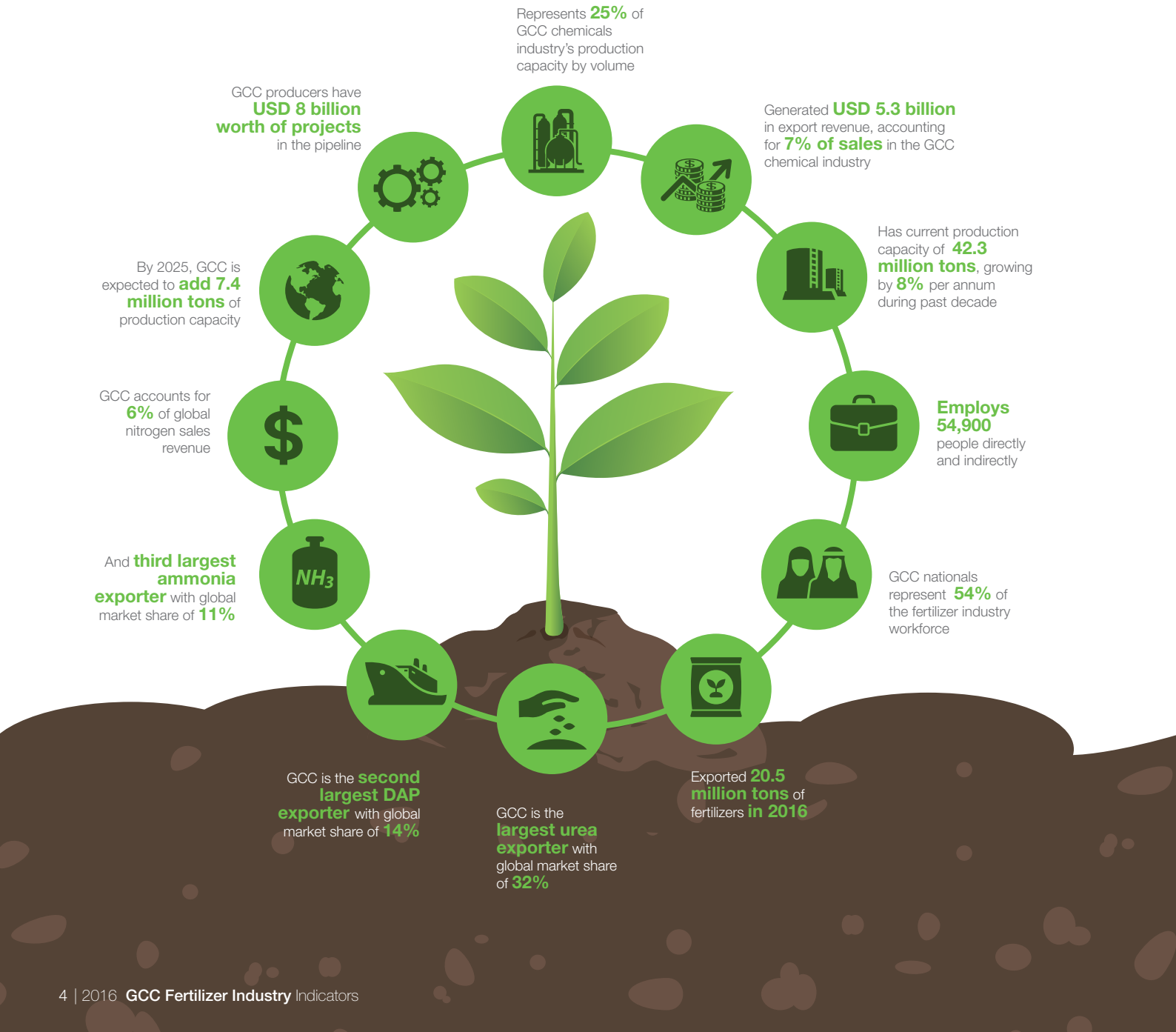
GULF PETROCHEMICALS & CHEMICALS ASSOCIATION
الاتحاد الخليجي للبتروكيماويات والكيماويات

2016 **GCC Fertilizer Industry** Indicators

CONTENT

2016 GCC fertilizer industry in numbers



Global industry landscape

Key trends impacting the sector

World fertilizer demand increased by 2.4% in 2016, reaching 185.6 million tons

Future demand for fertilizers is estimated to grow by 1.2% to 188 million tons

World demand for fertilizers rose by 2.4% in 2016 to 185.8 million tons, led by a strong rebound in nitrogen (N) demand which grew by 3.1%. This compares to a sharp decrease in 2015 when global demand levels dropped by 1.1%. Nitrogen fertilizers demand also recovered significantly from its 0.7% decline the year before. Future demand for fertilizers is estimated to grow by 1.2% to 188 million tons.

In North America, fertilizer demand dropped by 1.8% during 2016-2017, while in Latin America it increased sharply on the back of attractive returns from farming. European developed markets experienced marginal contraction during 2016, while Western Europe's fertilizer demand decreased by 0.3% and is expected to continue to decline further by 0.5%.

In Asia, fertilizer demand is driven by developments in China where demand remained modest. In contrast, fertilizer demand in Africa has been improving due to greater investments in agriculture as well as favorable weather conditions.

Global fertilizer demand (Mt nutrients)

	N	P2O5	K2O	Total
2014/15	102.9	43.2	33.3	179.5
2015/16	104.2	43.7	33.5	181.5
Change	*+1.3%*	*+1.0%*	*+0.7%*	*+1.1%*
2016/17 (f)	106.3	44.9	34.6	185.8
Change	*+2.0%*	*+2.8%*	*+3.1%*	*+2.4%*
2017/8 (f)	107.3	45.3	35.4	188
Change	*+0.9%*	*+1.0%*	*+2.3%*	*+1.2%*
2021/22 (f)	112.4	48.1	38.4	198.9
*Change**	*+1.2%*	*+1.5%*	*+2.1%*	*+1.5%*

(*) Annual growth rate compared to the average of 2014/16 to 2016/17

Source: International Fertilizer Association, 2017

World fertilizer demand is expected to increase by 1.6% in 2017. Demand will be influenced by prospects for slightly tightening agricultural commodity markets. Demand in China will slow down. However, other regions such as Brazil, US and Russia will offset this decline.

Demand growth for nitrogen fertilizers will return to its average medium-term levels, with India alone accounting for half of the increase year on year

Phosphorous fertilizer demand will increase modestly, boosted by requirements in India, Brazil and Argentina

Potassium fertilizer demand is expected to grow most rapidly driven by strong requirements in China, India, Brazil and Indonesia

NITROGEN

Helps with leaf development

PHOSPHOROUS

Aids in root growth

POTASSIUM

Vital for disease resistance and root development

Fertilizer policy changes

Fertilizer demand in India depends on subsidies structure and nutrient policy. During 2016, the government of India decided to test the Direct Benefit Transfer (DBT) program with farmers in an attempt to replace the current fertilizer subsidy regime. In addition, it reduced Nutrient Based Subsidy (NBS) for phosphate (P) and potassium (K) fertilizers for 2017-2018. This revision is anticipated to have a neutral impact on demand for DAP and NPK fertilizers, while it could affect MOP demand.

In 2016, Turkey banned the sale or distribution of ammonium nitrate (AN), calcium ammonium nitrate (CAN) and potassium nitrate with immediate effect. At present, Turkish companies are exporting CAN but are not allowed to sell it domestically, with the ban on AN expected to remain permanent. During the same year the government removed fertilizer VAT.

The Chinese export tax policy for 2017 has been announced and the tax on urea has been cancelled in line with expectations. Given that exports are limited by the reduced operating rates and the domestic market giving a better net back to producers, it appears the government is no longer concerned about exports being preferred over supplying the domestic market.

China is targeting zero growth in the use of chemical fertilizers and pesticides by 2020 to avoid further contamination of its farmland. Annual growth in the use of chemical fertilizers will be capped below 1% through 2019, with no growth slated for 2020. China will use more organic fertilizers –currently not fully utilized – to help boost grain output.

The European Union has adopted a so called 'Circular Economy' strategy which will apply to fertilizers as well, with emphasis on greater recycling and reuse of various organic fertilizers. Currently, national rules and standards make it difficult for producers of organic fertilizers to sell and use them across the EU single market. As a result, around half of all fertilizers produced currently remain in their country of origin. Existing fertilizer regulations ensure free movement of fertilizers manufactured in the EU. Recently, the European Commission proposed to bring organic fertilizers within the scope of the Fertilizers Regulation and grant access to CE marking. By affixing the CE marking to a product, a manufacturer declares that the product meets all legal requirements and can be traded freely across the EU. The regulation will create a level playing field for all fertilizer products.

Feedstock as a key enabler

In Saudi Arabia phosphate discoveries grew by 13% year on year, reaching 2.62 billion tons of phosphate rock

GCC ammonia production capacity saw little to no change at 13.1 million tons

Phosphate rock

In 2016, Saudi Arabia's total phosphate reserves increased by 13% compared to 2015, an increase of 53 million tons of contained phosphorus pentoxide (P2O5). Successful phosphate exploration programs in the Jalamid and Umm Wu'al areas since 2011 have uncovered 2.62 billion tons of phosphate rock containing 461 million tons of P2O5. This reserve base provides future strategic options for the GCC phosphate industry.

Country	2016 reserves (billion tons)	Share (%)
Morocco and Western Sahara	50.0	74%
China	3.1	5%
Saudi Arabia*	**2.6**	**4%**
Algeria	2.2	3%
Syria	1.8	3%
South Africa	1.5	2%
Russia	1.3	2%
Jordan	1.2	2%
Egypt	1.2	2%
USA	1.1	2%
Australia	1.1	2%
Peru	0.8	1%
Others	0.1	0%
World	**68.0**	**100%**

Source: U.S. Geological Survey, Mineral Commodity Summaries, January 2017
*Note: *Maaden Annual Report 2016*

Ammonia feedstocks

Of the hydrogen feedstock sources – natural gas, coal and petroleum fractions – natural gas is most often used in commercial ammonia plants, currently representing about 70% of world production. The Middle East holds the largest gas reserves in the world. It is hence not surprising that it is one of the regions where ammonia and integrated urea capacity has developed rapidly in the past years.

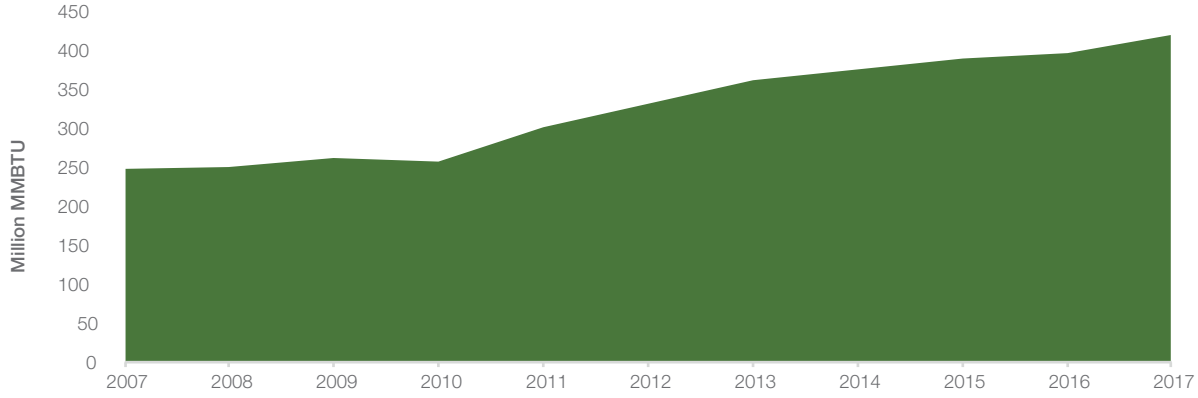
Total annual gas consumption of GCC ammonia producers in 2017 is estimated at approximately 420 million MMBtu. Energy consumption has grown in line with regional ammonia output – at 5.5% per annum – since 2007. Natural gas constitutes up to 90% of ammonia cash production costs and therefore new nitrogen capacities are being built in areas with competitive gas costs.

GCC ammonia production

Increasing demand from the fertilizer industry is driving growth in the ammonia market. Ammonia is the basic building block of the world nitrogen industry and is the intermediate product from which a wide variety of nitrogen based fertilizers and industrial products are produced. Fertilizer use accounts for over 80% of ammonia demand. In the GCC, most ammonia producers captively consume ammonia for the production of urea, accounting for almost 81% of total ammonia output. Ammonia is also used as refrigerants in food preservation, beverage production and cold storage facilities. Industrial application is anticipated to witness the fastest growth and surplus fertilizers demand in the near future.

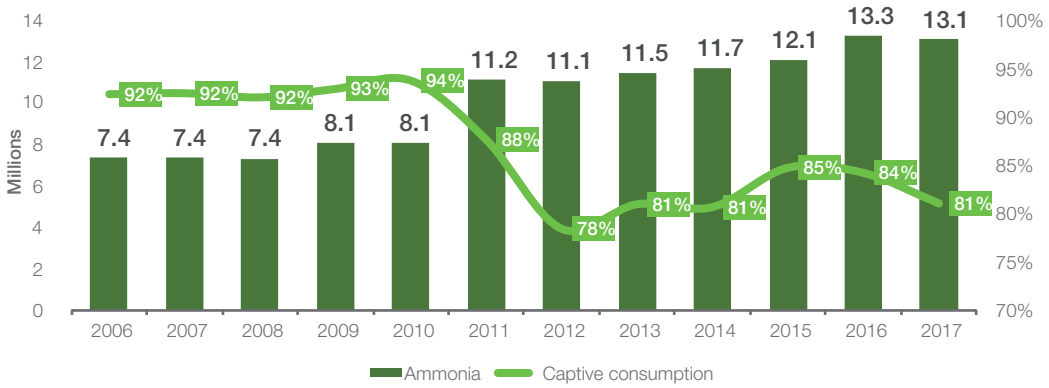
GCC ammonia production capacity in 2017 remained relatively unchanged compared to the previous year, at 13.1 million tons. Saudi Arabia is the largest producer of ammonia in the region, representing 40% of total output. Over the years, its share of the GCC ammonia market has remained relatively unchanged, with highest growth taking place in Qatar, UAE and Oman, which gained additional market share over the past decade. Ammonia growth in the UAE stood at 9.8% per annum between 2007 and 2017, marking the highest growth rate among all GCC producers.

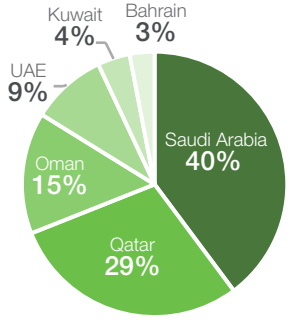
Natural gas consumption (MMBTU)
GCC fertilizers industry



Source: GPCA estimates, 2017

GCC ammonia production capacity (million tons)
Captive consumption (%)





Source: GPCA, 2017

Economic contribution of the GCC fertilizer industry

The GCC fertilizer industry has a huge impact on regional job creation, socio-economic development and non-oil export growth. Despite the recent global economic slowdown, falling commodity prices, intense competition abroad, and increasingly uncertain regulatory landscape, the GCC fertilizer industry remained profitable in 2017.

While growth in employment slowed compared to previous year, total number of jobs in the fertilizer industry remained similar to its recent levels. Compared with the broader manufacturing industry in the region, employment growth in the GCC fertilizer sector outpaced manufacturing overall which grew by about 6.8% per annum. It is estimated that the industry paid about USD 200 million in salaries and benefits. When indirect jobs are considered, the industry's total contribution to generating earned income is more than USD 800 million, including direct and indirect compensation.

Over the past decade, GCC fertilizer exports have grown at 7.3% per annum. Growth in fertilizer exports generates a significant multiplier effect throughout the local economy. Each dollar of fertilizer exports stimulates another USD 1.27 in economic activity. Thus, the USD 5.3 billion of export revenue overseas produced an additional USD 6.7 billion in supporting indirect economic activity in the region, including supporting services, warehousing and distribution, packaging and others. Through providing fertilizers at competitive prices, the regional industry has played an important role in supporting food security worldwide.

> *...employment growth in the GCC fertilizer sector outpaced manufacturing overall which grew by about 6.8% per annum*

Sales revenue

In 2016 GCC fertilizer industry sales declined by 21% to USD 5.2 billion

Sales revenue was affected by an overall decline in commodity markets

The GCC fertilizer industry's sales revenue has been affected by an overall decline in commodity markets. Near stagnant demand has depressed prices, while capacity and supplies have increased. In 2016, GCC fertilizer sales declined by 21% to USD 5.2 billion, marking the second consecutive year of declining sales revenues. In 2015, sales dropped by 10%.

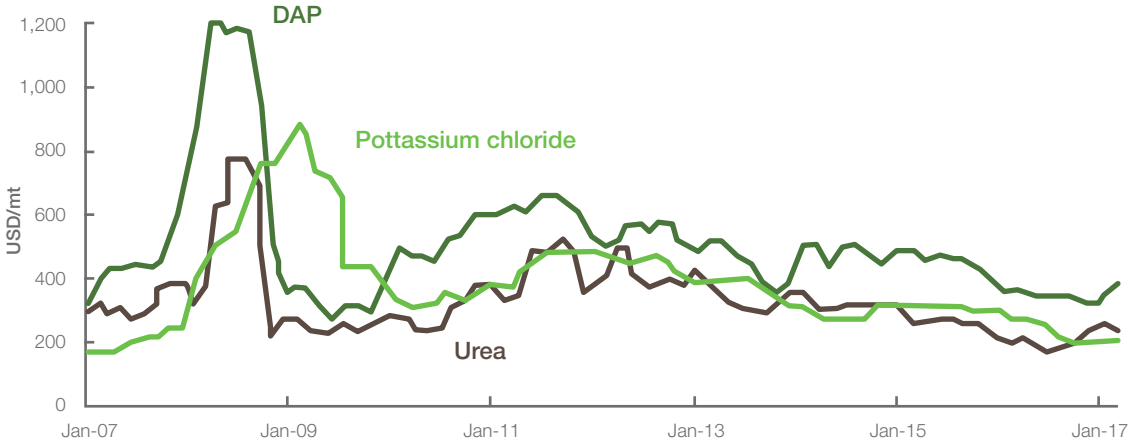
With global fertilizer capacity abundantly fulfilling current market requirements, nitrogen prices were under pressure for the second consecutive year. To put this in perspective, average ammonia price was down by about 38% in 2016. Ammonia is a key feedstock for other nitrogen fertilizers.

Subsequently, urea which accounts for the majority of GCC fertilizer output, saw its average price fall by 27% in 2016 compared with the previous year. This is nearly 75% below its 2008 highest historical levels and the largest price decline recorded over the past 10 years. Urea is the main GCC fertilizer export, generating significant sales revenue. Therefore, any changes on the global markets have a direct impact on GCC urea sales.

Similarly to urea, the 2016 average price for DAP declined by 25% compared with the previous year, when prices dropped by 4%. Demand weakness continues to stem from poor farmer profitability, low crop prices, and weak currencies of key importing countries. Despite production cuts, the excess supply remains considerable due to falling costs, low feedstock prices, and new low cost capacity.

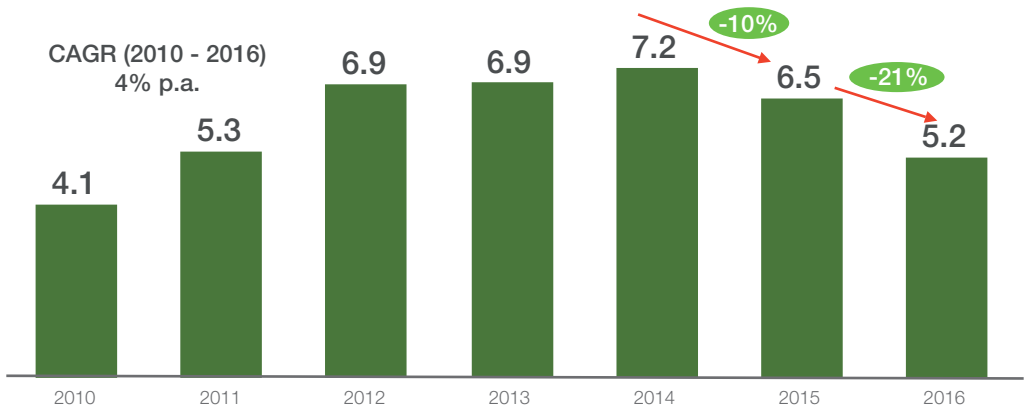
Moving forward, global fertilizer prices are not expected to advance higher any time soon. As reported by the World Bank, in 2017 fertilizer prices will improve by 1% with further upscale of 3% in 2018.

World fertilizer prices, USD/mt



Source: World Bank, 2017

GCC fertilizer industry sales revenue (USD billion)



Source: GPCA questionnaire, 2017

Employment

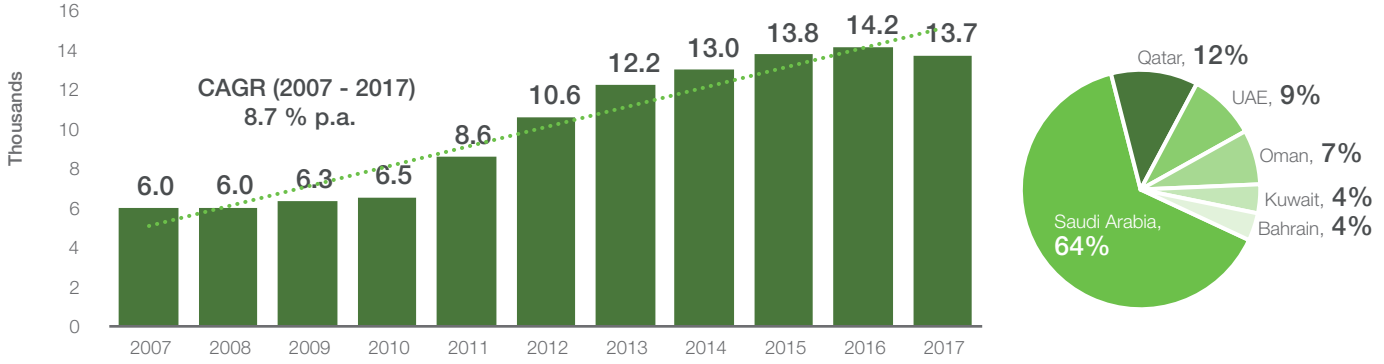
The GCC fertilizer industry accounts for around 55,000 direct and indirect jobs

Saudi Arabia accounts for 64% of total number of fertilizer jobs in the region

GCC fertilizer industry directly employs over 13,700 people and further 41,200 in other sectors. Collectively, the industry accounts for a combined 55,000 jobs, which is approximately 1 in 10 of all jobs in the chemical industry. Driven by favorable policies aimed at growing regional employment, direct job creation grew by CAGR of 8.7% per annum over the past decade, while overall employment in the chemical industry grew at an average rate of 6% per annum. In 2016, almost 55% of those directly employed in the industry were GCC nationals, compared to an average of 9% nationalization rate in manufacturing overall.

Due to it is leading position as a key manufacturing hub for fertilizers in the region, Saudi Arabia is a dominant employer in the GCC fertilizer industry, with 64% share of total number of jobs. In 2017, Qatar accounted for 12% of fertilizer employment in the region, followed by the UAE with 9%. Together, these three countries make up 85% of GCC fertilizer jobs.

Employment in GCC fertilizers industry (Thousand people)



Source: GPCA questionnaire, 2017

GCC fertilizer industry related employment in 2016 (Thousand people)

Source: GPCA questionnaire, 2017

Capacity growth

Breakdown by country

GCC fertilizer capacity increased by 12% in 2017

Saudi Arabia is the main fertilizer producer in the region accounting for 51% of total production capacity

GCC fertilizer production capacity continued to grow on the back of investments made several years ago. Production capacity reached 42.3 million tons per annum in 2017, up 12% from the previous year and much higher than the 4% growth posted in 2016.

The GCC fertilizer industry's share in total chemical output by volume increased to 25% in 2017. Nevertheless, the industry is characterized by a high concentration of production and trade.

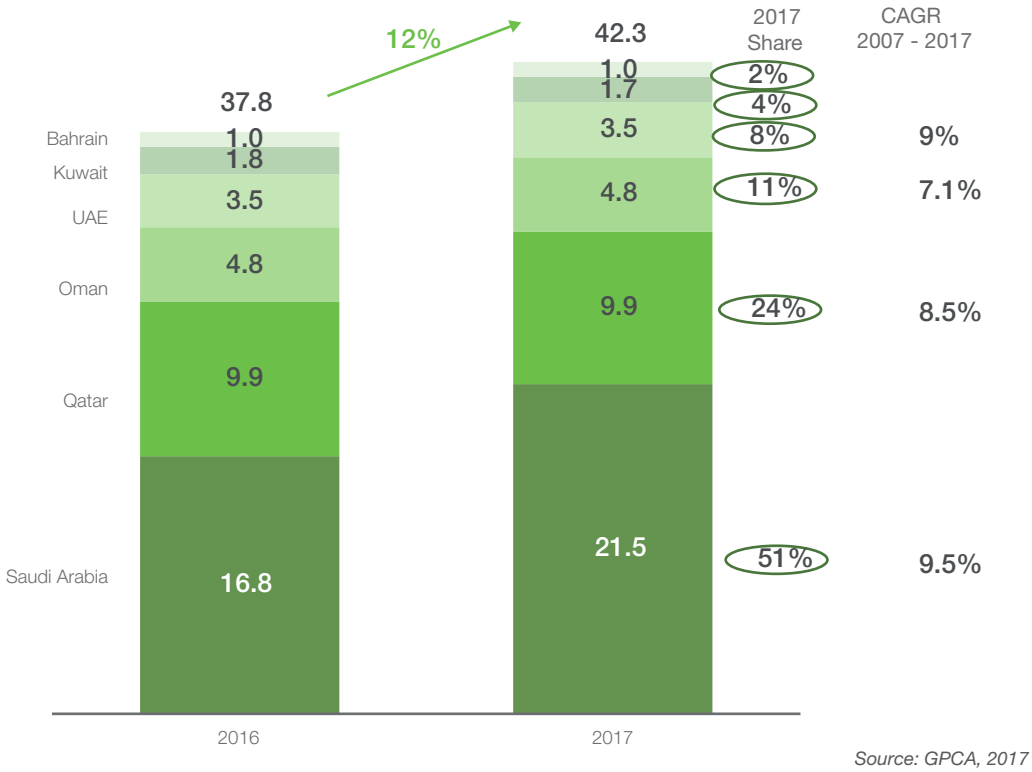
Over the last 40 years, the GCC fertilizer industry has expanded significantly. From just 3 million tons of fertilizers per annum in the 1970s-1980s, the region has grown into a major global hub for the production and export of fertilizer products.

Saudi Arabia and Qatar remain the top GCC fertilizer producers, making a contribution of 51% and 24% respectively to total regional output in 2017. With one of the strongest growth rates over the past decade, Saudi Arabia has dramatically increased its market share in the GCC fertilizer industry from 44% in 2007 to 51% in 2017.

Capacity additions in 2017 were driven by Saudi Arabia, with the start-up of Ma'aden's Wa'ad Al-Shamal facility in Tareef province, Saudi Arabia.

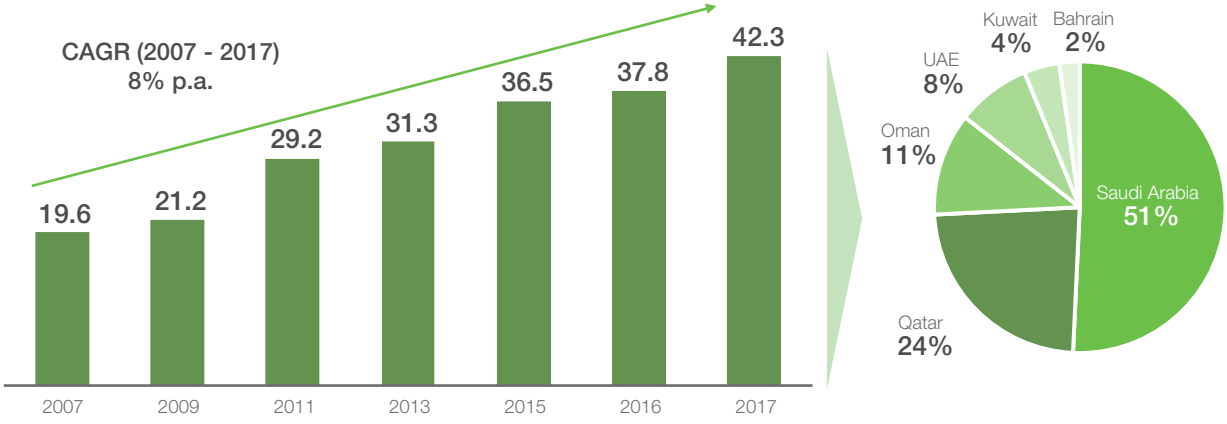
Waad al Shamal is a USD 7.5 billion project between Ma'aden, Sabic and Mosaic. Once completed, the total production capacity of the complex, slated to be the largest in the world, will stand at around 16 million TPA, with full production capacity expected to come on stream gradually over the next years. This development will position Ma'aden as a key global supplier of phosphate fertilizers. Phosphate fertilizers have a wide range of applications in the agricultural sector which includes crop development and plant maturation. Emerging economies such as India and China which are highly agriculture driven have seen a rise in demand for phosphate fertilizers and this demand will continue to grow.

GCC fertilizer production capacity (Million tons)



Source: GPCA, 2017

GCC fertilizer production capacity (Million tons)



Source: GPCA, 2017

Breakdown by product

GCC production capacity of mainstream fertilizers reached 24.5 million tons per annum, accounting for 57.6% of the entire fertilizer industry

In 2017, production capacity for fertilizer raw materials reached 17.8 million tons, up by 9% from 2016

GCC producers manufacture fertilizer raw materials, mainstream fertilizers and specialty fertilizers. Fertilizer raw materials offer sustainable supply of intermediate products, supporting profitability of the entire industry. In 2017, production capacity for fertilizer raw materials reached 17.8 million tons, up by 9% from 2016. Most of the ammonia produced is consumed for the manufacturing of urea.

Mainstream fertilizers offer crop nutrition solutions to farmers, supporting agricultural production. In 2017, GCC production capacity of mainstream fertilizers reached 24.5 million tons per annum, accounting for nearly 58% of the entire fertilizer industry.

GCC mainstream fertilizers

Among the various fertilizers manufactured in the GCC, urea is the main product produced in the region. In 2017, urea production capacity remained 17 million tons. Historically, urea has been the main fertilizer manufactured in the region. However, its market share in total mainstream fertilizers is declining. In 2007 urea accounted for nearly 90% of mainstream fertilizer products, while now it represents 69.7%. This reflects on a major diversification drive of the industry and new products additions.

GCC urea production

Urea production in the GCC has come a long way since its debut in the region. Today, all GCC states produce urea. Historically, the production of urea started off the back of availability of primary raw material, natural gas. Most GCC production facilities are capable of producing above 1 million tons per annum.

Qatar, the biggest urea producer in the region, is home to the world's largest urea facility. With production capacity of 5.9 million tons per annum, Qatar represents 35% of GCC's total urea output. Driven by rapid industry expansion over the past 10 years, urea capacity in both Qatar and the UAE grew at a CAGR of 9% for the period 2007-2017, while their market share increased by several percentage points.

The industry in the GCC grew not only quantitatively, but also in the area of higher value fertilizers, with regional producers such as QAFCO and SABIC switching towards the production of niche, environmentally friendly productsA. SABIC's manufacturing affiliate Al-Jubail Fertilizer Company (Al-Bayroni) in Jubail produces a specific grade of urea 'Technical Grade Urea' which will enable cleaner diesel technology in engines. This would allow the engine to perform better and to use fuel more efficiently.

Traditionally, the industry has been mostly a commodity business, relying on highly energy intensive products. Primary nutrient such as phosphorus is widely available in the region thanks to abundant raw material in the form of phosphate rock. N and P fertilizers are absolutely necessary to produce more food.

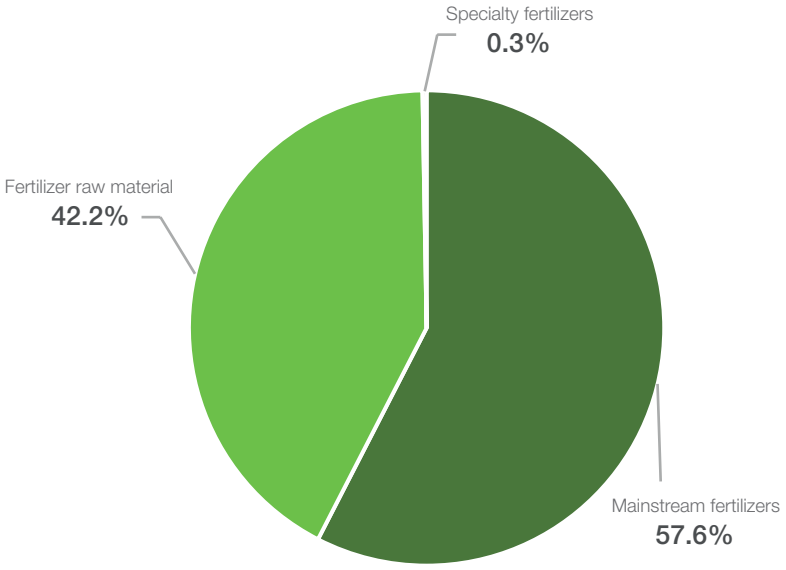
DAP is the most used among phosphate fertilizers and in the GCC its production capacity has reached 5.5 million tons per annum, accounting for 22.5% share of total mainstream fertilizers output. There was a considerable increase in DAP production in 2017 compared with the previous year. The regional production share of DAP has increased by seven percentage points over the last year, edging out ammonia's production share which has fallen over the same period.

Additionally, other phosphorus fertilizers, such as mono and dicalcium phosphate as well as prisodium phosphate (TSP), are coming into production. Output is still insignificant compared to other products, representing around 1% share each. Nevertheless, global consumption is increasing. Altogether phosphate fertilizers in the GCC represent 24% of total mainstream fertilizer output.

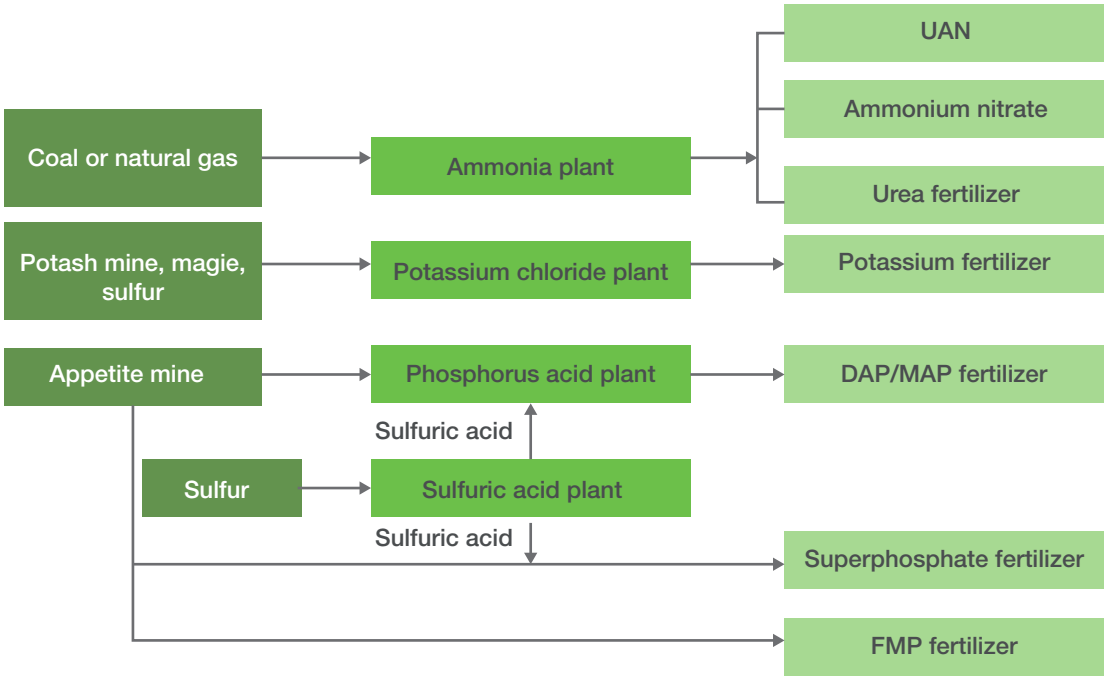
Specialty fertilizers

Specialty fertilizers in the GCC are still in their infancy. What distinguishes the specialty from commodity fertilizer businesses are the higher barriers to entry. In order to produce more sophisticated products, greater technical knowhow is required for the processes that coat commodity products or produce stabilizers, solubles and higher value micronutrients. This knowhow can be acquired through research and development or by licensing existing technology.

GCC fertilizer capacity by segment
2017 total: 42.3 million tons

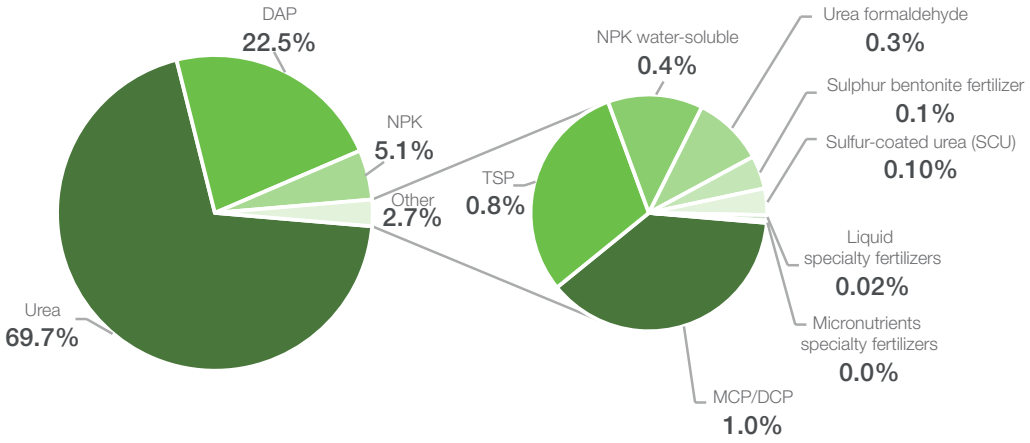


Source: GPCA, 2017

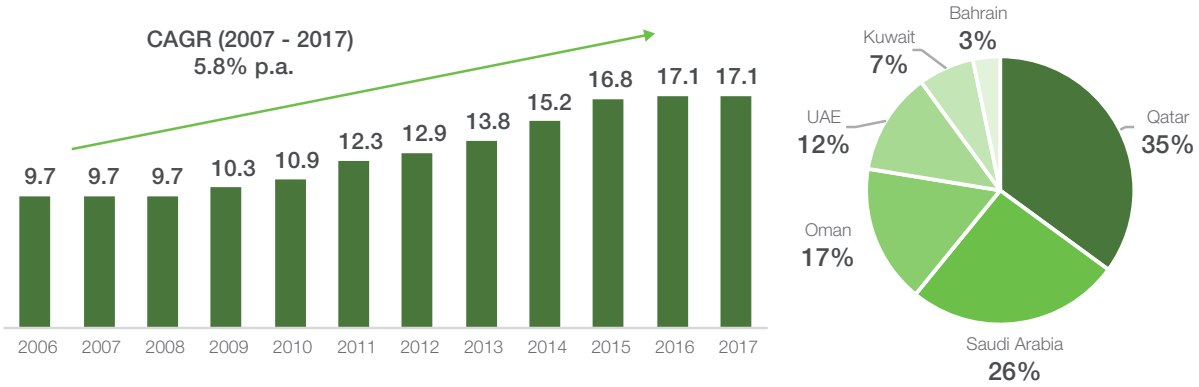


The depth of the GCC fertilizer value chain provides higher returns on investment than its peers. Vertically integrated supply chain model offers producers an opportunity for synergies on existing assets.

GCC mainstream fertilizers production capacity
2017 total: 24.5 million tons



GCC urea production capacity (million tons)



Source: GPCA, 2017

Investing in the future

GCC fertilizer producers are planning to invest USD 8 billion in new projects

Saudi Arabia

Phosphate fertilizers plant 3: The Saudi Arabian Mining Company (Ma'aden) has announced plans to expand its phosphate based business with the addition of a third project to manufacture phosphate fertilizers which will be executed gradually over the coming seven years till 2024. Upon completion of this third project, Saudi Arabia will increase its potential supply to global markets by 3 million tons of phosphate fertilizers.

Ma'aden ammonia plant: Ma'aden is also planning to build a new ammonia plant in Rask Al Khair. The plant will have the capacity to produce 3,300 tonnes a day (t/d) of ammonia, which will largely be used for the production of fertilizers.

Oman

Salalah Methanol Company ammonia plant: Construction of the project has commenced and when completed, the plant will produce about 1,000 tons of ammonia a day, using feedstock from the nearby methanol plant operated by SMC. The petrochemicals project in Salalah forms part of Oman's efforts to develop its downstream sector at ports such as Duqm and Sohar.

Bahrain

GPIC urea formaldehyde plant: GPIC is building a new facility which will produce 22 metric tons per day of urea formaldehyde and is expected to come on stream in Q3, 2018. Total investment in this project is estimated at about USD 8.8 million.

Capacity expansion

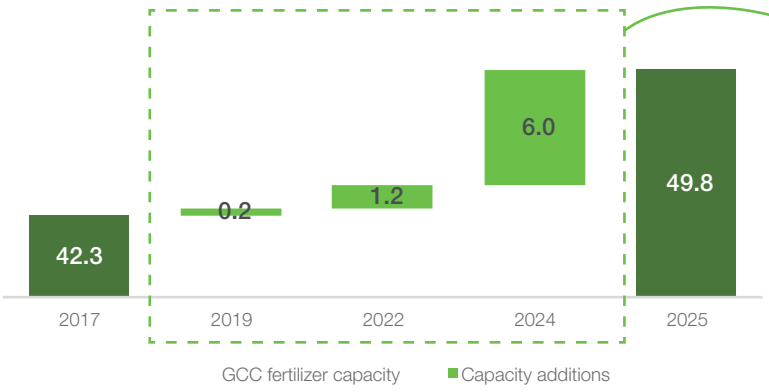
The GCC is expected to add 7.4 million tons of production capacity by 2025

Phosphate fertilizers will drive capacity additions in the region

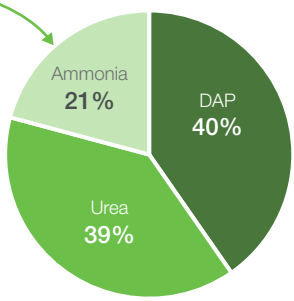
GCC fertilizer capacity is set to reach 49.8 million tons by 2025, growing at 2% per annum. The region is expected to add 7.4 million tons of production in the coming years. In addition to urea, ammonia and phosphate, DAP will be the main driver behind capacity additions in the region. From 5.5 million tons currently, DAP production is set to increase to 8.5 million tons at an annual growth rate of 5.6%. As a result, DAP's share in total GCC fertilizer capacity will grow by 4%, making it the only fertilizer product to gain market share in the medium term. This indicates that GCC producers are increasingly diversifying from nitrogen fertilizers and offsetting their reliance on one type of fertilizer products.

Between 2017-2025, 95% of total capacity additions will come from Saudi Arabia, growing the country's share in regional fertilizer production to 58%, up from 40-43% over the past decade.

GCC fertilizer production capacity expansion 2017 - 2025, million tons



Fertilizer capacity addition (2017-2025), Total 7.4 million tons



Source: GPCA, 2017

Global position

GCC share in global production

Ammonia

Global ammonia capacity in 2016 stood at 217.7 million tons per annum, up 2.4% from the year before

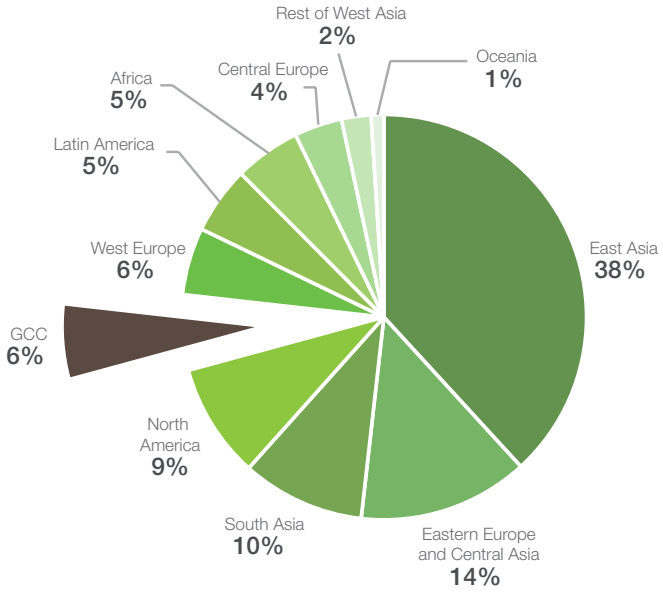
GCC is the fourth largest ammonia producer globally, accounting for 6% of global production capacity

Global ammonia capacity continued to expand despite massive reductions in China. In 2016 capacity stood at 217.7 million tons per annum, up by 2.4% from the year before. The largest capacity increase took place in North America where ammonia capacity grew by 14.3% YoY, reaching 19.9 million tons in 2016. Africa also saw significant ammonia capacity additions, growing at 13.7%. Ammonia capacity on the continent is estimated at 11.5 million tons which accounts for 5% of global ammonia capacity.

Over 50% of total ammonia production is located in Asia, with China, India, GCC, Indonesia and Pakistan accounting for 85% of the overall Asian market. China is the largest single country producer in the world with production capacity of over 60 million tons per annum, representing close to 30% of global ammonia output. China's ammonia plants are mainly concentrated in the north, east and central south parts of the country, with ammonia mainly being used for the production of nitrogen fertilizers. China's ammonia industry is fragmented with large number of small producers – the largest single-unit capacity reaches 500,000 t/a, while the smallest is less than 80,000 t/a.

Between 2016 and 2021, global ammonia capacity is expected to continue to expand by about 8%, reaching 234 million tons in 2021. Capacity will be added in EECA, North America and Africa. An estimated 45 new ammonia plants currently under construction or in advanced development stage are due to come on stream between 2017 and 2021.

Global ammonia production capacity
2016 total: 217.7 million tons



Source: IFA Production and International Trade, 2017

DAP

GCC accounts for 5% of global DAP capacity

GCC is the fourth largest producer of DAP globally

Global DAP production capacity in 2016 remained unchanged – at 62.2 million tons. But due to low capacity utilization rates, actual production of DAP stood at 35.6 million tons. Asia accounts for almost 60% of world DAP production capacity, China being the largest producer in the region, representing nearly half of global DAP output. In 2016 Chinese production of DAP fertilizers decreased by 11% YoY, adjusting to lower exports and depressed local demand.

North America holds the second largest DAP production capacity, and in 2016 accounted for 19% of global DAP capacity or 12.4 million tons with no changes over the previous year. Phosphate fertilizer consumption rose marginally in 2016 and will remain stable in 2017. With 5% share in global DAP capacity, the GCC is the fourth largest producer of DAP globally.

Total production capacity of DAP in Africa has reached 10.7 million tons, of which 9 million tons are located in Morocco, the largest DAP producer on the continent. Plans to add 8 granulation plants by 2021 will increase the country's production capacity to 15.8 million tons in 2021.

Urea

Global urea capacity in 2016 was estimated at about 208.2 million tons per annum

GCC accounts for 8% of global urea capacity, making it the third largest urea producer globally

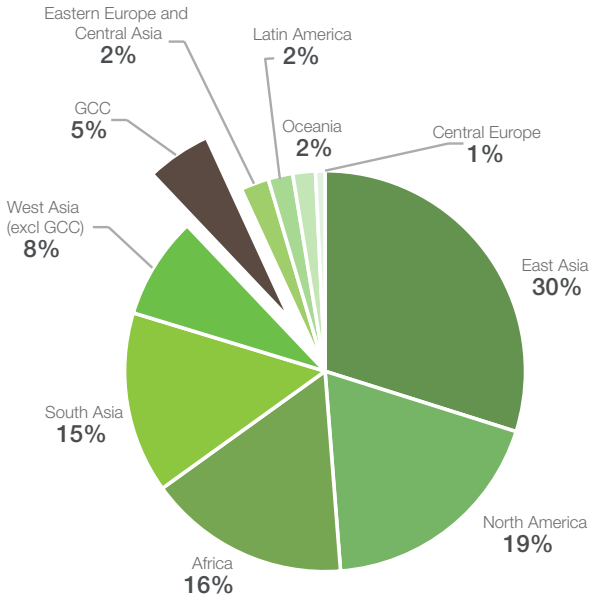
Global urea capacity in 2016 remained unchanged – at about 208.2 million tons per annum. While new urea capacity was added in Africa, East Asia and China saw a decrease, balancing out global capacity levels. Urea represents half of the total nitrogen output and will contribute two thirds of the projected ammonia capacity increment.

Actual production of urea during 2016 was reported at 174 million tons. Major increases of output occurred in Russia, Saudi Arabia, Iran, Nigeria and Pakistan. On average, the global urea industry ran at 84% of nameplate capacity.

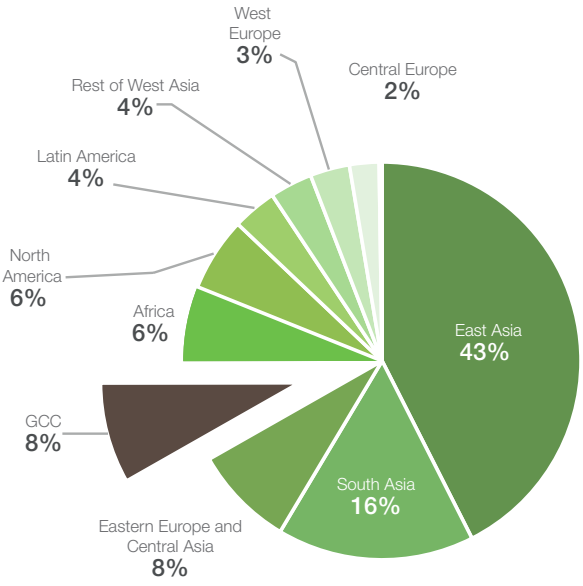
On a regional basis, Asia is the largest urea producer accounting for close to 70% of total urea capacity. China is a leading producer of urea globally, accounting for about 34% of global output. India, GCC, Indonesia, Pakistan and Iran are also among the top global urea producers.

Global urea capacity is projected to increase by a net 17 Mt (+8%) to 226 Mt in 2021. Close to 90% of planned expansions will occur between 2016 and 2018. On a regional basis, North America, South Asia and the Eastern Europe and Central Asia (EECA) region will account for 70% of overall capacity growth.

Global DAP production capacity
2016 total: 62.2 million tons



Global urea production capacity
2016 total: 208.2 million tons



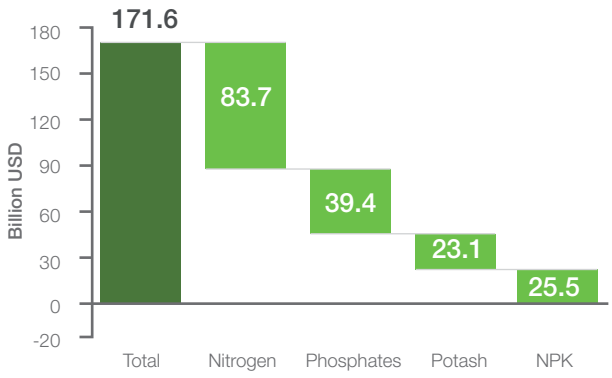
Source: IFA Production and International Trade, 2017

GCC share in global fertilizer sales

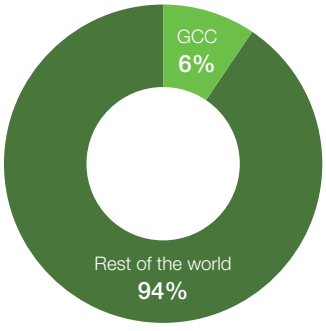
Global fertilizer sales in 2017 have been estimated at about USD 171.6 billion

The GCC accounted for 6% of global nitrogen sales revenue

Global fertilizer sales in 2017 have been estimated at about USD 171.6 billion, with nitrogen fertilizers sales representing about 50% or USD 83.7 billion. On the back of abundant supply and soft demand growth, fertilizer market conditions in 2016 were on a decline. Fertilizer prices dropped by 21% in 2016 posting a decline for the second consecutive year. Though nutrient sales grew by 2.9% YoY in 2016, the overall decline in fertilizer prices has resulted in negative growth for the majority of fertilizer producers. Most fertilizer sales originating from the GCC are from nitrogen, with the region holding 6% share in global nitrogen revenue. When both nitrogen and phosphate are concerned, GCC accounts for 4% of global sales.



GCC share in global nitrogen fertilizer sales



Source: International Fertilizer Association (IFA) and GPCA, 2017

GCC fertilizer trade

Export by volume and value

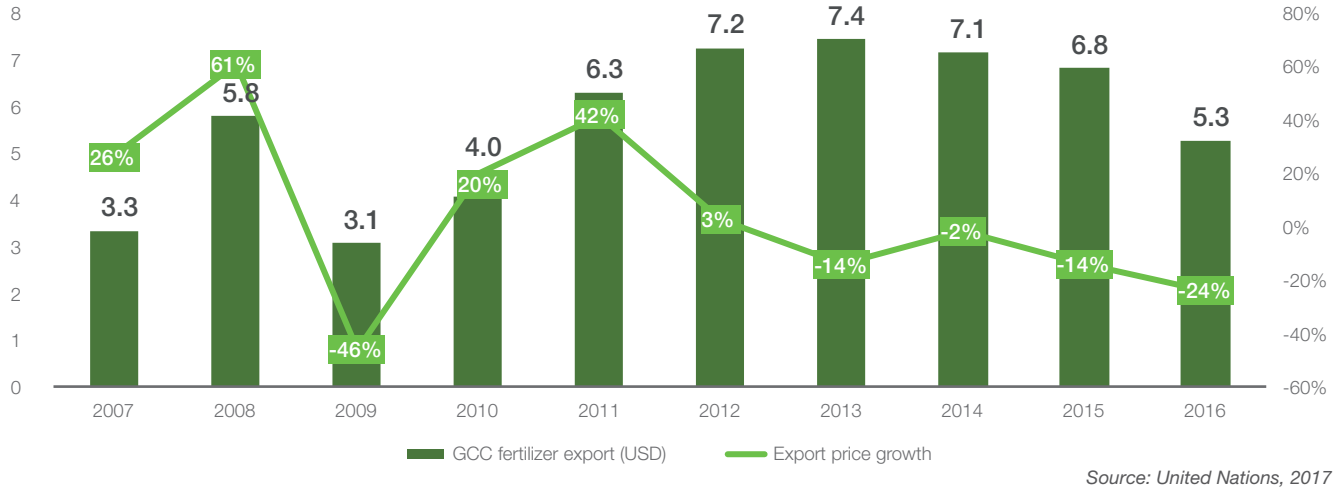
GCC fertilizer export revenue in 2016 stood at 5.3 billion

About 90% of GCC fertilizer output is exported to international markets

Historically, about 90% of GCC fertilizer output is exported abroad, exposing GCC producers to overseas markets dynamics, consumption patterns and high competition. A combination of factors, such as fertilizer supply fluctuations, production capacity increases and cost, has had a huge impact on GCC fertilizer sales abroad.

In 2016, the average export price fell by 24% YoY, posting a 50% decrease from its historic highs in 2008. As a result, GCC export revenue has been effected significantly. In 2016, revenue stood at USD 5.3 billion, down by 23% YoY, marking the second consecutive year of decreasing fertilizer sales revenue. This trend directly follows global fertilizer price dynamics, whereby the prices fell by 21% and 5% in 2016 and 2015 respectively.

GCC fertilizer export revenue (USD billion) vs export price changes (year-on-year change, %)



Source: United Nations, 2017

GCC fertilizer exports in 2016 totaled 20.5 million tons, up 2% from the year before. While this remains a low export growth, the region outperformed world merchandise trade growth (1.3%) and stayed on par with global urea export growth (2%). GCC fertilizer export in recent years was relatively low, however, long terms growth was upbeat. Over the past decade, export volume doubled from 10.2 million tons in 2006 to about 20.5 million tons in 2016.

Saudi Arabia accounts for about one third of this volume or about 7.2 million tons and has the most diversified product portfolio for export – urea representing 53%, with the remaining shared between ammonia and DAP. Other GCC countries have a strong dependency on urea exports, which represents the lion's share of total fertilizer exports, at almost 95%. This dependency makes GCC producers highly exposed to global dynamics within the urea segment.

Exports of fertilizer intermediates continue to materially increase with higher volumes compared with those a decade ago. This is in contrast to the global trend where intermediate export is declining as more producers expand into downstream production. Nevertheless, GCC export of mainstream fertilizers, such as urea and DAP, has registered even higher increases, growing at 6.7% per annum over the past decade.

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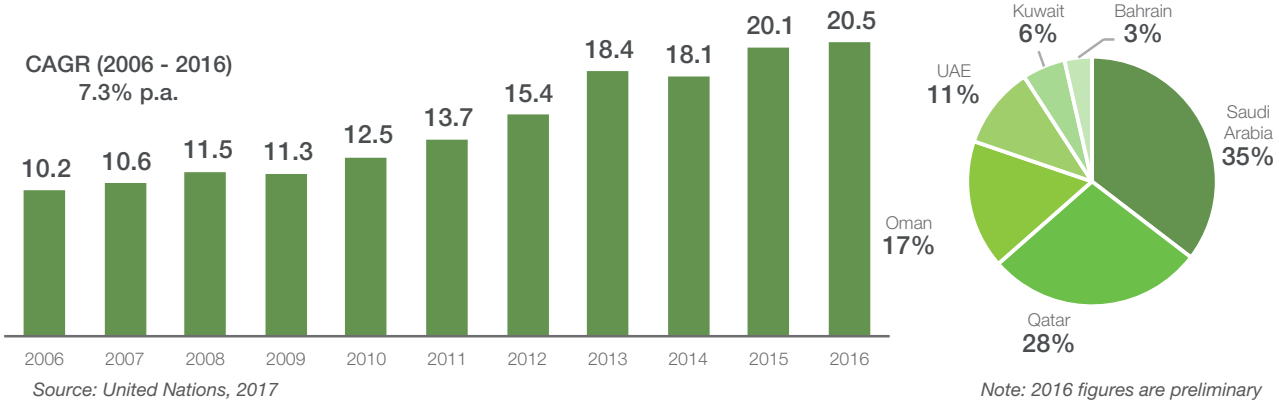
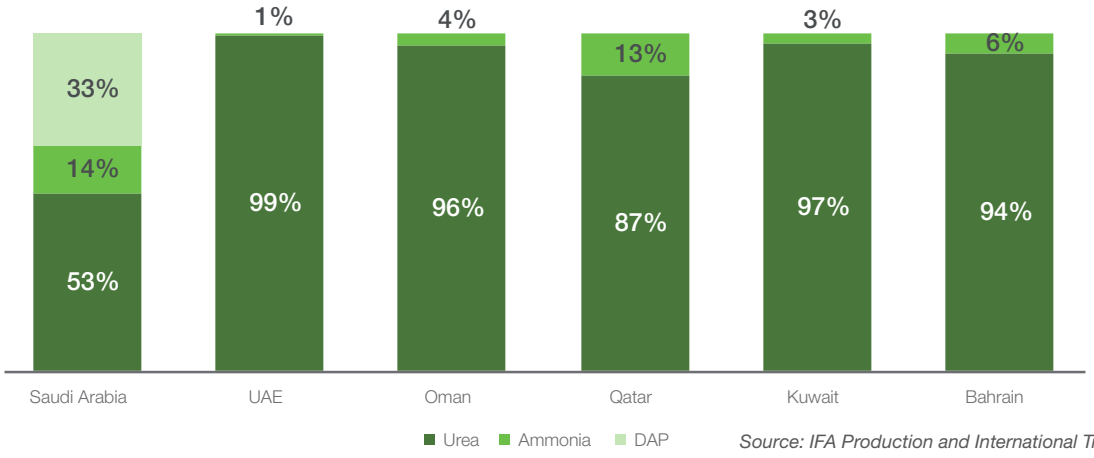
GCC fertilizer export (million tons)



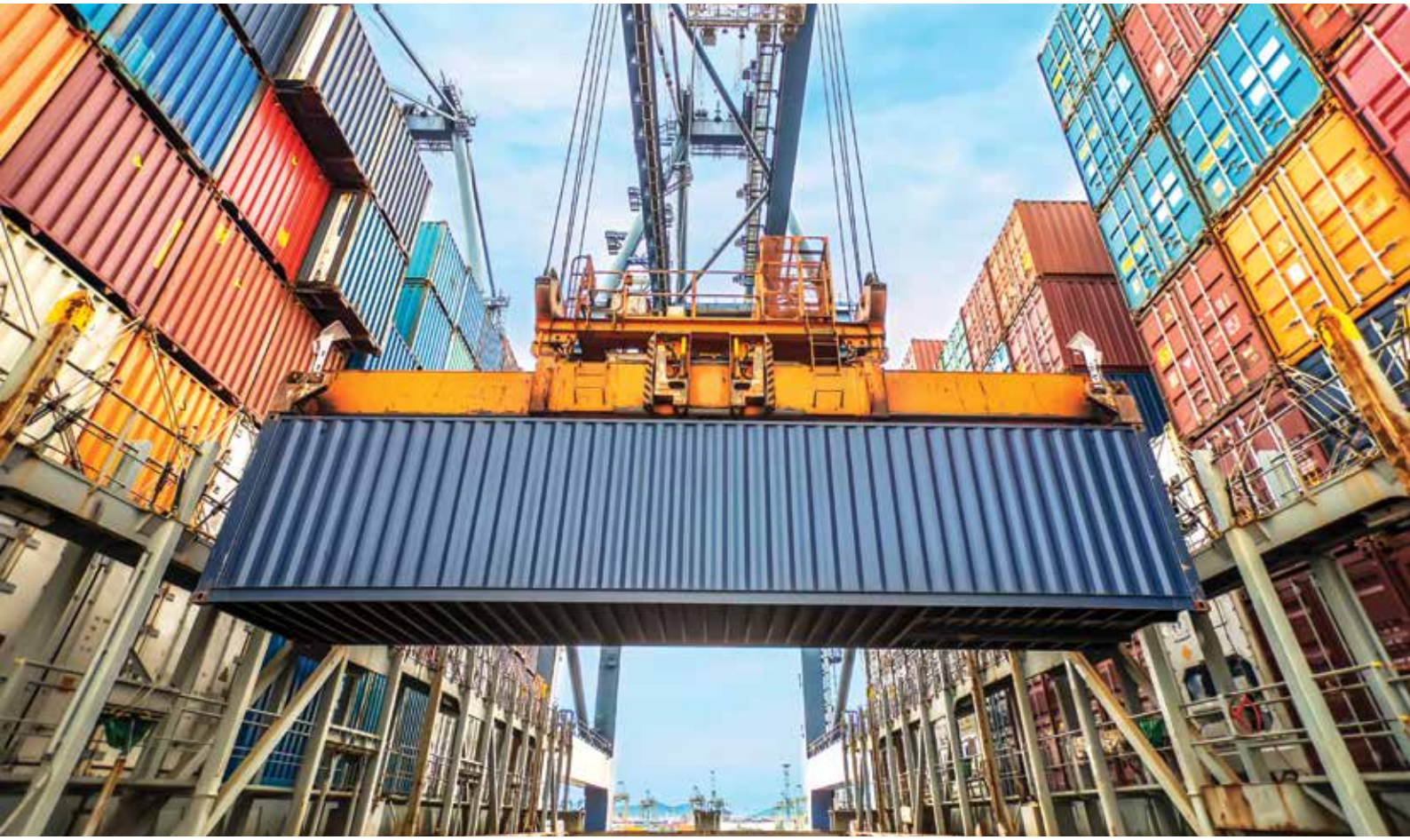
Source: United Nations, 2017

Note: 2016 figures are preliminary

GCC fertilizer export composition by country



Source: IFA Production and International Trade, 2017



Export by origin and destination

Asia is the largest export region, accounting for 56% of GCC fertilizer exports

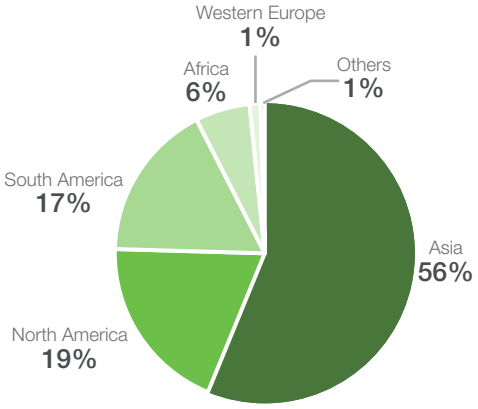
South America registered the highest CAGR of 40.3% per annum for 2006-2016

GCC fertilizers are distributed through a global sales network with access to all main fertilizer consumption regions. GCC fertilizer producers export to about 60 countries. South Asian countries, in particular India, remain major importers of fertilizers. For GCC fertilizer producers, Asia has been a traditional export market accounting for more than half of GCC export volume. Several countries in Asia are the top three export markets for GCC fertilizer products: India, Thailand and Bangladesh.

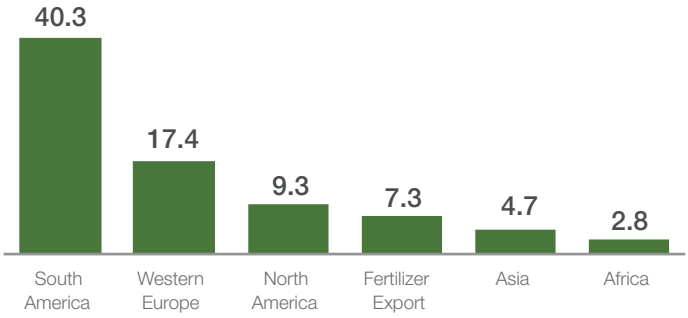
India is the top single country export market absorbing close to 5 million tons of GCC fertilizers valued at USD 1.3 billion with annual growth rate of 5.3% per annum over the past decade. Thailand imports about 1.6 million tons and Bangladesh just over 1 million tons. In India, fertilizer imports from the GCC account for about 20% of all fertilizer imports, and in Thailand and Pakistan, GCC's export share is one third.

North American countries imported close to 4 million tons of fertilizers, which is 19% of total GCC exports valued at about USD 1 billion. However, it was South America which witnessed the fastest growth. Over the past decade GCC exports on the continent grew by about 40.3% per annum, with Brazil and Argentina the main drivers for growth. GCC fertilizer exports to Brazil grew by 57% per annum and 14.5% per annum in Argentina.

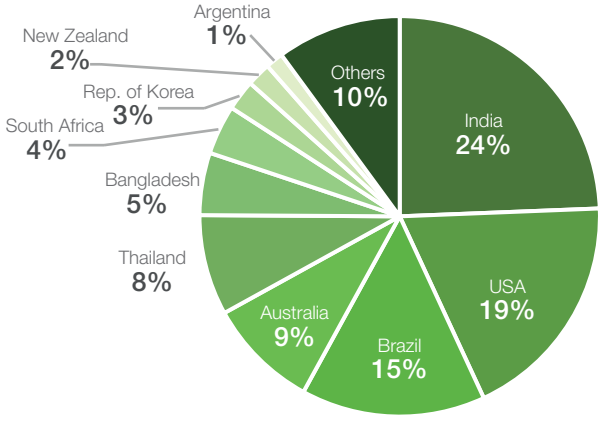
GCC fertilizer export by region
2016 total: 20.5 million tons



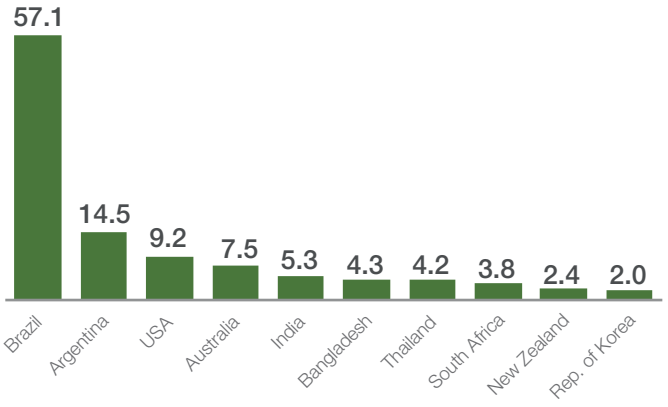
GCC fertilizer export growth by region
CAGR (2006 - 2016)



Top 10 export countries importing GCC fertilizers
2016 total: 20.5 milion tons



GCC fertilizer export growth by country
CAGR (2006 - 2016)



Source: United Nations, 2017

Share in global exports

GCC is the top urea exporter globally representing 32% of total urea exports

DAP exports by the GCC are the second largest globally, accounting for 14% share globally

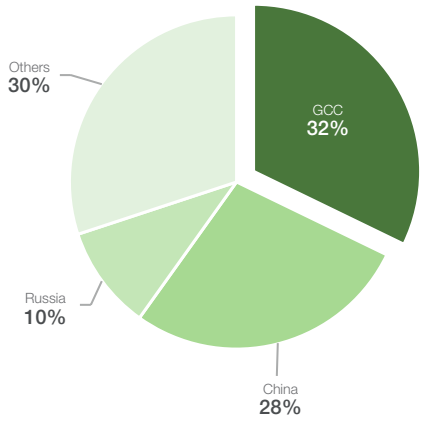
The GCC, China and Russia collectively account for 70% of world urea exports. The Arabian Gulf region is emerging as the largest urea supplier, accounting for one third of global volume in 2015, followed by China with 28% and Russia with 10%. Natural gas rich regions tend to be major exporters of urea. However, there are some exceptions. China has huge domestic capacity traditionally used to supply its domestic market needs. However, during periods with strong global demand China is needed to provide the additional volumes required on the international markets. North America, Latin America and South and East Asia are the main fertilizer importing regions.

Globally, only 10% of ammonia production is traded, with the majority of ammonia consumed for urea production. Ammonia is usually imported by the industrial market, in addition to phosphate fertilizers producers and some nitrogen producers. Ammonia has direct application on the field making it a desirable product for import.

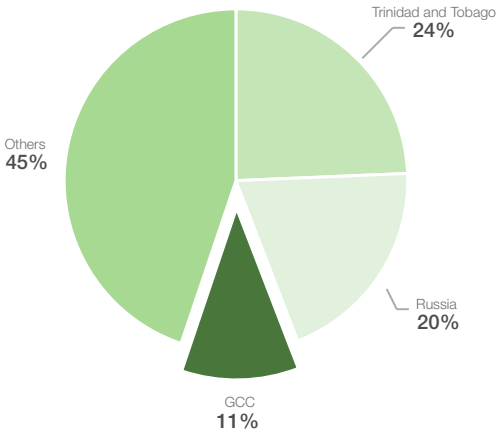
About half of the world ammonia exports are originated from Trinidad and Tobago, Russia and the GCC. Largest among them is Trinidad and Tobago representing about one quarter of the global volume in 2015, followed by Russia (20%) and the GCC (11%). As the world's top three largest producing regions, they operate on a large scale and have the primary focus to supply foreign markets.

China is the largest P-nutrient consuming country and exports about 25% of its P-fertilizers. It remains the largest exporter of DAP with 46% share globally. The US exports about half of its DAP output and in 2015 accounted for 12% of global DAP exports. In 2015, the GCC was the second largest DAP exporter representing 14% of global export. Altogether China, GCC and the US accounted for approximately 72% of global DAP supply in 2015.

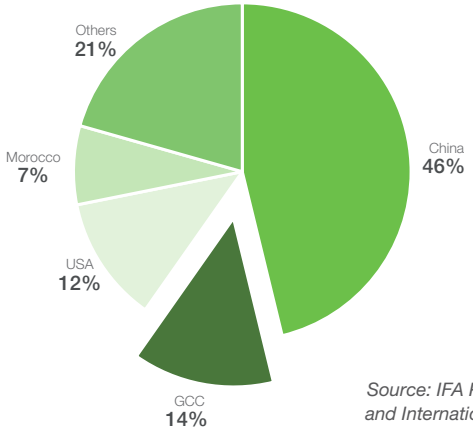
Global urea export, 2015 total: 49.6 million tons



Global ammonia export, 2015 total: 18.3 million tons



Global DAP export, 2015 total: 17.4million tons



Source: IFA Production and International Trade, 2017

GCC fertilizer industry outlook

The export oriented strategy of the region will continue to play a crucial role in the successful development of the Arabian Gulf fertilizer industry. However, it will be influenced by a series of internal and external conditions. Those conditions include international competition, global reach, demand dynamics, expanding supply markets, as well as stable supply of raw materials and feedstock.

GCC fertilizer earnings reflect world market prices which producers have to match in order to supply its customers. Following years of decline, fertilizer prices are expected to modestly improve by 1% in 2017 and further upscale by 3% in 2018. Based on this projection, GCC fertilizer earnings are expected to reach close to USD 7 billion by 2018, mostly fueled by the increase in fertilizer output.

Demand growth outlook

The Arabian Gulf fertilizer industry continues to grow and diversify its product portfolio away from nitrogen. Overall production capacity is projected to increase by 2% per annum during 2017-2025. Phosphate fertilizer production capacity alone will grow by 5.6% per annum during the same period. With growing output, phosphate export is expected to rise accordingly. Export oriented growth relies on the size of external markets and international fertilizer demand dynamics. Global demand is seen growing by an average of 1.5% per annum by 2022. The highest growth rate is expected in areas with the greatest agricultural potential such as Africa, Eastern Europe and Central Asia, and Latin America. Traditional markets for GCC producers like South Asia and North America will grow modestly by 1.9% and 0.4% per annum respectively. South Asia would be the second largest contributor to the anticipated increase in global fertilizer demand in the next five years. In order to maintain their market share, GCC producers will need to closely monitor evolving fertilizer policies in this region.

Changing market dynamics

As fertilizer demand is increasing, so is the competition for supply markets. By 2021, large fertilizer production capacity is coming on stream – around 90 million tons, to which the GCC will contribute about 8%. Assuming all planned projects will be realized as planned and based on modest demand growth projections, the fertilizer industry is heading towards oversupply conditions and expectation of tougher competition between producers. Stronger international competition will force regional producers to continuously innovate, expand product portfolio, improve quality and upgrade their technological capabilities. A move towards producing “specialty grades” fertilizers will become even more important. The specialty business requires a different skill set, greater emphasis on innovation and niche markets. Change will also be driven by the general shifts in the fertilizer market, which will move towards specialty fertilizers to increase yields and lower water consumption. With GCC fertilizer producers focused on supplying countries and regions with insufficient fertilizer application rates, such regions, particularly India and Africa, will offer great potential.

Ensuring competitiveness

In light of intensifying competition and tightening environmental regulations, many GCC producers will need to expand their business models. There is a great scope for improving nutrient use efficiency as well as nutrient management and farmer education. This will require further strengthening fertilizer producer’s capabilities beyond manufacturing efficiency, volume pricing and capacity utilization.

By ensuring the long term growth of the fertilizer industry, the Arabian Gulf region contributes to solving some of world’s greatest challenges such as food security, while also helping to meet the global sustainability goals.

The Gulf Petrochemicals and Chemicals Association (GPCA) represents the downstream hydrocarbon industry in the Arabian Gulf. Established in 2006, the association voices the common interests of more than 250 member companies from the chemical and allied industries, accounting for over 95% of chemical output in the Gulf region. The industry makes up the second largest manufacturing sector in the region, producing over US$ 108 billion worth of products a year.

The association supports the region's petrochemical and chemical industry through advocacy, networking and thought leadership initiatives that help member companies to connect, to share and advance knowledge, to contribute to international dialogue, and to become prime influencers in shaping the future of the global petrochemicals industry.

Committed to providing a regional platform for stakeholders from across the industry, the GPCA manages six working committees - Plastics, Supply Chain, Fertilizers, International Trade, Research and Innovation, and Responsible Care - and organizes five world-class events each year. The association also publishes an annual report, regular newsletters and reports.

For more information, please visit **www.gpca.org.ae**

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