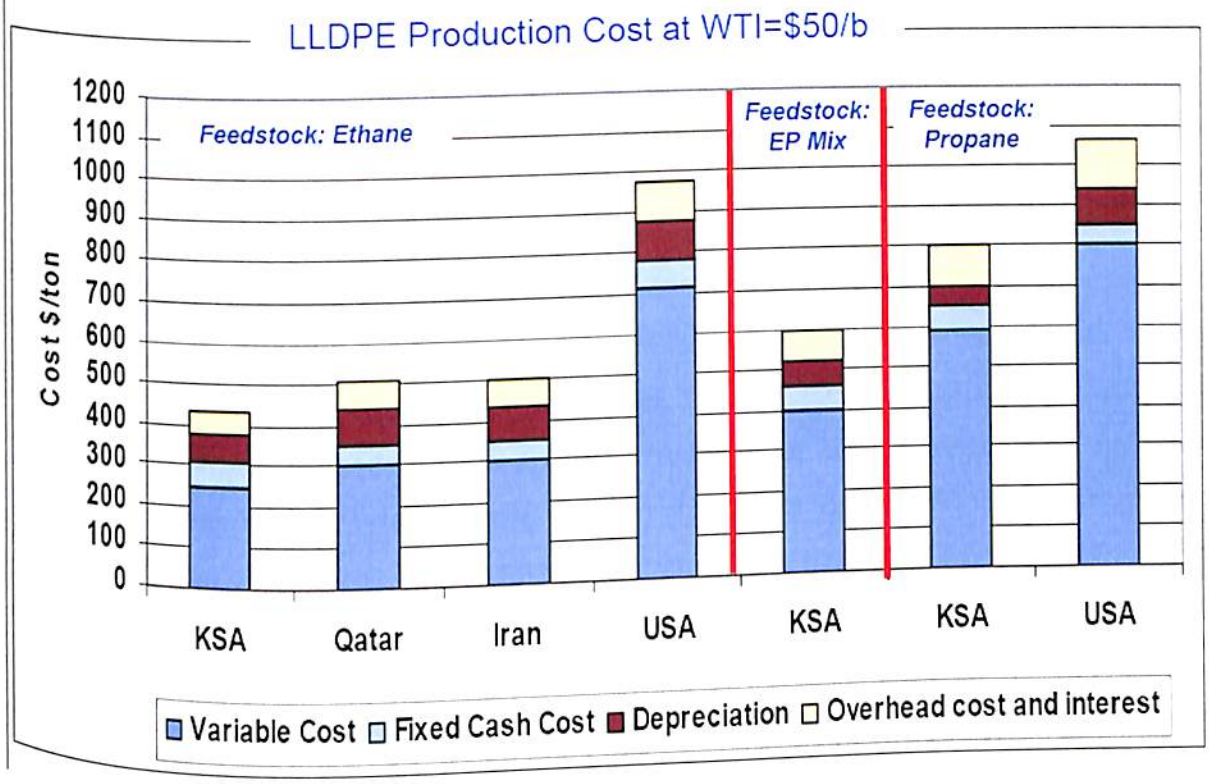
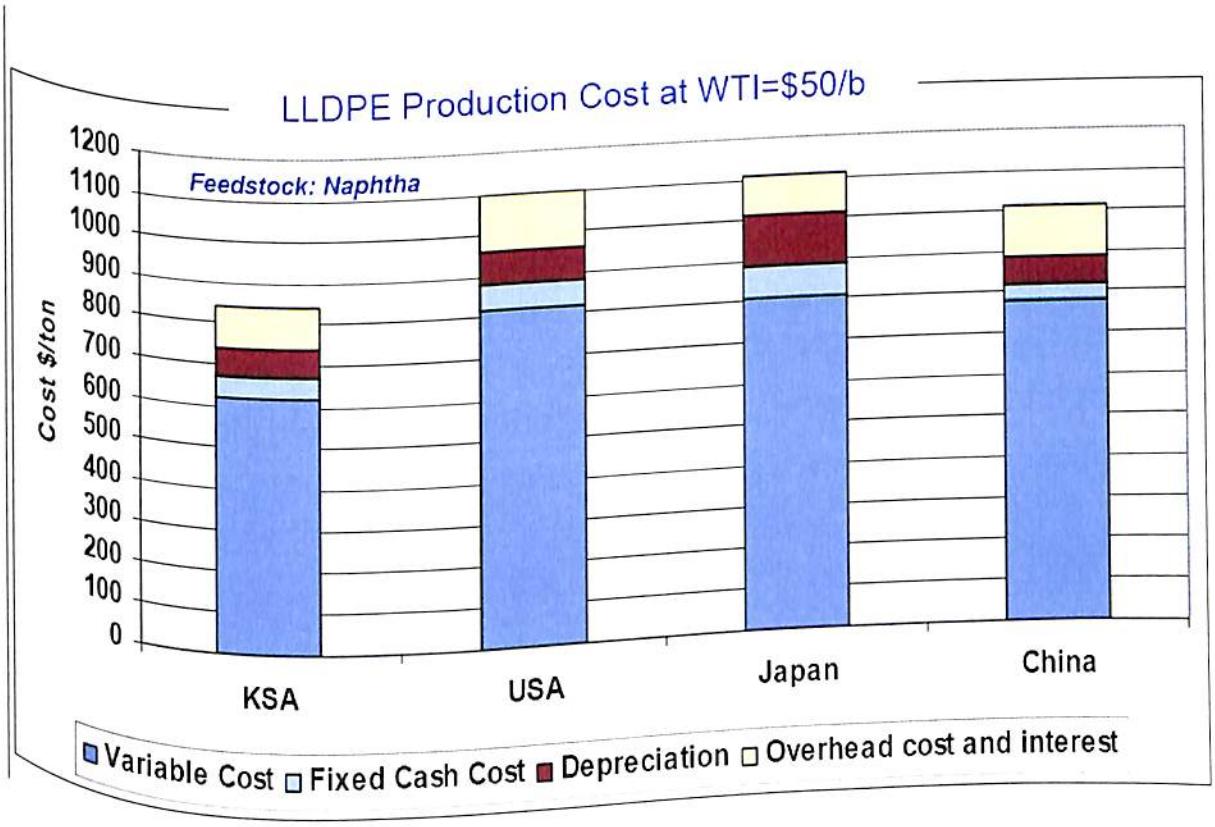


Figure 6.4 Comparison of production cost of LLDPE





6.3.4.3 Production Cost of Propylene & Polypropylene (PP)

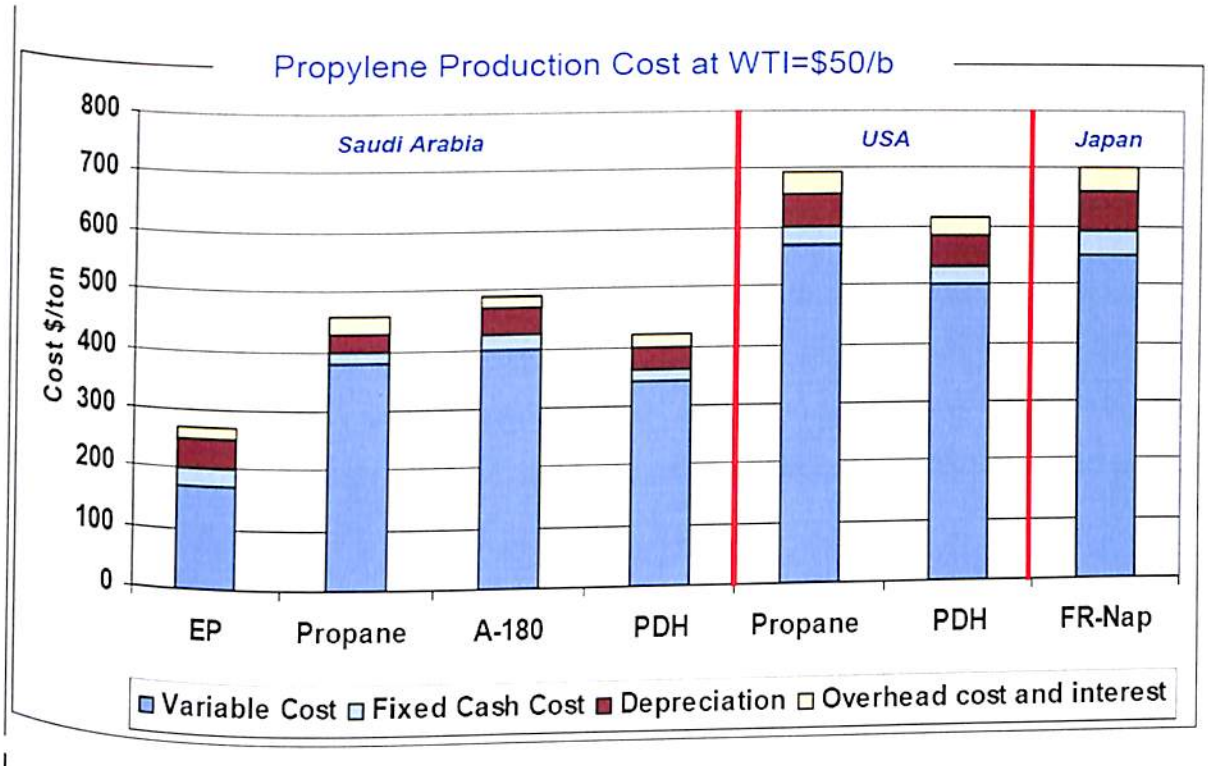
Figure 6.5 presents the summary of production cost of Propylene & Polypropylene (PP) in GCC and other competing countries based on different types of feedstock.

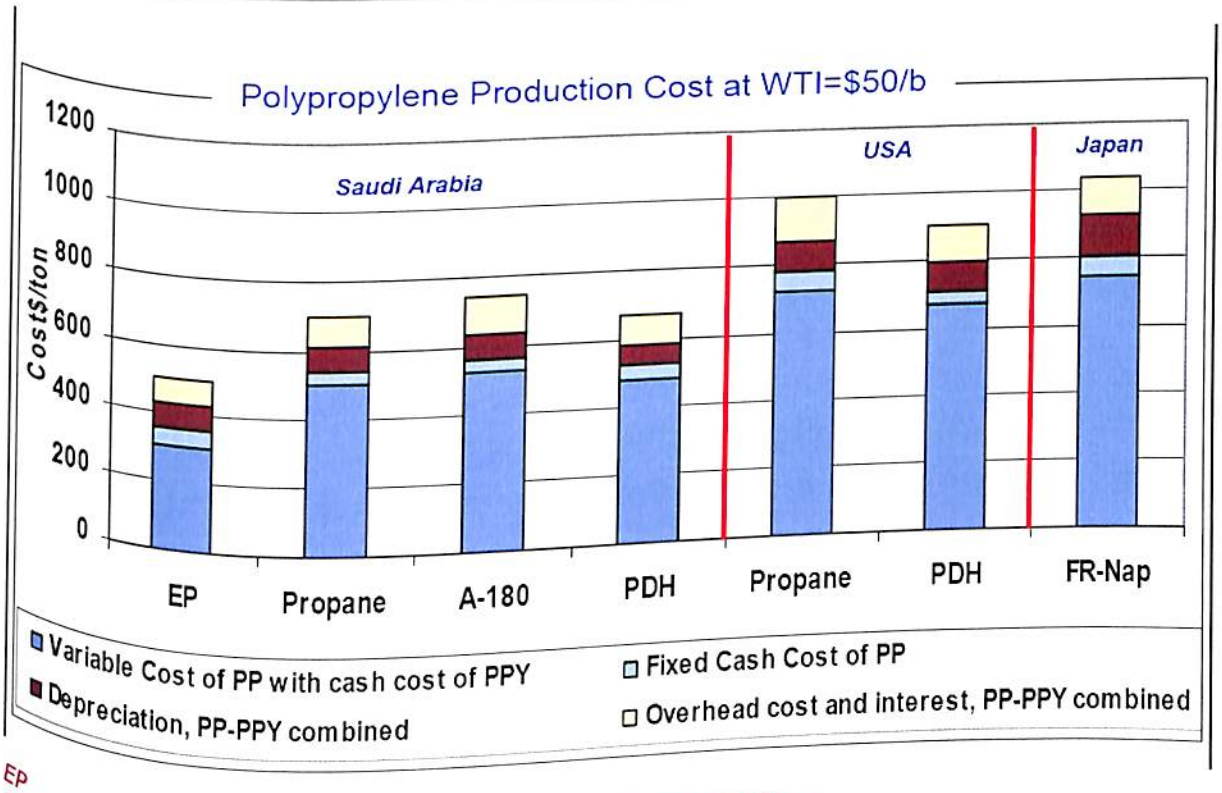
The propylene production processes in Saudi Arabia selected are based on thermal steam cracking of EP mixture (50:50), propane, A-180 at olefin plants and dehydrogenation of propane (PDH). The production cost of propylene from steam cracking of EP mixture is the lowest whereas the production cost of propylene from steam cracking of A-180 is the highest. Either of these is more cost competitive than propylene production in USA and Japan.

The production cost of PP is calculated based on propylene derived from different types of feedstock and production processes. The break up of the production cost is slightly different which has been followed in previous section: variable cost of PP with cash cost of propylene; fixed cash cost of PP; depreciation and overhead cost and interest accrued are shown as PP-propylene combined.

On comparison, it appears that there is only slight difference in the fixed production cost of PP among the competing PP producers. Therefore, the transfer cost of propylene is the governing factoring deciding the cost competitiveness between PP producers in Saudi Arabia, USA and Japan.

Figure 6.5 Comparison of production cost of Propylene &PP





EP : Ethane & Propane Mix (50:50) steam cracking
PDH : Propylene via propane dehydrogenation
FR-Nap : Full range naphtha steam cracking
PPY: Propylene; PP: Polypropylene

Based on the summary of cost calculation presented in this section the following key findings emerged which is important for the study of *Strategic Investment Decisions in Petrochemical Sector:*

- The competitiveness of the GCC stems from cracking inexpensive ethane and producing derivatives from relatively low cost ethylene. Figure 6.1 shows that the relative cash cost advantage of the ethylene produced from various feedstock in GCC countries and also compares this with the cash cost of leading producing countries in other region like Asia and USA.

- Ethane pricing of up to $1.5/MMBTU can still yield competitive commodity ethylene derivative projects in GCC Countries.

- Exports of derivatives from the GCC countries to the major markets of Asia will continue to remain competitive.

- Use of propane as a petrochemical feedstock is only feasible in Saudi Arabia, which grants discount to the market price in order to encourage domestic use.

- Investment in GCC countries will be weighted against potential investments in Asia. It is difficult to compare a naphtha cracker complex in Asia with an ethane cracker complex in the GCC countries since the capital investment, streams produced and product slate are bound to be different. Therefore, it is expected that global petrochemical companies who intended to produce *commodity grade ethylene based petrochemicals* will prefer to invest in the GCC countries provided they can get assurances of ethane availability at the price level mentioned in this report. The companies whose

intention is to produce relatively complex, high value added products would consider investment opportunities in Asia or other regions with large markets for these products.

- Oil prices are expected to have the most significant impact on the overall profitability. Therefore, four price scenario of WTI crude oil prices (at $20, $35, $50 and $65/ barrel) have been considered which but for discussion and comparative analysis in this section the WTI crude oil price of $50 has been consider which is more realistic in current cure oil price scenario.

Based on the analysis, the six GCC countries have been plotted on five point scale for variable *COST COMPETITIVENESS*, on the basis of detail cost calculation petrochemical products. The result is placed in Table 6.9.

Table 6.9 GCC Countries Ranking on COST COMPETITIVENESS

GCC Countries	Highly Favourable	Favourable	Moderate	Unfavourable	Highly Unfavourable
Saudi Arabia	✓				
Kuwait			✓		
Qatar		✓			
UAE			✓		
Oman				✓	
Bahrain				✓	

For cost comparison only Saudi Arabia and Qatar have been used as the representative countries of GCC to draw a comparison of cost competitiveness vis-à-vis Asia, Europe and North America for different products.

The petrochemical sector in Bahrain and Oman are underdeveloped therefore, these countries have been kept out for this comparison. UAE is rapidly developing its petrochemical sector and Kuwait has established petrochemical industry but their product slate are not as wide as Saudi Arabia and Qatar.

From the analysis, it is clearly observed that the availability of feedstock and the cost competitiveness are major forces for the development of petrochemical industry in Saudi Arabia and its future expansion. Qatar's rich natural gas reserves are supporting the development petrochemical sector in the country although the production cost is higher than Saudi Arabia mainly due to feedstock cost.

6.4 COMPARISON OF DRIVERS OF INVESTMENT

The GCC countries in the midst of a massive expansion in petrochemicals which is driven by increasing natural gas and associated natural gas production, relatively low feedstock prices, high oil prices (which increase the costs of petrochemical producers using naphtha), strong demand, high operating rates and product prices due to limited global investment in petrochemicals over past five years globally. Furthermore, high oil prices and volatile natural gas prices in other regions, most notably in North America and Western Europe, have dampened interest in capacity expansions in those regions by making production much less competitive relative to the GCC countries as discussed in section 6.3 of Chapter-6.

Currently, the GCC countries are promoting petrochemical projects worth more than $ 100 billion and more than half of these projects are in Saudi Arabia as mention in Chapter 4. In this section we examined these projects from strategic investment decision point of view and developed the list of investment drivers for petrochemical projects in GCC countries.

6.4.1 Capital Cost

The GCC countries are facing major challenge of acceleration in the project cost, for example read the PetroRabigh project announcements:

> ***DHAHRAN, Saudi Arabia, May 09, 2004 (Reuters)*** *– Saudi Aramco and Sumitomo Chemicals signed a comprehensive MoU on the planned development of a large, integrated refining and petrochemical complex in the Red Sea town of Rabigh. The Cost for the direct project investment is currently estimated to be* ***$ 4.3 billion****.*
>
> ***RABIGH, Saudi Arabia, March 19, 2006 (Reuters)*** *– Saudi Aramco and Sumitomo Chemicals started work on Sunday on a* ***$ 10 billion*** *integrated refining and petrochemical complex.*

PetroRabigh cost increased more than double which is partly due to major scope changes undertaken during the feasibility study phase of the project, but also due to some very large cost increases that have resulted from an extremely tight situation in the engineering, procurement and construction (EPC) market. The cost increases have been seen by many projects in the GCC countries was the deviation from historical construction cost expectations.

The capital cost in GCC countries escalated substantially between 2003 and 2006 with estimated averaging between 25-30% which is the result of number of factors including the increased prices for commodities, higher prices for equipment as well as higher fees for EPC and construction firms. EPC and contracting firms are overburdened and are demanding higher fee for undertaking new projects. The reason for overburdening is a synchronization of many large construction projects. In the past, oil, petrochemicals, refining and energy construction projects have been out of phase. Now, they are all in phase – leading to huge surge in demand. Not surprisingly, strong demand led to higher prices. Additionally, besides higher prices, construction timelines are being extended, though this varies widely.

6.4.2 Equity Structure and Partner Roles

In the GCC, the investment vehicles in petrochemicals are through joint ventures. In all countries except Saudi Arabia the local partner is a state owned oil company which supplies feedstock and infrastructure. The foreign partner supplies technology, technical know-how and marketing expertise. The shareholdings and contributions of each partner are the subject of direct negotiation. Till mid 1990s, Saudi Arabia also followed the same mode of investment with SABIC serving as joint venture partner. However, in the mid 1990s, government decided to open up the sector to private investment. The government permitted Saudi firms to apply for the feedstock allocations, with

the Saudi partner providing local know-how and expertise and foreign partner technology and market capability. To help share the benefits of the Kingdom's resources, the government also required the half of the firms total share should be sold to Saudi citizens through an IPO.

If we see closely the GCC investment pattern in petrochemicals, an interesting observation emerged here that the rate of return expected by local investors in GCC are well below the rate of return expected by most of the foreign firms investing in this region. The reason is very obvious as local investors have limited alternative choice for investment. Secondly, the local banks do not pay interest in accordance with Islamic law, whereas private banks pay perhaps 6% on invested funds. On the other side, many foreign companies would expect a substantial premium for considerations, as well as currency and other investment risk.

6.4.3 Capital Structures and Sources of Debt and Equity

There is no specific capital structure dictated by the GCC governments for petrochemical projects. Instead, the use of project financing is widespread, with equity contributing 30-40% to total capital and debt the remainder.

Discussions on debt and equity ratio and financing structure are between project sponsors and financing institutions and not the part of project approval process.

There are a number of petrochemical companies in GCC countries which have sizeable public share holdings, for example, In Saudi Arabia YANSAB (majority owned by SABIC), Saudi Industrial Investment Group, Shahra Petrochemical Company, SIPCHEM, in Kuwait Boubyan Petrochemical Company. Due to requirement of the Saudi government, major petrochemical projects have a sizeable public shareholding.

There are several sources of debt financing in the GCC countries. In some of the countries, most notably in Saudi Arabia, there are local development

funds- similar to Saudi Industrial Development Fund (SDIF) – which has funds to invest to promote local industry. SDIF was formed with intention of providing low cost loans to promote industrial development in the country. SDIF will loan up to 50% of the total capital of project, up to maximum of SR 600 million ($160 million). Loan terms are up to 15 years, there is no interest charged, although there are fee to arrange for the loan and to support follow up costs.

In the case of major cracker projects, in GCC countries industrial development or similar, funds will typically utilize as first layer (up to 10% of total capital) of debt on a project. Next, there are numerous financial institutions (e.g. pension funds, commercial finds and private banks), including both local as well as international institutions, which provide other debt financing. These loans are secured through processes which are typical of western bank in terms of project review and need for documentation. Loan from financial institutions would supply up to about 60%-70% of total capital. These loans would be at standard commercial terms. Finally, equity would provide the remaining investment funds.

6.4.4 Incentive

The main benefit provided by GCC countries is embodied in the feedstock prices. As to other incentives, there are a variety of incentives available to investors, although their outright use is declining. This is because there is already a significant amount of local infrastructure available at the major petrochemical sites in the GCC countries: Al-Jubail and Yanbu in Saudi Arabia, Mesaieed in Qatar, Shuaiba in Kuwait and Ruwais in Abu Dhabi. In some instances, a five year tax holiday be granted (tax rate for foreign partner is 20% of income where as GCC investors only pay a 2.5% Zakat or wealth tax). The GCC governments are willing to provide additional incentives for the firms that are willing to build plants in less developed part of the country. Such incentives are the subject of negotiation.

6.4.5 Risk versus Reward in New Petrochemical Projects

The GCC petrochemical projects are not without challenges. The regions' competitive position is impeccable if low priced natural gas liquids are used as a feedstock, but the region actually disadvantage from competitive standpoint if naphtha priced at international levels is used instead. Therefore, the petrochemical industry in GCC countries is tied to the extraction of gas liquids from increasing natural gas production. Also, the region is presently subject to rapidly escalating capital investment costs as a result of rising EPC costs. Higher capital costs reduce investment returns, and make it increasingly hard to justify downstream derivative production.

Risk to the rapid expansion of the petrochemical industry in the GCC countries includes shortages of skill labor –both engineering and managerial, political instability, security of construction and operating personnel and logistical consideration. The logistic issue is of particular concern to petrochemical industry in light of forecasted rapid growth in petrochemical exports from GCC countries as infrastructure such as ports and others will

not expand fast enough to accommodate the dramatic increase in exports-resulting in shipment delays and higher logistic costs.

6.4.6 Investment Strategies of National Oil Companies (NOC) in GCC Petrochemicals

GCC petrochemical is strongly influenced by the involvement of the NOC, but in different country their role and influence are different. For example, in countries like Saudi Arabia and Kuwait, so far NOC are not directly involved in the ownership of the petrochemical projects but the States are involved in the petrochemical industry through their holding companies. SABIC in Saudi Arabia and PIC in Kuwait are such companies. However, the influences of NOC like Saudi Aramco in Saudi Arabia and KNPC in Kuwait are strong as they are the feedstock suppliers for their petrochemical projects.

In other GCC countries NOC are involved directly through majority shareholdings in the downstream projects. In Qatar, QP has majority shares in QAPCO, Q-Chem, QVC and QAFCO similarly, in UAE, ADNOC has a share in Borouge. In Oman, Oman Oil is also planning to have an equity share in the proposed polypropylene project in Oman.

Although, both the approaches are quite successful in GCC region but they have their own advantages and disadvantages. The core difference in approaches comes from the ultimate products that each organization deals with. NOC obviously focus much more on increasing value from production and sales of crude oil, refined products natural gas and other NGLs, whereas the holding company are more focused towards petrochemicals.

Now the strategies of NOC are changing and NOC in GCC countries are encouraged to participate in petrochemical activities of the country. Recently, in Saudi Arabian NOC, Saudi Aramco is developing two the integrated oil refinery and petrochemical complexes in the country. The allocation of

feedstock is done by the ministry of petroleum along with approval of the project.

6.4.7 Investment Strategies of Multinational Companies

Multinational oil and gas companies have and are continuing to play a very important role in the development of the petrochemical sector in the GCC countries. Almost all the major global companies such as ExonMobil, TotalFinaElf, Shell, British Petroleum, ConocoPhillips, Chevron etc. are actively involved in the development of GCC upstream and downstream petroleum sectors. Most of these companies have had their presence in this region for many years and therefore are well versed with the issues related to project development in the region.

The situation in future will be different from the past as the recent changes in investment policies of GCC countries these companies can assume a sole ownership of the petrochemical venture subject to allocation of the feedstock or their participation in the upstream sector program of these countries. For example, recently announced petrochemical project of Chevron Phillips in Saudi Arabia has received the feedstock allocation.

In past decade a number of mergers and acquisitions in petrochemical sector took place which reduced the number of strong global players. Some of the major companies that have a presence in GCC countries have already undergone consolidation include Exxon which merged with Mobil, Dow acquired the Union Carbide, Elf Atochem merge with TotalFina and BP acquired Amoco. Considering the reduction in number of companies that can be approached for potential participation in petrochemical projects in GCC countries, the negotiation power of these companies have increased tremendously.

6.4.8 Overseas Investments Strategies by GCC Companies

A number of GCC petrochemical participants are already considering investment in other regions. SABIC has attempted to diversify its portfolio and increase its market presence in global market. SABIC acquired DSM's petrochemicals operations in the Netherlands and Germany (2002) which contributed in increasing the sales revenue. The acquired manufacturing business of Huntsman in Wilton in UK (2006) has added the substantial capacity of ethylene and aromatics beside the logistics facilities at Wilton and North Tees in UK. Most recently, the acquisition of North America based plastic makers GE Plastic (May 2007) is a big step for its globalisation and diversification efforts. It gives SABIC an important footholds in key automotive, consumer and industrial plastic markets.

The government of Qatar is also evaluating its participation in refinery and petrochemical projects in USA. PIC of Kuwait has already invested in Malaysian refining and petrochemical project through MEGlobal. Another overseas investment is by Abu Dhabi's International Petroleum Investment Company (IPIC)'s 25% ownership in the European Polyolefins company Borealis.

None of the other countries currently involved in petrochemical production have announced similar plans. However, there are also a number of overseas investments made or planned by the GCC oil companies. Saudi Aramco has number of joint venture projects like Petron in Philippines, Motiva Enterprise LLC in USA (through Saudi Refining Inc.), Arab petroleum Pipelines Co. in Egypt. The main drivers for Saudi Aramco to acquire share in the overseas refining companies is to have assured outlets for its crude oil. In March 2007, Saudi Aramco has signed an agreement with China Chemical & Petroleum Corp (SINOPEC) and ExxonMobil to triple the capacity of its Fujian refining and ethylene joint venture project. This is the first fully integrated refining, petrochemicals and fuels marketing project with foreign participation in China.

Based on the analysis, the six GCC countries have been plotted on a five point scale for variable *DRIVERS OF INVESTMENT*, these drivers have been identified by examining the petrochemical projects in GCC countries from strategic investment decision point of view. The result is placed in Table 6.10-A and Table 6.10-B.

Table 6.10-A GCC Countries Ranking on DRIVERS OF INVESTMENT:

GCC Countries	Capital Cost	Equity structure & Partner Roles	Sources of Debt & Equity	Investment Incentives	Risk v/s Rewards
Saudi Arabia	M	HF	HF	HF	M
Kuwait	M	HF	HF	HF	M
Qatar	M	HF	HF	HF	M
UAE	M	HF	HF	HF	M
Oman	M	F	F	F	U
Bahrain	M	F	F	F	U

HF: Highly Favorable; F: Favorable; M: Moderate; U: Unfavorable; HU: Highly Unfavorable

GCC Countries	NOC's Investment Strategies	MNC's Investment Strategies	GCC Companies' Overseas investment Strategies
Saudi Arabia	HF	HF	HF
Kuwait	HF	HF	HF
Qatar	F	HF	F
UAE	F	HF	HF
Oman	M	M	U
Bahrain	M	M	U

HF: Highly Favorable; F: Favorable; M: Moderate; U: Unfavorable; HU: Highly Unfavorable

Table 6.10-B Ranking of GCC Countries on DRIVERS OF INVESTMENT:

GCC Countries	Highly Favourable	Favourable	Moderate	Unfavourable	Highly Unfavourable
Saudi Arabia	✓				
Kuwait	✓				
Qatar		✓			
UAE	✓				
Oman			✓		
Bahrain			✓		

From the analysis, it is clearly observed that the impact of identified set of drivers for petrochemical projects in GCC countries varies from country to country. As these drivers have been identified from strategic investment decision point of view , they are very critical and have long term impact on the investment or growth decisions.

In Saudi Arabia, Kuwait, UAE the investment drivers are working effectively and promising the growth in petrochemical sector by attracting more investment from internal as well as external sources. Qatar needs to improve on some of the drivers where Oman and Bahrain need more initiatives and comprehensive investment plans for petrochemical sector.

For final analysis, the ranking of the results of all four variables of strategic investment decisions (SID) have been presented together in Table 6.11 to get the comparative table for GCC countries.

Table 6.11 Ranking of GCC Countries on Elements of SID:

Countries / Elements of SID	Saudi Arabia	Kuwait	Qatar	UAE	Oman	Bahrain
Structural Changes	HF	F	HF	F	F	F
Petrochemical Investment Environment	HF	F	M	HF	UF	UF
Cost Competitiveness	HF	M	F	M	UF	UF
Drivers of Investments	HF	HF	F	HF	M	M
OVER ALL	**HF**	**F**	**F**	**F**	**UF**	**UF**

HF: Highly Favorable; F: Favorable; M: Moderate; U: Unfavorable; HU: Highly Unfavorable

Based on our comparative study, *Saudi Arabia* emerged as **highly favourable** destination for SID among the GCC countries as all four variables of SID are working effectively and will further support the future investment. *Kuwait, Qatar and UAE* are **favourable** destination for SID among the GCC countries whereas Oman and Bahrain are **unfavourable** destination for investment in petrochemical sector.

Following are the common points emerged for **Saudi Arabia, Kuwait, Qatar and UAE**:

- Feedstock prices vary by country in GCC, but they all provide feedstock at attractive prices that provides an incentive to invest in the hydrocarbon production. This enables a GCC-based producer to manufacture and deliver petrochemicals, at a very competitive price.

- Opportunities for continued and future petrochemical development include exploiting the energy advantage to a greater degree. This means that more capacity in energy intensive chemicals. The development further along the petrochemical value chain will be driven by an export orientation.

- These GCC countries are already having healthy and growing base of chemical production that utilizes methane, ethane, and gas liquid feedstock in petrochemical units. These plants are of global size and utilize best and modern technologies. With base and secondary chemical production already flourishing, producers have begun exploring tertiary industries. This can offer diversity and better value addition to the industry. They are actively collaborating with petrochemical industry participants to gain access to technology and expertise.

- Good infrastructure can be found in large industrial cities, such as Jubail, Yanbu, Messaieed and Ras Laffan. The GCC country governments have made the investments in ports, roads, and buildings to promote the industrial growth. However, space in the existing industrial cities is becoming limited due to high growth rate witnessed recently , and additional development will be necessary to support future growth.

- On the financing side, strong growth has occurred in the GCC banking sector in the past decade. The equity markets have also emerged in all GCC countries. Foreign direct investment (FDI), another important economic driver, has grown modestly during the past decade. It can be evidenced from joint ventures formed with foreign companies such as Shell, ExxonMobil, Dow, Total Petrochemicals, and ChevronPhillips.

Therefore, the increasing influence of GCC on global petrochemical markets over the long term will remain due to its advantaged SID variables. Further petrochemical development in GCC countries will lead to growth in tertiary, energy-intensive and export-oriented conversion industries.