

# DOWNSTREAM GAS INDUSTRY

ANNUAL REPORT 2010

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## 1. OVERVIEW OF THE DOWNSTREAM GAS INDUSTRY 2010

In 2010 the global economy slowly emerged from recession. Following a contraction of 3.5 per cent in 2009, economic growth in Trinidad and Tobago remained relatively flat in 2010. The energy sector experienced moderate growth, mainly on account of increased output of natural gas.

The energy sector is the major contributor to the economy of Trinidad and Tobago, providing 52% of annual government revenue and 44% of gross domestic product (GDP) in 2010. The petrochemical sector alone contributed an estimated 13% to GDP in 2011.

Natural gas production expanded during 2010. For the first eleven months of the year, natural gas was produced at a rate of 4.3 billion cubic feet per day (bcf/d), up from 4.2 bcf/d during 2009. Natural gas utilization was also up in 2010, settling at 4.0 bcf/d from 3.8 bcf/d during the corresponding period of 2009.

As at December 1, 2010 the natural gas reserves of Trinidad and Tobago support the following natural gas based industries in the downstream industry:

- |                                           |             |
|-------------------------------------------|-------------|
| a. Electrical Power generation            | - 6 plants  |
| b. Manufacture of LNG                     | - 4 plants  |
| c. Manufacture of Ammonia                 | - 11 plants |
| d. Manufacture of Methanol                | - 7 plants  |
| e. Manufacture of Direct Reduced Iron     | - 4 plants  |
| f. Manufacture of Melamine and UAN        | - 1 plant   |
| g. Fuel use in Refining                   |             |
| h. Fuel use in Light Industrial Customers |             |

## Production

Table 1: Petrochemical Production 2009-10

Petrochemical	Production / MT	
	2009	2010
Ammonia	5,394,557	5,553,242
Methanol	6,120,248	5,932,232
Urea	674,068	708,760
UAN	-	1,277,839
Melamine	-	14,345

## Export

Table 2: Petrochemical Exports 2009-10

Petrochemical	Export / MT	
	2009	2010
Ammonia	4,849,404	5,254,926
Methanol	6,176,936	5,978,154
Urea	687,054	675,711
UAN	-	1,194,300
Melamine	-	13,262

## Price

Table 3: Petrochemical Prices 2009-10

Petrochemical	Location	Price (\$US/MT)	
		2009	2010
Ammonia	Caribbean	224	361
Methanol	US Gulf	234	328
Urea	Caribbean	260	301
UAN	US Gulf	149	243
Melamine	US Gulf	1789	2201

## 2. AMMONIA

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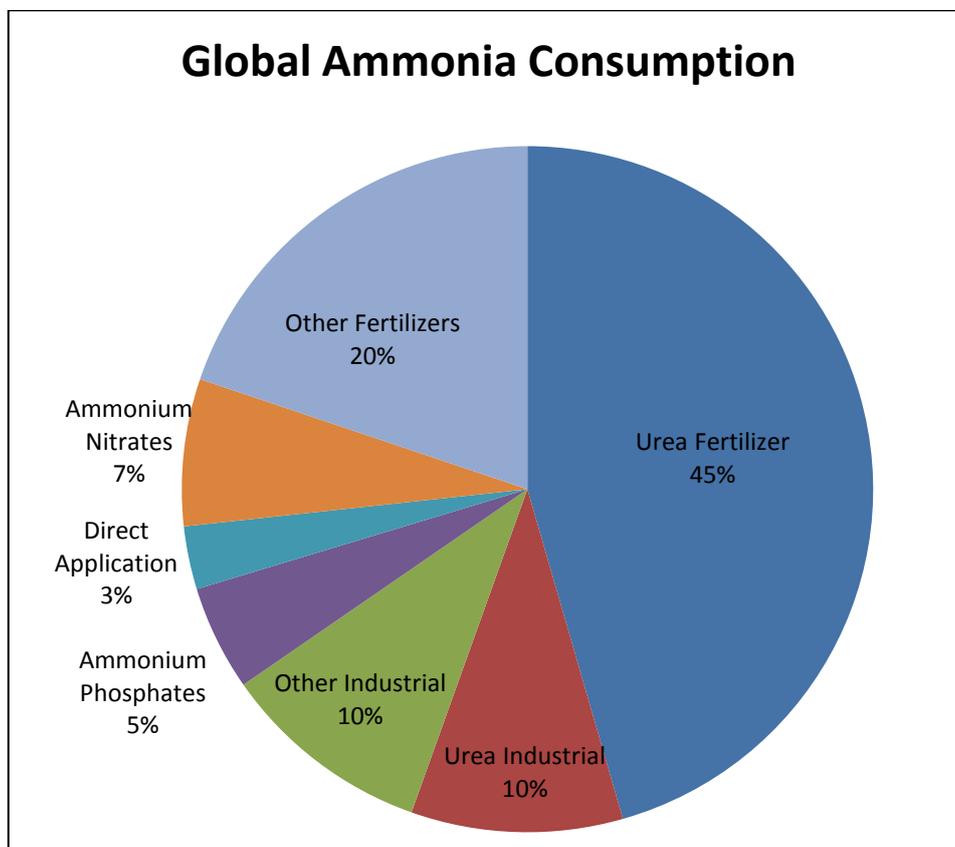


Figure 1: Ammonia Usage (Chemsystems, 2010)

Ammonia demand is primarily driven by urea consumption, which is mainly a function of fertiliser demand.

### Fertilizer Market Perspective 2010

Global fertilizer demand in 2010 has been robust and widespread, driven by a strong rebound in traditional markets where nutrient application was depressed in 2009. The recovery in demand has been stronger than anticipated and has provided support for an increase in domestic sales and global trade. Overall global demand grew by 3.7% over 2010, to 162.5 million metric tonnes (MT), and is forecasted to increase by 4.8% to 170.4 million MT. Globally, the fertilizer industry has operated at 82% of installed capacity, compared with 74% in 2009 (IFA, 2010). While this indicates a rebound, it does not yet signal the emergence of a potential shortfall in supply.

Global total nutrient production in 2010 has converged with world consumption, marking a significant 11% rebound over 2009. Ammonia production has increased by 4%, while urea output has expanded marginally.

## Ammonia Market Outlook (2011)

According to International Fertilizer Industry Association (IFA) estimates, world ammonia production in 2010 showed a 4% increase from 2009 to 158.8 million MT. Global ammonia trade in 2010 has rebounded from last year's 7% drop and has grown by 12% to 19.6 million MT.

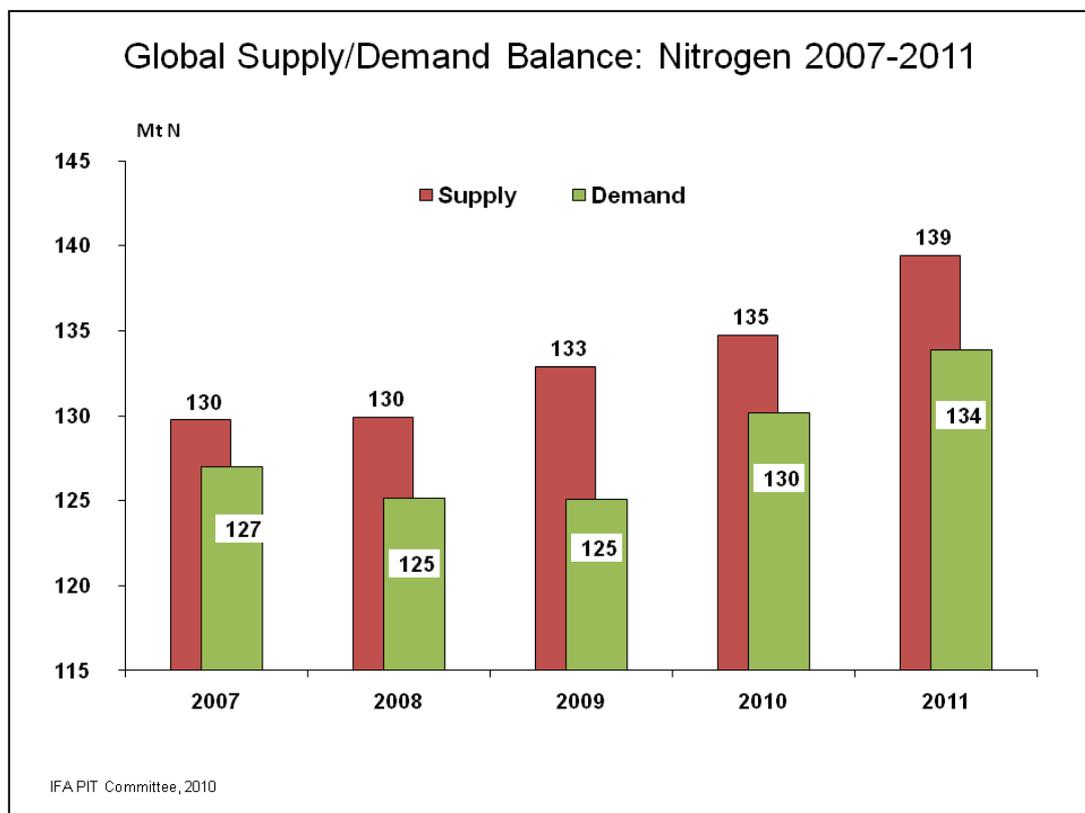


Figure 2: Global Nitrogen Balance (IFA, 2010)

World ammonia capacity is projected to grow by 3% in 2011 to 200 million MT. The supply and demand balances for nitrogen show a decreasing potential surplus, from 7.7 million MT in 2009 to 5.1 million MT in 2011.

Statistics from the IFA show that in 2010 total ammonia exports rose over 10% year-on-year to 14.12 million MT.

**Table 4: Leading exporters of ammonia in 2010**

Country / Region	2010 Exports (million MT)	Percentage change from 2009
Trinidad	5.25	↑ 8.4%
Russia	2.55	↓ 9.7%
West Asia	2.48	↑ 8.8%
Indonesia	1.00	↓ 1.5%

The upturn of ammonia prices in 2010 was indicative of the strength of improved demand globally, which in turn reflected the resurgence of international trading activity which recovered from 17.2 million MT in 2009 and to an estimated 19.6 million MT in 2010.

The downward price correction anticipated in 2011 reflects the downside risks due to the start-ups of:

1. Ma'aden ammonia plant in Saudi Arabia (1.1 million MT per year [PY] ) prior to commissioning of the phosphate facilities;
2. Sorfert Algerie project in Algeria (800,000 MTPY) ; and
3. QAFCO V in Qatar (4.3 million MTPY), which will have a large surplus of merchant ammonia available in the first year of operation until the QAFCO VI urea unit (5.6 million MTPY) commences production in 2012.

## **Americas**

North America is seen as recovering relatively quickly from the sharp market contraction recorded in 2008/09. This positive outlook is driven by strong demand for maize from the US ethanol industry. US ammonia demand is likely to remain strong in the first quarter of 2011 ahead of an expected robust spring application season.

Trinidad is the world's largest ammonia exporter with a capacity close to 4.9 million MT in 2009. Other Caribbean and Latin American exporters include Venezuela, Mexico, Argentina, Brazil and Colombia.

Over the past five years, imports into the US, the world's largest importer, has ranged between 7-8 million MTPY. Imports come mainly from Trinidad and to some extent from Russia, Ukraine, Venezuela and the Middle East.

Potash Corp announced that it would soon begin an 18-month process to restart its anhydrous ammonia plant in Louisiana. The plant has the capacity to produce 1,500 short tons/day. It was idled in 2003 due to high natural gas prices.

## **Europe**

According to the IFA, no major change in merchant ammonia capacity is expected in Europe. It is believed that Europe will remain the net importer of seaborne ammonia for the short term. IFA predicts an average import requirement of around 3 million MTPY.

## **Asia and Oceania**

Agricultural production in Eastern Europe and Central Asia is expanding rapidly in response to market opportunities and supportive policy. As a result, regional fertilizer demand is seen as growing firmly, at 4.1% PY.

Fertilizer demand in West Asia is expected to grow modestly, as the potential for increasing crop production in this region is limited. Consumption is projected to be up by 2.0% PY.

India is ranked as the world's third largest producer and importers of ammonia. Imports which are estimated at 1.9 million MT in 2009 are used for phosphate fertilizers since domestic ammonia production is mostly integrated with urea production. Excluding any plant restarts, IFA expected India's ammonia capacity to reach 20 million MTPY in 2014.

Demand for nitrogen fertilizers in China was soft in 2009 with ammonia production increasing at a moderate rate of 3.8% compared to 2008 to 50.8 million MT. Much of the increase was related to higher urea and Di-ammonium phosphate (DAP) output. In the medium term, China's ammonia capacity is projected by the IFA to increase from 62 million MTPY in 2009 to 71 million MTPY in 2013.

Agriculture in Oceania was strongly hit by two consecutive droughts in Australia and by the economic downturn. Fertilizer demand is projected to recover slowly, returning to its 2007/08 level in 2014/15 (an increase of 1.9% PY).

## **Middle East and Africa**

In the Middle East, the IFA estimated the potential for seaborne ammonia exports to grow from 3.1million MT in 2009 to 4.2 million MT in 2014.

Middle East price ideas are around US\$400/MT FOB (ICIS, Dec 2010), up from around \$290/MT FOB this time last year. However, pricing has become more challenging with Iranian product being sold at a discount to other Middle East origins due to sanction pressure which have limited export outlets for Iranian ammonia. This situation was likely to continue in 2011.

Further ahead, significant new ammonia capacity is due on stream in the Middle East later in 2011, and this may put downward pressure on prices.

At the end of the first quarter, the Ma'aden ammonia plant in Saudi Arabia is expected to start production which will add around 1.1 million MTPY to availability before reducing to 410,000 MTPY once the DAP plant starts in mid-2011. Ammonia is a key feedstock for DAP.

The Qafco V ammonia plant in Qatar is due to start production in mid-2011 and will add around 720,000 – 780,000 MTPY of ammonia availability. This extra ammonia will disappear in late 2012 when the Qafco VI urea plant starts up.

Several African countries are paying increasing attention to agricultural intensification and fertilizer use. Some have introduced or are considering the use of fertilizer subsidies. Fertilizer demand is seen as gaining momentum in the region, with an annual growth rate of 4.2%. There are, however, large differences between countries.

## Ammonia Market Outlook (Beyond 2011)

According to the International Fertilizer Industry Association (IFA) 2011, global ammonia capacity will increase by 20% to 224.1 million MTPY by 2014. Only a fraction of the overall net capacity increase will be as merchant ammonia supply since the majority of these projects are associated with increases in downstream capacity for urea and processed phosphates.

The bulk of the growth will be in China, Middle East, Latin America and Africa. The main additions to capacity would occur in Asia and Africa. Therefore, the higher rates of urea consumption growth are in regions where agriculture remains a major sector in national economies (such as South America, Central and Eastern Europe and Asia).

In the medium term, the positive agricultural outlook is expected to stimulate fertilizer demand. World demand is projected to be 188.3 million MT in 2014/15.

**Table 5: Forecasted World Nitrogen Supply/Demand Balance (IFA, 2010)**

		2010	2011	2012	2013	2014
Supply	Capacity	158.7	163.8	170.2	176.1	184.2
	Total Supply	134.7	139.6	144.3	150.3	158.5
Demand	Fertilizer Demand	103.9	106.1	108	109.9	111.7
	Non-fertilizer Demand	23	24.2	25.1	25.8	26.6
	Distribution Losses	3.2	3.3	3.3	3.4	3.5
	Total Demand	130	133.6	136.4	139.1	141.7
	Balance	4.7	6	7.9	11.1	16.7
	% of Supply	3%	4%	6%	7%	10%

### 3. UREA

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Ninety per cent (90%) of urea is used to make fertilisers. The remaining 10% is divided among the manufacture of:

1. Urea-formaldehyde (UF) resins
2. Melamine
3. Potassium cyanate
4. Urea nitrate

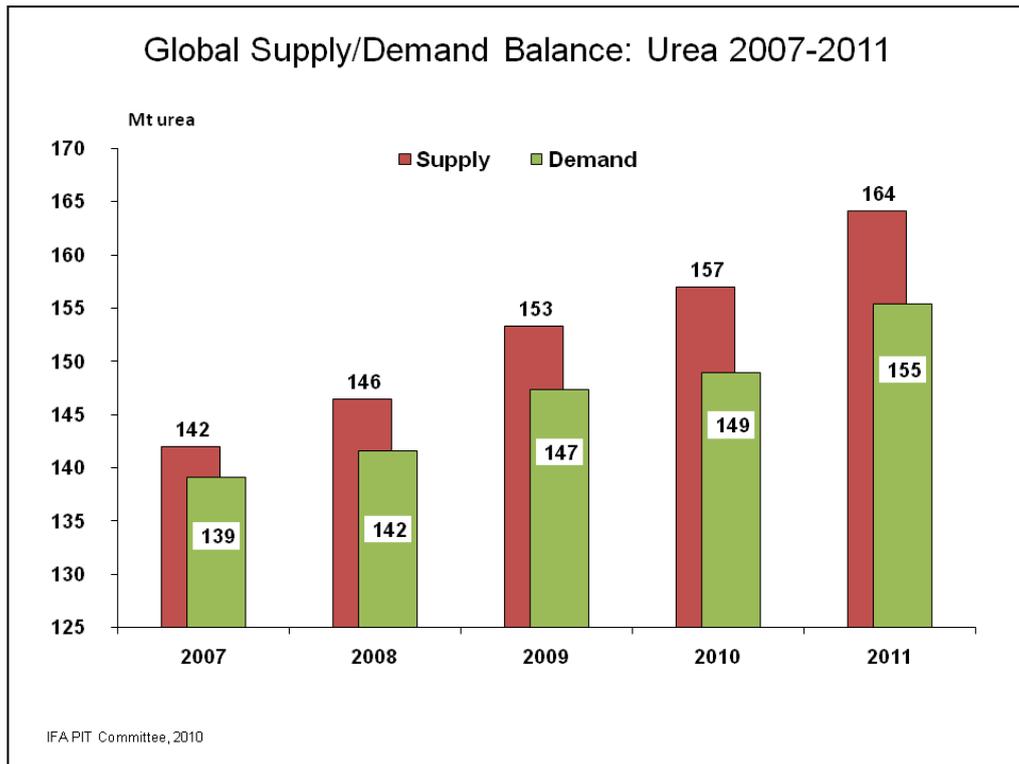
Emergence of new markets such as biofuels and AdBlue (Aqueous Urea Solution: 32.5%) for NOx emissions is expected to drive market growth worldwide.

#### **Urea Market Outlook (2011)**

Global urea production in 2010 is estimated at 149 million MT, representing a marginal 1% increase over 2009. The international urea trade is estimated at 38.5 million MT, a 6% increase over 2009. Imports have increased in most regions, notably Latin America, North America and Oceania.

Worldwide, close to 25 urea projects will provide new capacity in 2010 and 2011. IFA estimates that global urea capacity will be close to 181 million MT in 2010 and 190 million MT in 2011. China alone would contribute 46% of the annual capacity increases.

Taking into account a maximum operating rate of 87% of installed nameplate capacity, it is estimated that world urea supply will increase from 157 million MT in 2010 to 164.2 million MT in 2011. The global urea supply/demand balance shows an increase in the potential surplus by the second half of 2011, reaching 8.8 million MT by the end of the year. Overall, the potential surplus would represent less than 5% of supply when idled plants are taken into account.



**Figure 3: Global Urea Balance (IFA, 2010)**

However, the outlook for 2011 is not purely positive. Global urea demand has been forecast to increase around 3.8% per year, but additional capacity is also due on stream in several countries including Qatar and Algeria, which will reduce the potential for price rises as the year progresses.

## Urea Market Outlook (Beyond 2011)

Between 2009 and 2014, about 55 new plants are planned to come on stream, of which about 20 in East Asia. Global urea capacity is forecast to grow by 51.3 million MT, or 30%, to reach 222 million MT in 2014. This corresponds to a compound annual growth rate of 6%.

**Table 6: Forecasted World Urea Supply/Demand Balance (IFA, 2010)**

		2010	2011	2012	2013	2014
Supply	Capacity	179.1	188.3	198.5	206.9	222.1
	Total Supply	155.6	162.9	169.9	179.1	193.4
Demand	Fertilizer Demand	133.7	139.5	143.6	148.8	152.6
	Non-fertilizer Use	17.5	18.9	19.9	20.9	21.9
	Total Demand	151.2	158.3	163.5	169.7	174.5
	Balance	4.4	4.5	6.4	9.4	18.9
	% of Supply	3%	3%	4%	5%	10%

Taking into account historical operating rates by country and the ramp-up rates of new projects with a high probability of realization, world urea supply is estimated to be 148.6 million MT in 2009, 155.6 million MT in 2010 and 193.4 million MT in 2014.

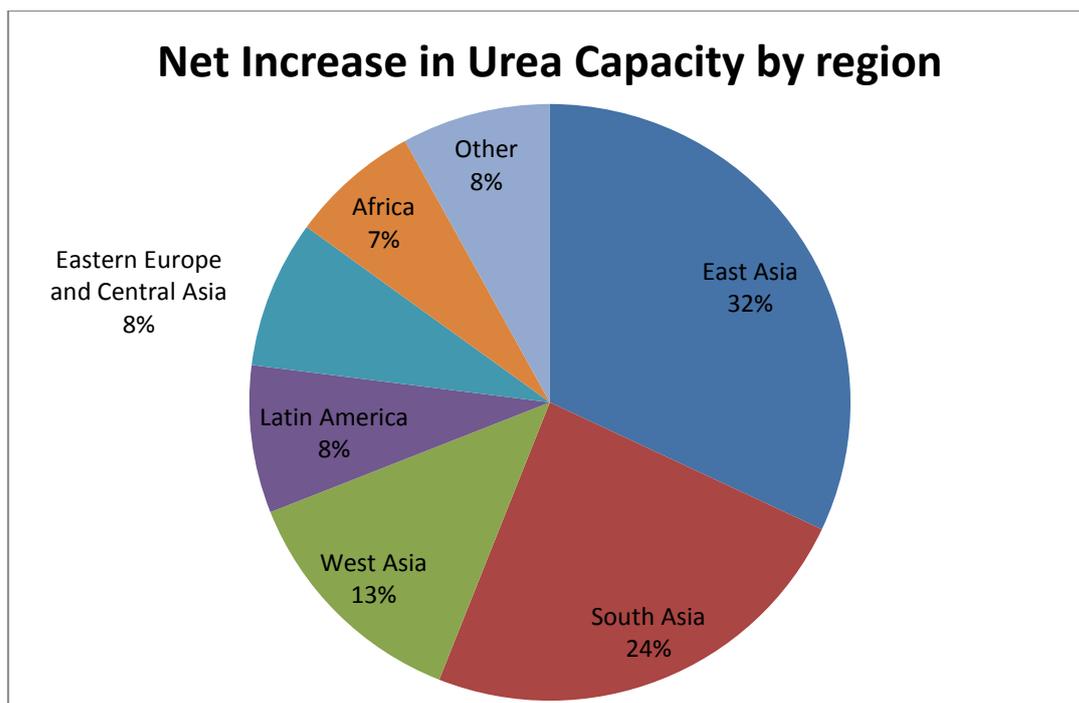


Figure 4: Net Increase in Urea Capacity by region

Excluding China, global urea capacity would increase by 36%, or 38 million MT, from 2010 to reach 144.6 million MT in 2014.

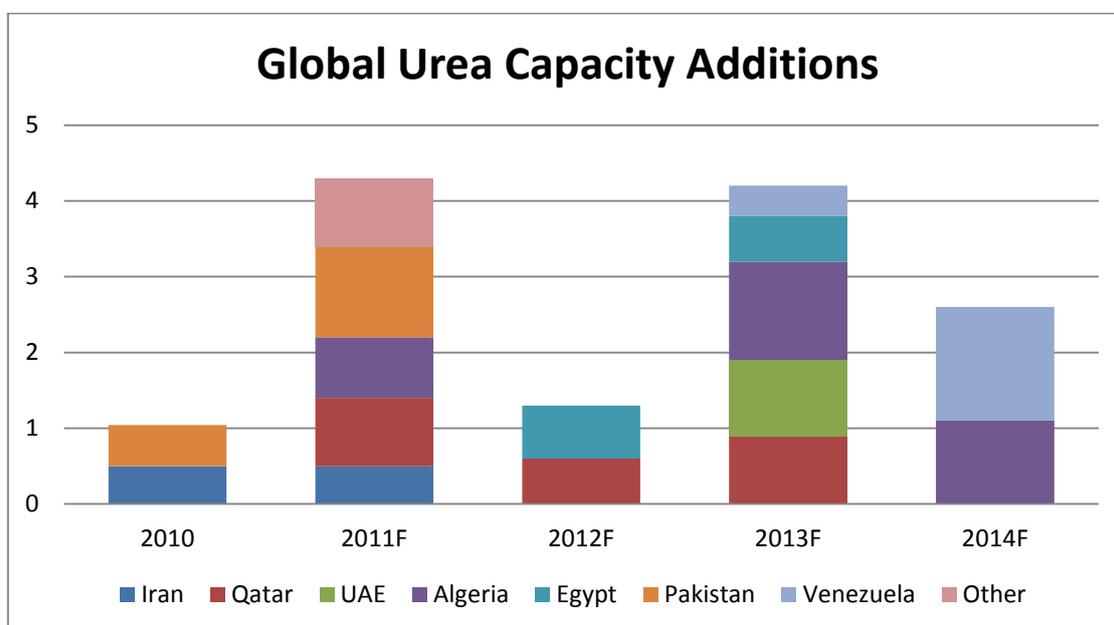


Figure 5: Global Additions in Urea Capacity (excluding China) (PotashCorp, 2010)

Approximately 90% of this capacity is likely to compete in the export market. Due to the relatively short construction lead time, projects after 2012 are still speculative at this stage and may be delayed or cancelled.

Global urea demand is forecast to increase from 146.4 million MT in 2009 to 151.2 million MT in 2010 and 174.6 million MT in 2014, representing net growth of 28 million MT over 2009 or 3.8% per annum. The bulk of this increase would come from the use of fertilizer urea, expanding 17% over 2009 to reach 152.6 million MT in 2014. The derived urea supply/demand balance for the period 2010 to 2014 shows a sustained surplus. The potential surplus in the period 2010 to 2014 is relatively marginal, representing 3% of global supply in 2009, but expanding to 10% in 2014. The large potential imbalance in 2014 would be caused by massive additions to capacity through an increasing number of projects and a relative slowing of growth in nitrogen fertilizer application.

## 4. METHANOL

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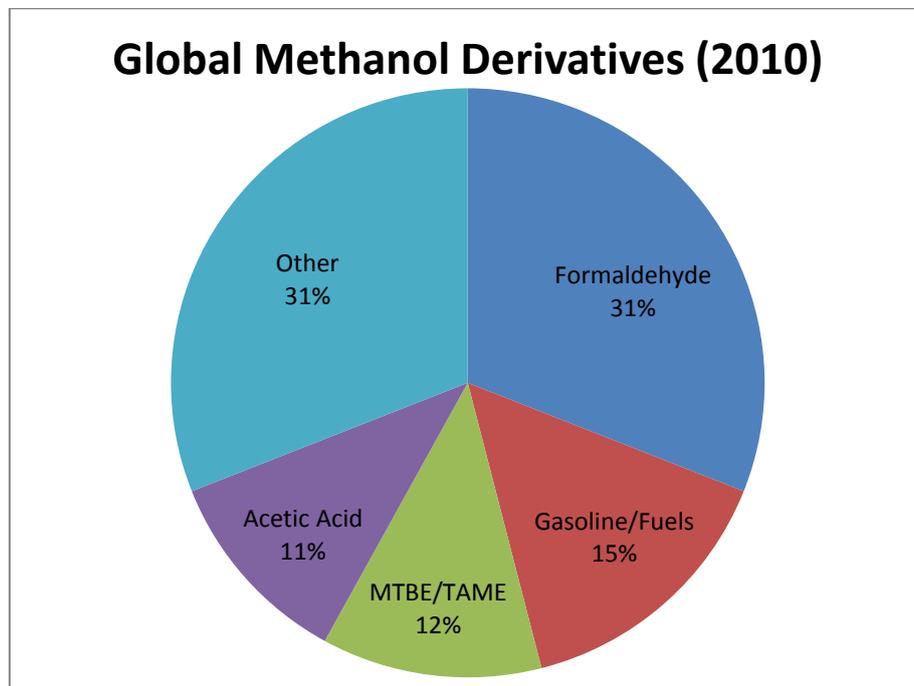


Figure 6: Methanol Consumer Derivatives for 2010 (CMAI, 2010)

Smaller methanol derivatives include:

1. Dimethyl Terephthalate (DMT)
2. Methyl methacrylate (MMA)
3. Chloromethane
4. Methylamines
5. Glycol Methyl ethers
6. Fuel

New uses of methanol are also expected to grow in 2011 with increased methanol consumption for use in methanol to olefins/methanol to propylene plants.

## Methanol Market Perspective (2010)

Improved global economic performance and a sustained gap for coal and natural gas versus crude create a powerful incentive for methanol demand.

The methanol industry suffered dramatic changes during 2009 and 2010 - from sluggish demand growth, to recovery. Global methanol demand grew a robust 11.4% in 2010 and is estimated at 46 million MT. The market remained relatively tight for 2010 with the average price for 2010 estimated at \$341/MT (CMAI, 2011).

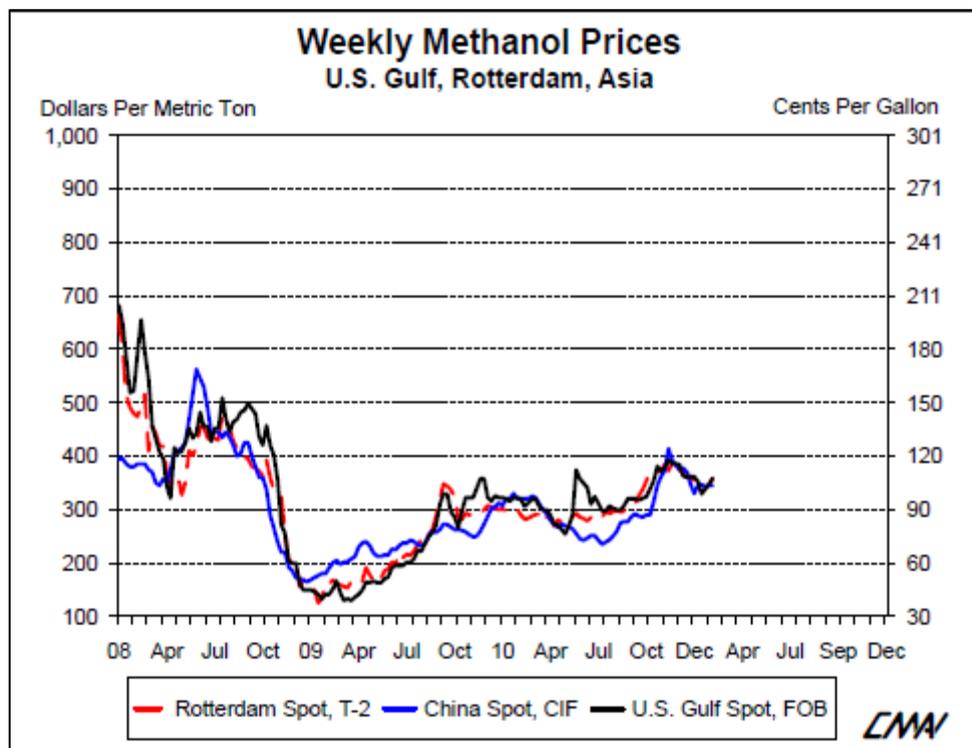


Figure 7: Global Methanol Price History 2008 – 2011 (CMAI, 2011)

Reduced global imports from Iran, particularly in Europe and China due to pending trade sanctions resulted in tighter market conditions.

The methanol industry saw capacity changes in all regions as new large scale plants came online. Approximately 2.7 million MT of new capacity were added in 2010, with new plants starting up as follows:

- Salalah Methanol, Oman - 1,000,000 MTPY
- Brunei Methanol Company, Brunei - 850,000 MTPY
- Metor II, Venezuela – 850,000 MTPY

Additionally, Terra Industries, Beaumont facility (120,000 MTPY) closed its plant in the US.

Plant outages worldwide contributed to the global tightness. Key turnarounds were the 1.9 million MTPY M5000 plant at Point Lisas, Trinidad and the 1.15 million MTPY APMCO plant on Bioko Island, Equatorial Guinea.

## Methanol Market Outlook (2011)

Approximately 2.2 million MT of new methanol supply will be added in 2011, with the following plants starting up:

- JSC Shchekinoazot, Russia - 450,000 MTPY (new capacity)
- Methanex, Egypt - 1.26 million MTPY (new capacity)
- Methanex, Alberta – 470,000 MTPY (re-start of idled capacity)
- Pandora Methanol, Texas - 850,000 MTPY (re-start of idled capacity)

As a result, tight to balanced market conditions are expected in 2011, with a methanol price of \$320/MT budgeted for 2011.

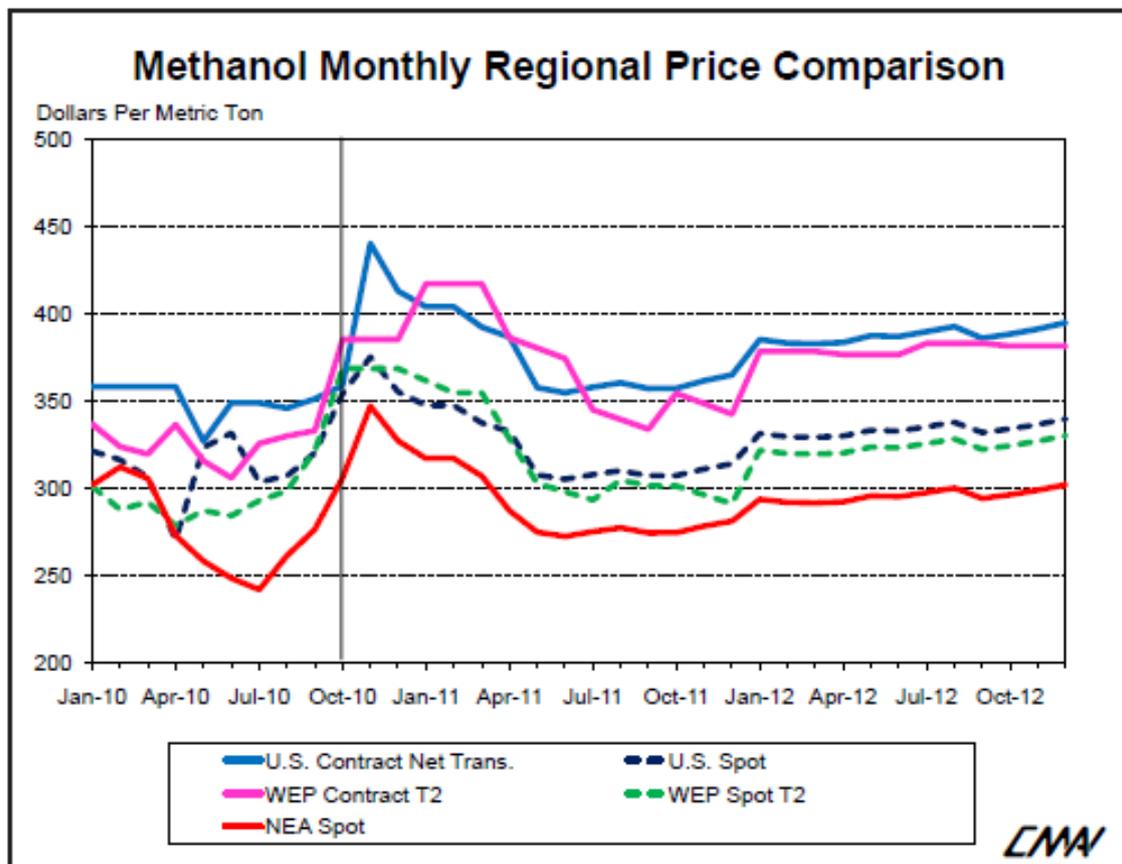


Figure 8: Comparison of projected Methanol Market Prices 2010 - 2012 (CMAI, 2011)

## Europe

Demand growth in Europe is at GDP levels. *Chemical Market Associates, Inc. (CMAI)* expects European growth to soften from around 1.7% in 2010 to about 1.4% in 2011.

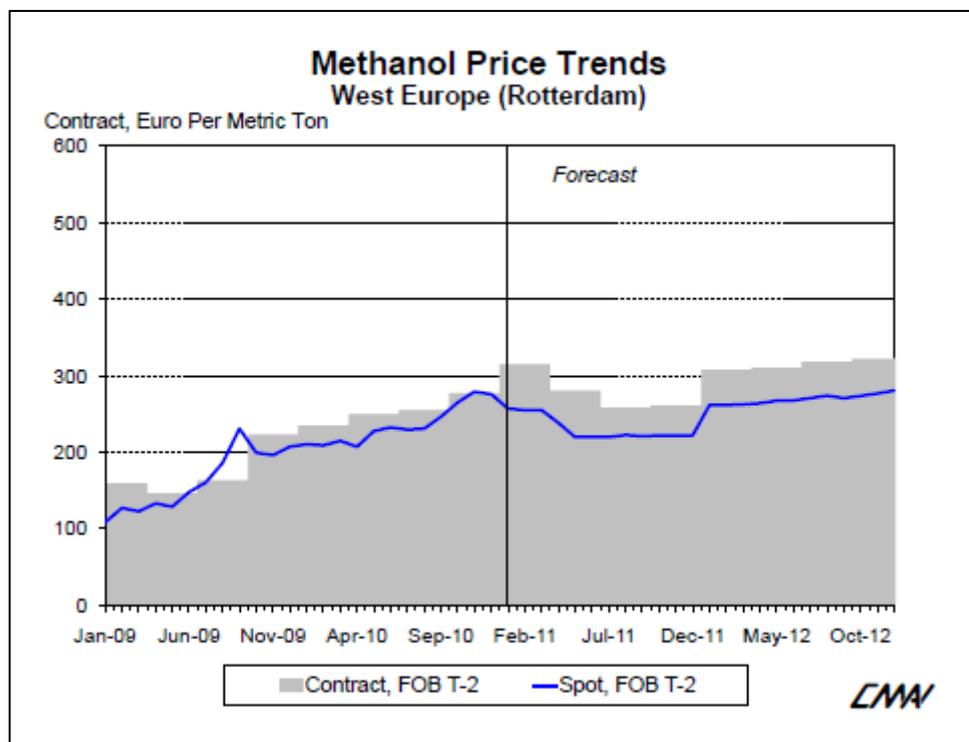


Figure 9: European methanol prices 2009 – 2012 (CMAI, 2011)

No investment is expected in Western Europe, with plans for new capacity focused in Russia, although some projects have been delayed or postponed. Global oversupply is likely to force rationalisation of uneconomic plants, particularly if prices remain under pressure.

Market conditions were stable and exerted a relatively constant yet mild upward pressure on prices. Inventories in northwest Europe were generally low. Although there was no critical shortage of material, this slight tightness combined with high demand and strong pricing in Asia helped to push up values.

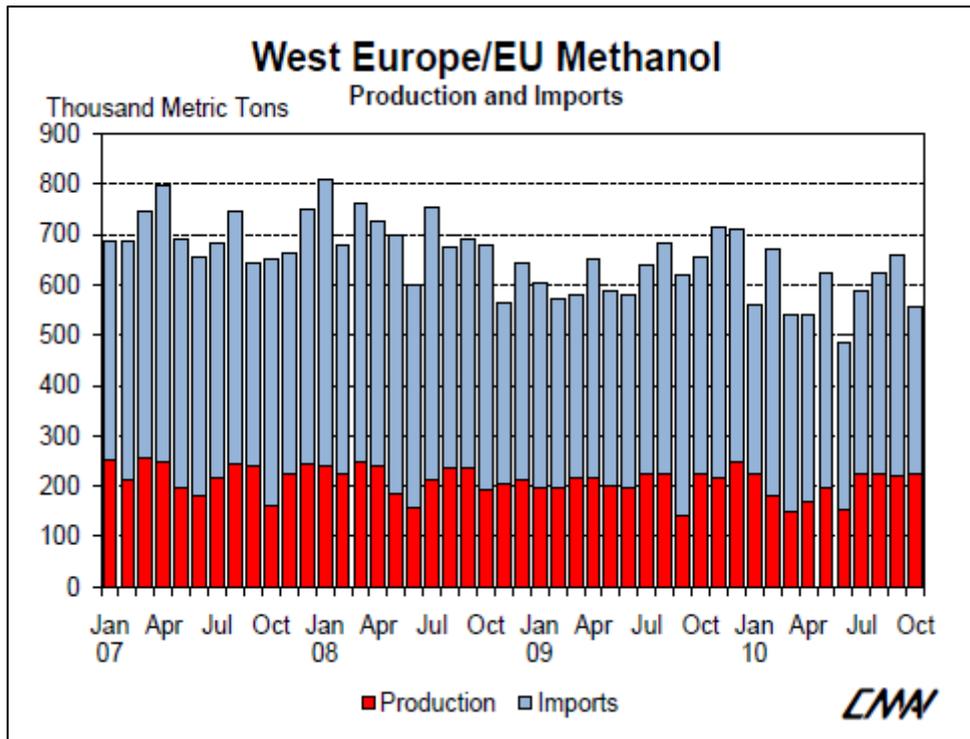


Figure 10: European Production / Import History 2007 – 2010 (CMAI, 2011)

The high pricing in Asia was a particularly potent bull factor given that Europe must compete with the Far East for volumes from the Middle East. Under the tight conditions, it was therefore unavoidable that European prices would follow those of Asia on their upward trajectory, pushed by high Chinese demand.

Russia has large volumes of associated natural gas in the country. Recent central government policy requires that 95% of the associated gas that is currently being flared must be used in downstream derivatives or within existing processes or emissions must be stopped by 2013. Oil and chemical company initiatives to comply with this policy are extensive with many options for gas utilization and monetization being explored.

## Asia

Asian methanol prices increased from \$215-260/tonne CFR (cost and freight) Asia in early August 2010 to a high of \$380-415/tonne CFR Asia by mid November 2010 - the highest level in two years.

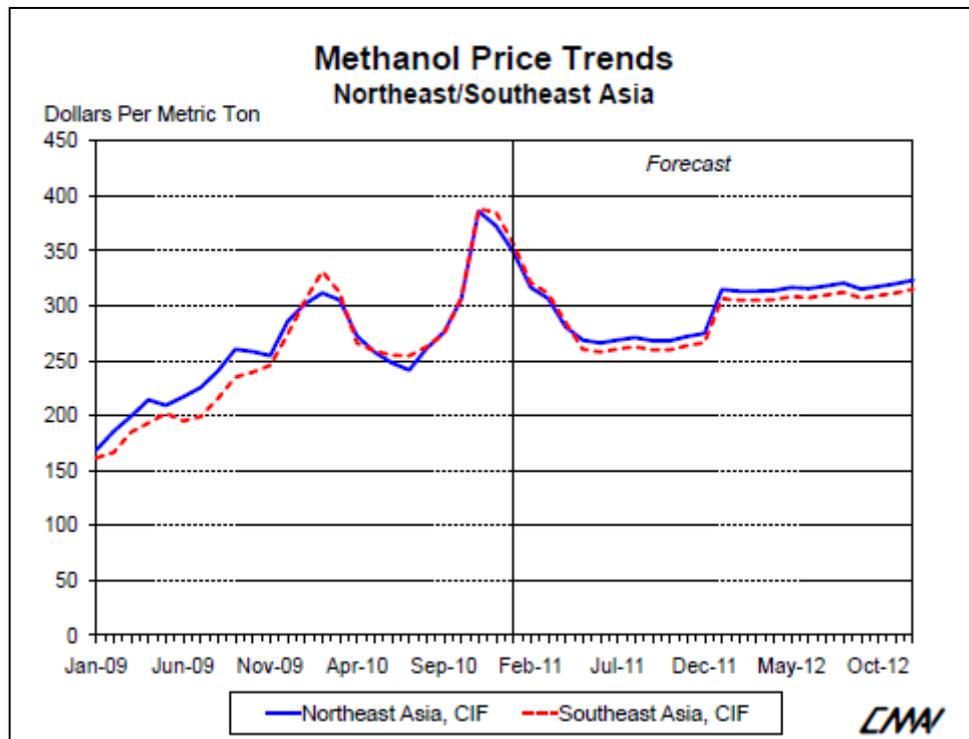


Figure 11: Asian methanol prices 2009 – 2012 (CMAI, 2011)

China is the largest regional market for methanol and the main driver of global markets, with an estimated consumption of 18 million MT for 2010, an estimated 29% increase from 2009. Increased consumption of methanol in energy applications in China continues to be the main contributor to increasing methanol consumption with:

- Gasoline/Fuels increasing by 19% p.a.
- DME by 16% p.a.

China is the largest regional market for methanol and the main driver of global markets. China has seen double-digit growth in methanol demand with strong performances in the acetic acid, methanol blending in gasoline and DME sectors.

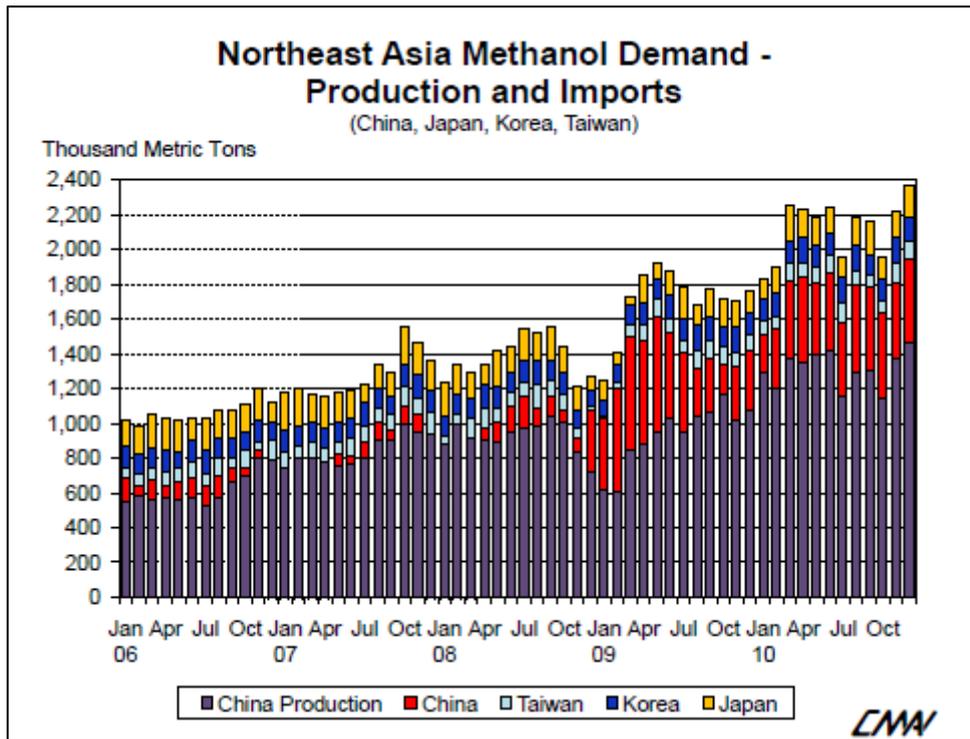


Figure 12: Asian Production / Import History 2006 – 2010 (CMAI, 2011)

Elsewhere in Asia, methanol prices continued to climb on higher selling notions led on by the key, the Chinese market.

Though other downstream segments such as acetic acid showed a lacklustre performance, prices were invariably yanked up by the bubbling methanol values.

The first Methanol to Olefins plant successfully started operations in China in August 2010. The 2000 Kta methanol capacity Baotou Shenhua plant in North China represents the first in a string of MTO/MTP plants scheduled to start up over the next five years.

Three MTO/ MTP plants will be starting up in China in 2011 (Shenhua Baotou, Shenhua Ningmei, Datang Power), and there are 5 additional MTO/ MTP plants (consuming approximately 2,000,000 MTPY of methanol per plant) underway, with 3 of the 5 already under construction. One of these 5 projects will source 100% of their requirements from merchant methanol (approximately 2,000, 000 MTPY). Additionally, there are over 40 MTO plants in various phases of project development, representing over 28 million metric tons of olefins. While many projects will not be realized, the effect on methanol is important since business models include merchant participation in the methanol market.

## 12th Five Year Plan for the China Methanol Industry (2011-2015)

Key take-away from the plan:

- China methanol demand for the following 5 years will maintain solid growth, but will slow down a bit compared with previous 5 years. The demand average annual growth rate for the following 5 years is projected at 15%.
- China's demand by 2015 is projected to be 40 million metric tons.
- China's total methanol capacity will reach 50 million metric tons.
- Up to 5 million tons of capacity with out-dated technology or less economic scale will be permanently eliminated.
- The number of producers will decrease to around 150.
- The Chinese government will implement import duty or other duties on imported methanol, to suppress dumping, under the spirit of WTO.

China is likely to experience a structural shortage of coal domestically and in the maritime merchant markets in 2011, resulting in a potential structural disconnect in coal prices impacting marginal methanol prices in China.

## **Middle East and Africa**

The Middle East is an essential part of the industry, supplying Europe and Asia. Total capacity in the region is around 17 million MTPY but demand in the region is only about 3.4 million MTPY. This leaves more than 13 million MTPY available for export if all plants run at full capacity.

The strategic direction for Saudi Arabian methanol is to move downstream with new projects for vinyl acetate monomer (VAM), Ethylvinyl Acetate (EVA), acetate esters, and other derivatives while also looking at other development opportunities for industrial gases. This is likely to affect merchant methanol availability and market competition in the derivative markets.

The Iranian methanol industry has 7 million tons of new projects in project development with an additional 7 million tons in planning. The projects vary in timing as some projects are funded by private parties while other projects are government sponsored.

The EMethanex (1.26 million MTPY) plant in Egypt started producing methanol on an intermittent basis, but was shut down due to the country's civil unrest.

A new mega project is under development incorporating 7 million MTPY methanol production (2 × 3.5 million MTPY plants) that would be the first gas to liquids project. The project consists of integrated downstream gasoline and diesel fuels production as well as multiple chemical derivatives, located in East Coast Africa.

## Americas

Market sources indicate methanol demand in the Americas for January was the highest since 2008. Market demand growth in 2011 is expected to meet or exceed forecast values.

With natural gas supply becoming abundant in North America, as well as other regions where shale gas reserves are prevalent, opportunities arise for new methanol capacity. In the Americas, two restarts are announced for 2011 with Methanex's Medicine Hat facility (470 Kta) and Janus Methanol's (previously Terra's) Beaumont facility (850 Kta). The Medicine Hat facility in Canada (470 Kta) is expected to have commercial product available in April 2011.

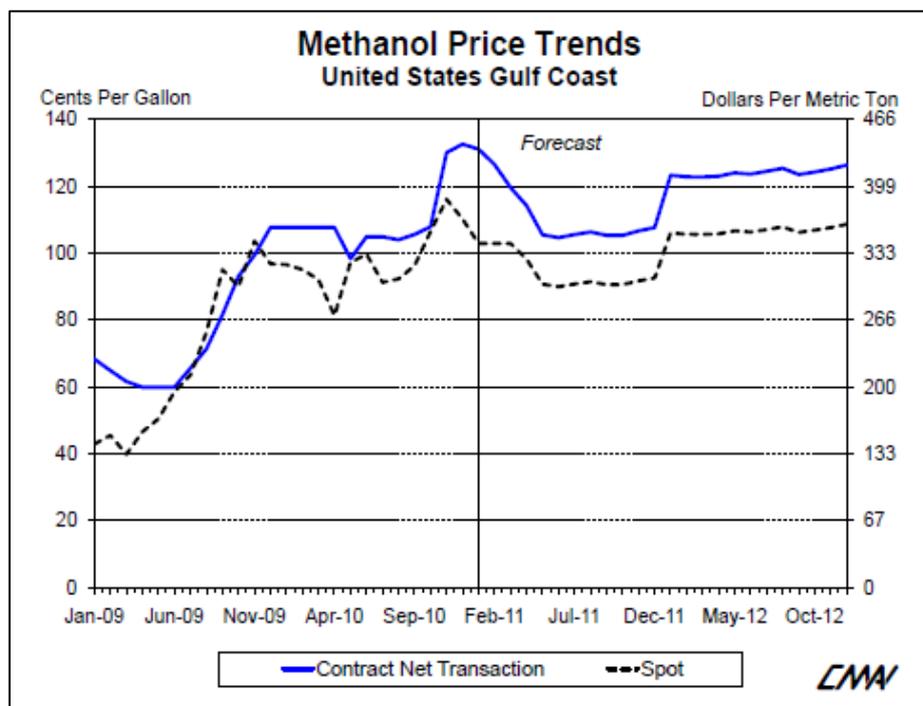


Figure 13: United States methanol prices 2009 – 2012 (CMAI, 2011)

Latin America is a primary supplier to North America, with significant volumes to Europe as well. The region has approximately 11.6 million MTPY of capacity. The major supply points are Trinidad, with approximately 6.6 million MTPY of capacity; Venezuela, with 2.4 million MTPY; and Chile, with approximately 1.8 million MTPY of effective capacity.

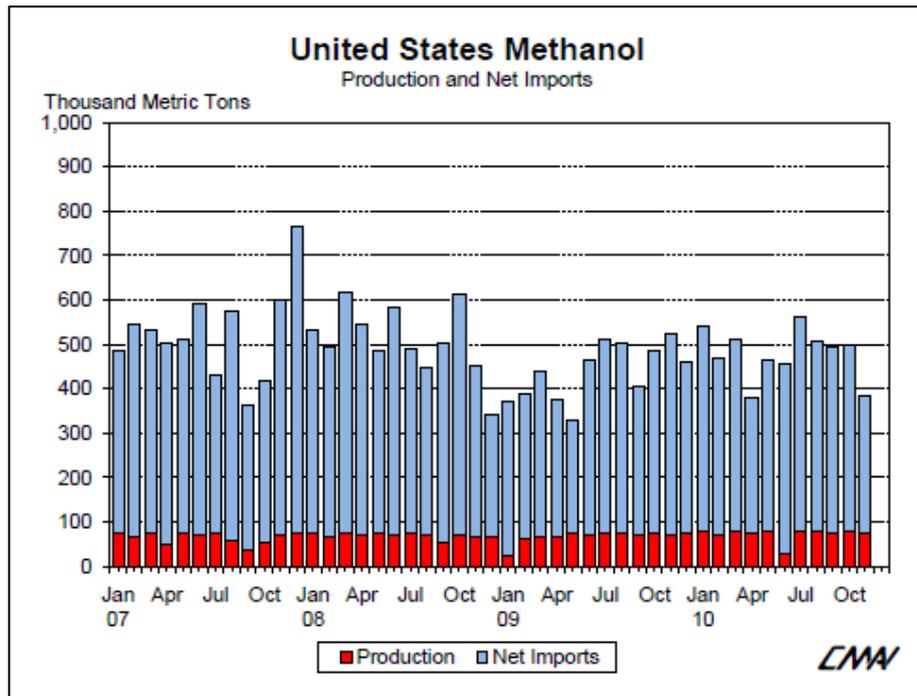


Figure 14: United States Production / Import History 2007 – 2010 (CMAI, 2011)

Renewable Fuel Standard requirements and the depletion of paper credits for bio-fuels leaves U.S. fuels blenders with no choice but to blend physical bio-diesel product in 2011 therefore ramping up biodiesel production in the U.S.

Janus Methanol’s long term initiatives consist of a grand vision of large scale integrated complexes (“Giga methanol”) with natural gas to methanol to gasoline as well as to traditional methanol derivatives. Janus’ technology for the gasoline project is “Reformulated Natural Gas” (RNG). The projects are scheduled to begin FEED (front end engineering design) in mid-2011 with commercial production anticipated in 2016.

## Methanol Market Outlook (Beyond 2011)

Global methanol demand grew a robust 11.4% in 2010 and is expected to experience an average annual growth rate of 10.6% in the forecast period of 2011-2015 to an estimated 51 million MT. Led by China demand across all derivatives as well as fuels applications in China and the rest of the world, the methanol industry is anticipated to rapidly advance to a balance position in the 2013-2014 timeframe.

Methanol incremental capacity growth in 2012-2015 is 0 to 3 million tons per year while incremental demand growth is 6-8 million tons per year with global operating rates increasing to 80-85% by 2013-2015. This enables a rapid return to a balanced market.

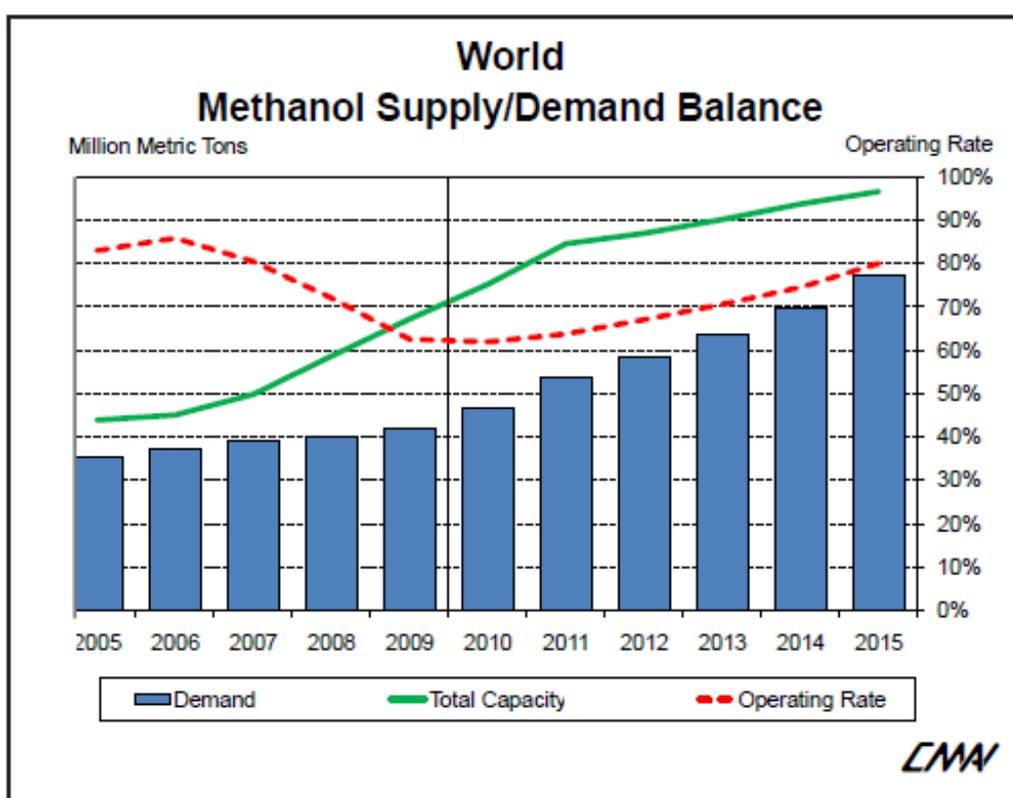


Figure 15: Global Methanol Supply Demand Forecast 2005 – 2015 (CMAI, 2011)

New uses of methanol are also expected to grow in 2011 with increased methanol consumption in China for utilization in Methanol to Olefins/Methanol to Propylene Plants. While traditional methanol derivatives are growing at average annual rates of nearly 4%, fuels applications for methanol are growing globally at nearly 13%. MTO/MTP is fast emerging with yet unknown

implications to the merchant methanol market, growing from nothing in 2009 to 12.6 million metric tons of demand in 2015. Multiple variations of the MTO/MTP business model are expected with methanol plant scale rising from today's 1.7 million MTPY methanol to 7 million MTPY methanol supply for world scale olefins plants. Major disruptive levers that may affect merchant methanol stem from large scale plants for MTO/ MTP, potential timing offsets between the methanol plant and olefins plant operations of 1-2 years, and potential merchant methanol sourcing positions.

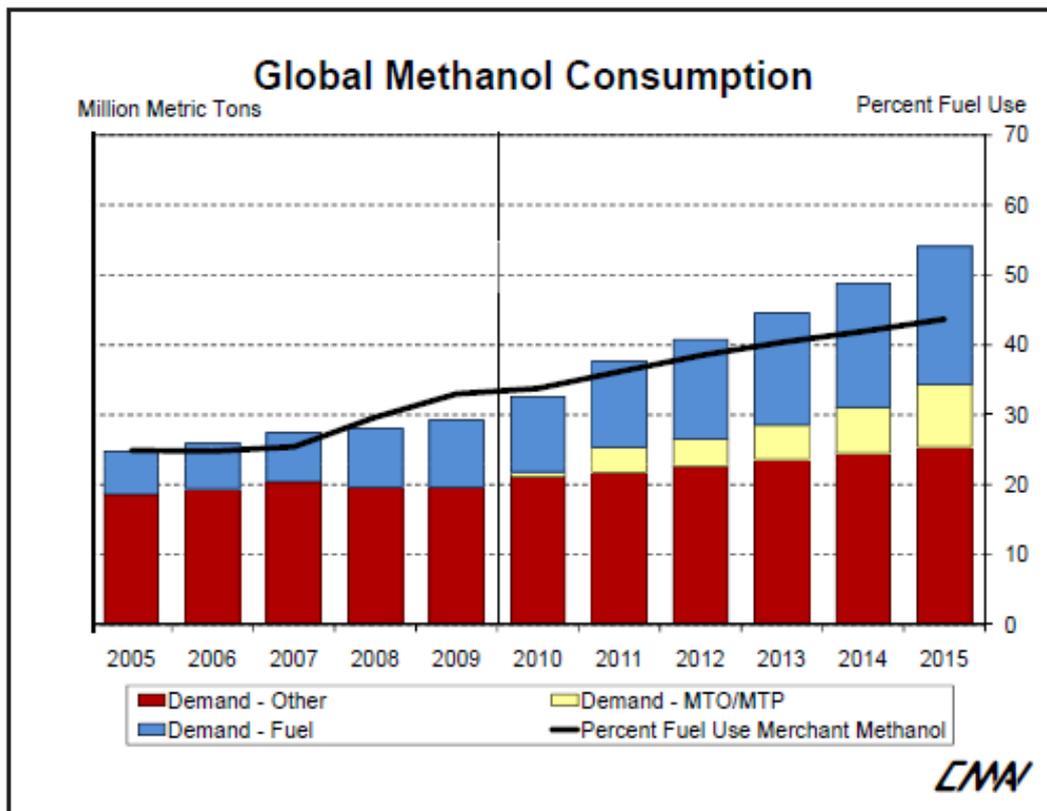


Figure 16: Global Methanol Consumption Forecast 2005 – 2015 (CMAI, 2011)

With potential supply delays and demand upside combined, global operating rates based on nameplate capacity may reach above 80% as early as 2013-2014.

The long term methanol price forecast is influenced by a number of factors: the supply/demand balance, global energy, trade/ tariff structures, as well as the cost structure of China’s marginal producing plants providing the last increment of competitive methanol to the market. Global operating rates affect the shape of the global supply cost curve and the location on the curve where demand intersects at the cost level of the last increment of capacity. Energy and feedstock changes shift the curve vertically. For example, a \$20 per barrel increase in crude price, if fully transferred to the cost of methanol, can result in over a \$100 per metric ton increase in methanol cost and likely the price as well. Increasing energy prices also increase the demand and value for methanol as a fuels blend stock.

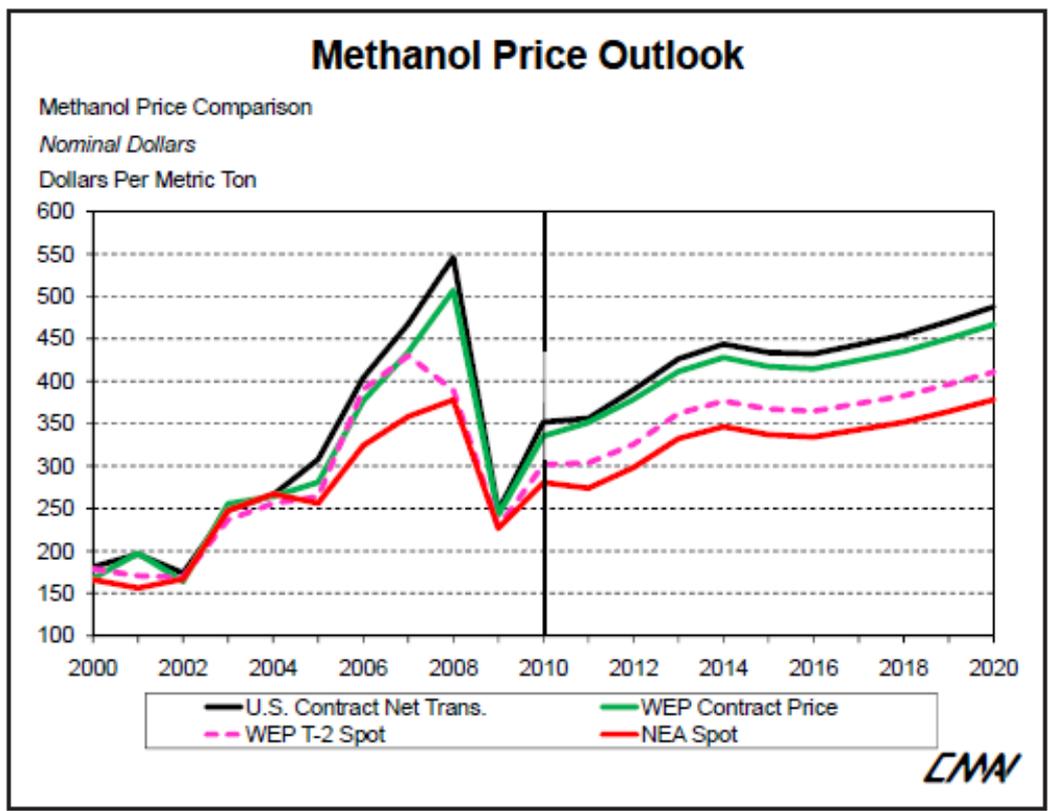


Figure 17: Projected global methanol prices 2000 – 2020 (CMAI, 2011)

## 5. UREA-AMMONIUM NITRATE

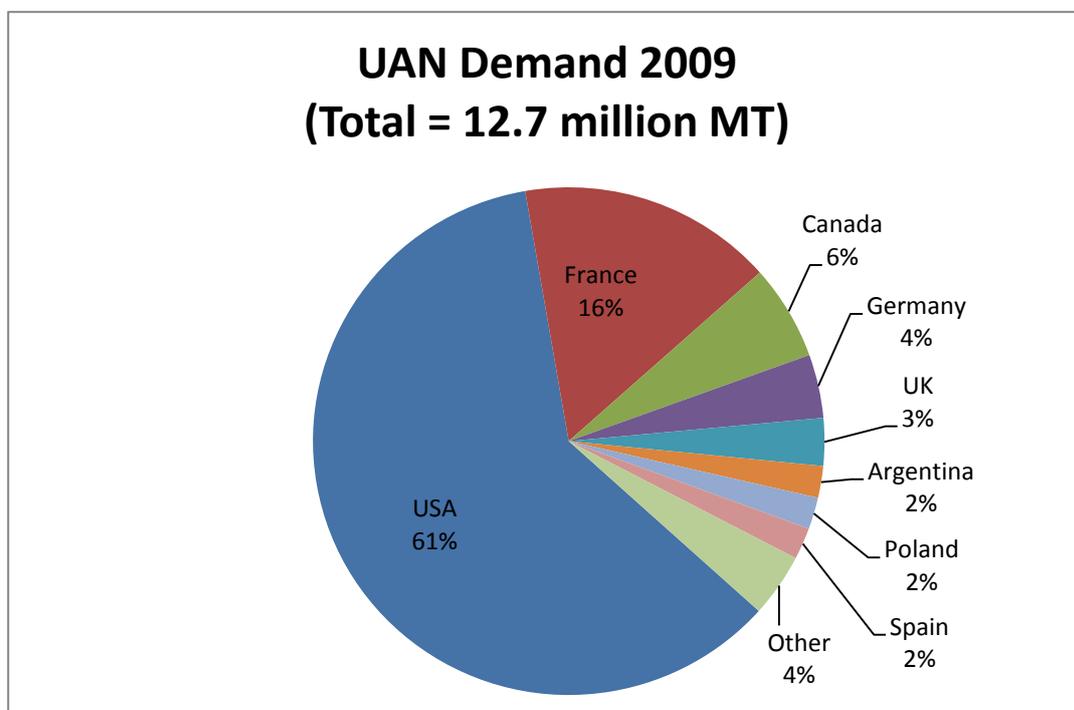
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Urea-ammonium nitrate (UAN) is made by dissolving urea and ammonium nitrate in water. This results in an aqueous solution usually containing 28% nitrogen by weight (a more concentrated product containing 32% is also available in some locations). Liquid UAN solution is popular because of the versatility of a liquid source, as well as widespread availability.

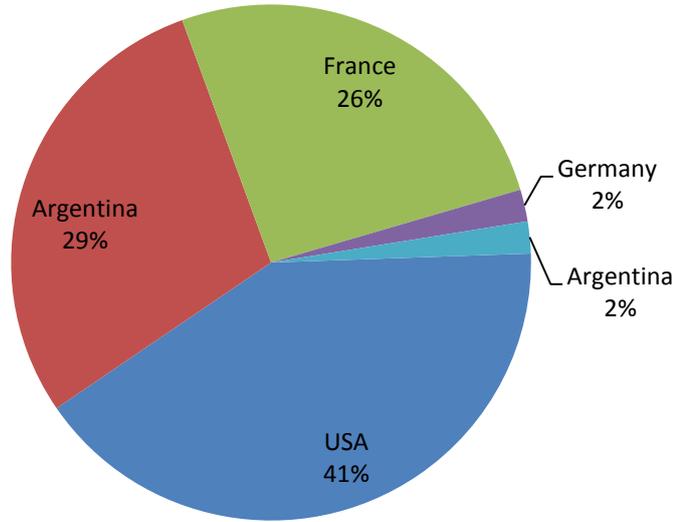
UAN can be applied more uniformly than non-liquid forms of fertilizer. It can be mixed with herbicides, pesticides, and other nutrients, permitting farmers to reduce costs by applying several materials simultaneously rather than making several separate applications.

Despite its relatively modest size compared to urea, the global UAN industry continues to attract investment driven by the diversification of the product portfolio and the expansion of the supply chain via the introduction of new value-added products to existing fertilizer complexes. The three new UAN projects that came on-stream in the period 2006-2011 are all export-orientated plants with nearly 100% of the output entering the international UAN trade:

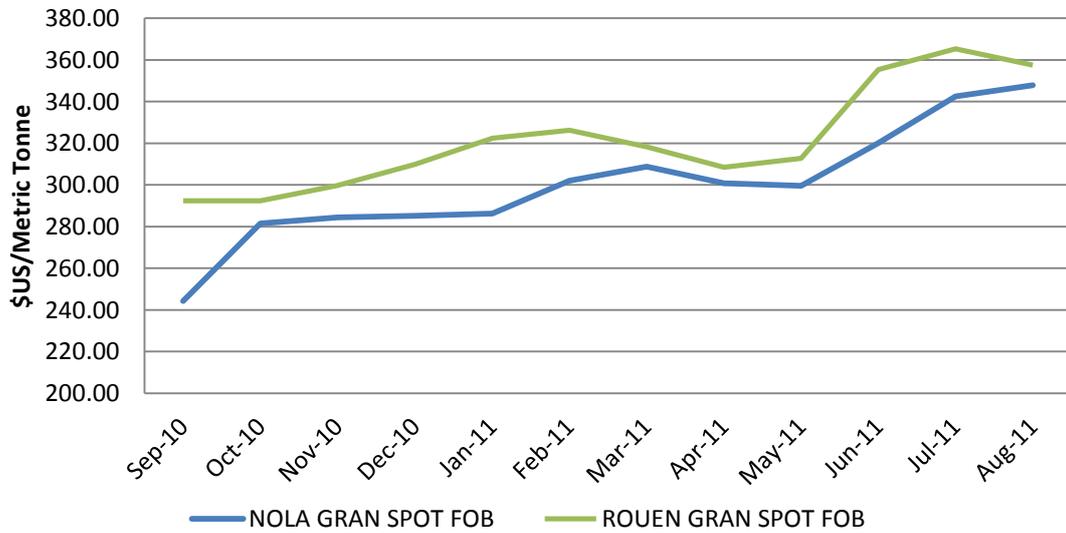
- Orica – Indonesia (145 mtpd)
- MHTL – Trinidad (4,300 mtpd)
- Abu Qir – Egypt (1,000 mtpd)
- Acron – Novgorod, Russia (2,000 mtpd)



## MHTL UAN Export Destinations 2010



## Urea Ammonium Nitrate (UAN) Prices 2010/11



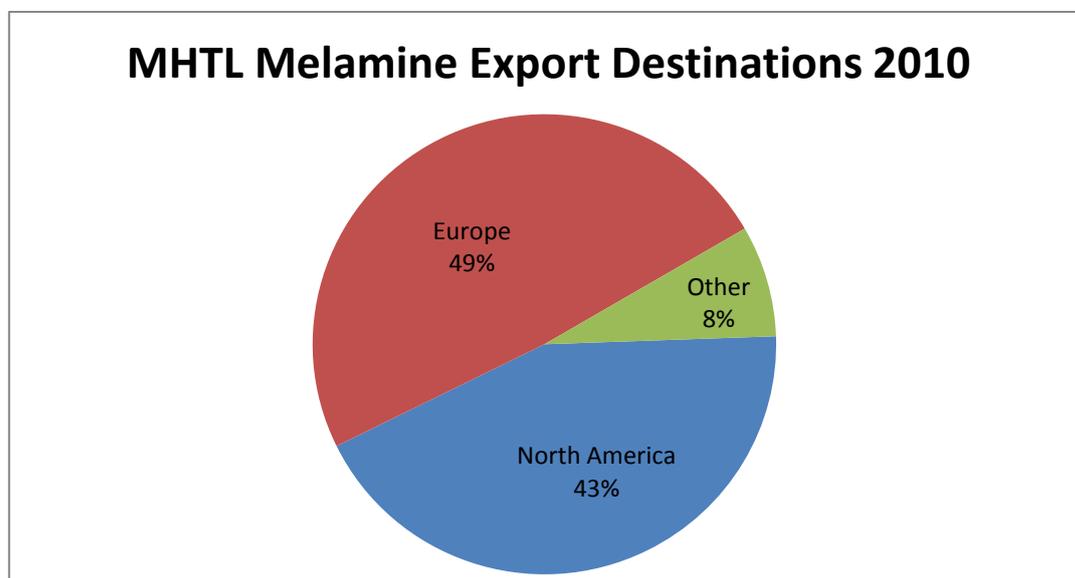
## 6. MELAMINE

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Melamine is used in a wide range of applications and is primarily produced in Europe, Asia and North America. The chemical is used in laminates, surface coatings, flame resistant materials, textiles and moulding compounds. Demand for melamine between 2011 and 2015 is expected to grow at 3%-5% across the world.

The current world market for melamine is tight. Supplies tightened in early 2010, as world consumption accelerated in response to recovering economies. Factors behind the tightness in supply include production outages, low inventories, increased world consumption and the fact that melamine production from capacity commissioned in mid-2010 did not contribute significantly to world supply.

China is the largest single participant in the melamine market, accounting for 39% of world consumption in 2010; it accounted for 53%, 46% and 26% of world capacity, production and exports, respectively, in 2010. This trend is expected to continue during 2011–2015, as significant growth in Chinese consumption will result in the commissioning of additional capacity and increased production. Europe is the second-largest melamine market, accounting for nearly 32% of world consumption in 2010.



World consumption of melamine is expected to be robust during 2011–2015; average annual growth is expected to be 3–5% in most regions. China, Central and South America, the Middle East, and Central and Eastern Europe are expected to exhibit rapid demand growth.

China is forecast to experience the fastest growth rates (around 8%) and volume increases in melamine consumption during 2010–2015. However, China's share of exports is expected to decline as a result of increased domestic consumption, competition from other sources of supply including Qatar and Trinidad, and increased regionalization of supply, in which many consuming regions are likely to source melamine locally.

During 2010–2015, melamine consumption in Europe is forecast to grow at an average annual rate of almost 4%. Growth in Central and Eastern Europe is expected at almost 8%, largely the result of increased production of laminates and wood adhesives; consumption growth in Western Europe is forecast at a more moderate rate of 3.0% during 2010–2015. Other Asian countries, excluding Japan, are expected to show large volume increases during 2010–2015, at an average annual growth rate of 4.4%.

Overall economic performance will continue to be the best indicator of future demand for melamine. Demand in most downstream markets is greatly influenced by general economic conditions. As a result, demand largely follows the patterns of the leading world economies. The major end-use markets include construction/remodeling, automotive production and original equipment manufacture (OEM).