



Petrochemicals and the Vision 2030

Summary

- The Saudi petrochemical industry is vital to the Kingdom’s non-oil economy. In value terms, chemical and plastic exports from Saudi Arabia amounted to \$30 billion (SR115 billion) in 2015, comprising a substantial 60 percent share of total non-oil exports.
- The prominent role of petrochemicals in the non-oil economy means it has been identified by both the National Transformation Program (NTP) 2020 and Vision 2030 as one of the sectors to lead the push away from fossil fuel reliance.
- The implementation of the NTP 2020 targets will help move the sector towards increased downstream specialty and end product capacity. This in turn, will not only help achieve growth in the Kingdom’s non-oil exports, but also establish a higher value-adding manufacturing base; creating employment opportunities for Saudi nationals.
- Yet the restructuring of the sector comes at a time when it is already facing a number of challenges, both at home and abroad. This includes; a drop in global chemical prices since mid-2014, higher domestic feedstock prices and more intensive global competition, especially from the US and China.
- All these factors combined will re-shape the petrochemical industry in the Kingdom. Nevertheless, the government has demonstrated, through both the Vision and NTP, that the sector’s importance to the Saudi economy will not be allowed to diminish.

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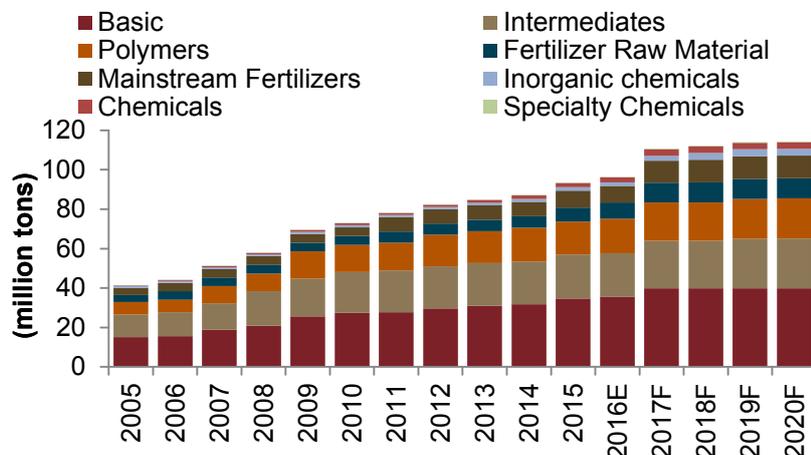
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Figure 1: Saudi petrochemical capacity (2005-2020F)





Overview

The Saudi petrochemical sector has grown to be one of the main pillars of the Saudi economy...

...and has therefore been set some major targets for 2020 under the NTP.

The Master Gas System developed during the 1980's laid the foundations for the petrochemical sector.

A number of factors accelerated this rapid growth...

...including cheap feedstock, record high oil and chemical prices and burgeoning Asian demand.

The Saudi petrochemical sector has grown from a locally based infant industry to one of the main pillars of the Saudi economy and through this rapid rise it has spawned some of the largest and most profitable companies in the world. The rise of the Saudi petrochemical sector is even more remarkable considering that this transformation has taken place in a very short space of time.

Moving forward, the introduction of the National Transformation Program (NTP) 2020 and the Saudi Vision 2030 will help facilitate developmental opportunities in the industry, namely through infrastructure improvements and technological innovation. The government has, and still is, heavily investing in the sector, encouraging investor participation, and supporting Saudi-foreign joint ventures for new petrochemical projects. Ultimately, sustainable growth for the sector over the long term can really only be achieved by moving down and across the petrochemical value chain and this is currently beginning to take place in the Kingdom.

Rapid growth in the last decade

The Kingdom did not have a petrochemical sector prior to the 1980's but this changed dramatically once the government invested in gas infrastructure in order to utilize previously flared associated gas from crude oil production. The Master Gas System developed gas gathering facilities and pipelines over the course of the 1980's to feed the industrial cities in Yanbu and Jubail which laid the foundations for the petrochemical sector that Saudi Arabia now has.

In the decade to 2015 the sector witnessed remarkable lift-off as evidenced by the huge level of investment in the sector resulting in chemical capacity rising by 116 percent between 2005-2015 (Figure 1). There have been a number of factors that contributed to this rapid growth, which include; the prevalence of abundant and cheap feedstock, record high oil prices, burgeoning Asian demand and record profitability for petrochemical companies.

Figure 2: Saudi petrochemical feedstock usage (percent)

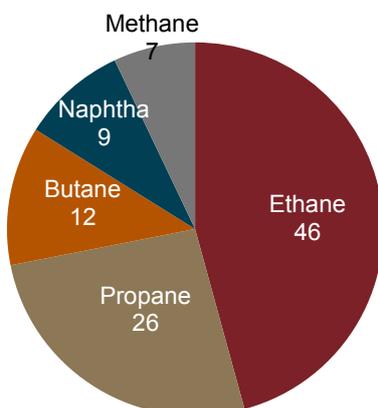
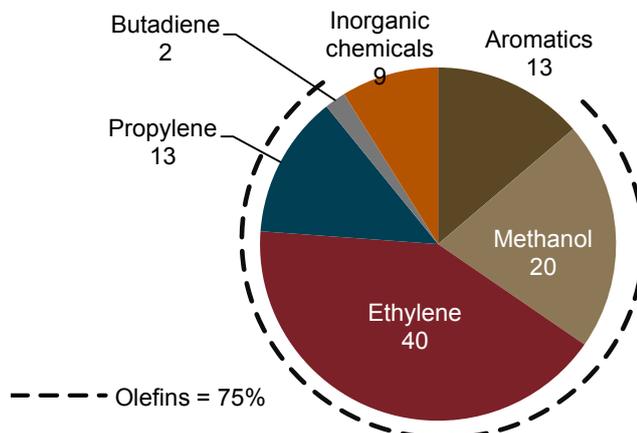


Figure 3: Saudi petrochemical capacity 2016 (percent)





The main source of current Saudi feedstock is ethane...

...other feedstocks include LPGs and naphtha.

The heavy usage of ethane and LPGs means Saudi chemical capacity is skewed towards olefins, such as ethylene.

The price of ethane and other feedstock was recently increased...

...although it has not totally eroded the cost advantage of the sector.

Prevalence of cheap feedstock:

In Saudi Arabia, the production of crude oil has led to two other types of natural resource derivatives, associated gas and liquid petroleum gas (LPG). The industry has naturally evolved towards consuming feedstock obtained from these two sources (Figure 2). The main source of current Saudi feedstock is ethane which, along with methane, is naturally found in associated gas. Other significant feedstocks includes propane and butane, both of which are derived from LPG. Lastly, there is naphtha, which is a product of crude oil refining.

The heavy usage of ethane and LPG as feedstock means chemical capacity in Saudi Arabia is skewed towards the production of olefins such as propylene, methanol and ethylene. Olefins account for around 75 percent of total capacity, whilst aromatics (derived from naphtha) account for only 13 percent (Figure 3).

The pricing of natural-gas-derived ethane, Saudi Arabia's largest feedstock is fixed at a price of \$1.75 per million British thermal units (mmBtu), having been increased, at the start of 2016 from \$0.75 mmBtu. The price of LPG, which also saw a change in pricing formula, still offers a discount against international prices (Table 1). The 2016 rise in feedstock prices by the Saudi government has not totally eroded the cost advantage of the sector, but combined with other factors, it adds to the industry's challenges going forward.

Table 1: Saudi feedstock prices

	Previous price	2016 price
Ethane (\$mmBtu)	0.75	1.75
Methane (\$mmBtu)	0.75	1.25
Propane	28% discount to Japanese Naphtha*	20% discount to Japanese Propane*
Butane	28% discount to Japanese Naphtha*	20% discount to Japanese Butane*

*Note: discount the cost of freight and insurance from Ras Tanura to Japan

Record high oil prices:

Ethylene and its derivatives are the most widely used products in the

Figure 4: Cash cost for production of a ton of ethylene (October 2014)*

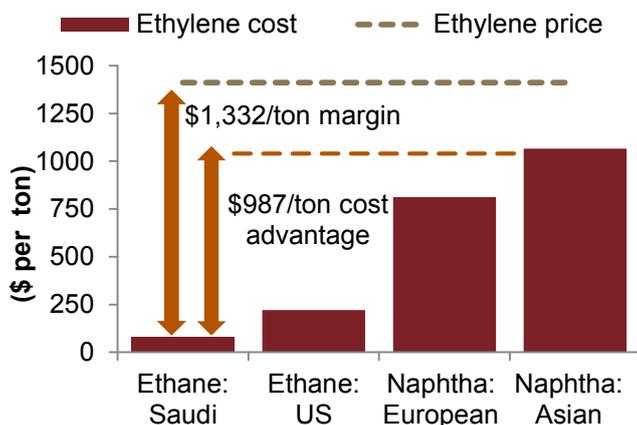
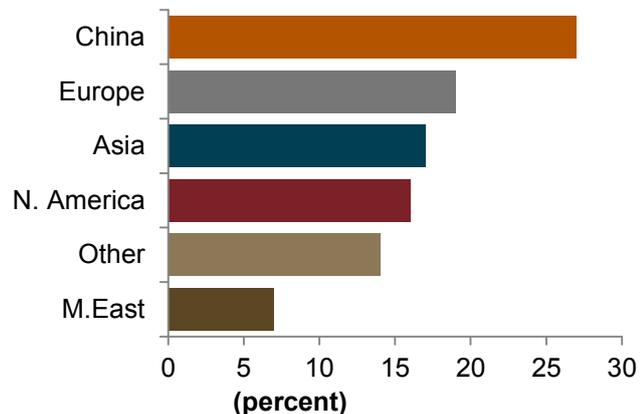


Figure 5: Global demand for ethylene dominated by China



*Note: Brent oil price in October 2014: \$87 pb



The period of sustained high oil prices in recent years widened the cost advantage for Saudi petrochemical companies.

The development of China's manufacturing industry has fuelled a rise in petrochemical consumption.

Saudi petrochemical companies enjoyed one of the highest margins on products such as ethylene...

...which helped them achieve record profitability.

global chemical industry. Whereas Saudi petrochemicals mainly use ethane, other regions, such as Europe and Asia, rely on crude-oil derived naphtha to produce ethylene. The generally lower cost of ethane versus crude oil has therefore lent a historical cost advantage to Saudi Arabia. This cost advantage widened significantly during 2010-2014 when crude oil prices hit record levels. In fact, Saudi petrochemical companies had a near \$1,000 per ton cash cost advantage in the production of every ton of ethylene compared to their Asian counterparts during the period of elevated oil prices (Figure 4).

Chinese demand:

Overall expansion in the population levels and increases in individual purchasing power has resulted in rising demand for petrochemical consumption in emerging markets over the last two decades. Specifically, the development of China's manufacturing industry has fuelled a rise in petrochemical consumption. China now stands as the largest consumer of ethylene (Figure 5). Due to the combination of Gulf region's large ethylene capacity and proximity to Asia, the region has emerged as the main supplier to China.

Record profitability:

Due to the linkages between crude oil and petrochemicals, record oil prices between 2010-2014 resulted in higher prices for chemical products too. As a consequence of higher prices and lower cost base, Saudi petrochemical companies enjoyed one of the highest margins on products such as ethylene (Figure 4), which helped them achieve record profitability. Figure 6 shows quarterly net-income of listed Saudi petrochemical companies rose from around SR5 billion in Q1 2006, to SR9.5 billion in Q3 2014. At one point, in Q1 2011, when Brent oil prices jumped 21 percent quarter-on-quarter to over \$100 per barrel (pb), petrochemical net-income accounted for 47 percent of total net-income of all listed companies in the Kingdom.

Recent developments

A number of major government and industry-led developments are currently being instituted within the petrochemical sector that will have a profound affect on the future of the industry. Although there are many different parts to this change, together they encapsulate the broader aims set out by the NTP and the Vision 2030 (Box 1).

Figure 6: Net-income of listed Saudi petrochemical companies and Brent oil price

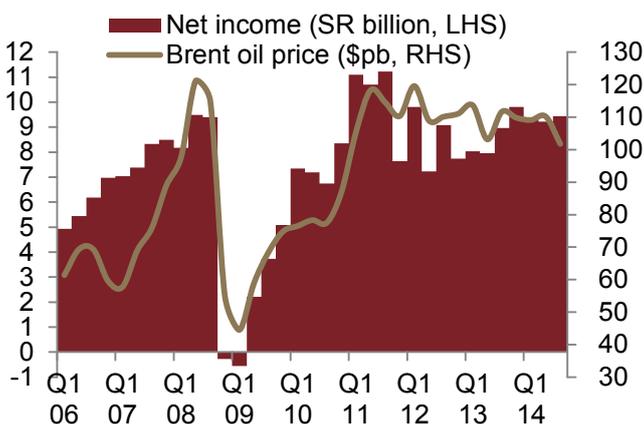
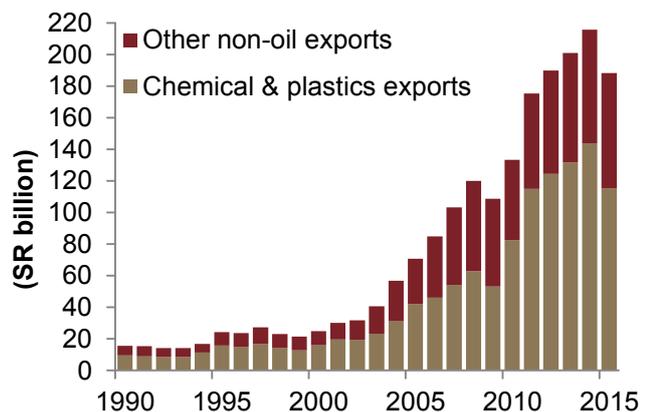


Figure 7: Chemicals and plastics make up a large portion of Saudi non-oil exports





The centrality of petrochemicals to the Kingdom is evident in both the NTP and Vision 2030.

The sector has the second highest cost borne by government for implemented initiatives under the NTP, at SR41.6 billion

Currently, the petrochemical sector in Saudi Arabia is not highly integrated into the wider economy...

Box 1: Petrochemical sector and the Vision 2030

The petrochemical sector features indirectly throughout the Vision 2030, since it is one of the sectors that will help push up non-oil exports. More directly, the Saudi petrochemicals industry has been designated as one of the seven national industries selected for concentrated support. Specifically, the Vision emphasizes the need to build a unique logistical hub in which the enhancement of logistical services, state-of-the-art infrastructure, and streamlined trade exchanges are sought. The Vision also emphasizes support for national companies, including petrochemicals, in helping them gain market share in both regional and international markets.

The NTP 2020:

The petrochemical industry is a key pillar of the Saudi economy, which is evident through its contribution to Saudi non-oil exports. In value terms, chemical and plastic (petrochemical) exports from Saudi Arabia amounted to \$30 billion (SR115 billion) in 2015, comprising a substantial 60 percent share of total non-oil exports, similar to levels over the last 25 years (Figure 7). The prominent role of petrochemicals in the non-oil economy means it has been identified in both the NTP and Vision 2030 as one of the sectors to lead the continued push for diversification away from fossil fuel reliance. It is for exactly this reason that the Royal Commission for Jubail and Yanbu (RCJY), (set up in 1975 to ‘plan, promote, develop and manage petrochemicals and energy intensive industrial cities’) has the second highest cost borne by government for implemented initiatives under the NTP, at SR41.6 billion (Figure 8). Accordingly, the RCJY has been set some major targets for 2020, which includes reaching an overall growth in revenue of 93 percent come 2020. In addition, petrochemicals is also one of the sectors identified by the Vision to help push the Kingdom’s non-oil export target up from 16 percent of GDP in 2015, to 50 percent of GDP by 2030.

Currently, the petrochemical sector in Saudi Arabia, and the rest of the Gulf countries, is not highly integrated into the wider economy. The lack of a chemical conversion industrial base in the Kingdom means that a large proportion of petrochemical output is geared towards basic (or commodity) chemicals with very little specialty chemicals (Figure 9). The creation of a downstream specialty and end product sector is vital in establishing a higher value adding manufacturing base. In addition, since demand for specialty

Figure 8: RCJY allocated second largest amount of funds under the NTP

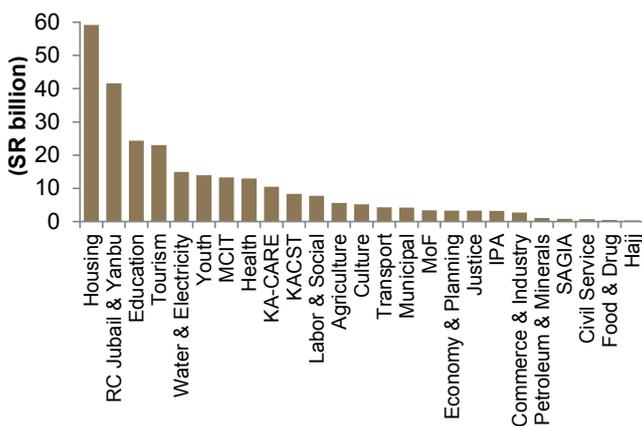
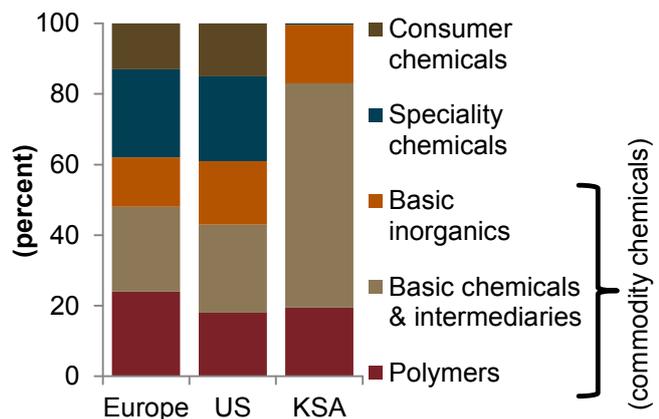


Figure 9: Saudi production geared towards basic commodity chemicals...





...although there are a number of initiatives to move the sector further down the value chain.

One initiative is the Industrial Clusters program...

...which aims to build up expertise in plastic processing, technology and conversion.

The PTSP is tasked with developing the sector's indigenous technology, research and invention.

chemicals is based on their performance and/or function, they tend to exhibit lower price volatility and correlation with oil (Figure 10).

Whilst Saudi Arabia does lag in this area, there are a number of current initiatives and projects being implemented to facilitate the movement down the petrochemical value chain, and help realize a logistical hub as envisaged by the Vision 2030.

Industrial Clusters:

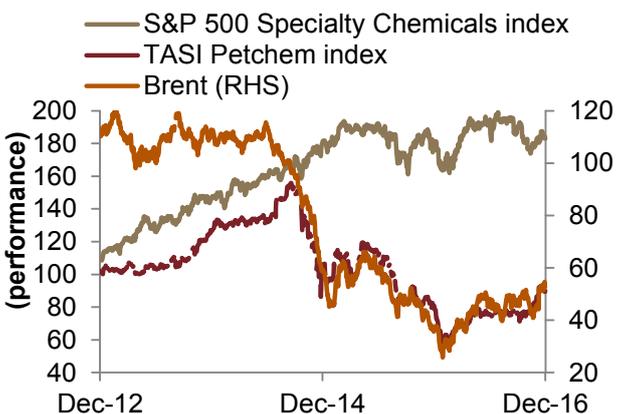
One initiative helping to facilitate the achievements outlined by NTP and Vision 2030 is the government's Industrial Clusters program. The program aims to concentrate major suppliers of plastic feedstock so to build up expertise in plastic processing, technology and conversion, thereby filling up a gap in the plastic supply chain. Currently more than 85 percent of plastic intermediaries, such as polymers, are exported outside the Middle East, with around 10 percent of polymers sold locally to Saudi based converters. The Industrial Clusters program aims to redress this imbalance by supporting plastic conversions in order to increase the production of specialty chemicals. The final aim would be to have a developed Plastic and Packaging Cluster which feeds into other Clusters such as Automotive, Biomedical and Solar Panel sectors, all of which are being developed simultaneously. The realization of such a program would not only push the sector further down the petrochemical value chain but also consolidate the assets of each Cluster, encouraging better integration, lower costs and job opportunities.

Technological capability:

Since specialty chemicals have unique chemical formulations and compositions, the ability to produce such chemicals is dependent on building up technical capability, investing in research and encouraging invention. Currently, this is an area where Saudi Arabia, and the region, lag in comparison to global counterparts. According to Gulf Petrochemicals and Chemicals Association (GPCA), the Gulf countries accounted for only 0.1 percent of all chemistry patent applications worldwide (in 2013) and 2 percent of global chemicals research and development spending (in 2015). Although this represents a very small total, the focus has turned towards building up technical and research capabilities.

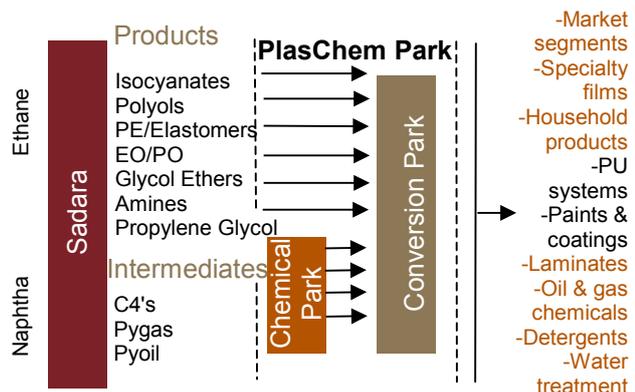
One of the channels in which the sector's development is being

Figure 10: ...resulting in higher correlation to oil prices when compared to specialty chemicals*



*Note: Indices rebased to 100 at October 2012

Figure 11: Sadara Complex introducing new chemical products into the Kingdom





New dimensions within the Saudi energy sphere are opening up...

...which includes the move towards the integration of oil refining and petrochemicals.

Saudi Aramco is leading the move into refining and chemicals...

...through two major projects: Sadara and Petro Rabigh II...

...and possibly an oils-to-chemicals complex with Sabic.

No new crude capacity means limited growth in ethane feedstock going forward...

pushed is through the Petrochemical Technology Strategic Plan (PTSP), which involves key domestic petrochemical stakeholders. The King Abdullah City of Science and Technology (KACST) holds the overall responsibility of the plan but other notable stakeholders include Saudi Aramco, major Saudi petrochemical companies, and the Saudi Human Resources Development Fund (HRDF). The key tenants of the plan are technology development, localization and transfer, all of which aim in achieving strategic goals of resource efficiency, investment attraction, job creation, and cost effective delivery. Under the PTSP, a new dimension within the Saudi energy sphere has opened up, which is so far being led by Saudi Aramco (Box 2).

Box 2: Saudi Aramco's move into petrochemicals

Traditionally, Saudi Aramco has only been involved with the Kingdom's oil and gas sector but recently it has begun to move into the chemical sector too. This move has been defined by the Sadara Chemical Company, a joint venture with US firm Dow Chemical, representing Aramco's first major step towards becoming a globally integrated energy and chemical company. As Sadara becomes fully operational from 2017, it will be the largest integrated petrochemicals complex in the world, and will help develop the Kingdom's non-oil manufacturing and technology sectors through the introduction of new chemical products. Its competitive advantage will be derived from being the first petrochemical complex in the Gulf to use naphtha as liquid feedstock, resulting in a variety of new downstream outputs (Figure 11). The complex will also benefit from Dow Chemical's technology which, in turn, will see the introduction of new specialty chemicals into the Kingdom, which were only accessible through imports previously. Another project, Petro Rabigh II, a joint-venture between Aramco and Sumitomo Chemical, will also introduce new products to Saudi Arabia, and the region as a whole once completed in March 2017. Both Petro Rabigh II and Sadara are seen as falling under the innovation-centric approach towards transitioning into a knowledge-based economy, and should help establish a thriving manufacturing sector in Saudi Arabia, as outlined by the Vision 2030. That said, although the start-up of both Sadara and Petro Rabigh II will see a 17 percent rise in specialty chemicals capacity, year-on-year in 2017, it will only equal 1 percent of total Saudi petrochemical capacity.

Aramco's expansion into chemicals has also included the possibility of partnering with domestic petrochemical companies. In June 2016, Sabic and Aramco agreed to conduct a feasibility study on a wholly integrated crude oil-to-chemicals complex based in the Kingdom. If realized, this process would eliminate the need for a costly intermediary link between the two commodities (oil and chemicals), which would lower the cost of petrochemical production and, at the same time, diversify the feedstock mix.

Improving the petrochemical value chain:

Whilst petrochemical capacity has increased in the last few years, ethane supply has not. Flatter Saudi crude oil production, at around 10 million barrels per day (mbpd) and maturing oilfields have limited the growth of associated gas and therefore ethane. No new major crude capacity expansions have been planned by Saudi Aramco which means there is little prospect of higher ethane feedstock being



...therefore other feedstocks are being brought into the mix, the most prominent being naphtha.

Sadara will be the first chemical complex in the Kingdom to use significant amounts of naphtha as feedstock.

made available going forward (Figure 12). In order to ensure growth of the petrochemical sector, as it faces up to an ethane supply crunch, other feedstocks are increasingly being brought into the mix, the most prominent being naphtha. According to Saudi Aramco data, around 124 thousand barrels per day (tbpd) of naphtha was produced in the Kingdom in 2015.

As mentioned above, Sadara will be the first chemical complex in the Kingdom to use significant amounts of naphtha as feedstock. Although more costlier than ethane, when naphtha is processed (cracked) it yields a larger variety of chemical derivatives (Box 3). This new value chain of chemical products will open up a downstream manufacturing and conversion industry, ultimately helping to create a vast number of jobs. According to Aramco, the core Sadara complex will employ around 4,000 people, but there will also be additional indirect employment opportunities, all with high Saudi content. The wider Sadara complex, which will house the manufacturing and conversion units (PlasChem Park), where cracked products will be fed into in order to develop specialty and end use products, will create an additional 15,000 direct and indirect jobs (Figure 11).

Box 3: Naphtha as petrochemical feedstock

Naphtha is a product of crude oil refining and hence its supply is relatively abundant in Saudi Arabia. In 2015, Saudi Aramco produced around 124 thousand barrels per day (tbpd) of naphtha, but only a small amount of this was used domestically. Although costlier than ethane feedstock, when naphtha is processed (cracked) it yields both olefins and aromatics (both are basic chemicals which are used to produce other more refined chemical products), whereas ethane yields mainly the former. The higher cost of cracking naphtha vis-à-vis ethane had discouraged its use in the Kingdom previously, but with an ethane shortage looming, naphtha's use has become increasingly viable. As a result of the higher use of naphtha, the Kingdom will see total aromatics output rising by 2020 (Figure 13).

Figure 12: Flatter Saudi ethane supply...

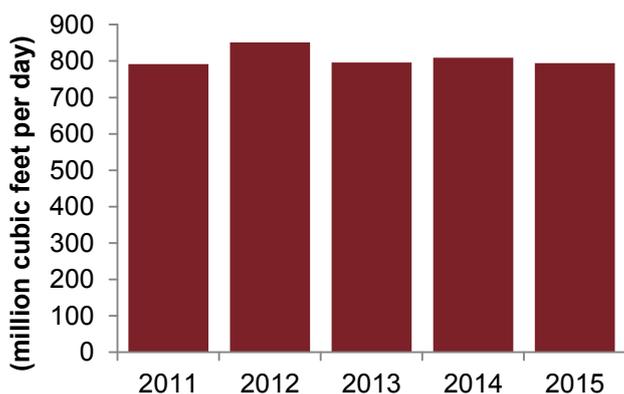
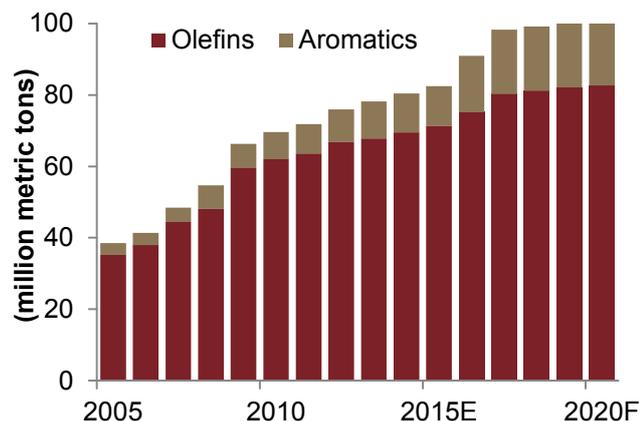


Figure 13: ...resulting in slower olefins capacity growth





Rising global supply

The next decade is expected to see a large increase in global petrochemical capacity.

The shale gas boom in the US has led to ethane and propane prices falling...

...which has provided a huge incentive to invest in infrastructure.

China has carried out major investment in CTO and MTO petrochemical plants.

The next decade is expected to see a large increase in global petrochemical capacity. The shale gas boom has given cheap and abundant feedstock supply to US producers, whilst China has developed technology which utilizes coal in its petrochemical supply chain. Meanwhile, the recent lifting of most nuclear-related sanctions is likely to see more Iranian petrochemical capacity.

US:

The US shale oil boom was preceded by large scale rises in US shale gas production. In the decade to 2016, the US saw a 54 percent rise in the daily production of gas. The ensuing increase in production has not only depressed US gas prices but also petrochemical feedstock prices (Figure 14). At the end of 2016, US ethane prices had dropped by 67 percent whilst propane prices were down by 51 percent since 2010. The drop in prices has given the US petrochemical sector a huge incentive to invest in infrastructure. According to the US Energy Information Administration (EIA), a large chunk of expansion projects will come on-line during 2017-18 which will increase total ethylene capacity by 40 percent, to a total of 37 million tons (mt), or 20 percent of global ethylene capacity.

China:

Since China does not have an abundance of gas or crude oil, it has been investing in alternative areas in order to satisfy demand. One area in which this has been done is through major investment in coal-to-olefins (CTO) petrochemical plants. China is the largest producer of coal and holds the world's third largest reserves. In addition to CTO, China has invested in methanol-to-olefins (MTO) plants as well. According to industry estimates, China's rise in both CTO and MTO capacity is expected to increase capacity from 3 mt in 2015 to 10 mt in 2025.

Iran:

The lifting of most nuclear-related sanctions in January 2016 paves the way for potential expansion in Iranian petrochemical capacity. According to Iran's National Petrochemical Company (NPC), annual petrochemical capacity totals 59 mt, with production at 45 mt (Figure

Figure 14: US ethane and propane prices

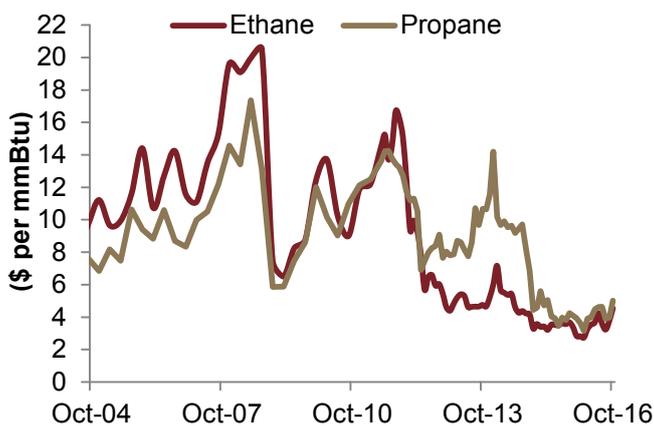
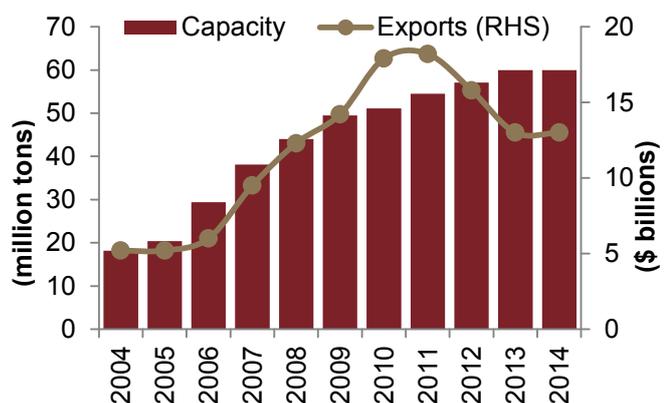


Figure 15: Iranian petrochemical capacity and export revenue





The lifting of nuclear-sanctions paves the way for potential expansion in Iranian capacity.

If plans to double capacity by 2021 are implemented, it would have the region's largest capacity.

Slower Chinese GDP growth from 2017-2021...

...and additional Chinese CTO and MTO capacity...

...will mean Gulf exporters are likely to face more competition.

Saudi companies have seen a decline in their cost advantage...

...and lower chemicals prices...

...which has impacted profitability...

15). If plans to double capacity by 2021 are fully implemented, Iran would have the largest capacity in the region. Since it holds the world's largest gas reserves, it also benefits from abundant supply of low-cost ethane feedstock. A number of major challenges remain before capacity expansions can be fully realized; the most pressing being the ability to attract investment, with industry estimates putting total petrochemical investment requirements at \$7-10 billion per year over the next decade. Attracting investment will be made more difficult by the fact that not all sanctions have been lifted. Although the US has lifted sanctions on non-US entities, US entities are still excluded from doing business with Iran. Nevertheless, a number of European and Asian companies have reported interest in investing in the sector. Whilst there is likely to be significant time-lags before sizable expansions in petrochemical supply come on-line, there is a real potential for Iran to contribute to regional petrochemical supply.

Challenges for Saudi petrochemical sector

Chinese demand:

According to the GPCA, demand from China led to an average growth of 14 percent per year in exports from the Gulf region in the decade to 2014, culminating in a total of 13 mt of petrochemicals exports (Figure 16). Over the same period Chinese GDP growth averaged a remarkable 10 percent per annum. It is now apparent that the Chinese economic transition, one which entails more reliance on domestic consumption, is likely to result in a slower pace of growth than in previous years. The IMF predicts Chinese GDP growth will average 6 percent between 2017-2021. Additionally, Chinese CTO and MTO capacity and potentially higher Iranian exports, will mean Gulf exporters will be competing for a smaller market.

Lower profitability:

The combination of lower oil prices (and naphtha prices), declining US ethane prices, and a hike in the Kingdom's ethane and methane prices, have resulted in a reduction in the cost differentials between regions. Since October 2014, Saudi petrochemical companies have seen their cash cost advantage in the production of ethylene being reduced by 50 percent against Asian producers. Against US ethane based producers, the differential narrowed to \$29 per ton at one point, before recovering recently. The decline in oil prices has also lowered prices for chemical products, which has negatively affected petrochemical margins of Saudi producers (Figure 17). Consequently, average net income of all listed petrochemical companies dropped by 38 percent year-on-year in 2015, although they improved by 8 percent year-on-year in 2016 as Brent oil prices recovered by 20 percent during the year (Figure 18). Going forward, in addition to increased supply and competition in key markets of China and Asia, further rises in domestic feed stock prices are expected to raise costs of the sector from 2020 onwards (Box 4).



...although the sector will be shielded from higher feedstock prices until 2020.

Some projects will create a large number of jobs with the aim for higher saudization ratios...

...but a potentially smaller pool of qualified workers will make saudization ratios difficult to reach...

Box 4: No rises in feedstock prices until 2020

The 2017 Saudi fiscal budget did not announce any specific price hikes in domestic energy prices, but it did reiterate that the Kingdom would continue reforming energy prices with the plan of linking domestic energy prices to an unspecified benchmark price through to 2020. According to the Fiscal Balance Program, natural gas/ethane and LPG prices will not change until 2020, when they will be linked to a yet-to-be determined reference price. This represents a cautious approach by government despite there being obvious pressure on gas supplies in the Kingdom from both the petrochemical and electricity sectors (for more details please see our report on [Natural Gas and the Vision 2030](#) published October 2016). We therefore interpret the decision to delay the rise in feedstock prices to 2020 as tacit acknowledgement from the government that the petrochemical sector will need more time to prepare for the impact of price hikes considering the numerous changes it faces in both the domestic and international sphere.

Saudization:

As reported in our publication on the [Saudi labor market outlook](#) (published in October 2015) one of the main challenges to the labor market is rooted in the overreliance on non-Saudis occupying private sector jobs. This has meant a structurally high unemployment rate for Saudis, which stood at 12.1 percent in Q3 2016. In the report, we also identified that manufacturing was one of the sectors that could improve overall Saudization rates and employment. Specifically within manufacturing, the petrochemical sector can play a greater role in increasing employment due to an empirically observed higher multiplier factor of job creation. According to research cited by the GPCA, each direct job created within the petrochemical sector can potentially create up to four additional indirect jobs. The Saudi Industrial Development Fund's (SIDF) website reports that saudization in the petrochemical sector stood at 33 percent in 2015. Whilst this is relatively low, it is higher than the 20 percent ratio for the manufacturing sector as a whole.

As we have highlighted previously, there are a number of projects coming on-line which are expected to create a large number of jobs for Saudi nationals. However, sourcing sufficient numbers of technically skilled and experienced Saudi personnel will remain a challenge for the sector in reaching these targets. As statistics from

Figure 16: GCC petrochemical exports and Chinese GDP growth

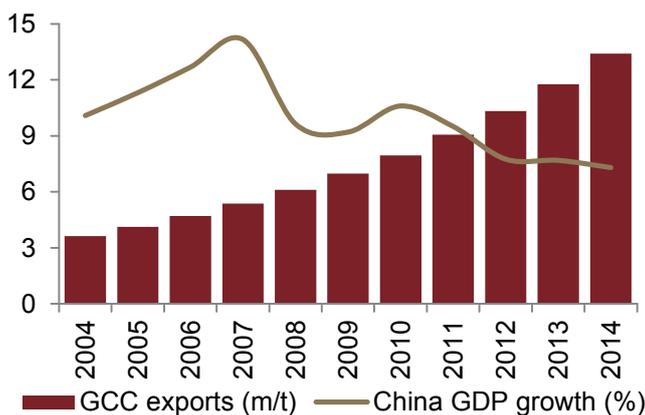
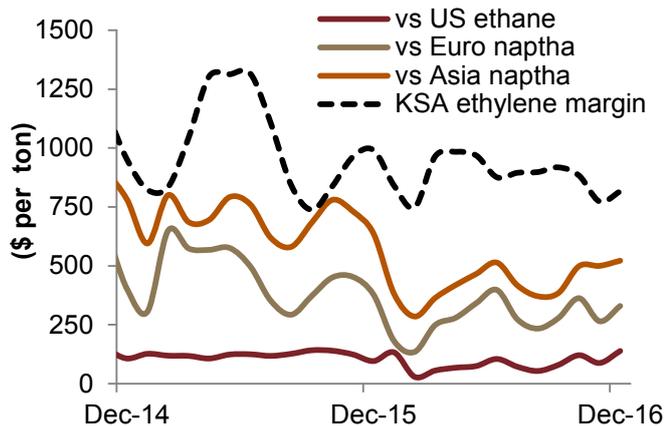


Figure 17: Saudi ethane cost advantage and ethylene margin lower



Note: Brent oil price in December 2016: \$53pb



...and push up wage costs.

The government will continue to support petrochemicals due to its centrality in the non-oil sector...

...but long term growth will only be achieved by moving down and across the petrochemical value chain.

the Ministry of Higher Education show, the growth in the number of science graduates has slowed in recent years, leading to a decline in the ratio of science graduates to total graduates (Figure 19). Furthermore, the petrochemical sector will also be competing with a number of other sectors, such as petroleum, mining and academia for science graduates, all of which are expected to see employment growth as NTP and Vision 2030 policies are implemented. If the number of well-qualified Saudi science graduates fails to keep up with demand from all these sectors, it will make higher Saudization rates more difficult to achieve, and push up wage costs related to employment of qualified and eligible local candidates.

Outlook

Despite its incredible historical achievement, the petrochemical sector in Saudi Arabia is currently geared towards the production of basic chemicals or commodity chemicals, with very little specialty chemicals capacity. The creation of a downstream specialty and end product sector is vital not only for establishing a higher value adding manufacturing base, but also for pushing the Kingdom's non-oil exports. It is for exactly this reason that the petrochemical sector has been set some major targets for 2020 under the National Transformation Program (NTP). Yet these targets come at a time when the sector is already facing up to a number of challenges, both at home and abroad, including; a rapid drop in international chemical prices since mid-2014, higher domestic feedstock prices and the emergence of global competition. There is no doubt that all these factors combined will re-shape the nature of the industry in the Kingdom in years ahead, but at the same time, the government has demonstrated through both the Vision and NTP, that the sector's importance to the Saudi economy will not be allowed to diminish.

Figure 18: Lower net-income of listed Saudi petrochemical companies since 2015

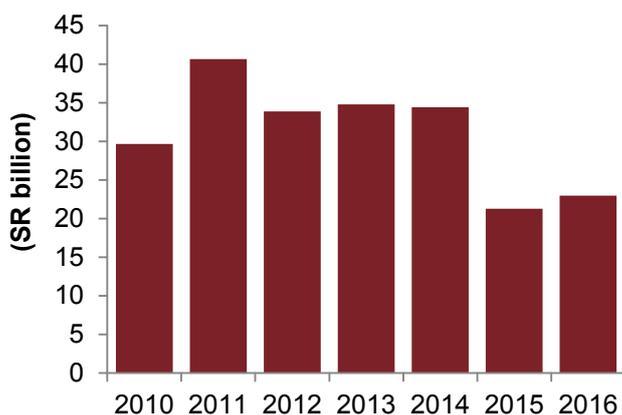
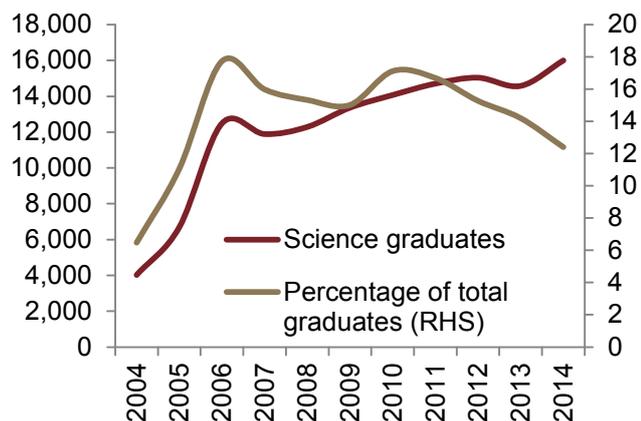


Figure 19: Number of Saudi science graduates and percentage to total graduates





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