



Assessment of Fertilizer Distribution Systems and Opportunities for Developing Fertilizer Blends MOZAMBIQUE

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Executed by:



This assessment was conducted by the International Fertilizer Development Center (IFDC) and the African Fertilizer and Agribusiness Partnership (AFAP) for the Alliance for a Green Revolution in Africa (AGRA) as part of a consultancy for Assessment of Fertilizer Distribution Systems and Opportunities for Developing Fertilizer Blends. The views, information, and opinions expressed in this assessment are those of IFDC and AFAP and do not necessarily reflect the official policy or position of AGRA.

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Acronyms and Abbreviations

ADRA	Adventist Development and Relief Agency
AENA	Associação Nacional de Extensão Rural
AFAP	African Fertilizer and Agribusiness Partnership
AGMARK	Agricultural Market Development Trust
AGRA	Alliance for a Green Revolution in Africa
AMOFERT	Al Madeena Organic Fertilizers
B	boron
BAGC	Beira Agricultural Growth Corridor
CAN	calcium ammonium nitrate
CLUSA	Cooperative League of the USA
COMESA	Common Market for Eastern and Southern Africa
DADTCO	Dutch Agricultural Development & Trading Company
DAP	di-ammonium phosphate
ETG	Export Trading Group
FUBC	Fertilizer Use By Crop
Ha	hectare
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFDC	International Fertilizer Development Center
IIAM	Instituto de Investigação Agrária de Moçambique
IITA	International Institute for Tropical Agriculture
IPNI	International Plant Nutrition Institute
IRRI	International Rice Research Institute
ISFM	integrated soil fertility management
ISPM	Instituto Superior Politécnico de Manica
LMAA	Last Mile Agripreneur Alliance
MAP	mono-ammonium phosphate
MBS	Mozambique Bureau of Standards
MLTC	Mozambique Leaf Tobacco Company
MoA	Ministry of Agriculture
Mt	metric ton
NGO	non governmental organization
NML	New Markets Lab
NPK	nitrogen phosphorus potassium
OCP	Office Chérifien des Phosphates
PROMAC	Conservation Agriculture Promotiion project
SADC	Southern African Development Community
SHF	smallholder farmer
SME	small and medium enterprise
SSP	single superphosphate
SWOT	Strengths, Weaknesses, Opportunities, Threats
TSP	triple super phosphate
USAID	United States Agency for International Development

Assessment of Fertilizer Distribution and Opportunities for Developing Fertilizer Blends in Mozambique

Introduction

In conducting this evaluation, we held discussions with AFAP, Omnia, ETG, Yara and Meridian Group. We had discussions with Mozambique Leaf Tobacco Company (MLTC), Beira Logistical Terminal (BLT) and we reviewed literature on infrastructural developments in 3 Mozambique Growth Corridors. The potential partners list was compiled by IFDC Mozambique staff.

Available Soil Information

There has been no systematic soil sampling in Mozambique. However, we have accumulated over the years 400 full soil analysis data for several provinces in the Beira and Nacala corridors from IFDC, AFAP and Greenbelt Fertilizers (Beira; now Yara). Only 20-30% of the data are georeferenced, but the remaining data are usually village and district-within-province referenced and is of value. All samples were run by competent South African laboratories (primarily SGS and Omnia) using well-respected methods. We believe these data form a strong basis for understanding general soil fertility trends, but it has not been systematically evaluated. We believe that considerable data of this sort may lie with other donor-funded organizations and projects.

General trends are low pH, low soil organic carbon, usually low P, variable K, and almost universally low S, Zn and B, and maize response to these elements has been demonstrated (elaborated below).

Fertilizer Availability and Use in Mozambique

Total fertilizer use in Mozambique in 2016 is shown in Table 1. The formulations 12:24:12 and urea dominate. Specialty fertilizers are used on tobacco and sugarcane. AFAP estimates that those crops are responsible for 90% of the fertilizer consumed in Mozambique, leaving less than 1000 MT for other crops.

Rationale for Why Available Fertilizer Products Were Developed

The main fertilizers used in Mozambique are 12:24:12 and similar products (12:24:12+S, 12:24:12+Mg+Zn, possibly others), with specialty fertilizers for tobacco and sugarcane following closely. The 12:24:12 product was first brought into Mozambique in the mid-

1970s, and the basic NPK percentage has not evolved. This general formulation is a compromise for many crops; somewhat suitable for many, not well-suited for any. It has a strong brand recognition with farmers.

Table 1. Fertilizers use by product, Mozambique (source: AFAP FUBC, 2016).

Product	Volumes (MT)
12:24:12	35,000
Urea	20,000
Specialty NPKs	20,000
CAN	6,000
23:21:0 +4S	3,000
MOP (0:0:60)	1,800
Sulfate of Ammonia	1,000
Total	86,800

Types of Fertilizer Recommendations that are Available, and their Suitability for Staple Crops and Agro-Ecological Zones that are Targeted by AGRA

Table 2 shows the nutrients extracted for given yield targets we believe routinely achievable for AGRA priority crops in Mozambique (maize, rice, cassava, and soybean), along with nutrients supplied in various fertilizer recommendations. As a general statement, some of the recommendations reflect a rather desperate situation of trying to make the best of a bad situation: meeting specific crop needs with the very few fertilizers actually available to farmers.

Maize recommendations and their suitability

Both maize recommendations are based on variations of the well-known NPK 12:24:12. The Yara recommendation improves on the older formula with the addition of S, Mg, and Zn. Some blenders have added S to 12:24:12 to make 12:24:12+6S.

Under the MIM project, IFDC established the value of some of these nutrient additions. A summary of the main results of that project can be accessed at <https://www.ipipotash.org/udocs/398-mim-brochure-8pages.pdf>. Maize was consistently responsive to the S addition. Further response to added Zn and B further improved yields, but the trial design did not allow separation of the Zn and B effects. Potassium response was limited at the few sites where its omission was evaluated. In a subsequent season, a formulation employing an NPS + Zn +B formulation outperformed 12:24:12 +6S.

Table 2. Nutrients removed to achieve target yields, and nutrients supplied in various recommendations.

Crop	Yield Target	Appl. Rate		N	P ₂ O ₅	K ₂ O	CaO	MgO	S	Zn	B	Cu	Mn	Fe	
		Basal	Topdress												
Maize	Mt ha ⁻¹ 5	-----kg ha ⁻¹ -----		-----Nutrients removed in crop and residue, kg ha ⁻¹ -----											
				100	46	121	18	35	13	0.23	0.24	0.07	0.73	0.36	
				-----Nutrients supplied in recommendation, kg ha ⁻¹ -----											
General: 12:24:12 basal, urea topdress		100	100	58	24	12	0	0	0	0	0	0	0	0	
Yara: 12:24:12 +4S +1MgO +0.01Zn basal, urea topdress		200	200	116	48	24	0	2	8	0	0	0	0	0	
Rice	Mt ha ⁻¹ 7			-----Nutrients removed in crop and residue, kg ha ⁻¹ -----											
				150	46	217	42	50	7	0.28	0.21	0.07	0.566	0.923	
				-----Nutrients supplied in recommendation, kg ha ⁻¹ -----											
		IIAM HIGH INPUT: 12:24:12 basal, urea topdress		100	200	104	24	12	0	0	0	0	0	0	0
		IIAM LOW INPUT: urea only (split)			200	92	0	0	0	0	0	0	0	0	0
		Yara 12:24:12 +4S +1MgO +0.01Zn basal, urea topdress		200	200	116	48	24	0	2	8	0	0	0	0
		IRRI: DAP basal, urea topdress		250	98	90	115	0	0	0	0	0	0	0	0
IRRI: 12:24:12 basal, urea topdress		375	98	90	90	45	0	0	0	0	0	0	0		
Cassava	Mt ha ⁻¹ 30			-----Nutrients removed in crop and residue, kg ha ⁻¹ -----											
				233	69	284	48	35	40	0.23	0.19	0.10	0.21	3.10	
				-----Nutrients supplied in recommendation, kg ha ⁻¹ -----											
IIAM: urea only		50	65	30	0	0	0	0	0	0	0	0	0	0	
Yara 12:24:12 +4S +1MgO +0.01Zn (3 splits)		400	0	48	96	48	0	4	16	0	0	0	0	0	
Soybean	Mt ha ⁻¹ 3			-----Nutrients removed in crop and residue, kg ha ⁻¹ -----											
				88	46	53	27	17	7	0.13	0.14	***	0.29	6.00	
				-----Nutrients supplied in recommendation, kg ha ⁻¹ -----											
		OFRA: TSP		129		0	58	0	27	0	3.9	0	0	0	0
		IITA: 30-40 kg P ₂ O ₅ from TSP		78		0	35	0	16	0	2	0	0	0	0
		IITA: 30-40 kg P ₂ O ₅ from SSP		175		0	35	0	49	0	21	0	0	0	0
		IITA: 40 kg P ₂ O ₅ from DAP (low N soils)		87		16	40	0	0	0	0	0	0	0	0
Yara: SSP		250		0	50	0	70	0	30	0	0	0	0		

The IIAM (Instituto de Investigação Agrária de Moçambique) recommendation uses 12:24:12 and urea. IIAM does not specify rates, but we chose a rate for the table which is commonly applied. Due to cost considerations, farmers rarely apply this fertilizer at optimal rates. In a recent subsidy implementation, it was supplied at half these rates.

The Yara formulation adds S, Mg and Zn to 12:24:12 and this is one of their signature products in much of Africa, though it is doubtful that the Mg and Zn are in optimal quantities. The rates are higher, and it is the best recommendation available, though probably not optimal, given indications of lack of K response and likely insufficient quantities of Zn and no B, which were deficient in most of the 400+ soil samples we have accumulated.

OCP makes a concentrated NPS +Zn +B compound that may well be suited to the needs of Mozambique, but it is available only in Ethiopia to our knowledge.

Rice recommendations and their suitability

Rice is a K-responsive crop but will not be responsive in high-K rice lowlands. We did not access any full soil analyses from Mozambique rice lowlands, though we are sure some exist, IFDC is sampling rice areas in Sofala province (sub-regions of Regadio de Buzi , Regadio de Chicumbua and Regadio de Inharongue), but full sampling was delayed due to early rains and results are not yet available. Greenbelt analysed samples from the Lower Limpopo Irrigation Scheme (Xai-Xai in Gaza Province) and successfully developed a rice blend based on these analyses.

Rice is also very responsive to Zn and B when deficient, based on our experience in Rwanda, Burundi, and Kenya. Of the rice recommendations, the Yara formulation and rate are most suitable, but as with maize (which has the same Yara recommendation), it has insufficient Zn and B. IIAM has a low-input recommendation supplies only N and may be the most appropriate for low-input farmers but will accelerate the depletion of other nutrients. One reality of rice cultivation in much of Mozambique is poor water control, which increases flood and drought risk and reduces yield potential.

The IRRI recommendations are unsuitable as they result in over-application of P, the most expensive of the macro-nutrients. It is based on obtaining 45 kg N/ha from DAP or 12:24:12 at basal dressing, and the other half at topdress time from urea.

A rice formulation can best be developed after knowing the general fertility status of the rice lowland. Lowlands commonly differ in fertility status, as the soils in them develop from flood water deposits and are therefore dependent on where those waters come from. Once the soil fertility status is known, it should be possible to develop more efficient rice formulations, which may or may not differ between flood plains.

Cassava recommendations and their suitability

No cassava recommendation is suitable, even without a good understanding of the secondary and micronutrient deficiencies. The Yara recommendation has too much P and too little N. Given their product line, they have much better options. The IIAM recommendation, while far from a balanced fertilizer (supplying only N), is at least practical and might give a return on investment and represents a practical fertilization step for most smallholder farmers who do not fertilize cassava at all. Neither is capable of meeting a balanced cassava fertilizer requirement to achieve a reasonable yield target.

The general trend seen in other African countries is that in spite of its high K consumption, cassava seems to do well with a moderate K dose (30-60 kg K₂O/ha) but does respond to higher N rates. Lower P rates are advised; P is expensive, and cassava is very efficient at extracting P from the soil. Cassava responses to S, Zn, and B have been demonstrated in Africa. Informed best-bet trials should yield better cassava formulations.

Soybean recommendations and their suitability

Soybean formulations are the best-informed for the AGRA priority crops. IITA's recommendation is not exactly as in the table; it is actually 30-40 kg P₂O₅/ha from either TSP or SSP. We took a median value of 35 kg P₂O₅/ha in calculating the rates. IITA's recommendation for low-N soils is 20 kg N and 40 kg P₂O₅ from DAP or MAP, but this cannot be achieved through application of DAP or MAP alone due to the N/P ratios in those products. The SSP recommendation is probably the best, as it supplies more Ca and S, but may be more expensive due to the higher application rate. Soybean is also known to be responsive to Zn and very small amounts of B.

In 2014, Technoserve achieved soybean yields averaging 3470 kg/ha using a soybean blend with inoculant, but we do not know what that fertilizer was. The blend was applied at a rate of 200 kg/ha. The blend without inoculant yielded 2790 kg/ha, and inoculant alone yielded 1400 kg/ha. In those trials, the blend was therefore adding an additional 2000 kg/ha yield when applied with inoculant. We cannot make any definitive statements regarding where the blend will be effective, but it is clear that fertilizers are a key component in achieving the 3000 kg/ha soybean yield target. Soybean yields are greatly reduced in acid soils, and it is not yet evident if this can be adequately addressed by TSP and SSP, if liming will be additionally required, or how extensive acidity is in the AGRA priority soybean zones.

Gaps that Need to be Addressed to Come Up with Area and Crop Specific Blends

One might begin with assumptions of general S, Zn, and B deficiencies existing in maize, cassava, and soybean-growing areas based on the 400+ full analyses from samples already analyzed. For rice, additional soil information will be required.

In the Mozambique context, the farmers being targeted are of consequence. Farmers who are part of tobacco concessions or otherwise in group associations potentially provide sufficient demand of fertilizer volume for a blender to address. Twenty metric tons (a half container) of product is something a blender can produce and deliver to a common distribution point, provided a guaranteed market exists. For farmers producing beyond their subsistence needs, it is important that a market exists. However, there are serious challenges to markets for soybean and cassava in Mozambique, further elucidated in the section on fertilizer distribution systems.

Fertilizer Companies and/or SME Blenders Existing in the Country and the Geographies Targeted by AGRA

Mozambique Fertilizer Company Lda (Chimoio) has a small 8 ton/batch blender. Considerable capacity exists in Beira; there, Omnia has a 40 MT/hr line blender, ETG/Kynoch a 15 MT/batch blender, and Yara is installing a 15 MT/hr batch blender. Yara, Omnia, and ETG also import compounds as per demands primarily for crops in the African interior, with major markets being Malawi and Zambia.

Inventory of Partners and Ongoing Efforts or Investments that are Promoting the Availability of Appropriate Blended Fertilizers that AGRA can Leverage in the Target Countries

A list of potential partners and key country contacts is in Appendix I.

Recommendations and Interventions that AGRA could Implement to Address the Availability of Quality Fertilizers

- 1. Aggregation of soil analytical data:** A first iteration of best-bet blends is best made once soil analytical data are aggregated. AGRA should support this and make it available to blenders and other fertilizer providers. It would also be useful to create a system where full soil analyses are regularly fed into a database so that this system is constantly improved. We believe that rice marshlands may require more analyses to create targeted blends for reasons elucidated earlier. In April 2018, AGRA awarded a grant to IIAM and Eduardo Mondlane University to develop soil maps and develop new fertilizer blends in the Beira Corridor. The work will involve collation and synthesis of existing soil data, targeted soil sampling, mapping, formulation of new blends and validation trials. Yara and Mozambique Fertilizer Company are involved in this project. It is important that data from different sources needs to be harmonized to consistent methods. Data are available from multiple South African labs as well as IIAM, but varying methods employed do not have the same critical values. IIAM may require some support in this harmonization. We believe it would be prudent to support this work with assistance from IFDC to develop and test multiple blended products; the tendency for fertilizer companies is to develop a single product based on soil analysis alone. IFDC is aware of many blending strategies to incorporate micronutrients and reduce costs, and of blends incorporating TSP, which are particularly relevant for soybean, of which blenders may not be not fully aware.
- 2. Blender technical support:** Competent blenders exist in Mozambique, most with experience in developing blends based on soil analysis. Once soil analyses are availed to them, some support may still be required to optimize their blends, particularly with regards to getting B into their products. IFDC can provide this expertise. We have noted serious B deficiencies in Mozambique, and through not commonly employed processes, B can be incorporated into basal and topdress fertilizers at a very low cost. Regarding soybeans, most blenders do not produce blends based on TSP, yet such blends may be a

better option for slightly acidic to acidic soils. This option should be developed with them.

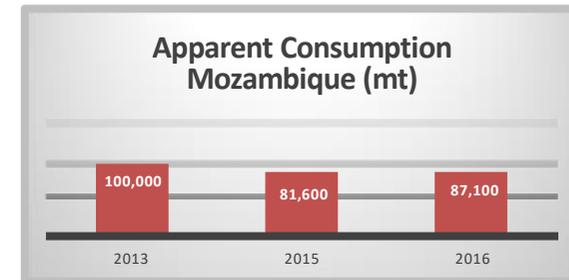
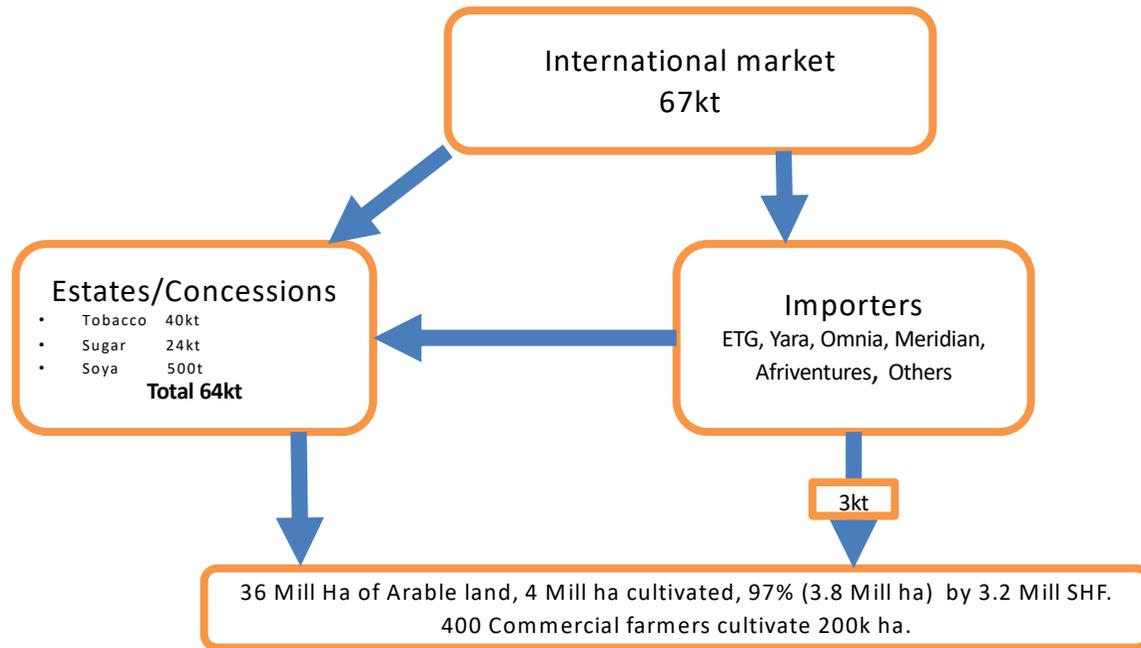
3. **Independent evaluation of best-bet options:** Blenders and providers of multi-nutrient compounds will have different approaches to formulation. AGRA could support some independent evaluation of options offered by blenders for AGRA-priority crops in their targeted regions, compared to 12:24:12. This is important not only to evaluate the financial returns to various options, but more importantly to provide the basis for shifting away from 12:24:12 as the standard fertilizer. When subsidy programs arise (as they did in 2014-15), it is vital that the evidentiary basis be in place to subsidize better options. Independent evaluations need to be done in collaboration with the government and supported with trial design, statistical analysis, and implementation support by IFDC and other qualified yet independent expertise.
4. **Support step-wise fertilizer entry strategies:** Subsistence farmers transitioning from no fertilizer use may not have the means or be willing to take the financial risk to go for best fertilizer practices. When actually scaling in projects, demonstrating low input options such as those elucidated by IIAM can still improve farmer income and even offer good returns on investment. Apart from the IIAM options, other low-input options can be developed to get farmers started on a path to improved food security and commercial surplus. AGRA should encourage low-input packages in projects it supports.
5. **Awareness creation:** Many farmers in Mozambique have never used fertilizers, and of those that have used them, some have not been exposed to blended products which have a different appearance than compounds, which can be confusing to farmers and has in some cases lead to accusations of product adulteration. IIAM extension staff and agrodealers need to be trained in proper fertilizer use using the 4R principles of nutrient stewardship (right fertilizer, right rate, right time, right placement), which need to be taught in the context of various AGRA priority crops. Another important target for such trainings is agronomists in value chain projects, who often have little experience with fertilizers in general or fertilizer blends specifically. IPNI has experience in developing training materials for different audiences, and in the training itself. Fertilizer companies should as well be invited to support these activities. Simple demonstration fields can serve as farmer training venues, and trainings should include an economic analysis so that farmers can understand the profitability of fertilizer use in their crop-specific contexts.

Bottlenecks in Fertilizer Distribution Systems, and Interventions that AGRA and Its Partners can Implement to Help Farmers Access Quality Fertilizers

The fertilizer market structure and SWOT analysis of the market are shown in Figures 1 and 2 respectively.

Market characteristics

Total fertilizer use in Mozambique in 2017 was estimated at 67,000 tons, of which estates (tobacco, sugar) and concessions use 64,000 tons (Table 3). The amount used by independent smallholder farmers is extremely small.



	Fertilizer system	Volume (mt)	%
Estates / Concessions	Bulk Plantation	64,200	96%
	Bulk Anchor		
	Bulk Government		
Importers	Private	2,800	4%
		67,000	

Figure 1. Mozambique fertilizer distribution, system, apparent fertilizer consumption, and distribution volumes through various fertilizer systems

	Strengths	Weaknesses	Opportunities	Threats
Manufacturer		<ul style="list-style-type: none"> Poor infrastructure 	<ul style="list-style-type: none"> Yara reviewing Nitrogen manufacturing capacity in the North Of Mozambique GoM has asked Yara to include Evate evaluation. 	
Importer	<ul style="list-style-type: none"> Most majors import 650kt through Mozambique to inland markets (Nacala, Beira, South Africa) All majors have (or will have this year) blending capacity Many options for bulk discharge and –off quay bagging 	<ul style="list-style-type: none"> Multiple Moz Govt agencies involved in process which causes conflict. Needs a single “go to” entity Port congestion sometimes means it is more viable to bring product through Durban Unfriendly regulations for import and transit Port congestion 	<ul style="list-style-type: none"> Lever off international experience to expedite product choice, formulations and best practice in fertilizer use Lever trade finance from manufacturers/Development funds and export banks Encourage manufacturers to provide flexible buying arrangements 	<ul style="list-style-type: none"> Entry of manufacturers into the market Expansion of subsidy program at exclusion of private sector
Blender	<ul style="list-style-type: none"> Adequate blending capacity. ETG, Omnia and Meridian 	<ul style="list-style-type: none"> Markets poorly developed. Major blender at Chimioio for tobacco market Laws for blending and export are complicated. Unfriendly regulations for blending for export 	<ul style="list-style-type: none"> Define domestic markets with market demand—eg Rice Work with Govt Pedsa Support platform with technical capacity Develop viable Anchor programs with adequate infrastructure Yara with the Norweign Govt implementing program to build small holder fertilizer use in Mozambique ETG have offered to assist in building input use through accumulation depots 	<ul style="list-style-type: none"> Requirements on blend exports make operations to difficult to blend at Beira
Distributor		<ul style="list-style-type: none"> Poorly developed High margin addition Low volume Poor distribution 		
Agro Dealer			<ul style="list-style-type: none"> Market development needs to happen first 	

Key Takeaways:

- Market creation is a strong requirement. Mozambique has large land availability and low population density. Infrastructure and market demand limit profitability. Hoyo Hoyo have had to stored soybean for 2 years because it is not viable to sell. (US\$150/ton freight inputs and US\$150/ton freight to Beira—cheaper to import of the international market)
- Proposals like pro Savannah have not been successful in developing the 34 Mill Ha of savannah of Mozambique which would allow infrastructural development.

Figure 2. SWOT analysis of the Mozambique fertilizer value chain

Table 3. Major commodities using fertilizer in Mozambique, 2017.

Commodity	Fertilizer (MT)
Tobacco	40,000
Sugar	24,000
Soya	500
Banana	Closed (disease)
Forestry	Closed
Cotton	Closed
Other (SHF)	3,000
Total	67,500

Low fertilizer demand at the smallholder level is a result of a number of factors. Mozambique is endowed with 36 million ha of arable savannah soils but has a very low population density. The distance from farmer to agrodealer (fertilizer buy point) averages over 40 km. Many farmers have poor access to markets to purchase inputs or sell produce and are therefore motivated primarily by food security. Food security is sufficient motivation for farmers in other countries to use fertilizers, but Mozambique is unique in that the dispersion of farmers also affects the ability of agrodealers to turn over significant fertilizer volume, resulting in extremely high fertilizer costs. High margins at the agrodealer level (50% in some cases), are due to high freight rates, high stock carrying costs (capital tied up in unsold product), and a low volume of turnover. Many SHFs have sufficient land holdings to practice shifting cultivation or cereal-legume associations (e.g., maize-pigeonpea relay cropping) as a soil fertility maintenance strategy. With little money to invest due to their non-commercial farming strategy, the tendency is to concentrate farm purchases on investments that give them maximum return: quality seeds and crop protection products. For fertilizer purchases, simple urea application often gives the best return on fertilizer investment. Hence, urea alone is an IAM recommendation for low-input farmers for maize, cassava, and rice. High climatic risk (both drought and flooding) is an additional disincentive to use fertilizers.

In this context, we examine the farmer motivation to increase fertilizer use for AGRA priority crops.

Maize and rice are both subsistence crops which farmers can reasonably sell excess production. To encourage more fertilizer use, costs must be reduced, fertilizer response must increase (multi-nutrient products), and markets must be accessible and profitable to increase output demand. These elements must work in synchrony.

Cost reduction is a function of the efficiency of the distribution system. A promising development is the Norwegian Embassy-funded, CLUSA-led PROMAC 2 project, partnering with Yara, Beira Agricultural Growth Corridor Group (BAGC) and AFAP to build distribution systems in the Beira corridor. The intervention intends to build 22 “hub” dealers and 400 community-based service providers to provide balanced fertilizers. It is providing customized fertilizers, farmer training and output market linkages to farmers in the Beira Corridor. Relative to other corridors (Nacala and Zambezi), transport costs are low.

This represents the kind of opportunity AGRA should seek to develop, although in this case, it already seems to be well-developed in the consortium listed. One opportunity for development is around tobacco concessions. These are mandated to grow one hectare of either maize or soybean for every hectare of tobacco. The Mozambique Leaf Tobacco Company (MLTC) is already using substantial amounts of fertilizers and has distribution well-organized. However, they are not mandated to provide inputs for these crops but may be motivated to do so if an arrangement can be made with a fertilizer blender.

Soybean and cassava are more challenging. Commercial soybean production is primarily in Zambezia. Freight costs are high: \$150 to 200/ton to and from Beira or Nacala, which adds to input costs (particularly bulky fertilizers) and export costs (costs to get harvest to market). This has challenged even commercial producers, who have cut back on production because they have little market for their product. While soybean can be used for subsistence demands, the reality is that SHFs do not grow much of it for this purpose; other legumes (beans, cowpeas and pigeonpeas) grow well, and can be consumed with less processing. Regarding cassava, meeting subsistence requirements is not challenging without fertilizers. Indeed, meeting the limited commercial demand (around the SAB-Miller/DADTCO opportunity for beer production) did not require farmers to apply fertilizers. Unless internal demand can be markedly increased, farmers may not be motivated to invest limited capital in fertilizers for these particular crops.

A key lesson is that that before investing in increased productivity in Mozambique, AGRA needs to evaluate the market potential of the commodity being produced, not only in relation to the commodity itself but as well in relation to the infrastructure to deliver the product to market at a competitive cost. Projects designed to increase farm income need a market pull component. If food security is the primary motivation, cassava and soybean may not be good options for targeting increased food security: cassava because food security can be achieved without fertilizer inputs, and soybean because it may not be a farmer preference compared to other legumes.

Policy Bottlenecks Affecting the Availability of Blended Fertilizers, and Interventions that AGRA and its Partners could Design and Advocate for to Help Farmers Access Appropriate Blends

The Mozambique Fertilizer Regulation is relatively new (2013). There is no act at present, but the suggestions made in “A Legal Guide to Strengthen the Mozambican Fertilizer Market” (AGRA, USAID, NML, AFAP; 2016) covers key needs (Appendix II), as follows:

Regulatory Fragmentation. Multiple government institutions are involved in fertilizer regulation and this often causes frustrations from importer/blenders and costs (Ministry of Agric, Customs, Mozambique Revenue Authority). There is a need for a single entity to deal with fertilizer matters. It appears the complexity is associated with the need for government agencies to ensure maximum taxes are collected and the administration needed to track product movement. Examples of frustration that have added an estimated US\$20 to \$40/ton on import products include

- Customs recently required blends have export documentation for each component of the blend. In some cases 5 export documents are needed for a single blend.
- Customs requirement that import orders for total transit cargo be presented before vessel can discharge—before final discharge weight is known.
- In 2016 the Mozambique Revenue Authority required a percentage of foreign currency from exported blends be deposited in Mozambique bank within a nominated time of export where it is converted to Mozambique currency. Release was dependent on forex availability and exchange rate variations. This seriously impacted importers' ability to pay international suppliers.

At the moment these issues are handled on an “as the need arises basis” through AMOFERT. AMOFERT is a successful industry platform made up of a broad cross section of industry actors. AMOFERT is well regarded and considered the voice of the fertilizer industry by the Ministry officials of the Government of Mozambique. AMOFERT has played a significant role in helping all actors interpret and understand the “new” regulations. It is a strong vehicle for regulatory change. AMOFERT needs continued support to undertake this role.

Registration Process. The fertilizer registration process needs clarity and simplification (from “A Legal Guide to Strengthen the Mozambican Fertilizer Market”). While registration of fertilizers is not required by estates and users of “custom blends” and the need at the moment is not significant, the outlined process needs clarity:

- Registration is required even for a fertilizer that is already in use in Mozambique, although the regulatory objective behind this requirement is not evident.
- Current regulations seem to suggest that a fertilizer that is well-known in the international market would be required to undergo the same registration process as a new fertilizer. This requirement impacts options for different varieties of fertilizer with affordable prices for Mozambican farmers.
- Any alteration in fertilizer composition, formulation type, quantity, or quality triggers a new registration process. This means that even small changes in the formulation of a registered fertilizer can require a completely new registration. This will negatively affect internal blends availability, because blends would be considered new and would need to go through the registration process even if there is only a change in formulation of nutrients already known to the Mozambican market.
- Registration is valid for five years and can be renewed for a similar period upon payment of the renewal fee. The registration renewal process can be quite lengthy and the timing uncertain. In light of this, stakeholders have questioned the need for registration renewal.

AGRA Support Activities

It is important AGRA demonstrates its leadership in the fertilizer sector. AGRA can

- play a key role in supporting AMOFERT operationally. Financially support its operation with one of the outcomes being clarification of the regulations.
- provide technical support to help bridge the gaps between actors and provide independent guidance through a technical group (within or external to AGRA) with broad set of skills and experience (Industry, fertilizer finance, agronomic, project management and policy) that can:

- ✓ engage with manufacturers/Importers- to build collaborative projects;
- ✓ provide direction to country programs and support country platforms;
- ✓ support regulatory structuring;
- ✓ provide guidance to AGRA consortium projects involving fertilizers; and
- ✓ engage with Industry to support the Last Mile Agripreneur Alliance (LMAA)

Appendix I. List of Potential Contacts and Partners for AGRA Implementation

Organization and contact details of key personnel	Provinces of activities	Organization type	Brief description of activities as related to AGRA priority crops
<p>IIAM: Ecole Carvalho, Director - Directorate of Agronomy and Natural Resources-DARN, Maputo Tel.+258828049580/+258848989997 ccecole@gmail.com Suzie Aline, Researcher Soil Fertility, Maputo Tel.+258 823 967 190 suziealine@gmail.com</p>	Throughout the country	National research center	Research Institute that deals with maize, rice, soybean and cassava. Funded by USAID and others
<p>IITA: Steve Boahen, Country Director, Nampula Tel.+258 823 045 286 S.Boahen@cgiar.org</p>	Nampula	CGIAR	IITA disseminates improved legume seeds and complementary management practices for soybean, groundnuts and cowpea. They are funded by USAID
<p>ICRISAT-SEMEAR Project: Carlos Malita, Project Manager, Nampula Tel.+258 826 811 790 C.Malita@cgiar.org</p>	Nampula	CGIAR	ICRISAT disseminates improved legume seeds and cowpea. They complementary management practices for soy, groundnuts and are funded by USAID
<p>WINNROCK: Isabel Mazive, Manager, Nampula Tel.+258 843 281 440 Isabel.Mazive@winrock.org</p>	Nampula	NGO	Resilient Agricultural Markets Activity (RAMA) – Nacala Corridor will facilitate the adoption of good agricultural practices and technology to increase resilience and achieve sustainable increases in agricultural productivity to protect food security. Funded by USAID
<p>Novos Horizontes Nampula</p>	Nampula	Private company	Novos Horizontes works on processing poultry feed and chicken production and processing. They focus on soybean and maize crop
<p>IKURU SA msousa@ikuru.co.mz Nampula</p>	Nampula	Private company	Output market (seed and grain). Crops are not specified
<p>JNB Empreendimentos: Jacinto Bila, Manager, Nampula Tel.+258 826 018 210T, +258 262 149 71 jnbila@gmail.com, jnbila@tdm.co.mz</p>	Nampula	Private company	Agrodealers (agri-inputs) for maize and soybean crops
<p>ISPM: Nascimento Nhantumbo, Lecturer/Researcher Soil Fertility Expert, Chimoio Tel. +258 827 411 580 tonhantumbo@yahoo.com</p>	Manica	Education institution	Implementing AGRA funded projects with regard to soybean and maize
<p>Land O'Lakes International Development: Carlos Sanchez, Manager, Chimoio csanchez@ncbaclusamoz.org</p>	Manica	NGO	Support local producers to increase agricultural productivity, profitability and climate change resilience. Funded by USAID
<p>Companhia de Zembe: Antonio Manjate, Manager, Zembe Tel.+258 820 920 106 antoniomanjate62@gmail.com</p>	Manica	Seed company	Seed company, implementing AGRA-SSTP, working on soybean and maize

Phoenix Seed: Mr. Kelvin, Director, Vanduzi Tel.+258 846 183 271 (George Technician)	Manica	Seed company	
CLUSA PROMAC: Sérgio Ye, Project Manager, Nampula Phone number:+258 823 042 024 SYe@ncbaclusa.net	Manica	NGO	They support local soybean and maize producers to increase agricultural productivity, profitability and climate change resilience- focus on CA. They are funded by USAID, Norweig Embassy
ECA (Empresa de Comercializacao Agricola) Manica-Barue	Manica	Private company	Maize buyer, processing and marketing
DECA Chimoio	Manica	Private company	Maize buyer, processing and marketing
Concern Universal: Helena Skember, Country Director, Maputo Tel.+ 258 823 095 200; +258 869 634 230 Helena.Skember@concern-universal.org Arlindo Muambole: Sustainable Livelihoods Coordinator, Chimoio Tel +258 827 795 260 Arlindo.Muambole@concern-universal.org	Manica	NGO	Impementing FAR-Mozambique - the Food Security Through Climate Adaptation and Resilience. Working on soybean and maize crops with funding from the Swedish Embassy
Agencia de Desenvolvimento Economico de Manica (ADEM): Manuel Queiroz, CEO, Chimoio Tel.+258 821 879 235 mqueiroz@ademmanica.org	Manica	NGO	ADEM does Market development of soybean and maize. This is a new project funded by AGRA
ECO-MICAIA: Andrew, Chimoio andrew@micaia.com / milagremicaia@gmail.com	Manica	Foundation	ECO-MICAIA is AGRA funded under the new strategy (PIATA). They do Extension (Manica) work on soybean and maize.
UPCT: Lusitano, Project Coordinator, Tete Tel.+258 842 249 881 upctete@gmail.com	Tete	Cooperative	UPCT is AGRA funded under the new strategy (PIATA).They do Extension (Manica) work on soybean and maize, funded by AGRA-New Strategy (PIATA)
MIRUKU: Abdul Cauio, Consortia Coordinator, Nampula Phone number:+258 842 070 290 cauio@miruku.co.mz abdulcauio@gmail.com	Nampula, Niassa, Zambezia	Cooperative	Miruku is a market development cooperative that focuses on Cassava, Maize, soybea. They are part of the new AGRA strategy (PIATA)
AENA: Matimula, Project Manager, Nampula matimulajunior.aena.org@gmail.com	Nampula, Niassa, Zambezia	Association	AENA offers extension services as part of the AGRA- new strategy (PIATA) with their focus being on Cassava, maize and soybean
AGMARK: Moises Raposo, Project Manager, Nampula Tel. +258 844 091 054 moises.raposo@gmail.com	Nampula, Niassa, Zambezia	NGO	AGMARK offers Market/Agrodealer development focusing on cassava, maize and soybean. They are also funded under AGRA-PIATA
Oruwera: Amilcar Lucas, Manager, Nampula Tel.+258 829 723 029 oruwera@teledata.mz	Nampula	Seed company	Input market-implementing AGRA-SSTP. Oruwera focuses on soy, maize, groundnut, cassava, pigeon pea
Agro Comercial Olinda Fundo Lda (ACOF):Olinda Fundo, Manager, Mocuba Tel.+258 824 080 684 olindafundo@yahoo.com.br	Zambezia	Private Company	Input and Output market of maize and soybean which is funded by the private sector

AGRIMERC: Gil Mucave, Director, Chimoio Tel.+258 844 955 128 agrimerccods@gmail.com	Zambezia	NGO	Development rural agrodealers network and VBAs- inputs supply. Extension with soybean and maize as their focus crops. AGRIMEC is funded by AGRA/PIATA
AFAP: Sergio Ussaca, Director, Maputo Tel.+258 824 584 240 sussaca@afap-partnership.org	Zambezia	NGO	Support local soybean and maize producers to increase agricultural productivity, profitability-Hub Agrodealers models. Funded under the AGRA/PIATA
ADRA Mozambique: Armindo Salato, Program Director, Maputo Tel. +258 823 617 940		NGO	Deal in output markets of soybean and maize. Funded by AGRA/PIATA
Farai Muchiguel: Project Manager, Mocuba Tel:+258 823 617 940	Zambezia		
Corredor Agro Nampula	Nampula		Soybean
IRRI: Carlos Zandamela, Researcher, Maputo Tel : +258 823 062 373 carloszandamela@gmail.com	Zambezia	CGIARs	IIRI does research on rice
Beira Agricultural Growth Corridor (BAGC): Emerson Zhou, Executive Director, Beira Tel.+258 82/84 306 9651 emerson.zhou@gmail.com	Sofala		
Zambezi Valley Development Agency: Roberto Mito, General Director, Maputo Tel.+258 823 019 371 / 843 162 370 albino.roberto@gmail.com	Zambezi valley		They work on rice, soybean, maize
ETC Adubos Lda: Guillermo Machado, Director, Maputo Tel.+258 823 061 250 / 843 061 250 Guillermo.machado@etgworld.com	Manica, Zambezia, Nampula, C. Delgado, Sofala	Private sector	Agro input importer, distributor & wholesaler
ETG: Anuraj Sasidharan, Assistant Manager –Logistics, Beira Tel.+258 825 145 660 fertilizer.beira@etgworld.com	Manica, Zambezia, Nampula, C. Delgado, Sofala	Private sector	Agro input Importer, Distributor & wholesaler
Soluções Rurais Lda: Rui Santos, Manager, Maputo Tel.+258 843 202 520 rui.santos@solucoesrurais.co.mz solucoesrurais.mz@gmail.com	Manica	Private sector	Agro input Importer, Distributor & wholesaler
TECAP-Casa do Agricultor: Eveline Batalha, Maputo Tel.: +258 844 566 604/ +258 823 207 310 Eveline.Batalha@casadoagricultor.co.mz	Manica, Tete, Nampula	Private sector	Inputs Wholesaler and retailer
Pannar	Manica, Zambezia, Nampula, C. Delgado, Sofala		They focus on maize and soy beans
Insumos Agricolas e Veterinarios (IAV) Lda: Sara Penicela, Manager, Chimoio Tel.+258 825 199 360 sarapenicela.penicela@gmail.com	Manica		Hub Agrodealer

Sementes Nzara Yapera Lda: Peter Waziweyi, Manager, Barue, Tel.+258 825 713 699 pwaziweyi@gmail.com	Manica		Inputs wholesaler and retailer - Barue. They are a seed company, implementing AGRA-PASS working on soybean and maize
Munguambe e Filhos Lda: Sinai Munguambe, Manager, Beira Tel.+258 825 014 430 / +258 847 600 076 munguambefilhos@yahoo.com.br	Beira		Hub Agrodealer
Morais Comercial: Antonio Morai, Manager Tel.: +258 826 763 050 mc.moraiscomercial@gmail.com	Nampula		Hub Agrodealer
Matuel Comercial: Elídio Matuel, Manager, Quelimane Tel.: +258 825 093 850 mc.ilidiocuambe@gmail.com , matuelcomercial@yahoo.com.br	Zambezia		Hub Agrodealer
Mozambique Fertilizer Company: Suhas Chougule, Gondola/Chimoio Tel.+258 820 387 129 suhas.chougule@mozfert.net	Manica	Fertilizer company	They deal in fertilizer production for maize, soybean and rice and delivery
Yara: Colin Macmillan, Sales and Marketing Manager Tel. +258 823 633 820 colin.macmillan@yara.com	Sofala	Fertilizer company	Yara does fertilizer production for maize, soybean and rice production and delivery

Appendix II. Summary of Key Regulatory Issues in Mozambique (Source: “A Legal Guide to Strengthening the Mozambique Fertilizer Market” 2016. AGRA, USAID, AFAP, NML)

Issue	Current Status	Possible Approaches
Addressing Regulatory Gaps and Clarifying Regulatory Discretion	<ul style="list-style-type: none"> The current Fertilizer Regulation has critical gaps and relatively wide discretion in some areas. For example, the regulation does not provide detailed rules on the criteria to evaluate fertilizer for registration. In many areas, the Fertilizer Regulation provides wide regulatory discretion, including the power of revoking registrations, which is defined in very general terms. Overall, expansive regulatory discretion and different interpretation of regulations can lead to inconsistent application and possible rent seeking activities, resulting in possible increases in farm gate prices for fertilizer. 	<ul style="list-style-type: none"> Minimize uncertainty by providing details on regulatory provisions and functions through subsidiary legislation or issuance of detailed guidelines outlining how regulatory agencies will exercise discretionary power. These steps will help create a transparent and predictable regulatory framework and minimize the possibility of varying regulatory interpretations and possible rent seeking behavior.
Addressing Regulatory Fragmentation/ Creating a One-Stop Shop	<ul style="list-style-type: none"> Multiple government institutions are involved in fertilizer regulation, which creates a significant burden on fertilizer importers and contributes to increased costs. The new draft Fertilizer Act would establish an autonomous fertilizer agency, which would be a positive step forward. Although creation of this institution would reduce transaction costs, help preserve institutional memory, and build necessary regulatory expertise, the draft legislation, in its current state, stops short of establishing the agency as a one-stop shop that coordinates functions. 	<ul style="list-style-type: none"> Establish an independent regulatory agency that can act as a one-stop shop, where businesses could complete all requirements. This agency could play an important role in facilitating a more efficient regulatory environment for the fertilizer industry. As Mozambique aims to significantly expand use of fertilizer in the country, streamlining the regulatory structure becomes increasingly urgent. The resulting reduction of regulatory costs will translate to reduced price of fertilizer at the farm gate level.
Addressing Challenges with Regulatory Instruments	<ul style="list-style-type: none"> The current Fertilizer Regulation was issued by the Council of Ministers as an attempt to fill a gap in the legal system. In general, creating regulations before a governing law can lead to challenges in the design and implementation of the legal and regulatory framework. As an act of the Council of Ministers rather than the parliament, regulations are less predictable in nature than a law and are not subject to parliamentary oversight. In addition, the Fertilizer Regulation is lower in legal hierarchy than a Parliamentary Act, and, in case of conflict between the Fertilizer Regulation and any Act of Parliament, the latter would prevail. 	<ul style="list-style-type: none"> Address the challenges associated with the design of the current regulatory framework by approving the draft Fertilizer Act.
Filling Gaps in Bio-Fertilizer Regulation	<ul style="list-style-type: none"> While Article 4 of the Fertilizer Regulation does not seem to exclude bio-fertilizer from the definition of fertilizer, no specific provisions exist that take into account the unique nature of bio-fertilizers. 	<ul style="list-style-type: none"> Address gap on bio-fertilizer regulation through the draft Fertilizer Act and subsequent regulations.
Implementing Subsidiary Legislation	<ul style="list-style-type: none"> A comprehensive legal and regulatory system for fertilizer typically consists a Fertilizer Act that establishes the legal framework and subsequent Fertilizer Regulations with details on the framework's implementation. In a sense, the current Fertilizer Regulation attempts to provide both the framework and the details needed for its 	<ul style="list-style-type: none"> Enact the draft Fertilizer Act, which, in its current form is designed to provide a legal framework and is expected to be followed by more detailed regulations or other legal instruments such as directives.

	implementation, but the Fertilizer Regulation falls short of both objectives in many cases.	
Clarifying Fertilizer Registration Process	<ul style="list-style-type: none"> • Although Mozambique requires registration of fertilizer, the specific requirements are not clear. • Registration is required even for a fertilizer that is already in use in Mozambique, although the regulatory objective behind this requirement is not evident. • Current regulations seem to suggest that a fertilizer that is well-known in the international market would be required to undergo the same registration process as a new fertilizer. This requirement impacts options for different varieties of fertilizer with affordable prices for Mozambican farmers. • Any alteration in fertilizer composition, formulation type, quantity, or quality triggers a new registration process. This means that even small changes in the formulation of a registered fertilizer can require a completely new registration. This will negatively affect blends, because blends would be considered new and would need to go through the registration process even if there is only a change in formulation of nutrients already known to the Mozambican market. • Registration is valid for five years and can be renewed for a similar period upon payment of the renewal fee. The registration renewal process can be quite lengthy and the timing uncertain. In light of this, stakeholders have questioned the need for registration renewal. • The reasons for revocation of fertilizer registration are not clearly defined, which can lead to arbitrary application of the regulatory framework. • Mozambique seems to follow the approved list approach, whereby a fertilizer can be imported only if it is included on an established list. According to many stakeholders, this approach unnecessarily restricts the availability of fertilizers in the country and reduces options for farmers. This regulatory approach contributes to the limited fertilizer range registered in the country, which is not wide enough to cater to all soil types, crops and agro-ecological conditions prevailing in Mozambique. 	<ul style="list-style-type: none"> • Establish clear requirements for fertilizer registration through additional regulations or directives in order to create transparency and stability in the fertilizer regulatory system. • Eliminate the registration requirement for fertilizers well known in the international market (including those registered in the regional market), even if new to the Mozambican market, in order to benefit Mozambican farmers. In such cases, testing for quality and efficacy would suffice to ensure quality. • Eliminate registration requirements for blend fertilizers to boost investment in blending and provide farmers with more fertilizer options tailored to their soil needs. The quality of blend fertilizers could be checked through testing. • Evaluate registration renewal requirements, as there appears to be no regulatory purpose for requiring renewal. Inspection could ensure the quality of fertilizers even after five years. • Provide specific requirements for revocation of fertilizer registrations through regulations or other subsidiary legal instrument in order to enhance transparency and predictability in the regulatory system. • Look at other good regulatory practices. For example, some countries in Africa, such as Zambia and South Africa, have adopted a regulatory approach whereby the government maintains a list of nutrients rather than a list of fertilizer grades. Fertilizer products offered for sale must be properly labeled with a guaranteed analysis and weight, and quality is controlled through ex post (instead of ex ante) mechanisms. Such an approach would allow for regulated quality at the retail level without unduly restricting market introduction of new fertilizer compositions based on approved ingredients. • Although a good regulatory practice, ex post controls (measures taken following market entry rather than preceding it; leading up to and including truth-in-labeling approaches) do require sufficient enforcement capacity, and enhancing the capacity of Mozambican regulatory agencies will be critical.
Enhancing Standards and Quality Control	<ul style="list-style-type: none"> • No Mozambican standards currently exist for fertilizer, although there are now settled international standards for fertilizer imported into Mozambique. Mozambique could initiate a process to develop equivalent national standards that are tailored to particular geographic or infrastructural factors. • Quality control of imported fertilizer helps control entry of counterfeit and adulterated fertilizers, and Mozambique, requires all imported fertilizer to be analyzed for quality. 	<ul style="list-style-type: none"> • Encourage collaboration between Ministry of Agriculture (MoA) and Bureau of Standards (MBS) on fertilizer standards to enforce international standards and develop appropriate equivalent national standards. MoA has already initiated development of standards and should expedite the process and collaborate with other relevant agencies to develop standards for blends. • Ensure quality by requiring that imported fertilizer be accompanied by a certificate of quality issued by a recognized certification authority of the country of origin of the exporter.

Increasing Inspection Capacity	<ul style="list-style-type: none"> Only 38 qualified fertilizer inspectors exist in the country, and some lack adequate training to conduct fertilizer inspections. 	<ul style="list-style-type: none"> Increase the number of inspectors and improve their capacity through continuous training to help improve regulatory functions across the fertilizer value chain. Leverage existing related services, such as extension services, in order to increase capacity for inspections.
Foreign Exchange Policy	<ul style="list-style-type: none"> Mozambique's foreign currency policy requires all registered fertilizer suppliers to convert all foreign receipts into 50 percent MT, and the government has put in place foreign exchange restrictions. 	<ul style="list-style-type: none"> Foreign currency related measures and restrictions pose a significant challenge to fertilizer importers. Fertilizer is a critical commodity, and the government should reconsider foreign exchange measures as they relate to fertilizer.
Streamlining the Process for Import Permits	<ul style="list-style-type: none"> An import authorization is required for each consignment and is valid for three months, with renewal for the same period possible. Regulators assert two reasons for requiring an import permit for each consignment: one is quality control and the other data collection, yet these goals could be achieved through other means. Fertilizer importers see the requirement as an unnecessary burden. 	<ul style="list-style-type: none"> Consider eliminating import permits or issuing them for the entire period of the validity of the import license. Quality can be ensured through existing quality control procedures which exist irrespective of the import permit requirement. Introducing an online portal for submitting fertilizer registration documents (these have to be completed in triplicates for the three line ministries responsible, and evaluation can take up to 4 months).
Ensuring Appropriate Penalties for Violations	<ul style="list-style-type: none"> Under the Fertilizer Regulation, penalties are prescribed as "sanctions," or fines, and "additional sanctions," or measures that may be applied on top of fines. Fines may be too light (with the maximum of MZN 250,000 for adulteration and MZN 75,000 for selling unregistered fertilizer), yet additional sanctions appear severe in some cases. For example, "additional measures" for adulteration and selling unregistered fertilizer include closing the business in question. 	<ul style="list-style-type: none"> Evaluate penalties in light of deterrence goals, with penalties set at an appropriate level and fines raised without additional sanctions.
Addressing Import Duties and Value-Added Tax (VAT)	<ul style="list-style-type: none"> Mozambique imposes a 2.5 percent customs duty on inorganic fertilizer. The duty is set to be eliminated per the Fertilizer Strategy as part of the government's drive to enhance agricultural productivity through increased use of fertilizer, although this has not happened yet. While fertilizer is exempt from VAT, services related to fertilizer, such as port and transport services, are still subject to a 17 percent VAT. 	<ul style="list-style-type: none"> Eliminate the customs duty and the VAT for fertilizer-related services, which could lower the price of fertilizer and increase affordability of fertilizer in line with the government's regulatory goals.
Improving Access to Finance	<ul style="list-style-type: none"> Farmers' access to quality seed, fertilizer, and agrochemicals is limited by challenges in accessing finance. 	<ul style="list-style-type: none"> Address certain legal elements of financial services delivery and tools for financing and present innovative solutions to challenges with access to finance, such as those around institutional capability (legal structures for aggregation models, including cooperatives, and other financial services delivery mechanisms), risk management (creation of collateral registry), and bankability. Focus on analysis and increased collaboration between regulators and financial services providers to develop models that could close gaps related to financing for seeds, fertilizers, and agrochemicals.
Encouraging Regional Harmonization	<ul style="list-style-type: none"> Farmers near national borders share similar soils and farming systems with farmers in neighboring countries. Regional harmonization of fertilizer rules and regulations would enable farmers in Mozambique to benefit 	<ul style="list-style-type: none"> Encourage development of a regional fertilizer strategy within COMESA and SADC to increase competition in the local market and allow manufacturers and suppliers the opportunity of operating in a larger

	<p>from fertilizers developed in neighboring countries without having to register each fertilizer blend anew.</p> <ul style="list-style-type: none"> • Mozambique is a member of the Southern African Development Community (SADC) and Common Market for Eastern and Southern Africa (COMESA). • COMESA, in partnership with AFAP, has undertaken a review of national policies and regulations on fertilizer importation, manufacturing, distribution, and use, with the aim of developing recommendations for the establishment of a harmonized regulatory framework for the region. • Regional harmonization of fertilizer in SADC has not yet moved forward. The SADC Ministers of Agriculture adopted the Regional Agricultural Policy (RAP) in 2014. While an important development in the move towards regional harmonization of agricultural policies, including fertilizer and other inputs, the RAP is meant only to define some common objectives and measures to guide members rather than serving as a binding mechanism that prescribes specific obligations for the member states. <p>In SADC, the broad policy objectives included in the RAP would need to be translated into specific legal instruments. As it stands now, the RAP represents a political commitment but not a legal commitment.</p>	<p>market with fewer constraints. It also could reduce administrative costs by sharing resources and facilities within the regional market.</p> <ul style="list-style-type: none"> • Mozambique could take a lead on fertilizer harmonization efforts within the COMESA and SADC, as stakeholders in Mozambique's fertilizer market stand to benefit from a harmonized regional market.
<p>Strengthening Capacity of the National Fertilizer Dialogue Platform</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<p>Raising Awareness of the Legal and Regulatory System</p>	<ul style="list-style-type: none"> • Stakeholders have reported that importers, suppliers, agrodealers, farmers, and even regulators have limited knowledge and awareness about legal and regulatory frameworks. • Limited knowledge of legal processes and difficulty accessing legal assistance leaves smallholder farmers vulnerable and undermines efforts to implement formal legal frameworks to regulate and strengthen the fertilizer market. • Smallholder farmers in Mozambique are the most vulnerable group in the fertilizer industry because of their lack of knowledge about their rights and obligations in fertilizer transactions. 	<ul style="list-style-type: none"> • Address challenges through (i) increased dissemination of information regarding laws and regulations, particularly as these systems change over time, (ii) the provision of assistance to farmers in preparing or interpreting legal documents such as contracts, and (iii) the provision of transactional legal services to individuals working with the agricultural sector. • All of these steps could be done in combination with the development of a legal education curriculum to train and equip lawyers with the necessary facilities for effective delivery of agricultural legal services to stakeholders. Training farmers on different aspects of fertilizer laws and regulations that impact them and enhancing their knowledge about their rights and obligations could make them informed partners in the fertilizer industry.