MINISTRY OF AGRICULTURE, LIVESTOCK, FISHERIES AND COOPERATIVES

(STATE DEPARTMENT FOR CROP DEVELOPMENT &AGRICULTURAL RESEARCH)

REVISED REGULATORY IMPACT STATEMENT (RIS)

THE FERTILIZERS AND ANIMAL FOOD STUFFS (FERTILIZERS) REGULATIONS, 2022

APRIL 2022

1.0 Introduction

The Regulatory Impact Statement for the proposed Fertilizers And Animal Food Stuffs (Fertilizers) Regulations, 2022 was prepared in accordance with the provisions of sections 6 and 7 (1) and (2) of the Statutory Instruments Act, 2013. Section 6 of the Act requires the Regulation Making Authority to prepare a Regulatory Impact Statement for the proposed regulations indicating the costs and benefits of the proposed regulations on the public and stakeholders. Section 7(1) and (2) of the Act set out the contents of a regulatory impact statement for the proposed regulations as follows:

2.0 A Statement of the Objectives and Reasons for the Proposed Regulations

The general objective and purpose of the regulations is to give effect to the provisions of the Fertilizers and Animal Foodstuffs Act. The specific objectives are to:

a) Regulate the importation, manufacturers, production, distribution and retailing of fertilizers and fertilizer raw materials;
b) Regulate the marketing and distribution of fertilizers and fertilizer raw materials;
c) Licence the importers, manufacturers, producers, distributors and retailers in the fertilizer industry;
d) Prescribe the list of approved fertilizers and their standards; and
e) Prescribe the process of inspection and analysis of fertilizers and fertilizer raw materials.

3.0 Statement on the Effect of the Proposed Regulations

3.1 Effect on the Public Sector

The Constitution of Kenya 2010 provides for two levels of government namely the national and county governments. The two levels of government have specific, residual and concurrent functions and powers as provided for under Article 186 and the Fourth Schedule. The two levels of government should cooperate with, support, consult and liaise with each other to exchange information, coordinate policies and administration and enhance policy. The Fourth Schedule of the Constitution has assigned specified functions on Agriculture to the National Government and the county governments. The roles of county governments include agriculture (crop husbandry); implementation of programmes in the agricultural sector to address food security in the county; development of programmes to intervene in soil and water management and conservation of the natural resource base for agriculture; land development services for horticultural production for food security and others. Specifically, the county governments are mandated to implement specific national government policies on agriculture, natural resources and environmental conservation.

The proposed Regulations will have both direct and indirect (secondary) effects on the public sector in the following ways: -

A. Direct Effects on the Public Sector

i. The Government will establish coherence and order in the fertilizer industry which has largely remained poorly organized and structured for harmonized regulation. This will enable the fertilizer to effectively contribute to the agricultural sectors' and national development objectives including food security, agro-industrialization and employment reaction.

ii. National fertilizer quality standards will be applied across all segments of the industry thus ensuring consumer protection for all fertilizer users and consumers of agricultural produce produced in the country.

iii. The Fertilizer and Animal Foodstuffs Board of Kenya (FABK) establishes fertilizer industry sector structures, systems and implementation framework for more effective fertilizer industry regulation and planning.

iv. Protect the local industry from counterfeit, illegal importation and exports of fertilizer products and materials which may distort the local market or introduce poor quality fertilizers into the country.

v. Facilitate the development and maintenance of a real-time database of all fertilizer industry actors and their respective roles, and fertilizer production, manufacture, packaging, importation and marketing of fertilizers for planning and monitoring purposes.

vi. County governments will have clear specified roles including regulatory roles in the fertilizer industry at the local/county level including licensing of retailers in accordance with county legislations, maintaining a register of licensed retailers and sharing returns on the same with the Board; nomination of inspectors; maintaining and sharing with the board records on fertilizer types, production, quantities, sales and stocks.

B. Secondary Effects on the Public Sector

i. The broader agricultural sector and national economy will benefit from the increased agricultural production, improved produce quality, enhanced food security and agro-processing, increased exports; and thus increased foreign exchange earnings; whilst creating employment for the increased production and processing.

ii. Leakage of government-subsidized fertilizer into the commercial market will be reduced in an efficiently regulated fertilizer industry with all outlets being duly licensed and monitored by the county governments and the Authority.

iii. The statutory payments, levies and fees prescribed in the Regulations will increase revenue collection from the provision of the different services enlisted in the regulations for the Authority.

iv. The contribution of the agricultural sector to the national economy will increase resulting from increased production and productivity from increased use of quality fertilizer products.

3.2 Effects on the Private Sector

The proposed Regulations will also have both direct and secondary effects on the private sector in the following ways:

A. Direct Effects on the Private Sector

i. Fertilizer industry players in the production, manufacture, packaging, importation, exportation and marketing of fertilizers among others will stand to benefit from a streamlined, competitive and well-regulated fertilizer industry protected from unfair trade practices and other malpractices including counterfeits, illegal imports and protect genuine fertilizer dealers especially the big industry players from unfair trade practices from unlicensed and often temporary fertilizer dealers.

ii. Use of unregistered, counterfeit, fake or repackaged fertilizers in Kenya especially among smallholder farmers will be reduced or eliminated as only licensed outlets will sell fertilizer with close monitoring by the County governments and the Board.

iii. Uniform standards will be applied across the country which will ensure that farmers across the country will only access fertilizer that meets the set quality standards for use, thus getting value for their investment in fertilizer.

iv. The licensing of all actors across the fertilizer industry will ensure that only eligible bonafide persons/entities who have the right facilities and meet all set requirements will be allowed to operate in the industry and all existing rogue agents will be eliminated from the industry eliminating unwarranted competition from such agents which will promote sustainable businesses in the industry.

v. Regular inspections and quality analysis will serve to re-affirm the quality of fertilizer in the market and will ensure only registered and good quality fertilizer is in the market and allows for discarding that which does not meet the standards. This will protect the market reputations of the fertilizer agents and brands in the market.

vi. The process of importation and export of fertilizers will be transparent and accessible to all eligible persons allowing for an even playfield for fertilizer importation for own use or re-sale and exports, thus avoiding domination by a few agents.

vii. Maintaining data and records by the Board and county governments on licensed industry actors, their products and location and fertilizer production, sales and stock movement will enable private sector actors in the fertilizer business to be better informed to plan their businesses and make informed business decisions.

viii. New investments and local industry developments in fertilizer manufacturing and blending will promote fertilizer product diversification to meet specialized product demands to address specific problems such as soil acidification or crop nutrition requirements.

ix. Enhanced local capacity in fertilizer manufacturing and blending will reduce the cost of transport of fertilizers which is one of the most important factors contributing to high local fertilizer prices and thus improve fertilizer affordability and usage.

x. The proposed regulations below will increase the cost of doing business through the different levies and fees proposed in Schedule IV of the regulation for all actors in the industry. The relevant costs under the Regulations are listed below;

S/No.	Category	Type of Fees	
		Kshs.	Remark
a.	Application Fee for Approval of Fertilizer	10,000	Payable Once
b.	License Fee as an Importer	10,000	Payable Annually
c.	License Fee as a Manufacturer/Producer	10,000	Payable Annually
d.	License Fee as a Distributor	5,000	Payable Annually
e.	Fertilizer Verification Import fee per MT	125	Per MT

As evident above, this increase in the cost of doing business will likely be transferred to the fertilizer consumers through retail price increases, reducing fertilizer affordability and usage.

xi. The regulations may be viewed by industry actors as introducing duplication of or multiple fees in the industry to the already other existing fees and levies payable to the KEPHIS,

PCPB, Veterinary department, county governments and among other government agencies and which may be viewed by many as harassment by such actors and especially of the small agro-dealers.

xii. To the large industry actors including importers, the regulations may introduce bureaucracy and hurdles to delay business transactions due to the prescribed importation requires for each consignment.

B. Secondary Effects on the Private Sector

i. Agricultural producers will benefit from the increased agricultural production, improved produce quality, increased sales and thus increased earnings and returns on investment for improving the livelihoods of farmers.

ii. Increased returns from increased agricultural production will increase the capacity of farmers to increase fertilizer usage resulting in fertilizer market growth.

iii. Leakage of government-subsidized fertilizer into the commercial market which distorts the market will be reduced in an efficiently regulated fertilizer sector with all outlets being duly licensed and monitored by the county governments and the Board.

iv. A well-structured and regulated fertilizer industry will attract new investments in the production, manufacture, packaging, importation export and marketing of fertilizers which will promote competition in the industry to the consumers' benefit.

v. Create more employment opportunities in the industry through new investments and the separation of roles in the industry and the increased agricultural production.

vi. Wide compliance to the set fertilizer quality standards will ensure that agricultural produce produced in the country is devoid of undesirable minerals such as cadmium and other heavy metals which are harmful to human health or may limit export markets access.

vii. The requirements set for licensing of fertilizer business premises may make many current industry actors, especially the small fertilizer retailers and Agrovets ineligible for licensing under these regulations and may be forced out of this business or be required to make heavy capital investments in their facilities to meet these requirements

3.3 Effects on Fundamental Rights and Freedoms

The proposed Regulations shall have a positive impact on fundamental rights and freedoms in the following ways:-

i. **Consumer Protection**

Article 46 of the Constitution guarantees the consumers the right to goods and services of reasonable quality, information necessary for them to gain full benefit from goods and services, protection of their health, safety and economic interests.

The Regulations seek to promote the realization of the rights of the consumers. For instance, regulation 19 prohibits manufacturers or producers of fertilizers from the use of raw materials for manufacturing, producing or blending fertilizers unless it is approved by the Board. Further, producers and manufacturers are mandated to present to the Board details of the source of the raw materials, test results showing the chemical composition of the raw materials from a credited lab and a declaration that the raw material is free from or has tolerable amounts of restricted and/or deleterious material as provided by KEBS. Additionally, regulation 22 requires the package of fertilizers to contain information including, the name of the fertilizer, brand, instructions for use, nutrient guarantees, country of origin, date of manufacture, date of expiry, handling and storage instructions among other things.

The provisions of the Regulations highlighted above seek to ensure that consumers are protected from the consumption of harmful fertilizers and have the necessary information relating to fertilizers in accordance with the Constitution.

ii. **Fair Administrative Action**

Article 47 of the Constitution guarantees the right to fair administrative action that is expeditious, efficient, lawful, reasonable and procedurally fair. Further, where a right is likely to be adversely affected by administrative action, the person has a right to be given written reasons for the action. This provision is reflected in the draft Regulations under regulation 8 where the Board is mandated to issue a license to importers of fertilizers or raw materials within 7 days and where the application is declined, the Board is required to give reasons in writing within 14 days. Similarly, regulation 14 of the Regulations mandates the Board before suspending a license to give written notice to the licensee. The Board is also required to issue grounds for suspension of a license to the licensee within 21 days of the notice. This is a reflection of expeditious fair administrative action which offers the licensee the reasons for revocation of the license and also written reasons for such actions of the Board.

iii. **Right to Clean and Healthy Environmental**

The proposed Regulations are keen on enforcing the right to a clean and healthy environment. For instance, regulation 20 obligates persons handling fertilizers or fertilizers raw materials to ensure

the safety of the environment. Further, regulation 27 mandates inspectors to dispose of seized fertilizers in a safe manner that is not destructive to the environment. This provision is in line with article 42 of the Constitution which guarantees the right to a clean and healthy environment.

iv. **Access to Information**

Article 35 of the Constitution guarantees the right of access to information held by another person and is required for the exercise or protection of any right or fundamental freedom. This is reflected in the proposed Regulations under regulation 28 which obligates every person manufacturing, producing, blending fertilizers to keep and submit the records of fertilizers by types with information on the production quantities, sales and stocks to the Board and the county governments. The information maintained by the Board and the county governments even though marked as confidential may be accessible to the public as necessary for the subsector.

3.0 Statement on Regulatory & Non-Regulatory Options

3.1 Option 1: Maintaining the *Status Quo*

Before considering new interventions, it is important to consider whether the problem could be resolved by making changes to practices within the existing legislative framework, thus maintaining the status quo. For examples: -

i. Making use of existing laws, regulations and/or guidelines;
ii. Simplifying or clarifying existing regulations;
iii. Improving enforcement of existing regulation; or
iv. Making legal remedies more accessible or cheaper.

3.2 Option 2: Passing the Regulations

Government can achieve its policy objectives by using taxpayer's money or through a range of non-spending interventions, including regulation. Regulations aim to set rules to protect and benefit people, businesses and the environment, stabilizing markets and addressing market failures to support economic growth. Regulations can also create costs for businesses, third parties and the public sector. It can if overused, poorly designed or implemented, stifle competitiveness and growth in the fertilizer industry. Adoption and operationalization of the proposed regulations will: -

i. Support increased efficient participation of industry players in the fertilizer industry, allowing for a more efficient industry that will support the Country's agricultural development agenda as envisaged in the Big 4 agenda, Vision 2030 and ASTGS.

ii. Enhance access to quality approved fertilizer products to meet the increasing demand for fertilizer products through reduced fake, counterfeit and smuggled products in Kenya.

iii. Streamline and coordinate players within the industry to promote compliance to the industry quality standards, promote transparent fair trade practices and remove underhand dealings that negatively impact the industry.

iv. Develop and maintain a realistic database on the industry inclusive of the list of approved fertilizer products, all licensed industry players including retail/agro vet outlets and fertilizer facilities in Kenya for better control and planning.

v. Develop local fertilizer manufacturing, production and blending capacity to compliment fertilizer imports and reduce dependence on imports to reduce the impact of fluctuations in fertilizer global market trends; and enhance local capacity for fertilizer products

diversification to meet specific soil fertility management needs including management of acidified soil and specific crop nutrition requirements.

These regulations are thus important for streamlining and organizing the fertilizer industry for its further development and to enhance its role in supporting the development of the wider agricultural sector.

3.3 Option 3: Other Practical Options

Alternatives to regulation include information and education, market-based structures, self-regulation and co-regulation. In addition, existing policies can be improved, without further regulation, using techniques such as behavioral insight or changing enforcement practices to improve compliance. Such approaches may be better or worse for business and the economy than an equivalent regulatory measure.

Alternatives to regulation include:

i. **No New Intervention/Do Nothing**

This may include making use of existing laws and regulations; simplifying or clarifying existing laws and regulations; improving enforcement of existing laws and regulations; or making legal remedies more accessible or cheaper and as discussed in the section above status quo in the sector are likely to remain. This would imply the industry continues to operate under the current legal framework which includes the existing Regulations developed in 1972 under Cap 365 Laws of Kenya and which have limited the development of the industry in Kenya and enabled prevalent trade malpractices in the industry to the disadvantage of all fertilizer industry and agricultural sector stakeholders in the country. Therefore, the current challenges in the industry will subsist.

ii. **Information and Education**

Information and education can be used to empower fertilizer industry players to make their own decisions, improving choice for the mutual benefit of all. This system works to change behavior through the provision of greater information or by changing the distribution of information; that is, making information that may be available to some businesses and consumers available to others. However, there are potential risks associated with this. Information and education can take time to make an impact. Access to information and the ability to use it can vary within a community or region and so it may not reach all equally. It may also not be straightforward to assess how people will react or change their behavior in response to the information provided. It will also increase costs for the government and businesses that will be providing the information and education required.

iii. **Incentive/Market-Based Structures**

The government can use economic instruments, such as taxes, subsidies, quotas and permits, vouchers among others as initiatives to realize the desired objectives. These initiatives however are only practically possible in well-developed and efficiently functioning sectors which have

well-defined structures, unlike in the Kenyan fertilizer sector. Further, often these sorts of systems need their regulations to establish the framework and may have additional costs to the government and are unlikely to be effective in the fertilizer sector.

Alternatives to regulation:

i. **Self-Regulation**

An industry or a sector can self-regulate, for example, through the use of codes of conduct, customer charters, standards or accreditation. In many cases, rules, codes of conduct, industry-based accreditation arrangements; and voluntary adoption of standards will be formulated by the industry representatives or organizations under their own initiative.

Ideally, private sector self-regulation in addition to government regulation can be a cost-effective and efficient means of ensuring high-quality fertilizer products. Industry associations such as the Fertilizer Association of Kenya (FAK) should typically support private sector development by providing technical knowledge to their members regarding different fertilizer products, fertilizer application, nutrient management, and market demand. Also, they can play a leading role in the monitoring of the sale of fertilizers by their members. This system may involve random testing of fertilizer and enforcement of penalties for any member businesses selling adulterated products. A look at the Kenyan fertilizer subsector, FAK being the industry association is not an all-inclusive fertilizer industry association as most players who majorly are involved in fertilizer distribution and retailing are not affiliated with the association and thus not obliged to observe any self-regulation interventions propagated by the association.

ii. **Co-Regulation**

Co-regulation is an intermediate step between state-imposed and self-regulation that involves some degree of explicit government involvement where the industry may work with the government to develop a code of practice and enforcement would be by the industry or a professional organization and accredited by the government. The specific types of instruments or mechanisms that may be created under a self-regulatory regime are similar under a co-regulatory framework. However, co-regulation entails explicit government involvement. It is the degree of government involvement and legislative backing that determines the difference between the two. When used in the right circumstances these instruments can offer significant advantages over traditional command and control regulation, including greater flexibility and adaptability; potentially lower compliance and administrative costs; an ability to address industry-specific and consumer issues directly; and quick and low-cost complaints handling and dispute resolution mechanisms. Both self-regulation and co-regulatory approaches have the potential to be very efficient policy instruments because of their flexibility. They can be tailored to the specific issue they are designed to address and can change quickly in response to changing circumstances. However, there can also be negative consequences: there must be adequate protection in place to ensure that the regime is not captured by the industry or professional association and so promote narrow interests rather than the wider community interest.

However, based on the reasons given above on the unsuitability of self-regulation as a way of regulating the fertilizer industry, co-regulation of the fertilizer industry in Kenya is also not feasible and the current challenges and inefficiencies will continue.

4.0 Costs-Benefit Analysis (CBA)

4.1 Economic, Environmental and Social Impacts

4.1.1 Economic Impacts of the Proposed Regulations

Economic Benefits

The economic benefits of the proposed regulations include: -

i. Access and use of better quality fertilizers will be enhanced: The regulations will ensure that only fertilizer products that meet the set quality standards are approved and used in Kenya, thus eliminating counterfeit, contraband, adulterated and fake products in the industry and will promote good fertilizer use practices.

ii. Increased farm-level agricultural production and productivity: The consumption of fertilizer in Kenya has increased from some 200,000 metric tons in 1990 to 450,000 metric tons in 2009, and about 800,000 Metric Tons now and still expected to increase to surpass the 1 million metric ton mark in the next few years, the increased use of quality guaranteed fertilizers will result in increased agricultural production/productivity, improved produce quality, increased produce sales and thus increased earnings and returns on investment for improving livelihoods of farmers.

iii. Increased national agricultural production and productivity: Increased aggregated national agricultural production/productivity and improved produce quality will enhance food security and the supply of raw materials for agro-processing.

iv. Employment creation on-farm to support the increased agricultural production and productivity and off-farm in the fertilizer importation, manufacture, production, blending, marketing, distribution and retailing and other auxiliary services in the fertilizer and agricultural sectors.

v. Increased local fertilizer manufacturing, production and blending capacity will substitute fertilizer imports and save the country's foreign exchange and grow fertilizer exports into the regional market and thus improve the country’s balance of trade with her trading partners.

vi. The licensing of all fertilizer industry actors including the over 8,000 retailers and other fees and other levies proposed in the regulations and industry taxes will increase revenue generation.

vii. Sustainability of business in the industry: A well streamlined and regulated fertilizer industry in the country will guarantee fair competition, transparency and fair trade practices which will ensure the sustainability of businesses and positive returns to investments in the industry.

viii. Increased efficiency in on-farm production: The regulations by ensuring only quality fertilizers are used in the country will increase farmers' production efficiency thereby reducing the production cost per unit of produce.

ix. Increased agricultural production and produce quality, increased agricultural exports for Kenya's agricultural exports and increased earnings from agricultural exports will all translate to increased earnings for farmers and thus increased savings and investment by farm families.

x. Increased foreign direct investment through new investments in fertilizer importation, manufacture, production, blending, marketing, distribution and retailing; and in production, value addition and marketing of the increased Kenyan agricultural products.

xi. Leakage of government subsidy fertilizers into the commercial market will be minimized/avoided assuring legal businesses in the sector enhance their viability and sustainability.

Economic Costs

The implementation of the proposed regulations will however have some economic costs including: -

i. Implementation of the regulations may result in job losses in the industry from the closure of some businesses especially small rural-based agro-vet/ fertilizer retailers unable to meet the minimum requirements set in the regulations and/or due to the increased cost of doing business.

ii. Implementation of the regulations will also increase the cost of doing business in the fertilizer industry from the new licensing requirements that will require industry actors to have licenses for their different roles and services in the sector.

iii. The provisions of the regulations may be viewed as bureaucratic resulting in time-consuming from the many different processes and actions envisaged in the regulations. Including business licensing, fertilizer products registration, product labeling and packaging, fertilizer importation and exportation procedures licensing of fertilizer business premises, fertilizer stocks information management, disposal of condemned fertilizer etc.

iv. Effective implementation of the regulations will require investment in capacity building of industry stakeholders among other provisions of the regulations and good fertilizer manufacturing, handling and use practices i.e. publicity costs related to countrywide awareness creation, sensitization and communication e.g. pamphlets, flier, mass media (radio spots, newspaper) advertisements and programmes; hands-on training of industry actors will be significant

v. The increased cost of industry inspections, monitoring and enforcement of the regulations across the entire country will require significant human, physical and financial resources for the Board, county governments and other complimenting agencies due to the spread of sector actors across the country.

vi. Fertilizer prices may increase as additional costs in levies, fees and cost of compliance with all the regulations provisions are transferred to the end-users/consumers.

4.1.2 Social Impacts of the Proposed Regulations

The social impacts of the proposed regulations include: -

Social Benefits

i. Reduced poverty among farm families and the community in general.

Increased agricultural production and produce quality, increased agricultural exports, and increased earnings from agricultural activities will be a major contribution to the reduction of poverty among farm families who make up 80% of Kenya's rural population and the Kenyan community in general.

ii. Improved income distribution among the farm families and the community in general.

Increased earnings from agricultural activities and the creation of employment across all the agricultural sector value chains right from the farm level, to agro-processing and trading, will improve income distribution in the population.

iii. Improved health status and reduced heavy metals-related health diseases.

Implementation of the regulations will also result in improved health status from improved food and nutrition security from the improved agricultural production and reduced exposure-related health disease incidences from the presence of heavy metals and other harmful elements such as cadmium which result from the fertilizer manufacturing processes in agricultural produce and residues in waters, food and air among the farm families and the community.

iv. The creation of employment in the rural areas in the agricultural sector will contribute to stemming the tide of rural-urban migration and reducing general insecurity, especially in the rural areas.

v. Improved education levels and reduced illiteracy, health and social amenities access in the societies due to improved incomes and improved income distribution, thus improving the social wellbeing of the rural communities.

vi. Government fertilizer subsidies will reach the targeted and disadvantaged groups in the society due to reduced diversion into the commercial market, improving the agricultural activities of this vulnerable segment of the population.

4.1.3 Environmental Impacts of the Proposed Regulations

The environmental impacts of the proposed regulations include: -

Environmental Benefits

i. Environment preservation: In a well-regulated industry, proper fertilizer handling and management across the industry and use will reduce surface and groundwater contamination from spillages and disposal of condemned fertilizers and fertilizer raw materials.

ii. Increased soil and fertilizer analytical services will promote the use of specialty/blend fertilizers to address identified purposes in soil fertility management e.g. in the management of acidified soils or for specific crop nutrition requirements thus reducing the blanket application of traditional fertilizers, reducing negative impacts on the environment.

iii. Reduced soil degradation from prolonged use of traditional fertilizers that have led to acidified soils in many parts of Kenya by promoting blends that correct this situation and so and the preserve soil life and productivity.

iv. Improved land utilization and management especially land currently underutilized for agricultural production and lands in low potential areas through targeted fertilizer-based soil fertility management interventions.

Environmental Costs

The implementation of the proposed Regulations may however have some environmental costs. The costs include: -

i. Increased local manufacturing, production and blending capacity may lead to pollution of air and water bodies with different elements including heavy metals and dust from the fertilizer manufacturing plants' processes.

ii. Potential environmental pollution: Irrespective of specific fertilizer products' safety profile, fertilizers are inorganic chemicals that are harmful to the environment, especially if not used according to the use instructions.

Destruction of the environment and loss of biodiversity remains a risk requiring measures to restore and or replace what is destroyed or lost at a cost. Economic losses from the use of such products can be evaluated using market prices or replacement costs. Reversible aesthetic losses can be evaluated as the cost of restoration or replacement; while irreversible aesthetic can be partially evaluated based on relevant and specific research studies on the opportunity cost of the loss of the aesthetic experiences.

Such environmental costs are usually borne by public agencies to correct such damages. However, with proper and effective implementation of these Regulations, these negative environmental impacts can be significantly mitigated and impacts reduced.

4.2 Costs, Benefits Analysis and Assumptions

From the above discussions, it is quite clear that the expected economic, social and environmental benefits from the implementation of the draft regulations heavily outweigh the corresponding costs. The analysis of the cost and benefits of implementation of the draft regulations is however based on the following assumptions: -

i. Implementation of the regulations will be undertaken in a holistic manner where all provisions of the regulations will be implemented and not partially selected provisions are implemented.

ii. The country’s development strategies, political, manufacturing, trade and policy environment will continue to prioritize and support the development of the agriculture sector.

iii. The climatic conditions will remain favorable for agricultural production.

iv. Kenya’s agricultural products will continue to access current and other alternative global markets.

v. Fertilizer industry actors including farmers’ will respond rationally to the implementation of the proposed regulations and voluntarily comply with the proposed regulations.

vi. The additional revenue generated from the various fees and levies will be used to further the development of the fertilizer industry.

4.3 Administration and Compliance Cost

RIA noted that resources would be required for operationalization of the Regulations which will include human resources and operation costs for inspections and enforcement as well as for awareness creation of the Regulations among the different fertilizer industry players including farmers. It is assumed that additional resources will go to the implementation of the wider national agricultural, trade and industrialization policies which support the fertilizer industry, soil and fertility management research and development, provision of advisory services to commercial farmers for strengthening knowledge transfer and technology distribution among the farmers, capacity building of industry actors, and in the implementation of the Regulations, individual national agricultural, trade and industrialization strategies, the Government's Big 4 agenda, Vision 2030, ASGTS, Counties' CIDPs and other relevant sector national policies and strategies.

4.4 Assessment of Return on Investment (Benefit)

Passing and operationalization of the proposed regulations will be critical in facilitating the development of the fertilizer industry first by streamlining Kenya's unstructured fertilizer industry to allow coordinated control of the industry, create a level playfield for all industry players and promote fair trade practices and stimulate increased and efficient use of fertilizer to support Kenya's agricultural development and manufacturing pillars as envisioned in the Big 4 agenda and other national and sector development blueprints.

A well-functioning and efficient fertilizer industry will support increased productivity of quality agricultural products that meet international market standards and ensure consistent provision of quality raw material for agro-industries sustainably to guarantee improved incomes for the farmer and thus improved livelihoods and social welfare for communities while guaranteeing other businesses within industry good returns and higher export earnings for the country.

In broad terms, the RIA noted the following broad benefits of the proposed Regulations:

i. The regulations will streamline the poorly structured fertilizer industry for better functioning while allowing for fair competition, enhancing access to quality fertilizer products and this will result in enhanced efficiency and development of the industry.

ii. Improved access to alternative fertilizer products complimented with effective agricultural advisory services will support the farmers to improve productivity and also improve their production.

iii. Enhance compliance of Kenya's agricultural products to international standards by ensuring only the use of quality fertilizers with no heavy metals such as cadmium or that are within acceptable tolerance limits and consequently, increase access to alternative export markets due to compliance to food safety standards.

iv. Increased agricultural national production and value addition will translate to increased farmers' incomes and agricultural exports, thus increasing foreign exchange earnings.

v. The regulations will promote good fertilizer manufacturing, handling and use practices and provide for approved fertilizers for use in Kenya, thus reducing incidences of exposure to non-safe fertilizers to handlers, users and consumers for the community's better health.

vi. The more efficient and growing fertilizer industry will attract new investments in fertilizer production, manufacture, packaging, importation and marketing devoid of smuggled and counterfeit products and unfair trade practices which deny investors in the industry full returns from their investments.

vii. Employment creation both on-farm to support the increased agricultural production and productivity; and off-farm in the fertilizer importation, manufacture, production, blending, marketing, distribution and retailing.

viii. A comprehensive sector database including all the industry actors, a list of approved fertilizers, fertilizer imports and exports, fertilizer stocks and stock movement etc. will be developed and maintained to inform industry planning and future investments.

ix. Establish clear structured mechanisms for the disposal of condemned and/or contaminated fertilizers.

4.5 Quantification of the Benefit

As stated in the introduction of this chapter, sufficient reliable data for cost-benefit analysis of Kenya's fertilizer industry is not readily available and valuing changes in policies such as regulations and how to establish and quantify how such changes impact the economy, society and the environment remains a big challenge. However, selected specific local case studies can be used to demonstrate the benefits of the proposed regulations.

The general objective of these regulations is to ensure increased access to quality fertilizers and to promote the use of customized fertilizer blends to meet unique soil fertility and crop nutrition need to increase agricultural production. The 2 case studies below demonstrate the impact of these two scenarios.

Case Study 1:

Mavuno Zaidi - Large-Scale Farmer Outreach to Increase Potato Yields in Kenya through a Focus on Balanced Fertilization

Partners: Syngenta Kenya, a seed and agrochemical input supplier, and Israel Chemicals Ltd. (ICL), a producer and importer of fertilizers, and was implemented by Technoserve, a non-governmental organization (NGO)

Background: ICL identified unbalanced fertilization as one of the limiting factors to potato productivity in the country. In Kenya, farmers have relied on two main fertilizer products: Di-Ammonium Phosphate (DAP) which is NPK 18:46:0 and Calcium Ammonium Nitrate (CAN) which contains 26% nitrogen (N), limiting fertilization to just nitrogen N and phosphorous (P). The current fertilizer recommendation for potato production is four 50 kg bags of DAP per acre which is equivalent to 500 kg ha^{-1} (KARI, 2008; Muthoni, 2016). Potassium (K) is a key nutrient for potato production but is hardly used because there is a widely-held belief that Kenyan soils are rich in K (Kanyanjua and Agaya, 2006). This has resulted in nutrient mining and declining yields. Some farmers will also top dress with one to two 50 kg bags of CAN. This rate translates to 90-150 kg N ha^{-1} and 225 kg P2O5 ha^{-1}, with farmers yielding an average of 10-13 Tons/ ha^{-1}.

A balanced fertilization recommendation was developed, consisting of 90-100 kg N ha^{-1}, 60-70 kg P2O5 ha^{-1}, 170-180 kg K2O ha^{-1}, 51 kg SO3 ha^{-1} and 5 kg MgO ha^{-1}. The nitrogen fertilizer used in project demonstration plots was a control release fertilizer produced by ICL.

Results from 60 demonstration plots of 1,000 m^2 each, planted across seven counties in two seasons, yielded an average of 26 Tons/ha^{-1}, varying between 20 and 33 Tons/ ha^{-1}. This compares to farmers' traditional practices which on average yielded 10 Tons/ha^{-1}, varying between 7-14 Tons/ ha^{-1}, representing a 160% increase in yields which demonstrated the crop's good response to potassium.

Table 3. Benefit-cost ratio: Analysis of the financial differences between farmers' practice and the ICL Mavuno Zaidi approach.

Parameter	Farmers' practice	Mavuno Zaidi (ICL approach)
Fertilizer ratio (kg ha^{-1})	N: 90-150 kg ha^{-1} P_2O_5: 225 kg ha^{-1} K_2O: 0 kg ha^{-1}	N: 90-100 kg ha^{-1} P_2O_5: 60-70 kg ha^{-1} K_2O: 170-180 kg ha^{-1} SO_3: 51 kg ha^{-1} MgO: 5 kg ha^{-1}
Fertilizer cost	USD 323-485 (15% of total outgoings)	USD 525-650 (7.5% of total outgoings)
Yield	10-14 Tons/ha^{-1}	26-33 Tons/ha^{-1}
Gross income	USD 2,300-3,200	USD 6,000-7,000
Value: cost ratio		USD 23 for every extra USD 1 spent on fertilizer

(Source: International Potash Institute)

Even though the fertilizers introduced during the outreach program were more expensive than farmers normally used, the cost-benefit analysis demonstrated the profitability of implementing

balanced fertilization (Table 3), with a calculated benefit-cost ratio of USD 23 for every extra USD 1 spent on fertilizer under the balanced fertilizer regime. This was based on a two-fold increase in yield that resulted in farmers receiving USD 380 gross profit above their normal production, representing a 119% increase in gross income. (IPI, 2018)

Case study 2:

The Kenya Cereals Enhancement Programme (KCEP) a Ministry of Agriculture project partnered with the Kenya Soil Health Consortium (KSHC) of the Kenya Agricultural & Livestock Research Organization (KALRO) with support from AGRA to facilitate the collection, synthesis harmonization of the pulses fertilizer recommendations for the different agro-ecological zones and from the different regions of the country in the different/alternative cropping systems including intercropped with maize and fertilizer treatments.

Sample of the results showing cropping systems, fertilizer treatments and yields were used to determine the benefit-cost ratio to inform the most ideal fertilizer recommendation for each cropping system.

Table 4. Maize-bean intercrop and mono-crop Fertilizer recommendations in western Kenya

			Grain yield (t/ha)		
AEZ	Cropping	Technology	Maize	Beans	BCR
UM1	Intercrop	DAP 40 kg P/ha + CAN 50 kg	7.89	1.03	8.21
	Intercrop	DAP 60 kg P/ha + CAN 60 kg N/ha	7.09	0.66	6.07
	Intercrop	No fertilizer	0.73	0.48	0
UM2	Intercrop	DAP 60 kg P/ha + CAN 60 kg N/ha	7.28	0.89	6.43
	Mono-crop	DAP 50 kg P/ha	-	2.38	12.55
	Intercrop	No fertilizer	1.2	0.25	0
	Mono-crop	No fertilizer		0.78	0
LM2	Intercrop	TSP 10 kg P/ha + CAN 10 kg N/ha	1.48	0.86	7.1
	Intercrop	DAP 30 kg P/ha + CAN 60 kg N/ha	3.25	0.67	2.21
	Intercrop	No fertilizer	1.19	0.44	0

LM3	Mono-crop	FYM 5 t/ha	-	1.13	6.85
	Mono-crop	DAP 40 kg P/ha	-	1.55	11.87
	Mono-crop	TSP 25 kg P/ha	-	0.82	7.19
	Mono-crop	Lime 5 t/ha	-	1.75	2.67
	Mono-crop	FYM 5 t/ha	-	0.67	2.21
	Mono-crop	No fertilizer	-	0.23	0

(Source KCEP)

From the above results in the Agro-Ecological Zone (AEZ) Upper Midlands 1 (UM1) for example, all treatments had higher yields for both maize and beans compared to the zero-fertilizer treatment and all had positive benefit-cost ratios, meaning that the returns from each of the treatments were positive or exceeded the cost of investment. The treatment of applying 40Kg of DAP and 50Kg of CAN had the highest yields of 7.89 Tons of maize and 1.03 Tons of beans compared to the treatment with no fertilizer application which had 0.73 Tons yields of maize and 0.48Tons of Beans, representing an almost 10-fold increase in maize yields and more than double the yield of beans. This treatment gives the highest benefit-cost ratio of 8.21, meaning that returns gotten are more than eight times what was an investment as a result of this fertilizer treatment.

Equally, all the other treatments in the other different Agro-Ecological Zones also had positive benefit-cost ratios implying that the investment in fertilizer applications in all these treatments is profitable. (KCEP, 2018). Similar work was done in the other regions of the country including the Coast, Eastern and central regions of the country and similar results were replicated.

In addition to the benefits to the farmers, all other industry actors are bound to also benefit from a well-streamlined and regulated fertilizer sector but quantifying such benefits is a challenge due to the unavailability of reliable data required.

5.0 Reasons Why Other Regulatory Options Are Not Appropriate

5.1 Option 1: Maintaining the *Status Quo*

Maintaining the status-quo may only sustain the challenges facing the fertilizer industry and hamper further development of this sector, including the following: -

i. The fertilizer industry shall continue to remain poorly structured and not effectively regulated allowing continued operation of the many unscrupulous, quick-for-profit players in the sector who do not necessarily comply with the set industry standards, exposing fertilizer users to poor quality, unregistered, counterfeit and adulterated fertilizer products denying them value for their investment and may be harmful to users' health and the environment.

ii. Access to quality fertilizers will remain elusive for most farmers which will negatively impact their production and productivity which will not only be a threat to the farm holds and the national food and nutrition security but will also be a threat to the development of the country's agricultural sector and economy.

iii. Agricultural productivity and quality of Kenya's agricultural products will decline, reducing export volumes and acceptability in some markets, thus, reducing foreign exchange earnings.

iv. Farmers' earnings will also reduce as a result of reduced productivity and product quality, thus impacting the farms' families' ability to access social services and amities including housing, health, education etc.

v. Reduced earnings for farmers will also translate to lost employment opportunities in agricultural production in the rural areas, increasing the rate of unemployment in the country and migration to urban areas which will further increase informal settlements in all major towns.

vi. Incidences of acute and chronic health effects attributable to heavy metals and other undesirable elements in fertilizers due to direct exposure to low-quality fertilizer products or residues in food, drinking water, rain and in the air may rise.

vii. Farmers' cost of production will remain high due to the use of ineffective poor quality fertilizers.

viii. Kenya will remain with a very limited capacity to manufacture and blend fertilizers locally and will continue to over-rely on imported fertilizers that do not necessarily meet the

specific needs of the country in soil fertility management and crop nutrition and drain the available scarce foreign exchange.

Based on the above challenges, RIA recommends that the proposed regulations be put in place to streamline and regulate the fertilizer industry to support the agricultural sector to effectively contribute to the realization of the objectives of Vision 2030, the ASTGS and the Big 4 Agenda.

5.2. Other Practical Options

Alternatives to regulation include: -

i. **No New Intervention/Do Nothing**

This may include making use of existing regulations; simplifying or clarifying existing regulations; improving enforcement of existing regulations; or making legal remedies more accessible or cheaper. But with this approach, the status quo in the fertilizer industry is likely to remain to the detriment of all the industry stakeholders and the country at large.

ii. **Information and Education;**

Information and education can be used to empower stakeholders to make their own decisions, improving choices for the mutual benefit of all. However, information and education can take time to make an impact and still may not be acceptable to all. This approach may increase costs for the government and businesses that will be providing the information and education required. The desired objectives are unlikely to be realized within a reasonable time for the common good of all.

iii. **Incentive/Market-Based Structures;**

The government can use economic instruments, such as taxes, subsidies, initiatives to realize the desired objectives. These initiatives, however, are only practically possible in well-developed and efficiently functioning sectors which have well-defined structures and often these sorts of systems need their regulations to establish the framework and may have additional costs to the government and are unlikely to be effective in the fertilizer industry.

5.3 Alternatives Models of Regulation include:

i. **Self-Regulation**

Self-regulation requires the industry to have a well-developed industry representative that is fully acceptable to all industry players and who willingly subscribe to the representative's objectives, standards, code of regulation etc. The Fertilizer Association of Kenya (FAK) is the industry representative but its membership is not all-inclusive and since the membership is voluntary mainly consisting of lead fertilizer importers and blenders, and with very limited inclusion of other industry actors. The over 8,000 retailers spread across the country. The association's rules and codes of conduct cannot be enforced to non-members and therefore self-regulation may not be an effective option.

ii. **Co-Regulation**

Co-regulation is an intermediate step between state-imposed and self-regulation that involves some degree of explicit government involvement where the industry may work with the government to develop a code of practice and enforcement would be by the industry or a professional organization that is accredited by the government. The fertilizer industry currently has no all-inclusive, wholly accepted industry representative at the moment and thus co-regulation is practically not possible.

5.4 Regulatory Flexibility Statement

Implementation of the proposed Regulations will have an impact across the fertilizer industry and the agricultural sector in the country by disrupting livelihoods and businesses and affecting agro-producers' fertilizer access and affordability and usage. Given the importance of the fertilizer industry and the agricultural sector in the country, the Board and county government should strive to implement the proposed targeted regulatory responses to mitigate all potential negative impacts generally referred to as "regulatory, or prudential, flexibility," as they entail adjustments to the standard prudential rules or closely related rules.

The Board may consider, where applicable, lawful, feasible and desirable, specific methods of reducing the burdens of the regulation on individuals and/or small businesses, including (1) establishing less stringent requirements and deadlines; (2) establishing performance standards to replace design standards; (3) exempting individuals and small businesses from all or part of the regulations; and (4) examining other ways to accomplish the regulation's purpose, while minimizing the impact upon individuals and/or small businesses.

The aim is to help preserve the fertilizer industry functionality and to continue supporting fertilizer use. Some of the regulatory, or prudential, flexibility measures that may be applied to guarantee this include:-

i. Adopt a staggered and flexible implementation framework of the proposed regulatory interventions to allow for buy-in and compliance by all industry actors and fertilizer users;

ii. Small and local fertilizer industry actors (fertilizer retailers and agro-dealers) serving the rural fertilizer user segments require customized flexibility measures to continue providing fertilizer accessibility in such areas as they endeavor to comply with the proposed regulations, especially on the eligibility of licensing of their business facilities;

iii. Small fertilizer retailers and agro-dealers who are estimated to be over 8,000 in the country are an integral part of the promotion and distribution of fertilizer use in the industry and there is a need for the continuous development of their capacity in fertilizer promotion, distribution, regulations compliance and business development;

iv. The Board should establish efficient and effective monitoring and evaluation systems to deal with the evolving dynamics and anticipated transformation in the industry. The purpose is to allow the Board to expeditiously customize regulatory flexibility and monitor its impact without imposing additional compliance costs on industry actors;

v. Adopt suitable measures targeted at small actors in the fertilizer industry and fertilizer consuming smallholder farmers to enhance fertilizer access and affordability; and

vi. Adopt flexible approaches for the registration and licensing of the different industry actors. This will allow for the inclusion of informal fertilizer dealers in the market. Registration of fertilizer industry actors is often a regulatory gateway to other activities such as legally dealing in fertilizers in the market and rules and regulations in this area have a particularly significant impact on farmers.

6.0 Conclusion

The fertilizer industry needs to be well-structured and regulated for the reasons discussed in the previous parts of this report. The Proposed Regulations seek to ensure that importation, manufacturing, production, marketing and distribution and retailing of fertilizers and fertilizer raw materials, licensing of the different industry actors, prescription of approved fertilizers and their standards, inspection and analysis of fertilizers and fertilizer raw materials are streamlined, well-structured and regulated to ensure that the development of a competitive and efficient fertilizer industry that provides the optimal outcomes in terms of price and quality of fertilizers to farmers. This is a critical prerequisite for improving agricultural production and productivity across the country's entire agricultural sector and will support the realization of the national agricultural sector and economic objectives including food and nutrition security, agro-processing and industrialization, environmental preservation and employment creation.

In addition to the anticipated economic, social and environmental benefits of an efficient and well-regulated fertilizer industry, the proposed regulations will support the realization of further development of the country's capacity in domestic fertilizer blending and packaging and also support the establishment of a manufacturing plant for national/regional fertilizer requirements as envisioned in the Vision 2030. This will greatly contribute to the country's capacity to avail balanced fertilizers to farmers for specific soil fertility and crop nutrition management requirements which fertilizer will use efficiently in agricultural production in addition to partially substituting fertilizer imports thus saving the scarce foreign exchange for the country.

The proposed Regulations will therefore act as regulatory tools for the realization of the above benefits in the interest of the national common good.

7.0 Recommendations

The RIA thus recommends the passing and operationalization of the proposed Regulations.