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Fertilizer Outlook 2012-2016

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This public summary report was prepared by Patrick Heffer, Director of the IFA Agriculture Committee, and Michel Prud'homme, Director of the IFA Production and International Trade Committee. The first part looks at the global context and agricultural situation. The second part provides global and regional fertilizer consumption projections for the period 2011/12 to 2016/17. The third part provides IFA projections of fertilizer supply and supply/demand balances for the period 2012 to 2016.

This report is available to the general public on the IFA web site (<http://www.fertilizer.org>) or by request to the IFA Secretariat.

The Fertilizer Outlook draws on the final versions of two reports presented at the 80th IFA Annual Conference held in Doha, Qatar in May 2012: the IFA report *Medium-Term Outlook for World Agriculture and Fertilizer Demand: 2011/12-2016/17 (A/12/68)*, and the IFA report *Global Fertilizers and Raw Materials Supply and Supply/Demand Balances: 2012-2016 (A/12/59b)*. These two comprehensive reports are strictly reserved for IFA members.

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PART 1 – GLOBAL ECONOMIC CONTEXT AND AGRICULTURAL SITUATION

1.1. Global Context

World economic activity remains fragile

World economic activity suffered a major setback in 2011, with global gross domestic product dropping from 5.3 to 3.9% according to the International Monetary Fund. Economic growth lost momentum in the second half of 2011, driven by the euro crisis. Weak activity is anticipated to continue at least during the first half of 2012, as several European countries have entered recession. Prospects have also deteriorated in emerging and developing economies due to declining exports to advanced economies and political unrest in a number of North African and West Asian countries. With an anticipated progressive recovery in the second half of 2012, the world output is seen as up by 3.5% in 2012.

Commodity prices rebounded sharply in 2010 and stayed firm in 2011. On average, they have been easing since the beginning of 2012 but remain well above levels observed prior to 2007/08. High price volatility has been a key feature since 2007, and it is expected to prevail in the medium term.

In view of economic uncertainty, exchange rates have evolved significantly during the past 12 months, affecting the terms of trade of a number of countries.

Reducing price volatility and green growth top the policy agenda

Contrary to high and relatively stable prices, high price volatility discourages investments in production factors. In the current context of low inventory levels for several strategic agricultural commodities, any weather-related crop shortfall can result in large price swings, which can be amplified by trade restrictions, speculation, fluctuating exchange rates, rising energy prices, etc. Policy leaders are considering actions to reduce volatility and mitigate its negative impacts in order to secure the necessary investments to enhance productivity.

On the environmental side, negotiators are focusing their attention on the United Nations Conference on Sustainable Development (Rio+20).

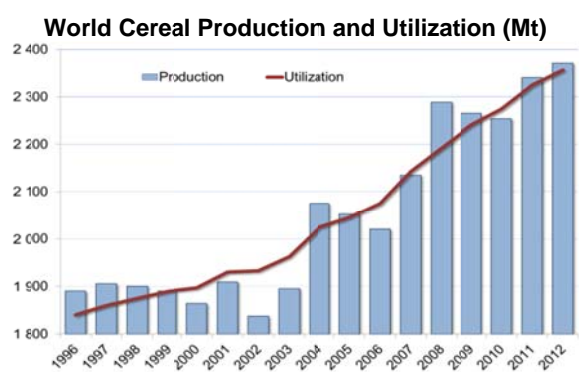
Green growth will be a central but controversial theme of the conference. As far as agriculture is concerned, green growth calls for more efficient use and recycling of natural resources, including land and soil resources, nutrients and water, and the conservation of biological diversity. All of these objectives have links, directly or indirectly, with nitrogen and/or phosphorus management.

The anticipated revision of the US Farm Bill and of the EU Common Agricultural Policy at a time of budget austerity, and the expected accession of Russia to the World Trade Organization, could influence the weight of the different regions in world agricultural production and trade.

1.2. Agricultural Situation

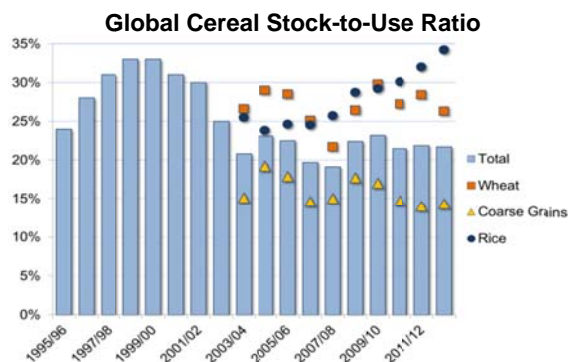
Cereal markets are seen as easing in response to an anticipated bumper US maize crop

After a 0.5% contraction in 2010, the world cereal output firmly rebounded in 2011, by 4.0%, to 2.34 Bt. Increases were achieved for all cereal categories, with a strong recovery of wheat production. The 2012 global cereal harvest is forecast to reach a new record, driven by excellent prospects for the 2012 maize crop in the US, which would largely offset smaller wheat harvests in the EU and Ukraine. The US Department of Agriculture forecasts a 62 Mt (20%) increase in domestic maize output as a result of a 4.4% expansion of the planted area and a 13% rise in average yields.



Despite larger global cereal harvests in 2011 and 2012, world cereal inventories are seen as rebounding marginally, as world demand remains firm. The aggregate world stock-to-use ratio is forecast to stay slightly below 22% between 2010/11 and 2012/13.

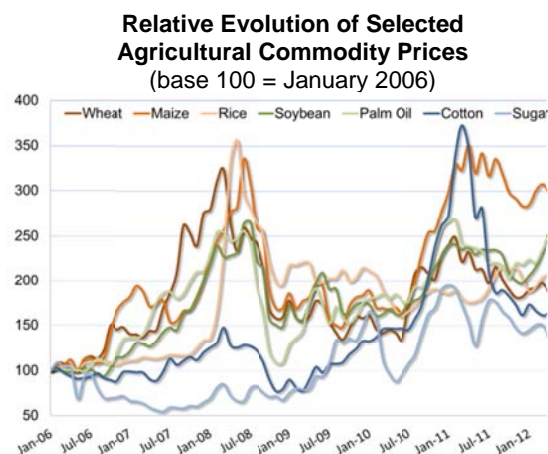
The stock-to-disappearance ratio for the major exporters dropped below 10% for coarse grains in 2011/12 due to sharply shrinking maize inventories in the US. In the perspective of a bumper US maize crop in 2012, the ratio is seen as rebounding to 11%, a still low level that characterizes very tight market conditions. The ratio for wheat would decline below 19%, its lowest level since 2008/09. The ratio for rice would increase to almost 25%, its highest level for more than a decade.



Source: FAO

With prospects for relatively ample wheat and rice stocks and slightly rebounding maize inventories, grain prices have been declining since the middle of 2011, but they remain firm compared to historical levels. Because the market for maize is tighter than for the other cereals, maize prices are more attractive compared to those of the other grains. This situation is not seen as changing in the short term.

The 2011/12 soybean harvest is disappointing, as dryness due to La Niña conditions has impacted yields in South America. Current global soybean inventories are low and, because soybean competes with maize for land, oilseed prices have sharply increased since the beginning of the year.



Sources: Financial Times, IMF and MPOB

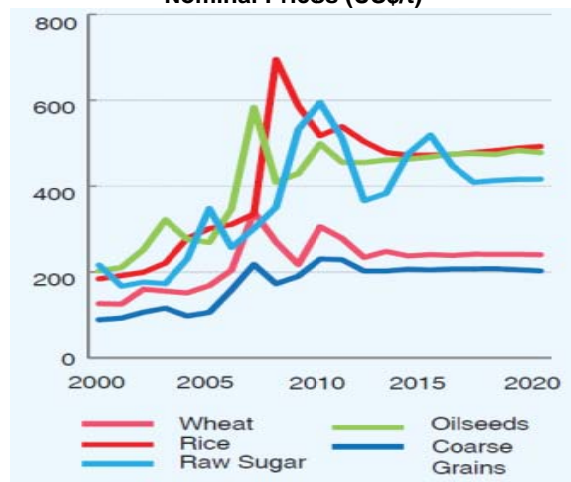
Reduced inventories and strong prices are expected to persist in agricultural commodity markets

In the medium term, agricultural production will grow steadily in order to supply the food, feed, fibre and bioenergy markets. Most of the growth in output is expected to come from yield gains, with the exception of oilseeds, where area expansion remains the key factor. The cropped area would continue to expand in Latin America, Sub-Saharan Africa and South-east Asia. Developing countries are projected to increase their share of global crop and livestock production.

Compared to the trend observed since the middle of the previous decade, feed uses are projected to rise at a comparatively higher rate than industrial uses, mostly due to a significant growth deceleration in the US ethanol sector.

According to the Organisation for Economic Co-operation and Development and the Food and Agriculture Organization of the United Nations, the world stock-to-use ratio for the main agricultural commodities is not seen as evolving much in the next five years, while the prices of all agricultural commodities would stay firm, well above the pre-food price crisis levels. Prices are seen as volatile since stock rebuilding would take time.

Ten-Year Outlook for Crops Nominal Prices (US\$/t)



Source: OECD-FAO

PART 2 – GLOBAL FERTILIZER DEMAND

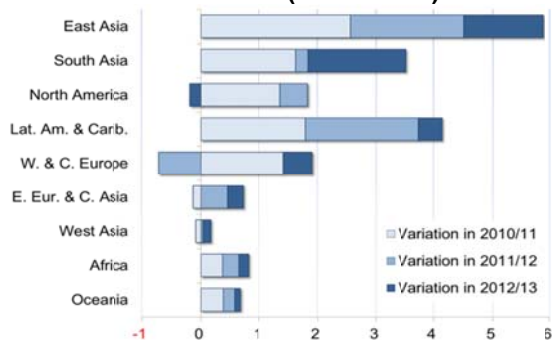
World fertilizer demand has completed its recovery

World fertilizer consumption sharply rebounded in 2009/10 and 2010/11, with growth rates of 5 to 6% in both campaigns. In 2010/11, aggregate world consumption fully recovered from the 2008/09 downturn, to 172.2 Mt vs. 167.9 Mt in 2007/08.

In 2011/12, world demand responded to very attractive prices for most agricultural commodities. Total demand is forecast to be up by 2.8%, to 177.0 Mt. Demand for N and P would increase by 4.0 and 1.4%, respectively. It would reach new highs at 108.2 Mt N and 41.0 Mt P₂O₅. K demand is seen as rising only marginally (+0.4%), to 27.7 Mt. Aggregate demand is anticipated to rise in all the regions but Western and Central Europe, where very dry conditions affected the 2011 winter crop harvest. The largest increases in volume are seen in East Asia and in Latin America.

With prevailing strong agricultural market fundamentals, global fertilizer demand in 2012/13 is projected to increase by 2.5%, to 181.4 Mt. After an expected 6.0% year-on-year expansion, K demand is seen as fully recovering from the 2008/09 downturn, to 29.4 Mt. Growth rates for N and P demand are seen as more moderate: +1.4%, to 109.8 Mt for N, and +2.9%, to 42.2 Mt for P. Fertilizer demand would increase in all the regions but North America, where declining crop prices compared to last year are expected to lead to lower application rates. Demand growth is seen as regaining momentum in South Asia after the disappointing 2011/12 campaign. The largest increases in volume are anticipated in South Asia and in East Asia.

Historical and Anticipated Annual Variation in Regional Fertilizer Demand between 2009/10 and 2012/13 (Mt nutrients)



Source: Heffer, IFA, May 2012

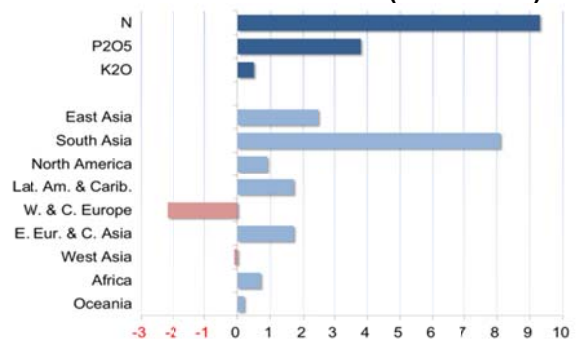
When compared to the 2007/08 campaign (the last campaign before the downturn), world fertilizer demand is anticipated to have fully recovered for the three nutrients by 2012/13.

During the five-year period from 2007/08 to 2012/13, global demand is seen as increasing by 9.3 Mt N, 3.8 Mt P₂O₅ and 0.5 Mt K₂O.

South Asia has been by far the main contributor to the expansion of world demand during these five years; with an estimated 8.1 Mt growth, South Asian demand would account for 60% of the global net increase.

In contrast, demand in Western and Central Europe would remain more than 2 Mt below its level of five years earlier.

Anticipated Evolution of Fertilizer Demand between 2007/08 and 2012/13 (Mt nutrients)



Source: Heffer, IFA, May 2012

Latin America reinforces its position as an engine of future growth, and global demand is seen as reaching 193 Mt in 2016/17

The medium-term agricultural outlook is expected to stimulate fertilizer demand, but high volatility could result in significant year-on-year variations.

World demand is projected to reach 192.8 Mt by 2016/17, corresponding to a compound annual growth rate of 2.1% compared with the base year (average of the 2009/10 to 2011/12 campaigns). Average annual growth is seen as stronger for K (+3.7% p.a.) than for P (+2.3% p.a.) and N (+1.5% p.a.).

Global Fertilizer Demand (Mt nutrients)

	N	P ₂ O ₅	K ₂ O	Total
07/08	100.5	38.4	28.9	167.9
08/09	97.7	33.7	23.4	154.8
09/10	101.9	37.5	23.5	162.9
10/11	104.1	40.5	27.6	172.2
Change	+2.2%	+8.0%	+17.4%	+5.7%
11/12 (e)	108.2	41.0	27.7	177.0
Change	+4.0%	+1.4%	+0.4%	+2.8%
12/13 (f)	109.8	42.2	29.4	181.4
Change	+1.4%	+2.9%	+6.0%	+2.5%
2016/17 (f)	114.7	45.4	32.7	192.8
Average Annual Change*	+1.5%	+2.3%	+3.7%	+2.1%

(e) estimated; (f) forecast

*Compared to the average 2009/10 to 2011/12

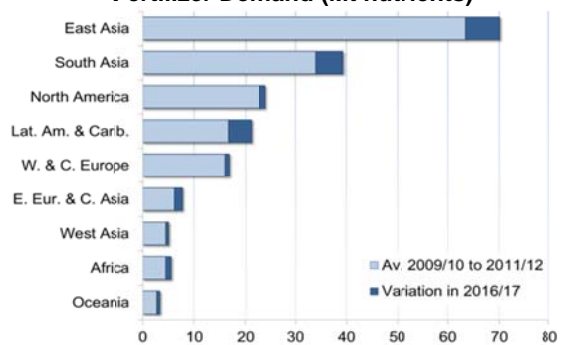
Source: Heffer, IFA, May 2012

The highest growth rates are found in regions with recovering agriculture such as Eastern Europe and Central Asia and Oceania, and in regions with large potential to increase agricultural production such as Latin America and Africa.

Compared to historical trends, demand growth is seen as significantly decelerating in Asia because some of the largest consuming countries in the region are approaching maturity.

In volume terms, East Asia, South Asia and Latin America together would account for three-fourths of the increase in world demand during the next five years.

Medium-Term Outlook for Total Regional Fertilizer Demand (Mt nutrients)



Source: Heffer, IFA, May 2012

The forecast remains subject to major uncertainties

IFA's baseline forecast is subject to a number of uncertainties.

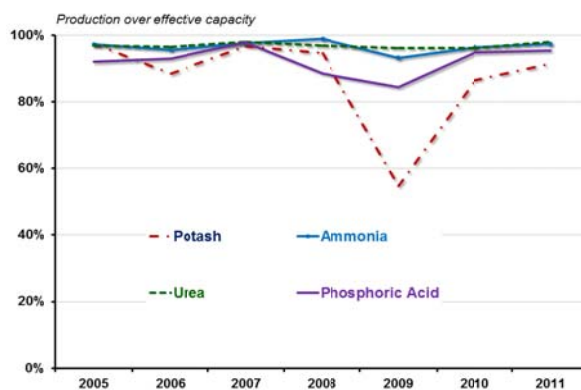
The main uncertainties that could influence the forecast are the evolution of the world economic context (especially with respect to the euro crisis and oil prices), the evolution of biofuel policy in the US and the EU, weather-related crop shortfalls, the evolution of agricultural commodity prices and of fertilizer prices relative to crop prices, the evolution of fertilizer subsidies, and new policies aimed at increasing nutrient use efficiency and recycling organic nutrient sources.

PART 3 – GLOBAL FERTILIZER SUPPLY

Global total *nutrient* sales for all uses reached 221 Mt *nutrients*, increasing 4% compared with 2010. Global total nutrient production was estimated at 224.7 Mt *nutrients*, representing a sustained 4% increase compared with 2010, on account of firm demand in the fertilizer sector and a gradual recovery in the industrial segments.

On average, the fertilizer industry operated at close to 95% of *effective capacity*, explaining the tight market conditions that prevailed in 2011, particularly in the nitrogen segment.

Global Industry Operating Rates



Global trade was rather subdued in 2011, showing very little growth in all segments, with the exception of MAP and potash.

Moderate increases were seen for ammonia and TSP. Exports of all other products declined compared with 2010 levels.

Moderate growth in global fertilizer demand towards 2016

According to the June 2012 forecast of the IFA Agriculture Committee, global fertilizer consumption on a **calendar year** basis is projected to grow at an annual rate of 1.7%, to reach 192.3 Mt *nutrients* in 2016. Increases in demand are projected for all three major nutrients, showing average annual growth rates of 1.3% for N, 2.1% for P, and 2.8% for K.

World Fertilizer Consumption <i>Calendar Year Basis</i>			
<i>Mt nutrients</i>	2011	2012e	2016f
Nitrogen N	107.5	109.5	114.4
Phosphorus P ₂ O ₅	40.9	41.9	45.3
Potassium K ₂ O	28.5	28.5	32.6
Total	176.9	179.9	192.3

Source: Heffer, IFA, June 2012

Total nutrient sales in the fertilizer and industrial sectors in 2016 are forecast at 245 Mt *nutrients*, representing a 9% increase compared with 2011 and an average annual growth rate of 1.8%.

Capacity additions face delays, but large expansions are seen in the next five years

About half the projects planned to come on stream between 2011 and 2016 have faced delays of 6 to 18 months. These slippages have slowed down the projected growth of capacity, and have led to more balanced market conditions in the short term and lower potential surpluses in the near term.

Close to 250 new units are projected to come on stream during the next five years, in addition to 30-35 projects related to phosphate rock mining; these developments equate to a total investment of US\$90 billion.

3.1. Nitrogen Outlook

Large ammonia capacity increases expected in China, Africa and West Asia

According to IFA's 2012 global capacity survey, global ammonia capacity is projected to increase 17%, from 196.2 Mt in 2011 to 230.4 Mt NH₃ in 2016.

Improving nitrogen demand to absorb short-term incremental supply

Global nitrogen supply is projected at 162.2 Mt N in 2016 and demand at 145.6 Mt N.

The global supply and demand balance shows tight market conditions in 2012, moving into a moderate balance in 2013 and 2014. The potential surpluses between 2011 and 2014 equate to only 2.5 to 5% of projected supply.

World Nitrogen Supply/Demand Balance <i>(million metric tonnes N)</i>						
	2012	2013	2014	2015	2016	
Supply						
Capacity	169.0	174.3	176.5	189.2	189.4	
Total Supply*	140.8	146.4	149.7	158.4	162.2	
Demand						
Fertilizer Demand	109.5	110.8	112.1	113.2	114.4	
Non-fertilizer Demand	24.4	25.3	26.3	27.0	27.6	
Distribution Losses	2.3	2.4	2.4	2.5	2.5	
Unspecified Demand	1.1	1.1	1.1	1.1	1.1	
Total Demand	137.3	139.6	141.9	143.8	145.6	
Potential Balance	3.5	6.8	7.8	14.6	16.6	
% of Supply	2.5%	4.7%	5.2%	9.2%	10.2%	

* Supply is capability, equating to the maximum achievable production. It is derived by multiplying capacity by the highest achievable operating rate.

Source: Prud'homme, IFA, June 2012

Potential surplus emerging by 2015

The emergence of new capacity, and consequently of supply from production ramp-up, by 2015 would result in a rising potential annual surplus above 16 Mt N in 2016.

Under a slow-growth supply scenario, the potential surplus would be close to 10 Mt N in 2016, equating to 6% of potential supply.

New urea capacity being developed in large consuming countries

Between 2011 and 2016, 60 new urea units are planned to come on stream, of which 18 will be located in China. World urea capacity will increase by 44 Mt, to 226.1 Mt in 2016.

World urea supply is estimated at 195 Mt in 2016, growing at a projected average annual rate of 4.4% compared with 2011.

Sustained demand growth in the agricultural and industrial sectors

Global demand for urea for all uses is forecast at 176 Mt in 2016, growing 2.4% per annum compared with 2011.

During the next five years, world urea markets will move from relatively tight to balanced conditions in 2012, to growing potential surpluses exceeding 8 to 10% of total supply in 2015-2016. Much of this increase reflects the massive capacity addition that is planned in India in 2015/16.

World Urea Supply/Demand Balance (million metric tonnes urea)

	2012	2013	2014	2015	2016
Supply					
Capacity	192.4	202.8	207.4	224.3	226.1
Total Supply*	165.9	173.7	180.3	189.7	195.0
Demand					
Fertilizer Demand	143.3	146.2	149.4	152.7	154.4
Non-fertilizer Demand	19.0	19.7	20.7	21.1	21.7
Total Demand	162.3	165.9	170.0	173.8	176.1
Potential Balance	3.5	7.9	10.3	15.9	19.0
% of Supply	2%	5%	6%	8%	10%

Source: Prud'homme, IFA, June 2012

A slow-growth scenario would suggest a potential surplus of 12 Mt urea, which would equate to 6% of potential supply in 2016.

3.2. Phosphate Outlook

Large phosphate rock supply emerging in Africa and East Asia in the near term

Global phosphate rock supply is forecast at 256 Mt in 2016, growing by 43 Mt compared with 2011. The largest increases will be in Africa and East Asia.

Growing phosphoric acid capacity in China, Morocco and Brazil

World phosphoric acid capacity is forecast to grow 4% per annum compared with 2011, to 61.3 Mt P_2O_5 in 2016. Global supply of phosphoric acid would be close to 49.8 Mt P_2O_5 in 2016, representing an average growth rate of 3.7% per annum compared with 2011.

Firm demand leading to balanced market conditions and moving to a moderate surplus in the future

Global phosphoric acid demand for all uses is forecast to grow at an annual rate of 2.4% compared with 2011, to 46 Mt P_2O_5 in 2016.

Between 2011 and 2016, the global phosphoric acid supply/demand balance shows a moderate surplus in 2012 and 2013, growing gradually to 3.6 Mt P_2O_5 in 2016. If a few projects were to be delayed, a marginal surplus of 2.0 to 2.5 Mt per annum would prevail between 2012 and 2016.

World Phosphoric Acid Supply/Demand Balance (million metric tonnes P_2O_5)

	2012	2013	2014	2015	2016
Supply					
Capacity	53.3	56.2	58.1	59.4	61.3
Total Supply*	44.3	45.9	47.4	48.8	49.8
Demand					
Fertilizer Demand	36.7	37.6	38.3	39.0	39.7
Non-fertilizer Use	5.0	5.3	5.5	5.6	5.6
Distribution Losses	0.8	0.9	0.9	0.9	0.9
Total Demand	42.5	43.8	44.7	45.5	46.2
Potential Balance	1.8	2.0	2.7	3.3	3.6
% of Supply	4%	4%	6%	7%	7%

Source: Prud'homme, IFA, June 2012

Massive new AP capacity to emerge in Africa, China and Brazil

Global capacity of the main processed phosphate fertilizers would reach 47.6 Mt P_2O_5 in 2016. Large capacity increases will occur in China, Morocco and Brazil.

3.3. Potash Outlook

Significant capacity additions expected from brownfield development projects.

Between 2012 and 2016, 40 capacity expansion projects are expected to come on stream. However, most of the announced projects have experienced slippages of 6 to 18 months. Global potassium capacity in 2016 is forecast at 61.4 Mt K_2O .

World potash effective supply would grow by 37% compared with 2011, to 52.8 Mt K₂O in 2016. The largest increases will occur in North America and EECA.

Sustained potash demand through 2016

Between 2011 and 2016, world potash demand for all uses is projected to grow at an annual rate of 3%, to 36.6 Mt K₂O in 2016.

Resilient potential potassium surplus due to rising supply

The global potash supply/demand balance shows a reduced potential surplus in 2011, growing moderately to 9.7 Mt K₂O in 2013. A potential imbalance of close to 16 Mt K₂O may emerge in 2016, assuming all planned projects are completed on schedule.

Under a slow-growth supply scenario, assuming six-month delays on all projects and no new greenfield operations, the five-year global supply and demand balances would show a potential surplus, growing moderately by 900 Kt K₂O per annum between 2011 and 2016.

World Potash Supply/Demand Balance (million metric tonnes K₂O)

	2012	2013	2014	2015	2016
Supply					
Capacity	46.2	49.8	52.7	58.4	61.4
Total Supply*	40.2	43.5	45.7	48.6	52.8
Demand					
Fertilizer Demand	28.4	30.0	31.0	31.7	32.6
Non-fertilizer Demand	2.7	2.8	2.8	2.9	3.0
Distribution Losses	0.9	1.0	1.0	1.0	1.1
Total Demand	32.0	33.8	34.8	35.7	36.6
Potential Balance	8.1	9.7	10.9	12.9	16.2
% of Supply	20%	22%	24%	26%	31%

Source: Prud'homme, IFA, June 2012

3.4. Sulphur Outlook

Large sulphur output by 2016, mostly from West Asia

World sulphur production is projected to grow at an average annual rate of 6.5%, to 69.6 Mt S in 2016. A large output increment from Abu Dhabi will be exportable by 2015/16.

Firm sulphur demand from the fertilizer and ore-leaching sectors in the near term

Global sulphur consumption for all uses would grow at an annual rate of 4% compared with 2011, to 65.8 Mt S in 2016.

Resilient supply/demand deficit in the short term

The world sulphur supply/demand balance shows a resilient potential deficit of about 2.3 Mt S in 2012 and 2013, followed by near-balanced conditions in 2014 and the emergence of large surpluses thereafter.

Under a slow-growth scenario of 5.5% per annum, global supply would be 67.3 Mt S in 2016. The potential balance would then remain in deficit until 2014 and a marginal surplus would emerge in 2015, equating to 2% of available supply.

World Elemental Sulphur Supply/Demand Balance (million metric tonnes S)

	2012	2013	2014	2015	2016
Sulphur Demand					
Sulphur for sulphuric acid	50.7	53.1	54.9	56.5	57.6
Non-sulphuric acid uses	7.7	7.8	8.0	8.1	8.2
Total Demand	58.4	60.9	62.8	64.6	65.9
Sulphur Supply					
Oil recovered	25.1	26.2	27.2	28.1	28.6
Gas recovered	27.5	28.7	32.4	35.9	36.2
Others, including Frasch	3.5	3.7	4.0	4.3	4.8
Total Supply	56.1	58.6	63.6	68.2	69.6
Potential Balance	-2.3	-2.3	0.8	3.6	3.7
% Balance/Supply	-4%	-4%	1%	5%	5%

Source: Prud'homme, IFA, June 2012