Current world fertilizer trends and outlook to 2011/12

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This report presents world nitrogen, phosphate and potash fertilizer medium term supply and demand projections for the period 2007/08 to 2011/12. The FAO/Fertilizer Industry Working Group made the forecasts in October 2007. The balances in Annexes 2-4 present a medium-term indication for possible changes in fertilizer nutrient demand and supply by region and subregion. Changes in installed supply capacity, operating rates and demand vary annually. Annex 1 provides explanatory notes on supply and demand balances.

FAO, in collaboration with experts from the Fertilizer Industry Working Group dealing with fertilizer production and trade, provides five-year forecasts of world and regional fertilizer supply and demand balances.

All fertilizer references are in terms of plant nutrients: nitrogen (N), phosphate (P_2O_5) and potash (K_2O). The fertilizer demand data refer to the calendar year. For countries that report their fertilizer statistics on a fertilizer year basis, data appear under the fertilizer year that begins in the same calendar year. The contributions made by the fertilizer industry associations and their representatives are gratefully acknowledged.

Summary

This report provides an overview of information on the world fertilizer situation in 2007/08 and a forecast till 2011/12. The fertilizer situation is examined in relation to crop production and factors likely to affect the latter.

High commodity prices experienced over recent years led to increased production and correspondingly greater fertilizer consumption as reflected in tight markets and higher fertilizer prices at the start of the outlook period. While demand for basic food crops, for high value crops such as fruit and vegetables, for animal products and for crops capable of being used to produce bio-fuels is likely to remain strong, it is expected that increased fertilizer consumption required to support higher levels of production will be adequately catered for by growing supply world wide during the outlook period.

At global level it is anticipated that there will be an ample supply of all three major fertilizer nutrients. Surpluses of nitrogen and phosphate are forecast to grow while those of potash are likely to remain more or less stable. Africa will remain a major phosphate exporter and increase nitrogen exports while importing all of its potash. It is expected that America will continue to be a net importer of nitrogen and that the region will move into increasing phosphate deficit during the outlook period while remaining a primary supplier of potash. Starting with a small deficit, the Asia region is expected produce a rapidly increasing surplus of nitrogen, but will continue to import phosphate and potash. According to forecasts, Europe will be the major nitrogen and potash exporting region in the world and will continue to produce surpluses of phosphate though decreasingly so. It is expected that deficits of all three nutrients will persist in Oceania.

World nutrient balance per region, 2007/8-2011/12 ('000 tonnes)						
Region	**N,P,K**	**2007/08**	**2008/09**	**2009/10**	**20010/11**	**2011/12**
Africa	N	677	1 397	1 566	1 776	3 184
	P_2O_5	5 278	5 765	6 105	6 684	7 064
	K_2O	(468)	(485)	(497)	(509)	(516)
America	N	(7 014)	(7 736)	(7 833)	(7 461)	(8 094)
	P_2O_5	1	(124)	(197)	(241)	(418)
	K_2O	4 689	3 370	4 312	4 527	5 917
Asia	N	(2 132)	206	1 972	5 078	7 374
	P_2O_5	(5 327)	(5 146)	(5 076)	(4 983)	(3 820)
	K_2O	(9 057)	(9 614)	(9 568)	(10 014)	(10 543)
Europe	N	12 468	12 748	12 816	13 069	13 587
	P_2O_5	742	695	677	430	372
	K_2O	10 963	11 106	11 241	12 370	12 317
Oceania	N	(714)	(772)	(848)	(912)	(992)
	P_2O_5	(307)	(283)	(294)	(306)	(326)
	K_2O	(373)	(384)	(394)	(404)	(415)
World	N	3 286	5 843	7 673	11 550	15 059
	P_2O_5	387	907	1 216	1 584	2 873
	K_2O	5 754	3 993	5 094	5 970	6 760

World fertilizer outlook

Fertilizer demand has historically been influenced by changing and often interrelated factors such population and economic growth, agricultural production, prices and government policies. This still holds.

However, three developments distinguish the current state of agricultural markets from past fluctuations, namely that the hike in world prices concern nearly all major food and feed commodities, that record prices are being achieved at a time not of scarcity but of abundance, and that linkages between agricultural commodity markets and other markets are strengthening.

Such phenomena already manifest in 2006 strengthened in 2007 a year characterised by persistent market uncertainty, record prices and unprecedented volatility in grain markets. The magnitude and nature of these changes have led some observers to refer to a paradigm shift in agriculture away from decreasing real food prices over the past thirty years. Given the inextricable link between food production and fertilizer use, it is opportune to consider such changes when reviewing prospects for fertilizer demand and supply balances until 2011/12.

MACRO FACTORS AFFECTING GLOBAL AGRICULTURE AND FERTILIZER DEMAND

Economic context

After solid and broad-based growth for three consecutive years the world economy decreased slightly in 2007 with anticipated GDP growth back to 2005 levels at 4.9% and 3.3% forecast for 2008 by the World Bank (2007). Developing countries and economies in transition continued their strong economic performance though with a mild reduction in 2007 growth rates when compared with the previous year, i.e. 5.9% for developing countries and 6.5% for countries in transition. Among developing countries,

sustained high though slightly decreasing growth in China and India engendered endogenous growth through increasing South-South trade and financial linkages. This is reflected in, among other things, continued strong demand and higher prices for energy and primary commodities including food. Notwithstanding the strong performance by most developing countries they remain vulnerable to any slow down in major developed economies and to the volatility of international commodity and financial markets.

Oil

So far oil prices have not had a significant dampening effect on the world economy largely due to buoyant non-oil commodity prices offsetting rising import costs (due to higher oil prices), and the cushioning effect of the depreciating United States dollar (9.5% relative to major currencies between January-September 2007) in which many international commodity prices are denominated.

High oil prices contributed to price increases for most agricultural crops by raising input costs on the one hand, and by boosting demand for agricultural crops used as feedstock in the production of alternative energy sources (bio-fuels) on the other. The combination of high oil prices and the desire to deal with environmental issues is driving the rapid expansion of the bio-fuels sector. This is likely to boost the demand for feed stocks mainly maize, sugar, rapeseed, soybean, palm oil and wheat for many years to come. However, much will also depend on the supply and demand fundamentals of the bio-fuel sector itself. High oil prices could depress the use of oil-based fertilizers which have been behind much of the increase in farm production during the past half century.

Trade

World trade expanded rapidly in the recent three years driven by increased trade of both oil and non-oil commodities as well as capital goods. Growth of world exports is more than double that of global output indicating a further deepening of global economic integration. The growth of world trade is expected to moderate to approximately 7% in 2008.

Freight rates

Freight rates have become a more important factor in agricultural markets than in the past. Increased fuel costs, stretched shipping capacity, port congestion, and longer trade routes due to altered trade patterns, have pushed up shipping costs. The Baltic Exchange Dry Index, a measure of shipping costs for bulk commodities such as grains and oilseeds, has recently passed the 10,000 mark for the first time with freight rates up 154 percent in November 2007 from a year earlier. High though decreasing freight values influence the geographical pattern of trade as countries opt to source their import purchases from nearer suppliers to save on transport costs. High freight rates are expected to last till 2009 when a large number of ships are expected to be launched. The impact of transport costs on fertilizer prices will grow as fertilizer is produced in fewer localities close to raw materials and ample energy availability.

Exchange rates

Exchange rate swings play a critical role in all markets including agricultural markets. Yet, rarely have currency developments been as important in shaping agricultural prices as in recent months. The decline in the United States dollar against most currencies since 2005 has made imports from the United States cheaper and lessens the true impact of the rise in world prices. This is a major reason behind the brisk world import demand that, in spite of high prices, shows little sign of retreat.

Overall

Medium term perspectives point to a slowing down of the world economy with a smoothing of the upward trend in emerging economies. Global growth is seen as remaining sufficiently robust to sustain demand for food (especially high value foods such as meat, fruit and vegetables) in emerging economies thereby strengthening demand for fertilizers.

THE AGRICULTURAL CONTEXT

Global population and economic growth are the major forces driving increased world food demand, crop production and fertilizer use. These and other factors influencing fertilizer use are outlined briefly in this section.

Population

In spite of world population growth slowing from 1.26% (1996-2005) to1.10% (projected 2006-2015), absolute annual increments continue to be large. It is anticipated that between 50 and 70 million people will be added annually to the world population until the mid 2030s. Almost all of this increase is expected to take place in developing countries especially the group of 50 least developed countries. More food and fibre will be required to feed and cloth these additional people and to increase the daily food uptake of the still 830 million undernourished world wide (2002-04). There is thus significant scope for further increases in demand for food even as population growth slows down.

Income growth and dietary change

The value of total agricultural output (all food and non-food crop and livestock commodities) has almost trebled in real terms since 1961, an average increase of 2.3 percent per year, well ahead of global population growth (1.7 percent per year). Much of this growth originated in developing countries and also reflects the rising share of high value commodities such as livestock and horticulture products in the total value of production.

Global agricultural value added per capita has grown at an average rate of 0.4 percent per year in real terms since 1961. Latin America and South Asia have seen a small increase, while East Asia and the Pacific has more than doubled agricultural value added per capita over the last four decades. Sub-Saharan Africa is the only region in which per capita agricultural value added has not seen a sustained increase, with a declining trend on average for the period and considerable variation over time and across countries.

Both reflecting and driving these changes in agricultural production, global dietary patterns have changed dramatically over the past four decades. Income growth, relative price changes, urbanization and shifts in consumer preferences have altered dietary patterns particularly in developing countries. Diets have shifted away from staples such as cereals, roots and tubers and pulses towards more livestock products, vegetable oils and fruits and vegetables. Total meat production in developing countries more than quintupled from 27 million tonnes to 147 million

tonnes between 1970 and 2005, and, although the pace of growth is slowing down, global meat demand is expected to increase by more than 50 percent by 2030.

Increased meat and aquaculture production will require more feed (coarse grains and oilseed meals). Conversion of grain areas to vegetable and fruit production will translate into higher fertilizer demand as average application rates for the latter is about double those for grain crops.

The above trends support continuing and increasing demand for mineral fertilizers to restore and enhance fertility of the world's agricultural land for higher yields and improved produce quality.

Bio-fuels

High oil prices are creating new markets for agricultural commodities that can be used as feedstock for the production of bio-fuels. Bio-fuels are being promoted as contributing to a wide range of policy objectives, most notably as providing greater energy security with regard to liquid fuels, increasing rural incomes, lowering greenhouse gas emissions and providing economic opportunities for developing countries. Production of ethanol and bio-diesel has soared in OECD countries since early 2004 and will probably continue to increase at least till the end of the decade due to processing capacity soon to come on line, and due to the difficulties of dismantling existing subsidies and protective measures (Steenblik, 2007).

It is difficult to predict the impact of bio-fuels feedstock production on fertilizer demand because the former is more dependant on a large array of support measures in pursuit of sometimes contradictory policy objectives, rather than on market fundamentals such as oil and feedstock prices. While the magnitude and nature of incentives and support for investment in the industry will probably ensure current support levels well into the future, increasing scrutiny of the high fiscal, developmental and environmental costs could influence the political economy of bio-fuels.

The predicted impact of increased bio-fuel production on world fertilizer demand is expressed in two ways; percentage fertilizer consumed by bio-energy crops and, total fertilizer used for feedstock production. Variance within and among such estimates show how approximate they are. For example, Smeets and Faaji (2006) estimate that bio-energy crops

will account for 1 to 8% of fertilizer consumption in 2015, and 2 to 16% in 2030, while Cassman et al. (2006) estimate 27.6% in 2010/11.

In the light of the uncertainty about the direct impact of bio-energy crop production on fertilizer use, four scenarios were examined by Tenkorang et al (2007). Only two of these estimates suggest that bio-fuel production could have a significant impact on fertilizer consumption in the near future. Tentative hypotheses put forward by the IEA suggest that if bio-fuel use grows 50% over the next ten years, and it is assumed that 21 million hectares of food crops are displaced by bio-energy crops implying greater intensification to make up the loss in food production, the net effect would be an increase in fertilizer use of 2.4 million tonnes. An Integer (2007) report estimates total fertilizer consumption for bio-fuel crop production at about 6.4 million tonnes in 2012, while according to Smeets and Faaji (2006) it could be 13.5 million tonnes by 2015.

Such variation in estimates is not surprising given the many and complex variables governing the relationship between bio-fuel production and fertilizer consumption. The most obvious are that:

- Demand for and financial viability of bio-fuels are strongly influenced by the oil price which is volatile;
- Increased land used for feedstock production does not translate directly into increased fertilizer use as it will be at least partially offset by less land used for other crops. Such changes in land use affects fertilizer consumption as crops do not all have the same total fertilizer requirements nor the same balance of nutrient uptake. Adequate data on crop fertilizer use would be required to compute the effects of such interrelated factors accurately.
- Increased demand for feedstock can be partially met by bringing more land into production thereby alleviating price hikes.
- Technology enabling the use of a wider diversity of feedstocks such as grass, wood and municipal waste to produce bio-ethanol could significantly reduce demand for cultivated carbohydrate-producing crops with a corresponding effect on fertilizer demand. While research is being conducted on such technology, the latter is unlikely to be applied widely during the outlook period.

The effect of such market related factors is compounded by sometimes incoherent policies supporting bio-fuel production in response to vested sector interests.

It is salutary to consider the possible impact of bio-fuels on global fertilizer consumption. As indicated previously, there are currently about 14 million hectares or one percent of arable land planted with bio-fuel crops which provide some one percent of transport fuels. Even if the IEA estimate that this could more than double to some 35 million hectares by 2030 do materialise, the increase over the period would be of the order of 4.3% per annum which is high. Another measure of possible impact is to take the average of the three previously mentioned forecasts of fertilizer to be used for bio-fuel production worldwide in approximately 2012 (2.4, 6.4, 13.5 million tonnes) which amounts to about 2.4% of total fertilizer use at that time.

Caution and realism should thus be exercised when attributing future increased fertilizer demand to bio-fuel production. While the need for large amounts of feedstock is likely to fuel demand in the short term, no dramatic increase in fertilizer demand is expected in the period under review during which sustained application rates are anticipated.

Additional agricultural land

The European Union suspension of its 10% obligatory set aside requirement for the 2007/8 season could bring an estimated three million hectares of arable land under cultivation. Although no official decision has been made regarding an early release of land from the Conservation Reserve Programme (CRP) in the USA, contracts on some 800 000 hectares have expired and could thus be put back into production during the new season. Should all this land be cropped, it would increase fertilizer demand by approximately 0.86 million tonnes [1] or 0.5% of global nutrient consumption.

In the longer term new land could be cultivated in Latin America, Sub-Saharan Africa, South-east Asia and Eastern Europe. However, developing such land and placing output on domestic and international markets would require large investments into transport and other infrastructure, which could take decades.

Increasing productivity on existing cropped land by inter alia using more fertilizer, remains the most likely path farmers will take to increase production.

1 Assuming average nutrient use of 156 kgN, 36 kgP, 33.5 kgK per hectare.

Technology

The scope for introducing higher yielding technologies including fertilizer lies mainly in developing countries where technology adoption is slowest. At the same time, concerns about the impact of nitrogen and phosphorous losses to the environment will call for increased recycling of organic nutrient sources. Here again, the scope for such improvements lies mainly in emerging economies and should improve nutrient use efficiency.

The adoption of improved technology is thus likely to contribute to increased fertilizer consumption only marginally during the outlook period.

Animal disease outbreaks

Outbreaks of highly infectious diseases such as Foot and Mouth disease (FMD), Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) and Avian Influenza (AI) could affect meat trade and the agriculture sector of some countries during the outlook period.

In spite of the recurrence of AI in some countries and sharply higher food and energy costs, global poultry meat production in 2007 is expected to be 3% higher than last year. This is reflected in the FAO poultry price index which in 2007 reached the highest level observed in the last ten years. Global pig meat production in 2007 is forecast to fall by 1% principally due to a major contraction of output in China where the sector was affected by massive culling following an outbreak of PRRSV disease and by high feed prices.

OUTLOOK FOR WORLD AGRICULTURE

Cereals

FAO's November forecast for world cereal production in 2007 stands at 2109 million tonnes, about 5% up from the previous years harvest. The bulk of this increase comes from a record maize crop in the USA. Production will meet the forecast 2% increase in consumption leaving global stocks unchanged from the previous season's low stock to utilization ratio which was the smallest since the mid 1990's.

Prices for all major cereals remained high with some, especially wheat, registering considerable gains from the previous season. **Wheat** prices reached record levels-some 60% higher than in 2006-due to unfavourable

production conditions in the EU, Canada, Australia and Morocco. Tight supplies and higher prices are expected to drive down **feed** utilization. Per caput consumption of wheat for **food** is also expected to decline slightly especially in low income countries and in Africa. Early prospects for production in 2008 are favourable.

FAO forecasts that world **coarse grain** production in 2007 will be up by 9% from 2008; the bulk coming from increased maize production in the USA. International prices of coarse grains remained high mainly because of strong demand for **maize**[2] as feedstock for ethanol production in the USA which had a knock-on effect on the demand and price of other coarse grains. This trend is expected to continue into 2008 in spite of expected increased maize production in the USA and Brazil, and of world stocks estimated to be 14% higher than in 2006.

International **rice** prices increased relatively less than other agricultural commodities in 2007 essentially due to the depreciation of the USD in which prices are denominated. Production sufficed to meet the small increase in use of rice for food, feed and other purposes.

The stock-to-use ratios for all major cereals are forecast to remain low and stable over the outlook period resulting in tight market conditions and volatile prices likely to react rapidly to any supply fluctuation.

Oilseeds

Following many years of expansion, global oilseed production is forecast to decline by 3% from record levels in 2006. A decline of 6% in soybean (the world's leading oil crop) and 10% in sunflower production explains this reduction which is unlikely to be offset by anticipated improved output of rapeseed, groundnut and palm kernel, and expected 6-7% increase in land planted to soybean in Latin America (mainly Brazil).

The two main factors behind the anticipated drop in total output are firstly, increased competition from grains for land notably in the USA, China and CIS countries. Secondly, unfavourable weather conditions have depressed oilseed production in several key growing areas or countries including Europe, Australia, Canada, China and the USA. Due to reduced oils/fats and oil meal supplies as well as expanding demand for food, feed and energy use, present short and medium term forecasts point towards

2 Which accounts for some 70% of total coarse grain production

continued firmness in prices for oilseeds and their products already at record highs. World stocks of both oil and meals are expected to fall to critical levels.

Sugar

World sugar prices weakened after the highs experienced in 2006 mainly due to rising production in traditional importing countries which depressed import demand. Global production is forecast to increase by 6% over the next five years with developing countries, mainly Brazil and India, accounting for most of the growth. The greatest increase in demand is expected among developing countries with strong economic performance such as China and India. More cane will be diverted from sugar production to ethanol manufacturing particularly in Brazil and India. Consumption in developed countries is likely to remain relatively unchanged due to low population growth and dietary concerns. World prices are expected to remain weak and stable in the medium term.

Meat and dairy products

Global **meat** output, constrained by rising feed costs and massive culling of pigs in China, is expected to grow by only 1% in 2007. Increasing demand, particularly from developing countries, is underpinning production expansion world wide. Reduced export restrictions are expected to facilitate global trade with supply likely to come mainly from developing countries.

International prices of **dairy products** continued their unprecedented surge that began in late 2006 peaking at an all time high in September at more than double the previous year. This surge resulted from a number of production shocks in some major exporting countries[3] , and strong demand especially from developing countries. Stocks held by key suppliers such as the EU and USA have fallen to record levels. High international prices and tight markets are expected to stimulate expansion of the sector.

DEMAND

Annexes 2, 3 and 4 present forecasts of regional and global fertilizer demand for the three major plant nutrients until 2011/12. World fertilizer

3 Including shortage and high prices of feed due to demand for maize as feedstock for ethanol.

consumption is to grow annually at about 1.7 % from 2007/2008 to 2011/2012, equivalent to an increment of about 15 million tonnes. About 69% of this growth will take place in Asia and 19% in America.

The expected share of world nitrogen, phosphate and potash consumption and the annual growth of this consumption are shown in Table 1. A revealing dimension of anticipated demand is the expected relative contribution to change in world consumption which is a function of the preceding two parameters. Low share of consumption combined with high consumption growth leads to higher contribution to changed world consumption than the share of consumption may suggest (e.g. Africa and Oceania in the case of nitrogen). Likewise, a high share of world consumption associated with low consumption growth means lower than may be expected contribution to world consumption (e.g. North America and West Europe for nitrogen). Evidently, if both share of consumption and consumption growth are high, the relative contribution to increased global demand will be high (e.g. South Asia for nitrogen). A measure of this expected relative contribution to changed consumption for nitrogen, phosphate and potash is given in Figures 1, 2, and 3 respectively.

TABLE 1
Regional and sub-regional fertilizer consumption 2007/8-2011/12

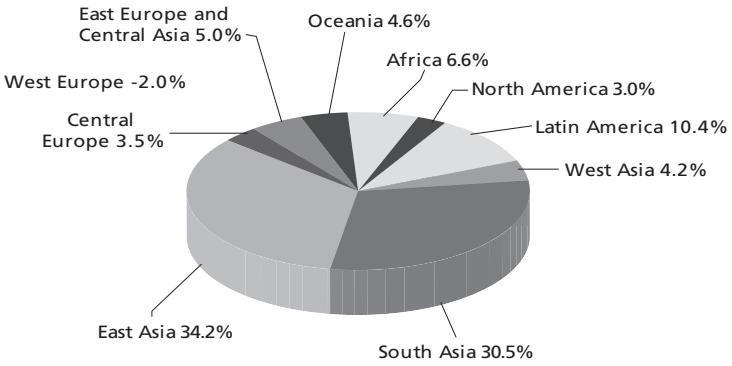
Nitrogen	N		P		K	
Regions and Subregions	Share of world consumption	Annual growth	Share of world consumption	Annual growth	Share of world consumption	Annual growth
	(%)		(%)		(%)	
World		1.4		2.0		2.4
Africa	3.4	2.9	2.5	1.0	1.6	2.0
North America	13.5	0.3	12.0	0.5	17.1	0.7
Latin America	6.3	2.4	13.0	2.8	17.5	2.9
West Asia	3.5	1.7	3.3	1.0	1.4	2.4
South Asia	19.6	2.2	20.5	3.5	10.9	4.2
East Asia	38.3	1.3	36.1	1.9	35.2	3.3
Central Europe	2.7	1.8	1.5	1.2	2.4	1.0
West Europe	8.4	-0.3	5.6	-0.7	9.5	0.0
E Europe and C Asia	3.0	2.4	2.0	4.5	3.1	1.6
Oceania	1.4	4.9	3.5	1.7	1.3	2.1

Nitrogen

The forecast is for world nitrogen fertilizer demand to increase at an annual rate of about 1.4% until 2011/2012, which is an overall increase of 7.3 million tonnes. About 69%t of this growth will take place in Asia (Table 1, Annex 2).

The world's largest consumers of nitrogen are East Asia, South Asia, North America and West Europe (Table 1, Annex 2). While their share of global consumption is modest, it is forecast that the relative contribution of Latin America and East Europe and Central Asia (EECA) to change in nitrogen use will be 10.4% and 5% respectively. The relative contribution to change in world nitrogen consumption by East Asia and South Asia is expected to be about 65% (Figure 1). North America is the largest importer followed by South Asia that still has a supply deficit of some 32%. East Asia will move from deficit to surplus during the outlook period (Annex 2).

FIGURE 1
Regional and sub-regional contribution to change in world Nitrogen consumption 2007/8-2011/12



Phosphate

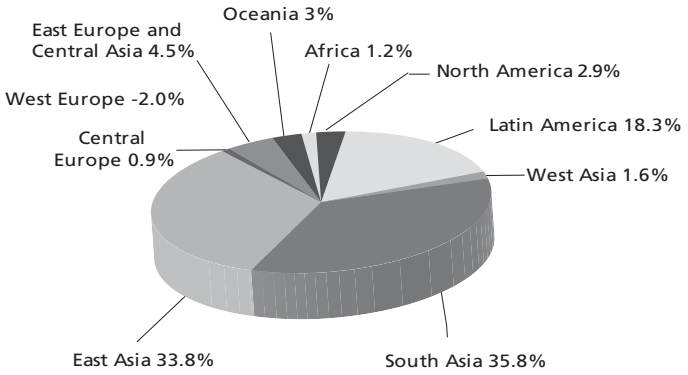
With an increment of 4.2 million tonnes during the outlook period, the expected annual growth rate in world demand for phosphate fertilizers is about 2.0%. About 71% of this growth will take place in Asia and 21% in America (Table 1, Annex 3).

The largest consumers will be East Asia, South Asia and North America and main importers will be South Asia, Latin America and West Europe (Table 1, Annex 3). The main contributors to increase in world consumption will be South Asia (35.8%), East Asia (33.8%) and Latin America (18.3%) (Figure 2).

Potash

World demand forecast for potash fertilizers is to increase at an annual average rate of about 2.4%, equivalent to an increment of 3.6 million tonnes over the outlook period. About 68% of this growth will occur Asia and 26% in America (Table 1, Annex 4).

FIGURE 2
Regional and sub-regional contribution to change in world Phosphate consumption 2007/8-2011/12



The largest consumers will be East Asia, North America and Latin America and main importers will be East Asia, Latin America and South Asia (Table 1, Annex 4). It is expected that the main contributors to increase in world consumption will be East Asia (48.1%), Latin America (21.0%) and South Asia (19.0%) (Figure 3).

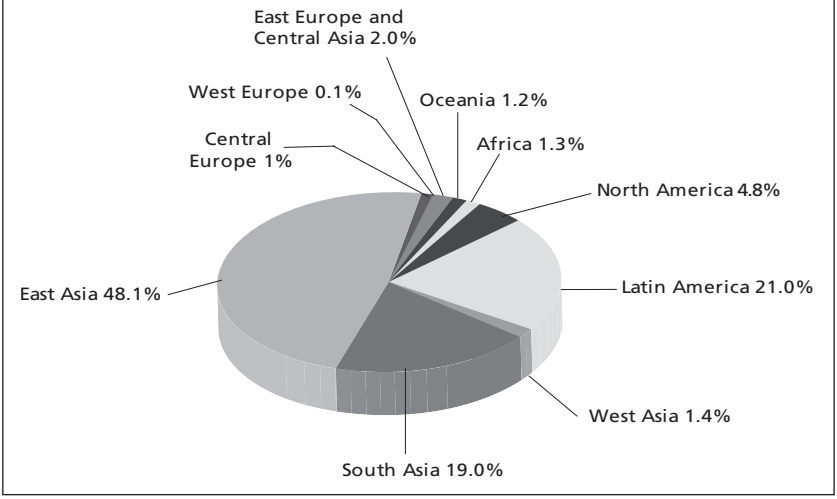
SUPPLY

World fertilizer supply is expected to increase by some 30 million tonnes representing an annual growth rate of 3% which is comfortably ahead of demand for the outlook period (Annex 2, 3, 4).

Nitrogen

World nitrogen supply is forecast to rise by 23.1 million tonnes by 2011/2012 compared to 2007/2008. Projected supply capacity considerably exceeds total demand for the outlook period and is expected to increase towards its latter part with supply exceeding demand by about 10% in 2011/12.

FIGURE 3
Regional and sub-regional contribution to change in world Potash consumption 2007/8-2011/12



East Asia, South Asia, North America and Europe are the largest producers of nitrogen but consume most of it. The largest exporter by far will be EECA (Annex 2).

Phosphate

World phosphate fertilizer supply is forecast to increase by 6.3 million tonnes by 2011/2012 at a growth rate of 3.2% per annum. It is estimated that a surplus of some 0.4 million tonnes at the beginning of the period will increase to 2.9 million tonnes in 2011/2012.

Areas with the largest production will be East Asia, North America and Africa, with Africa and North America having the largest surpluses for export (Annex 3).

Potash

The supply forecast for potash is that it will increase by 4.9 million tonnes to 43.2 million tonnes during the overlook period at an annual growth rate of 2.4% per annum.

The main producing areas will be North America, EECA and West Europe, with EECA, North America, West Asia and West Europe having the largest surpluses for export (Annex 4).

SUPPLY AND DEMAND BALANCES

Tables 2, 3, 4, and 5 show world fertilizer supply and demand balances respectively for total nutrients, nitrogen, phosphate and potash. It is anticipated that world fertilizer supply and demand will increase by 3.1% and 1.9% respectively between 2007/08 and 2011/12. World surplus is consequently expected to increase annually by 21.2% over the same period to reach about 11% of total demand in 2011/12.

Nitrogen

Continuing high crop prices in 2007 led to sustained demand for nitrogen and tight market conditions in most regions and sub-regions though mainly in Asia, Latin America and North America. The market is, nevertheless, expected to loosen over the outlook period as global supply increases and is expected to remain ahead of total demand. Surplus is forecast to increase from 9.4 to 24.7 million tonnes growing annually by

36% over the period. Surplus in 2011/12 is expected to exceed demand by some 11%. Shortages, expected mainly in North America and South Asia, are likely to be met by surpluses mainly in EECA.

TABLE 2
World fertilizer supply and demand, 2007/2008-2011/2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
			(thousand tonnes)[1]		
Total supply	206 431	212225	219 930	230 334	240 711
Total demand	197 004	201 482	205 947	211 230	216 019
Surplus (deficit)	9 427	10 743	13 983	19 104	24 692

[1] Difference between supply potential and consumption; negative signs denotes deficit situation.

TABLE 3
World nitrogen supply and demand balance, 2007/2008-2011/2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
			N (thousand tonnes)[1]		
Total supply	131 106	136 252	140 732	147 748	154 199
Total demand	127 820	130 409	133 059	136 198	139 140
Surplus (deficit)	3 286	5 843	7 673	11 550	15 059

[1] Difference between supply potential and consumption; negative signs denotes deficit situation.

TABLE 4
World phosphate supply and demand balance, 2007/2008-2011/2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
			P_2O_5 (thousand tonnes)[1]		
Total supply	37 000	38 461	39 672	41 112	43 299
Total demand	436 613	37 554	38 456	39 528	40 426
Surplus (deficit)	387	907	1 216	1 584	2 873

[1] Difference between supply potential and consumption; negative signs denotes deficit situation.

TABLE 5
World potash supply and demand balance, 2007/2008-2011/2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
			K (thousand tonnes)[1]		
Total supply	38 325	37 512	39 526	41 474	43 213
Total demand	32 571	33 519	34 432	35 505	36 453
Surplus (deficit)	5 754	3 993	5 094	5 970	6 760

[1] Difference between supply potential and consumption; negative signs denotes deficit situation.

Phosphate

In response to increased crop production following higher prices, demand for phosphate fertilizers remained high and only marginally above supply. Global phosphate surpluses are forecast to increase from approximately 0.4 to 2.9 million tonnes, growing annually at 49% over the outlook period to exceed demand by approximately 7% in 2011/12. Traditional exporters-Africa and North America-are expected to meet the needs of deficit areas such as South Asia, Latin America and West Europe.

Potash

Global potash supplies are expected to keep well ahead of total demand with the surplus increasing from 5.7 to 6.7 million tonnes at an annual growth rate of 3% over the outlook period. During this period the surplus will fluctuate little at about 18% of demand. This surplus will be provided mainly by EECA and North America for deficit areas such as East Asia and Latin America.

THE REGIONAL FERTILIZER SITUATION

Africa

Africa will account for marginally less than 3% of world fertilizer consumption during the outlook period. Nitrogen consumption is forecast to grow at 2.9%, and phosphate and potash by 1% and 2 % respectively (Table 1). The supply and demand forecast (Table 6) shows that the region will remain a major exporter of phosphate fertilizer and less so, though increasingly, of nitrogen. It will continue to import all its potash needs.

Fertilizer consumption continues to be largely restricted to 10 countries. Nitrogen and phosphate production capacity exists in only 11 and 6 countries respectively. High transport costs in land locked countries contribute to prohibitively high fertilizer prices. An array of other factors which further limit input and output markets, severely constrain fertilizer use.

The main consumers are Egypt, South Africa and Morocco. Steady demand growth is expected in Egypt due to increases in cultivated area and in yields. Growth in the Maghreb and South Africa, where largely

rain fed production is tributary to weather fluctuations, is likely to be more erratic. In South Africa, maize production would respond to high prices, to increased demand by the emerging bioethanol industry and to greater demand from neighbouring countries that could be affected by limited availability of USA exports and of food aid.

Follow up to the 2006 Abuja Africa Fertilizer Summit attempts to address the regional policy picture and fertilizer policies are being prepared in some countries. The sustainability of policies applied in some countries including tariff adjustments and fertilizer subsidies, needs to be demonstrated at a larger scale.

Overall, this contributes to a slow increase of regional fertilizer consumption.

America

It is forecast that America will consume 23.6% of global fertilizer supply during the outlook period. Consumption is expected to increase by 2.8 million tonnes, an annual growth rate of 1.4%. The region is likely to have a nitrogen deficit of about 27% of demand over the outlook period, but a considerable surplus of potash by 2011/12 (approximately 48% of demand). It is expected that the region will move into a phosphate deficit

TABLE 6
Africa fertilizer forecast 2007/2008-2011/2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
			(thousand tonnes)[1]		
N supply	4 441	5 316	5 605	5 929	7 454
Total demand	3 764	3 919	4 037	4 153	4 270
Surplus (deficit)	677	1 387	1 566	1 776	3 184
P supply	6 646	7 148	7 498	8 088	8 478
Total demand	1 368	1 383	1 393	1 404	1 414
Surplus (deficit)	5 278	5 765	6 105	6 684	7 064
K supply	0	0	0	0	0
Total demand	468	485	497	509	516
Surplus (deficit)	(468)	(485)	(497)	(509)	(516)

[1] Difference between supply potential and consumption; negative signs denotes deficit situation.

early during the outlook period and that this deficit will grow to some 3.5% of demand by 2011/12 (Table 7).

North America

Fertilizer consumption in North America which represents 13.5% of global fertilizer nutrient consumption is forecast to grow by 0.4% between 2007/2008 and 2011/2012. Nitrogen, phosphate and potash consumption levels are to grow by 0.3%, 0.5% and 0.7% respectively. Significant gains in nitrogen use efficiency over the past two decades combined with greater recycling of organic nutrient sources, mitigate against increased fertilizer demand resulting from expanding bioethanol production.

Latin America

Total fertilizer consumption in Latin America is forecast to increase by some 2.3 million tonnes at an annual rate of 2.7% during the outlook period. This growth in fertilizer demand is expected after strong recovery of crop production since 2006 mainly in Brazil and Argentina where there has been a rapid response to increased crop prices partly resulting from increased sugar cane plantings for ethanol production. Future production increases are expected to come from a combination of larger cultivated

TABLE 7
America fertilizer forecast 2007/2008-2011/2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
			(thousand tonnes)[1]		
N supply	19 368	18 925	19 225	19 878	19 724
N demand	26 382	26 661	27 058	27 339	27 818
Surplus (deficit)	(7 014)	(7 736)	(7 833)	(7 461)	(8 094)
P supply	11 254	11 307	11 417	11 561	11 579
P demand	11 253	11 431	11614	11 802	11 997
Surplus (deficit)	1	(124)	(197)	(241)	(418)
K supply	16 242	15 161	16 269	16 811	18 430
K demand	11 553	11 791	11 957	12 284	12 453
Surplus (deficit)	4 689	3 370	4 312	4 527	5 917

[1] Difference between supply potential and consumption; negative signs denotes deficit situation.

area and higher yields which will help Latin America further increase its share of global agricultural markets.

Asia

It is forecast that during the outlook period the region will use 58.6% of fertilizer consumed globally. Demand will increase by 10.4 million tonnes growing at 2.1% annually for all fertilizers, at 1.6% for nitrogen, at 2.4 % for phosphate and at 3.5% for potash (Annex 2,3,4). It is expected that the region will move from a small deficit to a considerable surplus of nitrogen; will reduce its dependency on imported phosphate; but will increase the volume of its potash imports (Table 8).

West Asia

Subregional fertilizer demand is estimated up by 1.6% annually for the outlook period with expected increases of 1.7% for nitrogen, 1.0% for phosphate and 2.4% for potash. Expected demand for potash is highest in view of the need to rebalance fertilizer application. Developing irrigation, improving water use efficiency, and adoption of modern varieties will remain the main drivers of regional agricultural development. In Turkey, wheat, maize and cotton production is likely to improve over the next

TABLE 8
Asia fertilizer forecast 2007/2008-2011/2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
			(thousand tonnes)[1]		
N supply	72 123	76 317	79 933	85 491	89 850
Total demand	75 255	76 111	77 961	80 413	82 476
Surplus (deficit)	(2 132)	206	1 972	5 078	7 374
P supply	13 882	14 744	15 484	16 185	17 964
Total demand	19 209	19890	20 560	21 168	21 784
Surplus (deficit)	(5 327)	(5 146)	(5 076)	(4 983)	(3 820)
K supply	5 428	5 524	6 226	6 450	6 530
Total demand	14 485	15 138	15 794	16 464	17 073
Surplus (deficit)	(9 057)	(9 614)	(9 568)	(10 014)	(10 543)

[1] Difference between supply potential and consumption; negative signs denotes deficit situation.

five years. Large irrigation development in Anatolia is likely to contribute to mainly high-value crop production, but is expected to take at least ten years to phase in. In Iran, wheat output is forecast to increase as a result of area expansion.

South Asia

India, Pakistan and Bangladesh remain the main fertilizer consuming countries in the subregion which is facing considerable population growth and has limited reserves of good agricultural land. Improving crop productivity and nitrogen use efficiency simultaneously is one of the greatest challenges facing the subregion. The need to increase food production to meet the requirements of a large and fast growing population, limited land and water resources, rising income and policies supporting food self-sufficiency, provide incentives for increasing productivity per land area. Grain production is anticipated to increase steadily over the next five years in India though more modestly in Pakistan and Bangladesh. Cotton output is also expected to rise in Pakistan and India, while sugar cane output in India should increase significantly in response to growing demand for sugar and ethanol. Fruit and vegetable production is also expanding quickly to supply both the domestic and international markets.

Fertilizer prices stabilized by government subsidies, programmes promoting balanced fertilizer use, and self sufficiency policies should contribute to strong subregional fertilizer demand. Fertilizer use is forecast to grow annually at a high 2.8% over the outlook period with corresponding increases for nitrogen (2.2%), phosphate (3.5%) and potash (4.2%). The need to rebalance fertilizer application points to stronger growth rates for phosphate and potash than for nitrogen.

East Asia

At 37.2% East Asia uses by far the largest share of fertilizer consumed globally. Small incremental consumption in the subregion will thus significantly increase global consumption. In spite of loss of arable land to rapid urbanization particularly in China, agricultural production is increasing due to productivity gains which are also manifest in countries with dynamic agricultural sectors such as Indonesia, Malaysia, Philippines Thailand and Viet Nam.

In a five-year perspective, China's maize and soybean harvests are projected to grow steadily to meet animal feed demand. With little additional land available in China, additional maize is likely to come from reducing areas planted to wheat and rice and from higher yields. Maize production in the subregion is seen as progressing faster than rice output in response to evolving diets. The rice-maize rotation is expanding and tends to replace rice monoculture in some areas. Declining rice production in Japan and the Republic of Korea will be tempered by sustained or marginally increased production in Viet Nam, Philippines, Thailand and particularly Indonesia. A strong driver of fertilizer demand is the fast expansion of palm oil production in Indonesia and Malaysia.

Fruit and vegetable production is also increasing rapidly particularly in China where there is a large availability of cheap labour for labour intensive crops. The area planted to fruit and vegetables in China is currently equivalent to almost 40% of the area cropped to cereals. With average fertilizer application rates being about the double of those on cereals, fruits and vegetables are estimated to be responsible for about half of the increase in fertilizer demand.

From a fertilizer demand point of view, the region is split between mature markets and developing markets. Mature markets are in Japan, the Republic of Korea, the Chinese Province of Taiwan and Thailand, all of which have declining or stable fertilizer demand trends. In these countries, recycling of organic sources and gains in fertilizer use efficiency are the main drivers of fertilizer demand. Fertilizer consumption is increasing quickly in all the other countries. In view of the large amounts of fertilizer applied, in particular in China, the efficiency with which fertilizers are used is an issue that deserves attention. Nitrogen use efficiency is declining as nitrogen fertilizer consumption increases faster than grain production. Yields and nitrogen use efficiency should be increased simultaneously.

Fertilizer consumption in the subregion is forecast to increase by some 5.6 million tonnes growing by 1.7% annually over the outlook period. Estimated growth for specific nutrients is nitrogen (1.3%), phosphate (1.9%) and potash (3.3%) reflecting the need to move towards more balanced fertilizer use (Table 1). It is anticipated that fertilizer production in the subregion will increase to move from a deficit to a surplus situation

for nitrogen and phosphate during the outlook period. The subregion will remain a net importer of potash (Annex 2,3,4).

Europe

Because its total fertilizer demand represents some 13% of global consumption, Europe remains an important region in the international fertilizer equation. However, total fertilizer consumption is expected to grow only fractionally at 0.6% per annum over the outlook period. Annual growth in consumption of nitrogen, phosphate and potash are forecast at 0.7%, 0.7% and 0.5% respectively. A predicted decrease in consumption in West Europe (-0.3%) will be offset by increases in Central Europe (1.6%) and in Eastern Europe and Central Asia (2.6%). The region will remain a major exporter of nitrogen and potash, but less so and decreasingly of phosphate (Table 9).

Western and Central Europe

On the policy side, the single farm payment (SFP) is now in force in all EU-15 states and is being implemented progressively in the new member states. The reform of the sugar regime leads to a significant reduction of the sugar beet area, which will continue over the next three years. Strong support for bioenergy development should offset, at least partly, the

TABLE 9
Europe fertilizer forecast 2007/2008-2011/2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
			(thousand tonnes)[1]		
N supply	33 690	34 172	34 440	34 896	35 617
Total demand	21 222	21 424	21 624	21 827	22 030
Surplus (deficit)	12 468	12 748	12 816	13 069	13 587
P supply	4 698	4 702	4 708	4 708	4 708
Total demand	3 956	4 007	4 031	4 278	4 336
Surplus (deficit)	742	695	677	430	372
K supply	16 665	16 827	17 031	18 213	18 213
Total demand	5 692	5 721	5 790	5 843	5 896
Surplus (deficit)	10 963	11 106	11 241	12 370	12 317

[1] Difference between supply potential and consumption; negative signs denotes deficit situation.

impact of the SFP and of the sugar reform. In response to current tight grain market conditions, the set-aside policy could possibly be abolished by the end of the outlook period. These policy changes are expected to influence the crop mix over the medium term. It is projected that the EU-25 cereal area will remain fairly stable in the medium term. At the same time the area planted to oilseeds is likely to increase mainly in Western Europe to supply its biodiesel industry if current policy in this regard is maintained. Wheat and maize outputs are predicted to increase slightly in response to productivity gains.

Environmental regulations on water, air and soil quality will probably have an increasing impact on farming practices. Farmers have been requested to further improve nitrogen use efficiency. This trend is likely to continue and to influence regional demand downwards in the medium term. Environmental regulations also mandate greater recycling of organic nutrient sources (e.g. animal manure and urban wastes) and implementation of nutrient budgeting which is likely to depress use of all nutrients particularly phosphate. Higher fertilizer prices, full implementation of the SFP and impact of environmental regulations are forecast to constrain fertilizer demand likely to increase slightly only because of demand growth in Central European countries.

Eastern Europe and Central Asia

Over the medium term, the subregion is expected to moderately increase its cereal output and to strengthen its position as a regular net cereal exporter with Russia, Ukraine and, to a lesser extent, Kazakhstan being the main actors. The subregion should also improve its leading position as an exporter of sunflower. Rapeseed and sugar beet production is expected to increase significantly over the outlook period.

Fertilizer consumption is likely to be constrained by structural problems in the subregion's agricultural and wider economy. Ukraine has high agricultural potential but, the poor macroeconomic context and incomplete land reform, hamper its development. Indebted farmers, low availability of credit, outdated machinery and weak infrastructure are some of the factors that limit regional agriculture and fertilizer use. The Russian government subsidizes the fertilizer price, interest rates on

rural credit, cost of yield insurance, livestock and seed production among others. But, policy measures to develop agricultural production have had limited impact.

Cereal and oilseed exports are handicapped by weak transport and port infrastructure. Significant investments in grain handling facilities have been made in Ukraine during recent years, offering good prospects for the future.

With the prospect of commodity prices remaining high and with steady development of the subregion's potential to increase its market share of world grain and oil seed exports, regional fertilizer consumption is expected to increase by 0.6 million tonnes at 2.6% per annum over the outlook period; nitrogen 2.4%, phosphate 4.5%, potash 1.6% (Table 1). These needs will all be met from local sources as the subregion, essentially Russia, is a major producer and exporter of nitrogen, phosphate and potash. It is forecast that exports of nitrogen and potash will increase while those of phosphate will decrease during the outlook period.

Oceania

In recent years the Australian farming sector has experienced severe drought which more than halved domestic grain production. At the same time, Australian farmers faced poor terms of trade with low prices for animal products and high input costs. Agriculture in New Zealand is affected by a still unfavourable currency exchange rate, high input prices and high ocean freight rates. If dairy prices remain strong, a shift to dairy production should result in higher fertilizer application rates per hectare.

Because farmers in Australia and New Zealand are not or little subsidized and because of environmental pressures, higher yields are likely to be achieved by using best management practices and improving nutrient use efficiency rather than through higher fertilizer application.

Assuming improved weather, cereal and oilseed outputs are expected to recover progressively over the outlook period essentially due to higher yields. Dairy producers should benefit from high prices.

During the outlook period total fertilizer consumption in the subregion is expected to increase by 0.5 million tonnes growing by 3.9% per year. Nitrogen, phosphate and potash consumption is forecast to grow by

4.9%, 1.7% and 2.1% respectively. Oceania depends on imports to meet deficits in its nitrogen and phosphate and all of its potash requirements (Table 10).

TABLE 10
Oceania fertilizer forecast 2007/2008-2011/2012

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
			(thousand tonnes)[1]		
N supply	1 484	1 522	1 529	1552	1 554
Total demand	2 198	2 294	2 377	2 466	2 546
Surplus (deficit)	(714)	(772)	(848)	(912)	(992)
P supply	520	560	565	570	570
Total demand	827	843	859	856	896
Surplus (deficit)	(307)	(283)	(294)	(306)	(326)
K supply	0	0	0	0	0
Total demand	373	384	394	404	415
Surplus (deficit)	(373)	(384)	(394)	(404)	(415)

[1] Difference between supply potential and consumption; negative signs denotes deficit situation.

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Annex 1
Explanatory note on supply and demand balances

NEW PROTOCOL

In October 2006, the FAO/Industry Working Group adopted a new protocol for the preparation of its fertilizer nutrient supply/demand balances. The work was developed by the IFA Production and International Trade Committee in 2005/06. The main objective of this revision was to take into account the resilient surplus between production and consumption and update the parameters used in the computation of supply and losses.

The new definitions and their criteria are defined as follows:

- Supply :
  - Total supply capacity (or just capacity) is defined as the maximum production achievable and is computed from the capacity , multiplied by the highest operating rate achieved over the previous five years. For new plants, a ramp-up of the operating rates was defined for the first three years of operation, using the following levels: 85%, 90% and 100%.
  - Supply refers to the projected amount actually made available.
- Demand :
  - Fertilizer demand is provided on a calendar year basis. Demand and consumption are used interchangeably.
  - Net non-fertilizer demand excludes the use of products which are recovered as by-products from industrial processes and then used as fertilizers.
  - Losses occur at both the production and consumption points; their magnitudes have been estimated at between 2.5% (nitrogen and

phosphate) and 5% (potash) of total fertilizer and non-fertilizer demand.

- Unspecified usages account for the historical residual tonnage from the production/consumption balances. This tonnage could be used either in fertilizers or in non-fertilizer products and would equate to about 4% of the other uses (nitrogen).
- Total demand includes consumption plus non-fertilizer demand and others.
- For phosphate, total demand includes H_3PO_4 fertilizer demand plus non-fertilizer H_3PO_4 demand. There is a difference between consumption expressed as P_2O_5 and total demand expressed as H_3PO_4 because consumption includes phosphate fertilizers manufactured from non-H_3PO_4 sources. The relative shares of non-H_3PO_4 phosphate fertilizers in total supply vary among regions and sub-regions and are expected to decline over time. P_2O_5 consumption is considered to be a suitable proxy for fertilizer actually applied by farmers.

Annex 2

World and regional potential nitrogen supply and demand balances (thousand tonnes)

WORLD	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	145 710	151 913	157 364	163 889	168 551
NH_3 Supply	131 106	136 252	140 732	147 748	154 199
N Fert. Consumption	98 441	100 486	102 290	104 101	105 716
Non Fertilizer Demand & Others	29 379	29 923	30 769	32 097	33 424
Surplus (-Deficit)	3 286	5 843	7 673	11 550	15 059

AFRICA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	5 083	5 832	6 062	6 388	8 193
NH_3 Supply	4 441	5 316	5 605	5 929	7 454
N Fert. Consumption	3 202	3 352	3 466	3 574	3 685
Non Fertilizer Demand & Others	562	567	573	579	585
Surplus (-Deficit)	677	1 397	1 566	1 776	3 184

AMERICA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	22 188	21 641	21 974	22 718	22 433
NH_3 Supply	19 368	18 925	19 225	19 878	19 724
N Fert. Consumption	19 794	20 095	20 319	20 446	20 773
Non Fertilizer Demand & Others	6 588	6 566	6 739	6 893	7 045
Surplus (-Deficit)	-7 014	-7 736	-7 833	-7 461	-8 094

North America	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	13 552	13 005	13 005	13 005	13 005
NH_3 Supply	11 364	10 921	10 921	10 921	10 921
N Fert. Consumption	13 669	13 787	13 829	13 804	13 888
Non Fertilizer Demand & Others	5 201	5 337	5 476	5 618	5 758
Surplus (-Deficit)	-7 506	-8 203	-8 384	-8 501	-8 725

Latin America	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	8 636	8 636	8 969	9 713	9 428
NH_3 Supply	8 004	8 004	8 304	8 957	8 803
N Fert. Consumption	6 125	6 308	6 490	6 642	6 885
Non Fertilizer Demand & Others	1 387	1 229	1 263	1 275	1 287
Surplus (-Deficit)	492	467	551	1 040	631

ASIA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	79 717	85 290	89 933	94 871	97 192
NH_3 Supply	72 123	76 317	79 933	85 491	89 850
N Fert. Consumption	60 097	61 481	62 750	64 123	65 106
Non Fertilizer Demand & Others	14 158	14 630	15 211	16 290	17 370
Surplus (-Deficit)	-2 132	206	1 972	5 078	7 374

West Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	10 302	11 434	12 437	14 440	15 530
NH_3 Supply	9 425	10 458	11 458	13 401	14 617
N Fert. Consumption	3 441	3 514	3 589	3 666	3 744
Non Fertilizer Demand & Others	514	596	601	607	613
Surplus (-Deficit)	5 471	6 348	7 268	9 128	10 260

South Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	15 232	16 032	16 478	17 686	17 686
NH_3 Supply	14 795	15 465	15 915	17 076	17 226
N Fert. Consumption	18 885	19 474	20 037	20 571	21 105
Non Fertilizer Demand & Others	751	768	785	800	816
Surplus (-Deficit)	-4 841	-4 777	-4 907	-4 295	-4 695

East Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	54 183	57 824	61 018	62 745	63 976
NH_3 Supply	47 903	50 394	52 560	55 014	58 007
N Fert. Consumption	37 771	38 493	39 124	39 886	40 257
Non Fertilizer Demand & Others	12 893	13 266	13 825	14 883	15 941
Surplus (-Deficit)	-2 761	-1 365	-389	245	1 809

EUROPE	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	37 113	37 541	37 786	38 303	39 124
NH_3 Supply	33 690	34 172	34 440	34 896	35 617
N Fert. Consumption	14 099	14 221	14 336	14 452	14 568
Non Fertilizer Demand & Others	7 123	7 203	7 288	7 375	7 462
Surplus (-Deficit)	12 468	12 748	12 816	13 069	13 587

Central Europe	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	6 107	6 159	6 159	6 159	6 159
NH_3 Supply	4 883	4 931	4 931	4 931	4 931
N Fert. Consumption	2 634	2 702	2 761	2 824	2 885
Non Fertilizer Demand & Others	728	736	744	751	758
Surplus (-Deficit)	1 521	1 494	1 426	1 356	1 288

West Europe	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	10 384	10 384	10 384	10 384	10 384
NH_3 Supply	10 138	10 138	10 138	10 138	10 138
N Fert. Consumption	8 611	8 574	8 537	8 500	8 464
Non Fertilizer Demand & Others	5 002	5 060	5 119	5 178	5 237
Surplus (-Deficit)	-3 475	-3 496	-3 518	-3 540	-3 563

East Europe and Central Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	20 622	20 998	21 243	21 760	22 581
NH_3 Supply	18 669	19 103	19 371	19 827	20 548
N Fert. Consumption	2 854	2 946	3 038	3 128	3 218
Non Fertilizer Demand & Others	1 393	1 407	1 425	1 446	1 467
Surplus (-Deficit)	14 422	14 750	14 908	15 253	15 863

OCEANIA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
NH_3 Capacity (as N)	1 609	1 609	1 609	1 609	1 609
NH_3 Supply	1 484	1 522	1 529	1 554	1 554
N Fert. Consumption	1 250	1 337	1 419	1 506	1 584
Non Fertilizer Demand & Others	948	957	958	960	962
Surplus (-Deficit)	-714	-772	-848	-912	-992

Annex 3

World and regional potential phosphate supply and demand balances (thousand tonnes)

WORLD	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	43 130	45 215	45 928	46 999	49 299
Supply	37 000	38 461	39 672	41 112	43 299
$P_2 0_5$ Fertilizer Consumption	40 444	41 490	42 552	43 557	44 605
$H_3 P0_4$ Ferti. Demand	31 521	32 338	33 166	34 164	34 988
Non-Fertiizer $H_e P0_4$ Demand	5 092	5 216	5 290	5 364	5 438
Surplus (-Deficit)	387	907	1 216	1 584	2 873

AFRICA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	7 206	7 871	8 253	9 083	9 413
Supply	6 646	7 148	7 498	8 088	8 478
$P_2 0_5$ Fertilizer Consumption	1 040	1 052	1 065	1 078	1 091
$H_3 P0_4$ Ferti. Demand	853	863	873	884	894
Non-Fertiizer $H_e P0_4$ Demand	515	520	520	520	520
Surplus (-Deficit)	5 278	5 765	6 105	6 684	7 064

AMERICA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	11 811	11 841	11 971	12 151	12 151
Supply	11 254	11 307	11 417	11 561	11 579
$P_2 0_5$ Fertilizer Consumption	10 191	10 402	10 619	10 843	11 074
$H_3 P0_4$ Ferti. Demand	9 037	9 215	9 398	9 586	9 781
Non-Fertiizer $H_e P0_4$ Demand	2 216	2 216	2 216	2 216	2 216
Surplus (-Deficit)	1	-124	-197	-241	-418

North America	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	10 041	10 071	10 071	10 071	10 071
Supply	9 556	9 585	9 585	9 585	9 585
P_20_5 Fertilizer Consumption	5 035	5 065	5 096	5 126	5 157
H_3P0_4 Ferti. Demand	4 783	4 812	4 841	4 870	4 899
Non-Fertiizer H_eP0_4 Demand	1 160	1 160	1 160	1 160	1 160
Surplus (-Deficit)	3 613	3 613	3 584	3 555	3 526

Latin America	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	1 770	1 770	1 900	2 080	2 080
Supply	1 698	1 722	1 832	1 976	1 994
P_20_5 Fertilizer Consumption	5 156	5 337	5 524	5 717	5 917
H_3P0_4 Ferti. Demand	4 254	4 403	4 557	4 716	4 882
Non-Fertiizer H_eP0_4 Demand	1 056	1 056	1 056	1 056	1 056
Surplus (-Deficit)	-3 612	-3 737	-3 781	-3 796	-3 944

ASIA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	16 506	17 922	18 123	18 184	20 154
Supply	13 882	14 744	15 484	16 185	17 964
P_20_5 Fertilizer Consumption	23 985	24 761	25 547	26 243	26 947
H_3P0_4 Ferti. Demand	17 745	18 336	18 936	19 474	20 020
Non-Fertiizer H_eP0_4 Demand	1 464	1 554	1 624	1 694	1 764
Surplus (-Deficit)	-5 327	-5 146	-5 076	-4 983	-3 820

West Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	2 190	2 195	2 195	2 195	4 134
Supply	1 716	1 752	1 760	1 760	2 873
P_20_5 Fertilizer Consumption	1 386	1 403	1 420	1 437	1 454
H_3P0_4 Ferti. Demand	1 012	1 024	1 037	1 049	1 062
Non-Fertiizer H_eP0_4 Demand	269	289	289	289	289
Surplus (-Deficit)	435	439	434	422	1 522

South Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	2 103	2 103	2 103	2 103	2 103
Supply	1 475	1 563	1 607	1 650	1 650
P_20_5 Fertilizer Consumption	7 970	8 336	8 705	9 075	9 459

H_3P0_4 Ferti. Demand	6 814	7 127	7 442	7 759	8 087
Non-Fertiizer H_eP0_4 Demand	90	90	90	90	90
Surplus (-Deficit)	-5 429	-5 654	-5 925	-6 199	-6 527

East Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	12 213	13 624	13 825	13 886	13 917
Supply	10 691	11 429	12 117	12 775	13 441
P_20_5 Fertilizer Consumption	14 629	15 022	15 423	15 731	16 034
H_3P0_4 Ferti. Demand	9 918	10 185	10 457	10 666	10 871
Non-Fertiizer H_eP0_4 Demand	1 105	1 175	1 245	1 315	1 385
Surplus (-Deficit)	-332	69	415	794	1 185

EUROPE	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	7 057	6 981	6 981	6 981	6 981
Supply	4 698	4 702	4 708	4 708	4 708
P_20_5 Fertilizer Consumption	3 792	3 811	3 828	3 869	3 934
H_3P0_4 Ferti. Demand	3 082	3 104	3 124	3 367	3 421
Non-Fertiizer H_eP0_4 Demand	874	903	907	911	915
Surplus (-Deficit)	742	695	677	430	372

Central Europe	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	1 087	1 087	1 087	1 087	1 087
Supply	740	740	740	740	740
P_20_5 Fertilizer Consumption	623	632	642	651	661
H_3P0_4 Ferti. Demand	483	493	503	514	522
Non-Fertiizer H_eP0_4 Demand	97	101	105	109	113
Surplus (-Deficit)	160	146	132	117	105

West Europe	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	1 235	1 235	1 235	1 235	1 235
Supply	1 060	1 060	1 060	1 060	1 060
P_20_5 Fertilizer Consumption	2 408	2 387	2 367	2 346	2 326
H_3P0_4 Ferti. Demand	2 119	2 112	2 104	2 111	2 093
Non-Fertiizer H_eP0_4 Demand	599	624	624	624	624
Surplus (-Deficit)	-1 658	-1 676	-1 668	-1 675	-1 657

East Europe and Central Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	4 735	4 659	4 659	4 659	4 659
Supply	2 898	2 902	2 908	2 908	2 908
P_20_5 Fertilizer Consumption	761	792	819	872	947
H_3P0_4 Ferti. Demand	479	499	516	741	805
Non-Fertiizer H_eP0_4 Demand	178	178	178	178	178
Surplus (-Deficit)	2 241	2 225	2 214	1 989	1 925

OCEANIA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Capacity	550	600	600	600	600
Supply	520	560	565	570	570
P_20_5 Fertilizer Consumption	1 436	1 464	1 492	1 524	1 559
H_3P0_4 Ferti. Demand	804	820	836	853	873
Non-Fertiizer H_eP0_4 Demand	23	23	23	23	23
Surplus (-Deficit)	-307	-283	-294	-306	-326

Annex 4

World and regional potential potash supply and demand balances (thousand tonnes)

WORLD	2007/08	2008/09	2009/10	2010/11	2011/12
Potash Capacity	41 220	41 435	42 965	44 285	46 055
Potash					
Supply	38 325	37 512	39 526	41 474	43 213
Potash Fertilizer Consumption	28 353	29 254	30 090	31 026	31 943
Non Fertilizer Demand & other	4 218	4 265	4 342	4 478	4 510
Surplus (-Deficit)	5 754	3 993	5 094	5 970	6 760

AFRICA	2007/08	2008/09	2009/10	2010/11	2011/12
Potash Capacity	0	0	0	0	0
Potash					
Supply	0	0	0	0	0
Potash Fertilizer Consumption	468	485	497	509	516
Non Fertilizer Demand & other	0	0	0	0	0
Surplus (-Deficit)	-468	-485	-497	-509	-516

AMERICA	2007/08	2008/09	2009/10	2010/11	2011/12
Potash Capacity	17 145	17 055	17 175	17 745	19 415
Potash					
Supply	17 145	17 055	17 175	17 745	19 415
Potash Fertilizer Consumption	16 242	15 161	16 269	16 811	18 470
Non Fertilizer Demand & other	9 987	10 223	10 385	10 648	10 913
Surplus (-Deficit)	1 566	1 568	1 572	1 636	1 640

North America	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	16 070	15 980	16 100	16 670	16 880
Potash					
Supply	15 190	14 109	15 217	15 759	15 958
Potash Fertilizer Consumption	5 058	5 105	5 156	5 192	5 229
Non Fertilizer Demand & other	1 371	1 373	1 377	1 381	1 385
Surplus (-Deficit)	8 761	7 631	8 684	9 186	9 344

Latin America	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	1 075	1 075	1 075	1 075	2 535
Potash					
Supply	1 052	1 052	1 052	1 052	2 512
Potash Fertilizer Consumption	4 929	5 118	5 229	5 456	5 684
Non Fertilizer Demand & other	195	195	195	255	255
Surplus (-Deficit)	-4 072	-4 261	-4 372	-4 659	-3 427

ASIA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	5 930	6 050	6 860	7 140	7 240
Potash					
Supply	5 428	5 524	6 226	6 450	6 530
Potash Fertilizer Consumption	13 092	13 703	14 320	14 944	15 553
Non Fertilizer Demand & other	1 393	1 435	1 474	1 520	1 520
Surplus (-Deficit)	-9 057	-9 614	-9 568	-10 014	-10 543

West Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	3 420	3 420	3 690	3 690	3 690
Potash					
Supply	3 420	3 420	3 690	3 690	3 690
Potash Fertilizer Consumption	399	411	425	437	450
Non Fertilizer Demand & other	185	200	200	200	200
Surplus (-Deficit)	2 836	2 809	3 065	3 053	3 040

South Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	0	0	0	0	0
Potash					
Supply	0	0	0	0	0

Potash Fertilizer Consumption	2 961	3 116	3 287	3 463	3 644
Non Fertilizer Demand & other	100	100	100	100	100
Surplus (-Deficit)	-3 061	-3 216	-3 387	-3 563	-3 744

East Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	2 510	2 630	3 170	3 450	3 550
Potash					
Supply	2 008	2 104	2 536	2 760	2 840
Potash Fertilizer Consumption	9 732	10 176	10 608	11 044	11 459
Non Fertilizer Demand & other	1 108	1 135	1 174	1 220	1 220
Surplus (-Deficit)	-8 832	-9 207	-9 246	-9 504	-9 839

EUROPE	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	18 145	18 330	18 930	19 400	19 400
Potash					
Supply	16 655	16 827	17 031	18 213	18 213
Potash Fertilizer Consumption	4 433	4 459	4 494	4 521	4 546
Non Fertilizer Demand & other	1 259	1 262	1 296	1 322	1 350
Surplus (-Deficit)	10 963	11 106	11 241	12 370	12 317

Central Europe	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	0	0	0	0	0
Potash	0	0	0	0	0
Supply					
Potash Fertilizer Consumption	699	707	719	728	736
Non Fertilizer Demand & other	200	200	200	200	200
Surplus (-Deficit)	-899	-907	-919	-928	-936

West Europe	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	5 590	5 590	5 590	5 590	5 590
Potash					
Supply	5 391	5 391	5 391	5 391	5 391
Potash Fertilizer Consumption	2 848	2 849	2 850	2 851	2 852
Non Fertilizer Demand & other	500	500	500	500	500
Surplus (-Deficit)	2 043	2 042	2 041	2 040	2 039

East Europe and Central Asia	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	12 555	12 740	13 340	13 810	13 810
Potash					
Supply	11 264	11 436	11 640	12 822	12 822
Potash Fertilizer Consumption	886	903	925	942	958
Non Fertilizer Demand & other	559	562	596	622	650
Surplus (-Deficit)	9 819	9 971	10 119	11 258	11 214

OCEANIA	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**
Potash Capacity	0	0	0	0	0
Potash					
Supply	0	0	0	0	0
Potash Fertilizer Consumption	373	384	394	404	415
Non Fertilizer Demand & other	0	0	0	0	0
Surplus (-Deficit)	-373	-384	-394	-404	-415

Annex 5
Regional country classification[1]

AFRICA
(developing countries)
Algeria
Angola
Benin
Botswana
Burkina Faso
Burundi
Cameroon
Cape Verde
Central African Rep.
Chad
Comoros
Congo, Dem. R
Congo Rep
Côte d'Ivoire
Djibouti
Egypt
Eq. Guinea
Eritrea
Ethiopia
Ethiopia PDR
Gabon
Gambia
Ghana
Guinea
Guinea-Bissau
Kenya
Lesotho
Liberia
Libya
Madagascar
Malawi
Mali
Mauritania
Mauritius
Morocco
Mozambique
Namibia
Niger
Nigeria
Reunion
Rwanda
St Helena
Sao Tome & Principe
Senegal
Seychelles
Sierra Leone
Somalia
Sudan
Swaziland
Tanzania
Togo
Tunisia
Uganda
Western Sahara
Zambia
Zimbabwe

AFRICA
(developed countries)
South Africa

EUROPE
Central Europe
Albania
Bulgaria
Czech Republic
Former Yugoslavia[2]
Hungary
Poland
Romania
Slovak Republic

Western Europe
Austria
Belgium-Luxembourg
Denmark
Finland
France
Germany
Greece
Iceland
Ireland
Italy
Malta
Netherlands
Norway
Portugal
Spain
Sweden
Switzerland
United Kingdom

AMERICA

Canada
United States

Latin America
Argentina
Bahamas
Barbados
Belize
Bermuda
Bolivia
Brazil
Chile
Colombia
Costa Rica
Cuba
Dominica
Dominican Rep.
Ecuador
El Salvador
French Guyana

[1] The classification attempts a purely geographical approach to facilitate easier comparison of historical data.
[2] Bosnia-Herzegovina, Croatia, Macedonia, Slovenia, Yugoslavia (Serbia and Montenegro).

Greenland
Grenada
Guadeloupe
Guatemala
Guyana
Haiti
Honduras
Jamaica
Martinique
Mexico
Nicaragua
Panama
Paraguay
Peru
Suriname
St. Kitts & Nevis
Saint Lucia
Saint Vincent
Trinidad & Tobago

Uruguay
Venezuela
Virgin Islands

ASIA

West Asia

Afghanistan
Bahrain
Cyprus
Iran
Iraq
Israel
Jordan
Kuwait
Lebanon
Oman
Qatar
Saudi Arabia
Syria
Turkey
U. A. Emirates
Yemen

South Asia

Bangladesh
Bhutan
India
Nepal
Pakistan
Sri Lanka

East Asia

Brunei
Cambodia
China
Indonesia
Japan
Korea DPR
Korea Rep.
Lao PDR
Malaysia
Mongolia
Myanmar
Philippines
Singapore
Taiwan
Thailand
Viet Nam

Eastern Europe and Central Asia

Armenia
Azerbaijan
Belarus
Estonia
Georgia
Kazakhstan
Kyrgyzstan
Latvia
Lithuania
Moldavia
Russian Federation
Tajikistan
Turkmenistan
Ukraine
Uzbekistan

OCEANIA

Australia
Caledonia
Fiji
French Polynesia
New Zealand
Papua New Guinea