

8. Fertilizer policy

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Fertilizer production and use in Africa is guided by the policies of national governments and regional economic communities. Policies affect many aspects of the fertilizer chain: the availability of finance for producers, distributors and farmers; price and types of fertilizers, institutional landscape, ownership and access to raw materials, research and technology development and dissemination, the number, size and location of fertilizer manufacturing plants, materials management, logistics and physical distribution, the availability of finance for producers, distributors and farmers, the price of fertilizers, the ease of trading both fertilizers and outputs, the availability and quality of hard and soft infrastructure.

This chapter provides an understanding on why policy and regulatory frameworks matter. It describes how policies are made regarding fertilizers. It then reviews the experience of policy formulation and implementation in selected countries to draw lessons about how to resolve the constraints and improve the performance of fertilizer industries.

Using the analogy of a football game, Chapter 4—on the institutional landscape—described some of the players as the organizations playing the game, this chapter looks at the rules of the game.

The major fertilizer-specific policy used by governments in sub-Saharan Africa has been subsidies. We discuss these separately in Chapter 9.

The importance of policies

African farmers pay the highest price for fertilizer around the world, and not surprisingly, fertilizer consumption levels in Africa are the lowest in the world. Fertilizer markets suffer from high costs for import procurement, marketing and distribution mainly resulting from market failures. This situation justifies public-sector interventions.

The policy and regulatory landscape is littered with instruments that governments have used in their attempts to reduce the farm-gate price of fertilizer and boost application rates. Policies have remained focused on the sustained, judicious and increased use of fertilizer by farmers to boost yields and reverse decades of the severe nutrient mining and declining soil fertility.

Billions of dollars are invested every year in implementing fertilizer policies, but without the

continent being any closer to achieving the “uniquely African Green Revolution” called for by UN Secretary-General Kofi Annan in 2004. The effectiveness of fertilizer policy and regulatory frameworks is disputed in every corner of the continent. Nonetheless, as governments strive to increase agricultural productivity, fertilizer policy and regulatory frameworks remain the key lever to pull.

Inadequate or inappropriate policies

Many agricultural policies, laws, regulations and practices deter rather than encourage private-sector investment in the fertilizer value chain. This is despite Africa’s governments’ commitment in the Malabo Declaration of 2014 to “create and enhance necessary appropriate policy and institutional conditions and support systems for facilitation of private sector investment in agriculture, agri-business and agro-industries, by giving priority to local investors”. The Abuja Declaration on Fertilizer for the African Green Revolution of 2006 is also yet to be realized. A long list of problems includes the following:

- Bureaucracy in registering new fertilizer products, and in registering businesses to import, manufacture and distribute fertilizers
- Requirements of export and import licenses for trade with neighboring countries
- Access to finance (and particularly foreign exchange)
- Subsidies that displace commercial sales of fertilizer
- High costs of fertilizer clearance at ports, charges and demurrages
- Undeveloped fertilizer distribution systems
- Poor regulation that enables the sale of fake and adulterated fertilizers
- Inappropriate fertilizers in terms of nutrient content
- Lack of harmonization and domestication of fertilizer quality standards within regional economic communities.

In many countries, the public sector has dominated production, import, marketing and distribution

systems. This contributes to the high cost and late arrival of fertilizer. Fertilizer is sometimes used as a political tool to gain votes. In countries that have invested in road and rail infrastructure, transport costs have gone down significantly, resulting in lower farm-gate prices.

Governments, the private sector, farmer associations and other stakeholders must work together to address these impediments. That includes developing and enforcing policies, laws and regulations to ensure smallholder farmers can obtain good fertilizers in a timely manner and at a reasonable cost. This can only happen if the industry is open to the private sector and the development of competitive markets.

Why fertilizer policy?

Governments around the world heavily intervene in agricultural input and output markets, including those for fertilizers. This is because of market, institutional and regulatory failures.

Market failures

A **market failure** may result from:

- Externalities such as the failure by fertilizer sellers to provide farmers with adequate information about the quality of their products.
- Adulterated, sub-standard, counterfeit and unsafe products.
- Imperfect competition due to only one or a small number of suppliers.
- Government involvement in the market, distorting prices or interfering in the functioning of the market.
- Economies of scale in production, resulting in natural monopolies.
- High transaction costs of doing business.
- Missing or incomplete markets because of a lack of purchasing power among potential fertilizer consumers.

Institutional and regulatory failures

Government intervention to correct market failures may themselves impose costs and administrative burdens, increase costs of doing business, worsen welfare outcomes and result in institutional and regulatory failures.

- **Institutional failure** results when policies, laws and regulations are poorly implemented because of overlapping responsibilities and

poor coordination among different ministries, departments, and agencies.

- **Regulatory failure** results from the ineffectiveness of rules to address problems, inadequate resources for enforcement, and inconsistency and inequity in regulation.

Outdated policies

As demand for fertilizers grows and technologies change, policies, laws and regulations that were developed previously have increasingly been overtaken by events. This results in policies and regulations that are:

- Too old and irrelevant to the current situation
- Duplicated and overlapping among government ministries, departments and agencies
- Missing or ambiguous
- Economically flawed
- Too restrictive or excessively implemented, or
- Poorly implemented.

Such outdated policies need to be reformed to create an enabling business environment for fertilizer firms and farmers.

Policy reform processes

The policy process starts with defining a **problem** (or problems) that needs to be solved (such as low yields and farm incomes) and diagnosing its root causes (Figure 33). This problem may be identified by the government itself, or defined as a result of public pressure. The government department responsible then identifies a **goal** (such as to increase yields and income) and sets **objectives** that will help achieve that goal (e.g. increase fertilizer use). The objectives need to fit with the overall vision and strategy for the agricultural sector and the country's development agenda. The objectives will vary among countries and within a country over time.

These objectives feed into a **policy** (such as "privatize fertilizer supply"), which must be translated into a **law** (or act, decree, directive, promulgation or ordinance). This is particularly so if the policy involves the appropriation of government budgets, imposes taxes (levies, fees or charges), or creates offenses and imposes criminal penalties and fines. The policy needs to be consistent with other related policies and laws.

To implement a fertilizer act, **regulations** (ministerial orders and subsidiary texts under the law) are enacted to provide the needed institutional

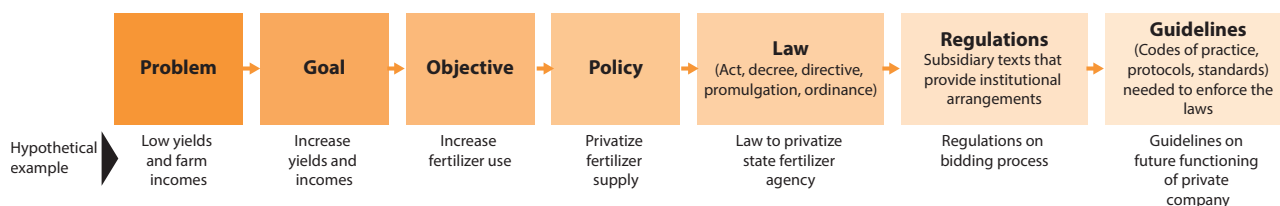


Figure 33. Policies, laws, regulations and guidelines

arrangements and legal underpinnings. The regulations also put in place the implementing **guidelines** (codes of practice, protocols, specifications and standards) that need to be in place to enforce the laws.

The process of policy development is non-linear (Figure 33). The policy must be initiated, developed, validated and approved, before it goes into the legislative process. This entails drafting, validating and approval of a succession of legal texts, followed by legislation by parliament. Once it becomes law, the measures can be implemented and enforced. After a period of implementation, the success (or otherwise) can be evaluated, and the policy or law revised as appropriate.

At various stages in this process, consultation with stakeholders is necessary to ensure the policy is appropriate and realistic, to incorporate the stakeholders' opinions, to inform them of the process and goals, and to get their support. The process may become stuck at any stage because of resistance from the public, stakeholders or actors within the government, or because of external events such as a change of minister or government.

Going through the full procedure in Figure 34 takes time: depending on the complexity of the issue and the administrative, political and legislative processes, the sequence from problem definition to legislation may take 5–10 years. Throughout, the responsible

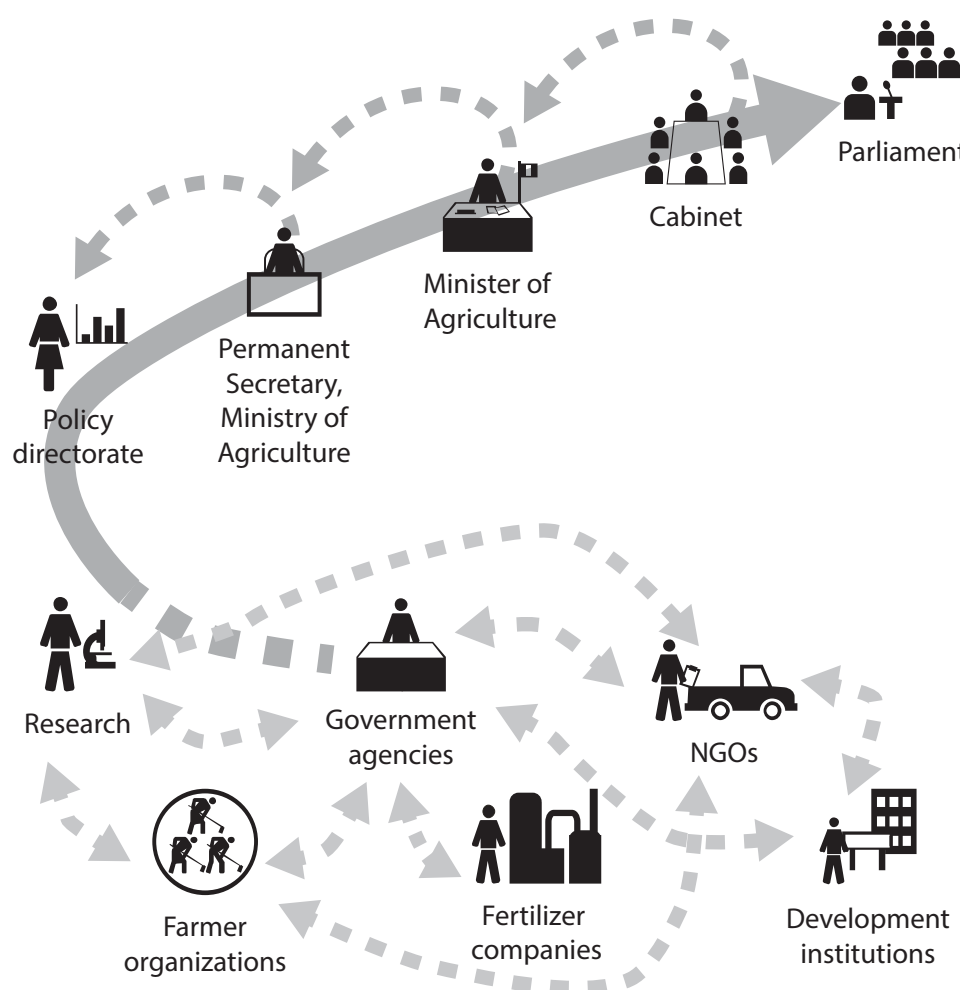


Figure 34. The policy process for fertilizers

ministry (for fertilizers, normally the ministry of agriculture) must coordinate with other ministries and consult with a long list of stakeholders: trade organizations, individual firms, farmers' organizations, civil society organizations, researchers, and other key stakeholders. These may also engage in policy and advocacy work to try to influence the policy process and outcomes.

Experience shows that it is necessary to work closely and consult widely with stakeholders and obtain their support and buy-in from the beginning of the policy development process. This may delay the process and consume resources. But the time and investment will more than pay off as the regulations gain wide acceptance by stakeholders.

The policy process has two dimensions: technical and political.

- The **technical** dimension is to facilitate the development of high-quality laws and regulations which are consistent with international best practices and relevant global, and regional instruments.
- The **political** dimension is to secure the participation of stakeholders in the development of the instruments as well as to ensure the buy-in of the political authorities.

The process is yet more complex if several layers of government are involved (regional community, national, regional, local), if consensus is needed (as in democratic as opposed to authoritarian systems), if the topic is high-profile enough to involve other ministries or the president's office, if the pre-existing legislation is complex, and if evidence is needed beforehand that the policy will have the desired effect. The process may go forward quickly or slowly, or it may be contested, stall or go backwards.

Once a policy is converted into law, implementation and enforcement are by no means assured. Those who are affected by the new rules – and those charged with enforcing them – must be made aware of the rules. Procedures must be put in place, staff hired, reassigned and trained, equipment acquired, facilities built, and so on. During implementation, activities must be coordinated, records kept and the situation monitored to ensure the measures are having the desired effect.

It is also necessary to ensure that the national regulations are harmonized with those of its neighbors in a regional economic community. This is necessary to facilitate cross-border trade in fertilizers and broaden the market for fertilizer firms.

Policies in individual countries

The remainder of this chapter describes the fertilizer policy background in eight countries: Mali, Burkina Faso, Ghana and Nigeria in West Africa, Ethiopia, Kenya and Tanzania in East Africa, and Malawi in Southern Africa. For each country we describe the history of fertilizer policy and show how this has led to the current situation.



Mali

Agricultural development strategies. Since the early 1980s, the government has implemented agricultural policy and regulatory reforms to transform the economy by giving a greater role to the

private sector and market processes (Dembele and Staatz, 1999; Dembele, 2004). The process began in 1981 by removing legal constraints to marketing cereals by the private sector. It increased the role of the private sector and linked weekly village markets to urban centers and export markets.

The government has implemented a series of strategies to combat poverty and promote development (MAFAP, 2013). These have included:

- **2002–6:** Strategic Framework for the Fight against Poverty.
- **2007–11:** Strategic Framework for Growth and Poverty Reduction (Cadre Stratégique pour la Croissance et la Réduction de la Pauvreté, CSCRP).
- **2008:** Start of the Program on Social and Economic Development to increase staple food grain production to meet national needs and drive the industrialization plan.
- **2012–17:** Strategic Framework for Growth, Employment and Poverty Reduction (CSCERP)—replaced the Strategic Framework for Growth and Poverty Reduction.

Within these broad frameworks, the government implemented several specific strategy and policy frameworks to guide agricultural and rural development. These included:

- **1992–2010:** Master Plan for Rural Development.
- **2011–20:** Agricultural Development Policy (Politique de Développement Agricole).

Operational programs were shifted from individual projects investment projects before 2010 to the National Agricultural Sector Investment Plan (PNISA) to bring together all national investment plans, programs and projects, and interventions for agriculture in the country for 2011 to 2020.

The **2006 Agricultural Orientation Law** (Loi d'Orientation Agricole) guides the formulation and implementation of long-term policies for agricultural development. The government transferred responsibilities and management of production, transformation, and commercialization of agricultural inputs and products to private-sector firms. This demonstrated the government's commitment to a private-sector approach.

The Ministry of Agriculture's **action plan for 2008–12** (Agreed International 2016a) provided a coherent framework to implement strategies and actions spelt out in the Program of Economic and Social Development, the Letter of the President of the Republic and the Declaration of General Policy General of the Prime Minister.

Fertilizer regulation. After controlling the fertilizer industry from 1960 to 1968, the government liberalized it in 1968. Several companies entered the sector: by 2010 there were 4 importers and blenders, 15–20 wholesalers, 300 distributors and 820 agrodealers engaged in fertilizer supply. In 2008, the government passed a fertilizer law to promote a competitive, open-market-based system (Agreed International 2016a). But it did not implement the law because there were no application decrees to operationalize it, and because it lacked the financial and human resource capacity to enforce it.

Subsidies. Following the global financial crisis in 2008, the government launched a seed and fertilizer subsidy under its Rice Initiative. This aimed to increase cereal productivity through improved access to fertilizer and to contribute to food and nutrition security through increased income and reduced consumer prices. The main component of the subsidy is fertilizer. The program was expanded to include maize, wheat, millet, and sorghum, seeds, pesticides, and agricultural equipment. The government provides subsidies through the Presidential Initiative. The subsidy program is provided using an open-market system based on companies tendering to supply fertilizers. The government subsidizes 40% of the cost and the farmer pays the remaining 60%.

The subsidies now account for a large share of the agricultural budget, with a share expenditure of around 25% of all government spending on rural development.

National Fertilizer Committee. In 2011, Ministerial Order 2011-2220/MASG appointed members of the National Fertilizer Committee (Agreed International 2016a). This committee includes a representative of the Minister of Agriculture and 18 members, including all actors in the fertilizer sector. But it does not function as well as it should due to lack of funding and challenges with its internal organization. An order from the Minister of Agriculture is needed to fix the modalities of this committee's operation.

Fertilizer quality. The ECOWAS Regulation C/REG.13/12/12 aims to harmonize rules governing quality control, certification, and marketing of fertilizers in the ECOWAS region. Mali has published this in its official gazette. A fertilizer testing laboratory was designated in 2013. Inspectors conduct field inspections (Keyser et al. 2015), but there is only one laboratory for the country and its capacity is limited. The national laboratory can only analyze for nitrogen, phosphorus, and potassium, but not other macro- or micronutrients. There is no systematic control of imported and locally produced fertilizers before they are distributed for sale. Substandard fertilizers are not removed from the market. Penalties have been identified but no prosecutions have been made. Therefore the supply of high-quality fertilizer is a major challenge.

Fertilizer recommendations are not based on soil- or crop-specific conditions, the nutrient content of the soil, or the needs of the crops. A new product must be tested in government-run trials for 3 years and give at least 30% higher yields than a standard fertilizer formulation.

Regional trade. The national law on fertilizer is not consistent with the ECOWAS fertilizer decree: it specifies different maximum variations in nutrient content and in heavy metals from those designated by ECOWAS. The Mali legislation includes chrome as a controlled heavy metal; this is not listed by ECOWAS. This implies that foreign fertilizer can be blocked at the border. The Mali legislation allows for much higher concentrations of cobalt than does ECOWAS. This makes it difficult for Mali to export its own products. Malian regulations also dictate different and less specific requirements for labeling of nutrient content than does ECOWAS.

Mali has followed an approach to fertilizer institutional and regulatory reforms based on developing a competitive, open-market system. Competitors import raw materials and finished fertilizers from several countries, including Belarus, Morocco, Nigeria, Russia and Ukraine.

The country has a relatively developed network of hub agrodealers, which helps explain the rate at which the fertilizer industry is growing. Annual fertilizer

consumption exceeds 700,000 tonnes (IFDC and AFAP 2018a). However, as much as 88% of the fertilizers consumed each year are subsidized. Only about 80,000 tonnes are sold through commercial markets.

Constraints. Constraints to improving the performance of the fertilizer industry include the poor enforcement of existing legislation, the quality of warehouses, limited human resources to control fertilizer, the lack of conformity with ECOWAS rules, soil mapping, and the high cost of fertilizers. Regulations on the axle load of trucks operating in the West African Monetary and Economic Union region is a constraint because it increases the cost of transporting fertilizers.



Burkina Faso

Agricultural development strategies. Starting in the 1990s, the government has implemented agricultural policy and regulatory reforms to accelerate the development

of sustainable agriculture and growth to improve people's livelihoods. From 1994 to 2009, it implemented structural-adjustment macroeconomic-policy reforms. These improved the environment for private investment in general and agricultural sector investment in particular (Abt Associates 2014).

Fertilizer regulation. Efforts to develop regulations for fertilizers started in the 1990s when the government committed to a private-sector-driven approach and began to emphasize expanding the private sector's role in fertilizer distribution. In 1999, the government adopted the National Strategy of Soil Fertility. Beginning in 2005, the government subsidized fertilizers for cotton: cotton companies are allocated public funds to maintain stable prices of fertilizers.

Following the Abuja Summit for fertilizer in 2006, a national strategy was developed to promote fertilizers. The overall objective was to double the average application rates from 7.5 in 2006 to 15 kg/ha in 2015. Investments were made to develop a network of agrodealers to distribute agricultural inputs and expand farmers' access to fertilizers. A Fertilizer Act and regulations to control the quality of imported, exported and locally manufactured fertilizers was passed in 2007. This required imported fertilizers to be approved by the Minister of Agriculture and to obtain a National Certificate of Conformity issued by the Minister of Trade. The law is not explicit about compulsory registration of new fertilizers, but it specifies penalties for importing, marketing and

manufacturing fertilizer without approval. The Ministry of Agriculture is mandated to enforce the controls; it does so by checking the quality of fertilizers, labeling and packaging at the borders, manufacturing plants, sales and storage points.

Subsidies. Following the global financial crisis in 2008, the government began to subsidize fertilizer for rice, maize, sorghum and cowpeas. From 2008 to 2011 these subsidies were distributed by the staff of the Ministry of Agriculture (Agreed International 2016b).

In 2011, the government adopted the Strategy for Accelerated Growth and Sustainable Development ("Stratégie de croissance accélérée et de développement durable") for implementation from 2011 to 2015. The National Program for the Rural Sector (PNSR) covers the planning, implementation, monitoring and evaluation of all public and private interventions in rural development. These two initiatives provide the vision, strategy and policy framework for agricultural and rural development. The National Program for the Rural Sector permits firms to push reforms forward through innovations that trigger increased production through prioritized value chains. A Presidential Council was set up for the private sector to meet with government officials and discuss policies and regulations, because the reality on the ground can be different from that envisaged in planning documents.

Starting in 2012 the government began to involve the private sector in the distribution of subsidized fertilizer in order to reduce the cost of reaching beneficiaries (Agreed International 2016b). It organized the Competitiveness and Growth Credit program to do this. This allocated 30,000 tonnes of fertilizer a year for distribution by private firms. The quantities of subsidized fertilizer distributed by the private sector during the 2012/13 to 2015/16 cropping seasons ranged from 40 to 56% of the planned 30,000 tonnes. The government has stated that it intends to withdraw progressively from supplying agricultural inputs in favor of the private sector. However, subsidized inputs for cotton are distributed through cotton companies (SOFITEX, SOCOMA, Faso Coton) and their trade association. There is the perception that a substantial proportion of fertilizers marketed are of poor quality.

Regional trade. The ECOWAS Regulation C/REG.13/12/12 governs the harmonization of rules governing quality control, certification, and marketing of fertilizers in the ECOWAS region. Burkina Faso published this regulation in its official gazette and designated a national regulatory service. In response, the Direction Générale des Production Végétales,

Ministry of Agriculture, Hydraulic and Fisheries Resources (DGPV/MAH) pushed through various orders and decrees:

- Inter-ministerial Order 2014-045/MASA/MEF/MICA, fixing the amount of approvals for the manufacture, import and distribution of fertilizers.
- Joint Order 2014-044/MASA/MICA, on fertilizer labeling standards.
- Ministerial Decision No. 2014-075/MASA/MICA/MERSI/MEDD, on methods of sampling, analysis and determination of the maximum concentration of heavy metal fertilizers.
- Order 2014-045/MASA/CAB on seizure and confiscation procedures in fertilizer control.
- Order 2016-131/MAAH/CAB appointing the members of the National Commission for Fertilizer Control.
- Decree 2017-1131/ PRES/PM/MINEFID/MAAH authorizing the collection of revenue relating to the control of fertilizers.
- Joint Order 2018-004/MAAH/MINEFID on pricing and payment arrangements for fixed inspection fees and other fertilizer control revenues.

Fertilizer quality. The National Committee for Fertilizer Control is supported by the laboratories of the National Soil Bureau for testing and the National Institute for Environment and Agricultural Research for fertilizer recommendations. That means Burkina Faso has in place regulations that are in compliance with ECOWAS quality regulations. But implementing the control structure has been a problem. An equipment problem at the National Soil Bureau is being fixed by a \$5 million investment, but problems with inspection procedures, human capacity and supervision remain. Moreover, the regulations do not cover fertilizer distribution. Fertilizers used are not tailored to the different situations of farmers depending on crops and soils. The availability of good-quality inputs is thus a problem. The government has been recommended to target fertilizer subsidies to support private fertilizer firms to open up new markets. Such subsidies would reduce investment costs to encourage companies to invest in distribution in more rural but high-potential markets.

Constraints. A comparative institutional analysis of ECOWAS regulations and the Fertilizer Act (Garane and Barry 2017) showed that the Act does not take

into account several provisions of the ECOWAS regulation. The analysts recommended that the discrepancies were so large that a new law would be necessary.

Of the total fertilizer volume of 280,000 tonnes consumed in 2016, 73% are subsidized (of which 66% are directly for cotton), leaving only about 75,000 tonnes supplied by private firms through commercial markets. It is unlikely that the growth in fertilizer consumption will come from subsidies (IFDC and AFAP, 2018b). Only the development of the private system can further the consumption of fertilizers in the country.



Ghana

Agricultural development strategies.

Under the Economic Recovery Program starting in 1983, the government removed price controls and subsidies, privatized state-owned enterprises, liberalized agricultural markets and devalued the currency. It developed several frameworks to guide development and interventions in agriculture (Ministry of Food and Agriculture 2007, 2015; National Development Planning Commission 2014):

- **2000–2004:** Accelerated Agricultural Growth and Development Strategy
- **2010–2013 (phase 1), 2014–17 (phase 2):** Ghana Shared Growth and Development Agenda
- **2002–6 (phase 1), 2007–11 (phase 2):** Food and Agriculture Sector Development Policy
- **2009–15 (phase 1), 2014–17 (phase 2):** Medium Term Agricultural Sector Investment Plan
- **2018–20:** Planting for Food and Jobs

The National Development Planning Commission set these agendas. The Agricultural Sector Working Group was organized beginning in 2002 to conduct policy dialogue for engaging the government and development partners on implementation of the policy frameworks.

Fertilizer regulation. Although the government liberalized the procurement, import and distribution of fertilizer beginning in 1988, it did not put in place a legal and regulatory framework to control quality until the enactment in 2010 of the Plants and Fertilizer Act,

2010 (Act 803). It took 9 years from 2001 to 2010 for this Bill to go through the government processes and get passed into law. After the Act came into force, it took another two years to put regulations in place so it could be implemented. The Fertilizer Policy was approved by Cabinet in July 2013.

The ECOWAS Regulation C/REG.13/12/12 on the harmonization of quality, certification and marketing rules for fertilizers were ratified in 2016.

Fertilizer quality. The National Fertilizer Council was reconstituted in 2014 to oversee the performance of the fertilizer industry. The Pesticide and Fertilizer Regulatory Division of the Plant Protection and Regulatory Services Directorate, Ministry of Food and Agriculture, was established under Act 803 as the national regulator. Twenty-five fertilizer inspectors were appointed. At least two inspectors are working in each of the country's region. The Directorate's National Laboratory was designated as the fertilizer testing laboratory, but it cannot yet run all the major nutrient analyses. Four other public and private laboratories were designated to carry out nutrient analysis.

The Fees and Charges Legislative Instrument is reviewed annually to determine fees and amounts for obtaining or renewing a license. However, the regulatory authority has inadequate human, material and financial resources to enforce the regulations. This is a major constraint to implementing the quality-control system.

Subsidies. After the 2008 global financial crisis, the government reintroduced subsidies to increase farmers' access to seeds and fertilizer, increase fertilizer application rates, drive down the cost of food production, and attain household and national food security. It tried different systems for implementing the subsidy scheme. It started by providing fertilizer subsidies to cocoa farmers through the Ghana Cocoa Board through licensed wholesalers, distributors, local agrodealers and agents. Subsidies to cereal farmers were delivered through fertilizer companies selected through competitive bidding. These companies were given a quota based on the company's capacity, historical distribution, the offered price and other factors. Regional quotas were allocated based on historical consumption and projections.

- **2008–9:** Subsidies to cereal farmers were provided through vouchers redeemable through agrodealers (World Bank 2017, Agreed International 2016c).
- **2010:** The government changed this system to a waybill system in order to reduce the cost of administration and the diversion of fertilizers from the intended beneficiaries.
- **2012:** A passbook system was introduced. Farmers used their passbook to go to district agricultural officers and collect fertilizers from the agrodealer.
- **2013:** Switch from universal to targeting by focusing on smallholders in the north, limiting the quantity per farmer, and reducing the subsidy element for fertilizer to less than 30%.
- **2014:** The subsidy program was not implemented because of a lack of funds.
- **2015:** The program was resumed, with targeting and subsidizing only for NPK and urea.
- **2016:** Change to an electronic system.
- **2017:** The database of farmers, piloted by e-Soko, was upscaled and used to operate the electronic voucher for the fertilizer subsidy. By September that year, the Crops Services Directorate had biometrically registered 250,000 farmers in seven of the country's ten regions.
- **April 2019:** 384,000 farmers had been registered electronically.

Constraints. Ten companies import and sell 440,000 tonnes of fertilizers a year (IFDC and AFAP 2018c). The major constraint to improved performance of the industry is that about 84%, of this amount is sold under some kind of subsidy and not necessarily tendered. This likely results in monopoly overcharges. There are also infrastructural problems. The electronic voucher system is difficult and expensive in the environment.



Nigeria

Agricultural development strategies. Starting in 1986, the government began to implement a package of agricultural policy and regulatory reforms under the Economic

Recovery Program. This reduced deficit financing, devalued the local currency, removed subsidies, price controls and market boards, eliminated controls on interest rate, restructured public expenditure, reduced tariffs, privatized state-owned enterprises, and liberalized agricultural trade (Moser et. al. 1997). However, these reforms were inconsistently and incoherently implemented until the introduction of Agricultural Transformation Agenda of 2011–16 and the “Green Alternative” Agriculture Promotion Policy of 2016–20 (Federal Ministry of Agriculture and Rural Development 2014, 2016). These provide a framework to guide interventions in the agricultural sector.

In 2011, under the **Agricultural Transformation Agenda**, the government liberalized the fertilizer sector, ending the direct procurement and distribution of fertilizers and seeds, and transferring the importation, manufacture, distribution and retail to private-sector firms. This ended four decades of endemic corruption in the fertilizer sector (Federal Ministry of Agriculture and Rural Development 2014).

The **Growth Enhancement Support Program** provided targeted support for seeds and fertilizer to 20 million farmers in the four years from 2011/12 and 2014/15. This program used an electronic wallet system to deliver seeds at no cost and a 50% subsidy on fertilizers. It was based on a national database of 15 million farmers. Registered farmers received vouchers through their mobile phones, which they could exchange for fertilizer and seeds from independent private agrodealers.

An assessment of the scheme by the Fertilizer Suppliers Association of Nigeria (2013) found it was successful in delivering subsidized inputs to large numbers of farmers. During the 2012, 2013 and 2014 planting years, it delivered inputs to a cumulative total of 14.3 million farmers. The program was successful largely because it was dominated by the private sector. But it lacked a regulatory framework to control quality. This resulted in product faking, adulteration, false labeling and other malpractices (Fertilizer Suppliers Association of Nigeria 2015). Anecdotal evidence indicates that some companies did not deliver fertilizers to farmers but instead bought them back and resold them in commercial markets. After a change in government leadership, the program was not institutionalized into a law that would have made it sustainable.

A **National Agricultural Growth Enhancement Support Scheme Bill** was drafted in 2014. This bill was approved by the Federal Executive Council stage in 2015, but was not sent to the House of Representatives and Senate because of a lack of time before the general elections in December 2016. Consequently the bill got stuck at this stage.

The **National Agricultural Inputs Bill** suffered a serious setback owing to the suspension of the Growth Enhancement Support Scheme in 2016, which provided the policy framework for it.

Presidential Fertilizer Initiative. In 2016, the administration of President Buhari introduced the Presidential Fertilizer Initiative in place of the Growth Enhancement Support Program. The federal government opted to directly support production plants in the country to produce 1.5 million tons of fertilizers in the 2017 farming season, for sale at fixed market prices (see also Box 3). The main aim of the Initiative is to encourage local blending of NPK, so that farmers could use crop and area-specific blends. This required the revival of blending plants that were operating below capacity or not at all, with a combined annual capacity of about 4 million tonnes. Using these plants reduced the cost of production, making it possible to pass on the savings to farmers. State government are given the right to take up about 60% of the fertilizer produced, while agrodealers take the remaining 40%.

The Initiative has recorded some major successes. In 2018, there were 24 blending plants with an aggregate capacity of 5.3 million tonnes per year, up from 11 plants with a combined capacity of about 4 million tonnes at the start of the program (IFDC and AFAP 2018d). The Indorama fertilizer manufacturing plant also came on-stream. The farm-gate price of a 50-kg bag of NPK blend declined from N13,000 to N5,500. Other NPK formulations sold for about N6,800 per bag.

The government banned the import of finished NPK fertilizers in 2018 in order to protect the infant domestic blending industry. There was a dramatic increase in fertilizer consumed, though only one blend now dominates the market. In 2017, consumption rose by 63% to 1.56 million tonnes, but in 2018 it dropped to 1.43 million tonnes. Still this is the highest consumption ever achieved in the country, and has been achieved without a direct farmer subsidy – a key thrust of this policy.

But there were challenges. Delays in offloading raw materials from ships were further complicated by flooding in Lagos State. Road and rail infrastructure are poor, and the participating blending plants are unevenly distributed across the country. Demand is seasonal, and adulteration and price racketeering occur.

These problems are being addressed. Old blending plants were revived and new ones built to reduce the cost of moving fertilizer; the plants are located strategically in each part of the country. Crack teams from the Office of the National Security Adviser, the police and civil defense were set up to resolve adulteration and price racketeering. Whistleblower numbers were established to receive complaints, and a barcoding system with a unique identification for each blending plant was put on bags to track fertilizer movements. A bilateral agreement was signed with OCP, a Moroccan phosphate supplier, to ensure an adequate and affordable supply of fertilizer. The agreement also included expanding investment in shared logistical hubs and assets along the Lagos–Kano–Jibiya corridor, railways, ports, and primary and secondary warehouses.

Fertilizer regulation. Although the government liberalized the fertilizer industry and privatized manufacturing plants in 1997, a coherent regulatory framework to control the registration and quality of fertilizers is still lacking (Liverpool-Tasie et al. 2010). Organizations involved include:

- The Standards Organization of Nigeria (established in 1971)
- National Fertilizer Technical Committee (1983)
- National Agency for Food and Drug Administration and Control (1993)
- Federal Fertilizer Procurement and Distribution Division (began implementing the fertilizer control decree in 2002).

Amendments to update the legislation governing quality control to bring it in line with changes in technology and organization of the industry were required. These had to follow time-consuming processes before they could be approved. It took 17 years, from 2002 to 2019, for the legislation to go through the government processes and get passed into law. The work started in 2002 when farmers pressurized the federal government to establish an agency for fertilizer regulation and control (Ayoola et al. 2002). The government drafted a Bill to establish the National Agency for Fertilizer Regulation to harmonize the competing functions of the Federal Fertilizer Department and the National Agency for Food and Drug Administration and Control. The Bill was adopted by the National Council on Agriculture in 2004 (Ayoola and Yakubu 2015) and reached then-President Obasanjo’s desk. But it then went into a hiatus because there was no government appetite to create new agencies. It was revived and revised in 2012 as an executive bill – the National

Fertilizer Quality Control Act – under the Agricultural Transformation Agenda under the administration of President Jonathan. The Bill reached the first and second reading stages of National Assembly in 2014, but was not enacted into law. Under the administration of President Buhari, the Fertilizer Quality Control Bill was again resuscitated and was passed by the House of Representatives in 2016. It then went to the Senate, which revised the Bill and forwarded it to the President. The president signed the Bill into law in October 2019.

Because the fertilizer bill still has to be signed into law, the ECOWAS Regulation C/REG.13/12/12 has not been published in the official gazette. The Bill will empower the Federal Ministry of Agriculture and Rural Development’s Department of Farm Inputs Support Services to implement the regulatory system. Preparations have been made: draft regulations have been developed (but are yet to be approved); the analysis and inspection manuals have been published; the fertilizer-testing laboratories have been designated; inspectors and technicians have been trained.

Constraints. Other policy reforms must still be addressed. The most critical is the lack of development of the best-bet fertilizer products.

Expanding private-sector investments will need to be supported by an effective regulatory system. The current structure assumes that a regulatory system can be built and that participants will comply with it. But experience in Nigeria shows that enforcing the rules has been a major problem, and regulatory agencies lack the capacity to monitor compliance by the many fertilizer firms and agrodealers. A regulatory system is needed that includes self-regulation, enforcement by the private sector, and the transformation of the Department of Farm Inputs Support Services. Privatized enforcement can be done through certified specialists who monitor company compliance, and audit and certify manufacturing processes, equipment, material, processes and staff competence. This would work in much the same way as financial auditors certify company accounts.

The jury is still out on the costs and benefits of the Presidential Fertilizer Initiative. Arguments have been made that the government has created opportunities for monopolistic competition and rents rather than competitive markets and zero economic profits (IFDC and AFAP 2018d). This has permitted fertilizer firms to capture the rents by extracting farmer and consumer surpluses and revenue paid by taxpayers. Much of the fertilizer is sold through government markets. This reduces incentives for firms to develop open competitive markets.



Ethiopia

Agricultural development strategies. The government introduced economic reforms beginning in 1991. These included a currency devaluation, trade liberalization, the deregulation

of agricultural markets, the lifting of restrictions on the participation of private-sector firms, and the privatization of state-owned enterprises (Shiferaw 2017).

- **1992:** Removal of the parastatal Agricultural Input Supply Corporation's monopoly on fertilizer imports and distribution. Fertilizer subsidies ended, and private-sector firms and regional state-operated agencies permitted to enter the industry.
- **1993:** Launch of the Agriculture Development Led Industrialization strategy to accelerate development, build human capacity, expand infrastructure, liberalize the economy, build institutions and decentralize government institutions.
- **1998:** Fertilizer Manufacturing and Trade Proclamation (No. 137/1998).
- **2000:** Poverty Reduction Strategy Program
- **2002–5:** Sustainable Development and Poverty Reduction Program.
- **2005–10:** Plan for Accelerated and Sustainable Development to End Poverty. This was aligned to the Millennium Development Goals and the Comprehensive Africa Agriculture Development Program framework.
- **2010–15:** First Growth and Transformation Plan and Agricultural Transformation Plan. The Ethiopian Agricultural Transformation Agency was established to help make Ethiopia a middle-income country in 20–23 years.
- **2015–20:** Second Growth and Transformation Plan. This emphasizes the commercialization of smallholder agriculture and mobilizing private investment in agribusiness.

By 1996 several private-sector firms were engaged in fertilizer importation, 67 in wholesaling and 2,300 in retailing (Spielman et al. 2013). But trading policies were biased towards government-affiliated companies and parastatals. For example, import licenses were allocated through a tender process that required that fertilizers be imported in lots of 25,000 tonnes; private importers had to deposit

100% of the value of fertilizer to be imported (Rashid et al. 2013). Private firms failed to compete with the state-owned enterprises and exited the industry.

By 2007, farmers' cooperatives had replaced the regional state-run agencies. In 2008, the government renamed the Agricultural Input Supply Corporation as the Agricultural Input Supply Enterprise and made it the sole fertilizer importer (a status it had pre-reform in 1992). Fertilizer imports and distribution through unions and primary cooperatives once again became dominated by public-sector organizations.

Fertilizer quality. Historically, diammonium phosphate and urea were the only fertilizers registered, imported and distributed. The Ethiopian Standards Authority approved standards covering eleven types of granular, powder and liquid fertilizers. It enforced these through pre-shipment quality inspections and checks of fertilizer quality at the port of Djibouti. No quality tests were conducted in Ethiopia itself. Quality checks at the port were discontinued in the early 1990s as a result of difficult working relationships with local and foreign stakeholders.

Beginning in 2010, various major developments resulted in pressure to reform the quality-control regulations:

- The development of the Ethiopian Soil Information System based on decentralized, digital soil-fertility mapping, the determination of fertilizers, and awareness-creation on new types of fertilizers.
- The development of new compound and blended fertilizers, plants for local production of blended fertilizers (starting in 2014), and marketing channels to supply this fertilizer to different locations based on soil information and awareness creation.
- Increased participation by private-sector firms, cooperatives and unions in the production, distribution and marketing of blended fertilizers.

Quality standards for the new fertilizers were developed by the Ministry of Agriculture. This responsibility was transferred to the Ethiopian Conformation Assessment Enterprise (IFDC 2012).

The Plant Health Regulatory Directorate of the Ministry of Agriculture initiated revisions in the fertilizer policy, drafting proclamations on fertilizer production and trade and fertilizer industry agency establishment, and merging the fertilizer control system with that of plant health protection. It pushed through the

establishment of an independent authority on fertilizer-quality control and plant-health protection, but the authority is still to be set up. The policy and proclamations were submitted to the prime minister's office but are still to be approved and legislated.

Various guidelines and systems have been put in place:

- Guidelines on the registration of fertilizers
- The issuance of certificate of competence for fertilizer administration and operation
- Manuals on fertilizer-testing methods
- Guidelines on fertilizer inspection
- Manuals on fertilizer analysis for laboratory technicians.
- Standard procedures for producing quality fertilizers for private and public manufacturers
- A certification system for quality of blended fertilizers
- A quality-control system spanning activities from import and production to the farm gate.

Fertilizer standards were updated by the Ministry of Agriculture in collaboration with the Ethiopian Standard Agency and the Ethiopian Conformity Assessment Enterprise. The capability of the latter was improved to enable it to carry out tests for chemical and physical quality, efficacy, content validation and labeling beyond diammonium phosphate and urea. The soil-testing laboratories were retooled and technicians were trained to carry out inspections of compound and blended fertilizers. Inspectors were trained on controlling fertilizer quality and collecting samples for testing.

Subsidies. Although Ethiopia does not have a direct fertilizer subsidy program, a hidden subsidy exists. This results from the administrative costs and inefficiencies in the processes of bringing in fertilizer, restricted profit margins through the trade, and delays in payment for credit for distributing fertilizers to farmers. The government perceives that the private sector does not have the capacity to take over activities currently managed by the government. This explains why the government has focused on making the public system work. Beginning in 2014, an input-delivery credit system based on electronic vouchers was introduced. This is being scaled up to several regions.

Constraints. As of January 2019, the fertilizer proclamation had not been altered to allow private-sector parties to be involved in the procurement and distribution of fertilizers. This has been proposed for at least 18 months, with the intent that OCP (a

Moroccan firm) would manage blending plants and provide technical skills and agronomic support. Plants are being built in Dire Dawa to produce 1,000,000 tonnes of urea and 1,000,000 tonnes of NP and NPK compounds a year using phosphoric acid from OCP. These are due online in 2022. These facilities will have the capacity to supply most domestic needs.

It may be decided that Ethiopia make a few compound fertilizers (rather than blends) so it can control product quality and use capital resources efficiently. The fertilizer market size of 866,000 tonnes a year is third largest in Africa (IFDC and AFAP 2018e). But the system has 100% government involvement, though there is growing private-sector interest. While the distribution networks are currently through cooperatives, the direct marketing of fertilizers is being introduced.



Kenya

Agricultural development strategies. The government implemented several agricultural policy and regulatory reforms beginning in the mid-1980s. These included market liberalization

to remove price controls on agricultural input and output markets, the dismantling of trade restrictions, the transfer of commercial functions to the private sector, and the reduction of government provision of services, including credit, extension services, marketing, dipping and artificial insemination (Gitau et al. 2008). However, there was a lack of political will and commitment, and policy reversals that hindered progress (World Bank 2015).

- **2003:** The government formulated and began to implement the Economic Recovery Strategy for Wealth and Employment Creation 2003-2007.
- **2008:** Launch of the Kenya Vision 2030. This set the overall vision and strategy framework for interventions in agriculture. The government developed a hierarchical structure of layers of policies that nest those for agriculture. The economy wide Economic Recovery Strategy Vision 2030 nests the Sector Sustainable Development Goals, the Comprehensive Africa Agricultural Development Program.
- **2008–12:** First Sector Medium Term Investment Plan.
- **2013–17:** Second Medium Term Investment Plan.

- **2018–22:** Third Mid Term Investment Plan, driven by the Big Four Presidential Agenda.

Within these overarching frameworks are nested various strategies and laws specific to agriculture and to fertilizer:

- **2004–14:** Strategy for Revitalizing Agriculture.
- **2010–20:** Agricultural Sector Development Strategy.
- **2011:** National Food and Nutrition Security Policy, National Social Protection Policy.
- **2012:** National Agri-Business Policy, Crop Production and Livestock Act, National Agricultural Research System Policy, National Agricultural Sector Extension Policy.
- **2013:** Crops Act, Agriculture and Food Authority Act.
- **2014:** Agricultural Policy, Ending Drought Emergencies.
- **2016:** Agricultural Sector Development Strategy,
- **2019–29:** Agricultural Sector Transformation and Growth Strategy. This is aligned with the third Medium-Term Investment Plan and the aspiration for 100% food and nutrition security in the Big Four Presidential Agenda.

These frameworks place heavy emphasis on expanding private sector participation and investment in the fertilizer sector.

Fertilizer regulation. In 1993, the government liberalized fertilizer importation and removed controls on private-sector imports with respect to type, quality, pricing and allocation of foreign currency (Muriuki 2013). Several players entered the industry, and private-sector companies became the main players in marketing and distribution of fertilizers, promoting fertilizer use and improving infrastructure. Companies began to distribute products mainly through agrodealers in different-size packs: 1 kg, 2 kg, 5 kg, 25 kg and 50 kg. Fertilizer companies also sell through the government subsidy program.

The 1985 Fertilizer and Animal Foodstuffs Act (Cap 345) provides the legal basis for fertilizer registration and quality control. There is no rule requiring fertilizer firms to register their products before they are imported. The market decides what types and nutrients get used: farmers look for fertilizers that offer solutions to their production problems.

It can be costly to register fertilizers. Agrochemicals are required to undergo field trials for 2–3 years

before they may be imported. This is a disincentive for private firms to introduce new products. The Kenya Bureau of Standards sets standards for products through a technical committee on fertilizers and soil conditioners. These standards are then approved by the National Standards Council and are gazetted under the Ministry of Trade. The quality of fertilizer imports is ensured by conforming to these standards.

The Kenya Bureau of Standards appoints independent inspecting agencies, including the Société Générale de Surveillance, Bureau Veritas, Intertek, and China Quality Control Inspection Service, to carry out pre-export inspections in the country of origin. If the product conforms to the standards, a certificate of conformity is issued, without which the fertilizer is not permitted to enter the country. The Bureau itself conducts surveillance tests and takes samples during discharge at Mombasa, the port of entry.

After leaving the port, no proper system of quality control exists. There are reports of adulteration, where unscrupulous traders open bags and mix the contents with cheaper materials, then sell the bags as a more expensive fertilizer product (Sanabria et al. 2018). Kenya Bureau of Standards certifies locally produced fertilizers. Inspectors from the Bureau of Standards do monitor retail outlets and the Standards Act, Chapter 496, to enforce quality control. But there are too few inspectors, and they lack the technical capacity to enforce compliance. The Ministry of Agriculture is putting in place a system to collect samples and take them to the Bureau of Standards for analysis.

The Ministry of Agriculture also imports fertilizers using public funds, thus competing with the private sector. The ministry operates in secrecy; the private sector then is left with having to mitigate the harmful effects of the government.

Subsidies. After liberalization of the fertilizer industry, fertilizer prices started going up especially from 2002 to 2009. Prices of DAP in the market rose dramatically, from KES 2,000 to 6,000 per 50-kg bag. Following the 2008 global financial crisis, the government reintroduced subsidies to cushion farmers against high fertilizer prices. Five types of subsidy programs have since emerged (Le Turioner and Karuri 2019):

- **National Accelerated Agricultural Inputs Program:** The government issues vouchers to farmers with less than 1 hectare of land in selected districts. These enable them to purchase 50 kg of planting fertilizer, 50 kg of top-dressing fertilizer, and 10 kg of

maize seed. Farmers obtain the inputs from stockists and agrodealers; the stockists redeem the vouchers from the government.

- **National Subsidy Program:** The Ministry of Agriculture tenders for procurement of fertilizers from the international market and distributes them at uniform, subsidized prices through National Cereals and Produce Board depots.
- **Safaricom electronic fertilizer subsidy:** This service operates through the Safaricom mobile phone network. Farmers self-register using an SMS text message on their mobile phones. This gives them access to fertilizer at subsidized prices using vouchers (Safaricom 2018).
- **Kenya Cereal Enhancement Program–Climate Resilience Agricultural Livelihoods electronic voucher scheme:** Farmers and agrodealers enroll in an electronic voucher system that allows them to access farm inputs through the platform. This uses working capital loans advanced to agrodealers by financial institutions.
- **County government subsidy schemes:** Since 2015, some counties have operated their own input subsidy programs. These include Bungoma, Kakamega, and Trans-Nzoia.

Electronic vouchers: Electronic vouchers replace paper documents and provide real-time settlement. The shift from paper to electronic vouchers results from various concerns: poor targeting and fraud in subsidies, the high cost of reaching farmers, the traceability of input distribution, delayed payments by the government to the private sector, sale of fertilizer across borders, unscrupulous traders buying subsidized fertilizers and reselling commercial prices, fiscal sustainability, and poor impact on yields and profitability. It is estimated that as many as 80,000 tonnes of subsidized fertilizers are redirected to retailers, who divert them to the retail market. About 40,000 tonnes are thought to go to Uganda through informal traders.

The government is restructuring the subsidy programs to harmonize the voucher schemes at national and county levels. The aim is to serve farmers nationwide and allow them to purchase a range of inputs, and not just fertilizers and maize seed.

But reforms are difficult. Fertilizer is highly political, and parties can capture economic rents from the current system, so resist change.

Revising legislation: In 2014 the Ministry of Agriculture initiated reforms to amend the 1985 Fertilizer and Animal Foodstuffs Act (Cap 345). This was to bring it in line with changes in fertilizer demand, technology and the shift to a competitive market-organized industry. The Ministry originally wanted to repeal the Act and replace it with two separate acts dealing with animal feeds and fertilizers. This intention was never realized; a private-member's bill was introduced in Parliament to amend the 1985 Act. This amendment was made law in October 2015, and resulted in the creation of a Fertilizer and Animal Foodstuffs Board. However, it is still necessary to repeal the 1985 Act and enact two comprehensive laws dealing with fertilizers and animal feed separately.

Fertilizer quality: Disputes have arisen over permissible amounts of trace elements in fertilizer imports. In 2010, the technical committee on fertilizers and soil conditioners lifted the permissible levels of cadmium in phosphate fertilizers from 7 to 30 parts per million. This allowed products of the Moroccan firm, OCP, to be bought into the country (Mwiti 2017).

In 2018 the permissible level was dropped to 15 parts per million, forcing OCP to exit the market again (Kamau 2019). OCP products were detained in Mombasa, and investigators claimed that they contained “mercury”. Kenya Bureau of Standards officials and some foreigners were charged for unlawfully releasing substandard fertilizer in Kenya; ships carrying fertilizer were delayed, and importers cancelled orders because of the risk of being left with an illegal product.

The charges have now been dropped and the impounded fertilizer consignments released (Ndonga 2019). OCP lawyers claim the dispute was the result of a battle to dominate the Kenyan fertilizer market: after the ban, the only source of phosphates available to farmers was from Saudi Arabia, and prices quickly rose.

A similar story concerns NPK 17:17:17. This is made in only a few locations in the world. NPK 16:16:16, on the other hand, is more common. The Kenya Bureau of Standards was influenced to permit 1.2% variation for nutrients – making it possible to import NPK 16:16:16 and sell it as NPK 17:17:17. But when NPK 16:16:16 is exported to Uganda, it fails product tests because the country has a tolerance of only 1%, and the major product there is NPK 17:17:17. This explains the high product failures in that country.

Constraints: There is a need for a competent, neutral and independent body within the Kenya Bureau of Standards with a strong technical team that

is respected, can guide decision making on product quality, and can challenge firms if they misdirect their efforts to protect their interests. There is a need to build technical capacity in the public sector to ensure that what private sector says is not biased.

Kenya's reforms have been based on permitting private-sector companies to buy fertilizers from international markets, regulating quality, and attracting international manufacturers to enter rural markets. The government has left the market to make pricing decisions. Currently 16 fertilizer firms are engaged in manufacturing, importing and blending, 500 in distribution, and 6,000 in retail (Muriuki 2018). The companies sell fertilizer to farmers at different prices.

At the level of manufacturers, importers and blenders, there are no quality problems, but at the distributor level some exist. Stockists and agrodealers need capacity building and training (Sanabria et al. 2018). Financing is an issue for agrodealers.

The market size is 682,000 tonnes a year (IFDC and AFAP, 2018). About 28% of the fertilizer has government involvement through the subsidy program managed by the National Cereals and Produce Board. But some 40% of fertilizers in this program leak to agrodealers, across borders, and to farmers who are not targeted.



Tanzania

Agricultural development strategies: The government began to implement agricultural policy and regulatory reforms in 1986 (Muganda, 2004). These

included a whole raft of measures: the removal of the state monopoly in food crop procurement, the elimination of export taxes, the revival of cooperatives, the privatization of non-performing public-sector estates, the relaxation of price controls, the liberalization of the foreign exchange allocation system, the devaluation of the currency, controls on public expenditure, increases in interest rates, the privatization of state-owned banks, the opening up of agricultural input and output marketing to the private sector, the removal of fertilizer subsidies, and scaling down the activities of the crop marketing parastatals (Potts 2005).

Several overarching policy documents guided interventions in agriculture:

- **2000–25:** Tanzania National Development Vision 2025.
- **2005–10:** National Strategy for Growth and Poverty Reduction phase one (Mkukuta I).

- **2010–15:** National Strategy for Growth and Poverty Reduction phase two (Mkukuta II).
- **2011–25:** Long Term Perspective Plan 2011-2025 (Tanzania Investment Centre 2011), to be implemented in three five-year development plans and annual development plans (United Republic of Tanzania 2011).

Agricultural policy documents include the following:

- **2001–25:** Agricultural Sector Development Strategy phase one (United Republic of Tanzania 2001).
- **2007–12:** Agricultural Sector Development Program.
- **2009:** Kilimo Kwanza (“Transforming Agriculture”).
- **2011–21:** Tanzania Agriculture and Food Security Investment Plan.
- **2011–30:** Southern Agricultural Growth Corridor.
- **2013:** National Agriculture Policy, New Alliance for Food Security and Nutrition, President’s “Big Results Now” initiative.
- **2016–25:** Agricultural Sector Development Strategy phase two.

All these frameworks place heavy emphasis on expanding private-sector participation and investment in the fertilizer sector.

Fertilizer regulation: In 1992, the government liberalized the fertilizer industry, withdrew from procurement and distribution of fertilizers through the monopoly Tanzania Fertilizer Company, and allowed private companies to enter the industry. Several firms did so, importing from international manufacturers and selling from depots in Dar es Salaam or up-country. Some firms established their own retail networks. Several of these early entrants are still important importers and wholesalers of fertilizer today. By 2015 there were 80 registered importers (Mkumba 2015). Twenty-five of these were actively engaged in fertilizer importation.

- **2003/4:** the government re-introduced fertilizer subsidies in selected grain-basket areas order to rectify the problem that majority of smallholder farmers were using low rates of fertilizer and certified seed as a result of unaffordable prices (Agreed International 2016d). This subsidy lasted five years until 2007/2008. It operated by subsidizing the cost of transport to deliver fertilizers to farmers, signing contracts with fertilizer companies to sell fertilizers at particular locations at

subsidized prices, and reimbursing firms that had sold the fertilizer to farmers.

- **2008:** Following the global financial crisis, the subsidy mechanism was switched to voucher scheme for farm inputs (Agreed International 2016d). This was done for several reasons: delays in fertilizers reaching farmers, the distance between farmers' homes and the distribution points, the sale of subsidized and non-subsidized fertilizers at different prices in the same markets, poorly trained agrodealers, and the agrodealers' lack of financial capacity to finance stock to sell.
- **2008/9–2016/17:** The voucher scheme was implemented for eight years (except in 2014/15). Farmer beneficiaries were selected by a village committee. Recipients had to be a full-time farmer farming less than one hectare of maize or rice, and able to co-finance the inputs. Beneficiaries redeemed the vouchers at local dealers in exchange of inputs. The dealers redeemed the vouchers with the National Microfinance Bank. The program trained 3,850 agrodealers in the procedures and requirements.

Problems included delays paying input-supply companies, slowing the delivery of fertilizers. A parallel market for vouchers emerged; political interference occurred in the selection of stockists; and village officers, voucher committees and agrodealers created lists of ghost farmers. In 2014, recommendations were made to switch from paper to electronic vouchers, but they were not adopted by the Ministry of Agriculture.

- **2014/15:** The government replaced the voucher scheme with subsidized interest rates on agricultural credit. Farmer groups, associations and savings cooperatives could buy fertilizers on credit from fertilizer companies by depositing 20% of the cost as collateral. The government deposited a matching fund of 20%. The farmers were then issued with the inputs and paid the remaining 60% after harvest. Alternatively, members of farmer groups and primary societies could get loans on inputs from commercial and community banks at subsidized interest rates. The program was organized hastily, resulting in some groups receiving fertilizer late or failing to get any fertilizers at all.

- **2015/16:** The government reintroduced an improved version of the national input-voucher scheme. Local governments no longer appointed agrodealers; instead input suppliers appointed their own agents to distribute and sell inputs.
- **2015/16 and 2016/17 seasons:** The government reduced its expenditure on subsidies.
- **2017:** To do away with fertilizer subsidies, the fertilizer bulk procurement regulation was gazetted. After a bidding process, contracts were awarded to two companies to supply DAP and urea. The same year, the Minister of Agriculture abolished 108 crop-related taxes.

Fertilizer quality: The liberalization of the industry, entry of new players, and the rising demand for fertilizers without an up-to-date regulatory framework led to an increase in volume of substandard fertilizers.

- **2006:** The Tanzania Bureau of Standards implemented fertilizer standards to guide manufacturers, importers, traders, regulatory authorities and farmers in producing and selecting fertilizers of good quality.
- **2009:** The Fertilizers and Animal Foodstuff Act Chapter 378 was repealed and replaced with the Fertilizer Act. This established the Tanzania Fertilizer Regulatory Authority to regulate the manufacture, import, sale and use of fertilizers and fertilizer supplements.
- **2011:** The fertilizer regulations came into force.
- **2012:** The Tanzania Fertilizer Regulatory Authority started operating.
- **2015/16:** The Ministry of Agriculture approved changes in the Fertilizer Act and Regulations to bring them in line with changes in technologies to blended products and the shift from a government to a market-based supply system.
- **2017:** New fertilizer regulations were gazetted in 2017. These included a reduction in registration fees, the abolition of various registration and license fees, and the elimination of the need to retest blended products. The Tanzania Bureau of Standards revised standards set in 2006, for example to raise acceptable cadmium levels from 7 to 30 ppm (Tanzania Bureau of Standards 2017).

The Tanzania Fertilizer Regulatory Authority and Tanzania Bureau of Standards

agreed to use one testing laboratory for fertilizers instead of each agency testing independently. This eliminated duplication and double payments for testing and allows the results to be shared.

The government abolished various fees and taxes on fertilizer imports. A harmonized procedure has been established, coordinated by the Tanzania Fertilizer Regulatory Authority, for the clearing of fertilizers.

The introduction of bulk-procurement regulations introduced new challenges. Firms think having a one-stop-shop (the Tanzania Fertilizer Regulatory Authority) is beneficial, but it raises a serious structural problem because the Authority is also a purchaser and can change the rules as it deems fit. Some actors argue that the mechanisms for estimating indicative prices for fertilizer products fail to capture all the costs, cutting the fertilizer traders' profits. The arrangements also have shifted fertilizers used at planting from DAP to NPKs, and transshipments through Tanzania to its neighbors have been disrupted by a ban on plastic bags.

A review of the bulk-procurement system (Amani and Lunogelo 2019) found that:

- Fertilizer importing companies actively participated in bidding to supply fertilizers using the bulk purchasing scheme.
- The landed cost at Dar es Salaam port was reduced (as expected).
- Inland transportation costs remained unchanged because of the old system of reliance on trucks instead of railway wagons.
- Previous beneficiaries of the subsidized-inputs system (25% of smallholder farmers) were losers in the new system
- Previous non-beneficiaries of subsidized system (75% of smallholder farmers) who are not linked to commercial off-takers but buy directly from shops were the main beneficiaries, as the lower costs were reflected in retail prices.
- Farmers served by off-takers and linked to the banking system had a marginal saving.
- Cooperative unions and agricultural and marketing cooperatives societies failed to engage in bulk procurement or credit facilities
- Banks appeared to offer cheaper bank guarantee facilities to private companies while offering more expensive guarantees to cooperative unions and cooperatives societies.

The analysts recommended that the bulk-procurement system be continued but improved.

- More importers should be involved to increase competition.
- Indicative selling prices should be abandoned
- Institutional arrangements are needed to link farmers to off-takers (agroprocessors, exporters and domestic traders) through contract farming to permit farmers to pay at the end of the cropping season
- Institutional support is needed for piloting the system under the research and extension committee
- Importers should provide requirements and bank guarantees on time.
- The Tanzania Bureau of Standards should issue certificates of chemical analyses and verification of conformity to standards, enforce safety and quality controls for fertilizers, and allow the independent testing of fertilizers before and after importation.
- Rail transportation should be considered.
- Regulations are required to allow for fertilizer re-export.

Tanzania has followed a different approach to reforms from Kenya. The reforms have focused on tenders for fertilizer companies to buy from international markets, evaluating tenders, and permitting the lowest tenderer to import fertilizers. The government chose to focus on DAP and urea. It reintroduced indicative prices for fertilizer products rather than letting the market set prices. There is a conflict of interest when the regulatory authority conducts tenders, decides on the quantity and quality of fertilizers to be brought into the country, and controls the regulations.

The argument is that the government cannot just sit aside. This is important – but private-sector firms need incentives to operate.



Malawi

Agricultural development strategies: The government initiated agricultural policy and regulatory reforms in 1981. These included repealing the Special Crops Act (making

it legal for smallholders to grow export crops such as tobacco), eliminating subsidies and controls to agricultural input and consumer prices, liberalizing agricultural input and output markets, commercializing and privatizing state-owned enterprises, devaluing the currency, increasing interest rates, imposing

fees for public utilities and services, reducing public expenditures, and changing investments from the National Rural Development Program to agricultural research and extension (Chirwa et al. 2008, Lele 1989, Harrigan 2003, FAO 2014).

Before the reforms in the 1980s and 1990s, the state-owned Agricultural Development and Marketing Corporation had a monopoly on importing fertilizers and marketing them to farmers through its network of rural depots (Kherallah and Govindan 1997). The government provided seasonal credit through the Agricultural Development and Marketing Corporation. Fertilizer was sold at subsidized prices. The overvaluation of the kwacha further lowered fertilizer retail prices.

- **1983:** The government started to remove fertilizer subsidies.
- **1988:** The Smallholder Farmers' Fertilizer Revolving Fund of Malawi began to import and distribute fertilizers to farmers through the Agricultural Development and Marketing Corporation.
- **1993:** The importation and distribution of fertilizers were opened to the private sector.
- **1996:** The fertilizer subsidy was eliminated (Kherallah and Govindan 1997). Several domestic, regional and international companies entered the industry and established distribution and retail networks to sell to smallholders (African Centre for Fertilizer Development 2007). However, the Agricultural Development and Marketing Corporation continued to dominate the industry for several years because of the government subsidy.
- **1998:** The government developed and adopted the Malawi 2020 Vision to provide an economy-wide strategic planning and management policy framework for long-term development (National Economic Council 2000). This Vision identifies agriculture and food security as priority areas to foster economic growth and development.
- **2006–11:** First Malawi Growth and Development Strategy as an overarching policy framework to achieve the long-term development goals laid out in Vision 2020.
- **2007:** National Fertilizer Strategy formulated to improve farmers' access to affordable fertilizer and develop private sector-led fertilizer markets to improve agricultural

productivity and profitability among smallholder farmers (Ministry of Agriculture and Food Security 2007).

- **2012–16:** Second Malawi Growth and Development Strategy.
- **2012:** Economic Recovery Plan to achieve quick development results and economic recovery (Banda 2013). This identified the private sector as the engine of growth and focused on implementing programs to create a conducive environment for business and development of cooperative and small and medium-scale enterprises.
- **2013–18:** National Export Strategy to serve as a critical component of the second Malawi Growth and Development Strategy and of the Economic Recovery Plan by providing a framework on enabling business environment for building productive capacity for exports.
- **2017–22:** Third Malawi Growth and Development Strategy.

In 2010, the government designed frameworks for the agricultural sector to translate the priority on agriculture development into sector-specific strategic documents. Key documents included:

- **2010–16:** National Agricultural Policy Framework
- **2010:** National Irrigation Policy and Development Strategy.
- **2011–15:** Agriculture-Sector Wide Approach program to implement priority investments for agricultural development.

Other initiatives include:

- **2006:** National Adaptation Program of Action to combat climate change.
- **2010:** Presidential Green Belt Initiative to use water resources for irrigation to increase production, productivity, incomes and food security (Chinsinga 2017).
- **2012:** Presidential Initiative on Hunger and Poverty Reduction to diversify agriculture, with special emphasis on the legume and livestock value chains.

Subsidies: Free fertilizer distribution programs were introduced in 1995:

- **1995/96:** Supplementary Inputs Program.
- **1998/99–1999/2000:** Starter Pack.

- **2000/1–2004/5:** Targeted Input Program and the Expanded Input Program (Harrigan 2007).
- **Since 2005/6:** The government has reintroduced large-scale agricultural input subsidies through the Farm Input Subsidy Program.

The Farm Input Subsidy Program targets fertilizer and seed subsidies to poor smallholder farmers using paper vouchers. Farmers redeem the vouchers through agrodealers, where they can purchase two 50-kg bags of fertilizers at a subsidized price. When it coincides with favorable weather, this has resulted in bumper harvests. It focuses on maize and is limited to two 50-kg bags per household. Also, there are diminishing returns to the subsidy program, and its effectiveness has waned significantly over time.

The land cultivated by medium scale farm holdings (5–50 hectares) increased by 49% between 2000 and 2015 (Anseeuw et al. 2016). This was driven by tenure reforms favoring the conversion of land from customary to titled land under the 2002 Malawi National Land Policy. This implies that if the subsidy program were to target these farmers (rather than the current resource-poor households) and if maize productivity on medium-scale farms were to increase to 4.5 t/ha (as with commercial farmers in South Africa and Zambia), there would be significant impact on national food security. Increasing the productivity of medium-scale farmer requires holistic packages that include good technical advice, output market development and finance. These farms can be specifically targeted by private-sector companies. Some firms already serve this group. Medium-scale farmers can cultivate customary land on a commercial basis on behalf of the traditional owners, so that jobs and income can go to the poor smallholders. This is better than the smallholders feeling forced to “sell” to bureaucrats or breaking up the land parcels, which makes it difficult to farm economically. Such an action would make the subsidy program sustainable.

Fertilizer regulation: The institutional framework governing the production, marketing and use of fertilizer lags behind changes in blending technologies and the shift from a government monopoly to market-based supply. The Fertilizers, Farm Feeds and Remedies Act of 1970 was repealed during the structural adjustment program to permit implementation of the reforms.

- **1996:** The regulations were amended; changes covered specifications, labeling and sampling and analysis, offenses and penalties for fertilizers imported, distributed and sold to farmers.

- **2003:** A Fertilizer Bill to govern the registration of fertilizers and regulation of imports, manufacture, distribution and sale was drafted. It was not debated in parliament because lawmakers required that there first be in place a national fertilizer policy to guide the legislative process.
- **2015:** The national fertilizer policy was initiated and is now awaiting submission to the Office of the President and Cabinet for approval. This will enable the Fertilizer Bill to be debated in parliament.

The Fertilizer Bill will include standards for organic fertilizers, biostimulants and blends. There is a major issue of fertilizer adulteration by traders, suppliers, transporters and manufacturers. This is because regulations are outdated, penalties are small, and there is a lack of institutions able to ensure compliance.

Fertilizer is a sensitive issue, constantly under the eyes of politicians.

Fertilizer quality: New fertilizers must be registered before they can be offered for sale. This is governed by the old Fertilizers, Farm Feeds and Remedies Act, which requires new fertilizers to be evaluated and approved.

The Department of Research evaluates the fertilizers, and the Agriculture Technology Clearing Committee releases and approves them. If it is not registered in any of the SADC member countries, a fertilizer product must be evaluated for three seasons before it may be released for sale to farmers (one year if it is already registered in an SADC country). After release, the product is submitted to the Malawi Bureau of Standards to develop and enforce standards.

Fertilizer standards are not overly restrictive, allowing businesses to enter the industry and develop over the last 20 years. The government has articulated its intention to continue with this progressive practice, but the proposed Fertilizer Bill is punitive and restrictive on blends. The government argues that it must protect smallholders and prescribe products that can be offered for sale to them.

A few companies started selling government-prescribed fertilizers, and blending products for commercial farmers, in 1997. They have been allowed to do so without registration. These companies are now marketing the area- and crop-specific fertilizer blends to smallholders; they are strengthening agrodealers, training farmer, and performing soil analysis to generate recommendations and soil maps to help farmers decide what product to use. Competition among firms is driving these investments.

Constraints: The legal and regulatory framework needs to encourage diversity. But payoffs to investments are limited when a large part of the market is subsidized or is managed by estates, and there are burdensome testing restrictions and controls by the Department of Research.

Recommendations

We can draw four lessons on how countries can strengthen their policies.

- **Consistent policies.** Governments are placing emphasis on expanding private-sector investment in agriculture and the fertilizer industries. The countries have implemented agricultural and policy reforms to increase such investments in agricultural input supply and output marketing. The policy objectives for fertilizers must be consistent with the vision and strategic frameworks at the economy-wide, sectoral, cross-sectoral, sub-sectoral and commodity levels.
- **Different paths:** Countries have followed different pathways for expanding private-sector investments in the fertilizer industries.
- **Subsidies:** All the countries have tried different kinds of fertilizer subsidy, with varying success. Subsidies have raised the level of fertilizer consumption and the production and yields of major crops. But subsidies are difficult to manage, and problems of cost, corruption, targeting and leakage remain.
- **Fertilizer quality:** Although ensuring good-quality fertilizer products is the primary responsibility of governments, they typically lack the capacity to monitor compliance. Self-regulation by private companies through trade associations is needed, along with competition to deter suppliers and dealers from cheating.

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