



The Gulf Petrochemicals Industry

March 7, 2010



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1 Executive Summary

Scope of the Study

This report caters to investors looking for investment opportunities in the Gulf petrochemicals industry. The focus of the report is on emerging trends and it explores various facets of industry development in the region. We have limited our study to basic petrochemicals.

Investment Rationale

The Gulf petrochemicals industry is at an inflection point – the region has enormous capacity expansion plans, which are set to change the global petrochemicals industry landscape. Most of the leading global petrochemicals firms are evaluating options of entering or expanding their activities in the Gulf through subsidiaries, joint ventures, or other innovative operating models.

In 2007, a rapid surge in oil prices led to a corresponding rise in input cost for petrochemicals firms across the globe. This played into the hands of the Middle East players, who used ethane (gas-based) as the major input rather than naphtha (oil-based). This advantage magnified with the rise in oil prices and led to global petrochemicals leaders shifting their focus from west to east for expanding their petrochemicals production bases. The Middle East was chosen because of the input advantage and China because of proximity to large and growing end-market.

Although the global economic recession has affected the commodity markets leading to delays in some greenfield petrochemicals projects and expansion plans put on hold, we believe the pace at which advantageous petrochemicals production in the Gulf is displacing existing plant capacities in mature western markets will increase.

INVESTMENT POSITIVES

Significant cost advantage: Feedstock and logistics are the top two cost components of petrochemicals products; the Gulf enjoys an advantage over Asia and Europe on both accounts. First, feedstock cost is lower in the Gulf owing to its rich oil and gas reserves. The GCC countries procure ethane at US\$ 0.75-1.5 per million BTU (mmbtu), compared

with a minimum US\$ 3.20/mmbtu in Europe and the US. As ethane is expensive and scarce, Asian and European firms use naphtha as a major feedstock. Secondly, the GCC's closeness to demand clusters – specifically India and China – offers a significant logistic cost advantage (second largest cost component after feedstock).

These cost advantages, coupled with increasing environmental regulation of petrochemicals companies in the west and rising margin pressure globally, offers a congenial environment for petrochemicals industry growth in the Gulf.

Strong government intent: In order to diversify economies away from oil and ensure broader economic, industrial and social growth, governments in the Gulf are taking initiatives in the petrochemicals space, particularly downstream. They are encouraging a shift from export-oriented petrochemicals production to manufacturing of value-added specialty chemicals for supply to domestic industries; automotive, appliances and consumer products. Moreover, significant tax advantages are offered to foreign partners to act as catalyst for capacity expansions and product diversification.

INVESTMENT NEGATIVES:

Project delay and cancellation: Some petrochemicals projects are behind schedule due to delays in project funding, feedstock shortages and subdued demand. Projects in the regions may face delays of around one year on average. Moreover, if the global economic situation worsens, delays could prolong further, although it is unlikely that projects will be shelved.

Growing ethane shortage: Although the GCC countries account for more than 23% of global gas reserves, the region is experiencing a shortage of natural gas due to increased domestic consumption in alternative areas such as electricity generation. Gas demand in the Gulf is estimated to grow at about 6.6% per annum, compared with yearly growth of 2.2% projected for oil according to Justin Dargin, researcher at the Dubai Initiative, Harvard University. The concern is that new plants and higher production capacities may not be matched by sufficient ethane supply.

Political and regulatory hurdles: Iran faces the threat of international sanctions, including a trade embargo, due to its nuclear technology development. If sanctions are applied on Iran, petrochemicals projects, involving JVs with foreign firms, could be delayed or cancelled. Moreover, the Gulf has been under the scrutiny of global investors and bankers after the news of Dubai's "debt crisis" broke out.

Further, the Gulf petrochemicals industry is under significant threat from new protectionist tariffs (anti-dumping) in key markets, such as India and China. India is contemplating enforcement of an anti-dumping duty on polypropylene imports from Saudi Arabia, Oman and Singapore, while China plans to impose anti-dumping charges on methanol imported from Saudi Arabia, Malaysia, Indonesia and New Zealand.

INDUSTRY OUTLOOK:

The Gulf emerges a clear favorite for investment in the petrochemicals sector. The pace of growth will depend on downstream sector growth, the global economic recovery and new supply initiatives overcoming feedstock, technical and human skill-set constraints. Here are a few trends we envision:

Massive capacity expansion: The global petrochemicals industry is facing an avalanche of new capacity build-up and accordingly we project additional capacity expansion of 32 mmt and 23 mmt for ethylene and polyethylene over the next six years (2010-15) from an estimated 139 mmt and 90 mmt respectively in 2009.

Major clustering in the Gulf: The majority of the world's petrochemicals capacity growth over the next six years will be concentrated in the Gulf, which now accounts for about 10% of global supply. Saudi Arabia is taking the lead in the region with numerous petrochemicals projects being

launched by as the likes of SABIC, SIPCHEM and Saudi Aramco.

Demand outlook moderate in short term, gaining momentum from 2011

We forecast global ethylene demand to grow at a CAGR of 4.7% over the next six years reaching about 153 mmt by 2015. The key emerging markets – China and India – remain the focus of petrochemicals demand growth. Although the demand situation improved in 2009, we expect it to pick up further in 2010 onwards.

Demand-capacity mismatch to deepen

Over the next six years, capacity growth will outpace demand growth, leading to a widening of the supply demand gap. The gap is likely to widen over the next two years and then gradually reduce as demand growth picks up. Excess capacity may peak at around 29 mmt in 2012- 2013 and then gradually reduce to around 18 mmt by 2015. This is bad news for marginal cost producers, but not necessarily so for Gulf producers with low cost advantage.

High capital intensity and strong cyclicity are key characteristics of the petrochemicals industry. The reasons for this are the long lead-times in plant construction and the fact that petrochemicals plants are often commissioned as a by-product of oil exploration and refining and not necessarily based on standalone project merits.

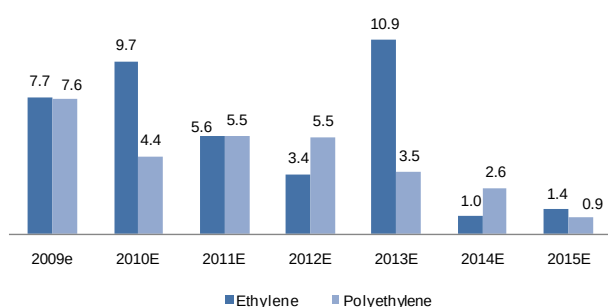
2 Capacity and Demand Projections

- Global capacity of ethylene and polyethylene to increase to about 171 mmt and 112 mmt by 2015 from 139 mmt and 90 mmt respectively in 2009. More than half of the expansion in 2009 to 2015 in the Gulf region.
- The global economic slowdown to continue to impact petrochemicals demand in the short term. However, in the long run, we expect ethylene demand to grow at 4.7% per annum to around 153 mmt by 2015.
- With capacity expansion set to outpace the rise in demand, we envisage a situation of excess capacity to continue; excess capacity of ethylene and polyethylene may peak in 2012-13 and then gradually fall to about 18 mmt and 22 mmt respectively by 2015.
- Implications of excess capacity to differ across regions and petrochemicals players, depending on the cost-arbitrage opportunity between ethane-based and naphtha-based production. Accordingly, operating rates will vary across petrochemicals plants and regions.

2.1 Rapid capacity expansion

The global petrochemicals industry is facing an avalanche of new capacity largely owing to cost-advantageous feedstock. Based on the petrochemicals projects pipeline, we estimate additional capacity of about 32 mmt and 22 mmt for ethylene and polyethylene over the next six years (2010-15) from 139 mmt and 90 mmt respectively in 2009.

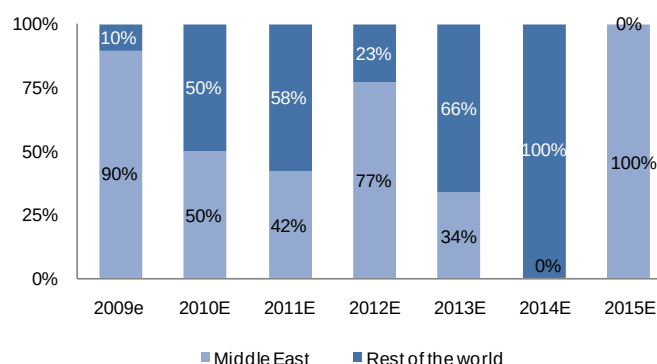
Chart 1. Global Ethylene and Polyethylene capacity addition (mmt)



Source: Alpen Analysis and CMAI
e – estimate; E – forecast

The majority of the world's petrochemicals capacity growth over the next six years is concentrated in the Gulf, which now accounts for approximately 10% of global supply. The region has a natural competitive advantage of cheap feedstock availability. In addition, the Gulf's proximity to the demand dense Asia region offers a significant logistics advantage.

Chart 2. Gulf's share in global Ethylene capacity addition



Source: Alpen Analysis and CMAI
e – estimate; E – forecast

Saudi Arabia is taking the lead in the region with numerous petrochemicals projects being launched by the likes of SABIC, SIPCHEM and Saudi Aramco. Petro Rabigh – a JV of Saudi Aramco and Japanese chemical producer Sumitomo – completed a refinery and petrochemicals complex in 2009, which is expected to produce 1.3 mmt/year of ethylene and 16 mmt/year of petrochemicals and refined products.

By 2012, SABIC plans to increase its petrochemicals production capacity by 12 mmt. Similarly, in Iran, National Petrochemicals Company (NPC) has around 34 projects under construction, which are expected to increase ethylene production capacity by 4.5 mmt in 2009 to 2011. Chart 2 depicts the share of the Gulf in global capacity addition over the next six years.

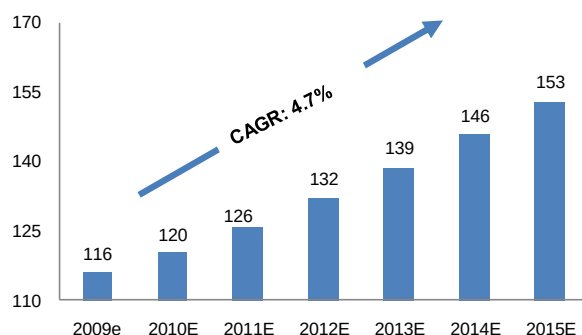
2.2 Demand outlook

Global ethylene demand increased sequentially in 2000 to 2007. However, it was affected by the global economic recession and the downtrend in oil prices in the second half of 2008. Demand for petrochemicals products fell by 1.7% in 2008. The situation improved somewhat in the latter part of 2009 and we expect this to continue in 2010.

Subdued demand has affected various petrochemicals projects worldwide, leading to project delays or cancellation. The majority of project cancellations took place in Western Europe and North America, as these regions were the most affected by the economic recession.

Petrochemicals demand has a high correlation with GDP growth. Therefore, as the global economy recovers, global demand for polyolefin should also recover and gain momentum from 2011 onwards. Global demand is estimated to grow at around a CAGR of 4.7% in 2010 to 2015.

Chart 3. Global Ethylene demand (mmt) : 2010-15



Source: Alpen Capital Analysis
e – estimate; E – forecast

Our estimated demand growth also account for the expected increase in plastic consumption per capita in growth markets such as India and China. These countries have latent petrochemicals demand potential, as their per capita polyethylene consumption is significantly lower than that of developed countries. As the economies develop and quality of life improves, polyethylene usage is expected to increase, which in turn should gradually diminish the existing difference in consumption rates vis-à-vis the developed countries.

Exhibit: Sources of petrochemicals demand growth

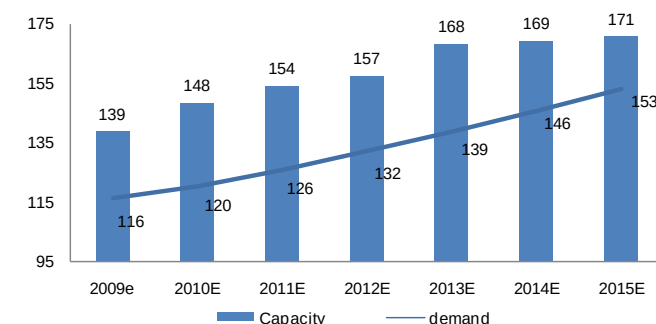
Growth Markets	GDP Real Growth %	PE consumption per capita (Kg)
China	11%	10
India	9%	2
Central / Southern America	8%	10
South East Asia	7%	8
Russia / CIS	7%	6
MENA	6%	12
Africa	5%	2
Mature Markets		
Europe	3%	24
North America	2%	36

Source: CMAI, CIA world factbook and Association of Corporate Counsel presentation, May 2009

2.3 Increasing supply-demand gap

Although petrochemicals demand is expected to pick up in 2010, it is unlikely to keep pace with projected capacity growth over the short to medium term. We believe that the supply-demand gap will widen in the short to medium term, but decline in the long run, when the global economy picks up, and more downstream and petrochemicals application projects come on-stream.

Chart 4. Global Ethylene supply-demand gap (mmt)



	2009e	2010E	2011E	2012E	2013E	2014E	2015E
Excess capacity	23	28	28	25	29	23	18

Source: Alpen Capital Analysis
e – estimate; E – forecast

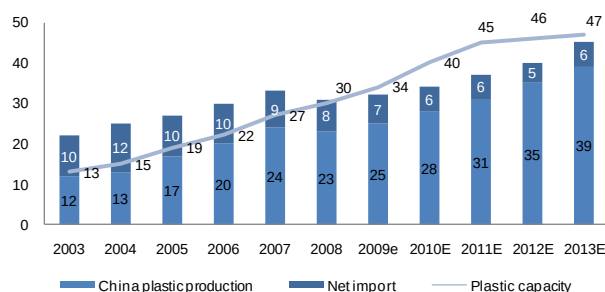
2.4 Varying growth prospects

Despite expectations of overall excess capacity build-up globally, not all companies will be impacted in the same way. The extent of the impact will depend on the nature of

and the access of feedstock, the proximity and access to end markets and the technology in use.

First, plants in proximity to and with access to feeding industries are likely to fare relatively better. China, for instance, has been relying on imports to meet its petrochemicals demand of domestic plastic producers. However, with the significant ongoing ramp-up in petrochemicals capacity in the country, its dependence on imports is likely to reduce and it will become increasingly self-sufficient.

Chart 5. China plastic* capacity addition



Source: CMAI

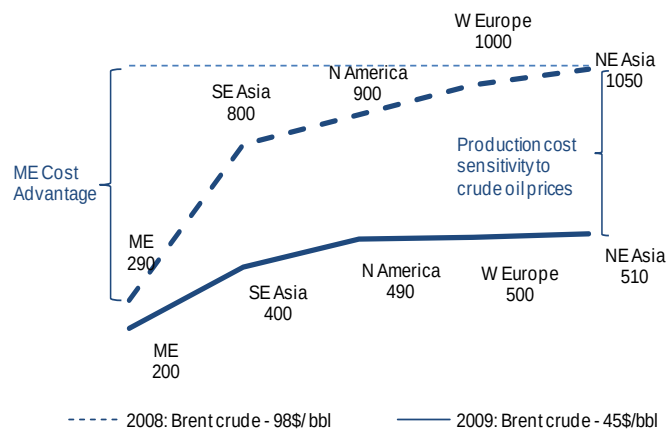
* PE, PP and PVC; e – estimate; E – forecast

The second key factor determining the operating rate of plants is access to cheap feedstock. Gulf-based petrochemicals plants have a natural advantage over global peers in this regard. Chart 6 shows the average cost of producing ethylene (basic building block of petrochemicals derivatives) for a Gulf producer versus the rest of the world. The cost differential is primarily attributable to availability of ethane as feedstock for Gulf producers, vis-à-vis the use of naphtha as primary feedstock by the rest of the world. Given such a significant cost advantage, we believe that Gulf producers will operate at near to full capacity, even at times of excess global capacity.

2.5 Momentum build-up in downstream operations

Momentum is building up in downstream activities, (specialty chemicals and plastics) driven by the Gulf's strong intent to diversify its economies and expand the petrochemicals value chain. For example, SABIC has recently signed a letter of intent with Mitsubishi Rayon to

Chart 6. Ethylene production cost (\$/mmt)



Source: CMAI

form a US\$ 1 billion JV for a plastic plant. The JV will manufacture methyl methacrylate monomer and polymethyl methacrylate. Moreover, the government is promoting the industry by introducing plastics processing zones across the Gulf.

Exhibit: Plastic processing industry in the Gulf

The Gulf's plastics processing industry is expected to see a vast increase in supply of plastic resins over the next few years. Plastics exports would comprise plastic resins and plastic products. Investments in engineering plastic resins production would widen the scope for production of both non-durable and durable goods. Furthermore, China would continue to feature prominently in plastics processing due to the sheer size of its industry. However, the new frontiers such as India and the Gulf are expected to record double-digit growth in plastics processing.

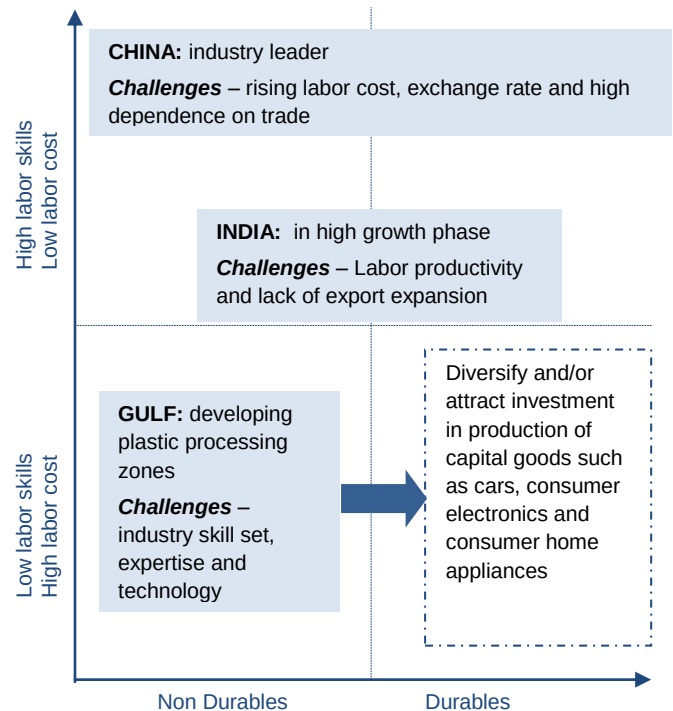
Source: CMAI, 2008

Development of the plastic industry in the Gulf will bring about two key positives: Movement toward higher value-added products and creation of more job opportunities. First, Gulf producers can serve the finished and semi-finished plastic goods markets directly rather than producing base chemicals (ethylene) and secondary resin (polyethylene) that are exported to China for conversion into finished plastic goods shipped to end customers around the world. Second, downstream operations provide

more job opportunities than upstream due to higher value-added.

China is a key plastic provider to the world owing to a huge pool of relatively low cost and highly productive labour. However, the challenge ahead for China's plastics processing industry is to move up the value chain to counter the effects of rising labour costs, business costs, and currency appreciation. The Gulf and India have smaller plastic processing industries than China, but both have great growth potential.

Chart 7: Comparative position in plastics industry



Source: CMAI

Current scenario Future potential

3 Price Trend and Outlook

- The petrochemicals industry exhibits significant cyclical volatility, as reflected by historically volatile price trends for most of the products.
- The price trend for petrochemicals products over the past quarters has been encouraging. Moreover, 2009 was a year of recovery, when prices moved up from the cyclical trough attained in 2008. The encouraging price increase (YoY) for the majority of petrochemicals products defines this recovery.
- The price outlook is positive on forward commodity market cues. The majority of the commodities – oil, natural gas, and gasoline – exhibits contango (i.e. forward price at a premium to the spot price).
- Oil-related feedstocks remain the main driver in the pricing of petrochemicals as they make up to 80% of overall end-costs.

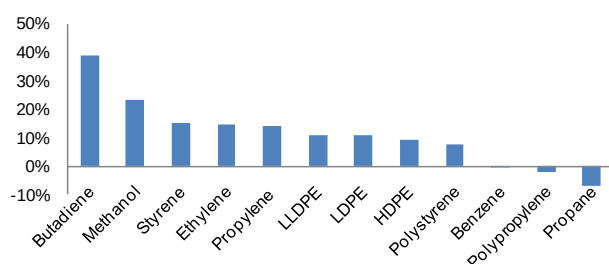
The petrochemicals sector has come full circle over the last decade, as the industry experienced a phase of rising demand before entering the slowdown in 2008 with falling demand. Accordingly, the industry has suffered significant price and product spread volatility.

3.1 Recent price performance

Petrochemicals prices are moving northward premised on demand revival in China and a temporary supply shortage.

Most petrochemicals registered upward price movement on a QoQ basis. Butadiene and methanol prices progressed the most at 38.8% and 23.1% respectively, followed by styrene and ethylene with 15.3% and 14.6% respectively.

Chart 8: Petrochemicals price change: QoQ (as at 4 March 2010)



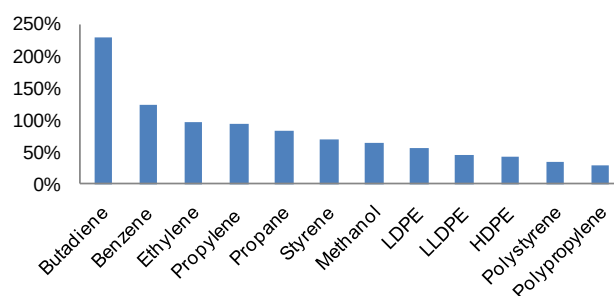
Source: Bloomberg

High propylene and ethylene prices in Asia and Europe, coupled with a temporary undersupply situation, have led to a rise in petrochemicals prices in recent months. High crude prices at close to US\$ 80/bbl have lent further support to the price hikes.

Although significant new capacity has come on stream in the GCC over the past few months, feedstock shortages, a human resource crunch, overstretched utilities and technical hiccups have kept operating rates low at new plants.

The past year was a dynamic one in terms of petrochemicals price and demand volatility. Butadiene and benzene prices moved the most at 228.4% and 124.7%, respectively on YoY basis followed by ethylene, which rose 96.7% on yearly basis.

Chart 9: Petrochemicals price change: YoY (as at 4 March 2010)



Source: Bloomberg

The relative strength of Asian demand for petrochemicals has provided a solid foundation for the recovery of the industry from the sharp downturn experienced in the second half of 2008. A long awaited recovery in Japan, which emerged from recession in the second half of 2009, after five consecutive quarters of contraction, added to the strength of the revival.

3.2 Diverging oil and gas prices

Over the past year, oil and natural gas prices have taken divergent paths. Weak demand and rising unconventional gas production have exacerbated gas price volatility and kept prices at lower levels. Oil prices, on the other hand, have risen despite subdued economic condition primarily due to limited E&P activities.

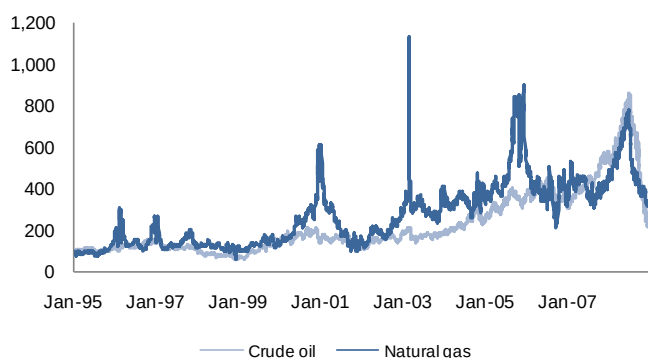
From the peak price of US\$ 145/bbl (WTI) in mid-2008, oil price collapsed to US\$ 31/bbl by the end of 2008 owing to the global economic crisis. However, oil prices recovered significantly in 2009, before settling in the range of US\$ 70-80/bbl, supported by some economic expansion, OPEC discipline, and a weak dollar. Natural gas prices too plunged during the economic crisis, but could not recover in tandem with oil prices. Gas prices have been even more volatile than oil, peaking at more than US\$ 13/mmbtu in July 2008, then crashing to below US\$ 2/mmbtu by September 2009 – the lowest in a decade. Going forward, demand is expected to remain muted due to a supply overhang.

The renewed strength of crude oil prices in a demand-constrained environment compared with natural gas prices has led to feedstock selection emerging as a vital source of competitiveness for petrochemicals companies across the globe. If decoupling progresses, the spread in the alternative petrochemicals feedstock costs (ethane vs. naphtha) may widen further. While the naphtha price is linked to the oil price, change in the ethane price is tied to movement in gas prices.

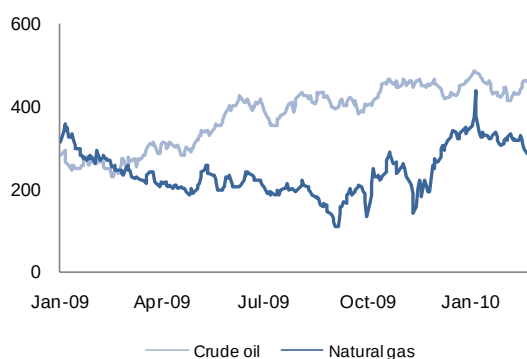
With rising oil prices and depressed gas prices, ethane-based producers in the Gulf and to some extent the US, are in an advantageous position relative to their European and Asian peers relying primarily on naphtha as feedstock.

Chart 10: Oil and Natural Gas Price history (1995-2009)

Long history of in-tandem movement...



....drifting into decoupling zone during 2009



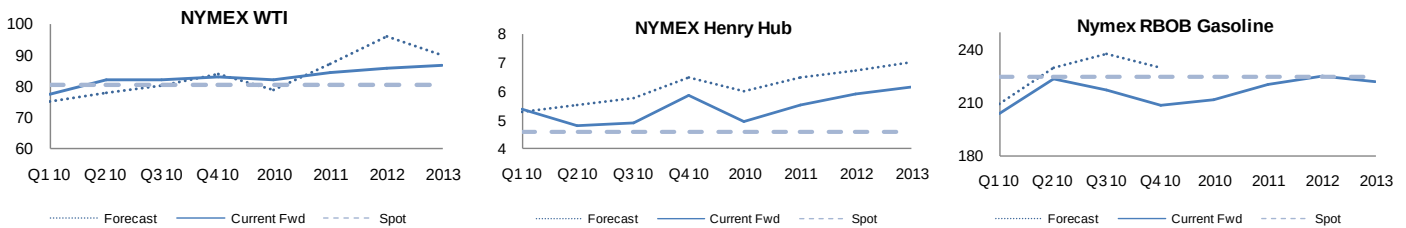
Source: Bloomberg

3.3 Price outlook

The price trend for petrochemicals products mirrors that in the larger commodity market and therefore, a forward curve for key commodity benchmarks is a good proxy for future price movements. The outlook for natural gas and crude oil remains positive as the forward prices are trading at a premium to spot prices.

The current contango structure in crude oil and natural gas futures is an encouraging sign as it reflects investor and producer optimism in the overall commodity market. This rising optimism is on the back of demand from China, post Lunar New Year holidays.

Chart 11: Price outlook



Source: Bloomberg

Chart 12: Commodity Futures (as at 4 March 2010)

Commodity	SPOT		Q1 10	Q2 10	Q3 10	Q4 10	2010	2011	2012	2013
NYMEX WTI	80.66	Forecast	75	78	80	84	79	87	96	90
		Futures	77.6	81.88	82.27	83.16	81.88	84.36	85.71	86.78
ICE Brent	78.99	Forecast	74.5	77	80	81	79.25	84.5	90	85
		Futures	76.06	79.74	80.83	81.86	80.18	83.64	85.34	86.57
ICE Gasoil	645.75	Forecast	645.1	662.1	700	700	673.9			
		Futures	616.12	654.93	668.94	683.17	661.82	704.64	729.47	742.86
NYMEX Henry Hub	4.57	Forecast	5.28	5.5	5.75	6.5	6	6.5	6.75	7
		Futures	5.36	4.81	4.89	5.86	4.95	5.53	5.9	6.14
UK NBP Natural Gas	29.5	Forecast					52.3	49.5	52.3	
		Futures	31.88	29.54	31.31	41.9	34.01	38.85		
Nymex Gasoline	224.45	Forecast	209.5	229.8	238.1	229.8				
		Futures	203.52	223.91	216.92	208.64	211.48	220	225.31	221.91

Source: Bloomberg

4 Feedstock Economics

- The Gulf enjoys a significant feedstock advantage over global peers. While ethane costs US\$ 0.75/mmbtu in Saudi Arabia, it is priced around US\$ 3.20/mmbtu in Europe and the US.
- However, the region is facing a rising ethane shortage due to lack of growth in E&P activity and increasing gas demand for electricity generation. As a result, the Gulf players are gradually shifting toward heavier feedstock (naphtha-based). The majority of new plants, therefore, are either non-ethane based or use a small proportion of ethane in combination with other feedstock.
- The move toward heavier feedstock has some advantage though, as it offers wider product options. While ethane can be used to produce only basic olefins, naphtha and other natural gas liquids (NGL) can be used to produce complex and diversified products.
- The shift toward heavier feedstock has important implications for petrochemicals companies in the Gulf as well as for investors exploring options in the Gulf petrochemicals sector.

The development of the Gulf petrochemicals industry is based on significant crude oil exports from the region. The associated gas, which is produced with crude oil and re-injected or flared at the well-head, is the main feedstock for production of basic petrochemicals. Owing to limited alternate value, the corresponding pricing structure for this feedstock is based entirely on the cost of extraction of NGL, especially ethane.

4.1 Feedstock – basic building block

Feedstock is the first stage input for production of all petrochemicals products and is available in two forms: gas (primarily ethane) and liquids (mainly naphtha or NGLs such as butane and propane). While ethane is derived from associated or non-associated gases, naphtha is one of the by-products of crude oil refining. Other NGLs are derived from the associated gas – by-product of the crude oil production process.

4.2 Ethane – preferred feedstock in Gulf

Ethylene production in the Gulf is primarily ethane-based in contrast to naphtha-based production in European and Asian countries. This clear preference for ethane is owing to the region's significant cost advantage in ethane procurement. Saudi Arabia supplies ethane at US\$ 0.75/mmbtu, compared with a minimum US\$ 3.20/mmbtu in Europe and the US. The Gulf ethane price is based on

its cost of extraction from the associated gas, which is produced during oil exploration.

4.3 Ethane limitations

Scarcity of gas, coupled with inapplicability of ethane to yield higher-value products, is however driving petrochemicals producers away from it.

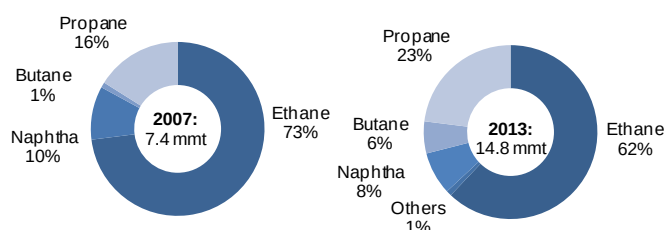
First, the Gulf faces an increasing shortage of ethane supply due to supply and demand side factors. On the demand side, an increasing number of petrochemicals plants and rising demand for natural gas for electricity generation are resulting in declining ethane availability in the region. Saudi Arabia, for instance, has not issued any new allocation of ethane to a petrochemicals company since 2006. On the supply side, lack of E&P activity growth is leading to gas shortages in the region despite of abundant reserves. According to Paris-based International Energy Agency (IEA), MENA gas demand will rise 145%, from 280 BCM/year to 676 BCM/year by 2030, taking the region's share in world gas usage from 9% to 15%.

Second, expansion and development of downstream operations necessitate diversification of the feedstock mix. Ethane can be cracked to produce only basic olefins such as ethylene, whereas naphtha can be cracked to produce diversified products including aromatics and intermediates and advanced chemical products.

4.4 Growing alternate/heavier feedstock dependence

In view of the aforementioned limitations, the petrochemicals producers are shifting toward alternative liquid/heavier feedstock such as naphtha, propane and butane. The percentage of ethane in the Saudi Arabian feedstock mix is estimated to shrink 8-10 percentage points over the next six years.

Chart 13: KSA ethylene production (mmt)



Source: CMAI

The trend of shifting away from ethane for diversification of the product slate is encouraging, as it is in line with the government's endeavours to promote production of higher-value chemicals and plastics essential for broader-based industrial and economic development in the region. It is gaining momentum in Saudi Arabia, where heavier feedstock such as propane and butane are used along with a small proportion of ethane, to produce new products rather than the conventional polyethylene and ethylene glycol. For instance, Saudi Kayan petrochemicals complex, scheduled to be completed in 2011, will produce new products including polycarbonates and phenols by using 70-80% of butane, while the rest would be ethane.

4.5 Changing investment proposition

In the past investors were in euphoria while investing in the Gulf petrochemicals sector. Use of ethane as feedstock ensured attractive returns on investment compared with similar investments in other parts of the world.

Now, with the gradual shift toward non-ethane feedstock, investment in the Gulf petrochemicals sector will require proper due diligence based on individual project merit. Plants based on naphtha and other NGL as feedstock are

costlier to build and maintain. In addition, the labour cost is comparatively higher in production using liquid feedstock. The prime cost disadvantage, though, is that product margins are highly linked to swings in global oil prices.

Nevertheless, the Gulf still has many cost advantages over global players in liquid-based projects as well. This, in our view, will continue to garner investment inflow into the region as evident from the recent JVs between regional players and global energy firms.

4.6 Revived dynamics for Gulf players

The relative economic advantage and operating rates of the Gulf petrochemicals companies will largely depend on the nature of feedstock and the size of operations. The economics of producing from heavier feedstock varies from country to country, but on cost, ethane continues to offer producers a competitive advantage over naphtha and LPG feedstock users.

Among producers using ethane as feedstock, those with existing continuous allocation of ethane are better placed than plants facing potential disruption in ethane supply. Ensuring sufficient feedstock to load the production facilities remains a key challenge for the new ethane-dependent petrochemicals plants. Saudi Aramco, the chief supplier of ethane to petrochemicals companies, is not able to commit new ethane feedstock allocation in the last couple of years due to gas shortage.

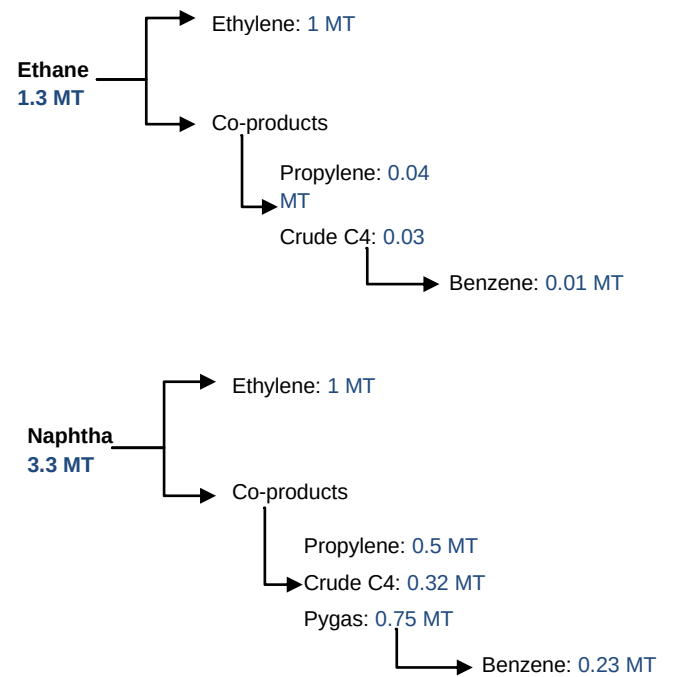
Exhibit: Naphtha dependence on crude oil prices

The greatest threat to using naphtha and other liquid feedstock is the cost volatility in tandem with fluctuation in oil prices. In Q3 of 2008, when oil prices were trading above US\$ 100/bbl, naphtha prices peaked at US\$ 962 a tonne and dropped to US\$ 420 a tonne in Q4, as global oil prices collapsed. As a result, the cost of a West European naphtha cracker was lower than a Saudi ethane cracker for a brief period at the end-2008.

Source: MEED

Furthermore, we prefer large integrated plants (refinery as well as petrochemicals) such as Petro Rabigh over smaller pure play companies, as naphtha or other liquid/oil-based feedstock gradually replaces ethane in the long term.

Exhibit: Steam cracking yields from Ethane vs. Naphtha



Source: CMAI

5 Financials and Valuation

5.1 Financial performance

Defining the peer group

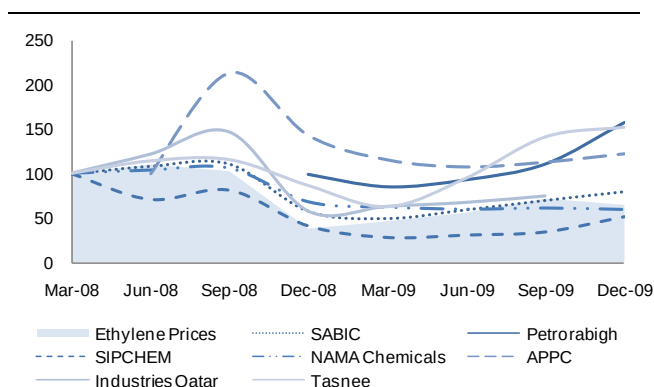
In this chapter, we assess the financial performance of eight of the largest publicly-listed petrochemicals companies in the Gulf and (see table at the end of the chapter). This group is referred to as the 'Gulf petrochemicals companies' throughout the report. Firms involved solely in the manufacture of fertilisers (urea and ammonia) have been excluded from our analysis.

Revenue growth

Affected by the global recession and the fall in petrochemicals prices, companies in the petrochemicals space posted significant revenue declines in 2009. The Gulf was no exception with an average revenue decline of 29% year-on-year, excluding Petro Rabigh, which posted exceptionally high growth of 350% as new capacity came on-stream. This compares to 20% for our developed market peer group. Emerging markets were shielded to some extent by indigenous demand and therefore posted the smallest revenue decline of 12% year-on-year.

Quarterly revenue figures during 2009 fluctuated in tandem with ethylene prices movements as can be seen in the chart below (see chart 14).

Chart 14: Revenue and Ethylene price trend: Q1 2008 – Q4 2009



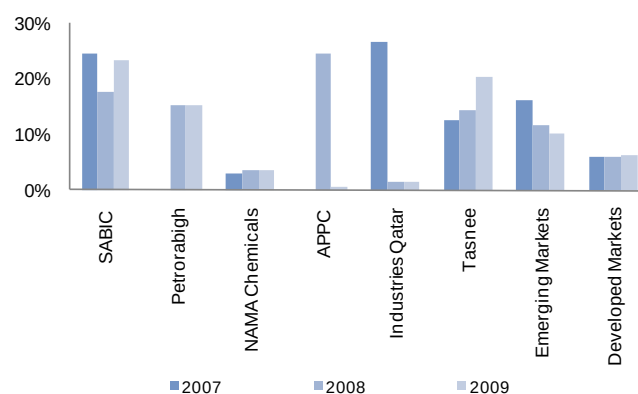
Source: Bloomberg. Prices and revenue rebased to 100.

A distinct improvement was visible in the final quarter of 2009 as many companies registered a reversal in the revenue growth trend from negative to positive on a year-on-year basis.

Capital expenditure to sales ratio

The expansion drive of the Gulf petrochemicals players is reflected in the capital expenditure (CAPEX) to sales ratio, which was higher for Gulf petrochemicals companies than their developed market peers in 2007 to 2009 (See chart 15).

Chart 15: Capital expenditure to Sales ratio



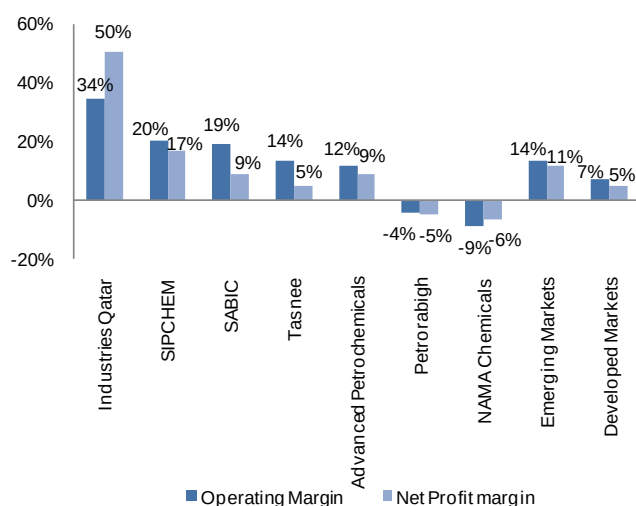
Source: Bloomberg. In emerging market category, Q4 estimates used to arrive at yearly figures for companies whose annual results are not yet released

While overall CAPEX declined for most Gulf petrochemicals companies and their developed market peers in 2009, the decline in sales was even greater, resulting in an increase in the ratio. The majority of the developed market peers recorded a year-on-year decline in the CAPEX to sales ratio in 2009, except for Royal Dutch and Sumitomo Chemicals, which are into significant capacity expansion in the Middle East. For emerging market peers, the CAPEX to sales ratio declined in 2007 to 2009, as the fall in CAPEX exceeded that in sales.

Operating margin

The average operating margin of the Gulf petrochemicals players was 12% in 2009, down from 19% in 2008 (See chart 16). The margin was higher than the emerging and developed market averages of 10% and 6% respectively however.

Chart 16: Operating and net margins (2009)



Source: Bloomberg. In emerging market category, Q4 estimates used to arrive at yearly figures for companies whose annual results are not yet released

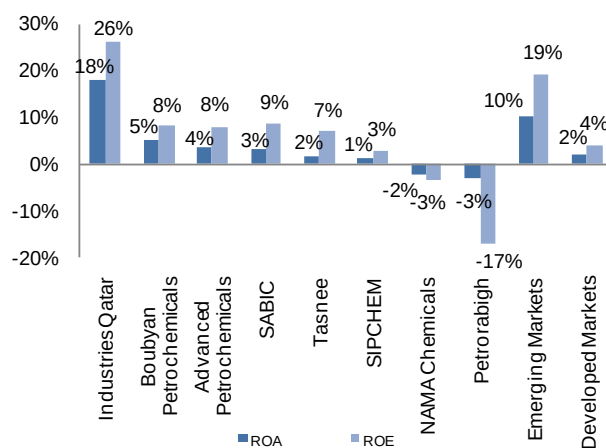
The Gulf players recorded high comparative operating margins primarily due to the low feedstock cost. The ethylene feedstock cost in Saudi Arabia is the lowest in the world.

Profitability – ROE and ROA

The Gulf petrochemicals players delivered moderate returns to shareholders in 2009.

The Gulf companies recorded ROA and ROE of 4% and 5% respectively, compared with an average of 10% and 19% for the emerging market peers and 2% and 4% respectively for the developed market peers (See chart 17). This is to an extent explained by the capital committed to expansion projects that are not yet generating earnings for the companies in question.

Chart 17: ROA and ROE (2009)

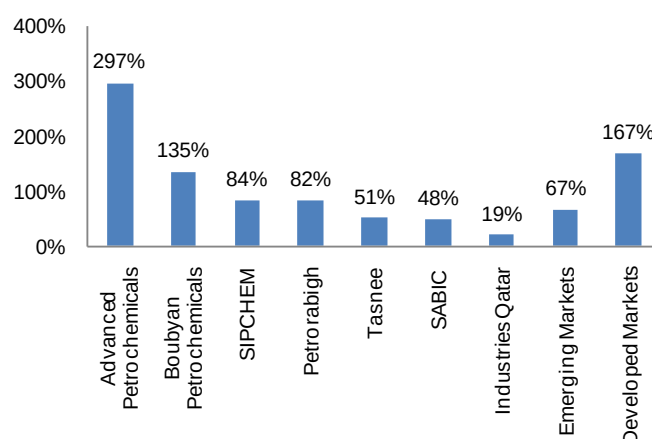


Source: Bloomberg

5.2 Stock liquidity

Liquidity of the Gulf petrochemicals stocks varies greatly. Overall, the stocks display adequate liquidity, free floats (65%) and annual traded volume. The average turnover velocity (excluding outliers) of the Gulf petrochemicals stocks was 102%, more than their emerging market peers (67%), however, less than the developed market peer group average of 167% (See chart 18).

Chart 18: Annual Turnover Velocity (as at 04 March, 2010)



Source: Bloomberg; Excluding Nama Chemicals

5.3 Valuation

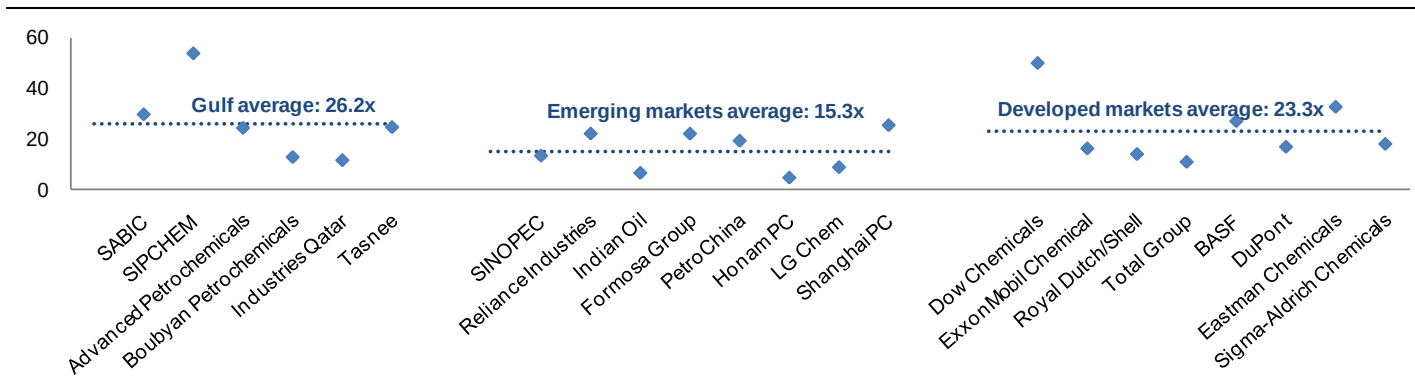
Valuation based on trailing P/E: The Gulf petrochemicals companies are trading at a trailing 12 month P/E of 26.2x, compared with their emerging market and developed market peers at 15.3x and 23.3x respectively.

SABIC and SIPCHEM are trading at relatively higher P/E, demonstrating strong growth potential.

The high P/E ratios across the board reflect the fact that we are now at what is considered the low point of the petrochemicals cycle, with the expectation that earnings will gradually improve as we exit the trough. This may take a couple of years however as new capacity is likely to outpace new demand in the short to medium term.

The relatively lower P/E of developed and emerging market peers is a reflection of lower growth potential.

Chart 19: Current P/E

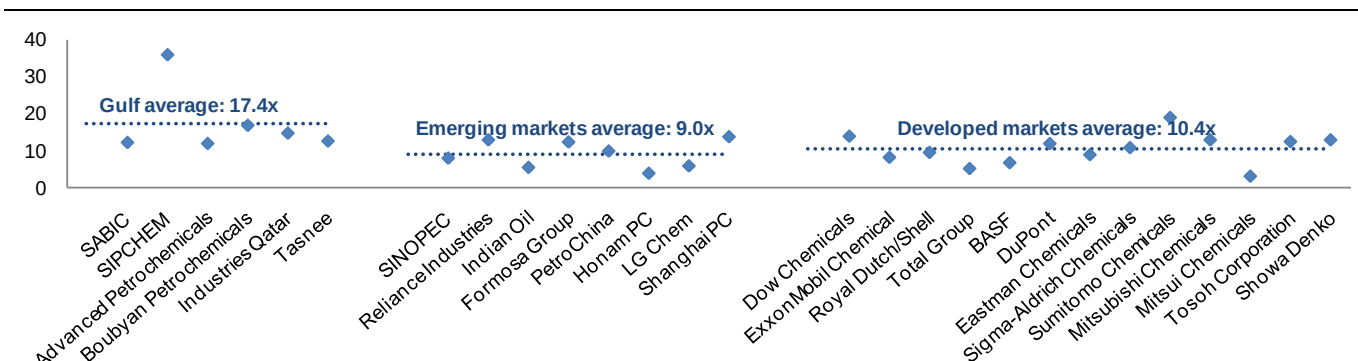


Source: Bloomberg
Excluding outliers

Valuation based on EV/EBITDA: The Gulf petrochemicals stocks are trading at an EV/EBITDA of 17.4x. SIPCHEM is trading at a higher EV/EBITDA, reflecting relatively stronger growth expectations.

EV/EBITDA of emerging market peers is 9.0x, compared with 10.4x for the developed market peers.

Chart 20: Current EV/EBITDA



Source: Bloomberg
Excluding outliers



Chart 21: Comparable Analysis – Global Petrochemical peers

Companies	Market Information (in USD mn)		y-o-y Revenue Growth %					Profitability (%)			Current Multiples (x)		Stock Liquidity		
	Market cap	EV	2009	1Q 2009	2Q 2009	3Q 2009	4Q 2009	Net Income (USD mn)	Operating margin	Net Profit margin	ROA	ROE	P/E	EV / EBITDA	Turnover velocity
Gulf															
SABIC	72,009.0	96,897.2	-31.6%	-50.4%	-45.2%	-36.9%	38.4%	2,416.8	19.2%	8.8%	3.2%	8.6%	29.8	12.2	47.7%
Industries Qatar	15,582.5	15,596.0	-34.5%	-37.2%	-44.6%	-49.1%	28.8%	1,339.9	34.4%	50.5%	17.9%	26.2%	11.6	14.8	19.2%
Petro Rabigh	7,849.9	13,784.5	349.7%	NA	NA	NA	58.1%	-382.2	-4.1%	-4.9%	-2.9%	-16.8%	-20.5	-359.2	82.0%
Tasnee	3,464.8	8,146.6	8.4%	-37.5%	-16.9%	22.2%	76.4%	140.2	13.6%	4.8%	1.7%	7.0%	24.7	12.6	51.1%
SIPCHEM	2,026.9	3,162.8	-51.4%	-72.7%	-57.4%	-58.5%	26.1%	37.6	20.3%	17.0%	1.2%	2.8%	53.9	36.0	83.7%
Boubyan Petrochemicals	907.4	1,510.4	-60.0%	-11.1%	-57.3%	-87.5%	-80.0%	70.4	NA	66.6%	5.1%	8.1%	12.9	16.9	135.0%
Advanced Petrochemicals	827.6	1,138.4	0.5%	NA	7.6%	-47.0%	-14.3%	33.9	11.8%	8.7%	3.7%	7.7%	24.4	12.0	296.9%
NAIMA Chemicals	347.9	523.5	-36.0%	-38.2%	-42.6%	-42.5%	-12.8%	-13.3	-8.7%	-6.1%	-2.1%	-3.2%	-38.0	-109.2	695.2%
Emerging Markets															
LG Chem	1,282,542.3	1,292,179.4	-5.4%	-2.1%	4.9%	7.4%	4.0%	144,776.2	15.1%	12.0%	20.0%	31.3%	8.9	5.9	186.2%
Honam PC	330,612.7	329,795.6	-22.4%	NA	NA	NA	NA	70,035.7	13.1%	13.6%	15.7%	23.1%	4.7	3.9	162.4%
PetroChina	327,068.4	348,634.4	-12.0%	-29.9%	-19.5%	-12.0%	-22.7%	16,916.9	15.8%	12.3%	8.1%	13.1%	19.3	9.9	8.0%
SINOPEC	126,324.6	163,198.5	-9.5%	-32.6%	-30.8%	-21.7%	-170.0%	9,413.2	6.9%	5.0%	7.8%	17.1%	13.4	8.0	30.8%
Reliance Industries	72,849.8	83,940.1	11.9%	-24.9%	-24.6%	6.1%	92.7%	3,285.2	12.7%	8.9%	6.1%	15.9%	22.2	12.9	69.0%
Formosa Group	24,322.0	29,516.1	-29.9%	-48.4%	-40.7%	-29.2%	51.8%	1,099.0	6.3%	5.7%	8.1%	16.0%	22.1	12.4	8.1%
Indian Oil	16,292.4	23,043.9	-3.3%	-17.2%	-22.2%	-18.7%	6.4%	2,465.0	5.3%	4.8%	8.3%	24.0%	6.6	5.5	11.5%
Shanghai PC	7,815.0	9,045.7	-22.1%	NA	NA	NA	NA	306.4	5.9%	4.5%	7.6%	14.1%	25.5	13.8	54.1%
Developed Markets															
ExxonMobil Chemical	308,771.3	312,337.3	-35.2%	-46.3%	-46.9%	-40.3%	9.3%	19,280.0	9.5%	7.0%	8.4%	17.3%	16.3	8.2	151.2%
Royal Dutch/Shell	171,911.9	270,384.7	-36.1%	-41.5%	-44.2%	-40.2%	-10.7%	12,234.7	5.3%	4.5%	4.4%	9.5%	14.1	9.5	30.5%
Total Group	132,626.6	153,619.5	-30.0%	-35.2%	-38.6%	-34.6%	-7.2%	11,481.2	13.2%	7.5%	6.9%	16.6%	11.0	5.2	74.0%
BASF	52,120.5	71,266.6	-18.6%	-23.3%	-23.3%	-18.9%	-7.9%	1,916.5	8.0%	2.8%	2.8%	8.0%	27.1	6.7	104.7%
Dow Chemicals	34,002.7	58,098.7	-22.0%	-38.7%	-30.7%	-21.6%	14.4%	648.0	3.0%	1.4%	0.6%	2.2%	50.1	13.9	226.8%
DuPont	31,236.6	36,806.6	-14.5%	-19.9%	-19.8%	-18.3%	6.3%	1,755.0	6.1%	6.7%	4.7%	25.2%	16.9	11.9	188.5%
Sumitomo Chemicals	7,421.0	20,304.2	-17.3%	13.0%	4.1%	-3.4%	-33.6%	-657.8	0.1%	-4.0%	-2.5%	-10.7%	-9.6	19.0	104.4%
Mitsubishi Chemicals	7,377.0	19,599.7	-0.7%	14.9%	13.7%	-3.7%	-24.8%	-752.9	0.3%	-2.3%	-2.4%	-9.0%	-6.5	12.9	82.2%
Sigma-Aldrich Chemicals	6,296.9	6,500.9	-2.4%	-8.8%	-10.1%	-1.3%	12.3%	346.7	23.7%	16.1%	13.2%	22.6%	18.1	10.8	181.1%
Eastman Chemicals	4,454.0	5,265.0	-25.0%	-34.6%	-31.7%	-26.5%	-1.3%	136.0	10.2%	2.7%	2.5%	8.9%	32.8	8.9	290.1%
Showa Denko	3,154.3	7,293.9	-32.4%	-51.0%	-37.2%	-34.2%	-2.5%	-425.7	-0.7%	-5.6%	-4.0%	-15.7%	-6.1	12.9	210.4%
Mitsui Chemicals	2,897.8	8,297.7	-7.4%	2.9%	2.6%	-24.1%	-47.5%	-1,471.6	-3.3%	-6.9%	-1.6%	-6.2%	-1.4	3.1	258.2%
Tosoh Corporation	1,428.3	5,671.2	-11.3%	0.8%	11.6%	-18.6%	-36.8%	-283.1	-2.8%	-3.4%	-3.2%	-14.3%	-3.8	12.5	274.0%

Source: Bloomberg and company annual reports. All numbers are for Calendar Year 2009; 4Q consensus estimates used to arrive at yearly figures for companies whose annual results are not yet released; Figures based on estimates are in italics

5.4 Corporate governance

In the fast developing Gulf economy, corporate governance standards and transparency are critical aspects for potential investors. The corporate governance standards of the Gulf petrochemicals companies are currently weaker than their international peers.

Some of the key shortcomings in our sample of players include the following: Limited financial information is available on company websites; some websites are under construction or not available, and therefore, investors have to look to the respective stock exchanges or other databases for audited financial statements. Most players

do not have a dedicated investor relations department or a contact list of management departments on their websites to handle investor queries. Moreover, the Gulf petrochemicals industry has low credit rating coverage with SABIC being the only rated entity in the peer group.

The primary rationale behind the IPO listings has been to raise capital for new petrochemicals units. In some cases, petrochemicals units are under construction and some have not been commissioned yet, which explains the limited availability of information on operations.

Chart 22: Corporate Governance parameters

	History of publicly available accounts	Reporting frequency on the website	Availability of investor relations contact details	Equity Analyst coverage	Rated by rating agency	Dividend policy and/or leverage targets in annual report	Corporate governance charter on website or annual report	Independent Directors on the Board
SABIC	●	●	●	●	●	○	○	●
Petro Rabigh	◐	◐	○	◐	○	◐	◐	◐
SIPCHEM	◐	◐	○	◐	○	○	○	●
NAMA Chemicals	●	●	○	○	○	○	●	●
Advanced Petrochemicals	◐	◐	○	◐	○	○	○	●
Boubyan Petrochemicals	◐	NA*	NA*	◐	○	○	○	○
Industries Qatar	◐	◐	◐	●	○	◐	○	●
Tasnee	◐	◐	●	◐	○	○	◐	●

Source: Bloomberg

•Website under construction

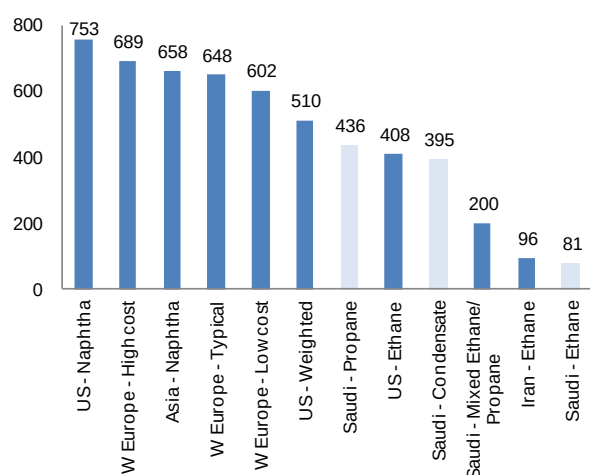
6 The Gulf Petrochemicals Industry

6.1 Growth drivers

Competitive feedstock advantage

The Gulf enjoys a significant advantage of low feedstock cost owing to its rich oil and gas reserves. In 2008, the GCC countries accounted for around 40% and 23% of global proven oil and gas reserves respectively. The governments offer natural gas to domestic petrochemicals producers at below market rates of US\$ 0.75-1.5/mmbtu as the majority of upstream operations are nationalised. The rationale for the lower feedstock rates are that it is a natural by-product in upstream operations and hence involves minimal cost of production. This cheap and assured supply provides a significant competitive advantage to the Gulf players vis-à-vis their global competitors who procure feedstock at market rates of US\$ 3-8/mmbtu. In 2008, Ethane price in the US reached a high US\$ 10/mmbtu.

Chart 23: Ethylene cash cost – March 2009 (US\$/ ton)



Source: CMAI

Regulatory constraints in the West

The introduction of the REACH guidelines (Registration, Evaluation, Authorisation and Restriction of Chemicals) in the EU transferred the responsibility for health and chemical security from the governments to the chemical

industry in Europe. This influences the whole product chain and makes the introduction of new products and production more complex and time-consuming.

Moreover, a growing need to follow the Kyoto protocol (European Union directive on chemicals and environmental campaigns for reducing greenhouse gas emissions) has added costs for petrochemicals producers.

Strong political will and initiatives

In an effort to diversify oil-based economies and reduce dependence on volatile oil prices, governments in the Gulf are promoting development of the downstream petrochemicals sector, which also generates employment in the region. The governments across the Gulf are encouraging a shift in industry's focus from being export-oriented to manufacturing for the domestic market. By extending the product slate into value-added specialty chemicals for domestic industries – automotive, appliances and consumer products – the petrochemicals sector will drive broader economic, industrial and social growth across the region. Moreover, the governments also provides tax advantages for foreign partners, which further acts as an incentive for petrochemicals industry growth.

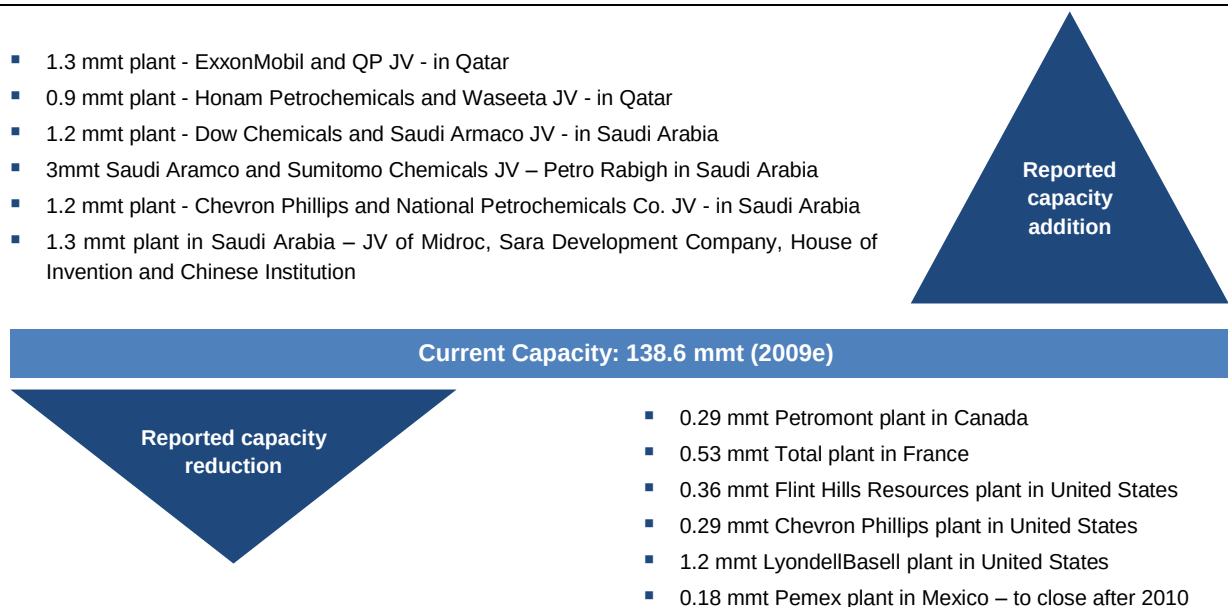
Displaced capacity from the West

The profitability of the European petrochemicals industry weakened sharply in 2008, forcing many players to idle or shut down uneconomic production units. The pressure on leveraged European and US petrochemicals companies was especially high due to their substantial debt repayment obligations. Recent closure announcements include BASF's polystyrene plants in Ludwigshafen, Germany; Dow Chemical's ethylene oxide and ethylene glycol plants in Wilton, UK; Arkema's methyl methacrylate and vinyl production units in France; and Rhodia's polyamide production unit in Italy.

At the same time, major players from the US and European countries are setting up JVs with Middle Eastern partners to establish new production plants in the Gulf. Examples include SABIC-Chevron Phillips Chemicals, Basell-Saudi Polyolefins, Dow Chemical-Oman Oil, and CPC-Qatar Petroleum-Total. Dow Chemical has almost

tripled its Gulf production capacity in 2007 to 2009, with
JVs in Kuwait, Oman and Saudi Arabia.

Chart 24: Ethylene plant closures in the West and new JVs in the Gulf



Source: CMAI, Zawya and Alpen Analysis

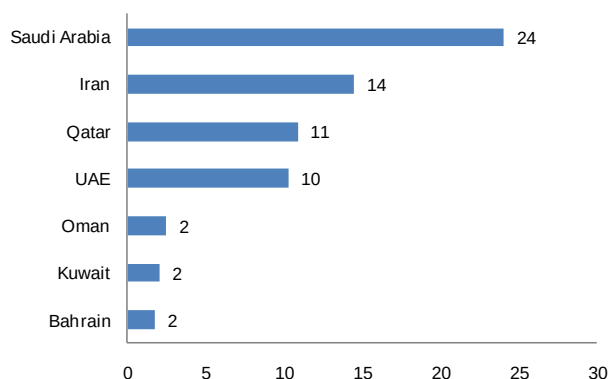
6.2 Key trends

Capacity expansion underway

The Gulf petrochemicals industry is on a massive expansion drive. The region accounts for more than 50% of the ongoing global petrochemicals capacity addition owing to its significant feedstock advantage.

Among the Gulf countries, Saudi Arabia leads the race with petrochemicals giants such as SABIC, Petro Rabigh, Saudi Kayan, and SIPCHEM, all in expansion mode. The region is seeking to acquire technology from Asian petrochemicals firms to produce more advanced products. Iran is also focusing on increasing its share in overall Gulf petrochemicals production to around one third by 2025.

Chart 25: The Gulf Petrochemicals Capacity Expansion (mmt): 2010-15



Source: Alpen analysis; Petrochemicals include only basic petrochemicals

Abu Dhabi-based Borouge is leading the growth in the UAE petrochemicals industry. The company's ethane cracker is already operative and the second one is scheduled to be completed by 2010, bolstering its position as a major poly-olefins player.

Shift toward heavier feedstock

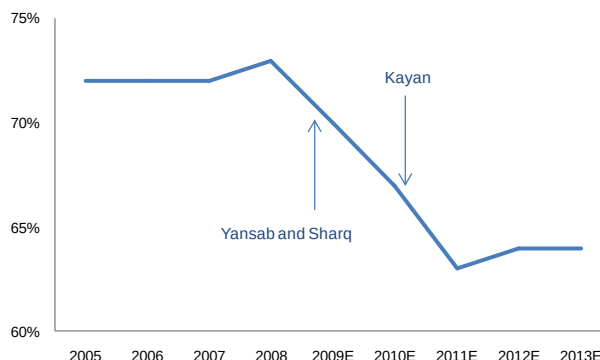
As outlined in the feedstock economics section, the Gulf petrochemicals producers are shifting away from ethane and toward alternative feedstock like naphtha, LPG and heavier gases (propane and butane), primarily driven by two factors:

1. Growing shortage of ethane due to limited E&P activity and increase in its demand for electricity generation
2. Limited product slate options. Therefore, moving down the value chain necessitates usage of naphtha or other heavier feedstock in combination with ethane.

Below are few other examples underlying this thematic shift away from ethane:

- The Chemaweya Taweelah Chemicals Industrial City phase one plant, which is expected to begin operations in 2013, will use naphtha feedstock from the Ruwais refinery. The second phase of the same plant will use propane/butane for production of higher-value added products.
- In Qatar, South Korea's Honam Petrochemicals Corporation plans to set up an ethane/naphtha cracker and an aromatics complex in Mesaieed Industrial City.
- The Dow Chemical/Saudi Aramco-backed Ras Tanura refinery expansion will use a 1.2 million-t/y cracker, fed by a mixture of naphtha, ethane and natural gas liquid feedstock sourced from the Juaymah gas processing plant and the existing Ras Tanura refinery.
- Petro Rabigh's second phase expansion may include a naphtha cracker to be fed by the expanded refinery.

Exhibit: SABIC – Declining share of ethane feedstock



Source: SABIC

Diversifying product slate

The Gulf traditionally focused on basic petrochemicals such as ethylene, poly-olefins, polyethylene and polypropylene, but companies are now diversifying to specialty chemicals and plastic polymers.

The move toward higher-value added product lines brings about two benefits: reduced dependence on ethane and higher employment compared with that in traditional basic petrochemicals manufacturing.

SABIC, the leading petrochemicals producer in the region, plans to increase the amount of specialty chemicals as a proportion of total sales up to 30% by 2020. Similarly, Saudi Kayan started operations at the US\$ 400 million, 450,000 mmt polypropylene plant in Jubail in 2009. The complex also manufactures polyethylene, ethylene glycol, amines, benzene and phenol.

Developing domestic downstream operations

Gulf producers are moving up the value chain as they are expanding petrochemicals production downstream. The development of a regional downstream industry is also seen as an important employment opportunity for many GCC nationals given the very large young population in the region, with 35% of the total population in all six countries under the age of 24.

Foreign acquisitions

Apart from building capacity on the domestic turf, the Gulf petrochemicals players are looking for assets abroad to increase their footprint globally. The genesis of this approach was sown when SABIC acquired DSM and Huntsman petrochemicals businesses in Europe. The reason for the interest of SABIC and other players in the region in European and US companies is access to technology and markets. Gulf players aspire to broaden their derivative portfolios and move up the value chain and therefore need access to technology either via licences or acquisitions.

However, in recent years, the focus has shifted to acquisition of companies in China or India – major demand hubs.

Preference for “inorganic” growth

With the decline in plastic demand in 2009, state-owned and private players, including investment firms, may embark on inorganic growth. Decline in demand and prices of chemicals commodities led to reduced profit of petrochemicals firms around the world. However, the Gulf petrochemicals companies are in a better position due to lower feedstock cost and lower levels of indebtedness (due to semi-government ownership structures).

Companies such as SABIC, SIPCHEM, and Iran-based NPC are currently the major global players. We are now in a phase of consolidation and the Gulf is being looked at as a potential buyer of distressed assets in Asian and European petrochemicals companies. In February 2007, SABIC acquired GE Plastics. Similarly, Abu Dhabi sovereign wealth fund IPIC has agreed to acquire Canada-based NOVA Chemicals for US\$ 2.3 billion including debt.

As the capacity expansion of petrochemicals plants continues and international companies weakened on the back of the global recession, the Gulf is expected to establish itself as the dominant force in the global petrochemicals market.

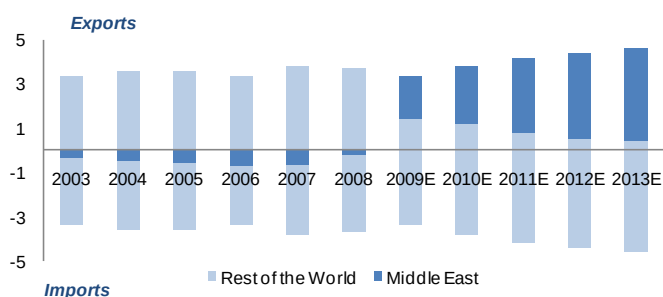
Emergence as major propylene player

The annual production of propylene in the region increased from 0.2 mmt in 2000 to 2.5 mmt in 2009. The Gulf became an exporter of propylene in 2009 from being an importer in 2003. Exports are expected to grow further in the near future. Moreover, production of propylene is being encouraged as it helps governments create more job opportunities than ethylene production.

Larger steam crackers using heavier feedstock are also under development in the region, and will contribute increasingly to propylene supply. However, the cost of production of propylene in the region is not as competitive as ethylene. For ethylene producers, the cost is fixed at a

subsidized rate, while the majority of propylene is sourced from naphtha, which in turn is linked to oil prices.

Chart 26: Propylene Net Equivalent Trade (mmt)



Source: CMAI

Most of the propylene capacity expansion is coming up in Saudi Arabia. Major propylene cracker plants in the region include Petro Rabigh Petrochemicals Complex, Ras Tanura Integrated Refinery & Petrochemicals Complex and Qatar Petrochemicals Complex (See chart 25).

Increased private players participation

While the oil and gas sector has been predominantly controlled by the governments in the Gulf, private sector presence is increasing in the petrochemicals space. The slew of JVs between western petrochemicals players and Gulf players is the key driver for this trend.

For example, in the UAE, Abu Dhabi's Borouge is a JV of Abu Dhabi National Oil Company and European plastics giant, Borealis.

Expansion in external markets

The trend of GCC players looking to invest beyond their domestic markets has emerged with a shift in demand centres across the world. A large number of new projects have been initiated over the past few years, where local players from the Gulf have announced capacity additions in countries such as China.

In 2009, Qatar Petroleum International (QPI), the overseas arm of Qatar Petroleum, indicated its plan to buy a stake in two petrochemicals JVs in Singapore with Dutch Shell Chemicals. Also, the Chinese government approved SABIC's joint project with China Petroleum & Chemical

Corporation (Sinopec) in the Tianjin petrochemicals complex, China. The main driver behind this trend is access to large, growing markets. For example, the participation of SABIC in this project will ensure its proximity to customers with local availability of its products and services. These players mainly play the role of a raw material provider in addition to making capital investments in the project.

6.3 Key challenges

Project delays and cancellations

Many petrochemicals projects are facing delays due to reasons such as subdued demand, feedstock shortage, and difficulty in project funding. Projects in the region facing delays include Petro Rabigh Petrochemicals Complex in Saudi Arabia and Qatofin project in Qatar. Delays of around 12 months is more the norm than an exception. If the global economic crisis worsens, delays could prolong further although it is unlikely that projects would be shelved completely.

Growing ethane shortage

The petrochemicals production economics in the Gulf is based on comparatively cheap ethane supply. However, the region is facing an acute shortage of ethane supply due to a dearth in E&P activities and increased gas demand for alternative usage, primarily electricity generation.

Although the GCC countries account for more than 23% of global gas reserves, the region is experiencing shortage of natural gas due to increased domestic consumption. Gas demand in the Gulf is estimated to grow at 6.6% per annum compared with 2.2% projected for oil.

Threat from anti-dumping laws

The Gulf petrochemicals industry is under significant threat from new protectionist tariffs (anti-dumping) in key markets - India and China - as these governments strive to promote indigenous petrochemicals producers and raise local employment.

India has enforced anti-dumping duty on polypropylene imports from Saudi Arabia, Oman and Singapore, while China plans to impose anti-dumping charges on methanol imported from Saudi Arabia, Malaysia, Indonesia and New Zealand. Europe is also considering similar measures against firms from three countries including the UAE.

The reasons offered for imposing tariff restrictions are that the Gulf countries are selling petroleum products below

their market prices, as they source feedstock at significantly subsidised rates. According to the Gulf Petrochemicals and Chemicals Association, however, gas sold to petrochemicals firms is produced along with oil, and therefore gas production cost is extraordinarily low.

Global recession – double dip

The global economy is suffering from rising government debt, higher oil prices, and lack of growth in the job market. Therefore, it may again enter into a recession by late-2010 or 2011. If the global recession continues in 2010 and 2011, then demand for petrochemicals products would not pick up, posing a challenge for industry growth.

Move towards naphtha-based feedstock

Petrochemicals producers have begun shifting to naphtha-based feedstock owing to limited natural gas availability in the Gulf. However, unlike ethane, naphtha prices are sensitive to crude oil prices, and therefore volatile, and are comparable worldwide. Usage of naphtha feedstock reduces the cost advantage the Gulf companies enjoy over peers across the rest of the world.

Geopolitical risk

Iran faces the threat of international sanctions, including a trade embargo, due to its nuclear technology development. If sanctions are applied on Iran, petrochemicals projects involving JVs with foreign firms could be delayed or cancelled. Cancellations of existing contracts with foreign companies could deter future foreign direct investment.

Financing issues

The Gulf has been under the scrutiny of global investors and bankers after a number of high profile defaults, including the Saad and Alghosbi Groups, Global Investment House, Investment Dar and the Dubai World restructuring. These events have made it more difficult to raise financing for any regional issuers or projects.

Country Profiles

Kingdom of Saudi Arabia

Industry Size	2008	2009e
Oil production ('000 b/d)	10,900	11,150
Oil consumption ('000 b/d)	2,218	2,285
Oil imports ('000 b/d)	0	0
Oil exports ('000 b/d)	8,682	8,865
Gas production (bcm)	79	82
Gas consumption (bcm)	79	82
Refining capacity ('000 b/d)	2,530	2,530
Ethylene capacity ('000 t/y)	8,070	13,100
PE capacity ('000 t/y)	5,880	7,080
PP capacity ('000 t/y)	2,210	3,120

Overview

Saudi Arabia is an oil-based economy with more than 20% of world's proven oil and gas reserves. The country is the largest exporter of petroleum and plays an important role in OPEC. Saudi Arabia also has the largest petrochemicals market in the Gulf

High oil prices have enabled Saudi Arabia boost economic growth, government revenue, and surplus financial reserves, shielding the Kingdom against the global economic slowdown.

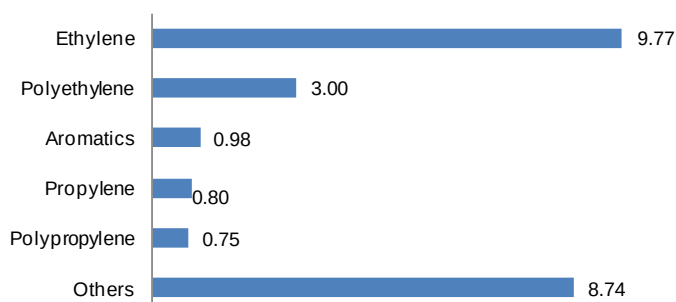
However, the Saudi government is striving for growth in the private sector, especially in telecommunication, natural gas exploration and petrochemicals, to reduce the dependence on oil exports. This would also boost local employment in the region.

As a measure to attract foreign investment and diversify the economy further, Saudi Arabia signed the WTO accession in 2005.

Source: EIA, World Cracker Report

Project Pipeline

- Significant capacity expansion is taking place in Saudi Arabia; 24 mmt of petrochemicals and 7.6 mmt of fertilizers are estimated to be added during 2010-15.
 - Major capacity expansion is expected in ethylene and polyethylene.



- Significant projects in Saudi Arabia include the following:
 - USD 20 billion **Ras Tanura Integrated Refinery & Petrochemicals Complex Phase 2**: A venture of Saudi Aramco and Dow Chemicals, it is undertaking construction of 1.2 mmt Ethane/naphtha cracker and other petrochemicals. On completion, this would be the largest petrochemicals facility of its kind, producing 11 mmt of various petrochemicals and chemical products.
 - USD 10 billion **Jubail Petrochemicals Complex** of Saudi Kayan: It is expected to produce 1.35 mmt of ethylene and 2.6 mmt of other finished products, post completion in 2011.
 - Petro Rabigh Integrated Refinery and Petrochemicals Complex**: It is involved in development of 1.3 mmt ethylene cracker and various downstream petrochemicals process units, to produce more than 2.4 mmt of petrochemicals and refined products.

Trends and Developments

- The global economic recession also affected the Saudi Arabia petrochemicals industry. A steep decline in automotive and construction sector demand led to a fall in demand for specialty plastics.
 - However, cheap feedstock helped Saudi Arabian producers hedge the massive losses, as opposed to their foreign competitors. Ethane feedstock prices are only USD 0.75/BTU in Saudi Arabia, compared with USD 8.00/BTU in the US.
 - Various industry players such as Saudi Aramco, SABIC, SIPCHEM are undertaking capacity expansion.
 - Owing to low production and feedstock costs in Saudi Arabia, investments in olefins and derivatives appear attractive, while the government encourages export-oriented plastic conversion projects. Therefore, the government's strategic plan would increase investments in the plastics industry and it would grant various exemptions to industrialists and businessmen who invest in these industries.
 - Saudi Arabia is becoming a key exporter to Asia, particularly China, which will continue playing a key role in Saudi Arabia's export-oriented petrochemicals industry. Almost half of SABIC'S exports go to Asia, and the firm continues to target the world's fastest-growing market.
-

Iran

Industry Size	2008	2009e
Oil production ('000 b/d)	4,200	4,320
Oil consumption ('000 b/d)	1,675	1,708
Oil imports ('000 b/d)	NA	NA
Oil exports ('000 b/d)	2,525	2,611
Gas production (bcm)	130	155
Gas consumption (bcm)	119	130
Refining capacity ('000 b/d)	2,000	2,200
Ethylene capacity ('000 t/y)	5,606	5,606
PE capacity ('000 t/y)	1,855	2,820
PP capacity ('000 t/y)	1,040	1,340

Source: EIA, World Cracker Report

Overview

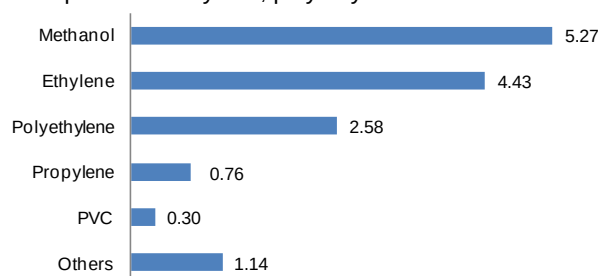
Iran has the world's second largest oil and gas reserves. However, its petrochemicals sector is not completely exploited, which indicates significant untapped potential. This is primarily because the country experiences difficulties in international project financing and sanctions. These have led to delays and increased costs in many projects.

Currently, Iran accounts for 12% of the Gulf petrochemicals production and the country plans to increase it to 34% by 2015 and 36% by 2024. It intends to raise petrochemicals production from 40mt in 2008 to 70mt in 2015.

There are 81 Iranian petrochemicals companies with 51 in the private sector. The new regulation of restricting NPC's stake to a mere 20% has led to further privatising of 19 firms.

Project Pipeline

- 14.5 mmt petrochemicals and 6.8 mmt fertilizers are scheduled to be added to Iran's petrochemicals capacity during 2010-15.
 - Major capacity expansion is expected in ethylene, polyethylene and Methanol.



- Majority of the petrochemicals projects in Iran are centered in the South Pars special economic and energy zone in Assaluyeh.
- In 2009-10, 11 petrochemicals projects are expected to become operational in Iran. These projects, with a capacity of 8.8 million, have an estimated cost of USD 5.1 billion.

Trends and Developments

- NPC in Iran is currently producing almost 70 types of petrochemicals, including ethylene, HDPE, amonia, carbon monoxide, acetic acid, isocyanate, PTA, PET and polycarbonate. The major petrochemicals complexes are located in Bandar Khomeini and the Pars Special Economic Energy Zone in Asaluyeh.
- Iran's oil ministry aims to increase the country's petrochemicals capacity from 47mt/y in 2008 to 73mt/y by 2015, increasing annual production of ethylene to 12mt, urea to 8.5mt, aromatics to 4mt, and polymers to 10mt.
 - The government's 20-year vision programme started in 2005 and it plans to raise Iran's petrochemicals production capacity to 100 mmt by 2025.
 - However, regulations and international sanctions inhibit the growth of Iran's petrochemicals sector. New regulations restrict NPC's contribution to any project to 20%, posing a challenge to secure investments for the project.
- NPC plans to become the largest petrochemicals producer in the Gulf by 2025. However, it is facing obstacles such as difficulty in project financing, international sanctions, and fragmentation through spin-off and privatizing of its

subsidiaries.

- Under Article 44 of the Iranian constitution, 80% of Iran's state-owned companies are required to be sold. Therefore, NPC's subsidiaries are being privatized and the target date for completion is 2014. NPC would retain only 20% stake in the privatized petrochemicals companies.
 - Iran faces difficulties in international project financing due to international sanctions and concerns about its nuclear program. These hurdles have led to delays in project completion. Delays in upstream projects are also leading to uncertainty about feedstock supply.
 - Around 70% investment in the Iranian petrochemicals industry is expected to come from government organizations and the rest from the private sector. Thus, the petrochemicals sector would be less exposed to policies in the international financial sector. However, it would depend on liquidity in the Iranian banking system, which is dependent on oil prices. Volatility of oil prices would affect the petrochemicals project financing in Iran.
 - Iran is expected to face difficulty in securing foreign investment as long as it faces international sanctions. Therefore, despite having the second-largest oil and gas reserves worldwide, the country still has significant latent potential in the petrochemicals sector.
-

Qatar

Industry Size	2008
Oil production ('000 b/d)	1207.6
Oil consumption ('000 b/d)	129.0
Oil imports ('000 b/d)	0.0
Oil exports ('000 b/d)	1078.0
Gas production (bcm)	77.0
Gas consumption (bcm)	20.2
Refining capacity ('000 b/d)	200.0

Overview

Qatar leads the GCC nations in terms of its proven gas reserves. The petrochemicals industry in the country is concentrated in two regions: Ras Laffan Industrial City and the Messaieed Industrial City.

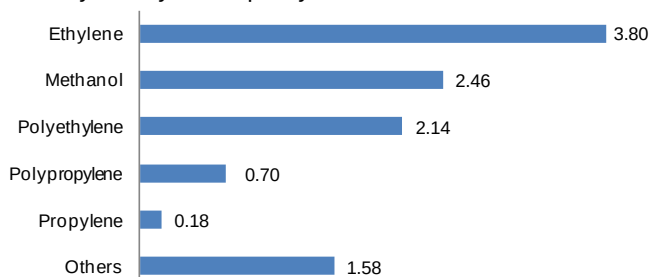
While ExxonMobil, Shell, Dolphin Energy, Qatar Gas and Ras Gas are located in Ras Laffan Industrial City, Qapco, Qafco, Qatar Chemical Company (Q-Chem), Qafac, Qatar Vinyl Company, Qatar Lubricants, Qatar Plastic Products Ltd. and Qatofin are based in Messaieed Industrial City.

Industries Qatar (QAPCO) is the leader in Qatar's petrochemicals market. It has presence in many petrochemicals projects being implemented in the country.

Source: EIA, World Cracker Report

Project Pipeline

- Total petrochemicals and fertilizers amounting to 10.9 mmt and 1.9 mmt respectively are expected to be added to Qatar's petrochemicals capacity during 2010-15.
 - Ethylene and polyethylene are the major petrochemicals.
- The Messaied Petrochemicals Complex, developed by Honam Petrochemicals of South Korea, which is scheduled to be operational in 2012, is one of Qatar's flagship petrochemicals projects and of critical importance to the GCC. The complex would add 900,000 t/y of ethylene capacity.



Trends and Developments

- QAPCO plans to invest around USD 2 billion in petrochemicals projects to triple its polyethylene capacity to 1.3mmt. The firm is viewed as one of the world's low-cost petrochemicals producers.
- Revenue from natural gas and the petrochemicals sector in Qatar is expected to more than double that from oil by 2013.
- The Qatar government is striving to diversify from being a petroleum-based economy. The country has a Qatar National Vision 2030 plan to expand its economy in other industries and service sectors.

United Arab Emirates

Industry Size	2008	2009e
Oil production ('000 b/d)	2,965.0	3,025
Oil consumption ('000 b/d)	470.0	489.0
Oil imports ('000 b/d)	NA	NA
Oil exports ('000 b/d)	2,495.0	2,536
Gas production (bcm)	58.0	63.0
Gas consumption (bcm)	48.0	52.0
Refining capacity ('000 b/d)	1,000.0	1,000.0
Ethylene capacity ('000 t/y)	600.0	600.0
PE capacity ('000 t/y)	620.0	640.0
PP capacity ('000 t/y)	0.0	0.0

Source: EIA, World Cracker Report

Overview

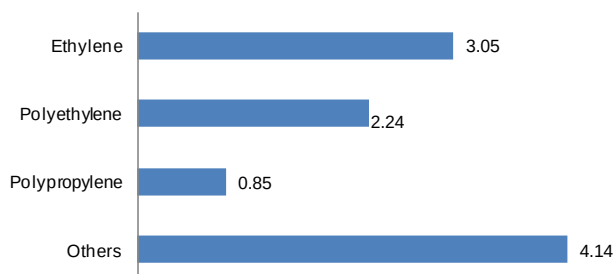
UAE, with world's fifth-largest oil and gas reserves, is an oil-based economy. The country was not traditionally focused on diversifying the economy by venturing into the petrochemicals sector.

Abu Dhabi National Polymers Company (Borouge) is the leading petrochemicals producer in Abu Dhabi. The Emirate has an Abu Dhabi 2030 plan to make petrochemicals one of its prime growth sectors. It plans to spend around USD 100 billion by 2030 to develop the sector.

Another petrochemicals complex coming up in Abu Dhabi is Chemaweya - the only plant in the region that would use naphtha as feedstock, compared with Ethane used by other players.

Project Pipeline

- Several petrochemicals projects in the UAE are coming up in the city of Taweelah.
- Many projects in the region are undertaken in collaboration with foreign players. Moreover, expansion plans are more prominent than those to set up new petrochemicals plants.
- Total petrochemicals and fertilizers of 10.3 mmt and 0.5 mmt respectively are expected to be added in the region during 2010-15.



Trends and Developments

- UAE's petrochemicals activities are concentrated in Abu Dhabi, with majority of olefin and polymer production capacity in the Emirate.
- Dubai follows Abu Dhabi in petrochemicals production in the country. Around 70% of UAE's foreign trade in petrochemicals products is from Dubai.
- According to IFA forecasts, demand for food (and accordingly, fertilizers) is expected to grow in the next five years. Sensing this rising demand, UAE is focusing on expanding its urea and ammonia capacity.
- Abu Dhabi Basic Industries Corp (ADBIC) set up the USD 4 billion Abu Dhabi Polymer Park (ADPP) in Industrial City of Abu Dhabi in 2008. ADPP would be the world's largest plastics conversion complex, producing more than 1m t/y of plastics by 2012.
- ADPP will have the UAE's first naphtha cracker Chemaweya of 1.45mt/y capacity, along with downstream Propylene and ethylene derivatives plants and xylene, benzene, cumene, phenol and derivatives units.

Bahrain

Industry Size	2008
Oil production ('000 b/d)	48.5
Oil consumption ('000 b/d)	35.0
Oil imports ('000 b/d)	0.0
Oil exports ('000 b/d)	11.0
Gas production (bcm)	12.6
Gas consumption (bcm)	12.6
Refining capacity ('000 b/d)	262.0

Overview

The petrochemicals industry in Bahrain enjoys support from both the government and the private sector. The industry was established with the formation of Gulf Petrochemicals Industries Company (GPIC) in 1980. GPIC was set up in a JV with SABIC (Saudi Arabia) and PIC (Kuwait) for manufacturing urea, ammonia and methanol. Currently, GPIC is a major player in Bahrain's petrochemicals sector.

Various petrochemical-based downstream industries such as chemicals, detergents, plastics and paint form an integral part of Bahrain's industrial sector, attracting private sector investments.

Source: EIA, World Cracker Report

Trends and Developments

- Bahrain has a GPIC Petrochemicals Complex in the pipeline, with estimated cost of USD 1.2 billion. The complex is expected to produce 1.75 mmt of Methanol and 2.08 mmt of fertilizers.
- GPIC is the only complex in the Gulf that would produce both fertilizers and petrochemicals products.
- Considering the shortage of natural gas in the region, various gas exploration programs are being implemented in Bahrain. This is the largest E&P programme in Bahrain's history.

Kuwait

Industry Size	2008	2009e
Oil production ('000 b/d)	2,690.0	2,775.0
Oil consumption ('000 b/d)	286.0	292.0
Oil imports ('000 b/d)	0.0	0.0
Oil exports ('000 b/d)	2,404.0	2,483.0
Gas production (bcm)	14.0	15.0
Gas consumption (bcm)	18.0	21.0
Refining capacity ('000 b/d)	990.0	990.0

Overview

Kuwait's economy is largely oil-dependent, with the country controlling around 8% of the global crude oil reserves. Petroleum commands around 50% of its GDP, 95% of export revenue, and 80% of the government's income.

Kuwait plans to diversify its economy, by leveraging its strategic location and increasing population.

Source: EIA, World Cracker Report

Trends and Developments

- Majority of the petrochemicals projects were completed in 2009; not many projects are in the pipeline. Total petrochemicals amounting to 2.0 mmt are expected to be added during 2010-15.
- Petrochemicals projects such as Equate form a low-cost base for exports to Europe and Asia, where demand is expected to grow rapidly in the next decade. Thus, Kuwait has a strong competitive downstream position overseas.
- Kuwait is facing severe shortage of natural gas despite a substantial discovery in 2006. Gas shortage is a major hurdle in the development of Kuwait's petrochemicals sector and the diversification of its economy.
- Further development of Kuwait's petrochemicals sector depends on the development of new gas supply.

Oman

Industry Size	2008
Oil production ('000 b/d)	761.0
Oil consumption ('000 b/d)	81.0
Oil imports ('000 b/d)	0.0
Oil exports ('000 b/d)	680.0
Gas production (bcm)	24.0
Gas consumption (bcm)	13.5
Refining capacity ('000 b/d)	85.0

Source: EIA, World Cracker Report

Overview

Oman, a small country with limited capital, heavily depends on oil resources. High oil prices have helped Oman build trade surpluses and foreign reserves.

Oman is striving to diversify its economy via privatization and industrialization and by reducing oil contribution to GDP to 9% by 2020.

Oman is planning industrial development in fields such as gas resources, metal manufacturing and petrochemicals. It is also seeking foreign investors for information technology, higher education and tourism development.

Trends and Developments

- 2.5 mmt of petrochemicals are expected to be added to Oman's total petrochemicals capacity during 2010-15.
- Sohar is the petrochemicals hub of Oman, with majority of the pipeline projects focussed in the region. This is primarily due to the availability of gas feedstock in the region, attracting various downstream industries to the zone.
- In 2008, Oman's oil production increased 4.3%, after eight years of decline.
- The downstream sector and petrochemicals production capacity in Oman is small compared with its peer Gulf countries. The country is focusing on industrial diversification to boost revenue from non-oil sources.
- Oman Gas Co. (OGC) charges \$0.80/m BTU for plant gas supplied to industries. The price of gas exported to UAE, or gas to be sourced from Qatar, is \$1.30/m BTU with annual escalation of 1.5%. This is significantly lower than gas prices in Europe and the US.

Company Profiles

Saudi Basic Industries Corporation (SABIC)

Publicly Listed

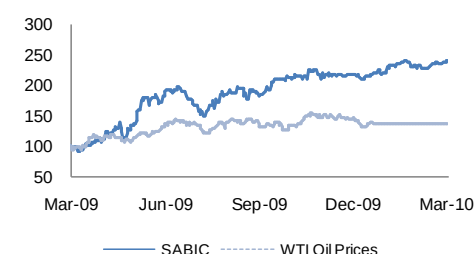
Company Brief

Saudi Basic Industries Corporation (SABIC) is one of the five largest petrochemicals manufacturers globally. It manufactures chemicals, fertilizers, plastics and metals. The company operates in 100 countries worldwide.

Stock Data*

	SABIC AB Equity
Bloomberg Ticker	
Price (SAR)	90.0
52 Week High/Low	91.75/33.6
Enterprise value (SAR mn)	340,819.0
Market cap (SAR mn)	270,000.0
6 month average daily value traded (SAR mn)	293.6

Stock Chart*



Source: Company website and Bloomberg * as on 4 March, 2010

Performance Summary

(USD million)	2008	2009	%/pp*
Revenue	40,203.8	27,488.2	-31.6%
COGS	28,003.9	19,903.6	-28.9%
Operating income	9,754.7	5,275.3	-45.9%
Operating margin (%)	24.3	19.2	-5.1 pp
Net income	5,872.9	2,416.3	-58.9%
Net income margin (%)	14.6	8.8	-5.8 pp
ROE (%)	22.7	9.7	-13.0 pp
ROA (%)	8.3	3.2	-5.2 pp

Business description

- SABIC is the largest and most-profitable non-oil company in the Gulf.
- The company invests significantly in R&D for constant innovation.
- It employs a strategy to create advanced manufacturing plants and eventually enter into JVs with industry leaders across the globe.
- SABIC has seven business units: Basic Chemicals, Polymers, Performance Chemicals, Fertilizers, Metals, Innovative Plastics and Manufacturing. Six of these make four different products: Chemicals, plastics, fertilizers and metals.
- Basic Chemicals, the largest business unit, accounts for more than 40% of the company's total production.

Source: Company website and Bloomberg
*pp - percentage point

Recent developments and future plans

Recent developments

- In January 2010, SABIC announced the signing of financing agreements by its affiliate SINOPEC SABIC Tianjin Petrochemicals Co. Ltd, worth US \$2.68 billion.
- New production capacities coming on stream in SHARQ and YANSAB would boost SABIC's performance in the coming quarters.
- SABIC and Mitsui Rayon have signed an LOI to form a 50-50 JV in Saudi Arabia.
 - The JV will utilize the ethylene-based Alpha process, commercialized by Lucite, to manufacture 250,000 TPA of methyl methacrylate monomer (MMA). The JV will also produce 30,000 TPA of polymethyl methacrylate (PMMA).
- SABIC entered into a JV (50:50) with Sinopec, China, to establish a major ethylene derivatives complex in Tianjin, China. The plant capacity is expected to be a million metric tons of products per year.
- In May 2009, SABIC and SIPCHEM signed MoU for establishing new projects in Jubail and utilizing their existing infrastructure and manufacturing capacity. The projects are expected to be operational by mid-2013.
 - The projects include seven plants with an estimated investment of \$3.2 billion (SAR12 billion).
 - SABIC will construct 250,000 TPA of methyl metha acrylate (MMA), 30,000 TPA of poly methyl metha acrylate (PMMA), 200,000 TPA of acrylonitrile, 50,000 TPA of polyacrylonitrile, 50,000 TPA of polyacetyl

resins, 3,000 TPA of carbon fiber, and 40,000 TPA of sodium cyanide plants.

- SIPCHEM will build 125,000 TPA of poly vinyl acetate and 200,000 TPA of ethylene vinyl acetate plants, with estimated cost of SAR3 billion (\$810 million).

Future plans

- SABIC plans to set up a SAR375 million Plastic Applications Development Centre at Riyadh Techno Valley, Saudi Arabia. The centre is expected to be operational by 2012 and would produce diversified plastic products in Saudi Arabia.
 - Its thermoplastic resins production is estimated to reach 12.5 mmt by end-2013. Moreover, the company plans to produce elastomers for use in tyre and automotive interior and exterior manufacturing in next few years.
 - SABIC plans to be the world leader in chemicals by 2020. To realize this goal, it plans to restructure and rationalize its diverse strengths.
-

Saudi International Petrochemicals Company (SIPCHEM)

Publicly Listed

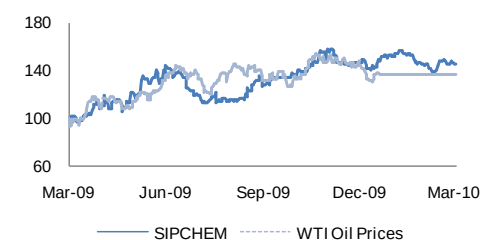
Company Brief

SIPCHEM, established in 1999, is a Saudi Joint Stock Company. It develops and invests in petrochemicals and chemical industries to produce chemicals, later used for manufacturing other products.

Stock Data*

Bloomberg Ticker	SIPCHEM AB Equity
Price	22.8
52 Week High/Low	24.8/14.7
Enterprise value (SAR mn)	12,208.1
Market cap (SAR mn)	7,600.0
6 month average daily value traded (SAR mn)	19.8

Stock Chart*



Source: Company website and Bloomberg * as on 4 March, 2010

Performance Summary

(USD million)	2008	2009	% change
Revenue	455.5	221.4	-51.4%
COGS	185.0	158.5	-14.3%
Operating income	231.1	44.9	-80.6%
Operating margin (%)	50.7	20.3	-30.5 pp
Net income	143.1	37.6	-73.7%
Net income margin (%)	31.4	17.0	-14.6 pp
ROE (%)	13.0	2.8	-10.2 pp
ROA (%)	5.8	1.2	-4.4 pp

Source: Company website and Bloomberg
pp - percentage point

Business description

- SIPCHEM employs a strategy to integrate present and future petrochemicals and chemical products to form final value-added products, developing the Kingdom's petrochemicals production capacity.
- SIPCHEM, through its associates – International Methanol Company (IMC) and International Diol Company - produces more than one million MTPA of methanol and 75,000 MTPA of butanediol.
- As part of Phase-III, SIPCHEM is establishing an integrated olefins derivatives complex. The complex, consisting of nine plants with production capacity of 800,000 MTPA, is expected to be operational in 2013.

Recent developments and future plans

Recent developments

- In December 2009, SIPCHEM announced the commencement of Vinyl Acetate Monomer (VAM) Plant, with annual production capacity of 330,000 metric tons of Vinyl Acetate Monomer (VAM).
- In November 2009, SIPCHEM announced the start-up of its Acetic Acid Plant, with annual production capacity of 460,000 metric tons of Acetic Acid and 50,000 metric tons of Acetic Anhydride.
- In October 2009, SIPCHEM, King Fahd University of Petroleum and Minerals (KFUPM) and the Ministry of Petroleum & Minerals signed a MoU to establish a research centre for the development of Polymers technologies and applications. The project cost is estimated to be SAR80 million.
 - The centre plans to develop polymer films that would be used in manufacturing solar cells and for the development of industrial complexes.
- In August 2009, carbon monoxide plant (345 thousand MTPA) of SIPCHEM Acetyls Complex became operational. It is the largest CO plant in the world.
 - The complex construction was started in 2006. Others plants in the complex include Acetic Acid plant (460

thousand MTPA) and Vinyl Acetate Monomer plant (330 thousand MTPA).

- In July 2009, SIPCHEM signed a 75:25 JV with South Korea-based Hanwha Chemical Corporation to establish a new petrochemicals company in Al-Jubail Industrial City. The new company is expected to produce 200,000 MTPA of Ethylene Vinyl Acetate (EVA) and 125,000 MTPA of polyvinyl products.
 - The project, with an estimated cost of SAR4 billion (USD 1.1 billion) is expected to start by 2013.
- In May 2009, SIPCHEM signed a Technology License Agreement with ExxonMobil Chemical Technology Licensing to use ExxonMobil's tubular high pressure low density polyethylene process (HPPE) technology for SIPCHEM's 200,000 MTPA new ethylene vinyl acetate (EVA) plant. The EVA plant is proposed to be built in Jubail Industrial City, as part of the SIPCHEM Third Phase Projects.
- In May 2009, SABIC and SIPCHEM signed MoU for establishing new projects in Jubail and utilising their existing infrastructure and manufacturing capacity. The project is expected to be operational by mid-2013.
 - The projects include seven plants with an estimated investment of \$3.2 billion (SAR12 billion).
 - SABIC will construct 250,000 TPA of methyl methacrylate (MMA), 30,000 TPA of poly methyl methacrylate (PMMA), 200,000 TPA of acrylonitrile, 50,000 TPA of polyacrylonitrile, 50,000 TPA of polyacetyl resins, 3,000 TPA of carbon fiber and 40,000 TPA of sodium cyanide plants.
 - Sipchem will build 125,000 TPA of poly vinyl acetate and 200,000 TPA of ethylene vinyl acetate plants, with estimated cost of SAR3 billion (\$810 million).

Future plans

- SIPCHEM's \$7 billion Jubail Polyolefins Complex is proposed to be completed by 2012. The complex with 16 plants would include an olefins cracker to produce ethylene and propylene and other downstream operations producing 800,000 t/y of a variety of petrochemicals, including high density polyethylene (HDPE), low density polyethylene (LDPE), ammonia, acrylonitrile (ACN), methyl methacrylate (MMA), and ethylene vinyl acetate (EVA).

Tasnee

Publicly Listed

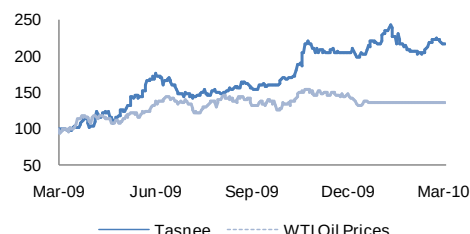
Company Brief

Tasnee is involved in the establishment, management, operation and acquisition of petrochemicals and chemical projects and markets them as well.

Stock Data*

Bloomberg Ticker	NIC AB Equity
Price	28.2
52 Week High/Low	31.9/12.3
Enterprise value (SAR mn)	30,499.9
Market cap (SAR mn)	12,991.3
6 month average daily value traded (SAR mn)	35.5

Stock Chart*



Source: Company website and Bloomberg * as on 4 March, 2010

Performance Summary

(USD million)	2008	2009	% change
Revenue	2,675.8	2,899.8	8.4%
COGS	2,128.1	2,239.0	5.2%
Operating income	259.8	393.2	51.4%
Operating margin (%)	9.7	13.6	3.9 pp
Net income	160.2	140.2	-12.5%
Net income margin (%)	6.0	4.8	-1.2 pp
ROE (%)	9.7	7.5	-2.2 pp
ROA (%)	2.2	1.7	-0.5 pp

Business description

- Tasnee's business segments include:
 - **Petrochemicals** including Saudi Ethylene and Polyethylene Company (SEPC), Saudi Polyolefins Company (SPC), Saudi Mono-acrylic Company, and National Petrochemicals Marketing Company.
 - **Chemicals** including National Titanium Dioxide Company (CRISTAL Global).
 - **Metals** including National Metal Manufacturing & Casting Co. (MAADANIYAH) and National Lead Smelting Co. (RASASS).
 - **Diversified** including Rowad National Plastic Company (ROWAD), National Batteries Company (BATTARIAT), and National Packing Products Company (WATANPAC)
 - **Services** including National Petrochemicals Marketing Company, National Technical Inspection and Testing Co (FAHSS), National Operation and Industrial Services Co. (KHADAMAT), and National Environmental Preservation Co. (BEE'AH).

Source: Company website and Bloomberg
pp - percentage point

Recent developments and future plans

Recent developments

- The company expanded its polypropylene plant capacity from 450,000 TPA to 720,000 TPA in 2008.
- Tasnee also launched its first project in Saudi Arabia with Dow Chemical to produce acrylic acid.
- The company is set to build a naphtha cracker, downstream to the proposed Jijan refinery in Saudi Arabia. The unit is proposed to be on stream by 2013-14 and the product slate includes olefins and polyolefins.
- SPEC, the JV of Tasnee, Sahara Petro and LyondellBasel, is currently running at 80-100% utilization. It has started selling products in the domestic market.

Alujain Corporation

Publicly Listed

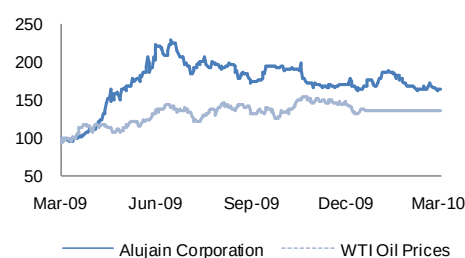
Company Brief

Alujain Corporation, established in 1991, identifies, supports, and invests in major industrial projects in the petrochemical, mining, metals and energy sectors in Saudi Arabia.

Stock Data*

Bloomberg Ticker	ALCO AB Equity
Price	16.7
52 Week High/Low	23.5/9.3
Enterprise value (SAR mn)	3,523.1
Market cap (SAR mn)	1,152.2
6 month average daily value traded (SAR mn)	10.2

Stock Chart*



Source: Company website and Bloomberg * as on 4 March, 2010

Performance Summary

(USD million)	2008	2009	% change
Revenue	-1.4	3.6	-363.2%
COGS	NA	NA	NA
Operating income	-18.9	-14.5	-23.5%
Operating margin (%)	1,390.1	-403.9	-1794.0 pp
Net income	-17.4	-7.3	-58.1%
Net income margin (%)	1,273.6	-202.8	-1476.4 pp
ROE (%)	NA	NA	NA
ROA (%)	-2.2	-0.8	1.4 pp

Business description

- Alujain has a subsidiary, NATPET, a closed Saudi joint stock company that produces 400,000 TPY of Propylene and Polypropylene.
- Mobeed, which is involved in the manufacturing, packing, and sales of agrochemical, public and animal health pesticides and aerosol products, is the company's affiliate.
- Other investments include:
 - Arabian Industrial Fibers Co. (Ibn Rushd), which produces aromatics, PTA and Polyester fibers. Alujain has a minor stake in the firm.
 - Yanbu National Petrochemicals Co. (Yansab), an olefins steam cracker producing ethylene, Propylene, polyolefins and monoethylene glycol. Alujain has a minor stake in the firm.
- Projects undertaken by Alujain include:
 - \$750 million Propane Dehydrogenation Plant to produce Propylene, integrated with 400,000 TPA Polypropylene (PP) Plant. It is promoted by Alujain's subsidiary, NATPET.
 - SuperAlkylate Project with 900,000 TPA Iso-octane. Complex to produce a high octane. The Project is promoted by Alujain and Noble Americas.

Source: Company website and Bloomberg
pp - percentage point

Recent developments and future plans

Recent developments

- Alujain increased its shareholding in Mobeed from 25% to 93.08% by buying out the majority of the partners through self-financing.
- NATPET, a subsidiary of Alujain, has started operating the Propylene and Polypropylene Complex in Yanbu



Industrial City. The complex is capable of running at 73% capacity, producing 22,500 tonnes of Polypropylene.

- The company is planning to increase its capital by SAR327 million to SAR500 million. The extra capital will be used to fund its expansion programme that will comprise investment in three projects in the petrochemicals industry within Saudi Arabia: Alfasel, Teldene and SuperAlkylate.

NAMA Chemicals

Publicly Listed

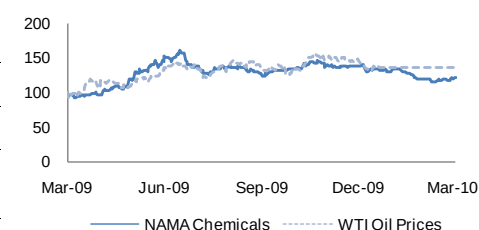
Company Brief

Nama Chemicals, a Saudi multicultural joint stock company, establishes and develops petrochemicals industrial projects in association with other companies.

Stock Data*

	NAMA AB Equity
Bloomberg Ticker	
Price	10.2
52 Week High/Low	13.5/7.7
Enterprise value (SAR mn)	2,046.6
Market cap (SAR mn)	1,304.5
6 month average daily value traded (SAR mn)	16.3

Stock Chart*



Source: Company website and Bloomberg * as on 4 March, 2010

Performance Summary

(USD million)	2008	2009	% change
Revenue	165.8	106.0	-36.0%
COGS	147.4	102.9	-30.2%
Operating income	3.5	-9.2	-359.8%
Operating margin (%)	2.1	-8.7	-10.8 pp
Net income	-18.0	-6.5	-64.0%
Net income margin (%)	-10.9	-6.1	4.7 pp
ROE (%)	1.8	-1.5	-3.4 pp
ROA (%)	-3.1	-1.0	2.2 pp

Source: Company website and Bloomberg
pp - percentage point

Business description

- NAMA Chemicals has investments in Arabian Industrial Fibers Company (Ibn-Rushd), Yanbu National Petrochemicals Company (Yansab), and National Chemical Industries Corporation (NACIC) Bahrain.
- Its affiliates include Jubail Chemical Industries Company (JANA), Arabian Alkali Company, NAMA Industrial Investment, and NAMA Europe.

Recent developments and future plans

Recent developments

- In January 2009, Saudi Industrial Development Fund approved a loan of SAR210 million to NAMA Chemical's affiliated company, Jubail Chemical Industries, to finance the expansion of production capacity of the Jana Epoxy plant from 60,000 TPA to 120,000 TPA.

Advanced Petrochemicals

Publicly Listed

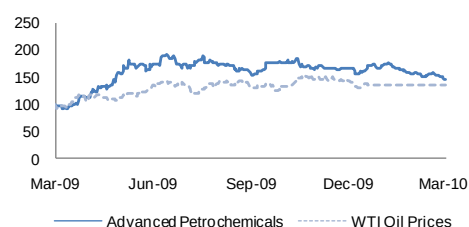
Company Brief

Advanced Petrochemicals (APPC), established in 2005, is an integrated propane dehydrogenation and Polypropylene complex in Jubail Industrial City. It produces 450,000 TPA of Polypropylene. The products are marketed within the region and worldwide through approved partners.

Stock Data*

	APPC AB Equity
Bloomberg Ticker	
Price	22.0
52 Week High/Low	29.1/13.7
Enterprise value (SAR mn)	4,685.4
Market cap (SAR mn)	3,103.2
6 month average daily value traded (SAR mn)	23.1

Stock Chart*



Source: Company website and Bloomberg * as on 4 March, 2010

Performance Summary

(USD million)	2008	2009	% change
Revenue	389.0	391.1	0.5%
COGS	314.5	333.0	5.9%
Operating income	67.7	46.1	-31.9%
Operating margin (%)	17.4	11.8	-5.6 pp
Net income	56.0	33.9	-39.5%
Net income margin (%)	14.4	8.7	-5.7 pp
ROE (%)	13.9	7.7	-6.1 pp
ROA (%)	6.9	3.7	-3.3 pp

Source: Company website and Bloomberg
pp - percentage point

Business description

- The company uses technologies provided by ABB Lumus and Novolen Technology Holdings (NTH).
 - CATOFIN-ABB Lumus technology is used to convert Propane gas, received from Saudi Aramco, into Propylene with a capacity of 455KTA.
 - Novolen Technology produces 450KTA of Polypropylene of both Homopolymer and Random copolymer grades.

Qatar Petrochemicals Company (QAPCO)

Private

Company Brief

Qatar Petrochemicals Company (QAPCO), established in 1974, utilizes the associated and non-associated Ethane gas from QPC's petroleum production. The company's main products are ethylene and LDPE.

Source: Company website

Performance Summary

(USD million)	2007	2008	% change
Revenue	727.0	1,006.0	38.0%
COGS	165.0	236.0	42.0%
Operating income	561.0	771.0	37.0%
Operating margin (%)	77.0%	77.0%	0 pp
Net income	559.0	747.0	34.0%
Net income margin (%)	77.0%	74.0%	-3.0 pp
ROE (%)	50.0%	53.0%	3.0 pp
ROA (%)	32.0%	33.0%	1.0 pp

Source: Company website and Annual Report 2008
pp - percentage point

Business description

- The manufacturing unit has an ethylene plant of 720,000 MTPA, two LDPE plants of 360,000 MTPA and a Sulphur plant of 70,000 MTPA.
- The firm manufactures fertilizers, steel, refined petroleum products and natural gas liquids.
- To expand its downstream industrial capacity, QAPCO is involved in various new projects in Qatar, such as Qatar Vinyl Company (QVC), Qatar Plastic Products Company (QPPC), Qatofin and Ras Laffan Olefins Company Ltd.

Recent developments and future plans

Recent developments

- In June 2009, the company signed an EPC contract with Uhde for the New LDPE-3 project to produce 300,000 TPA of LDPE. With investments of QAR2 billion, the project is scheduled to be completed in 2011.
 - The company has entered into a QAR730 million deal with Qatar Islamic Bank for a Shariah-compliant financing facility to be utilized for the project and related operations.
- In March 2009, QAPCO signed a USD 23.4 million contract to provide ethylene to Japan's Sumitomo Corporation until end-2009.
- Qatar Petroleum and Honam Petrochemicals delayed the launch of their USD 2.6 billion 70:30 JV petrochemicals project in Mesaieed. The project, originally scheduled to start in 2011, has been delayed until 2012. Qapco would supply Ethane and naphtha for a 900,000 t/y cracker and total downstream production is expected to include 700,000 t/y of PP and 200,000 t/y of PS.

Future plans

- QAPCO plans to be the world's local petrochemicals producer and supplier and therefore, has a strategic marketing plan from 2007 to 2011.

Boubyan Petrochemicals

Publicly Listed

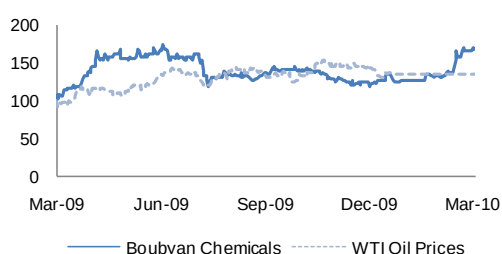
Company Brief

Boubyan Petrochemicals is involved in direct investments across petrochemical, industrial and utility segments.

Stock Data*

Bloomberg Ticker	BPCC KK Equity
Price	540.0
52 Week High/Low	560.0/335.0
Enterprise value (KD mn)	375.0
Market cap (KD mn)	262.0
6 month average daily value traded (KD mn)	0.9

Stock Chart*



Source: Company website and Bloomberg * as on 4 March, 2010

Performance Summary

(USD million)	2008	2009	% change
Revenue	274.7	111.0	-59.6%
COGS	NA	NA	NA
Operating income	179.8	65.0	-63.9%
Operating margin (%)	65.5	58.5	-7.0 pp
Net income	189.4	73.9	-61.0%
Net income margin (%)	69.0	66.6	-2.4 pp
ROE (%)	NA	NA	NA
ROA (%)	14.5	5.1	-9.6 pp

Source: Company website and Bloomberg
pp – percentage point

Business description

- The company operates through manufacturing and trading of petrochemicals and their by-products.
- Its manufacturing and trading segment includes subsidiaries such as Boubyan Plastics Industries and National Waste Management Company.

Recent developments and future plans

Recent developments

- In August 2009, Fluor Corporation completed a multi-billion dollar project for a JV with Dow Chemical and Petrochemicals Industries Co. in Kuwait. The JV also included Boubyan Petrochemicals and Qurain Petrochemicals Industries.

Appendix

Appendix I: Gulf Projects Pipeline

Company	Project	Plant	Estimated Project Capacity (t/y)	Expected Completion Year	Estimated Cost* (\$ mn)
Bahrain					
GPIC	Petrochemicals Complex	Ammonia & Urea Plant	- Ammonia – 766,500 - Urea – 1,314,000	2012	200
		Methanol Plant	Methanol – 1,750,000	2010	1,000
Kuwait					
Equate and Kuwait Paraxylene Petrochemicals Company (KPPC)	Paraxylene and Benzene Plant		- Benzene – 370,000 - Paraxylene – 822,000	2009	1,240
PIC	Olefins III		Ethylene – 1,400,000	2015	7,000 - 8,000
Equate and TKOK	Equate - Olefins II petrochemicals complex	Olefins II - Polyethylene Expansion	Polyethylene – 225,000	2009	150
The Kuwait Styrene Company (TKSC) and Equate		TKSC Olefins II - Styrene Monomer Plant	Ethyl benzene and Styrene monomer – 450,000	2009	250
United Industries Company (UIC)	PTA/ PET Complex		- PTA – 400,000 - PET – 240,000	2012	800
Oman					
OPIC	Sohar Olefins Complex	Ethane Cracker Package	Ethylene – 1,000,000	2009	2,500
		PE Package	Two polyethylene units	2009	
Octal Petrochemicals	Integrated PET Resin and APET Plant Expansion	Phase 1	PET and APET – 330,000	2009	350
Octal Petrochemicals		Phase II expansion	PET and APET – 500,000	2010	210
ORC	Duqm Refinery & Petrochemicals Complex - PP		Polypropylene – 1,500,000	2009	2,000
Salalah Methanol Company	Methanol Plant		Methanol – 1,095,000	2010	900
Sohar International Urea and Chemical Industries	Urea and Ammonia Project		- Ammonia – 730,000 - Granulated urea – 1,277,500	2009	638
Aromatics Oman LLC	Sohar Aromatics Complex		- Benzene – 210,000 - Paraxylene – 814,000	2009	1,600
Dow Chemical, OOC and Oman government	Sohar Petrochemicals Complex		Polyethylene – 800,000-1,000,000	2012	NA
Qatar					
ExxonMobil	Ras Laffan Petrochemicals Complex		- Ethane/ propane cracker – 1,300,000 - LLDPE – 570,000 - LDPE – 420,000 - Ethylene glycol – 700,000	2012	3,000

Company	Project	Plant	Estimated Project Capacity (t/y)	Expected Completion Year	Estimated Cost* (\$ mn)
Qatar Holding Intermediate Industries Co. (Waseeta) and Honam Petrochemical	Qatar Petrochemicals Complex		- Ethylene – 900,000 - Propylene – 180,000 - Polypropylene – 700,000 - Styrene – 380,000 - Polystyrene – 220,000 - Other aromatics – 250,000	2013	2,600
QAFAC – II, QP, and Chinese Petroleum Corp (CPC)	Mesaieed Ammonia & Methanol Expansion		- Methanol – 2,463,750 - Ammonia – 365,000	2010	800
Qatar Fertilizer Company (QAFCO)	Qafco 5		- Urea – 350,000 - Ammonia – 440,000	2011	3,200
	Qafco 6		Urea – 1,405,250	2012	610
QAPCO and Basel is the technology provider	LLDPE 3		- LDPE – 700,000 - LLDPE – 450,000	2012	550
Qatofin - QAPCO (63%), Total (36%), QP (1%)	Polyethylene Plant		LLDPE – 450,000	2009	1,200
Q-Chem II - QP and Chevron Phillips	HDPE & Alpha Olefins Plant		- HDPE – 350,000 - Alpha olefins – 345,000	2009	850
QMC/ QAFCO	Melamine Plant		Melamine – 20,000	2009	250
Ras Laffan Olefins Company - Qatar Chem II (53.31 %) and Qatofin (45.69 %)	Ras Laffan Olefins Cracker		Ethylene – 1,300,000	2009	800
Tasnee/ National Qatar Industries - Qatar	Polyacetal Resins Plant		Polyacetal resins – 30,000	2010	130
Shell Group/ QP	Integrated olefins complex		Ethane cracker – 1,600,000	2012	3,000
QP plus foreign partner	New aromatics complex		NA	NA	NA
Saudi Arabia					
Al Rajhi	Jubail Petrochemicals Complex		NA	2011	4,000
Al Razi	Jubail Methanol Plant 5		- Acetic acid – 460,000 - Vinyl acetate monomer (VAM) – 300,000 - Acetic anhydride – 50,000 - CO₂ – 265,000 mmtpa	2009	1,000
Al Waha Petrochemicals Company - Sahara Petrochemicals and Basell Holdings	Polypropylene and PDH Plant		- Polypropylene – 450,000 - Propane dehydrogenation – 460,000	2009	613
Al Zamil / Chemtura	Jubail Metal Alkyls Plant		NA	2011	150
National Propylene Company - Alfasel	Propylene Plant		Propylene – 400,000	2009	285
Alujain Corporation	Jubail Iso-Octane Plant		NA		550

Company	Project	Plant	Estimated Project Capacity (t/y)	Expected Completion Year	Estimated Cost* (\$ mn)
Arabian Amines Company	Jubail Ethylene Amines Complex		▪ Ethyl amines – 27,215	2009	289
Arabian Chlor Vinyl Company	Jubail Alkali Complex		▪ Caustic chlorine – 250,000 ▪ Ethylene dichloride (EDC) – 300,000	2011	400
Saudi Aramco /Dow Chemical Company	Ras Tanura Integrated Refinery & Petrochemicals Complex Phase 2		▪ Ethane/ naphtha cracker – 1,200,000 ▪ Propylene – 400,000 ▪ Benzene – 400,000 ▪ Paraxylene and other polyolefins – 460,000	2015	20,000
Chemanol (Methanol Chemicals Company Ltd.)	Dimethylformamide (DMF) Facility		▪ Methyl amines (Di-methyl amines and tri-methyl amines) – 50,000 ▪ Dimethylformamide (DMF) – 60,000	2009	60
Chemanol	Methanol Plant		▪ Methanol – 231,000	2009	150
Chemanol	Pentaerythritol Production Facility		NA	2009	NA
Dammam 7	Acrylic Acid and Acrylates Complex		▪ Butanol – 100,000 ▪ Acrylic acid and acrylates – 200,000	2010	400
Arabian Industrial Fibers Company	Ibn Rushd	Propane Dehydrogenation PDH	▪ Propane dehydrogenation – 650,000	2010	NA
		Yanbu PET Conversion and Debottlenecking	▪ PET – 300,000	2009	150
JANA (Jubail Chemical Industries Company)	Epoxy Expansion		▪ Epoxy – 120,000	2011	NA
			▪ Ethylene – 1,350,000	2011	10,000
		Polypropylene Plant	▪ Polypropylene – 350,000	2011	341
		Amines Plant	▪ Amines – 270,000	2011	400
		HDPE Plant	▪ HDPE – 400,000	2011	NA
		EO/EG Plant	▪ Ethylene Glycol (EG) – 490,000 ▪ Ethylene Oxide (EO) – 530,000	2011	500
Saudi Kayan	Jubail Petrochemicals Complex	LDPE Plant	▪ LDPE – 300,000	2011	300
		Phenolics Complex	▪ Iso-propyl-benzene – 290,000 ▪ Phenol – 220,000 ▪ Bisphenol A – 240,000 ▪ Acetone – 71,000	2011	1,200
		Polycarbonate Plant	▪ Polycarbonate – 260,000	2011	1,300
		Offsite and Utilities	NA	2011	600

Company	Project	Plant	Estimated Project Capacity (t/y)	Expected Completion Year	Estimated Cost* (\$ mn)
JV of Kemya and Yanpet	Kemya/Yanpet - Synthetic Rubber Plants		Carbon black – 400,000	2014	NA
OSOS Petrochemicals Company	Yanbu Petrochemicals Complex		- Polybutylene terephthalate (PBT) – 60,000 - Butanediol (BDO) – 50,000 - Tetrahydrofuran (THF) – 3,500 - Malic anhydride acid (MAN) – 85,000	2011	1,000
Arabian Petrochemicals Company	Petrokemya - Jubail ABS plant	Jubail ethylene crackers	Acrylonitrile butadiene styrene – 200,000	2011	300
Saudi Aramco/ Sumitomo Chemical Company	PetroRabigh Refining & Petrochemicals Complex	Complex Expansion	- Ethane cracker – 30,000,000 cu.ft/d. - Napththa cracker – 3,000,000	2014	2,000
Saudi Aramco/ Sumitomo Chemical Company	PETRORabigh - Rabigh Refining & Petrochemicals Complex (Phase 1)			2009	10,100
		Ethane Cracker and High Olefin Fluid Catalytic Cracker	- Ethylene – 1,300,000 - Propylene – 900,000 - Gasoline – 59,000 bpd	2009	850
		MEG and PO Plants	- MEG – 600,000 - PO – 200,000	2009	852
		Polymers Plants Package	- Polypropylene – 700,000 - Easy Processing Polyethylene unit (EPPE) – 250,000 - LLDPE – 350,000 - HDPE – 300,000 - Butene 1 – 50,000	2009	1,000
				2010	4,500
SABIC - 30% and Saudi Arabian Mining Company - 70%	Phosphate and Fertilizer Complex	Ammonia Plant	Ammonia – 1,204,500	2010	950
		Sulphuric Acid Plant	Sulphuric acid – 450,000	2009	240
		Phosphoric Acid Plant	Phosphates – 4,380 t/d	2010	330
		DAP Plant	DAP fertilizer – 3,000,000	2010	240
SABIC and SIPCHEM	SABIC and SIPCHEM MOU for new projects in Jubail	SABIC 7 plants	- Methyl metha acrylate (MMA) – 250,000 - Poly methyl metha acrylate (PMMA) – 30,000 - Acrylonitrile – 200,000 - Polyacrylonitrile – 50,000 - Polyacetyl resins – 50,000 - Carbon fiber – 3,000 - Sodium cyanide – 40,000	2013	3,200

Company	Project	Plant	Estimated Project Capacity (t/y)	Expected Completion Year	Estimated Cost* (\$ mn)
		SIPCHEM 2 plants	▪ Poly vinyl acetate – 125,000 ▪ Ethylene vinyl acetate – 200,000	2013	810
SABIC and Mitsubishi Rayon Co. (MRC)	Acrylates Plant		▪ Methyl metha acrylate (MMA) – 250,000 ▪ Poly methyl metha acrylate (PMMA) – 30,000	2013	1,000
Sadaf	Styrene Plant		NA	NA	600
Safco 5	Urea and Ammonia Plant		▪ Ammonia – 1,200,000 ▪ Urea – 1,500,000	2011	500
Safra 2	Aromatics Complex in Yanbu		▪ Naphtha processing – 1,500,000	2009	500
Saudi Aramco Total Refining and Petrochemicals Co. (SATORP)	Jubail Refinery and Petrochemicals Complex	Aromatics Package	▪ Paraxylene – 700,000 ▪ Benzene – 140,000	2013	700
Saudi Acrylic Company - TSOC and Rohm and Haas	Jubail Acrylic Complex		▪ Acrylic acid – 250,000 ▪ Mixed acrylates – 125,000 ▪ Super absorbent polymer (SAP) – 80,000	2012	700
Saudi Polymers Co. (SPC) - 50/50 JV between Chevron Phillips and National Petrochemicals Co.	Jubail Petrochemicals Complex		▪ Ethane cracker – 1,200,000 ▪ 1-hexene – 100,000 ▪ Polyethylene – 1,100,000 ▪ Polypropylene – 400,000 ▪ Polystyrene – 200,000	2011	5,000
Saudi Ethylene and Polyethylene Company (SEPC) - Tasnee and Sahara Olefins Company and Basell Polyolefins	Jubail Olefins Complex	Ethane/ Propane Cracker Package	▪ Ethylene – 1,000,000 ▪ Propylene – 285,000	2009	2,400
		HDPE & LDPE Package	▪ HDPE – 400,000 ▪ LDPE – 400,000		630
					3,640
Sharq	Petrochemicals Expansion	Ethylene Glycol (EG) Package	▪ Ethylene glycol – 700,000	2009	400
		Ethane/Propane Cracker Package	▪ Ethane/propane cracker – 1,300,000	2009	900
		Polyethylene (PE) Package	▪ LLDPE – 400,000 ▪ HDPE – 400,000	2009	NA
JV of House of Invention, Midroc and Sara Holding Company	Midroc/ House of Invention/ Sara Holding - Isocyanates Complex		▪ Toluene di-isocyanate (TDI) – 100,000 ▪ Methylene diphenyl di-isocyanate (MDI) – 100,000	2012	800

Company	Project	Plant	Estimated Project Capacity (t/y)	Expected Completion Year	Estimated Cost* (\$ mn)
Sino Saudi Petrochemicals Company - Midroc 18.33 %; Sara Development Company 18.33 %; House of Invention 18.33 %; Chinese Institution 45%	Jubail Olefins Complex		- Ethylene – 1,300,000 - Polyethylene – 400,000 - Propylene – 400,000 - Ethylene glycol – 700,000 - Alpha olefins – 200,000 - Benzene, Toluene and Xylene (BTX) 150,000	2010	5,000
SIPCHEM	Jubail Ammonia Plant		Ammonia – 657,000	2011	NA
				2009	1,830
SIPCHEM	Phase 2 - Jubail Acetyls Complex	Acetic Acid and VAM Package	- Acetic acid – 430,000 - Acetic anhydride – 50,000 - Vinyl acetic monomer (VAM) – 330,000	2009	1,000
		Carbon Monoxide Unit	Carbon monoxide (CO) – 345,000	2009	200
SIPCHEM	Jubail Polyolefins Complex		- Ethylene and propylene – 1,300,000 - Petrochemicals – 800,000	2012	7,000
SODA - Arabian Alkali Company	Plant Expansion		NA	2009	NA
Saudi Polyolefins Company	Polypropylene (PP) Expansion		Polypropylene – 350,000	2009	560
Teldene	Polypropylene Plant		Polypropylene – 400,000	2009	215
Saudi Aramco	Yanbu Petrochemicals Complex & Refinery Upgrade		NA	2014	4000
			4 million t/y of petrochemicals products (details below)	2009	5,000
		Benzene Toluene Xylene (BTX) Plant	- BTX – 250,000 - Butene-1 – 60,000	2009	150
		Ethane/Propane Cracker	- Ethylene – 1,300,000 - Propylene – 400,000	2009	1,000
		Ethylene Glycol (EG) Plant	Ethylene glycol – 700,000	2009	400
Yansab	Yanbu Olefins Complex	High Density Polyethylene (HDPE) Plant	HDPE – 400,000	2009	400
		LLDPE and PP Plant	- LLDPE – 400,000 - Polypropylene – 400,000	2009	400

Company	Project	Plant	Estimated Project Capacity (t/y)	Expected Completion Year	Estimated Cost* (\$ mn)
UAE					
Abu Dhabi Polymers Company	Petrochemicals Complex Expansion - Phase II		- Ethane cracker – 1,400,000 - Olefin Conversion Unit (OCU) – 752,000 - Polyethylene – 540,000 - Polypropylene – 400,000	2010	5,500
Abu Dhabi Polymers Company	Petrochemicals Complex Expansion - Phase III		Polyolefins – 2,500,000	2013	3,000
		Ethane Cracker Package	Ethylene – 1,500,000	2013	1,075
		Polyolefins Package	Polyethylene and Polypropylene – 800,000	2013	NA
Abu Dhabi National Oil Company (ADNOC) and Chinese Petroleum Corporation (CPC)	PTA/PET Complex in Abu Dhabi		NA	NA	1,000
Ruwais Fertilizer Industries - UAE	Fertil - Expansion of Urea Plant (debottlenecking)		- Urea – 912,500 - CO₂ – 400 MTPD	2009	117
Abu Dhabi National Chemicals Company and International Petroleum Investment Company	Chemaweyaat - Tacaamol Petrochemicals Complex		7 million t/y of petrochemicals products including: - LDPE – 350,000 - LLDPE – 550,000 - Ethylene oxide – 750,000 - Naphtha – 145,000 - Aromatics – 135,000 - Urea – 510,000 - Polypropylene – 450,000	2015	10,000
Agrolinz Melamine International (AMI) and ADNOC	Abu Dhabi Melamine Industry (ADMI), Ruwais		Melamine – 80,000	2009	200
Ras al-Khaimah and Iran's NPC	Ras al-Khaimah Petrochemicals Complex		Ethylene and derivatives – 1,000,000	2009	1,500
International Petroleum Investment Company (IPIC) and Borealis	Petrochemicals Complex - Abu Dhabi		NA	2013	NA
Iran					
Kharg Petrochemicals Company	Kharg MEG		- DEG – 50,000 - TEG – 3,500 - MEG – 500,000	2009	NA
Laleh Petrochemicals Company	Laleh Petrochemical		LDPE – 300,000	2009	NA
NPC/ Bakhtar Petrochemicals Co.	Andimeshk LDPE		LDPE – 300,000	2012	NA
NPC	Bandar Imam 3rd NF		NA	2010	NA

Company	Project	Plant	Estimated Project Capacity (t/y)	Expected Completion Year	Estimated Cost* (\$ mn)
NPC/ Petroleum Ministry Retirement and Welfare Fund	Chlor Alkali and PVC		- PVC – 340,000 - Liquid chlorine – 187,000 - Ethylene dichloride – 330,000 - Caustic soda – 634,000 - Sodium hypochlorite – 16,000	2009	NA
NPC/ PIDMCO	Charmahal Va Bakhtiari HDPE		NA	2012	NA
NPC/ PIDMCO	Dehdasht HDPE		NA	2012	NA
NPC/ Bushehr Petrochemicals Co.	Ethan-Ethylene-Methanol Extraction		- Ethylene – 675,000 - Propane/ Butane – 195,000 - Methanol – 1,970,000	2013	NA
NPC/ PIDMCO	Ethyl Benzene, Styrene Monomer & Polystyrene		- Toluene – 11,000 - Styrene – 600,000	2009	NA
NPC/ Tabriz Petrochemicals Co.	Expansion of Tabriz Petrochemicals Co.		Hi PS – 54,000	2009	NA
NPC/ Gachsaran Petrochemicals Co.	Gachsaran Olefin		- Ethylene – 1,000,000 - C3 – 90,000	2011	NA
NPC/ Mitsui Engineering & Shipbuilding/ PIDEK	Gachsaran MEG		- Ethylene oxide – 100,000 - DEG – 500,000 - TEG – 3,500 - MEG – 50,000	2009	NA
NPC/ Iran Petrochemicals Commercial Co.	Hamedan PVC		PVC – 43,000	2009	NA
NPC/ Tam Iran Khodro	Hamedan VAM / EVA		- Vinyl acetate – 140,000 - Ethyl vinyl acetate – 45,000	2012	NA
Jam Petrochemicals Co.	JAM Petrochemicals - LLDPE plant		LLDPE – 300,000	2009	NA
NPC/ JAM Petrochemicals Co.	Jam Expansion Project		- Alpha olefins – 168,000 - Butene 1 – 100,000 - Butadiene – 1 & 3 – 64,000 - Acrylonitrile butadiene styrene – 200,000 - Raffinate C4 – 130,000	2011	NA
NPC/ PIIC/ Indonesia's Pusri	Joint Venture Ammonia/Urea Project with Indonesia		- Ammonia – 75,000 - Urea – 1,075,000	2012	NA
NPC/ Sab Industries/ Arak Petrochemicals Co./ Bank Melli Investment Co.	Joint venture Ammonia / Urea with Oman		- Ammonia – 175,000 - Urea – 860,000	2012	NA
NPC/ PIIC/ Venezuela's Pequiven/ IPHL	Joint venture Methanol project with Venezuela		Methanol – 1,650,000	2012	NA
NPC/ Kazeroon Petrochemicals Co.	Kazeroon HDPE / LLDPE		- LLDPE/ HDPE – 300,000 - Butene 1 – 7,000	2012	NA

Company	Project	Plant	Estimated Project Capacity (t/y)	Expected Completion Year	Estimated Cost* (\$ mn)
NPC/ Bakhtar Petrochemicals Company	Kermanshah HDPE		HDPE – 300,000	2010	NA
NPC/ Bakhtar Petrochemicals Company	Kordestan LDPE		LDPE – 300,000	2011	NA
NPC/ Amir Kabir Petrochemicals Co.	LDPE Amir Kabir Petrochemicals Co.		LDPE – 300,000	2009	NA
NPC/ Bakhtar Petrochemicals Company	Lorestan HDPE / LLDPE		- LLDPE – 300,000 - Butene 1 – 7,000	2011	NA
NPC/ Bakhtar Petrochemicals Company	Mahabad HDPE / LLDPE		- LLDPE – 300,000 - Butene 1 – 7,000	2011	NA
NPC/ Manasani Petrochemicals	Mamasani HDPE		HDPE – 300,000	2012	NA
NPC/ Bakhtar Petrochemicals Company	Miandoab PVC		- PVC – 300,000 - Caustic soda – 195,000 - Sodium hypochlorite – 44,000	2012	NA
NPC/ PIDMCO	Shiraz Ammonia / Urea		- Ammonia – 75,000 - Urea – 1,075,000	2010	NA
NPC/ Ghadir Investment/ Iran Petrochemicals Commercial Co.	6th Ammonia / Urea		- Ammonia – 75,000 - Urea – 1,075,000	2009	NA
NPC/ Ghadir Investment/ Modaber Investment Co.	7th Methanol Projects(Marjan Petrochemicals Co)		Methanol – 1,650,000	2012	NA
NPC/ PIIC/ Oman Oil Company	7th Methanol Projects(Hormoz Petrochemicals Co)		- Ammonia – 75,000 - Urea – 1,075,000	2012	NA
NPC	10th Ammonia / urea (zanjan Petrochemicals co.)		- Ammonia – 75,000 - Urea – 1,075,000	2011	NA
NPC	11th Ammonia /urea (lordegan Petrochemicals co.)		- Ammonia – 75,000 - Urea – 1,075,000	2011	NA
NPC	12th Ammonia / Urea (Golestan Petrochemicals co.)		- Ethylene –600,000 - Propylene – 350,000	2013	NA
NPC/ Bakhtar Petrochemicals Company/ Gachsaran Petrochemical/ Lorestan Petrochemical/ Kermanshah/ Kordestan	11th Olefin		- Ethylene – 2,000,000 - Polyethylene (C3+) – 180,000	2010	NA
NPC/ Ghadir Investment/ Ilam Petrochemical	13th Olefin		- Ethylene – 153,000 - Propylene – 120,000 - HDPE – 300,000 - Fuel oil – 33,000	2010	NA
NPC/ Singapore Petrochemicals Investment Ettehad / Mehr Petrochemical	HDPE (Assaluyeh)		HDPE – 300,000	2009	NA

Source: Zawya, arabianbusiness.com, gulfbase, company websites and other sources. * Does not include additional cost due to project delay

Appendix II: Global Ethylene and Polyethylene Projects Pipeline

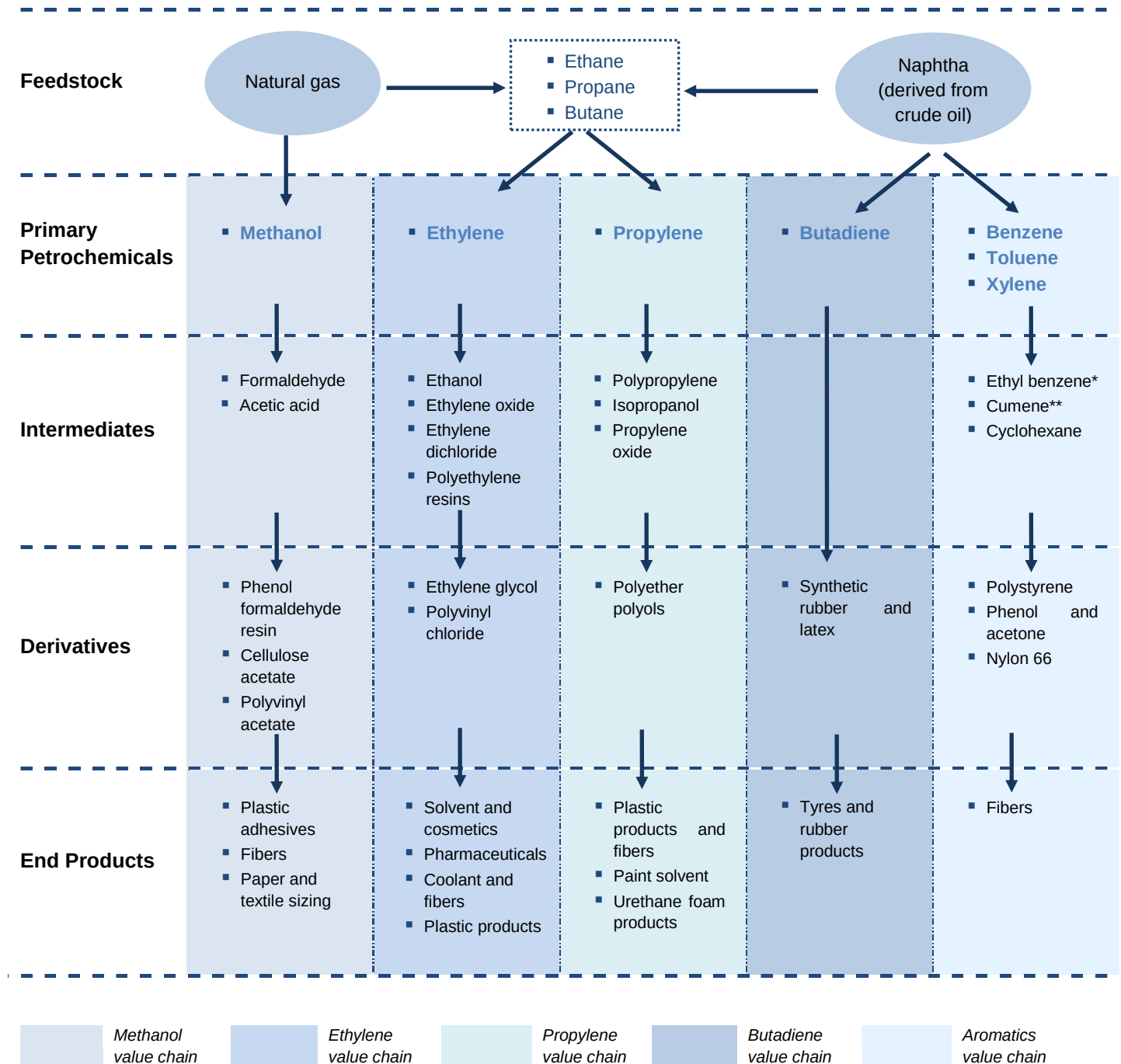
Region	Company	Country	Estimated Project Capacity (t/y)	Feedstock	Expected Completion Year	Project Status
Ethylene						
China	Sichuan Petrochemical	China	0.80	Naphtha	2013	Confirmed
Northeast Asia	Samsung Total Petchem	S. Korea	0.20	Naphtha	2007	Confirmed
Northeast Asia	LG Daesan PC	S. Korea	0.28	Naphtha	2007	Confirmed
West Europe	BASF Antwerp	Belgium	0.28	Naphtha	2007	Confirmed
Northeast Asia	Lotte Daesan PC	S. Korea	0.35	Naphtha	2008	Confirmed
CHINA	Daqing	CHINA	0.60	Naphtha	2011	Confirmed
North America	Flint Hills Resources	US	(0.36)	NA	2009	Confirmed
North America	LyondellBasell	US	(0.54)	Naphtha	2009	Confirmed
West Europe	TOTAL	France	(0.24)	NA	2009	Confirmed
Southeast Asia	PTT	Thailand	1.00	Ethane	2010	Confirmed
Indian Subcontinent	Indian Oil CL	India	0.90	Naphtha	2010	Confirmed
North America	Chevron Phillips	US	(0.29)	NA	2009	Confirmed
Northeast Asia	Formosa	Taiwan	1.20	Naphtha	2007	Confirmed
CHINA	Liaoning Huajin	China	0.45	Naphtha	2009	Confirmed
CHINA	Wuhan	China	0.80	Naphtha	2013	Confirmed
CHINA	Tianjin PC	China	1.00	Naphtha	2010	Confirmed
CHINA	Zhenhai Refining	China	1.00	Naphtha	2010	Confirmed
Southeast Asia	ExxonMobil	Singapore	1.00	Naphtha	2011	Confirmed
China	Dushanzi PC	China	1.00	Naphtha	2009	Confirmed
China	Fujian PC/ Aramco/ Sinopec/ ExxonMobil	China	0.80	Ethane/ Propane	2009	Confirmed
Southeast Asia	Shell	Singapore	1.00	Naphtha	2010	Confirmed
Southeast Asia	MOC	Thailand	1.00	Naphtha	2011	Confirmed
North America	Petromont	Canada	(0.27)	Naphtha	2008	Confirmed
Latin America	QUATTOR	Brazil	0.20	FCC	2008	Confirmed
Indian Subcontinent	ONGC (OPAL)	India	1.80	Naphtha	2013	Confirmed
North America	Pemex	Mexico	(0.18)	Ethane	2011	Speculative
CHINA	Fushun	China	0.80	Naphtha	2011	Speculative
CHINA	Baotou Shenhua	China	0.30	COAL	2013	Speculative
CHINA	Sinopec, Kuwait, Dow, Shell	China	0.80	Naphtha	2013	Speculative
Northeast Asia	Mitsubishi, Asahi Kasei	Japan	(0.23)	Naphtha	2012	Speculative
Latin America	Comperj	Brazil	1.18	NA	2013	Speculative
AFRICA	Total PC / Sonatrach	Algeria	1.00	Ethane	2014	Speculative
Southeast Asia	PTT	Thailand	1.00	NA	2012	Speculative
Indian Subcontinent	Reliance	India	1.60	FCC	2013	Speculative

Region	Company	Country	Estimated Project Capacity (t/y)	Feedstock	Expected Completion Year	Project Status
Polyethylene						
West Europe	LyondellBasell	France	(0.11)	Naphtha	2009	Confirmed
West Europe	Total PC	France	(0.39)	Naphtha	2009	Confirmed
Indian Subcontinent	GAIL	India	0.11	Ethane/Propane	2007	Confirmed
China	Maoming PC	China	0.25	Naphtha	2007	Confirmed
Former Soviet Union	Nizhnekamskneftechim	Russia	0.23	Naphtha	2009	Confirmed
West Europe	Sabir Europe	Germany	0.17	Naphtha	2009	Confirmed
West Europe	Borealis	Sweden	0.20	NA	2010	Confirmed
West Europe	LyondellBasell Industries	Germany	0.15	Naphtha	2009	Confirmed
Global	Various	Various	0.29	NA	2007	Confirmed
Global	Various	Various	0.33	NA	2008	Confirmed
Global	Various	Various	0.15	NA	2009	Confirmed
Global	Various	Various	0.08	NA	2010	Confirmed
Global	Various	Various	0.00	NA	2011	Confirmed
North America	Flint Hills Resources	US	(0.38)	NA	2009	Confirmed
Southeast Asia	MOC	Thailand	0.30	Naphtha	2011	Confirmed
CHINA	Sichuan Petrochemical	China	0.60	Naphtha	2013	Confirmed
North America	LyondellBasell	US	(0.22)	NA	2009	Confirmed
North America	Dow	US	(0.10)	NA	2009	Confirmed
West Europe	SABIC UK Petrochemicals	UK	0.40	Mixed Feed	2009	Confirmed
China	Wuhan	China	0.60	Naphtha	2013	Confirmed
Former Soviet Union	Salavatnefteorgsyntez	Russia	0.12	Naphtha	2009	Confirmed
Latin America	Quattor	Brazil	0.20	FCC	2009	Confirmed
China	ZRCC	China	0.45	Naphtha	2010	Confirmed
South America	Braskem	Brazil	0.20	Ethanol	2011	Confirmed
Southeast Asia	PTT Chemical	Thailand	0.40	Ethane	2010	Confirmed
Southeast Asia	PTT Chemical	Thailand	0.30	Ethane	2010	Confirmed
China	Dushanzi PC	China	0.60	Naphtha	2009	Confirmed
China	Dushanzi PC	China	0.30	Naphtha	2009	Confirmed
China	Fujian PC/Sinopec/Aramco/EM	China	0.80	Naphtha	2009	Confirmed
Southeast Asia	ExxonMobil	Singapore	1.07	Naphtha	2011	Confirmed
North America	LyondellBasell	US	(0.07)	Mixed Feed	2008	Confirmed
Northeast Asia	Lotte Daesan PC	S. Korea	0.13	Naphtha	2008	Confirmed
North America	Petromont	Canada	(0.27)	Naphtha	2008	Confirmed
Latin America	Quattor	Brazil	0.20	FCC	2008	Confirmed
West Europe	SABIC Europe	Netherlands	(0.12)	Mixed Feed	2009	Confirmed
China	Liaoning Huajin	China	0.30	Naphtha	2009	Confirmed
Indian Subcontinent	Indian Oil PC	India	0.65	Naphtha	2010	Confirmed
China	Tianjin PC	China	0.60	Naphtha	2010	Confirmed

Region	Company	Country	Estimated Project Capacity (t/y)	Feedstock	Expected Completion Year	Project Status
China	Daqing	China	0.47	Naphtha	2011	Confirmed
Indian Subcontinent	ONGC (OPAL)	India	1.10	Naphtha	2013	Confirmed
Indian Subcontinent	Reliance	India	0.25	FCC	2013	Speculative
Indian Subcontinent	Reliance	India	0.18	Ethane	2013	Speculative
Latin America	PEMEX	Mexico	0.30	NA	NA	Speculative
China	Fushun PC	China	0.80	Ethane	2011	Speculative
South America	Comperj Poliolefinas	Brazil	0.00	Ethane	NA	Speculative
South America	Dow / Crystalev	Brazil	0.00	NA	NA	Speculative
Africa	Total / Sonatrach	Algeria	0.40	Naphtha	2014	Speculative
Africa	Total / Sonatrach	Algeria	0.40	NA	2014	Speculative
Southeast Asia	Petro Viet Nam	Viet Nam	0.50	Naphtha	2014	Speculative
Southeast Asia	Petro Viet Nam	Viet Nam	0.30	FCC	2014	Speculative
China	Baotou Shenhua	China	0.27	Naphtha	2012	Speculative
South America	Polimerica	Venezuela	1.00	Ethane	2014	Speculative
Former Soviet Union		Kazakhstan	0.45	NA	2012	Speculative
South America	Polinter	Venezuela	0.00	Heavy oil	2014	Speculative

Source: CMAI, Nexant, Alpen Compilation

Appendix III: Petrochemicals Process Diagram



* Ethylene and benzene derivative; ** Polyethylene and benzene derivative

Joint venture of



&



**Bukhatir
Group**



US\$ 245,000,000
Syndicated Term Loan Facility &
Commodity Murabaha



US\$ 100,000,000
Term Credit Facility



حديد الجزيرة
Jazeera Steel

Acquisition of Strategic
Equity Stake By



ETA &



US\$ 200,000,000
Syndicated Facility

al khaliji الخليجي

US\$ 180,000,000
Medium Term Credit Facility



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