Non-confidential

NON-CONFIDENTIAL FINAL REPORT: MARKET INQUIRY ON FERTILIZER IN KENYA

Maryanne Nduati*, Phumzile Ncube#, Simon Roberts# and Thando Vilakazi#

***Competition Authority of Kenya**

and

#Centre for Competition, Regulation and Economic Development,

University of Johannesburg

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The Market Inquiry on Fertilizer in Kenya is undertaken for the Competition Authority of Kenya (CAK) by the Centre for Competition, Regulation and Economic Development (CCRED) in the University of Johannesburg, and is funded by the Kenya Markets Trust (KMT). This report constitutes a non-confidential final draft market inquiry report based on in-depth interviews with various market participants and stakeholders, written submissions, and a desktop review of publicly available information on the fertilizer market in Kenya. We alone are responsible for the findings reported here.

Contents

Acronyms

AGRA	Alliance for a Green Revolution in Africa
Amitsa	Agricultural Input Market Information and Transparency System
ARM	Athi River Mining
CAK	Competition Authority of Kenya
CAN	Calcium Ammonium Nitrate
CCPC	Competition and Consumer Protection Commission of Zambia
CCRED	Centre for Competition, Regulation and Economic Development
CFS	Container Freight Station
cif	cost insurance freight
DAP	Di-Ammonium Phosphate
ETG	Export Trading Group
EU	European Union
fob	free on board
FSP	Fertilizer Subsidy Programme
GDP	Gross Domestic Product
GOK	Government of Kenya
IDF	Import Declaration Form
IFDC	International Fertilizer Development Centre
IPC	the Import Planning Committee
KASDS	Kenya Agricultural Sector Development Strategy
KEBS	Kenya Bureau of Standards
KEPHIS	Kenya Plant Health Inspectorate
KFA	Kenya Farmers Association
KGGCU	Kenya Grain Growers Cooperative Union
KIFWA	Kenya International Freight and Warehousing Authority
KMA	Kenya Maritime Authority
KMT	Kenya Markets Trust
KNBS	Kenya National Bureau of Statistics
KNTC	Kenya National Trading Corporation
KPA	Kenya Ports Authority
KRA	Kenya Revenue Authority
KTDA	Kenya Tea Development Agency
NAAIAP	National Accelerated Agricultural Inputs Access Programme
NBC	Nitrogen Balance Committee
NCPB	National Cereals and Produce Board
VAT	Value Added Tax

Executive summary

This inquiry on the fertilizer market in Kenya is conducted for the Competition Authority of Kenya (CAK) by the Centre for Competition, Regulation and Economic Development (CCRED) at the University of Johannesburg, and is funded by the Kenya Markets Trust (KMT). This report has been prepared by CCRED as the Consultant in collaboration with and under the guidance of the CAK in fulfilment of the objectives of this market inquiry. The report constitutes a final draft market inquiry report based on 36 in-depth interviews with various market participants and stakeholders, written submissions, and a review of publicly available information and data on the fertilizer market in Kenya. Those interviewed included industry associations, fertilizer suppliers, transporters and logistics companies, government agencies and departments, and large consumer groups such as farmers.

This version of the market inquiry report is a non-confidential report which has been prepared for public dissemination. The report does not generally identify specific respondents to the inquiry, nor does it contain references to specific interviewees. The report reflects the main viewpoints and information obtained from market participants and stakeholders consulted as well as our analysis of this information. Only the CAK has been provided with the full sources and confidential version of the inquiry report.

The main objective of this inquiry is to identify any anticompetitive conduct, competition constraints and consumer protection issues within the market for fertilizer. The inquiry also assessed the Government of Kenya's (GOK) fertilizer subsidy programme and its effect on competitive outcomes in the market as a whole.

While the inquiry has relied on both qualitative and quantitative data from various sources, it is important to note that the responses from the main market participants in the form of the importers and suppliers has generally been very poor. This includes the failure by most of these firms to make submissions and provide responses and documents requested despite numerous requests and follow-ups.

This report focuses on the period from 2009 to 2014 and assesses changes over time in market outcomes relating to costs, prices, quantities, regulation, government subsidy programmes, the relative positions of main players in the supply of fertilizer, and international and domestic supply conditions. The approach has been to assess observed outcomes in the market relative to objective competitive benchmarks for the main fertilizer products DAP, Urea and CAN. Pricing data shows a significant increase in the national average list prices of all three products near the end of 2011 consistent with an increase in international fob ('free-on-board') prices, taking into account exchange rate movements. A careful assessment of costs, focused on DAP, in particular, indicates that local prices increased by more than the international price movements and remained at the relatively high levels despite subsequent decreases in international prices in 2012 and 2013. We find significant price mark-ups being charged in these years in the domestic market, well above competitive cost benchmarks. These are due to the major importers and suppliers and not to costs in the logistics and transport chain, nor by margins being made by agro-dealers. The pricing is also not explained by the short term effects of the subsidy programmes, as has been claimed, or changes in other cost parameters including the exchange rate.

Similar observations can be made in the case of Urea where the gap with international fob prices widened significantly from 2011, only returning to 2010/11 margins in late 2014. Despite the entry of several new players in 2009/10, most likely in response to high margins associated with the earlier global price spike in 2008/9 which led to the introduction of the Government of Kenya's subsidy programme, the expected effect of the entry and rivalry is not reflected in the outcomes from the end of 2011. This further indicates the likelihood of anti-competitive coordinated conduct raising prices at the supplier level. Even with the new entry, fertilizer importing and supply in Kenya remains very concentrated with a very small number of suppliers led by Yara East Africa Ltd (Yara) and Mea Ltd (Mea) dominating the commercial market for much of the period. The 2008/9 shock and the Government of Kenya's subsequent

intervention appears to have led to the reintroduction of the Fertilizer Association of Kenya in 2008/9, chaired by Mea.

The likely effects of other cost parameters are considered including the effects of delays at the port for both the commercial market and fertilizer subsidy imports, inland transport costs, and margins at the agro-dealer level of the market. Arguments put forward in terms of distortionary effects of delays, poor targeting and private importer uncertainty due to the main subsidy programme may account for short term price effects, but do not provide a sufficient explanation for sustained high margins.

Concerns related to leakages and shortages in supplies through the subsidy programmes (including the National Accelerated Agricultural Inputs Access Programme) appear to be valid and suggest scope for revisions in the implementation of the programmes particularly to ensure efficient targeting. The available data on total quantities imported reflects that there has not been a sustained growth trend in fertilizer used since 2009 and relative to the period 2005/6 to 2010/11, with the exception of a spike in import volumes in 2013 due to carryover stocks for government imports which were delayed.

Overall, in the medium term there is no evidence that the subsidy has sustained higher fertilizer usage relative to the pre-subsidy period although the subsidy might have worked as an effective stop-gap measure during the 2008-2009 period and again in the period between 2010-2011 when the international price was at a higher level. While there is a clear rationale for subsidy programmes targeting small-scale farmers, the effectiveness of these interventions relies on monitoring and implementation to restrict distortions. Recommendations have been made on the basis of available information to address concerns relating to the subsidy programmes as follows:

- Poor targeting: Re-evaluation of the targeted 'small-scale' farmer with a clear threshold (and enforcement) of maximum acreage applicable and to align subsidy with the objective of making fertilizer available to those who cannot

afford it. Furthermore, making fertilizer available from accredited input dealers (and not just NCPB) is likely to reduce transport and time costs of obtaining fertilizer for the very poor farmers.

- Inefficiency in sourcing and delays: Government of Kenya may delegate the function of procuring and distributing fertilizer to private sector importers and ensure rivalry through performance standards and low distribution costs.
- Substantial travel costs for farmers: Allowing fertilizer to be accessed through importers and agro-dealers that are registered and compete to distribute fertilizer alongside the NCPB.
- Low levels of competition in supply and distribution of subsidy fertilizer: Encouraging greater rivalry through allocating the distribution of subsidised fertilizer to a number of suppliers.
- Subsidy has not resulted in downward pressure on prices: Possibility for subsidy to be directed at measures to reduce shipping and transport costs, such as at the port of Mombasa, especially for smaller suppliers, thus reducing prices across the board and supporting greater competition.

With regard to the main competition concerns, the inquiry finds that it is likely that understandings between the suppliers have distorted or lessened competition. These include understandings around the pricing of fertilizer in Kenya such as the international benchmark prices and the cost components to be used, which are not the actual costs of competing suppliers. Despite intensive follow-ups most of the importers and the FAK declined to provide the detailed information and documents requested. The inquiry thus recommends an investigation be initiated by the CAK to probe these issues further under the formal powers allowed for in the Competition Act.

1. Introduction

This inquiry on the fertilizer market in Kenya is conducted for the Competition Authority of Kenya (CAK) by the Centre for Competition, Regulation and Economic Development (CCRED) at the University of Johannesburg, and is funded by the Kenya Markets Trust (KMT). This report has been prepared by CCRED as the Consultant under the guidance of the CAK in fulfilment of the objectives of this market inquiry. It is based on in-depth interviews with various market participants and stakeholders, written submissions, and a desktop review of publicly available information on the fertilizer market in Kenya.

The main objective of this inquiry is to identify any anticompetitive firm conduct, competition constraints and consumer protection issues within the fertilizer market. The inquiry also assesses the Government of Kenya's (GOK) fertilizer subsidy programme and its effect on competitive outcomes in the market as a whole. Recommendations may be made to rectify or mitigate the issues identified.

Specifically the inquiry aims to address competition and consumer protection concerns in the fertilizer market specifically at the import and distribution levels of the supply chain. This affects the cost of fertilizer to farmers, the extent of fertilizer usage and therefore agricultural yields.

The specific objectives of the inquiry were as follows:

a. Examine the market structure and market shares of suppliers and importers;

b. Determine cost components and price determinants of fertilizer in the retail market;

c. Determine the current levels of fertilizer demand/consumption at regional and national levels;

d. Assess whether the fertilizer subsidy is distorting market prices;

e. Assess whether the fertilizer subsidy programme is inefficient and discourages private sector businesses; and

f. Suggest policy reforms.

We highlight at the outset that this report does not cover all the areas fully. There have been substantial challenges with obtaining information. The main focus of this report is on the competition, price and cost issues, along with a review of the fertilizer subsidy programme.

This inquiry has been initiated at a time when there has been a great deal of public interest in productivity and agricultural yields in Kenya, the GOK subsidy programmes and prices of agricultural inputs, and the importance of agriculture as a contributor to the Kenyan economy.[1] In 2014, President Uhuru Kenyatta publicly announced that the prices of fertilizer in Kenya should be reduced, and spoke on the release of a report by the Kenya Agricultural Research Institute of soil testing studies outlining a new emphasis on using fertilizers which would enhance the returns from land under crop and decrease soil acidity in Kenya (see, PSCU, 2014; and Andae, 2014b).

Agriculture value-add as a proportion of Kenya's GDP has accounted for just less than 30% since 2013, which is a substantial share.[2] As a key input for crop farming in particular, studies have estimated that fertilizer is amongst the main costs for farmers in the production of maize in Kenya, constituting 14% of total production costs, along with land preparation (18%), labour for weeding (19%), and manure (13%) (Fintrac, 2014). It is therefore particularly important that fertilizer markets are competitive and provide the optimal outcomes in terms of price and quality to farmers.

[1] See, for example, Awiti, 2014; Andae, 2014b, 2015a, 2015b, 2015c; Ratemo, 2012; Omukubi, 2013; Poulton and Kanyinga, 2014; PSCU, 2014.

[2] See World Bank data. Includes forestry, hunting and fishing, as well as crop farming and livestock production.

The fertilizer industry globally is characterised by close control amongst a handful of large global traders and suppliers in tight oligopolistic, concentrated markets with a long history of cartel conduct (see Jenny, 2012). The two largest fertilizer producers in the world by revenue in 2012 were Yara, which is also present in Kenya, and Agrium (ACB, 2014). Suppliers have been investigated for anticompetitive conduct in countries within the region. In Zambia, the Competition and Consumer Protection Commission found Omnia Zambia Limited and Nyiombo Investments Limited to have rigged government contracts for fertilizer supply between 2007 and 2011 (Zambia Weekly, 2013; CCPC, 2013). The two firms were fined over $20 million for the conduct which was found to have largely affected the price and quality of supply of fertilizer to farmers under the government's fertilizer subsidy programme.[3]

In South Africa, large fertilizer companies were found by the Competition Commission to have engaged in price fixing and market allocation until around 2006, further artificially and illegally raising the price of fertilizers supplied locally and to the SADC region.[4] Arrangements with traders were an important part of the way in which coordination worked across countries. Following a complaint by Nutri-Flo in 2003, Sasol Chemical Industries was found to be in a cartel with two other major producers of intermediate fertilizer products, Omnia (a South African producer) and Kynoch Fertilizer (then owned by multinational Yara) (Makhaya and Roberts, 2013).

It is therefore important to assess the market in Kenya with a wide lens that considers the role of all different stakeholders at various levels of the supply chain, and in particular the role played by fertilizer suppliers. Our approach in this inquiry has been to go into some detail in understanding the main players, the influence of the policy and regulatory environment, firm strategies and interests, key cost parameters, and prices and competitive dynamics and how they may have changed over time in

[3] This is under appeal.

[4] Competition Tribunal Case No.: 31/CR/May05.

response to changes in the drivers of prices and costs, including the influence of GOK subsidy programmes.

The inquiry has relied on both qualitative and quantitative data. Information has been collected from various sources to ensure that the views expressed in the report have been objectively confirmed and verified. It is important to note that while great efforts have been made with the full involvement of the CAK to request information (particularly in the form of written submissions) from a wide range of market participants, especially suppliers, the response from those contacted has generally been very poor. The report therefore relies on information obtained in interviews which have been conducted with most importers, market participants and stakeholders including government agencies that were initially targeted, and the few written submissions which have been received. This particularly restricts the data over time on firm-level pricing and costs which was sought through the information requests.

Interviews were conducted with 36 different firms and organisations at various levels of the supply chain.[5] Two rounds of in-depth face-to-face interviews were conducted in Kenya with relevant stakeholders and market participants including industry associations, fertilizer suppliers, forwarders, transporters and logistics companies, government agencies involved in facilitating imports, and large consumer groups such as farmers. The first round of interviews was conducted in December 2014 with a focus on government agencies and research institutions; and the second round of interviews was carried out in February 2015 with a primary focus on private enterprises involved in the fertilizer sector.

The inquiry focuses on the period from 2009 to 2014. This period covers the duration of the GOK's broad fertilizer subsidy programme and accounts for the effects of the major price spike in 2008/9 which led to its introduction. We consider that this period

[5] This is only the number of organisations that were actually interviewed as part of the study.

of time is sufficient to fully observe market dynamics and changes in the market that may have cumulatively led to the perception in recent years that prices in the market are high. In this period, there has been entry of rival suppliers in the market such as Export Trading Group (ETG), and the revival of the Fertilizer Association of Kenya[6], both of which developments may have had an effect on the functioning of the market.

Furthermore, we focus primarily on the main fertilizer types, and DAP in particular, in order to isolate the effect of changes in the market on the pricing of a key product in the fertilizer sector. As DAP, and the other major fertilizers such as Urea, CAN, and NPK blends, are used across various soil types and crop types, understanding competitive dynamics in the supply and distribution of these products allows for findings which can be generalised across soil and crop types, and counties in Kenya. Of course, some segments of the market such as tea production may function relatively independently of other sectors and of the main fertilizer suppliers and, as such, we account for these differences in the analysis where necessary.

The report is structured as follows. Section 2 provides a brief history and characterisation of the fertilizer market in Kenya including main products and crop types, and an outline of the main activities that form part of the fertilizer supply chain. Section 3 covers the available data on imports and main suppliers. Section 4 considers price and costs data in detail. Section 5 considers the various subsidy programmes of the GOK. We then provide analysis of the available data and information in Section 6, with a focus on assessing any likely competition concerns that are present in the market, including the competition impact of the subsidy programmes of the GOK.

[6] The association had apparently become moribund since the mid-1990s and was reintroduced under the current name in 2008/9. See interview with FAK, 8 December 2014.

2. Overview of the fertilizer sector in Kenya[7]

The important developments in the Kenyan fertilizer market in recent decades include the central role of private importers in supplying the market since the 1990s and the growing role of the state through the various fertilizer subsidy schemes of the past decade. Each of these aspects forms a critical part of our analysis of the competitive dynamics in the market. Fertilizer markets globally are especially prone to distortions arising from government intervention or the anticompetitive conduct of firms. It is therefore critical to understand the various price and cost drivers in the markets which we assess in section 3, as well as the characteristics of the fertilizer market as discussed in the remainder of this section. Specifically, we consider a brief history of the market in Kenya, the main fertilizer products used, the main crop types to which fertilizer is applied, and the structure of the value chain in Kenya.

2.1. Brief history of the fertilizer market in Kenya

The fertilizer market in Kenya has undergone substantial reforms since the 1990s when the GOK, under pressure from international donors, liberalised the market. In around 1989, prices were decontrolled and the forex and import license requirements were removed (Argwings-Kodhek and Mbatia, 2010; Minde et al, 2008: 18). The GOK repealed fertilizer import restrictions in 1992 and "allowed private actors to participate in importing, trading, and distributing fertilizer" (Ariga and Jayne, 2010: 99). The GOK also eliminated controls on access to foreign exchange and in 1994 removed customs duties and VAT imposed on fertilizer imports (Ariga and Jayne, 2009: 8).

This led to a decline in donor-funded imports and an increase in the involvement of private importers and cooperatives in importing fertilizer. Of particular relevance, is the fact that the liberalisation of the market led to the introduction of private importers

[7] This section is based on views obtained from fertilizer importers, industry associations and research organisations, unless otherwise stated.

supplying the commercial market and cooperatives that imported on behalf of their members, many of which remain as operators in the market currently. In 1996, it was estimated that Kenya had 12 major importers, 500 wholesalers, and approximately 5 000 retailers (which apparently grew to between 7 000 and 8 000 by the year 2000) (Ariga and Jayne, 2010: 99). More recent estimates suggest that there are approximately 500 wholesalers and 8 000 retailers in the market based on a 2009 study (Fintrac, 2014).

It is estimated that by 1993, donor imports had declined to 5% of total fertilizer imports (Ariga and Jayne, 2010). From this period in the 1990s over the next decade the use of fertilizer per hectare of maize has increased by 33% while the role of the NCPB as a buyer of maize (typically at prices which are above market price) has been reduced to less than a third of the maize sold by Kenyan farmers (Ariga and Jayne, 2010). However, as we discuss below, there has not been a sustained increase in the use of fertilizer from the mid-2000s to 2014.

The increase in the number of retailers over time meant that farmers had to travel shorter distances to access fertilizer and other inputs, which has increased usage. Average distances to the closest retailer have declined between 1997 and 2007 (Minde et al, 2008: 18). Usage has also been influenced by the reductions over time of the costs involved in offloading at the Mombasa port and delivering to the farmers. The market is said to have become more contested over time in terms of competition between importers and wholesalers that have sought to derive efficiencies in terms of transport, sourcing and consolidation of firms (Ariga and Jayne, 2010). It was found that increased competition in the local market had a very significant effect on prices and costs, with fertilizer transport and marketing costs from Mombasa to western Kenya having declined by nearly 45%, from $245 to $140 per ton over ten years (Minde et al, 2008: 18).

Even with the dramatic increase in the number of wholesalers and retailers, and the improvement in cost efficiencies and scale, Kenyan fertilizer usage is still relatively

low among smallholder farmers (Argwings-Kodhek and Mbatia, 2010: 5). As it stands, it is estimated that only 41% of all farmers use fertilizer consistently in Kenya (Fintrac, 2014). This is despite the efforts of the GOK to introduce a new subsidy programme in 2009 in response to dramatic increases in the global price for fertilizer in 2007/8. Since then, subsidised fertilizer has been available at substantially lower prices compared to commercial market prices. We discuss the fertilizer subsidy programme in section 5 below.

This discussion largely relies on earlier studies of the fertilizer market in Kenya and provides the context of how the market developed over time. However, we note that far less research has been conducted on the state of the fertilizer market in more recent years covering the period of this inquiry from 2009 to the present. We therefore rely substantially on updated information received from market participants on the developments in the sector during this period. For instance, while the 1990s and 2000s saw substantial liberalisation of the market, the period from 2009 to the present is somewhat different in that there has been some entry and growth of new suppliers in recent years.

2.2. Fertilizer products and main crop types

The type of fertilizer applied by a farmer should vary according to a range of different factors including the specific soil type of an area, the climate, and the soil nutrient level on the farm, as well as other market related factors such as accessibility and price. These characteristics are likely to differ according to where a farm is located, including across the seven main 'food baskets' in Kenya situated largely in the Rift Valley and west of the Rift Valley. In Kenya, farmers will typically apply a combination of a planting fertilizer (such as DAP) and top-dressing fertilizer (such as Urea or CAN). Traditionally farmers have tended to use DAP (as the main planting fertilizer) based on experience from early years with donor-funded fertilizers. A recurring theme throughout most of the interviews conducted is the extent to which farmers in Kenya are loyal to specific types and brands of fertilizer.

However, it is clear that the same type of fertilizer is not sustainably beneficial across all soil types, such that in recent years there has been a shift led by the GOK and research organisations towards soil-specific fertilizer types.[8] This is largely driven by the fact that acidity levels in Kenyan soils have become very high (and yields have decreased as a result) through a simple process whereby because plants can only absorb a certain amount of nitrogen or phosphorus, what is not absorbed remains in the soil and when combined with the rains becomes nitric or phosphoric acid. In recent years, this trend seems to have also led to the increased consumption of blended and specialised fertilizer types which are more crop-specific and soil-specific such as CAN and the range of Athi River Mining (ARM) Mavuno products which balance out the effects of acidity and introduce further nutrients as well.

The four main fertilizer types in terms of imports are DAP, CAN, Urea, and NPK (17:17:0).[9] The inquiry focuses largely on understanding the markets for these products. In some sectors, for certain crop types, farmers are applying soil-specific, crop-specific fertilizer types. For tea, the KTDA's general recommendation to farmers is for twelve 50kg bags of fertilizer per hectare which is roughly 150kg of nitrogen per hectare. KTDA mainly imports NPK (26:5:5) which is the primary fertilizer for tea growing in Kenya. For maize, the NCPB's general recommendation is 1 bag per acre for crops such as maize, and 2 bags per acre for other crops e.g. potatoes. Although maize is the primary crop in Kenya including for ensuring food security, the main users of fertilizer are in the plantation crops coffee, tea and sugar. This is partly because maize is largely farmed by small-scale farmers who do not tend to use as much fertilizer as they should as part of their farming practices.

The demand for fertilizer in Kenya is further affected by the timing of the rainy season. The general practice is that farmers will buy their planting fertilizers before or once

[8] See Awiti (2014) on the NAAIAP soil testing report released February 2014.
[9] There are also a range of blends and speciality fertilizers such as those used by the horticulture industry about which we have obtained limited information. We do not consider these products in this report.

the rainy season starts and add top-dressing fertilizer thereafter in some cases. The main rainy season is the 'long rains' which includes March, April and May.[10] This is followed by a 'short rains' period which occurs from around mid-October to November each year. Most importers, as well as agro-dealers generally look to align their shipments or purchases of significant volumes of stock with these key periods of the season such that farmers are able to buy fertilizer in time for the rainy seasons.

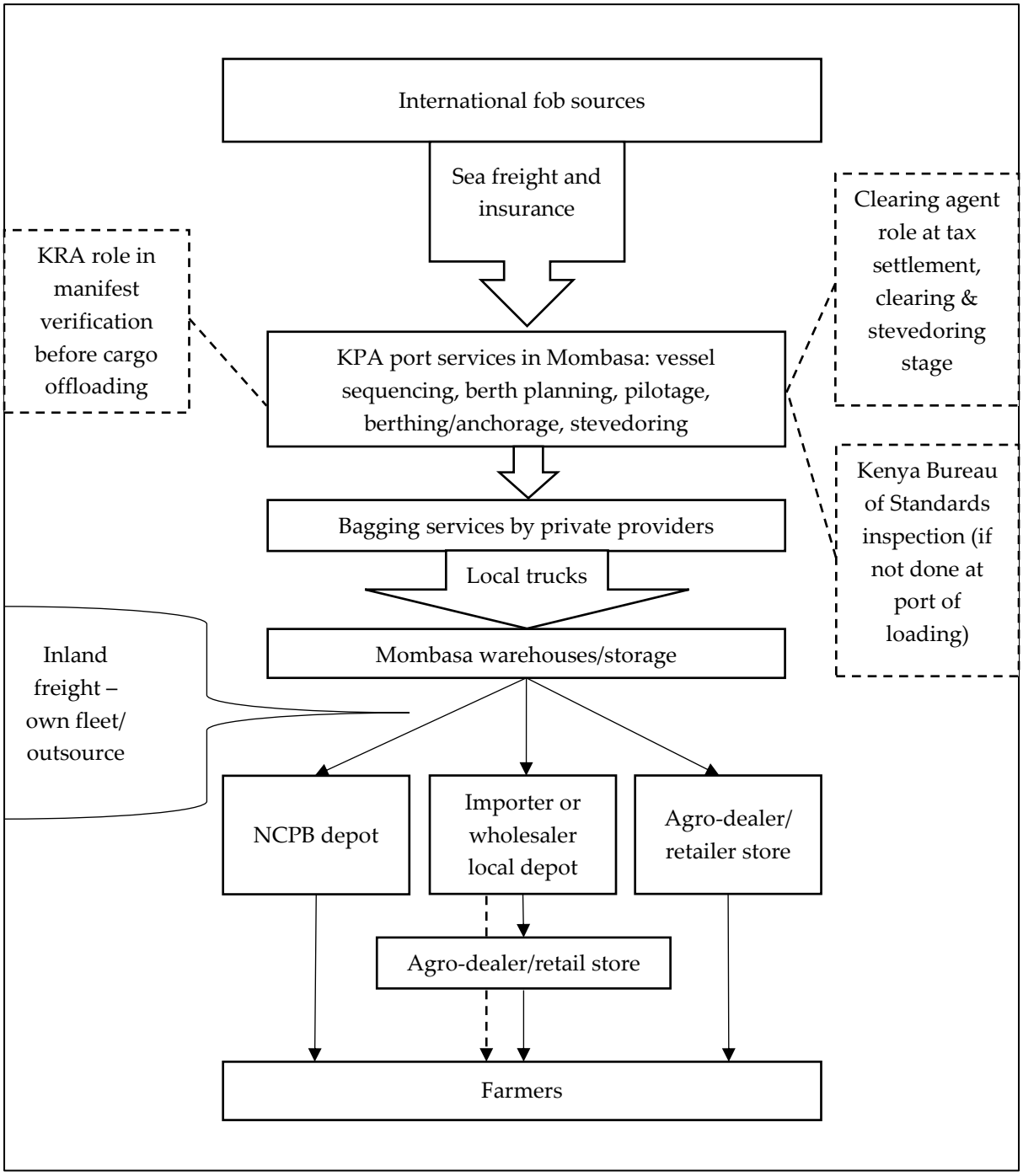
2.3. Fertilizer supply chain in Kenya

Across different importers the process for importing fertilizer is similar, from the level of buying from international sources, sea transport, compliance with statutory Kenya Ports Authority (KPA) procedures applicable at the port, and the removal of fertilizer from the port area to nearby warehouse and storage facilities which are usually leased by importers from private providers. There can be some differences between importers for instance at the level of bagging, whereby only one fertilizer importer in the Kenyan market (Yara) has their own bagging facility at the Mombasa port.

In general, most importers buy fertilizer from international sources and either store it in their own or leased warehousing facilities in Mombasa, before selling it on directly to agro-dealers/retailers or moving the products to regional or localised depots in different areas of the country (Figure 1). In some cases, customers such as wholesalers and agro-dealers may buy ex-Mombasa from the storage facilities in which case the customer will bear the cost for transportation to local areas using their own or hired transport.

[10] And only sometimes in June as well.

Figure 1: Fertilizer supply chain in Kenya



Source: Authors' own interpretation from interviews

The domestic supply chain for fertilizer in Kenya comprises different channels, which differ at the level of distribution in the case of GOK subsidised products. As discussed in sections to follow, in the distribution and sale of fertilizer under the GOK's targeted subsidy programme, farmers can collect fertilizer at NCPB depots or outlets selling on behalf of the GOK.

There are also more specialised systems used in Kenya by large customer groups producing high-value crops (tea, coffee, sugar) wherein procurement directly from international sources is done by collective agencies on behalf of a specific group of farmers instead of general sales through importer depots and agro-dealers. Examples include the Kenya Tea Development Agency (KTDA), out-grower schemes in western Kenya (supplying fertilizer to the large sugar companies); and coffee cooperative organisations (supplying fertilizer to their members across the country). Some of these arrangements have evolved into input-output schemes whereby inputs are provided to farmers on credit and costs are recovered by the agency once output has been sold at a later stage (IFDC, 2012; Ariga et al, 2006). The KTDA conducts its own sourcing of fertilizer products and is able to source fertilizer products directly from international suppliers at discounted prices due to the significant volumes purchased on behalf of farmers.

We discuss the structure of the market and competitive dynamics in the main levels of the fertilizer supply chain in Kenya further below.

Port services and Kenya Ports Authority

The KPA is responsible for offering various handling services at the port including the discharge and loading of cargo. These services include sequencing, berth planning, pilotage and anchorage (berthing) of vessels particularly as they come into the port area, as well as stevedoring which is the process of loading or offloading vessels using cranes and scoopers. The KPA applies different charges for services provided including a wharfage charge applicable for use of the wharf or berth during offloading and loading at US$5.50 per ton for loose cargo.[11] Although some offloading services take place within the port area which the KPA oversees, there are private providers responsible for performing services for private importers as well, in some cases utilising the KPA's own infrastructure. For example, bags and bagging services are

[11] See KPA Tariffs Section III: Charges for Shorehandling, Wharfage and Storage Services, available: http://www.kpa.co.ke/Customer%20Center/Tariffs/Pages/default.aspx

provided to importers by private bagging machine operators or agents at the quay (Yara have their own facility). Some of these bagging machines belong to the KPA but are contracted to private companies to provide the service (e.g. Multiport).

There are no specialised fertilizer storage facilities at the port however the specialized fertilizer bulk terminals at the Mombasa port are Mbaraki wharf and berth number 3, of the 17 berths in use (of which 13 are for general cargo and 4 are for containerised cargo). Fertilizer importers effectively compete with importers and exporters of various other products for the use of port facilities, which can result in delays. Peak periods for fertilizer imports are related to the planting seasons, that is, December to March, and July to September. Some importers may import fertilizer earlier, such as in November, in order to get their products in before the peak period. The KPA is concerned primarily with improving efficiency from the handling of vessels up to and including the stevedoring stage. This includes various aspects relating to piloting in and anchoring the vessel and initiating the process of offloading (stevedoring), after which private service providers and clearing agents are responsible for ensuring offtake of offloaded products on behalf of the importer.

Demurrage charges are applied when importers and their agents fail to provide offloading or offtake of offloaded products such that the vessel remains in the port area for longer than the allocated period. Generally, delays for fertilizer importers can arise at various stages including where there is unfavourable weather, insufficient trucks for loading bagged products, and shortage of labour in particularly busy periods. To decrease congestion at the port, the KPA has introduced the Container Freight Station Policy which effectively licenses operators to provide storage facilities linked to the port (but not within the port) such that products that have not been removed from the quay do not delay offloading of vessels.

The KPA has over time been able to marginally reduce vessel dwell times at the port from 2.3 days in 2009, to around 2.15 days in 2013. However, in 2012 the dwell time peaked at around 2.78 days which coincided with the implementation of dredging at

the port to allow for larger vessels to come into the port and thus a greater volume of transhipment to other countries. By 2013, dwell times had returned to levels consistent with those in previous years. In recent years, dwell times and overall efficiency at the Mombasa port are generally aligned with international best practice and Mombasa port performs well relative to its peers in major African ports such as Dar es Salaam (SCEA, 2013). Vessel offloading time for bulk cargo once the vessel is berthed is approximately 3 000 tons per day. The majority of fertilizer imports throughout the period 2009 to 2013 were bulk shipments and by 2013 around 90% of these imports were in the form of bulk cargo which then needs to be offloaded and bagged.

The Kenya Revenue Authority (KRA) is involved in facilitating customs clearance and tax payments. Before a vessel docks, a manifest of goods on-board must be loaded online by the vessel operator to the customs authority stating the contents, volume and value of the goods at least 48 hours before the vessel docks. The KRA is then required to provide confirmation that the required tax amount has been paid before the vessel is offloaded and transferred to the importer. The clearing agent will in most cases facilitate this process on behalf of the importer. In some cases, other authorities such as the police services and Kenya Bureau of Standards also step in to verify that the products being declared are correct and check that the product complies with Kenyan regulations and product classifications.

Freight forwarders

The Kenya International Freight and Warehousing Association (KIFWA) is the sole representative of all clearing, forwarding and warehousing companies in Kenya. It was established in 2006 and currently has approximately 1 500 members. Membership of KIFWA is a prerequisite for being registered as a freight forwarder or a warehousing agent and for having an operating license renewed. Before granting membership, a thorough vetting and analysis of past conduct is carried out by KIFWA's vetting committee. The conditions of membership are that a potential member must have references from at least two other current members of KIFWA and

the potential member must have the relevant experience as a clearing agent or in the warehousing industry. This raises questions about the ability of new participants to enter, which should be considered in the light of international competition cases relating to collusion by freight-forwarders.[12]

KIFWA mainly plays three roles, of providing advocacy, advisory and consultancy services. The Association is mandated to ensure that unscrupulous clearing agents are not registered and are not allowed to operate at the port in Mombasa. KIFWA also liaises with regulatory bodies on behalf of its members. Some of these bodies include the KPA, Kenya Bureau of Standards (KEBS), the Kenya Maritime Authority (KMA) and the Kenya Plant Health Inspectorate (KEPHIS). KIFWA lodges complaints with these bodies on behalf of its members relating to delays and bureaucracy at the port through the Port Committee.

The main players in the clearing sector are Interfreight and Bollore. Previously, shipping companies were not permitted to offer cargo clearing and forwarding services. However, a recent court ruling has since allowed shipping companies to enter this market. The shipping companies mainly offer these services through their subsidiaries.

The involvement of the clearing and forwarding agent in importing products begins when the importer engages with the supplier and the clearing and forwarding agent. An Import Declaration Form (IDF) is obtained from the KRA and submitted online through KenTrade. After approval the IDF is forwarded to the importer who then forwards it to the supplier. The supplier, through the clearing and forwarding agent, must inspect the IDF and then come to an agreement with the importer. Once the ship sails all the documents will be finalised and forwarded to the importer. The relevant documents are as follows:

- Bill of Lading which indicates the owner of the consignment;

[12] See http://europa.eu/rapid/press-release_IP-12-314_en.htm.

- Commercial Invoice which reflects the price of goods imported and terms;
- Insurance;
- Packing List (in the case of container goods, this shows how the goods are packed in the containers);
- Certificate of Origin;
- Certificate of Conformity which is normally collected in Kenya

When the clearing and forwarding agent receives the Bill of Lading, they enter the goods into the KRA system which calculates the taxes to be paid by the importer. Bulk goods other than oil are received by the clearing and forwarding agents at the port of Mombasa while goods which come in containers are received at a Container Freight Station (CFS), not at the port. A CFS is a dry port (of which there are around five in Kenya) which is licensed by the KPA and the KRA to handle imports which come in containers. Once the goods have been cleared they are offloaded and transported to either the storage warehouses around the port (for bulk goods) or to their final destination. For containerised goods, clearing and forwarding in 2014/15 cost between KSh10 000 and KSh25 000 per container. For bulk goods the current charge is roughly KSh50 to KSh80 per ton and this rate has not changed significantly since 2009. KIFWA does not recommend rates, however, it is reported that it used to recommend minimum rates although greater competition in the market has made this less possible.

Storage providers

Once fertilizer has been offloaded, it is taken from the port to the warehouse for storage. Some of the main players in the storage of bulk goods such as fertilizer are Mitchell Cotts, Rapid Kate Services and Siginon Logistics.

When the fertilizer is being transported from the port to the warehouse, the trucks that are generally used in this case are those which specialize in local haulage, that is, between the port and the warehouse. An importer would normally have to hire the

number of trucks required for discharging the fertilizer. Wholesalers then collect the bagged fertilizer from the warehouses and have it transported to agro-dealers. Some of the importers who have their own outlets also collect their fertilizer straight from the warehouse in order for it to be transported to their outlets.

The main prices and costs which are related to storage are the handling costs – the labour for offloading the fertilizer from the trucks into the warehouse – and the actual storage costs. The storage and handling costs are negotiated and they depend on labour cost and space rental costs. Currently, handling costs are $7 per ton and they have been increasing by 10% per year. In 2011, storage was on average $0.50 per ton per week and this has not changed since then. The average cargo stay is two months but storage is usually free for the first 28 days. However, if fertilizer comes in too late in the season due to reasons such as late deliveries, it may end up being stored in the warehouse until the next planting season.

Transporters

The transport level of the value chain comprises operators of varying sizes ranging from small owner-operators to large transport companies with large fleets. Fertilizer is apparently a high risk product to transport, particularly when it is not containerised. There are various reasons for this including theft by drivers and theft by port authority representatives e.g. tally clerks. As a result, larger transport companies are averse to transporting shipments of fertilizer, or in some cases will only transport products during the day (due to poor lighting on long distance routes at night) or will transport fertilizer at a higher price than their benchmark rates for similar goods. Larger transporters may also employ security personnel to accompany trucks carrying fertilizer.

The main costs for transporters are diesel, tyres and mileage costs. Of these, diesel costs are generally half of the costs worked out as a base of around half a litre of diesel per kilometre, to which wage costs and costs related to the truck are added.

For bulk transportation (in 50kg bags, not containerised), a 28-ton truck carries approximately 550-560 bags of fertilizer. While the standard rate charged for most goods in early 2015 was around KSh11/ton/km (around $0.13/ton/km), large transporters were charging a higher rate for fertilizer of around KSh13-14/ton/km (around $0.15-0.16/ton/km), largely to compensate for additional risk. Transport rates are also affected by the extent to which return loads are available. For instance, return loads from some parts of Kenya such as Mumias and Nakuru are considered to be poor relative to those available from across the border in parts of Uganda. Where return loads are available, the transport rate could be discounted significantly to around KSh10/ton/km. Transport rates obtained from agro-dealers are significantly lower reflecting the fact that these businesses are engaged in transport and logistics as part of their operations (Table 1).

Transport prices can also be affected by the delays at the port, and during offloading at the destination. Typically, a trip from Mombasa to Nairobi comprises two days of driving (assuming no travel at night) and one day of loading and offloading (half a day each). Loading and offloading is generally done manually. A trip from Mombasa to Mumias in the west of Kenya requires driving time of approximately 2.5-3 days. For loads of fertilizer, delays can occur during offloading, whereby fertilizer depots will only offload around 5 trucks per day.

Overall, available information suggests that there is a significant growth in demand for transport in Kenya over the past five years, estimated at around 10% growth per year. In this period, larger transport companies have had to make additional investments annually to increase their fleet capacity. Given this constraint, large transporters tend not to negotiate with clients in terms of the rates charged.

In this context, the estimates above based on large transporters can be compared to those obtained from agro-dealers and other users of road transportation from Mombasa to regions of Kenya in particular (Table 1). We expect that agro-dealers and wholesalers that buy small volumes of fertilizer stock on an ex-Mombasa basis would

tend to use owner-operator and small- to medium-sized trucking companies such that the rates charged are potentially different. These may also differ relative to large volume importers and distributors and the main fertilizer traders with storage and retail operations throughout the country and in-house or long-term trucking arrangements.

From the various estimates of transport rates paid by users (importers and agro-dealers) it is clear that the rates faced by users are generally well below those figures provided by the large transport companies (Table 1). This supports the view that large transporters may be charging a significant premium for the transportation of fertilizer. To Nakuru, where we have rates paid by both importers (including NCPB) and agro-dealers, the average rate paid by importers is around $206/ton whereas the average rate paid by agro-dealers who are likely to be transporting smaller loads and making use of owner-operator or small- to medium-sized transporters is $164/ton.[13] The rate paid by importers transporting fertilizer to Nairobi, which is closer to the port and where demand is expected to be less (not a major agricultural region), is in the range of $150-180/ton, whereas for Kitale (a major agricultural region in the west of Kenya) the range is $283-300/ton. This difference can be explained by the greater distances travelled. However, when expressed as US$/ton/km, economies of distance are evident.

Table 1: Transport rates from Mombasa to Nairobi, Nakuru and Kitale, 2014/15[14]

	KSh/50kg bag	KSh/ton	US$/ton	US$/ton/km	Distance (km)
Nairobi (importers)	150-180	3500-3600	40.2-41.4	0.08-0.09	480
Nakuru (importers)	200-225	4000-4500	46.0-51.7	0.07-0.08	645
Nakuru (agro-dealers)	136-220	2720-4400	31.3-50.6	0.05-0.08	645
Kitale (importers)	283-300	5655-6000	65.0-69.0	0.07-0.08	870

Source: Interview data

[13] We caution that the number of observations was relatively limited, although it does provide an indication of general ranges for pricing in the market.

[14] Estimated using an exchange rate of KSh88 to the US$.

Finally, we note that localised transport rates from the supplier's warehouse in Nairobi for example to the store a few kilometres away, are around KSh30-50 per 50kg bag. [15]

Agro-dealers

As mentioned above, the agro-dealer level of the market in Kenya comprises a very large number of dealers or retailers. By some estimates, there are up to 8 000 dealers located throughout the country (Fintrac, 2014). Within each town in or near to farming areas, there are several dealers often located fairly near to one another.

There seems to be a range of different business models applied at this level of the market. Some agro-dealers are distributors for or are owned by a particular supplier and as such will only stock fertilizer from that supplier. In some cases, an 'aggregator' or stockist will supply a number of different stores and as such will make purchases on the stores' behalf from suppliers. It appears, in some of these cases that the stockist can to some extent dictate the price that the dealer should sell at although generally it seems dealers can set their own prices. However, regarding the latter, it is clear that the cost price is the primary determinant of price given very narrow margins and limited scope for discounting by agro-dealers. This means that effectively the stockists or suppliers control prices in the market through their influence on the cost price faced by the agro-dealer.

Although almost all dealers stock several different fertilizer types, most dealers seem to stock a single brand of fertilizer, or two or three at most. This allows the dealer to buy in bulk from a supplier, however this is also influenced by the demand of customers for certain brands. The prices at which dealers sell different brands if they stock more than one brand do not differ significantly from one another.

[15] This generally applies to agro-dealers buying from the supplier warehouse located in the same town in the case of Nairobi and Nakuru.

Agro-dealers appear to earn very low margins through the sale of fertilizer. In addition, across product types (for DAP, CAN, Urea and NPK 17:17) it appears that agro-dealer margins per bag of fertilizer are higher in Nairobi than in Nakuru which could be explained by the fact that Nairobi is not a major agricultural area and demand is not high relative to areas such as Nakuru where there appear to be fewer operators in close competition. For instance, agro-dealers in Nairobi reported margins for a 50kg bag of DAP of around KSh200-400/bag, compared to a range of KSh100-500/bag in Nakuru.[16]

Table 2: Agro-dealer prices (Nairobi and Nakuru), 2014/15

	Nairobi	Nakuru
DAP	3410	3244
CAN	2617	2275
Urea	2775	2650
NPK 17:17	3375	2925

Source: Interview data

For the majority of dealers interviewed in Mombasa, Nairobi and Nakuru, the sale of fertilizer was not their primary business in terms of revenues and profits. Agro-dealers only earn higher margins on fertilizers if they re-bag 50kg bags and sell these as smaller units, e.g. 1kg bags. Fertilizer is considered a 'loss-leader' type product, which dealers stock largely to attract customers to the store, who will typically also buy other products such as agrochemicals available in the store, on which margins are far higher.

Agro-dealers will give customers discounts for large purchases of around 20-40 bags, although most farmers will buy orders of 1 or 2 bags, up to 10 bags. Discounts are typically around KSh50 per 50kg bag, although these will depend on the cost price obtained from the suppliers and the price at which other stores in the area are selling the same product for.

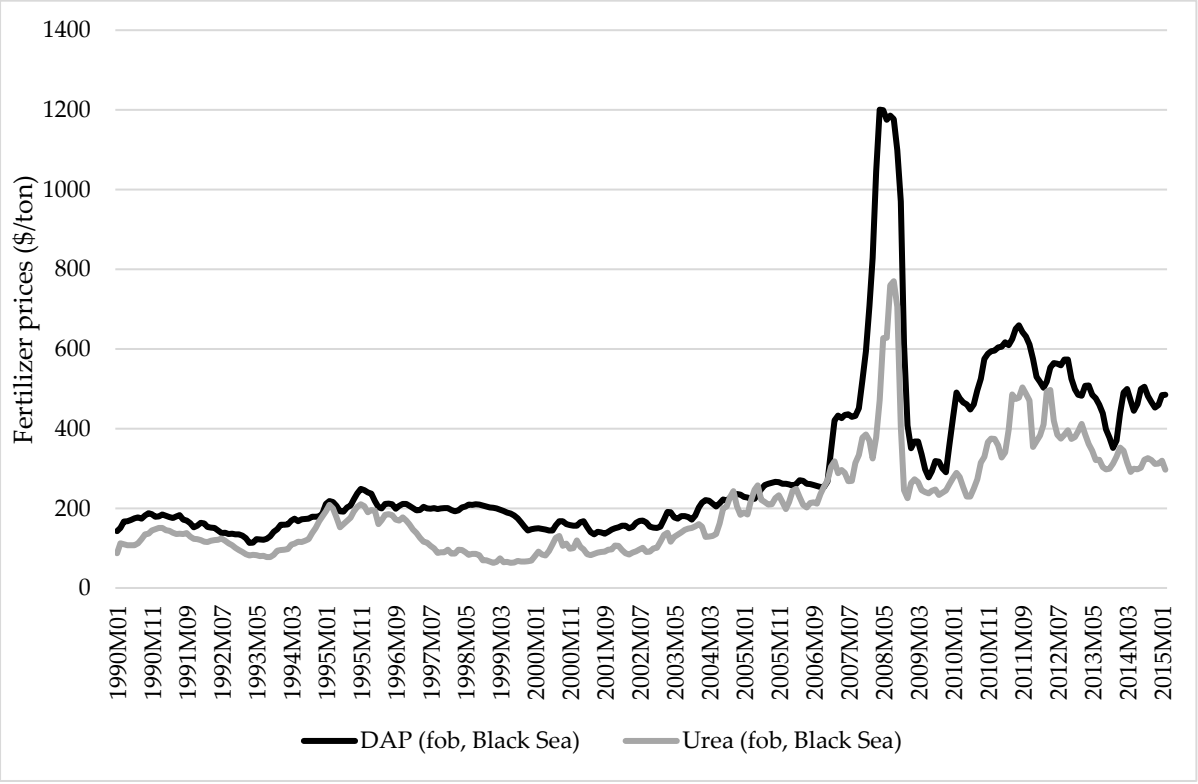
[16] It is important to caution that some agro-dealers were reluctant to share or were unaware of their cost prices. The gaps in this data limit the ability to compute average cost prices by product type. The ranges provided are therefore only indicative based on the data that are available.

The costs of offloading deliveries at the store are in the range of KSh4-7 per 50kg bag.

2.4. International developments

There have been important movements in the international prices of fertilizer in the past two decades that are worth considering briefly for this analysis. Fertilizer is almost all imported for the Kenyan market and, as such, movements in the international prices are significant. For instance, there was a significant spike in the global prices of fertilizer in 2007-8 across products which resulted in a sharp increase in prices domestically (Figure 2). It was this period of high prices that led to the introduction of the subsidy programme by GOK, as we discuss below.

Figure 2: International DAP and Urea prices



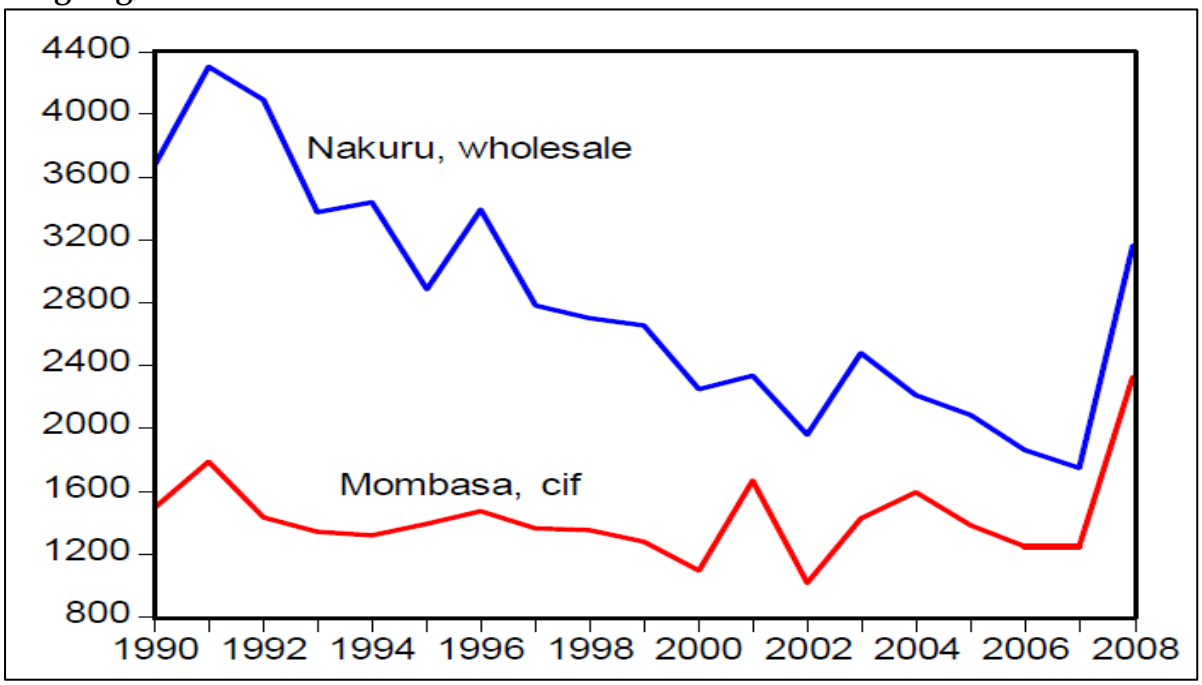
Source: World Bank Commodity Price data (The Pink Sheet)

Most relevant to our analysis is the significant spike in prices, particularly for DAP, in 2008. In 2011, both the international DAP and Urea prices increased once again although not to the levels reached in 2008. As we discuss below, although

international prices decreased after the sharp increase in 2011 the local prices in the Kenyan market did not come down relative to international prices.

Previous analysis of the period following liberalisation suggests that there was vigorous local competition for the market in the 2000s driven by the entry of a number of suppliers (Ariga et al, 2008). This is reflected in a significant decline in margins of the inland prices over the Mombasa cif (cost-insurance-freight) prices from the 1990s to 2007, dropping to around KSh400 per 50kg bag (Figure 3). As we discuss below, Yara emerged as the lead firm in the market in this period followed by Mea Ltd. The drop in the Nakuru wholesale price was substantial with prices halving from the early 1990s even while prices in Mombasa had been relatively stable (Figure 3). This significant decline in prices has been attributed to decreasing fertilizer marketing costs. The reasons for these declining marketing costs are varied. Apart from the apparent increase in competition among wholesalers and retailers, another reason is that there were efficiencies in transport including more backhaul potential in trucking from cargo being transported from Rwanda and Congo to the port of Mombasa (Minde et al, 2008: 18). Furthermore, importers have switched over time to using international lines of credit at lower costs than those in the domestic market.

Figure 3: DAP price in Mombasa and Nakuru 1990-2008 (constant 2007 KSh per 50kg bag)



Source: Ariga et al (2008)

In 2007-8 as noted above, international prices increased significantly which is reflected in higher local prices, both cif Mombasa and inland. As we discuss below, it is significant that from 2011/12 margins of local prices over international prices increased significantly once again, albeit not to the levels seen in the early 1990s. We consider the available cost data in some detail, and focus on the apparent mark-ups of local inland prices over the cif Mombasa prices.

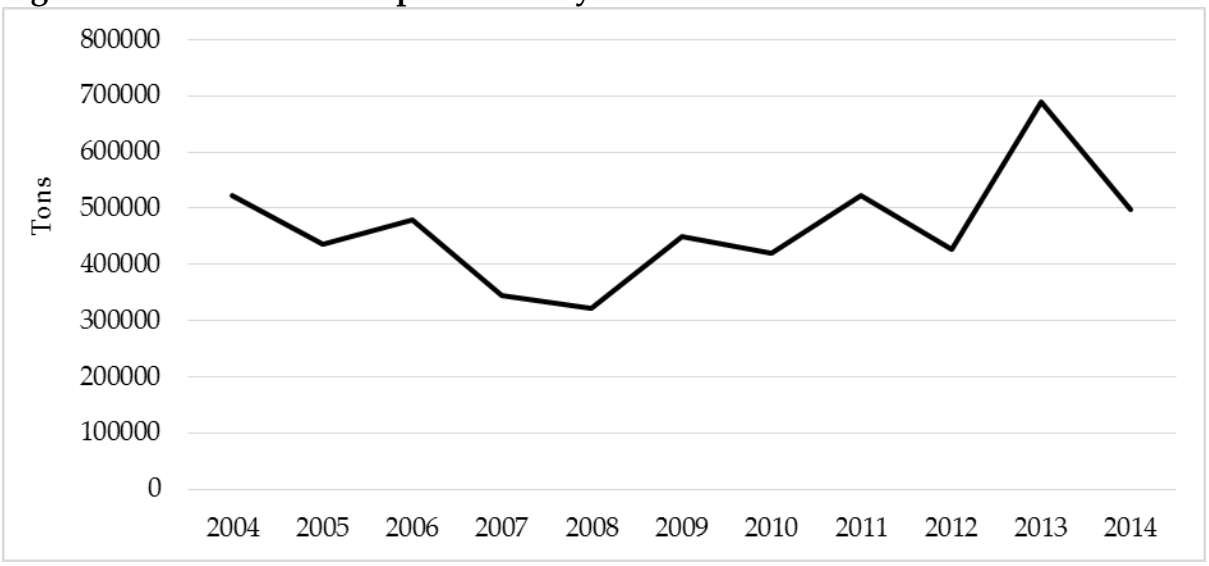
3. Fertilizer quantities, imports and main players

This section considers the available data on import quantities and the main suppliers of fertilizer. We rely largely on data obtained from government agencies such as the NCPB, the Kenya National Bureau of Statistics (KNBS) and the KRA. The data have been checked against various sources where possible, including information obtained from market participants and key stakeholders in interviews and submissions.

3.1 Import volumes

After market liberalisation in the 1990s, fertilizer imports had increased. However, more recent data show that fertilizer importation decreased from 2004 to 2008 with the decline in 2007/08 consistent with the international price spike. While there was a subsequent recovery in volumes and a sharp increase in imports between 2012 and 2013 (Figure 4), this does not appear to reflect a sustained growth trend in fertilizer usage.

Figure 4: Total fertilizer imports to Kenya



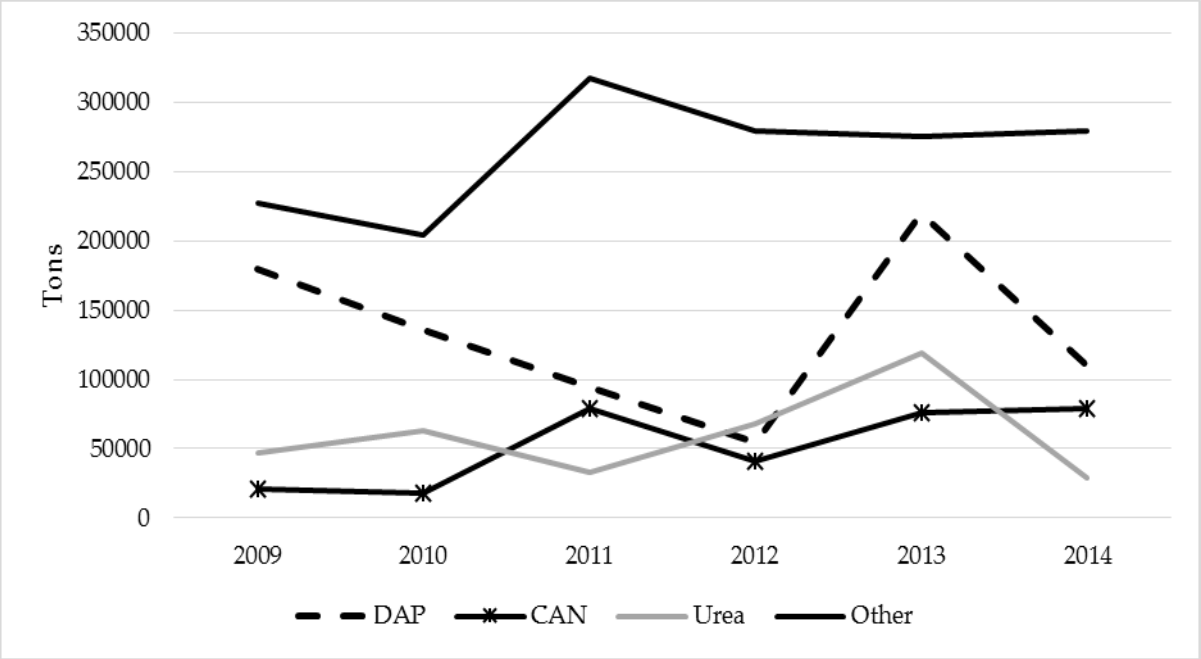
Source: Comtrade

Note: 2014 volumes from KRA (data are consistent with Comtrade for total in 2012 and 2013).

Total imports of fertilizer have fluctuated between 400 000 tons and 700 000 tons from 2009 to 2014. The three main fertilizers are DAP, Urea and CAN, with a large amount of other fertilizers (Figure 5). DAP has been the single most important fertilizer, while

CAN has increased in significance and overtook Urea in 2014. There are also re-exports included in this data, however, these are relatively small at around 20 000 to 30 000 tons in most years (Appendix A1). The other fertilizers include NPK blends, some of which are standard blends, such as NPK 17:17:17 (mainly for coffee) and NPK 25:5:5 or NPK 26:5:5 (for tea), while some are specialist ones containing additional nutrients and minerals largely for horticulture crops (IFDC, 2012). The KTDA is a major importer of NPK blends.

Figure 5: Imports by main category of fertilizer



Source: KRA

What is also readily apparent is that there has not been a sustained growth trend in fertilizer imported, and thus used, since 2009. Indeed, volumes have not grown substantially since 2005. Estimates of total average fertilizer use for the period 2005/6 to 2010/11 were approximately 488 803 tons per annum (IFDC, 2012). There was a spike in imports in 2013, however, it appears that in the case of DAP and Urea much of this was carried over into 2014.[17] The average of DAP and Urea imports over 2012

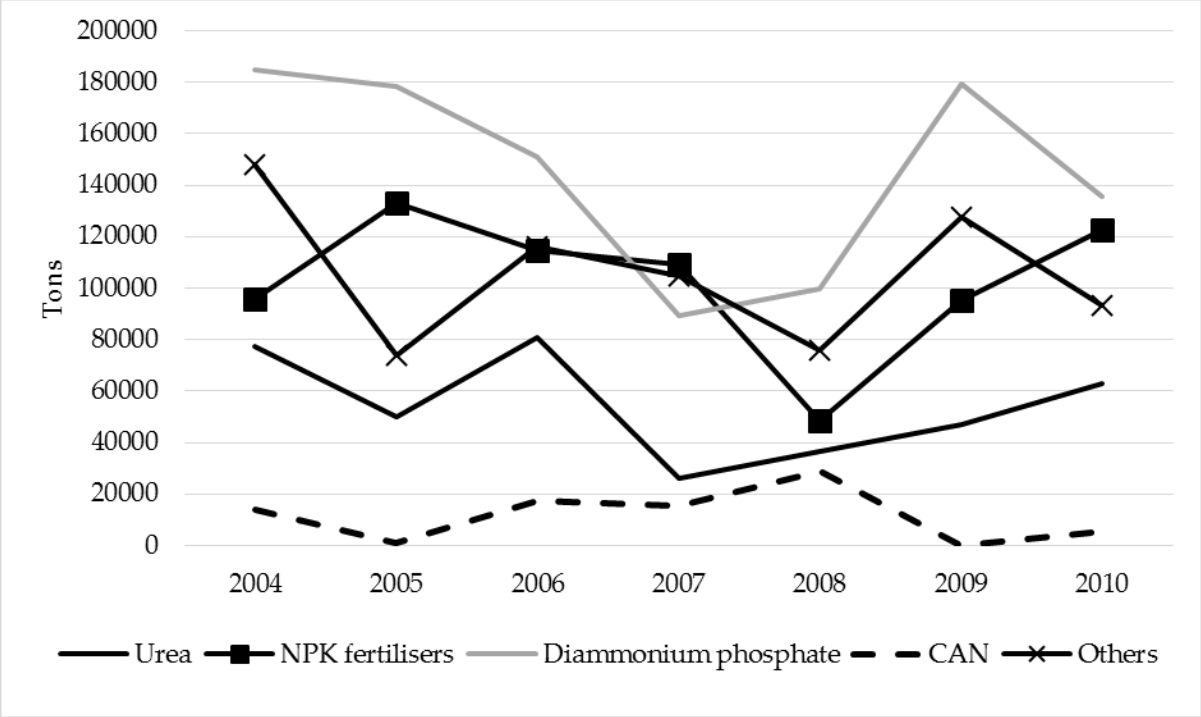
[17] Spikes in the size of the market in this case are apparently due to significant carryover stocks for the GOK because their consignment had arrived late at the end of the year in 2013.

to 2014 are no higher than in 2009 and 2010, while the total imports of 497 000 tons in 2014 are no higher than a decade earlier.

The overall trend is concerning as increasing fertilizer usage has been identified as a key issue in growing agricultural production. In addition, the fertilizer subsidy programme has been a substantial and costly intervention aimed at growing fertilizer usage over this period.

When we consider the longer-term context using trade data from a different source (UN Comtrade), we find a similar breakdown of the main products, with DAP leading. This data also indicates the significance of NPK blends, and separately other speciality fertilizers. Unfortunately, the disaggregated Comtrade data is not available beyond 2010.

Figure 6: Fertilizer imports (main fertilizers), 2004-2010[18]



Source: Comtrade

The import volume figures above have been stripped of re-exports, therefore they reflect the fertilizer which was destined for use in Kenya. They do not, however,

[18] Disaggregated fertilizer trade data for Kenya is not available beyond 2010 on the Comtrade database.

distinguish between commercial and subsidised imports. While CAN imports are shown to be very low in Figure 6 above, previous studies such as IFDC (2012) found higher consumption of CAN, which is more consistent with the KRA data for 2009-2014.

3.2 Sources of imports

DAP: In many years the USA has been the single largest source of DAP imports, however, in 2011 Morocco was the most important, and in 2013 and 2014 Saudi Arabia accounted for the biggest share. This implies a lower shipping freight cost applied in 2013 and 2014 as transport from the Middle East is around $35-40/ton compared to around $55/ton from the US Gulf and $58-60/ton from the Black Sea.

Urea: Russia has been the largest source of imports of Urea, followed by the Ukraine. This is consistent with quoted fob prices from the Black Sea. There have also been some imports from the Middle East such as from Saudi Arabia and Qatar. A major change was observed in 2014 when China was by far the main import source. This appears to be related to ETG making major inroads and looking for lower cost import sources. As we discuss below, this appears related to the opportunities which resulted from higher margins in 2012 and 2013.

CAN: Imports have mainly been from Ukraine, followed by Italy and Norway. Black Sea fob prices are therefore the most relevant for this product also.

3.3 Main importers and suppliers

The main suppliers have historically been Yara (formerly Norsk Hydro), a large multinational fertilizer producer and also implicated in the South African fertilizer cartel, and Mea Ltd, a Kenyan supplier which established a bagging and blending facility at Nakuru in 1977. Estimates of many market participants put the shares of Yara and Mea Ltd even higher than reflected in the table below. It is surprising that ETG, a Kenyan business operating across the continent, has been such a small supplier in Kenya itself. In 2013 and 2014 the significance of ETG has increased substantially,

as has some of the smaller importers. This is consistent with supra-competitive prices being apparent from 2011, with the margins attracting smaller importers.

The Fertilizer Association of Kenya (FAK) was established in January 2009 as an umbrella organization for fertilizer importers, traders and stockists. FAK's mandate includes protecting and furthering members' interests in the fertilizer industry by promoting public education in the use of fertilizers as well as enhancing ethical practices among others. Currently, it has members who are mainly importers, namely Mea Ltd, Yara East Africa Ltd, Devji Meghji & Bros, Shah Kanji Lalji & Sons, Export Trading Group, Turbo Highway Ltd, Afri-Ventures Ltd, Supplies & Services Ltd, Metro Plastics Ltd, Louis Dreyfus and Athi River Mining Company. Some of these firms such as Mea Ltd and Athi River Mining are also involved in blending of fertilizer domestically using largely imported inputs.

The association and all its members apparently accounted for approximately 95% of the national requirements for fertilizer of 500 000 tons in 2012 with Yara and Mea Ltd as the largest suppliers (Table 3).[19] Four firms are reported to collectively account for 85% of the market (excluding government imports and donor contributions) (Fintrac, 2014). An earlier study reflects even higher levels of concentration in finding that the import market is serviced by two players, namely Norsk Hydro (trading as Yara) and Mea Ltd, with a combined market share estimated at 90%, which is in line with Yara's own estimates (Argwings-Kodhek and Mbatia, 2010). From the above, it seems that the market had become tightly controlled by the two main players Yara and Mea Ltd by the early 2000s, after significant entry of new players in the 1990s due to liberalisation. In the table below we note that there was significant entry of smaller players in the market from around 2010.[20] This period of entry of firms such as ETG, Turbo Highway, Louis Dreyfus and Afriventures would seem to have meant more

[19] Ratemo, 2012.

[20] For example, ETG entered the fertilizer sector in 2010, and Afriventures became operational in Kenya in 2010 as well. Louis Dreyfus has also apparently only been in the Kenyan market for 3 or 4 years.

competition in the market, or at least the growth of the smaller players leading to the estimates above for 2013. However, we treat these estimates with a great deal of caution, and note that a more complete picture of the position of different players in the market over time could only be finalised with more complete time series data from the suppliers.

The main suppliers are involved in various activities across the value chain and currently hold different production and storage capacities (Table 3). Understanding the interaction of the control and capacity at different levels of the supply chain is an important dimension of analysing competition.

Table 3: Profile of main fertilizer suppliers in Kenya

Fertilizer company	Company profile
Mea Ltd	• In the Kenyan market since 1977 initially providing a broad range of plant nutrition product, largest private player at the time at 100 000 tons imported annually (wholly Kenyan owned) • Have a fertilizer production facility in Nakuru, Kenya conducting blending, bagging and warehouse storage, commissioned in 1997, and distribution depots throughout East and Central Africa • Mea imports and blends fertilizers. It also tests soils for soil fertility evaluation and based on these results, they are able to prescribe the suitable blend to the given soil/crop conditions • Mea is now constructing a NPK fertilizer plant with a capacity of 100 000 tons per annum
Yara East Africa	• Operations in 8 African countries including Kenya and Tanzania in East Africa under Yara East Africa Ltd (Africa-based production facilities through 50% joint venture in Libya) • Entered the Kenyan fertilizer market in 1994 after buying out the existing distributor of Yara fertilizers in Kenya • Yara's main fertilizer brand in Kenya is Chapa Meli • Yara is the only supplier in Kenya with their own bagging facility at the Mombasa port • Yara has four rented storage sites in Mombasa, and 2 in Nairobi • Yara International (parent company) has production facilities in Norway and Italy for production of NPK and CAN. Urea is manufactured through joint ventures and DAP is sourced from other suppliers
Devji Meghji & Bros Ltd	• Operations based in East Africa with offices in Nairobi, and also export to Uganda, Rwanda, Burundi, Eritrea and Somalia • Company originated in Kenya having started as a trading company in the 1960s; trades in fertilizer as DMBL Ruiru
Shah Kanji Lalji & Sons	• No info available
Export Trading Group	• ETG began business in Kenya in 1967 as a commodity house dealing only in commodities. Only began supplying fertilizer in Kenya in 2010

	• ETG's fertilizer brand in Kenya is Falcon • Procures produce in Kenya via Export Trading Company (Mauritius) • 6 warehouses in Kenya with capacity of 163 000 tons • Fertilizer imported to Kenya largely sourced from Ukraine, Russia, Egypt, Jordan and China • ETG won the tender and supplied fertilizer for the government subsidy in the 2011-12 season
Turbo Highway Eldoret Ltd[21]	• Began operations in Kenya as a trader in 1979, and now specialises in fertilizer, agro-chemicals and tools • Own brand of fertilizer, Turbo, launched in 2008 – including DAP, CAN, Urea, and NPKs • Previously stated that they were the third largest importer of fertilizer to Kenya at 75 000 tons per year • Started operating as distributor of major brands
Afriventures Ltd[22]	• Entered the Kenyan market in 2009, and began operations in 2010 • The firm is also present in South Africa, Malawi, Nigeria, Ghana, Mozambique (Mozambique to a lesser extent) • Afriventures brand in Kenya is Spring Fertilizer • Rented warehouses in Mombasa (main warehouse) and Nairobi
Supplies & Services Ltd	• No info available
Metro Plastics Ltd	• Limited info available • Seem to be involved in plastics including importing certain fertilizer related chemicals; and fertilizer • Do import fertilizer at least since 2004
Athi River Mining	• Produces Mavuno fertilizer blend • Initially began as an industrial chemicals business in 1974 producing lime fertilizer then fertilizer business declined as a proportion of their overall business • In 2004 ARM re-entered fertilizer market and set up crop-specific and soil-specific fertilizers (Mavuno fertilisers) blended with a range of additional minerals and nutrients. Some of the additives are locally sourced, whilst others are sourced from other importers (DAP) and international suppliers

Source: Company websites, interviews and publicly available information

[21] http://www.turbohighway.co.ke/#

[22] Interview with Afriventures, 23 February 2015.

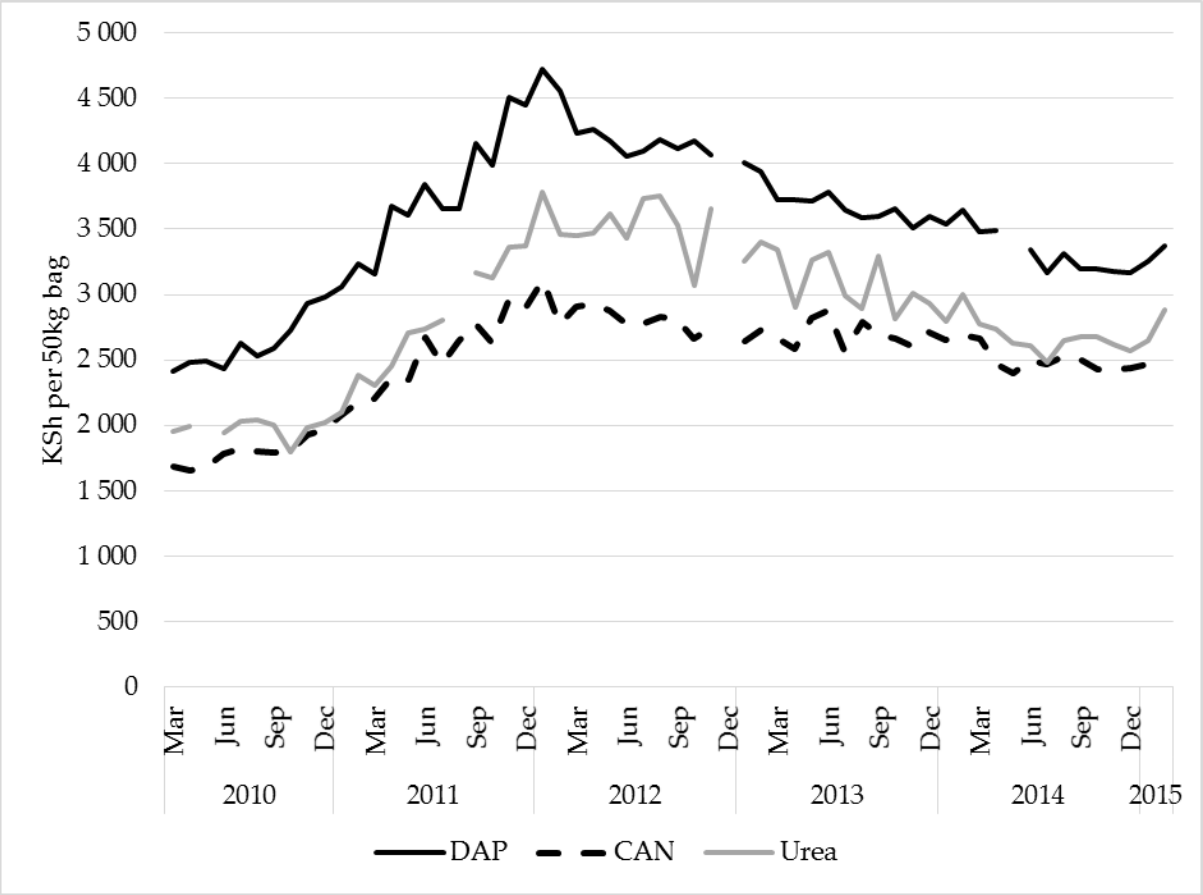
4. Fertilizer prices and costs

This section provides an analysis of the price and cost data. Almost all of the detailed information requests have not been complied with meaning we substantially rely for fertilizer price data on the time series data compiled by Agricultural Input Market Information and Transparency System (Amitsa) of the International Fertilizer Development Centre (IFDC). First, we present monthly fertilizer prices over time, comparing price information for DAP, CAN and Urea. Second, we present the cost build-ups for DAP only which seek to explain the differences seen in the prices.

4.1. Fertilizer prices

Monthly local retail price data obtained from IFDC's Amitsa data portal from March 2010 to February 2015 indicate similar price movements across all three fertilizer types (Figure 7). DAP prices increased from KSh2410 in March 2010 to peak at KSh4718 in Jan 2012, and had decreased to KSh3491 per 50kg bag by June 2014. CAN and Urea prices were initially very close together but CAN prices did not increase as much as Urea prices and the gap between the prices of CAN and Urea widened between early 2012 and early 2013.

Figure 7: Average local fertilizer prices, 2010-2014

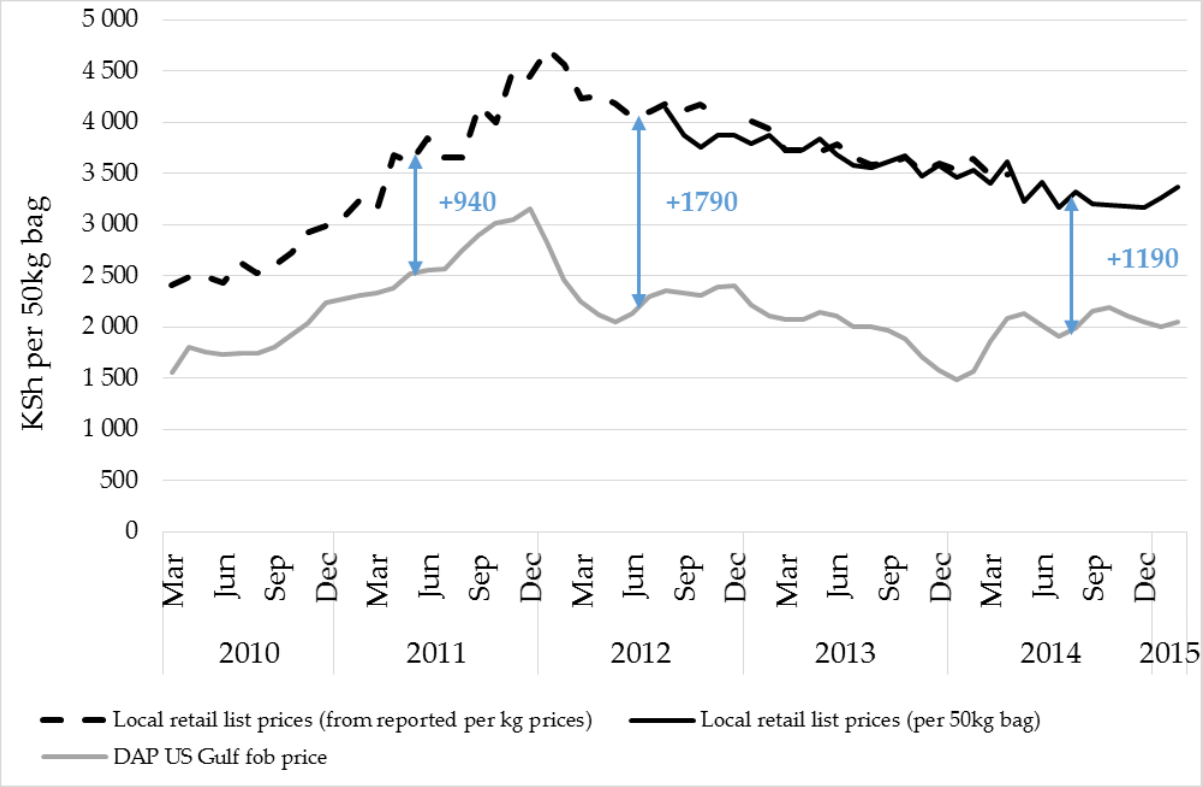


Source: IFDC/Amitsa; The prices provided above are based on the reported per kg prices

The relative price increases of DAP and Urea in Kenya compared to CAN are consistent with changes observed in DAP and Urea local prices relative to international prices for, and raise concerns. The local DAP price increased in 2011 consistent with an increase in the international DAP price, however when the international price adjusted downwards in 2012 the local DAP price remained at relatively higher levels meaning that a substantial margin opened up over the international price (an increase of some KSh500-750 per 50kg bag or close to $200/ton) (Figures 8 and 9), which is consistent with the relative change compared with CAN prices. The price increase was consistent with a sharp depreciation in the shilling (Figure 10), however, it appears that once the shilling appreciated once again, local fertilizer prices of DAP and Urea did not adjust. For purposes of comparing local and international prices in Figures 8, 9 and 12, the international prices have been lagged by two months to account for the amount of time that it takes to have fertilizer

delivered. Thus, the mark-up related to May 2010 is the difference between the local price of either DAP or Urea in May 2010 and the corresponding international price in March 2010.

Figure 8: DAP local prices and international fob prices



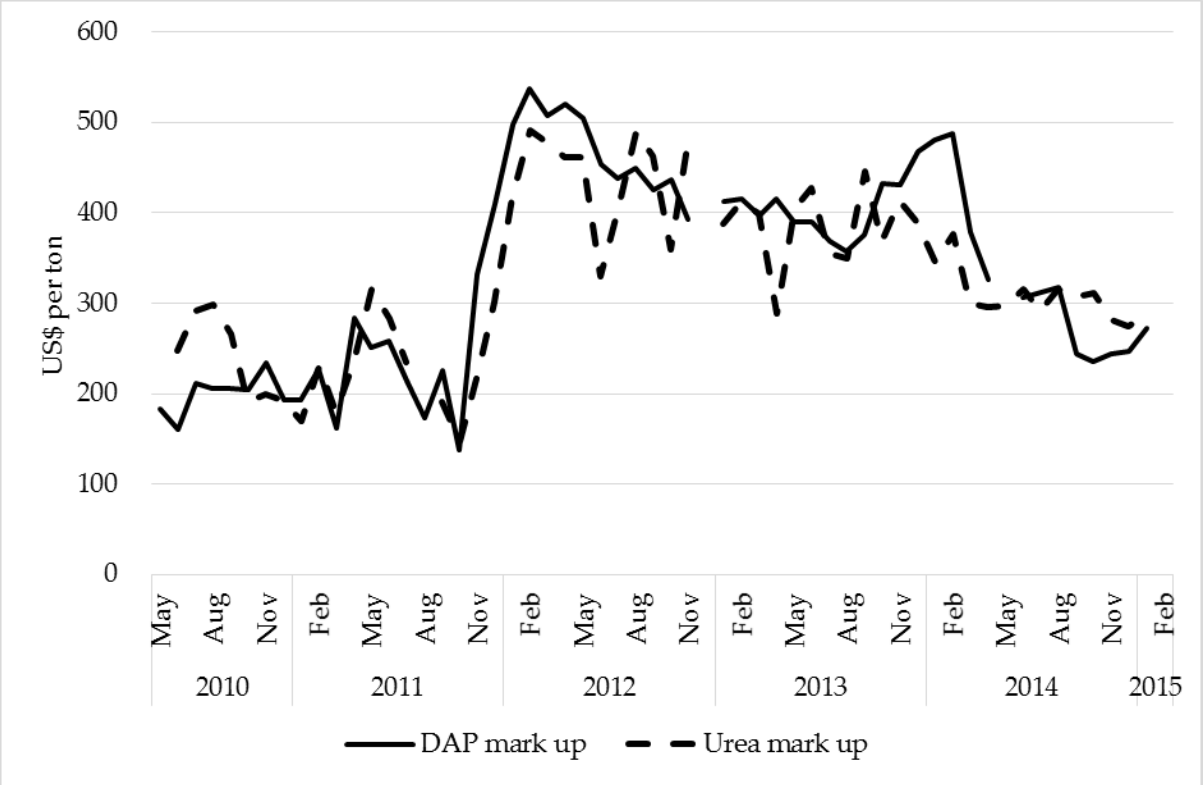
Source: IFDC/Amitsa, World Bank

Note: The average mark ups indicated in Figure 8 were calculated for the following periods: March 2010 to November 2011, December 2011 to December 2013 and May 2014 to February 2015 (being the period when increased competition apparently reduced mark-ups).

Expressed in terms of US$/ton, between 2010 and 2011 the mark-ups of DAP and Urea over the international prices were approximately $200 per ton on average over the US Gulf fob price and the Black Sea fob price, respectively (Figure 9). During the price spike at the end of 2011, the individual mark-ups increased to over $500 per ton, although the average mark-ups between 2012 and 2013 were roughly $400 per ton. While these mark-ups have since decreased, they have not returned to the levels seen in 2010 and remain on average $300 per ton from 2014 onwards. However, towards the end of 2014 the DAP mark-up decreased to $240 per ton. This increase of around

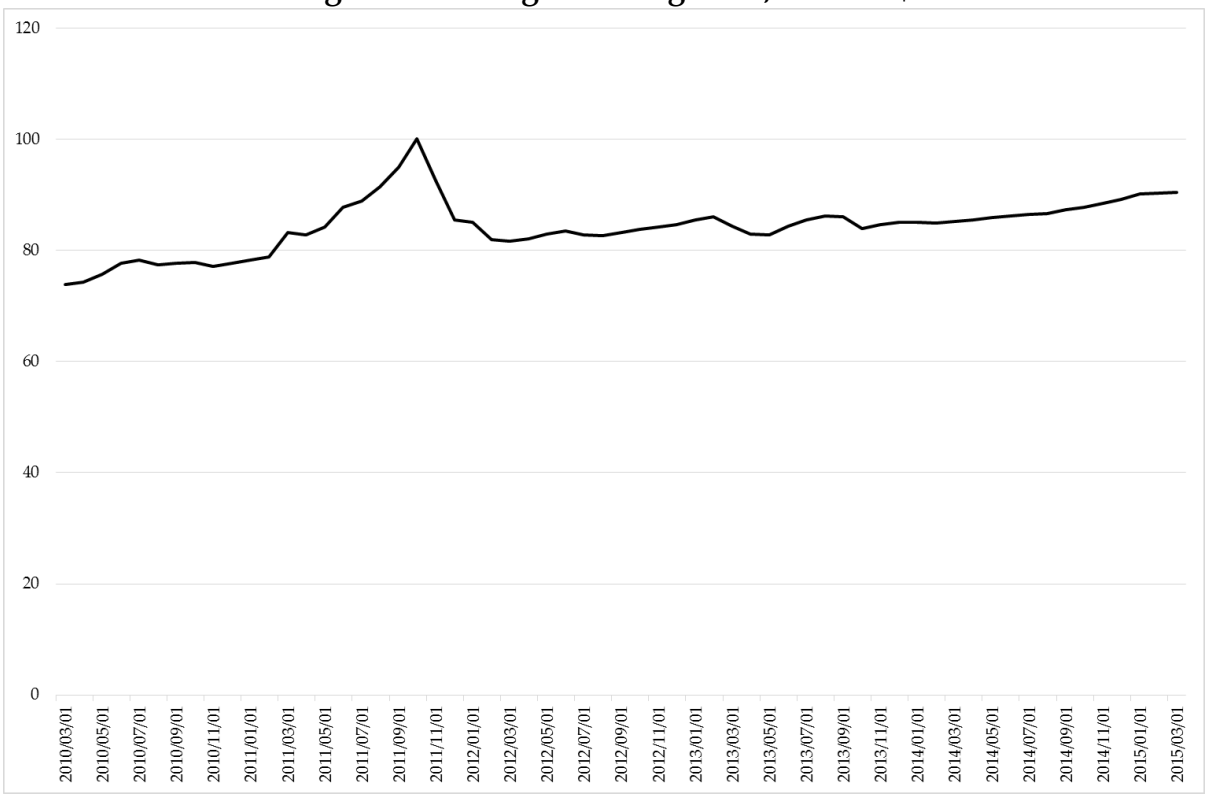
$200/ton for much of 2012 and 2013 (around 800KSh per 50kg bag) represents around 20% to 25% of the fertilizer price.

Figure 9: Mark-up of DAP and Urea prices over international prices



Source: AMITSA; World Bank Commodity Price data (The Pink Sheet)

Figure 10: Foreign exchange rate, KSh:US$



Source: www.oanda.com

To consider whether there are data collection reasons for this picture, we check the data used for local DAP retail prices, as follows.

- First, we check whether the reported prices are inflated because of the way they are reported on a per kg basis, potentially reflecting higher prices for very low quantities being purchased.
- Second, we check whether the average local prices are influenced by agro-dealers in relatively remote areas reporting high prices, or whether they are reflective of local prices in large fertilizer using areas, as well as the differences between coastal and inland prices.
- Third, we consider the impact of using list retail prices rather than allowing for agro-dealer discounts.

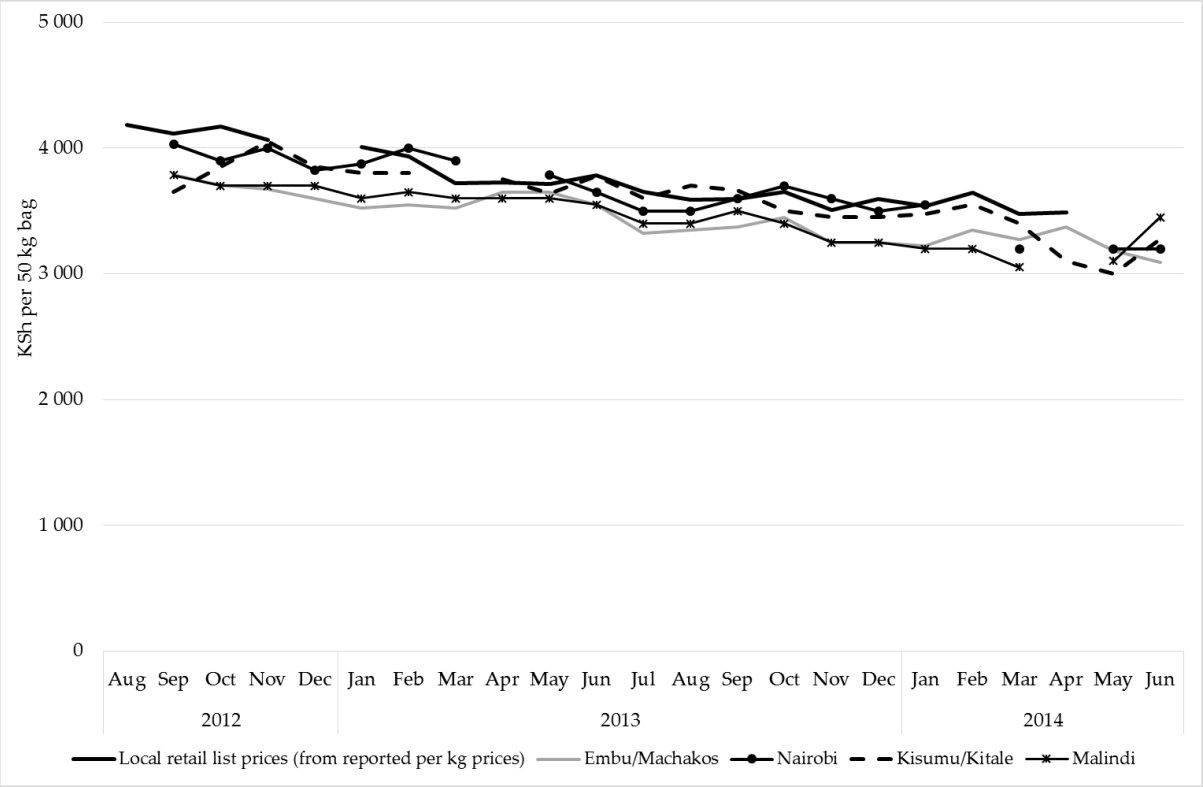
The local retail price data (from March 2010) was collected from IFDC's Amitsa portal. This is data supplied on retail list prices by agro-dealers throughout the country, on a per kg basis and averaged across the country. From August 2012, Amitsa started also

collating data for retail prices per 50kg bag. We thus checked whether the longer price series in per kg terms implied a higher price as agro-dealers could be reporting prices for a 1kg 'scoop'. As the agro-dealers sometimes re-bag the fertilizer from 50kg bags into smaller bags, the prices of these smaller bags would generally be higher than the per kg rate of a 50kg bag, and could thus distort the price data. From August 2012, the IFDC requested the agro-dealers to submit prices in the units in which they were sold. Comparing the average local prices from those reported on a per kg basis and those reported for 50kg bags in Figure 8 above, it can be seen that there is no material difference. Furthermore, we received confirmation from IFDC that they were satisfied that the data had been shown to be consistent.

In making the second check as to the influence of prices in different locations on the average, we considered the prices reported in different locations where there was fairly consistent reporting and where fertilizer usage is significant. We observe that prices in Nairobi are higher than those in rural areas relatively close to Nairobi such as Embu and Machakos. This appears to reflect the higher costs of storage and trading in Nairobi. Where an agro-dealer (as compared to an end customer) purchases in bulk from a warehouse in Nairobi we were also informed they would not pay the retail price reflected here.

The average reported Embu and Machakos prices tend to be some KSh300 lower than the Amitsa national average price, and in fact are in line with coastal prices at Malindi which is somewhat surprising given the much larger transport distances inland compared to the Malindi area (Figure 11). The average national prices are in fact in line with average prices reported for Kisumu and Kitale (these are also close to those for the Eldoret area). In what follows we use the national average prices, as this is the only data series we have for local prices from 2010, and compare these to costs for supply to significant inland markets further from the coast, such as Kisumu, Kitale and Eldoret.

Figure 11: DAP prices (including selected areas), 2012-2014



Source: AMITSA

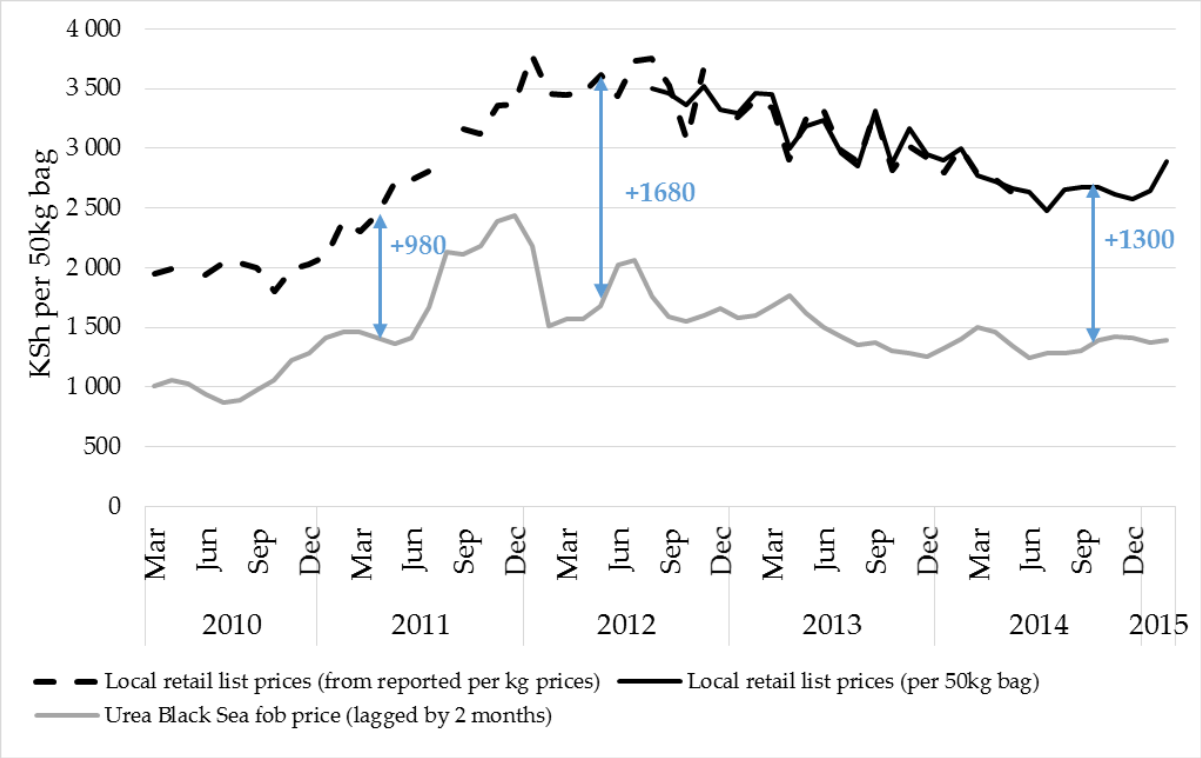
We note, as applies more generally, that it is important to obtain data over time on prices and costs direct from suppliers and agro-dealers. While this has been requested, it has not been forthcoming. It could also be obtained in an investigation if such were decided to be pursued.

The third check relates to list prices compared with transactions prices after agro-dealer discounts. Interviews revealed that agro-dealer discounts are relatively small, as their margins are slim to start off with. The main traders naturally favour strong competition between agro-dealers, which means any margins remain upstream and not with the agro-dealers. The agro-dealer mark-ups were reported by interviewees to be around KSh200 per 50kg bag or less, which can be discounted by around KSh50-100. In our price-cost assessment we use a build-up which allows for the standard (non-discounted) agro-dealer mark-up to be consistent with the Amitsa price data.

The Urea prices were compared to those of the corresponding international benchmark price, in this case, the Black Sea fob price lagged by 2 months. Similar to

the dynamics observed in DAP prices (Figure 8), the mark-up of local prices over international prices increased substantially between 2011 and 2013. The mark-up increased from an average around KSh1000 in the period between 2010 and 2011 to about KSh1700 per 50kg bag in 2012 and 2013, declining in 2014 (Figure 10). However, local prices seem to be increasing again as the February 2015 price represents an increase of over 10% from the December 2014 price.

Figure 12: Urea local prices and international fob prices

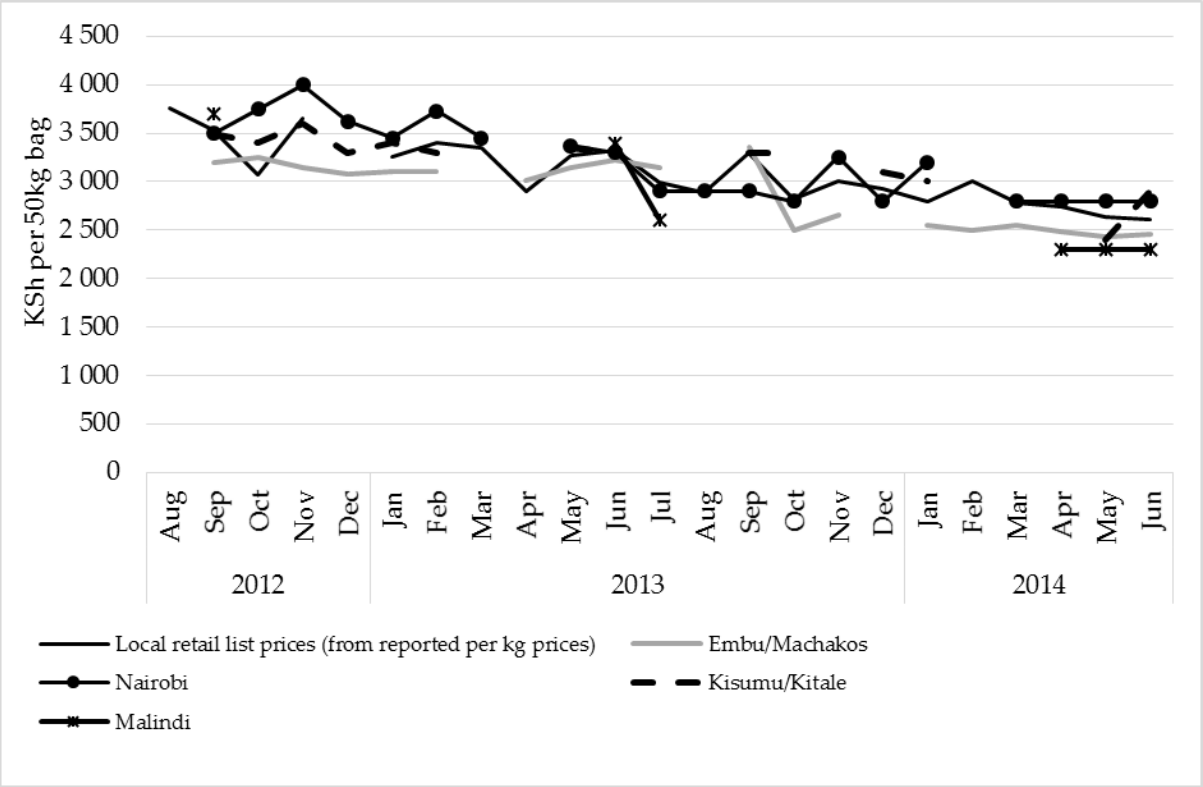


Source: AMITSA, World Bank

Note: The average mark ups indicated in Figure 12 were calculated for the following periods: March 2010 to November 2011, December 2011 to December 2013 and May 2014 to February 2015 (being the period when increased competition apparently reduced mark-ups).

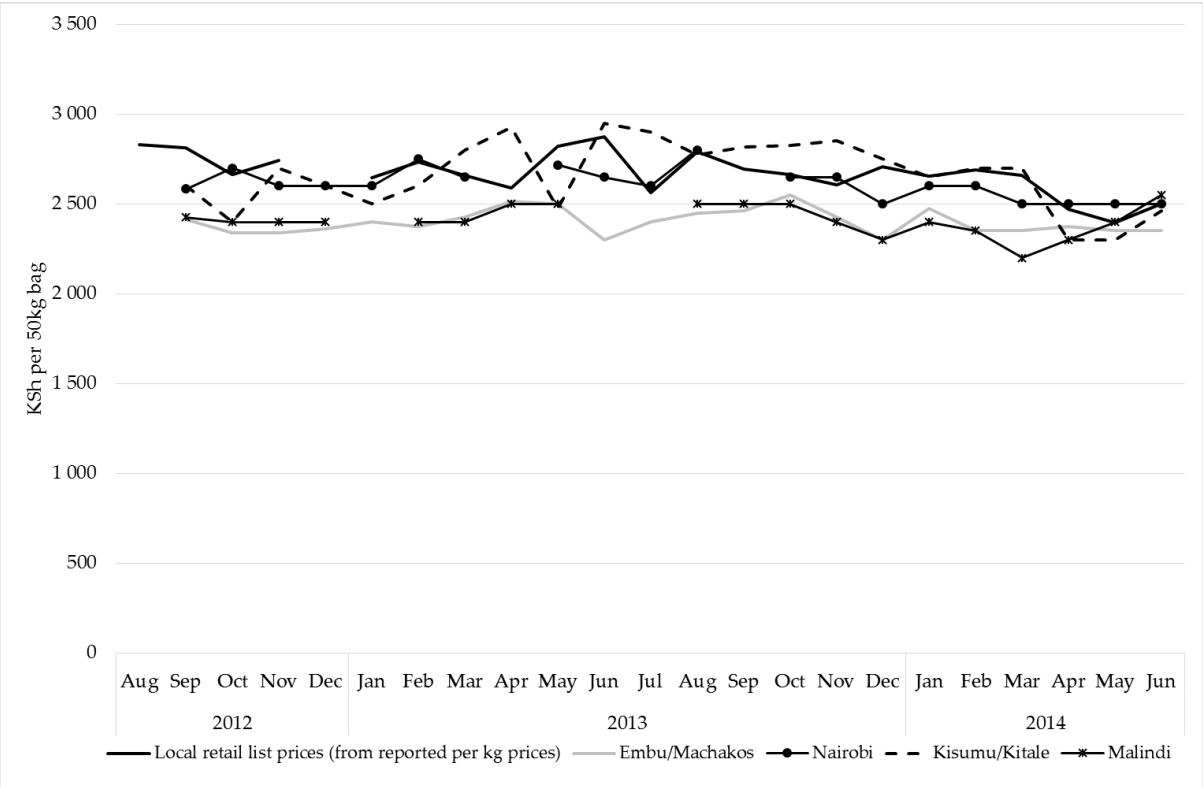
The local prices of Urea and CAN show similar patterns as for DAP (Figures 13 and 14). Prices in Nairobi and inland locations such as Kisumu and Kitale are relatively high compared to coastal prices as well as locations such as Embu. The overall average is closer to the higher inland prices. In terms of the trend, while the Urea prices have decreased over 2012 to 2014, the CAN price has remained fairly stable around KSh2500 in all towns observed between 2012 and 2014.

Figure 13: Urea prices (including selected areas), 2012-2014



Source: AMITSA

Figure 14: CAN prices (including selected areas), 2012-2014



Source: AMITSA

4.2. Cost parameters

Cost build-ups were obtained from different market participants, from the international price at which fertilizer is sourced through to all the costs incurred to deliver the product to different locations. The data were sometimes noted from interviews and given as estimates, while requests for follow-up detail were often not complied with. Full responses to information requests are important to have greater confidence in these numbers. The detailed cost build-ups for DAP are therefore presented for three companies, Fertilizer Company A, Fertilizer Company B and Fertilizer Company C in Table 4. An indicative cost build-up was set out by the FAK in presentations it made to government.[23] Where there are blank spaces, this indicates that those prices were not provided by the relevant interviewee.[24] The Fertilizer Company C prices were calculated based on the information provided in the interview and were for the end of 2014. This company appears to have been a vigorous competitor at this time. Data were also provided annually from 2009 to 2014 on prices and costs by a key informant close to the import and supply of fertilizer, referred to here as Company X.

A critical concern of the report is to estimate the costs of supply in an efficient and competitive market environment. The data provided by the different respondents for DAP is first reported and compared to the data on average delivered prices to farmers at agro-dealers (as noted above, apparently reflecting inland prices) in Table 4. Competitive prices are then imputed using cost build-ups from Company X and from

[23] This was also elaborated on in the interview.

[24] The Fertilizer Company A price data is presented as it was provided, with no changes made. The company converted some of their prices from US dollars to Kenyan shillings using the following exchange rates: KSh81 in 2012, KSh88 in 2013 and KSh88 in 2014. The Fertilizer Company B costs were originally quoted in Kenyan Shillings per ton. Where necessary, they were converted to US dollars to allow for comparison to the costs provided by the other importers. The following average annual exchange rates were used: KSh87 in 2011, KSh85 in 2013 and KSh87 in 2014. These exchange rates were retrieved from www.oanda.com/currency/historical-rates/. It must be noted that the 2013 exchange rates used by Fertilizer Company A and the average exchange rates that we used are different.

build-ups reported by Fertilizer Company C which is apparently a vigorous competitor at the end of 2014 and early 2015 (in Tables 5 and 6).

The international fob prices have decreased over the years from 2011/12 to 2014. However, Fertilizer Company A reported sourcing at higher prices than for Fertilizer Company B, which could be due to sourcing from suppliers in different countries or at different times in the year.[25] The 2014 price that Fertilizer Company C faced was much higher than that faced by Fertilizer Company B despite both sourcing from Saudi Arabia.[26] When comparing the Fertilizer Company B prices to those provided by the FAK for 2013, Fertilizer Company B prices were significantly higher. The fob price that a firm faces depends on a number of factors including the volume of fertilizer to be imported and whether the firm is sharing a vessel (and thus the costs) with another importer or bringing in their own vessel, as well as the time in the year that the purchase is made. The higher sea freight costs for Fertilizer Company C could be due to the firm bringing fertilizer into Kenya on their own and not sharing the costs of a vessel. The indicative sea freight cost cited by FAK is lower than the 2013 sea freight cost quoted by Fertilizer Company B, although the sea freight rates faced by Fertilizer Company B and Fertilizer Company C in 2014 are very similar.[27]

Fertilizer Company A faces the lowest port charges. However, it must be noted that while the company did provide most port charges, they did not provide separate data on costs related to wharfage. Port charges also include customs charges, shorehandling and stevedoring charges.

[25] Fertilizer Companies B and C reported sourcing from Saudi Arabia, while Fertilizer Company A did not provide a source.
[26] This likely reflects that the Fertilizer Company C data is for prices and costs at the end of 2014.
[27] It is not clear why the freight rates paid by Fertilizer Company B in 2014 were significantly lower than those in 2011 and 2013 although this may have to do with a change in the source of fertilizer.

Table 4: DAP cost build-up from various sources

	Fert. Co. A[28]			Fert. Co. B			Fert. Co. C	FAK
	2012	**2013**	**2014**	**2011**	**2013**	**2014**	**2014**	**2013**
Fob price[29] (US$ per ton)				554	520	419	485	490
Sea freight (US$ per ton)				71	73	35	40	60
Cost and freight (US$ per ton)	*675*	*610*	*460*	*625*	*593*	*454*	*525*	*550*
Insurance (1.5% C&F - NCPB)	10	9	7	2	3	2	8	
Total CIF (US$ per ton)	***685***	***619***	***467***	***627***	***596***	***456***	***533***	
Finance charges	3	3	2	32	5	9		
Port charges	33	31	27	38	51	45	36	60
Total amount in US$	*721*	*653*	*496*	*697*	*652*	*511*	*569*	*610*
Total in Kenya Shillings	*58 421*	*57 475*	*43 643*	*60 614*	*55 329*	*44 436*	*49 481*	*51 836*
Other charges	592	536	407	329	162	129	826	
Total handling cost into warehouse – Mombasa (KSh)	*59 013*	*58 011*	*44 050*	*60 943*	*55 491*	*44 565*	*50 307*	*51 836*
Total landed cost per 50kg bag (Mombasa)	*2 951*	*2 901*	*2 202*	*3 047*	*2 775*	*2 228*	*2 515*	*2 715*
Prices								
Mombasa				3 200	2 850	2 400		
Nairobi				2 906				
Eldoret								3 141
Kitale							3 063	3 171
Amitsa average (Feb-April)	4349	3793	3538	3353	3793	3538	3538	3793

Sources: Fertilizer company cost build-ups

The bagging services provided by the KPA cost $1 per ton. Bags generally cost between $7 and $10 per ton based on various interviews. If the bagging services are provided by private players, they usually cost between $5 and $10 per ton and we understand this fee to include the cost of the bags. In the assessment, bagging service charges are included in the port charges. In the Fertilizer Company C build-up, we have assumed that they use the bagging service which includes both bagging and the supply of bags. In their template, the FAK included the KPA bagging, the private

[28] The Fertilizer Company A data presented is stated on a 'sight Letter of Credit' basis.

[29] The fob price for Fertilizer Company B and Fertilizer Company C is the Saudi Arabia price.

bagging and the cost of empty bags. While we believe that this constitutes double-counting, we have left the costs in the build-up in order to reflect their submission.

There are also costs charged by regulators such as the KPA. These include the Import Declaration Form (IDF) which is charged at 2.25% of CIF, VAT of 16% on shore handling, the Rail Development Levy at 1.5% of fob and the Certificate of Conformity which seeks to ensure that the fertilizers imported are of good quality. Other charges include incidental charges, tally charges and weighbridges. This adds up to the total landed cost in Mombasa, quoted in KSh per 50kg bag.

The next set of charges are related to transportation and storage. After the fertilizer has been bagged, it is transported to warehouses in Mombasa, usually not far from the port. Transportation services from the port to the warehouse generally cost between KSh15 and KSh25 per 50kg bag.[30] Storage services are generally charged per ton per week. The main providers of storage services in Mombasa are Mitchell Cotts, Rapid Kate Services and Siginon Logistics. Excluding handling charges into the warehouse which are approximately $7 per ton, storage services generally cost up to $1 per ton per week. However, while some companies state that storage for the first 28 days is free, Fertilizer Company C states that they receive a package of $8 per ton for the first 3 weeks and thereafter they have to pay between $0.50 and $1 per ton per week. The storage costs depend mainly on the handling, which is the labour required to offload the fertilizer into the warehouse.

Fertilizer Company B prices are cited ex-Mombasa. From Mombasa, most importers have their fertilizer transported to various places such as Nairobi, Eldoret and Kitale. The price of fertilizer in different areas includes the importer's profit margin which in the case of Fertilizer Company C is 2.5%, and 10% for Fertilizer Company A, while the FAK states that in general margins are approximately 5%.

[30] Based on various interviews with importers.

Next, we estimate what a relatively efficient and competitive cost and price build-up would be for both DAP and Urea from the CIF prices to an inland selling price using a combination of Company X and Fertilizer Company C costs and prices (Tables 5 and 6). We have costs and prices for 2009 to 2014 from Company X. We also use Fertilizer Company C prices and costs for the end of 2014/early 2015 when we believe that the market had become more competitive once again as evidenced by the decreasing DAP and Urea prices discussed above. We use Company X's data for this exercise because it seems to have been able to derive certain efficiencies in procurement and distribution.[31] We also use Fertilizer Company C's information because they are apparently very competitive and then estimate the build-up in earlier years from the data for the end of 2014. For each year we compile the estimates for prices to supply fertilizer in the main season of February to April.

The DAP and Urea cost build-ups were constructed in the same manner in Table 5 and 6.[32] The cost build-ups start from the international price of DAP and Urea using US Gulf fob prices (as the US is where DAP has generally been sourced from) and Black Sea fob prices, respectively. Specifically, we use the average prices from December to February as this is consistent with the approximately two-month time period it takes to source and ship products for the February to April main season. The price of the fertilizer in Mombasa on a CIF basis is then reflected and the difference is shown over the fob price (being the freight and insurance costs of importing). The cost (including importer margin) to inland markets is calculated from the Company X and Fertilizer Company C information as follows. For Company X it is the difference between its final inland selling price and reported CIF price. Because Company X claimed not to include a retail margin we added an agro-dealer margin of KSh200 per 50kg bag based on information gathered from interviews with agro-dealers.[33] For

[31] We do not use Company X fob prices, but their cost build-ups.

[32] The same assumptions indicated in the notes below Table 6 apply in the case of Table 7 also.

[33] The estimate of the margin from agro-dealer and importer interviews (excluding one outlier that reported margins of KSh500 per bag) was for agro-dealer margins of between KSh100 and KSh200 per

Fertilizer Company C, the difference is calculated from the price in Kitale (KSh3 063 in Table 5) and Fertilizer Company C's CIF price, related to late 2014/early 2015. We also add a KSh200 agro-dealer margin as we assume that Fertilizer Company C provided us with their wholesaler prices. This figure is then deflated by consumer inflation to obtain estimates consistent with the first quarter of each year. In addition, we take into account that 16% VAT was added onto local costs (such as transport) from 2013 onwards.

The imputed competitive inland retail price is thus derived from the international prices and efficient, competitive supply costs and margins. The Amitsa retail prices are compared with it to generate the 'mark-up over imputed price'. For both DAP and Urea in 2010 and 2011, the imputed prices are around the Amitsa prices, where the negative mark-ups denote lower Amitsa prices while positive mark-ups imply that the Amitsa prices are higher than the imputed prices (Tables 5 and 6). This period is associated with increased levels of competition from smaller new entrants.

Table 5: DAP price comparisons (KSh per 50kg bag)

	2010		**2011**		**2012**		**2013**		**2014**	
	Co. X	Fert Co. C	Co. X	Fert Co. C	Co. X	Fert Co. C	Co. X	Fert Co. C	Co. X	Fert Co. C
Fob, US Gulf (Dec-Feb)	1555		2332		2272		2078		1840	
Add-on to get to CIF	374		401		258		263		236	
CIF Mombasa	1929		2733		2530		2341		2076	
Cost to inland (Kitale/Eldoret)	564	544	617	565	626	645	653	844	652	892
Imputed price	2493	2472	3350	3299	3156	3175	2994	3185	2728	2969
Amitsa (Feb-April)	2447		3353		4349		3793		3538	
Mark-up over imputed price	-45 -1.8%	-25 -1.0%	3 0.1%	54 1.6%	1193 37.8%	1174 35.6%	799 26.7%	608 19.1%	810 29.7%	569 19.2%

Source: Company X and Fertilizer Company C cost build-ups, World Bank (The Pink Sheet) fob prices

Notes:

1. In their submission of their cost build-ups running from 2009 to 2014, Company X provided exchange rates that they used to convert costs from US dollars per ton to Kenyan Shillings per ton. However, when we compared these exchange rates to annual average annual exchange rates, we found that the Company X exchange rates were always higher than the annual averages.[34] If we were to use the annual average exchange rate applied to the international freight and shipping costs

bag, sometimes even as low as KSh50 (particularly where there is discounting), with an average KSh175 per bag, which we round up to KSh200.

[34] The annual average exchange rates were retrieved from www.oanda.com.

this would increase the mark-ups marginally (by KSh11 in 2012 and 2013 on the Fertilizer Company C estimates).

2. The add-ons to get CIF prices are calculated from the difference between Company X reported fob and CIF prices. Note that Company X generally imported from Eastern European sources, i.e. Black Sea, which tend to have slightly *higher* freight rates than the US Gulf or Saudi Arabia (which increases the imputed competitive price and lowers the mark-ups).
3. We adjust the 2010 to 2012 local costs for the fact that VAT was not levied on them in these years (this only affects the Fertilizer Company C estimates as Company X submitted actual numbers over the earlier years).

Table 6: Urea price comparisons (KSh per 50kg bag)

	2010		2011		2012		2013		2014	
	Fert Co. X	Fert Co. C	Fert Co. X	Fert Co. C	Fert Co. X	Fert Co. C	Fert Co. X	Fert Co. C	Fert Co. X	Fert Co. C
Fob, Black Sea (Dec-Feb)	1004		1439		1546		1679		1454	
Add-on to get to CIF	374		401		258		263		236	
CIF Mombasa	1377		1840		1803		1942		1690	
Cost to inland (Kitale/Eldoret)	564	530	617	551	626	629	653	823	652	870
Imputed price	1941	1908	2457	2391	2430	2432	2595	2765	2341	2560
Amitsa (Feb-April)	1973		2381		3457		3215		2838	
Mark-up over imputed price	32 1.6%	65 3.3%	-76 -3.2%	-10 -0.4%	1027 29.7%	1025 29.7%	620 19.3%	450 14.0%	497 17.5%	278 9.8%

Source: Company X and Fertilizer Company C cost build-ups.
Notes: As for Table 5.

However, from 2012 onwards, the Amitsa prices exceed the imputed competitive, resulting in sharp increases in the mark-ups over imputed prices for both DAP and Urea, especially in 2012. This is despite the fact that CIF prices had come down in these years and inland costs had not increased sufficiently to explain a sustained increased in average prices. In 2012 there are very large mark-ups of over KSh1000 for both DAP and Urea consistent with the impact of the appreciation of the Kenyan Shilling on international prices and transport costs not having flowed through to local prices. Over time this mark-up over the imputed price has decreased for both DAP and Urea, with the DAP mark-up dropping to under KSh600 in 2014 and the Urea mark-up dropping to just under KSh300 (when using the Fertilizer Company C prices in both cases).

The implication is that there was a period of several years with substantial mark-ups of local fertilizer prices over the competition levels, by as much as 30% in some years. We discuss possible explanations for this in Section 6.

5. Evolution and operation of subsidy programmes in Kenya

There is an extensive history beginning in the 1960s of the GOK providing subsidised agricultural inputs, and fertilizer in particular, in the agricultural sector (see Argwings-Kodhek and Mbatia, 2010; Ariga and Jayne, 2009). Throughout this period, in response to market conditions, the GOK has changed and adapted the structure of its intervention in the fertilizer market. From the early years prior to the 1990s, when the Kenyan Farmers' Association held the responsibility for all fertilizer imports, through to the liberalisation of the sector in the 1990s that allowed for the entry of private importers, the GOK has intervened in different ways to control prices and/or supply. There have been three distinct periods of government intervention in the fertilizer sector (Table 7).

Table 7: History of subsidy programmes in Kenya

Time period	**Agency**	**Form of government intervention**
Before 1990	Kenya Grain Growers Cooperative Union (KGGCU), Kenya Farmers Association (KFA) & Kenya National Trading Corporation (KNTC)	Direct intervention in input markets through either state-run agencies that set prices at pan-territorial levels or through farmer organizations, including application of: 1. Price controls 2. Import licensing quotas 3. Allocation of foreign exchange 4. Fertilizer donations by external donor agencies
1990-2007	Ministry of Agriculture, National Cereals and Produce Board (NCPB)	Fertilizer market liberalised through: 1. Allowing the participation of the private sector in importing, local trading, and distribution 2. Elimination of government price controls 3. Elimination of licencing quotas 4. Phasing out of fertilizer donations by external donor agencies
2007- Present	Ministry of Agriculture, NCPB	Increased government involvement through: 1. Agricultural inputs access programme 2. Direct subsidy on fertilizer 3. MOA and NCPB imports of fertilizer 4. NCPB distribution of fertilizer

Source: Adapted from Ariga and Jayne (2010)

We consider the interventions with regard to fertilizer focusing on the period from 2007 to present. We set out the government's objectives, review the two main programmes, and then evaluate the impact including distortions on the commercial fertilizer market.

5.1 Objectives

The broad rationale for government subsidies in the agricultural sector is twofold. First, governments seek to support small and low-income farmers as part of improving income distribution. Second, intervention is motivated by the need to address market failures in commodity markets associated with externalities, imperfect or asymmetric information and market power (Moore, 1987). These failures are particularly significant in an uncertain agricultural environment, with low price elasticities and substantial price volatility, where the mechanisms for hedging risks such as drought, floods and international price swings, are not easily accessible to small farmers.

In addition to the above, in sub-Saharan African countries, an important motivation for subsidies in the agricultural sector is the promotion of national food security strategies. In Kenya, the acutely food insecure population stood at 1.3 million in February 2014 according to the Kenya Food Security Steering Group.[35] In this regard, programmes such as the Kenya fertilizer subsidy have become important policy instruments in the agricultural policy portfolio in an effort to ensure food security (Druilhe and Barriero-Hurle 2012).

The broad objectives of the GOK fertilizer subsidy as captured in the Kenya Agricultural Sector Development Strategy (KASDS) (2010-2020) are crystallized into the following specific objectives:

i. Stimulate agricultural production in targeted crops;

[35] http://www.foodsecurityportal.org/kenya/food-security-report-prepared-kenya-agricultural-research-institute

ii. Ensure self-sufficiency in food production and to ensure a production surplus and food security;
iii. Make inputs affordable to farmers who cannot buy them, owing to poverty, lack of access to credit, and inability to insure against crop losses.

For this inquiry, we consider the two main programmes of the GOK in the provision of fertilizer over the past decade:

- National Accelerated Agricultural Inputs Access Programme (NAAIAP), launched in 2007.
- Fertilizer subsidy programme introduced by the GOK in 2009.

5.2 Overview of National Accelerated Agricultural Inputs Access Programme (NAAIAP)

NAAIAP was launched in 2007 with the aim of giving targeted farmers access to free fertilizer and seed (Argwings-Kodhek and Mbatia, 2010). The programme was developed as part of Kenya's effort to meet the goals proposed at the African Fertilizer Summit in 2006 regarding the use of agricultural input technology and to provide support for poor farmers. Based on information from various interviews, NAAIAP sought to provide up to 2.5 million smallholder farmers (with land less than an acre in size) with Kilimo Plus starter packs containing 50kg of DAP or NPK (planting fertilizers), 50kg of CAN (top-dressing fertilizer), and 10kg of hybrid seed (IFDC, 2012). The recipients were also required to attend training on the use of these inputs (Kiratu et al, 2014). These starter packs were once-off supplies intended to introduce farmers with no experience in the use of fertilizer to the benefits of using fertilizer on their farms and was supposed to help farmers cultivate at least 0.4 hectares of land which is expected to be enough to feed an average household of 5 people (Kiratu et al, 2014).

The introduction of this programme was consistent with a trend in various African countries throughout the 2000s of using 'demonstration packs' to show farmers the benefits of using the correct inputs (Druilhe and Barreiro-Hurlé, 2012). Through the

experience with the starter packs, and in particular the increased yields from fertilizer use, farmers were encouraged to purchase their own fertilizer for use in subsequent seasons. In the case of NAAIAP, the farmers could receive the support for two agricultural seasons after which they move on to the Kilimo Biashara programme whereby farmers will pay for inputs themselves at the market price but receive subsidised credit to do so (Sheahan et al, 2014). Kilimo Biashara was structured as a partnership between Equity Bank, GOK and Alliance for a Green Revolution in Africa (AGRA), and included access to loans at reduced interest rates (Onyango, 2009).

In order to limit distortions in the commercial market this, and other similar programmes across different countries, targeted farmers that were not previously applying fertilizers (Sheahan et al, 2014). The target group of farmers through NAAIAP is mostly poor smallholder farmers involved in the farming of staples and specifically those with less than an acre of land (Druilhe and Barreiro-Hurlé, 2012; Kiratu et al, 2014). In terms of the specific target areas for the rollout of the programme, districts were selected on the basis of their suitability for maize, sorghum, and/or millet production, the incidence of poverty in that district, and the lack of similar programmes (Sheahan et al, 2014). Members of the community are then involved in selecting which farmers become recipients of the programme. In this regard, preference was required to be given to the following groups (Sheahan et al, 2014):

- subsistence farmers without capacity to purchase inputs themselves;
- farmers with smallholdings but a sufficient amount of land to produce maize;
- women and child-headed households;
- those who had not received similar support before.

The inputs (fertilizer and seed) are distributed to farmers using a voucher scheme. A voucher is issued to the farmer who can then purchase the inputs from an accredited stockist or retailer. The stockist or retailer can then redeem the voucher at a government contracted financial provider (Kiratu et al, 2014).

The GOK has faced challenges over the years in terms of funding the programme such that it has had to be scaled-down. For instance, from its implementation for the 2007/8 season up to 2011, the programme had only reached 615 000 farmers and not the planned 2.5 million (Sheahan et al, 2014). If each farmer received 100kg of fertilizer this implies around 15 000 tonnes of fertilizer per year over this period.

The governance of NAAIAP is through a steering committee which includes representatives of various stakeholder groups, including private importers. In the early years up to around 2011, KENAFF had participated as the implementing agent or distributor for NAAIAP that would source and distribute to farmers fertilizer from the local importers such as Mea Ltd, Athi River Mining and Supplies & Services, while sourcing seed from Kenya Seed Company. Supply would mostly come from Mea Ltd as a supplier with a wide network of outlets throughout Kenya. KENAFF also has a wide network of members and officials throughout Kenya that would work with the Ministry of Agriculture officers in each area (later, each county) to select farmers and make the products available to them. Difficulties in the implementation mainly arose when GOK payments intended for suppliers were delayed such that suppliers and funders started to withdraw their support of the programme.

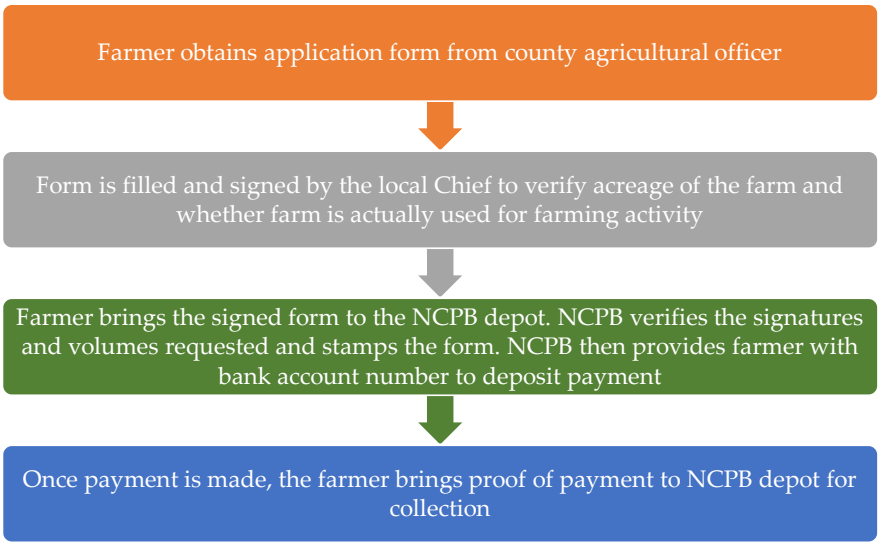
5.3 Overview of the Fertilizer Subsidy Programme (FSP)

In 2008-9, following a severe spike in the global and domestic prices of fertilizer in Kenya, the GOK initiated another subsidy programme to assist farmers. In this programme, the GOK has sold inorganic fertilizer to farmers at a subsidised price, using the NCPB to distribute the products (Sheahan et al, 2014). The general recommendation to farmers is 1 bag per acre for crops such as maize, and 2 bags per acre for other crops e.g. potatoes.

The process followed by farmers to purchase the subsidised product involves various steps (Figure 15). In applying to access the subsidised fertilizer from a NCPB depot, farmers are required to obtain permission from the local chief in the area where their

farm is situated. In Nakuru, for example, the depot serves as the central distribution point in an area which covers about 100km radius of the depot. The depot is also responsible for receiving all products transported from the port in Mombasa, distributing these in the broader Nakuru area, or transferring some products to the few satellite offices which lie about 100km from the depot. NCPB has 110 depots in total located throughout Kenya, each with varying capacity ranging from smaller depots with a capacity of less than 100 000 x 90kg bags, to the largest in Nakuru with a capacity of 2 595 000 x 90kgs.

Figure 15: Process followed by farmers purchasing subsidised fertilizer



Source: Interviews with various market participants

Farmers are generally required to provide their own transport from the depot. This may be a challenge for farmers travelling from areas which are some distance from the depot. In some cases, farmers from the same area will pool together to collect the fertilizer. At the depot, the NCPB provides casual labour for loading fertilizer into the farmers' vehicles.

The fertilizer has been sold at prices which are fixed at the same level throughout the country and well below the commercial market prices (Table 8). When we compare DAP prices of the subsidised fertilizer to NCPB's selling prices in Nairobi for non-subsidised fertilizer, the difference was around KSh800-900, or in the range of 25%.

In 2015 the amount of the subsidy increased further, as the selling price of KSh1800 for a bag of DAP in 2015 can be compared with the cost-price at the depot in Nakuru of KSh3333, which suggests a 46% subsidy. The difference between the subsidised price and the average commercial prices at agro-dealers is even greater.

Table 8: NCPB prices for main fertilizer types, KSh per 50kg bag

	NCPB subsidy prices (uniform across Kenya)				**Prices and costs, DAP**		
	DAP	**CAN**	**Urea**	**NPK 17:17:17**	**NCPB cost (landed Mombasa)**	**NCPB market price, Nairobi**	**Average retail price (Amitsa)**
2009	3000	-	-	2000			
2010	2000	1500	-	2000			2621
2011	2500	1600	-	2500			3747
2012	2500	1600	-	2300	2951	3383	4239
2013	2000-2480	1600	1500	2000-2300	2901	3328	3706
2014	2000	1500	1500	2000	2202	2789	3338
2015	1800	-	-	-			3312

Source: Interviews with various market participants

Note: Amitsa prices are averages, derived from per kg price series. 2010 is for March – December; 2015 is for January and February.

Over the years, the practice has been to determine the price for DAP and other fertilizer products and announce these publicly in advance of the arrival of the product in local distribution outlets. The NCPB generally sells the products for the government and the GOK reimburses the NCPB the difference between the commercial market and the subsidised price.

Our understanding from various interviews is that the GOK employs three mechanisms for importing and supplying fertilizer.

a) Annual and then multi-year tenders for fertilizer supply for the long rains. In 2013 a three-year contract was issued to a company named Holbud Ltd. The tender was awarded to initially supply 100 000 tons of fertilizer in the first year of the contract for the long rains, and then subsequently to supply the Ministry with fertilizer as and when required.

b) GOK issues open tender to fertilizer suppliers (domestically or internationally) to supply a set volume of fertilizer for the GOK from time to time. This is typically linked to imports for the short rains or for top-up volumes where it is beneficial to have suppliers that may already have stock in the country to supply the GOK in a short period of time.
c) NCPB itself invites firms to tender for supply of fertilizer which will then be sold by NCPB throughout Kenya.

The processes of issuing tenders to supply fertilizer to the GOK or NCPB have not been without controversy. For instance, in 2012 the award of the tender and specifically the processes followed by the Tender Committee of the NCPB in a decision dated 3 February 2012 were taken on review by Mea Ltd.[36] The NCPB had awarded the tender to ETG. Mea complained that the Tender Committee had violated several provisions of the Public Procurement and Disposal Act ('Procurement Act') in awarding the tender to ETG. The foremost of their concerns was that the Tender Committee was not allowed under the Procurement Act and in the current case to pursue a method of direct procurement as described below. In response the NCPB had argued that the urgency that was required in delivering the products ahead of the planting season necessitated the course of action to which it felt it was entitled. The review which was conducted before the Public Procurement Administrative Review Board (PPARB) related to the supply and delivery of 30 000 tons of DAP (PPARB, 2012). The PPARB acknowledged the irregularities on several grounds in the procurement process followed by the NCPB, but felt that these considerations were outweighed by a public urgency to have the matter resolved and the fertilizer delivered to farmers as soon as possible.

[36] The tender had been advertised by NCPB in the Daily Nation newspaper on 23 November 2011.

The three year tender issued to Holbud also raised concerns, as some firms such as ETG were excluded on the basis that they had not met the terms such as tendering to supply over three years. This seems surprising as these are large well-organised trading companies. The tender for 100 000 tons made up of specified products was issued in October 2014 (Figure 16).

Figure 16: International tender issued by NCPB, October 2014[37]

INTERNATIONAL TENDER
PRE-QUALIFICATION OF SUPPLIERS FOR SUPPLY AND DELIVERY OF FERTILIZERS
APPLICATION NO: NCPB/FERT/043/2014-2015

The National Cereals and Produce Board (hereinafter referred to as ''NCPB or the Board) intends to pre-qualify firms for the purpose of supply and delivery of assorted types of fertilizers as indicated below:

Type of Fertilizer	QUANTITIES (MT)*
Diammonium Phosphate (DAP 18:46:0)	**35,000**
Chemically Compounded NPK 23:23:0)	**20,000**
Urea 46% N	**20,000**
Calcium Ammonium Nitrate (CAN 26% N)	**25,000**

NCPB therefore invites reputable manufacturers and/or their appointed agents to submit technical proposals for supply and delivery of the fertilizers. This is a two stage procurement process that will involve pre-qualification of technically qualified firms and then invite them to submit their financial bids.

Source: Excerpt from official tender document issued by NCPB

In December 2014, shortly after the invitation issued by the NCPB, the GOK issued a localised tender inviting fertilizer suppliers operating in Kenya to supply the GOK with volumes totalling around 63 000 tons (Figure 17). This is consistent with the practice of the GOK in terms of issuing tenders for additional supply as and when required seemingly to supplement the supply under the three-year contract with Holbud.

[37]Adapted from: http://www.nation.co.ke/business/tenders/-/2394514/2502338/-/whsq34z/-/index.html

Figure 17: National tender issued by GOK, December 2014

MINISTRY OF AGRICULTURE, LIVESTOCK AND FISHERIES
NATIONAL COMPETITIVE BIDDING
TENDER REF No. MOALF/SCMD/AGRIB/12/2014-2015
SUPPLY AND DELIVERY OF VARIOUS TYPES OF FERTILIZER

Fertilizer is a major input in crop production and hence food security but its use by farmers in Kenya is limited by its high cost in an effort to make fertilizers affordable and accessible to farmers, the National Government subsidizes the price of fertilizer. In the past the provision of the fertilizer has been through the National Government and its agencies, the Government would now like to encourage greater participation by the private sector in direct sale of the fertilizer to farmers at subsidised prices The Government of Kenya through the Ministry of Agriculture, Livestock and Fisheries (MOAL&F) now invites fertilizer dealers operating in Kenya to quote for direct supply of various types of fertilizer to farmers at the designated National Cereals and Produce Board (NCPB) depots all over the country. However in line with the government policy that the women, youth and persons living with disabilities be considered for 30% of all Government procurement, eligibility to the tender is restricted to the Youth, Women and firms owned by people living with disability. Under this arrangement the fertilizer dealers SHALL:

i. Quote delivery prices to various NCPB depots and sugar factories for the following types of fertilizers:

LOT NO	ITEM DESCRIPTION	QUANTITIES (MT)*
1.	DIAMMONIUM PHOSPHATE (DAP) 18:46:0	5000
2.	CHEMICALLY COMPOUNDED NPK 25:5:5	7000
3.	UREA (46%N)	5000
4.	MURIATE OF POTASH (MOP)	3,950
5.	Blend 1, NPKCaMgS; 12:30:7:7:2	13,126
6.	Blend 2, NPKCaMg; 26:0:20:0:3:1	3,126
7.	Blend 3, NPKCaMgS; 10:26:10:10:4:5	16,000
8.	Blend 4, NPKCaMgS; 26:0:0:10:0:5	11,748

**THESE ARE TENTATIVE QUANTITIES*

ii. Deliver allocated fertilizer quantities to designated NCPB depots and sugar factories countrywide

iii. Enter into an agency Agreement with NCPB for the handling and selling of the fertilizer.

iv. Allow the fertilizer to be sold to farmers at Government subsidised prices and the sale proceeds be deposited in an account operated by NCPB.

v. Ensure that the stocks in the various depots are replenished as and when required starting from Mid-January 2015.

Ministry of Agriculture, Livestock & Fisheries SHALL:-

i. Provide funds for subsidy in a special NCPB account

ii. Monitor the selling of fertilizers through the NCPB depots and sugar factories to ensure that the laid down procedures are followed

National Cereals and Produce Board SHALL:-

i. Sell the delivered fertilizer to the farmers at government subsidised prices.

ii. Remit full payment for the fertilizer sales on a weekly basis to the suppliers accounts together with the subsidy portion.

Source: Excerpt from official tender document issued by Ministry of Agriculture, Livestock and Fisheries, http://www.nation.co.ke/business/tenders/-/2394514/2534536/-/wfwo6yz/-/index.html

5.4 Evaluation of the impact of the fertilizer subsidy programme

Supply of fertilizer under the subsidy programme

It is difficult to assess the overall size of the subsidy programme. According to the tenders, and based on the interviews, the total subsidised fertilizer has been around 150 000 tons per year, at least from 2013. Around 100 000 tons are for the long rains, and a smaller amount for the short rains, together with the volumes under the NAAIAP. In principle, the total quantum of the subsidy depends on the volumes and the subsidy price compared to the cost (including all the costs of distribution, which should be close to the competitive commercial price).

The volumes reported in submissions made to the inquiry indicate total NCPB and GOK sales of between 74 984 tons and 87 874 tons in 2011 and 2013 (Table 9). This is a big increase from 2010 and does not appear to include the NAAIAP (which as noted above had averaged 15 000 tons per year).

Table 9: NCPB – GOK fertilizer sales (Tons), 2010-2013

	NCPB sales of fertilizer (Tons)			
	2010	**2011**	**2012**	**2013**
GOK DAP	783	18650	12699	41953
GOK Other	0	2	0	2072
Total GOK	783	18652	12699	44026
Total NCPB (incl. GOK)	6724	87874	80449	74984

Source: Various submissions

Based on the estimates of the size of the subsidy, at around KSh800-900 per 50kg bag for DAP (Table 9 above) or KSh16000-18000/ton, the subsidy cost has amounted to between KSh1.28bn (based on 80 000 tons at KSh16000 subsidy per ton) to KSh2.7bn (based on 150 000 tons at KSh18000 subsidy per ton).

Notwithstanding the uncertainty about the total volumes, it appears that the subsidised fertilizer has remained less than one-third of total fertilizer volumes. Since 2004, volumes of fertilizer imported have generally been around 400 000 to 500 000 tons.

Impact and targeting

A primary objective was to increase fertilizer usage by making it affordable to those farmers who had not used fertilizer because of the upfront cost involved. As a whole, it appears that the subsidy programmes have not significantly increased overall fertilizer usage. The programmes undoubtedly ameliorated some of the effect of the price spike in 2008, however, the average usage levels of DAP and Urea (based on imports) were not higher in 2012 to 2014 than in 2009 and 2010, and total fertilizer imports in 2014 were not higher than in the mid-2000s. There are many other variables affecting fertilizer usage, however, the absence of any growth trend in fertilizer usage over the past decade is very concerning. We note that the assessment of trends in fertilizer usage also has to recognise the volumes imported by the KTDA which have been around 70 000 tonnes per annum.

Under the NAAIAP programme, there was a stronger emphasis on developing the rationale for who would receive the input subsidies than under the FSP (Druilhe and Barriero-Hurle, 2012; Kiratu et al, 2014). The criteria for the NAAIAP were clearly aimed at those not using fertilizer, with small plots of land (less than one acre), in districts where the incidence of poverty was high and child and women headed households (see also Sheahan et al, 2014). It effectively prioritised poverty alleviation, however, the NAAIAP remained relatively small in terms of the numbers of farmers reached, as evidenced by the funding challenges that the programme has experienced causing it to be scaled down to approximately 60 000 farmers as of 2009. While the NAAIAP has continued since 2009 it has shrunk significantly and some counties have put in place their own relatively small programmes along similar lines.

Based on the structure of the NAAIAP programme and its administration, the targeting operated at the national and local level as follows:

i. At the national level, the prioritization of districts according to production capacity, poverty levels, previous use of inputs and prevalence of smallholder farmers focused the effects of the subsidy to the most potentially productive smallholder farmers who have not received support before but who need the subsidy support the most.

ii. At the sub-national or local government level, the peer review process to determine who would get the subsidy focuses the subsidy further to ensure that amongst those who were eligible to receive the subsidy, the most vulnerable had the first priority.

Under the NAAIAP programme the selected farmer is issued with a voucher. This farmer would then purchase the needed inputs from an accredited stockist through the voucher while finally the stockist would then redeem the vouchers received from farmers at a government contracted financial provider (Kiratu et al, 2014). At the point of purchase, the freedom to redeem vouchers at any accredited stockist allows the eligible farmers the cost saving of not having to travel long distances to enjoy the subsidy. This is a material difference with the FSP, as we discuss below.

The FSP had a national coverage. The objectives of national reach is evidenced by the engagement of NCPB's distribution network and 110 depots and selling centres across the country. According to the NCPB, the second subsidy programme is also targeted at small scale farmers. This intervention does make one specification at the national level, that farmers with less than 40 acres of land are the only ones eligible to receive the subsidy. The screening then relies on a process at the local level through the county agricultural officer and under the local chief. This verification process leaves it to the discretion of the vetting committees found in sub-locations and made up of an assistant chief responsible for farmers under his jurisdiction/sub-location, a church

leader, a women's representative and an agricultural officer of the county government. This committee confirms the needy people and the number of bags needed to determine who is eligible to receive the fertilizer subsidy.

If deemed eligible by the vetting committee, the farmer must then make a first trip to a NCPB depot where a second verification of the form is undertaken by an employee of the NCPB. Only after this verification is complete will the farmer deposit funds into an account specified by the NCPB's verification agent and make the journey back to the depot to claim their bags of fertilizer, meaning substantial travelling for those located far from an NCPB depot.

There are a number of concerns regarding targeting of the FSP:

i. The rationale for defining a small-scale farmer as being one with up to 40 acres of land is unclear. In addition, there are also provisions for farmers who require more than 500 bags (of 50kg each) to contact the Ministry of Agriculture directly. This does not seem to match the objectives of making inputs affordable to farmers who cannot buy them owing to poverty or lack of access to credit. If the FSP was to cushion farmers who had been purchasing fertilizer to cope with the price hikes, then it should have been temporary in nature with a clear limit on the maximum number of bags that can be obtained by a farmer.

ii. At the local government level, rather than the peer review process adopted by the NAAIAP programme, who is eligible for the subsidy programme is left at the discretion of a vetting committee which appears to be run by local government officials and the chief. This structure creates an opportunity for the local chiefs to rent-seek compounded by the much larger volumes at stake when compared with the NAAIAP. Questions arise as to whether the targeted poor, smallholder farmers would be able to afford any additional costs associated with the potential rent-seeking of local government officials.

iii. At the NCPB depot, the process of actually obtaining the fertilizer requires that the eligible farmer make two journeys. First to the depot for the second leg of the verification process and, if successful, for the collection of the fertilizer. The structure of this process requires that the targeted, poor, smallholder farmer has enough income to make the journey to the local NCPB depot, to the bank then back to the depot for collection of the fertilizer. In addition, the farmer must then transport the fertilizer back to their farm. There is an element of cost to the subsidy fertilizer that might force extremely poor farmers to self-select against actively seeking the subsidy. This element of cost that includes, transport and time (especially if the trips to the depot are repeated due to delays/shortages) work against the targeting objective of the second subsidy programme.

While the NAAIAP programme's greatest challenge appears to be its coverage of farmers, the discussion above illustrates that there are distinct characteristics of the FSP which undermine any claimed targeting at poor, smallholder farmers. These observations are reinforced by the views of stakeholders interviewed in the course of this inquiry. A recurring issue raised was that the subsidy, although intended for small-scale farmers, actually benefited those with larger commercial farms. As noted, this could be justified in the initial years by the need to cushion the impact of the international price spike, but it does not hold water in light of the growth in the subsidy programme in terms of both the subsidy per ton and the volumes supplied under the programme.

It is also not clear to what extent the subsidy programme has had the effect of increasing agricultural production. If the programme has not increased fertilizer usage (as appears to be the case) it simply represents a transfer to those receiving subsidised fertilizer, without increasing overall volumes used. To relate the subsidy programmes to agricultural output by targeted farmers would require data specifically on production by small-scale farmers.

Implementation factors undermining effectiveness

There are a number of considerations related to implementation which have undermined the effectiveness of the programme.

First, the timing and organisation of supplies under the FSP has been problematic. Farmers expecting to obtain fertilizer under the FSP will plan accordingly, reasonably expecting the deliveries to arrive as announced. Similarly, commercial suppliers appear to have adjusted their supplies based on expectations regarding the subsidised volumes (which reflects the fact that the subsidised volumes are largely replacing commercial sales rather than being additional to these for those who could not afford to purchase at commercial prices). In practice, there have been significant delays in the sourcing and supply of fertilizer. This was especially highlighted in the second round of interviews carried out between the 19th and 26th of February 2015. These interviews coincided with a significant time in the implementation of the fertilizer subsidy programme, the long rains planting season (March to May 2015). Despite the time sensitive nature of fertilizer application, the subsidised fertilizer had not reached farmers and was still at the port.

The 2015 delay in the disbursement of fertilizer was not a unique occurrence to the stakeholders interviewed, however, the 2015 delay in the disbursement of fertilizer was particularly harmful to farmers as a delay in the application of fertilizer increased the likelihood of a bacterial infection (necrosis) in maize, which had devastated the 2014 maize crop. The delays in the disbursement of fertilizer are against a backdrop of accusations of graft in the procurement and administration of the fertilizer subsidy especially with regards to the awarding of contracts for the supply of the subsidy fertilizer.

These delays effectively create artificial shortages in the market which are remedied by commercial market purchases. It is also likely that suppliers will factor in additional costs of storage and warehousing of products in the period when GOK

fertilizer is available or expected to arrive, particularly for those importers that bring in vessels early on to avoid congestion at the port. Added to this is the impact of uncertainty, which could lead to high overhead and inventory costs, as well as excess stocks.

Second, there are concerns with the controls in the system for fertilizer delivery and distribution. Subsidised fertilizer has not been restricted in practice in terms of who gains access to it, such that the target farmer groups effectively compete with larger farmers for access to a limited supply of subsidised products.

Third, there are also concerns regarding the volumes of GOK subsidised fertiliser that are bought and resold at higher prices, or sold into other countries although it has not been possible to estimate the extent of this practice without detailed consumption data.

Fourth, as noted above, the burden of transport falls on the farmer for the FSP, whether individually or in a collective group. Farmers incur costs in time and transport where NCPB depots are situated some distance from their farms. A farmer of two acres is unlikely to travel long distances for 2 bags of fertilizer especially if there are asked to keep checking back due to delays. Therefore, as structured, the farmers with the smallest farms are likely to self-select out of pursuing the subsidy.

The transport costs depend on the extent and location of NCPB's network of depots. Opening up the distribution to agro-dealers would ensure wider availability.

Distortions and possible impact on price

Given the initial findings here that the margins of local prices to farmers have been inflated over the costs of supply, would the subsidy programmes not have a downward impact on price? This is not the case, either in theory or in practice. The NAAIAP is very limited, while the volumes supplied under the FSP are fixed in advance. This means that, in effect, the market demand is a residual after subtracting volumes under the FSP and there is no impact of the subsidy programme on the

market clearing price, assuming FSP volumes are as planned and announced. The commercial suppliers make their assessments based on their understanding of demand less the FSP volumes. If more fertilizer was brought in under the FSP than had been announced then overall supply would be increased and prices could be suppressed. However, if less were brought in, or volumes were delayed as we have noted above, then prices could be increased, subject to the time for additional commercial supplies to be sourced and imported.

The farmers purchasing under the subsidy face a decision in terms of their marginal source of supply after they have received GOK fertilizer. This is because the fertilizer supplied by the GOK is of a fixed quantity which is known to the market. As such, when supply under the programme has been used, then farmers that require a marginal unit (bag) of fertilizer need to turn to the commercial market for supply at a higher price. Similarly, when there are delays in the delivery of GOK fertilizer and as the planting season draws to an end, farmers are effectively left with little alternative but to source from the commercial market.

By comparison, a subsidy which reduced the costs of traders in sourcing and supplying fertilizer, such as by reducing port costs, would have a direct effect on the price at which it could be supplied.

5.5 Summary and alternatives

Recalling that the core objectives of the fertilizer subsidy were to make inputs affordable to farmers to increase usage, such as to increase agricultural yields and rural incomes, the lack of sustained growth in fertilizer usage during the period of the subsidy is of particular concern.

Where the subsidy programme benefits farmers who have the financial capacity and would have otherwise bought from the commercial market the subsidy does not necessarily increase fertilizer usage. This is because these farmers would not necessarily buy more fertilizer from the market using the savings accumulated from

purchasing the GOK fertilizer. Farmers will typically only require a certain quantity of fertilizer for a season and, as such, having the subsidy in place is not likely to translate to greater volumes of fertilizer being consumed in the Kenyan market overall. This observation is consistent with the postulated effects of the current structure and administration of the subsidy, which suggest that mainly farmers with the financial capacity to buy from the commercial market have purchased the subsidized fertilizer.

It is important to note that there was a significant increase in fertilizer imports and usage in the period following the 2008 price shock. The fertilizer subsidy during this period may have indeed assisted the targeted beneficiaries as necessitated by the international price spike during this period and the effect of the post-election violence in late 2007 and early 2008. However, while the subsidy might have worked as an effective stop-gap measure when there was an international price spike in the 2008-2009 period and again between 2010-2011 (Figures 4, 5 and 6), in the medium term there is no evidence that the subsidy has sustained higher fertilizer usage relative to the pre-subsidy period taking into account the growth rate of the agricultural economy during this period.

There are strong arguments for targeted programmes to increase access to inputs for small-scale farmers with limited resources. This is especially the case where prices of the inputs are inflated due to inefficient and related transport costs and there are market imperfections in accessing finance and high levels of uncertainty due to volatility in input and output prices. There are also arguments for support of small farmers as part of addressing inequality. Such programmes critically depend on the mechanisms for selecting the farmers to receive support as well as the monitoring and control mechanisms. The larger the subsidy is, the greater the incentive for rent-seeking. The targeting is also critical to ensure that the redundancy is minimised where farmers who would have bought fertilizer in any case, benefit from the

subsidised volumes. The effect of the programme then depends on what they do with the additional income that they derive from the programme.

These failures or weaknesses in the system for fertilizer distribution seem to be widely recognised in the Kenyan market based on various interviews. Indeed, the view of some importers is that they would be happy to operate alongside a subsidised market if the GOK was able to ensure that only those farmers targeted by the programme gain access. This is consistent with the incentives of fertilizer importers who stand to benefit from GOK efforts to increase knowledge and usage of fertilizer amongst small-scale farmers which constitute the majority of farmers in Kenya. While these farmers purchase small volumes at a time, it is clear that the size of the commercial market stands to grow over time should a significant proportion of small-scale farmers take up fertilizer usage. This also speaks to the incentives of agro-dealers in so far as their businesses stand to benefit from an aggregate growth in the purchase of fertilizer by small-scale farmers over time as farmers 'graduate' through the subsidy programmes (such as under the Kilimo Biashara scheme, or if the cap on the volumes of fertilizer available to a single farmer or to farmers beyond a certain scale under the broad subsidy programme is effectively enforced). In the case of agro-dealers this is especially important in so far as the sale of fertilizer products acts as a 'gateway' to farmers purchasing other agro-chemicals.

There are also a range of administrative issues with the operation of the programme which if addressed could substantially improve the effectiveness of the funds spent on the subsidy. We summarise possible changes to address the various identified limitations in Table 10 below.

Table 10: Adjustments and alternatives to subsidy programme

Limitation	Description	Alternative/Adjustment
1. Poor targeting	At the national level, no clearly enforced threshold as to who qualifies as a small-scale farmer, provisions for 40	As with the NAAIAP programme, there needs to be a re-evaluation of the targeted 'small-scale' farmer. A threshold of maximum acreage e.g. 5 acres needs to be

	acre farms and possibly more to get subsidy fertilizer	set in line with the objective of availing fertilizer to those who could not afford it
	Potential rent-seeking by local government officials would exclude the very poor farmers not able to absorb those costs from getting the subsidy	Set clear guidelines on who is to receive the subsidy and why, then deliver the subsidy directly to these determined recipients cutting out the extra bureaucratic layer of local government
	The costs of actually obtaining the fertilizer might cause the very poor farmers to opt-out of getting the fertilizer	As with the NAAIAP programme, the ability to redeem fertilizer vouchers at the most convenient accredited input dealer would decrease the opportunity cost of the time and money taken to purchase the fertilizer for the very poor farmers
2. Inefficiency in sourcing and delays in the fertilizer disbursement	The government procurement process often leads to delays to farmers	Rather than the government undertaking the process of procurement, the government may delegate this to the private sector whose profit motive means they have an incentive to be timely in their fertilizer deliveries and like with the NAAIAP programme, reimburse private players for vouchers used by the targeted farmers Rivalry between traders could be coupled with performance standards including the on time sourcing and delivery, across the country, at low distribution costs
3. Substantial travel costs for some farmers	Using only NCPB depots means long distances for some farmers coupled with need to travel there several times	Allow for vouchers to be redeemed at any approved agro-dealer. Involving private operators, both agro-dealers and importers, in registering and competing for distribution of GOK subsidised products including alongside the NCPB. One aspect of this could be through appointing these operators to handle distribution in remote, local markets in which they are likely to have more adept distribution systems.
4. Graft in the procurement and distribution of fertilizer	There are irregularities in the procurement of fertilizer	Rationalizing the process of fertilizer procurement to the public by developing guidelines for the process, availing them to the public and adopting the principles of

		transparency, accountability and predictability in the process
5. Low levels of competition	Allocation of tender to one or two of major traders has reinforced low levels of competition affecting fertilizer prices more broadly	The subsidy programme could support the greater rivalry in fertilizer trading if the volumes were allocated to a number of traders and had the effect of increasing competition
6. Subsidy does not put downward pressure on prices	As subsidy is for fixed volumes it is largely a transfer to the designated farmers	The subsidy could instead be directed at measures to reduce the costs of shipping and transport, so as to reduce the prices of fertilizer across the board

Addressing these concerns related to the implementation of subsidy programmes is likely to have positive effects on pricing outcomes as well, which we discuss below. However, on the basis of available information, it has not been possible to estimate the extent of leakages and as such the potential gains from different interventions except to say that measures to address the seemingly sub-optimal implementation of the programmes would need to consider both the benefits and losses of private operator distribution as well.

6. Evaluation of competition in the fertilizer sector and recommendations for further action

Our assessment indicates price mark-ups above competitive levels, as least from 2012 to 2014. We consider possible types of anticompetitive conduct in section 6.1, before considering the observed pricing outcomes with regard to DAP in section 6.2. As indicated above, similar trends have been observed for Urea (and possibly to a greater extent) and less so for CAN. We do not have data on the prices of NPK blends, which would have to specify the particular blend. Section 6.3 considers the explanations in competition terms for the conduct observed in the market. We refer also to explanations provided by various market participants in interviews. Section 6.4 briefly reviews gaps, including in information, and ways forward.

6.1 Possible types of anticompetitive conduct

It is clear that the structure of fertilizer markets is often conducive to coordinated conduct. In general, cartel conduct is more likely to occur in markets where there is a high concentration of firms, relatively homogenous products, high barriers to entry, stable demand conditions, firm symmetry, multi-market contact between firms, and cross-ownership, among other facilitating factors (Bernheim and Whinston, 1990). A number of these characterize the markets for fertilizer in Kenya.

It is well accepted that cartel behaviour is detrimental to consumer welfare by raising prices above the competitive level and reducing output, and stifles competition as new entrants face substantial barriers to entry due to the actions of incumbents (Roberts, 2012; OECD, 2002). If dynamic rivalry is reduced consumers do not benefit from variety, improved quality and lower prices (Levenstein and Suslow, 2003). Collusive conduct and unilateral abuses of market power are particularly harmful when they occur in inputs to farmers, reducing production and having knock-on effects on markets for agricultural produce.

In most African countries, while there may be a number of fertilizer importers and traders, the market is typically dominated by two or three multinational players and specific fertilizer products are largely homogenous (see Ncube et al., 2014). This oligopolistic market structure reduces the incentive for firms to compete aggressively with one another and encourages them to keep out entrants. It is more profitable for firms to reach a coordinated outcome rather than entering into a price war which would erode the margins of each firm in the market. Through the sharing of information or if there are high levels of transparency between firms in the market, firms in coordinated arrangements can monitor compliance with the tacit or explicit cartel arrangement, and will establish a credible mechanism for punishing those firms that deviate from the agreement.

Coordination involves understandings with regard to how prices are set as well as on the volumes being supplied. An obvious way to have a 'meeting of minds' on prices across the firms is to use readily observed pricing points and build-ups, which are not necessarily the actual costs but rather include a higher margin. In this case, the international prices are readily transparent as a number of companies collate and publish data on a regular (monthly and weekly) basis, typically on free-on-board prices at major ports.[38] Actual prices are unlikely to be higher than these (as why would any buyer accept a higher price) but it is likely that large traders receive discounts on their transaction prices meaning that they already secure an additional margin. The 'standard' shipping can also be agreed on by the suppliers, as well as port and handling charges, financing costs and margins. Coordination around all these components essentially means coordination on the selling price. The collusive margin is achieved by choosing components in the build-up which are higher than those under effective competition. There are a number of indications that this has been happening in fertilizer in Kenya, including through information exchange.

[38] These include the Fertilizer Market Bulletin and Fertecon.

Information exchange between market participants facilitates collusion by disclosing information on market strategies to competitors. It increases market transparency and reduces strategic uncertainty about competitors' actions (das Nair and Mncube, 2012). In this way the information can be used to monitor adherence to agreed prices and/or volumes and thus ensure the durability of the cartel arrangement. In many cases industry associations have been used as platforms for establishing and monitoring agreements, including through the sharing and dissemination of disaggregated industry information (Levenstein and Suslow, 2006). For instance, in the South African fertilizer cartel, the major firms were the main members of several industry bodies and associations including the Fertiliser Society of South Africa through which market share data by region could be monitored by the participants (das Nair and Mncube, 2012) (see Box 1 below). Sasol subsequently admitted to the conduct in its settlement agreement with the Competition Commission.[39] The South African fertilizer cartel also involved an agreement about price and cost build-ups including which international benchmark prices to use and the cost add-ons to get the agreed list prices, even while companies did discount somewhat at the wholesale level in order to allow for small dealer margins.

For this inquiry, it is important to identify the possible extent of coordination amongst domestic players based on setting mark-ups above international price benchmarks and costs. In addition, there may be coordinated international arrangements impacting on Kenya. As the supplies of fertilizer are largely imported, the main suppliers are international in scope. For example, coordination between suppliers of potash (one fertilizer component) is well known (Jenny, 2012).

Another set of conduct is that which excludes rivals and raises barriers to entry. This has not been the main focus of this inquiry as supply is simply about being able to import and distribute. Regulations may raise entry barriers and this has been an issue

[39] See Consent Agreement in the matter between The Competition Commission South Africa and Sasol Chemical Industries, Competition Tribunal Case No.: 31/CR/May05.

looked into. Obstacles to rivals can be erected through restricting access to port, warehousing and distribution facilities. Market power can thus be exercised at different levels of a supply chain through the control of key infrastructure or essential facilities. For instance, in fertilizer trading, this could include control by a firm or group of firms over the usage of key infrastructure at the ports for offloading imports which creates incentives for the extraction of rents.

In many cases, import quotas and restrictions on trade in small concentrated markets serve to maintain the market power of incumbent firms and protect dominant players, or cartel arrangements, from the disruptive entry of new competitors. There can also be restrictions in the form of licencing required. Indeed, exclusionary conduct and collusion may well be reinforcing. If there are inflated margins being made through collusion of suppliers then this will attract rival traders. Only by finding ways to impede such entrants can a cartel protect its position. There may also be regulatory barriers to protect local interests, or obstacles in the form of high costs and inefficiencies in the transport system.

Box 1: Information exchange in the South African fertilizer cartel

Various bodies were used by market participants to coordinate the sharing of information which had the effect of increasing transparency and the ability to monitor competitor behaviour (and possible deviations from the arrangement) in the market. These bodies included the Nitrogen Balance Committee (NBC), the Import Planning Committee (IPC), the Export Club, and Fertiliser Society of South Africa of which the main members were the primary fertilizer companies. The main forms of information shared through these different platforms were as follows:

- NBC: The purpose of the NBC was to ensure security of supply where there were shortages of ammonia products. Members submitted information on forecasts and requirements per region and planned imports for key fertilizer products. This included stock availability, capacity, usage and surpluses and deficits. Information was also disaggregated by nitrogen usage between competing end-uses and circulated to all members of NBC.
- IPC: The IPC was used to share data relating to imported fertilizer volumes, available shipping capacities and other logistical costs.
- Export Club: This platform was used to share information on fertilizer sales that were to be exported in order to coordinate bids for the supply/exports of products to the Southern African region through traders.
- Fertiliser Society of South Africa: The association collated information received from members on market shares based on sales data. This allowed for deviations from agreed market shares to be detected, which could be caused by aggressive discounting by one player in a particular local market.

Through these mechanisms, transparency was assured in the market. Although there may have been some smaller players in particular regions, in most cases the three main players would be present in each region due to their scale and size. By monitoring domestic market shares, as well as exports and imports of products, each member would have a clear idea of the size of the market and the behaviour of competitors within it. It is also important to note that there was an agreement on how list prices would be determined, through adding on agreed costs to the international benchmark prices to get local prices in different regions.

In fertilizer markets competition would otherwise take place through aggressive discounting to customers given that the products are relatively homogenous. A monitoring mechanism through information exchange helps to detect cheating from the arrangement to gain market share.

(Adapted from das Nair and Mncube, 2012)

6.2. Analysis of DAP fertilizer prices and costs in Kenya

In this report we have focused on assessing prevailing and supply prices in Kenya, as reflected primarily in the Amitsa data which provides data for different locations and national average delivered (list) prices for fertilizer, which predominantly reflects inland pricing. We have analysed this pricing against what would be expected under competition. In the absence of detailed pricing and cost data having been supplied by market participants (although it was requested), the evaluation of the price and cost data in section 4 above relies on data from Fertilizer Companies A, B and C, and Company X. The analysis could be developed further to be more robust in the context of an investigation where further data from market participants could be obtained.

In Table 4 above, we compared the cost items provided by various market participants to establish useful benchmarks of the costs involved in importing and distributing fertilizer. This includes international fob prices, freight costs faced by different suppliers, a combination of charges incurred at the port of Mombasa, as well as costs such as inland transport to Kitale/Eldoret. Through adding these costs together, and considering a reasonable margin (where it was not already included in the data provided), we estimate an imputed price using three different methods to ensure robustness in the analysis. Specifically, we derive imputed prices – the prices that should prevail using objective cost benchmarks from different sources – using Fertilizer Company C and Company X submissions. Where data was incomplete, inconsistent or unavailable, we have made certain assumptions including deflating available estimates for the 2014/5 season to obtain estimates for previous years, and applying quoted exchange rates where they differed from those of Company X.

The imputed prices, which are effectively estimates of competitive prices that account for costs and a reasonable profit margin for importers and agro-dealers, were then

compared to the Amitsa average DAP prices to Kitale/Eldoret for February to April (in line with the peak of demand ahead of the annual long rains) in each year.

Through calculating the difference of the imputed prices with the average DAP prices we find that there were substantial supra-competitive mark-ups in 2012, 2013 and 2014 of around 20% to 40% (Table 11).

Table 11: Summary of estimated mark-ups for DAP over imputed competitive inland prices

	2010		2011		2012		2013		2014	
	Co. X	Fert. Co. C	Co. X	Fert. Co. C	Co. X	Fert. Co. C	Co. X	Fert. Co. C	Co. X	Fert. Co. C
Mark-up over imputed price	-45	-25	3	54	1193	1174	799	608	810	569
	-1.8%	*-1.0%*	*0.1%*	*1.6%*	*37.8%*	*35.6%*	*26.7%*	*19.1%*	*29.7%*	*19.2%*

Note: Based on table 4; *Percentage mark-ups over imputed price indicated in italics*

As discussed above, the margin analysis reflects an important dynamic in the market. For the years 2010 and 2011, a period which we associate with increased levels of competition from smaller new entrants such as ETG and Afriventures, the average prices in the market were close to those which are estimated to be the competitive benchmark price for the market, i.e. the imputed prices. This suggests that the market was contestable after the 2008/9 price spike and entrants were able enter the market and compete away high margins. This may also be linked to the impact of the GOK's 'growth' as a major player through the subsidy programme.

However, for 2012 and 2013 following the sharp increase in prices in the market at the end of 2011, prices seem to have increased and remained at higher levels as reflected in the margins estimated using a range of different parameters. This is despite the fact that CIF prices had come down in these years and inland costs had not increased sufficiently to explain a sustained increase in average prices. It is this aspect that is especially relevant in this inquiry, which we explore in the following section. Specifically, we seek candidate explanations for mark-ups above 30% in 2012 (more than KSh1 000 per bag), up to 26.7% in 2013 (around KSh800 per bag), and 19.2% (or

KSh570 per bag) in 2014. Similar price patterns were observed for urea, and less so for CAN. Based on a conservative estimate of non-speciality commercial market volumes of around 300 000 tonnes per annum this implies annual over-charges of KSh1.2bn for a mark-up of KSh800 per bag.

6.3. Assessment of observed outcomes and competition issues in the Kenyan fertilizer market

Prices in markets are known to be sticky downwards meaning that while they may easily rise to reflect an increase in costs, they may not decline as easily. In the Kenyan market, the prices of fertilizer rose substantially towards the end of 2011 and do not appear to have returned to previous levels. There have been several explanations put forward for the sharp increase in prices. However, none have been put forward to explain the sustained high prices and margins, even where costs internationally and domestically seem to have declined or remained at similar levels. In most markets, a sustained high margin of this nature relative to costs which we have estimated using a range of different methods, would suggest the possible exercise of market power jointly by market participants, or unilaterally in local market segments.

Candidate explanations for the sharp increase in prices at the end of 2011 include a possible shortage in the market for the forthcoming long rains in early 2012 created by the dispute regarding the NCPB fertilizer subsidy tender, which was discussed above. However, as we note in the earlier discussion on the subsidy programmes, these shortages are only likely to result in temporary price increases and not sustained increases as observed in this case. Another explanation is the increase globally of fertilizer prices and lagged effect of these increases. However, as reflected in section 2, the international prices for fertilizer decreased in 2012 from above $600/ton for DAP, to below $500/ton by the end of 2012, and further in 2013 (Figure 2).

This suggests that other factors may be sustaining prices well above competitive benchmarks over this period, even where costs have come down. It was

acknowledged by market participants that there are benchmarks which are widely communicated amongst suppliers, including in presentations made by them through the FAK to government. These include the international benchmark price and shipping costs being 'used' in local pricing, although these are not the prices and costs actually incurred by the traders. There are also a number of queries around the local cost components, such as the actual costs of bagging and of local transport. In addition, the FAK states that it considers a 16% financing cost is appropriate, although this is far in excess of actual financing costs.

This appears to be prima facie distortion of competition in contravention of s21, under the auspices of the FAK. The role of the FAK is further likely to be important in a number of respects. To the extent that the FAK is involved in collecting and sharing information between its members this could constitute grounds for horizontal coordination. The available information from interviews was mixed. Interviewees suggested that the FAK has, since its revival in 2009, not had a secretariat and has been disorganised in its functions. However, it has quite regular meetings and there are apparently minutes although these were not provided (with the excuse that they needed to first be 'edited'). This is obviously unacceptable. When questioned, members (unsurprisingly but not necessarily plausibly) indicated that no information is collected by or shared within the association and that members are generally protective of their sensitive information when the FAK does meet 5-6 times a year. The participants suggest that these meetings are often only to coordinate the efforts of importers when approaching the GOK in discussions regarding the adverse effects of the subsidy programme on importers. However, it is evident that the FAK has collectively set out pricing parameters to justify the high levels of pricing in the Kenyan market. These include in representations made to government and have a forward-looking impact. The representations set out the basis on which the market participants' should price, including their supposed cost build-ups, and are not related to the actual costs of the suppliers. This conduct is apparently in contravention

of sections 21 and 22 of the Competition Act of Kenya in lessening and distorting competition.

Such pricing standards are widely viewed to be competition violations. For example, the European Court of Justice's *T-Mobile* decision indicates that the law clearly precludes any direct or indirect contact which may influence the conduct on the market of actual or potential competitors.[40] It indicates that for a concerted practice to be regarded as having an anti-competitive object it is sufficient that it has the potential to have a negative impact on competition. It must simply be capable, in an individual case, having regard to the specific legal and economic context (such as product homogeneity and market concentration), of resulting in the prevention, restriction or distortion of competition within the common market. The latest case confirms that information exchange can be an infringement under European Law by object. The case related to communications between suppliers of bananas before they each set their quotation prices. The EU Court of Justice decision in March 2015 confirmed that communications can be anti-competitive by their very object without requiring an analysis of their effect on competition in the market.[41]

As discussed above, coordination between market participants can also take place in a more tacit manner, particularly where there are already high levels of transparency in the market. For instance, participants may choose to coordinate on setting fixed margins to charge on prices based on common international benchmarks, which was a feature of the South African fertilizer cartel. This may involve suppliers agreeing once-off to set prices in relation to, say, the US Gulf fob price for a product, and apply a certain margin onto this benchmark to determine the domestic price, even where an individual supplier has sourced actual products sold in Kenya from a different, cheaper source.

[40] Case C-8/08.
[41] EUCJ, case C-286/13 P

This mechanism would be consistent with prices which are found to be on average consistently well above competitive benchmarks as estimated above. It is also quite consistent with vigorous rivalry at the level of agro-dealers in local markets. Certainly a consistent theme in the interviews conducted with agro-dealers in Nakuru and Nairobi suggests that margins of agro-dealers are extremely narrow and many dealers will sell fertilizer as a loss-leader to attract buyers for their other more lucrative products.

Through exercising tight pricing control through the value chain, including potentially recommending prices at various levels, a cartel arrangement could be sustainable. In the present case we note that the period prior to the price spike in 2011 was likely a competitive period. In this period, the imputed prices were virtually aligned with the Amitsa average prices. This suggests that our estimate of a competitive price is conservative (and not too low), as it is in line with and even above some of the measures for 2010, when the market was still highly concentrated at the importer level.

The high levels of concentration combined with the homogenous nature of the product and the requirements of shipping mean that it is relatively easy for firms to monitor each other. In particular, all shipments effectively have to come through Mombasa port and to be cost effective have to be sourced in relatively large shipments which are easy for those at the port to observe. Over much of the period two major commercial operators, Yara and Mea Ltd, have dominated supplies. The smaller suppliers in fact also rely on the larger ones for some of their supplies and to co-organise shipping. Only more recently does it appear that smaller rivals such as ETG have sought to contest more vigorously including looking for lower cost international sources.

It is surprising that ETG was not a more significant supplier earlier given that it has rapidly expanded into countries such as Zambia (see Ncube et al. 2014), has extensive

operations across the continent, and is originally a Kenyan company. One possibility is that ETG won the main tenders under the FSP in exchange for it not competing vigorously in the commercial market. However, when GOK went outside the traditional FAK members in awarding the three year tender to Holbud in 2013 this might have led to ETG changing its stance in 2014 and the more competitive outcomes being observed (although prices still appear somewhat above competitive levels). At the time it was reported that the awarding of the tender to an outside trader occurred after the FAK members had refused government's requests to justify their pricing.[42]

While further evaluation of the subsidy programme is required, overall its impact appears to have been limited in terms of increasing overall fertilizer usage. Those farmers who have accessed the subsidy have undoubtedly benefited from the lower price it means, but its impact depends on what these farmers did with the money they saved and whether they would have bought the fertilizer in any case. This goes to the effectiveness of the targeting of the subsidy, the size of the subsidy and the volumes to which it applies. Ideally the subsidy should change behaviour at the margin, ensuring that those who would otherwise not apply fertilizer, or very small quantities, will increase their usage. If the subsidy is largely used by those farmers who would use the same quantities in any case then it is effectively redundant.

The subsidised volumes have also sometimes come in late, and have led to uncertainty. This has meant those farmers who are targeted recipients have not been able to plan effectively, have possibly not been able to apply fertilizer when optimal or have had to buy on the commercial market when they had expected to be able to access subsidised fertilizer. There are separate concerns about whether the programmes have been targeted appropriately.

[42] http://www.standardmedia.co.ke/article/2000094632/cutting-out-kenyan-firms-in-fertiliser-imports-right-move

6.4 Conclusions and recommendations

There are strong indications of anti-competitive conduct which has caused substantial harm to farmers purchasing fertilizer in the commercial market. This includes coordination around pricing benchmarks which appear to have served to increase and maintain prices substantially above competitive levels. In addition, there are indications of market allocation.

The supply of fertilizer in Kenya has been highly concentrated with Yara and Mea the largest parties. Mea is also the chair of the FAK. Yara is one of the world's largest fertilizer suppliers and is a party to the cartel arrangements admitted by Sasol in South Africa, albeit persists in contesting the findings on technical legal grounds.

The ability of the inquiry to draw firm findings was hampered by the refusal of market participants to provide detailed information. Indeed, the unwillingness of participants to provide information and documents which are clearly in their possession (including but not limited to minutes of FAK meetings) reinforces suspicions. It also points to an issue with the information gathering powers of the CAK under inquiries.

In so far as one purpose of an inquiry is to point to possible areas for investigation, where there are powers to compel parties to provide information, then the information gaps can be readily addressed after an investigation is initiated. We recommend such an investigation is initiated with regard to possible anti-competitive conduct on the part of fertilizer suppliers and the FAK, including but not limited to restrictive practices which distort, limit or prevent competition.

It is likely that possible arrangements relating to coordination of fertilizer supply in Kenya were part of wider arrangements across the region. The pattern of pricing observed in Kenya is similar to that in Tanzania (Ncube et al. 2014). In addition, if there were substantial differences in pricing between Kenya and Tanzania it is likely there would have been cross-border arbitrage. Indeed, it appears as if the price (and margin) increase happened slightly earlier in Tanzania. The CAN prices also increased

less in Kenya than in Tanzania, and also less in Kenya than was the case for the other fertilizer products suggesting that whatever understandings were reached were not water-tight. These are all issues which can be pursued in an investigation, especially if there was coordination with other countries in East Africa.

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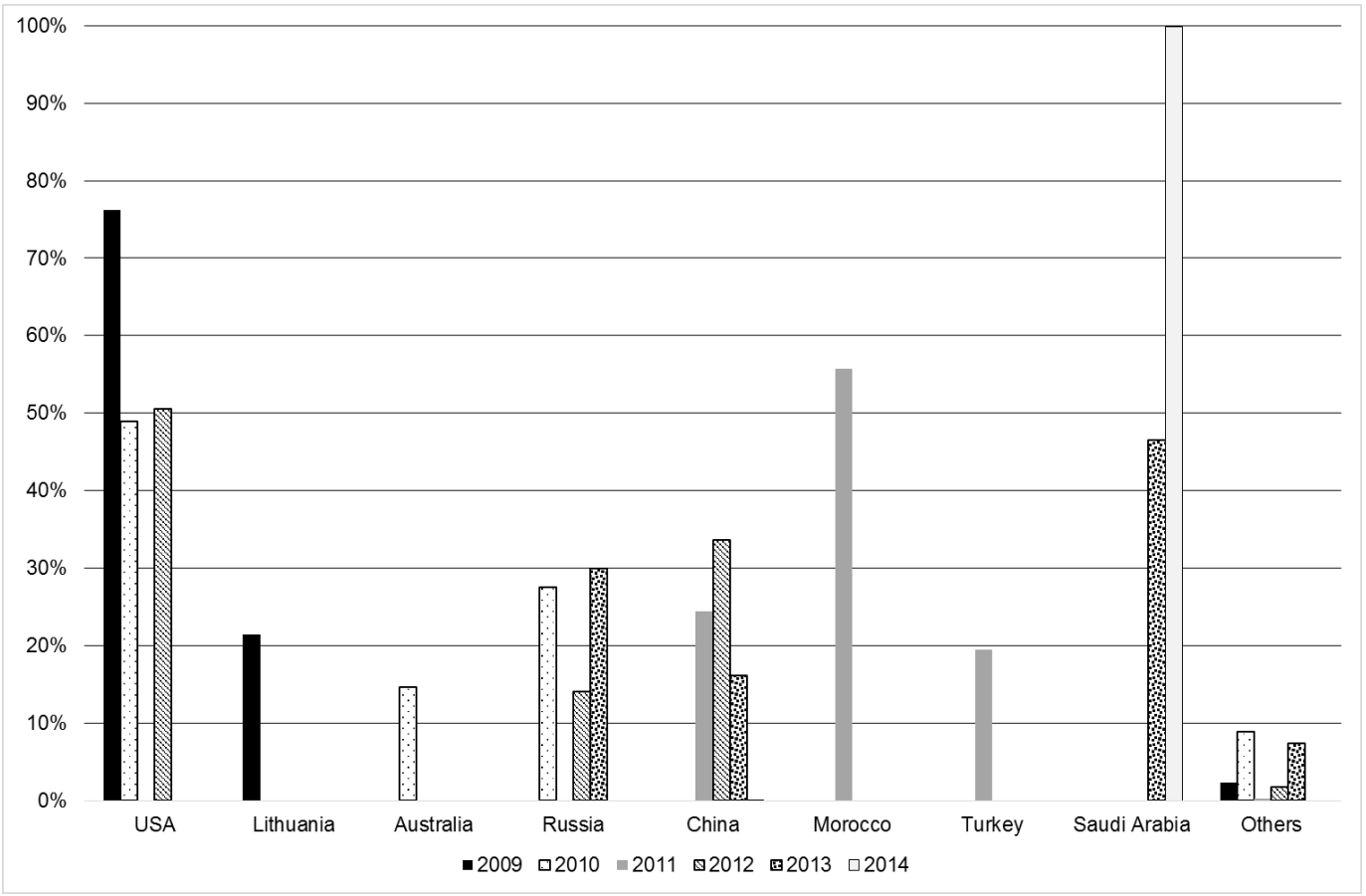
Annexures

Appendix A1: Fertilizer imports and re-exports, 2009-2014

	2009	2010	2011	2012	2013	2014
Imports	474 234	420 052	522 472	443 144	688 750	496 651
Re-exports	50 113	22 855	31 178	29 655	28 537	40 549

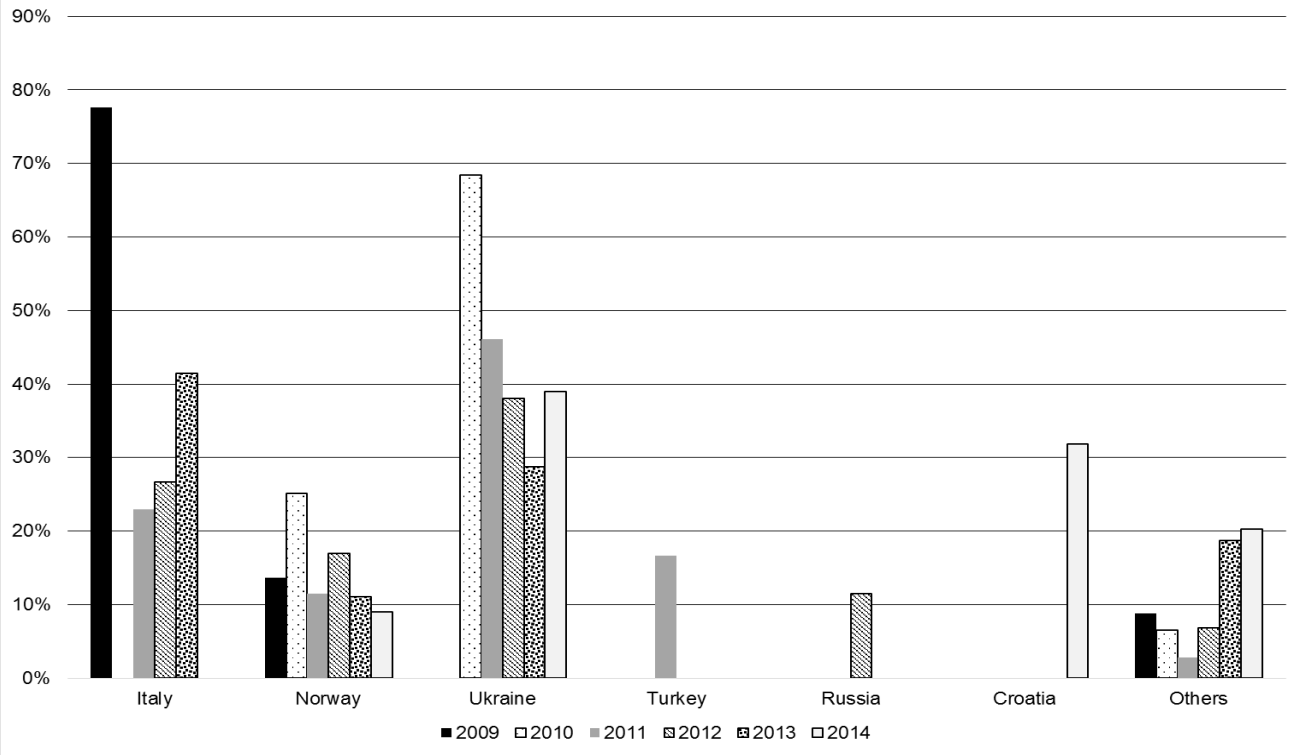
Source: KRA

Appendix A2: DAP imports to Kenya by source country, 2009-2014



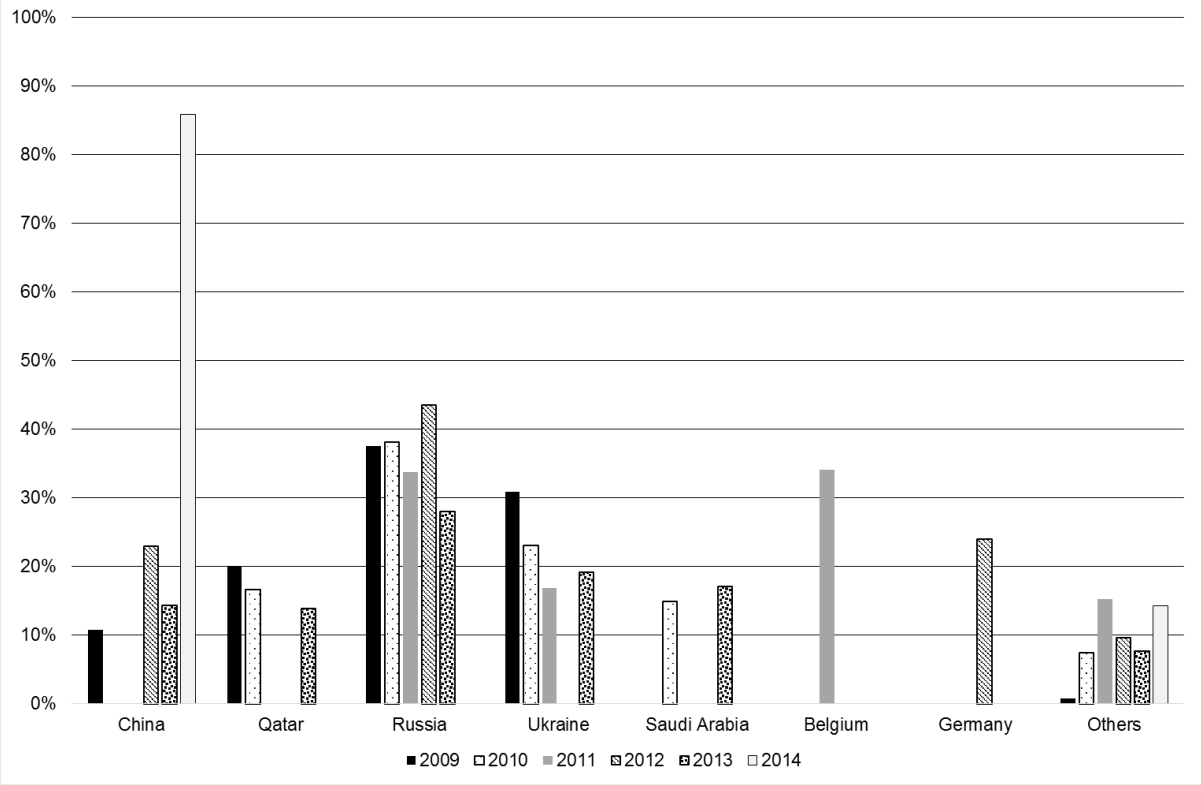
Source: KRA

Appendix A3: CAN imports to Kenya by source country, 2009-2014



Source: KRA

Appendix A4: Urea imports to Kenya by source country, 2009-2014



Source: KRA