

# Towards an Integrated Market for Seeds and Fertilizers in West Africa

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## *Abstract*

To improve farmer access to quality seeds and fertilizers, West African governments have been working through ECOWAS and other regional organizations to develop harmonized rules for input trade for many years. After extensive consultations, regional regulations based on advanced international standards have mostly been agreed upon and are already helping to guide quality improvements in some countries. Despite these encouraging signs, most countries do not currently have the physical capacity or institutional structures needed to implement the agreed trade rules which will take considerable time and investment to develop. The analysis, therefore, points to a need for pragmatic solutions that are easy for individual countries or groups of countries to implement in the near term while longer-term progress towards full harmonization continues.

## *Key words*

Africa, regional trade, crop inputs, harmonization

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## Acronyms

AFSTA	African Seed Trade Association
AGRA	Alliance for a Green Revolutions in Africa
ARIPO	African Regional Intellectual Property Organization
ASARECA	Association for Strengthening Agriculture Research in Eastern and Central Africa
ASN	Africa Seed Network
BUNASOL	Burkina Faso National Bureau of Soils ( <i>Bureau National des Sols</i> )
CAADP	Comprehensive Africa Agriculture Development Programme
CARI	Liberia Central Agriculture Research Institute
CGIAR	Consultative Group on International Agricultural Research
CILSS	Permanent Interstates Committee for Drought Control in the Sahel ( <i>Comité Permanent Inter-Etats de Lutte Contre la Sécheresse dans le Sahel</i> )
CIMMYT	International Maize and Wheat Improvement Center
COMESA	Common Market for Eastern and Southern Africa
DGIS	Netherlands Directorate-General for International Cooperation
DUS	Distinctiveness uniformity and stability
EAC	East African Community
ECOWAP	ECOWAS Agricultural Policy
ECOWAS	Economic Community of West African States
EU	European Union
FAO	Food and Agriculture Organization
FFD	Nigeria Federal Fertilizer Department
GES	Nigeria Growth Enhancement Support Program
GIZ	German Society for International Cooperation ( <i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> )
GMO	Genetically modified organism
IART	Nigeria Institute for Agriculture Research and Training Institute
ICARDA	International Center Agriculture Research in Dry Areas
ICIRSAT	International Crops Research Institute for the Semi-Arid Tropics
ICRAF	International Center for Research in Agroforestry
IFDC	International Fertilizer Development Center
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
INERA	Burkina Faso Institute for Environment and Agriculture Research ( <i>Institut de l'Environnement et de Recherches Agricoles</i> )
INSAH	The Sahel Institute ( <i>Institut du Sahel</i> )
IPPC	International Plant Protection Convention
IPRs	Intellectual property rights
ISO	International Standards Organization
ISTA	International Seed Testing Association
LABOSEM	Mali Central Laboratory for Plant Seeds ( <i>Laboratoire Central de Semences Végétales</i> )
MIR	Marketing Inputs Regionally Project
NAFDAC	Nigeria National Agency for Food and Drug Administration
NARI	National Agricultural Research Institute
NASC	Nigeria National Agricultural Seed Council
NEPAD	New Partnership for Africa's Development
NPK	Nitrogen (N), phosphorus (P), and potassium (K)
NPPO	National Plant Protection Office
OAPI	African Intellectual Property Organization
OECD	Organisation for Economic Cooperation and Development

OPVs	Open pollinated varieties
PAU	UEMOA Policy on Agriculture ( <i>Politique Agricole de l'UEMOA</i> )
QDS	Quality declared seed
SADC	Southern Africa Development Community
SEEDAN	Seed Association of Nigeria
SON	Standards Organisation of Nigeria
SPS	Sanitary and phytosanitary
SSA	Sub-Saharan Africa
UEMOA	West African Economic and Monetary Union ( <i>Union Économique et Monétaire Ouest-Africaine</i> )
UN	United Nations
UPOV	International Union for the Protection of New Varieties of Plants
USAID	United States Agency for International Development
VCU	Value for cultivation and use
WAAPP	West Africa Agriculture Productivity Program
WACoFeC	West Africa Committee for Fertilizer Control
WAFP	West Africa Fertilizer Project
WASC	West Africa Seed Committee
WASNET	West Africa Seed and Planting Material Network
WASP	West Africa Seed Project
WECARD	West and Central African Council for Agriculture Research and Development

## *Executive summary*

This paper looks at ongoing efforts in West Africa to build an integrated regional market for seeds and fertilizers. Problems with limited availability, poor quality, and high prices of certified seeds and fertilizers are common in West Africa and represent a major barrier to agriculture growth. To improve the situation, West African governments have been working through ECOWAS and other regional bodies for several years to develop harmonized trade rules and quality control procedures designed to increase farmer choice, bring prices down, improve buyer confidence, and otherwise make input trade easier, faster, and cheaper.

After extensive consultations with stakeholders throughout the region, new regulations based on advanced international standards have mostly been agreed upon and are already helping to guide quality improvements in some countries. Despite these positive developments, most countries are a long way from having the required capacities and institutional structures needed to implement the agreed trade rules and it will likely be many more years before true harmonized trade can begin. Certain legal details still need to be resolved and opportunities for private competition also remain constrained on many fronts thereby adding to the burden on overstretched public research and extension systems. Rather than rely so intensively on regional harmonization and efforts to implement advanced international standards, the analysis points to a need for pragmatic solutions and simple improvements that countries could implement now and would have direct impact in the near term while longer term progress towards full harmonization continues. Other key messages from the paper may be summarized as follows.

**Access to quality inputs is a significant barrier to agriculture production in West Africa.** For at least the past 30 years, most gains in agriculture production in West Africa have come from area expansion and not yield improvement. Recent spending on input subsidies is helping to change the situation in some countries, yet the use of improved seeds and fertilizers still barely figures in most farm operations particularly for staple foods. As a result, staple crop yields are among the lowest in the world and the region is heavily dependent on food imports. This is a serious economic concern. In just the next 15 years, West Africa's population will nearly double with most of the growth coming in large urban areas. Without transformational improvement of farm productivity together with increased food trade from surplus areas to deficit zones, the region's import dependence will only get worse.

**There are many good reasons for regional collaboration on seed and fertilizer.** In looking for strategies to improve input use, the physical nature of West Africa's agro-ecological zones provides a powerful argument for regional collaboration. Soil types and rainfall patterns cut across countries mainly in east to west bands meaning that neighboring countries are potentially the nearest source of supply and/or best market outlet for adapted seeds and appropriate fertilizer types. Expanding input markets across borders therefore could be of significant benefit in achieving the economies of scale and savings on transport costs needed to bring input prices down and improve choice and availability. Particularly as governments look to maximize the returns from input subsidies, efforts to save on trade costs and promote intra-regional trade are fundamentally important.

**Full sets of harmonized regional regulations for seed and fertilizer have (mostly) been agreed.** After extensive consultations involving UEMOA and CILSS, ECOWAS enacted a set of harmonized

trade rules for seed in 2008 that member states are now in the process of making operational. In 2012, ECOWAS enacted a similar set of harmonized trade rules and quality control procedures for fertilizer that is similarly in the process of being made operational in partnership with UEMOA. Despite the landmark importance of these agreements, only one out of three sets of implementing regulations needed for the seed rules to work has so far been adopted by the ECOWAS Commission and none of the implementing regulations needed for the fertilizer system to work have been adopted. For seed, discrepancies between ECOWAS and UEMOA versions of the regulations need to be resolved and a convention between ECOWAS and UEMOA and CILSS has to be validated and signed to allow ECOWAS to lead implementation. For fertilizer, a similar convention between ECOWAS and UEMOA needs to be drafted, validated, and signed. Also for seed, key issues pertaining to the protection of intellectual property rights and quarantine pest lists that are fundamental parts of international seed trade have so far not been addressed.

**The regulations for seed stand to transform variety release and certification procedures.** Although much is still required to make the regional seed system operational and complete, the harmonized regulations stand to benefit West Africa in many important ways. Under the existing harmonized rules, new varieties of seed will only need to be tested and registered in one member country after which they can be multiplied and traded anywhere in the region. This alone will be an important achievement once operational since slow, expensive, and repetitive testing requirements are currently a major constraint to the introduction and marketing of new varieties. The regional regulations also set out specific rules for seed certification based on internationally recognized standards for field inspection and laboratory analysis that stand to improve seed quality in domestic markets and minimize border delays through mutual recognition of regional seed certificates.

**The rules for fertilizer are based on truth in labeling.** The regional regulations for fertilizer similarly provide a detailed set of procedures for the functioning of domestic and regional fertilizer markets based on truth in labeling and harmonized quality control standards. Consistent with this approach, countries should not maintain approved lists of fertilizer types that can be sold to farmers and must allow importation of any type of fertilizer from another ECOWAS country as long as it is truthfully labeled and does not contain harmful substances. In principle, countries with such systems can freely trade fertilizer between one another with imported fertilizer being subject to the same quality control procedures and level of inspections as it was in the country of origin thereby improving consumer confidence and minimizing border delays.

**Both sets of regulations are based on international best practice.** For both seed and fertilizer, ECOWAS members chose to base the regional rules and quality standards on international best practice. For seed, these standards include variety release procedures determined by UPOV and seed certification procedures set by the OECD for field inspection and ISTA for laboratory analysis. On the fertilizer side, regional quality control procedures are based on standards set by the AOAC and ISO with EU regulations as an alternative. These systems are each highly effective as quality control instruments, but are technically demanding and require specialist skills, advanced laboratory equipment, and other resources to implement that are generally lacking in most of West Africa.

**There is a need to match regulatory ambitions with current regulatory resources and regulatory capacities.** In agreeing on the regional rules for seed and fertilizer, ECOWAS members chose to use the powerful legal instrument of regional regulations that automatically supersede national

legislation in the areas covered. This eliminates the need to domesticate the regulations in national law, but does not avoid the more difficult and time consuming task of developing the new institutional structures and improved capacities the regulations demand. This is particularly important for harmonization efforts in West Africa where countries are at very different stages of development and often have little capacity to implement or even afford the advanced international standards that were chosen as the basis of the regulations. Even in relatively advanced countries, quality control systems are greatly overstretched. Improving the trade of inputs in the near to medium term therefore requires much more than enacting formal regulations and establishing new committees and other bodies called for by the regulations themselves, but also demands stepwise improvements in which regulatory ambitions are matched with current capacities.

**Throughout the region, knowledge of the new regulations is limited.** Despite many consultations when the regulations were formed, knowledge of the new trade rules and where the process stands is thin and patchy. With donor support, good progress has been made in countries such as Burkina Faso and Mali with building awareness of the new rules, but even in these places stakeholders say that national laws are fully consistent with the ECOWAS regulations when, in fact, a number of discrepancies do exist. In Nigeria, knowledge of the regulations in key institutions is rudimentary and several parts of draft national legislation directly contradict essential aspects of the ECOWAS regulations dealing with regional variety acceptance and truth in labeling of fertilizer. In principle, regional regulations supersede national laws, but in practice enforcement officers naturally point to their own national laws as the ones that guide their operations. In Liberia, there are no specific seed and fertilizer laws and knowledge of the regional regulations is virtually nonexistent. Even in the ECOWAS Commission itself, several officials described the harmonization process as complete when there is still a lot to do from both the legal and operational points of view.

**Before full implementation begins, the harmonized regulations are already making a difference to quality control in some countries.** Although many hurdles to full implementation remain, discussion of the need for quality improvements and detailing of specific procedures to achieve the desired outcomes has helped focus attention on important quality issues and trade matters. As a result, several countries have already begun to implement new systems for variety release, seed certification, and fertilizer quality control based on the regional regulations that are benefiting farmers even now. In Burkina Faso, Mali, and Nigeria, for instance, seed inspectors are already carrying out at least some certification visits using newly developed field manuals that follow the ECOWAS guidelines. Similarly, licensed inspectors in Mali have started to sample at least some subsidized fertilizer all the way to the distributor level and newly trained inspectors are expected to begin comparable work in Burkina Faso soon. Also in Mali, new tender rules for subsidized fertilizer are being developed that include tolerance limits for nutrient defect.

**Countries are taking other simple steps that deserve to be recognized and shared.** Many other simple steps are also being taken in West Africa to improve input trade. In the difficult area of seed quality control, for instance, Nigeria is using first year agriculture graduates to help meet the demand for seed certification whereas Burkina Faso requires seed farmers with small plots to be organized in seed producer groups to make field inspections more manageable. Both strategies have their limitations and do not strictly follow the ECOWAS guidelines, but are good practical ways to achieve higher levels of quality control than would otherwise be possible with limited resources.

Similarly, in Liberia where capacities are even more limited, the approach has been to introduce procedures for production of “good quality” seed rather than certified seed. These procedures are much less demanding than the ones agreed to with ECOWAS, but are a far more meaningful way to improve on quality in the near term than aiming for a very advanced seed system right away. Liberia’s is not alone in West Africa in having a long way to go to achieve the ECOWAS standards, and expanding the regulations to accommodate different levels of upgrading could do much to improve quality assurance throughout the region.

**Unilateral and joint actions also should not be ruled out as a way to fast-track progress.** As the important but time consuming work of establishing national and regional seed and fertilizer committees, building new inspection and enforcement capacities, and finalizing legal agreements needed for the regional rules to be operational continues, West African countries should not rule out other unilateral or joint actions that could improve input trade immediately. For instance, any country could already make a decision to accept proven varieties of seed from neighboring countries without waiting for the regional seed catalog and regional seed committee to be established. Use of lighter standards for seed certification such as the FAO’s rules for Quality Declared Seed that are easier to apply than the ECOWAS standards would be another good option to explore. Countries could also decide to accept fertilizer from reputable manufacturers and transporters without insisting on full inspection of every consignment at the border so that scarce resources can be used to address other quality issues. Risk based approaches such as these would improve trade conditions and provide increased quality control almost immediately and could be implemented by individual countries or small groups of countries with little cost or effort.

**Opportunities for private competition remain constrained on many fronts.** Much remains to be done to eliminate longstanding business constraints and promote genuine private competition in strategic areas of input supply. With seed, West Africa continues to be overwhelmingly dependent on public research systems including national institutes and regional CGIAR centers for improved seeds with little or no room for private participation in variety development and maintenance. Some countries even have outright bans on private variety ownership while many others require all breeder and foundation seed to be produced by the state. With increased spending on input subsidies, many small seed companies have emerged to do seed multiplication. Without ownership of varieties or even exclusive access to public varieties, however, there is little incentive for these firms to promote their products through demonstration plots and farmer field days as is common in other parts of the developing world. Similarly, on the fertilizer side, production and trade of locally made blends is increasing but is threatened by recent proposals for centrally managed regional procurement as a way to bring prices down. Such an approach would directly undermine the competitive mechanisms the ECOWAS regulations seek to encourage that are now starting to emerge in some countries and can themselves lead to lower prices.

**There is a particular need to address the issue of private variety ownership and maintenance.** Until private seed companies are certain of maintaining permanent ownership and even physical control of their research at all stages of the supply chain, it is likely that West Africa will continue to lag behind in access to new varieties and seed quality. The regional regulations allow qualified private operators to be licensed for any stage of seed production. Without having to negotiate new regional regulations or complex treaties dealing with intellectual property rights, therefore, one step

countries could take almost immediately would be to allow qualified companies to retain full control over their intellectual property at every stage of the production and supply chain without time limits or having to hand over parental germplasm to public agencies. Such a policy would not only alleviate pressure on overstretched public breeding systems so that these institutes can be more effective, but could also do a lot to improve on seed quality since owners of private seed technology have a much stronger incentive to ensure the value of their products and prevent counterfeiting than companies that only engage in multiplication of public technology.

**Creation of a regional knowledge platform on inputs would be a good way to support short-term improvements and long-term harmonization.** To help countries get the most out the regional regulations, establishment of a knowledge platform on input trade dedicated to sharing ideas on what works and what doesn't work would be a good practical strategy for West Africa to explore. Much more than a website where the ECOWAS regulations and other documents get posted, a regional knowledge platform might take the form of a working group or think tank that aims to fill information gaps and identify practical solutions to strategic problems. Such a platform would serve to complement the work of existing stakeholder forums and aim to support the regional seed and fertilizer committees with timely information and analysis needed for effective decision making once they are established. Ultimately, implementation of the harmonized regulations is not the goal itself but merely a way to achieve the much more important objective of improving farmer access to quality inputs through sustainable market driven channels. As discussed throughout this paper, achieving that aim requires a combination of strategies together with ongoing dialogue between regional governments, donors, NGOs, and others with a shared desire to promote inclusive agriculture growth and market integration in West Africa.



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## *1. Access to quality inputs is a necessary condition for improved farm productivity*

When the Economic Community of West African States (ECOWAS) launched its Regional Agriculture Policy (ECOWAP) in 2005, the ECOWAS Commission noted that 70 percent of production gains since 1985 had been obtained by putting more farmland under production with little improvement in yield. The use of certified seeds and fertilizers barely figured in most producers' operations, particularly among small scale farmers. This model of growth, the ECOWAS Commission said was unsustainable and insufficient to keep pace with rapidly growing urban demand. Dependence on area expansion it observed was contributing to a dramatic decline in soil productivity, increasingly degraded natural resources, and more and more conflicts over land use, particularly between farmers and herders (ECOWAS, 2005a). With average yields of less than 1.5 tons per hectare for major cereals (maize, rice, millet and sorghum), less than 1.0 ton per hectare for pulses (beans, groundnuts, and soybeans), and less than 10 tons per hectare for root and tuber crops (cassava, yams, and sweet potatoes), staple crop yields in West Africa are among the lowest in the world and have barely improved in recent years (Nin-Pratt and others, 2011).

Contributing to this problem, the majority of farmers in West Africa rely on unimproved seeds including traditional landraces and seeds of improved varieties that have been recycled for so many years they no longer provide a yield advantage. Setimela and others (2009) compared 2007 adoption rates of improved maize varieties in 14 Sub-Saharan African countries and found that West Africa (represented by Benin, Ghana, Mali, and Nigeria in the sample) had the lowest adoption rates compared with other parts of Africa. Across these countries, supply of open pollinated varieties (OPVs) and hybrid seeds from the formal sector was estimated to be only 33 percent of the potential demand, based on the amount of maize cultivated, with variations at country level from zero percent adoption of improved varieties in Benin, to 3 percent in Mali, 11 percent in Ghana, and 47 percent in Nigeria.

Fertilizer use is similarly inadequate for high crop yields. At an average of just over 5kg nutrients per hectare from 2002 to 2009 (Druilhe and Barreiro-Hurlé, 2012), and perhaps 6-7kg per hectare now because of spending on subsidy programs (NEPAD, 2011), fertilizer use in West Africa is less than one tenth of the world average and well below the 2015 target of 50kg of nutrients per hectare set by the Africa Union (AU) in its June 2006 Abuja Declaration on Fertilizer (AU, 2006). This low level of input use is all the more concerning given that the vast majority of fertilizer in West Africa is used on cotton, cocoa, and other industrial crops and not food staples (UEMOA, 2013). Fertilizers are particularly needed in West Africa due to the naturally low nitrogen and phosphorus status of the soils (Bationo and others, 2013). Continued cultivation without fertilizer additions leads to soil nutrient depletion with Henao and Baanante (2006) estimating that West Africa lost an average of

55 kg of nitrogen (N), phosphorous (P), and potassium (K) annually per hectare cultivated from 2002 to 2004.

As a result of its poor performance in agriculture and low level of input use, West Africa currently imports around 20 percent of its total food requirements (UNECA, 2012) and is one of the few geographic regions in the world that does not produce enough staple food to feed itself (IFPRI, 2012). For some food staples, the region is very heavily dependent on imports. Of the almost 10 million tons of rice consumed in West Africa in 2007, for example, around 70 percent was imported (Albehri and others, 2013). The dependence on imported food thus represents a significant burden to regional balance of payments and without transformational improvement in crop yields is likely to get much worse. According to the United Nations' latest projections (UN 2013), West Africa's 2010 population of 305 million will grow to 516 million by 2030 and to 815 million by 2050 with urban population increasing from 44 percent to 66 percent of the total in this timeframe.

Fortunately, with correct use of improved seeds and fertilizer, West African farmers could easily double or triple their yields of most major crops (Nin-Pratt and others, 2011; World Bank, 2012a). In other parts of the world, use of improved inputs contributed to vast productivity gains. During the Green Revolution in Asia, for example, improved seeds and fertilizer were responsible for an estimated 23 percent and 25 percent respectively of the extra 117 million tons of rice produced from 1965 to 1980 (Conway, 2011). Similarly, policy reforms in the early 1980s in Turkey that increased farmer access to privately owned seed varieties led to an increase in average maize yields of 1.4 tons per hectare over a 10-year period adding an estimated US\$ 97 million per year to farmer income, with similar gains in production of soybeans, wheat, and potatoes (Gisselquist and Pray, 1999). Traditional landraces that are well-adapted to local conditions also have many important roles to play, particularly as a foundation of farmer household food security, but are unlikely to provide the transformational improvement West Africa needs to meet its growing demand for food staples.

In looking for strategies to facilitate use of improved inputs in ECOWAS countries, the physical nature of West Africa's agro-ecological zones provides a powerful argument for regional collaboration. Soil types and rainfall patterns cut across countries mainly in east to west bands meaning that multi-country zones often share more similarities in crops, soil fertility, and nutrient status than zones within the same country (Eilittä, 2014). As a result, neighboring countries are potentially the nearest source of supply or best market outlet for adapted seeds and appropriate fertilizer types. Expanding input markets across national borders, therefore, could be of significant direct benefit in achieving the economies of scale and savings on transport costs needed to bring prices down and improve farm-level choice and availability.

As in other parts of Africa, one of the main ways West Africa governments have sought to improve input supply has been through the adoption of harmonized trade rules designed to improve quality and make regional transactions easier, faster, and cheaper.<sup>1</sup> After extensive consultations involving the West African Economic and Monetary Union (*Union Économique et Monétaire Ouest-Africaine*, UEMOA) and the Permanent Interstates Committee for Drought Control in the Sahel (*Comité*

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<sup>1</sup> Other groups of countries in eastern and southern Africa are following a similar approach of harmonizing seed rules through the Southern Africa Development Community (SADC), Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), Common Market for Eastern and Southern Africa (COMESA), and the East African Community (EAC).

*Permanent Inter-Etats de Lutte Contre la Sécheresse dans le Sahel*, CILSS), ECOWAS enacted a set of harmonized trade rules for seed in 2008 (ECOWAS, 2008) that member states are now in the process of making operational. In 2012, ECOWAS enacted a similar set of harmonized trade rules and quality control procedures for fertilizer (ECOWAS, 2012) that is similarly in the process of being made operational in partnership with UEMOA.

With the importance of improving farmer access to inputs mind, this paper looks at the strengths and limitations of regional trade reform efforts. The analysis is based on a desk review of the requirements for regional trade of seed and fertilizer, recent performance of input markets in West Africa, and specific provisions of the new harmonized regulations. The analysis also builds on a series of country case studies carried out during January and February 2014 in Burkina Faso, Liberia, Mali, and Nigeria that were selected for being at different levels of development in input supply and because of other differences in market size, proximity to the sea, language/legal background, and progress with implementation of the harmonized regulations. Burkina Faso and Mali, for instance, are inland Francophone countries that are regarded by development projects supporting the harmonization process as having made good progress towards implementation of the new regulations (WAFP, 2014; WASP, 2014). Nigeria, on the other hand, was selected because of the massive size of its economy and to represent an Anglophone country where some institutional development and progress towards harmonization has been achieved. Liberia, meanwhile, was selected for being a coastal Anglophone country with relatively undeveloped markets for seed and fertilizer and few of the institutions needed to support regional harmonization. To the extent possible, examples from other countries in the region and around Africa are also included to support the analysis and illustrate the practical challenges and opportunities for improved input trade.

Taken together, the desk analysis and case study work shows that harmonization has many potential benefits and is already helping to guide some countries in making important improvements to their quality control systems. Equally, the analysis also finds that harmonization is a demanding approach to trade facilitation that needs to be supported by multiple types of capacity improvement and other institutional reforms at the domestic and regional levels to be truly successful in breaking down trade barriers, improving farmer choice, and stimulating private sector investment. Rather than rely exclusively on harmonization and efforts to make the regional rules operational, therefore, the analysis points to a need for complementary actions that are simple for individual countries or groups of countries to undertake in the near term while longer-term work towards full harmonization continues.

## ***2. Markets for seeds and fertilizers in ECOWAS***

Apart from industrial cash crops where inputs are often provided by processing companies, most farmers in West Africa have little or no access to improved inputs for food staples. For food crops, farmers typically have to travel long distances to find improved seed and fertilizer and then face problems of little choice, high prices, and uncertain quality. Farmer demand is also limited by lack of prior experience using improved seed and fertilizer for food staples and by the poor availability of extension services to promote the benefits of these inputs. Compounding the problem, local markets for food staples in West Africa are often thin and uncompetitive while regional markets are highly fragmented with many costs and risks including the threat of outright trade bans that

undermine competitiveness and give farmers little reason to produce surplus food for market sale (World Bank 2012 and 2012a; Keyser 2013).

Problems with the emergence of competitive markets for seed and fertilizer are not unusual in developing countries and can even be expected in the absence of effective regulatory support. Without oversight, the quality of farm inputs may only become apparent long after they are used, and even then with some degree of uncertainty due to intervening factors such as rainfall, soil type, and timeliness of use that ultimately affect how well each input performs. Commercial marketing of inputs also involves considerable risk for traders given that farmers may hold off on their purchases until they see how the rains develop whereas input companies must make their purchases and decide on marketing strategies months in advance.

Despite these longstanding constraints, new opportunities for input supply are opening up in West Africa with the reemergence of government spending on input subsidies that began in the wake of the 2008 global food crisis. In Ghana and Nigeria, for instance, the state is actively promoting private sector involvement in the procurement and distribution of subsidized seed and fertilizer. Mali and Burkina Faso are also moving to a private sector approach in their subsidy programs, at least for fertilizer distribution. Thus far, however, there have been few efforts by private companies to promote their inputs through demonstration plots, farmer field days, and other such activities as is common in other developing countries including many parts of eastern and southern Africa. Private sector involvement in seed research and variety maintenance also remains extremely limited with several West African countries imposing outright bans on private ownership of seed technology and/or private supply of breeder and foundation seed. Côte d'Ivoire is reportedly an exception and allows private variety maintenance,<sup>2</sup> but many other countries including Burkina Faso, Ghana, Mali, and Nigeria do not and instead require the state to supply 100 percent of breeder seed.

Donor support for professional agro-dealer associations is also helping to promote private competition and improve farm-level input supply in some countries including Burkina Faso, Ghana, Mali, and Nigeria. Agro-dealer density, nevertheless, varies greatly in these countries with input suppliers across all West Africa ranging from well-trained operators of large shops to small tabletop dealers in the markets, who have had no training in inputs and often sell from open bags (Eilittä, 2014).

It is also important to note from the outset that there are inherent differences between seed and fertilizer as commodities that shape the opportunities for regional trade and private competition. First, fertilizer is a bulk commodity traded in the world market that is subject economies of scale at virtually every stage of the supply chain. An ammonia/urea production facility, for instance, can cost upwards of US\$ 1 billion to establish. Additionally, fertilizer production plants can only be established in areas with sufficient supply of quality raw material, such as natural gas, phosphate rock, or potash. Blending plants that produce fertilizer from imported and/or local raw materials can be established for much less, but fertilizer is still a business that favors large firms and can easily result in monopolies and oligopolies in places like West Africa where market demand is limited (Bumb and others, 2012). The bulkiness of fertilizer also means that transport costs are a major factor in determining its final price. Road freight costs in West Africa are among the highest in the

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<sup>2</sup> Email exchange with Robert Guei, Secretary of the Committee on Agriculture, FAO.

world (Bromley and others, 2011) and various studies show that transportation from coastal ports to inland locations easily accounts for 20 to 40 percent or more of total value excluding distribution to the farm gate (Bumb and others, 2012; Diakite and others, 2013; Wanzala and Groot, 2013). Taken together, these factors provide a strong argument for producing or blending fertilizer as close as possible to where it is needed, but can also mean that well-established global companies with low cost structures may be the most competitive source of supply, particularly in coastal areas.

Seed supply, on the other hand, does not involve the same massive economies of scale and is even possible for small farmers to multiply very good quality planting material as long as they follow the correct procedures including required isolation distances for open pollinated crops. Seed production, however, is arguably more complicated compared with fertilizer in that years of adaptive research are required to develop effective varieties. Seed supply also requires reliable systems for maintaining each variety's parental germplasm and for replicating true copies of the variety for farmer use. The greater the number of seed crops and varieties that need to be multiplied, the more expensive and laborious the process becomes (Rohrbach and others, 2003; Keyser 2013a).

### **2.1 Regional seed trade is extremely limited and complicated by many factors**

Seed trade is inherently complicated and requires overcoming multiple challenges at nearly every stage of the supply chain beginning with variety development and maintenance, through to seed multiplication, certification, marketing, and distribution. Production requirements vary from crop to crop and by the type of seed but generally involve several generations of multiplication. Beginning from parental germplasm, these generations typically include *breeder seed* (sometimes known as pre-basic seed) from which *foundation seed* (also called basic seed) is produced and, in turn, is used to multiply *certified seed*, which is the generation of seed that farmers plant.

Most improved seeds in West Africa bred for specific characteristics were developed within the region by public bodies including national agriculture research institutes (NARIs), universities, and international CGIAR Consortium research centers such as AfricaRice in Cotonou, the International Institute of Tropical Agriculture (IITA) in Ibadan, and the International Crops Research Institute for the Semi-arid Tropics (ICRISAT) in Bamako. These research institutes have proved themselves to be very effective in developing new varieties, but not in making the bridge to commercialization such that many of the very good varieties bred in West Africa have never been brought to market or otherwise made available for farmer use (Nin-Pratt and others, 2011). With recent government spending on input subsidies, there has been an upsurge in the number of private companies doing seed multiplication, often involving smallholder farmers, but there is still very little private involvement in seed breeding or variety maintenance including production of breeder seed and foundation seed.

With respect to variety development, the supply of new and improved types of seed is constrained by the fact that most countries have very few plant breeders and limited resources to support their work. Even in Burkina Faso, which has a relatively large public sector agricultural research system, there are only one or two plant breeders for major food crops including maize, millet, and sorghum. Rice and cowpeas do somewhat better with four state breeders each, but even for these crops, researchers face serious resource constraints (Sène, 2014). Small countries like Liberia, on the other hand, typically have little or no domestic breeding capacity and depend almost entirely on

partnerships with CGIAR Consortium research centers for crop research and access to improved germplasm.

Access to new varieties is also constrained by national requirements for variety testing and release. Even if a variety is a known good-performer in a neighboring country with similar growing conditions, each country currently requires its own series of domestic trials before the variety can be made available to farmers. Registration procedures vary from country to country, but in international systems involve a series of “distinctiveness, uniformity, and stability” (DUS) and “value for cultivation and use” (VCU) trials carried out by the national seed authority in which data needed to measure different traits are collected in various locations around the country. Developing a variety can easily take plant breeders seven to ten years or more and, with few exceptions, registration trials in West Africa take a minimum of two years but often require much longer. In Ghana, for instance, all types of seed for farmer use must be tested by research stations for at least one year before being put to two more years of farmer field trials while on-station tests continue (Republic of Ghana, 2010). Many West African countries require VCU tests at three to six sites and, in Benin, VCU trials must be carried out at 25 separate sites (Setimela and others, 2009). Then, after the tests are complete, national variety release committees are usually required to review the results and make a formal decision on whether to allow the seed to be registered and sold within the country’s borders or not. Ideally, variety release committees should meet at least once a year, but in some countries, these committees may not meet for several years due to lack of resources.

Because of these factors, the release of new varieties in West Africa has been limited overall. Some countries have done better than others in meeting their own variety release requirements, yet Gisselquist and others (2013) observe that in 11 western and central Africa countries just 0.75 new varieties of maize were released per country per year from 1965 to 2006 with only 0.24 new varieties coming from the private sector per year, against 0.51 new varieties per country per year from public institutions. Even in Burkina Faso, where public agriculture research is relatively advanced, just eight yellow maize varieties and nine sorghum varieties have been released in the past five years equal to 1.6 and 1.8 new varieties per year respectively (Sène, 2104).

This pace of variety release is far slower than in other parts of Africa where there has been much greater private involvement in seed breeding and marketing. In Kenya, Tanzania, and Zambia, for instance, an average 11 new varieties of maize were released per country per year from 2000 to 2008 including an average of 7.7 new varieties by private companies and 3.3 varieties from public institutions. In South Africa, a median of 45 new varieties of maize were released per year from 2000 and 2010 together with 10 new varieties of beans per year, and six to eight new varieties per year each of potatoes, sorghum, sunflower, and wheat with 90 percent of all new varieties developed and owned by private seed companies (Gisselquist and others, 2013).

Seed supply is also complicated by the need to maintain the parental germplasm of each variety and multiply reliable copies for farmer use. In West Africa, these functions have traditionally also been the responsibility of the NARIs and/or other public bodies. Breeder seed production including the maintenance of inbred lines for hybrids and families of selected seeds for OPVs needs to be supervised by trained plant breeders and is particularly demanding. As Tripp and Mensah-Bonsu (2013) observe, yields at this stage of the seed chain are low because of the need for rigorous selection of acceptable plants and because inbred lines have little vigor on their own. The production

of breeder and foundation seed is also expensive because seeds must be stored under carefully controlled conditions. Excess production is wasteful, but insufficient supply can shut down the entire production chain. When variety maintenance is managed by private sector, the firm is naturally responsible for coordinating the production process and for matching the supply of different generations of seed against its own medium-term sales projections. When state bodies manage breeder and foundation seed production, there also needs to be an organized system for coordinating the supply of genetic material to private companies or others doing seed multiplication.

Thus far, few such systems exist. Even in Ghana where private involvement in the seed industry is relatively advanced, requests for breeder seed are handled by directors of breeding programs who may or may not have the resources or incentives to act. In the first place, there is no system for paying deposits for breeder seed meaning the breeding program faces a serious risk of non-collection and non-payment by the seed company. There are also no provisions for sanctions against the breeding program if it fails to deliver, thereby putting the seed company at risk of not being able to multiply the product it wants to sell. As Tripp and Mensah-Bonsu (2013) explain, the result of this is that only a few varieties of each crop are produced and marketed as seed in Ghana in any year with a general dominance of one or two varieties for each crop. In the case of maize, a single variety, Obatanpa released in 1992, has accounted for more than 95 percent of certified seed production in Ghana for the past decade. Obatanpa is an excellent variety, but is now more than 20 years old and so widely grown that it is unlikely to contribute further to national yield gains by itself or to growth of the commercial seed industry more generally.

Certification procedures to ensure that each seed lot is true to type are another demanding part of seed supply. Depending on the crop, type of seed, and generation of seed being produced, full certification requires two to four field visits performed by qualified seed inspectors at specific stages in the production cycle. During these visits, inspectors need to check what crops were grown previously on the seed plot, verify minimum isolation distances, measure maximum percent of off-types and presence of noxious weeds, and confirm that the field is free from specific diseases. Inspectors must also check that required actions such as tassel removal are performed at the correct time so need to visit the field just before the start of flowering to check for purity and immediately after flowering to check the level of male sterility. After field inspections, certification also requires laboratory analysis of the seed crop to measure genetic purity, germination capacity, moisture content, and other variables.

Seed certification thus requires significant resources including an adequate number of trained inspectors, reliable transportation, and professionally staffed and well-equipped laboratories. Without these things, various mistakes can easily happen including poor quality seed being allowed onto the market as “certified seed” and/or to perfectly good quality seed being rejected because of inspectors not being able to do everything “by the book” (Tripp and Mensah-Bonsu, 2013). When large quantities of seed are produced in a small area, the cost of these inspections is much more manageable than when production is widely dispersed across groups of small farmers (Rohrbach and others, 2003; Keyser 2013a).

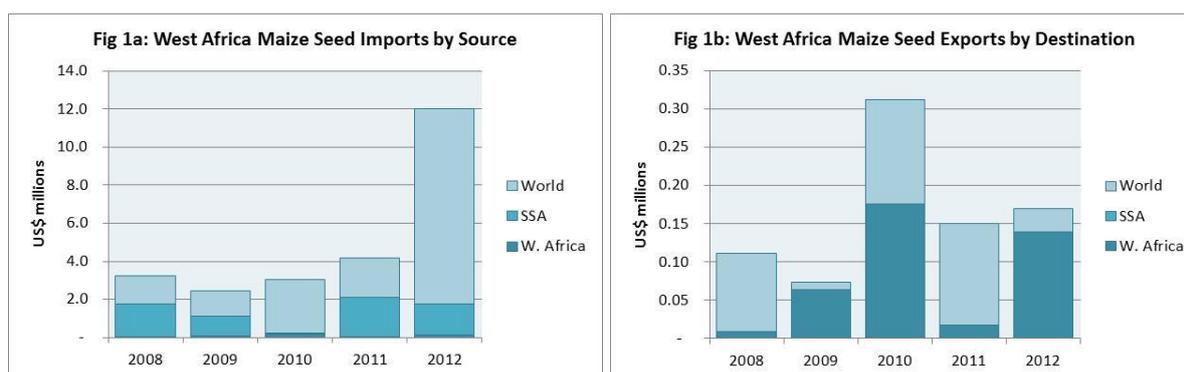
At present, very few countries in West Africa have the capacity to implement these requirements and, at best, only manage to certify part of their annual seed crop leaving most farmers little choice other than to rely on uncertified seed and recycled landraces. Where improved seed is sold, both in

commercial markets and under government subsidy programs, there are frequent complaints for poor quality and of outright counterfeiting with ordinary grain being disguised as certified seed. From a regional perspective, this reduces the confidence of importing countries to the point where governments often perform their own tests before allowing imported seed onto the market and sometimes insist on sending their own inspectors to visit foreign seed plots. Nigeria has even required importers to pay for its national seed inspectors to visit countries such as Brazil and South Africa that have internationally accredited seed certification systems before allowing imported seed from these places to be sold to farmers (Ayoola, 2014).

Beyond the requirements for variety release and seed certification, other challenges arise with international seed trade with respect to phytosanitary control. Under the terms of the International Plant Protection Convention (IPPC), exporters of plant products are required to obtain a phytosanitary certificate from their National Plant Protection Office (NPPO) to verify that the product is free of pests and plant disease and otherwise meets the importing country's phytosanitary import requirements.<sup>3</sup> Common pest lists for seed trade in West Africa do not exist and, as a result, various tests and inspection visits by plant health officers (who are different from seed inspectors) are typically required before a phytosanitary certificate can be issued.

Figures 1a and 1b below show the overall nature of West Africa's seed trade by looking at the source of maize seed imports and destination of maize seed exports in value terms. Although data for other seed crops are not available, maize seed is by far the most commonly traded seed crop in Africa. First, on the import side (Fig 1a), the data show that West Africa's maize seed imports have been very low at less than around US\$ 4 million per year except in 2012 when Nigeria imported US\$ 8 million of seed from Argentina for its subsidy program. Other than Nigeria, in fact, only Ghana and Senegal reported significant maize seed imports over the period covered meaning that most countries were almost completely reliant on their own domestic supply.

### **Figures 1a and 1b: Directions of West Africa's Maize Seed Imports and Exports**



**Source:** COMTRADE data (consulted 3 July 2014). **Notes:** Data query was for 15 ECOWAS countries plus Mauritania and Chad who are party to the ECOWAS regional seed agreement through CILSS. Analysis prepared using mirror data (i.e. imports reported by ECOWAS and CILSS countries from world, SSA and fellow ECOWAS/CILSS members for imports and imports reported by world, SSA, and fellow ECOWAS/CILSS members from ECOWAS/CILSS for exports).

On the export side (Fig 1b), the data show that West Africa's maize seed exports have been extremely limited. Over the five years covered, countries participating in the ECOWAS harmonization

<sup>3</sup> In West Africa, only The Gambia is not contracted to the IPPC. Other African countries not participating in the Convention are Angola, The Democratic Republic of Congo, Lesotho, and Somalia. See: [www.ippc.int](http://www.ippc.int)

agreement reported a combined total of just US\$816,000 of maize seed exports with average total exports being only US\$143,000 in most years.<sup>4</sup> As shown, around half of the region's maize seed exports went to countries outside West Africa and nearly all of these exports went to Mexico, Lebanon, and other countries with CGIAR Consortium research centers.<sup>5</sup> Most intra-regional seed exports have likewise been connected with development projects or subsidy programs rather than private initiative. Nigeria, has occasionally allowed seed to be imported for its subsidy program from AfricaRice in Benin together with small quantities from private companies doing seed multiplication in Burkina Faso and Mali (Ayoola, 2014). The Food and Agriculture Organization (FAO) similarly reports that breeder seeds used for its West Africa Rice Project in Niger were exported by Mali and Senegal.<sup>6</sup>

## 2.2 Fertilizer use remains low amid signs of increasing regional trade

Compared with seed, fertilizer trade is relatively straightforward and primarily revolves around quality control procedures including the verification of container weights and declared chemical components. Soil analysis is needed to determine optimal formulations for farmer use on different crops and good storage conditions are required to avoid caking, water damage, and other types of loss. Nevertheless, fertilizer trade does not involve complicated procedures for variety maintenance and multiplication as described above for seed. Moreover, because inorganic fertilizer is not a food, animal, or plant product, a phytosanitary certificate should not be required for international trade like seed.

Rather, the main challenge with fertilizer trade is that quality problems can arise anywhere along the supply chain. During the case study investigations for this paper, numerous complaints were heard in each country visited of problems with underweight bags and grossly adulterated products even to the point of ash and pure sand sometimes being sold as fertilizer (Ayoola, 2014; Eilittä, 2014). Like seed, therefore, enforcing fertilizer standards in West Africa is a great challenge. International test certificates and inspections at seaports or inland border crossings, place of manufacture, or even in local warehouses, may give little indication of the quality of the product sold in the market or distributed to farmers through a subsidy program. An assessment of fertilizer quality in Côte d'Ivoire, Ghana, Nigeria, and Togo commissioned by the ECOWAS Commission as it embarked on the harmonization process (Sanabria and others, 2013), for example, found serious problems with the quality of blended fertilizers and granular compounds in all countries covered. Of the blended products, 51 to 96 percent of the samples analyzed did not comply with tolerance limits for nutrient content set by ECOWAS. Compound fertilizers manufactured by global suppliers did better with only 15 percent of the samples found to be deficient in nutrients although problems with underweight bags and inadequate storage were still common. In Nigeria, 41 percent of the bags sampled did not meet the ECOWAS tolerance limits for weight.

Bearing in mind that fertilizer procurement in West Africa has often been marred with corruption, large producers including manufacturers and blending companies that trade on their reputation

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<sup>4</sup> Average excluding the low of 2009 and peak of 2010.

<sup>5</sup> The International Maize and Wheat Improvement Center (CIMMYT) is headquartered in Mexico City and from 2012 the International Center for Agricultural Research in Dry Areas (ICARDA) has been operating temporarily from Beirut.

<sup>6</sup> Email exchange with Robert Guei, Secretary of the Committee on Agriculture, FAO.

generally have a strong underlying incentive to ensure the quality of their products and mostly have their own laboratory facilities to test production runs. In Nigeria, large manufacturers reported they have even started to draw samples from affiliated distributors and retailers to check for the quality of their products at these levels too (Ayoola, 2014). Smaller blending companies, on the other hand, usually do not have the same capacity and must depend on assurances from their suppliers for the quality of raw materials they use together with simple physical inspections that help ensure products are being blended at the correct ratios. When laboratory analysis is desired by these companies, samples must be sent to the national fertilizer laboratory if it has capacity or to a private laboratory somewhere within the region or offshore.

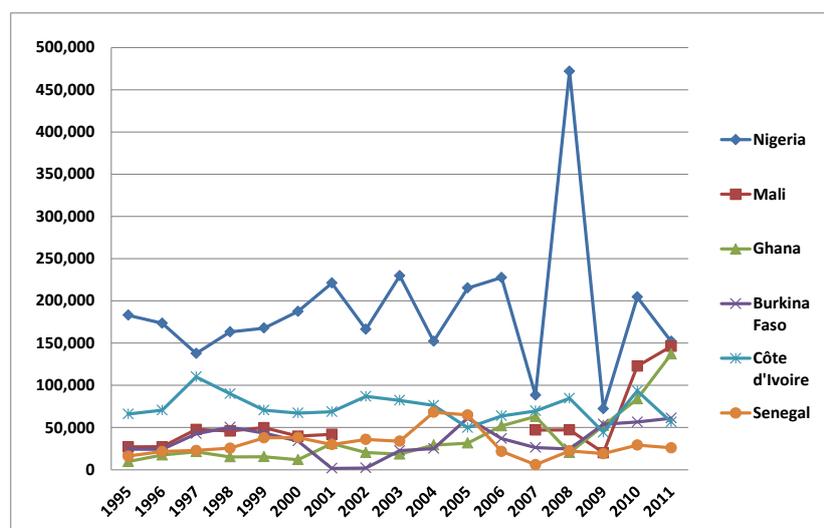
In 2011, total NPK consumption in the ECOWAS region was 608,000 tons of nutrients, equal to 13 percent of total consumption in Africa (4.8 million tons) and 0.35 percent of global consumption (173 million tons) (AfricaFertilizer.org, consulted May 20, 2014). Compared with the late 1990s when fertilizer consumption in West Africa was around 525,000 tons of nutrients, the 2011 figure is an increase of about 16 percent. When this apparent increase is set against the increase in total cropped area of about 25 percent from the late 1990s to 2011, however, it is clear that the region has not advanced and even gone backwards in per hectare application rates. To put these numbers in a wider context, average fertilizer use in West Africa from 2002 to 2009 was barely above 5kg of NPK nutrients per hectare of arable and permanent cropland against 7.1kg nutrients per hectare for all sub-Saharan Africa and 12kg per hectare in eastern Africa. In southern Africa, Malawi, Zambia, and Zimbabwe, each consumed 29 to 35kg of nutrients per hectare over the same 2002-2009 period (Druilhe and Barreiro-Hurlé, 2012).

Some recent gains have been recorded in West Africa because of spending on subsidy programs, yet total nutrient use remains well below the level needed to transform agriculture production (NEPAD, 2011). The overall stagnation in fertilizer consumption in West Africa is illustrated in Figure 2, which shows total NPK use in the top six fertilizer-using countries from 1995 to 2011. From a regional perspective, these data also show that fertilizer consumption is heavily skewed in favor of just a few countries. Of the 608,000 tons of nutrients consumed in 2011, for instance, Nigeria, Mali, and Ghana accounted for 72 percent of the region's total fertilizer use, or when Burkina Faso and Côte d'Ivoire are added, these five countries accounted for 91 percent of West Africa's total consumption. Three West African countries (Guinea, Gambia, and Togo) consumed less than 5,000 tons each in 2011 while Benin and Senegal consumed from 10,000 to 30,000 tons each.<sup>7</sup> The spike for Nigeria in 2008 is explained largely by a surge in distribution of subsidized fertilizer.

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<sup>7</sup> Data are not available for Cape Verde, Guinea Bissau, Liberia, or Sierra Leone, all of which are small consumers (AfricaFertilizer.org, consulted on May 20, 2014).

**Figure 2: Tons of Fertilizer Nutrients (NPK) Consumed by Top-6 West African Fertilizer Consuming Countries, 1995-2011.**



Source: AfricaFertilizer.org (consulted 20 May 2014).

While the overall regional picture is bleak, close examination of the data for Mali, Ghana, and Burkina Faso reveals that these countries have made very large gains in fertilizer consumption since 2008. These gains are mostly a result of each country's input subsidy program, so may not be sustainable if farmers are required to pay commercial prices. As shown, Burkina Faso experienced a rise in fertilizer consumption in the early 2000s only to give up its gains until consumptions started to rise again from 2008 due to spending on subsidies. Many of the fertilizer companies interviewed for this study in fact complained of unpredictable market size and problems with corruption linked to the subsidies. Others, however, pointed to the sharp rise in fertilizer consumption as having helped private importers and local blending companies selling to subsidy programs achieve improved economies of scale. To the extent that farmers who have never before used fertilizer on food crops become aware of and continue to demand the benefits fertilizer has to offer, spending on subsidies could potentially kick start a lasting transformation in market size and regional competitiveness in fertilizer production.

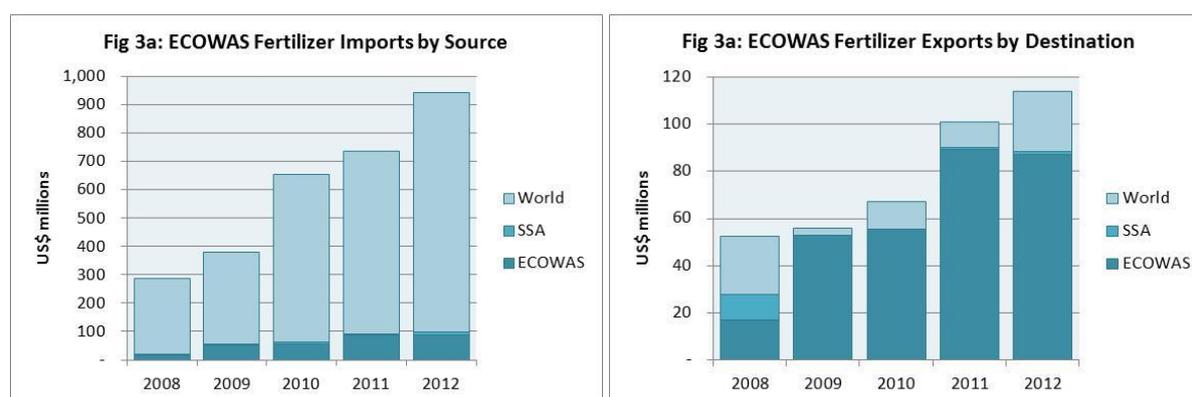
Currently, most fertilizer in West Africa is imported through the region's coastal ports and shipped by trucks to its final destination. This is normally done by large importers, who may also act as wholesalers and in some cases have their own distribution networks. Some importers such as Yara and Louis Dreyfus operate regionally in several countries, but there are usually only a few importers per country due to the high cost and difficulties of obtaining finance and small market size. In comparison to more developed fertilizer markets, importing in West Africa (as generally in sub-Saharan Africa) is expensive due to the high costs of finance, high cost of sea freight to the region, delays and slow operations at the ports, poor bagging operations, and high cost of warehousing. Companies participating in subsidy programs also complain about delays in government payments, which they say greatly increase finance costs and risks of doing business.

Local fertilizer production is growing, but is still very limited and dominated by blending companies that use ingredients imported from outside West Africa. Blending plants with appreciable capacity are installed in Burkina Faso (CIPAM), Côte d'Ivoire (YARA and STEPC), Ghana (Yara, Golden Stork),

Mali (SOGEFERT, Toguna Agro Industries), Nigeria (NOTORE, Golden Fertilizers, TAC Agro), Togo (WabcoCotia, SOTAGRI), and Senegal (SENCHEM) (Fuentes and others, 2011; UEMOA, 2013; Ayoola, 2014). Potential also exists to exploit commercial deposits of rock phosphate (most notably in Senegal and Togo), lime, dolomite, gypsum, and pyrite found throughout the region. Natural gas and/or coal reserves in Côte d'Ivoire, Ghana, Niger, Nigeria, and Senegal can similarly be used for the production of nitrogenous fertilizers. Presently, however, only Nigeria is exploiting this opportunity by producing urea and other forms of nitrogen that are used in blended products made with other imported raw materials (Wanzala and Groot, 2013; UEMOA, 2013).

Figures 3a and 3b below show the source of West Africa's fertilizer imports and destination of its fertilizer exports in value terms. First, with respect to imports to West Africa (Fig 3a), the data show that total value has grown steadily over the period covered with a small but increasing share of total fertilizer coming from local West Africa suppliers. Given the stagnation in volume of fertilizer used, the value increases primarily reflect increased spending on fertilizer subsidies in a few countries. On the export side (Fig 3b), the data show that regional markets in West Africa are by far the most important destination for locally produced fertilizer. Over the period covered, regional sales accounted for 75 percent of West Africa's fertilizer exports thereby underscoring the importance and potential benefits of efforts to harmonize regional trade policies.

### Figures 3a and 3b: Directions of West Africa's Fertilizer Imports and Exports



**Source:** COMTRADE data (consulted 3 July 2014). **Notes:** Data query was for 15 ECOWAS countries that are party to the ECOWAS fertilizer harmonization agreement. Analysis prepared using mirror data (i.e. imports reported by ECOWAS countries from world, SSA, and fellow ECOWAS members for imports and imports reported by world, SSA, and fellow ECOWAS members from ECOWAS for exports).

Of the region's exporting countries, Mali has done especially well growing from a low base to account for slightly over 50 percent of West Africa's intra-regional fertilizer trade and nearly 46 of West Africa's total fertilizer exports in recent years. Most of these exports have come from the privately owned firm, Toguna Agro-Industries that was established only in 2009. The company manufactures blended products using raw materials imported from global sources and currently supplies the entire 15,000 tons of fertilizer required by Burkina Faso for its subsidy program for cereals and part of Burkina Faso's requirements for cotton. Toguna Agro-Industries has also exported its blended products to Benin, Niger, and Senegal and says it expects sales to increase in the near future with the opening of a second blending plant and with the exploitation of domestic rock phosphate mined near Tilemsi. Fertilizers blended in Ghana, Côte d'Ivoire, and Togo, the three next leading exporters in the region, are also being imported by Burkina Faso and Mali.

Due to the bulkiness of fertilizer, prices tend to be far higher in the landlocked Sahel countries than in coastal countries (see Table 1). West Africa's transport costs are notoriously high and are estimated to account for almost a third of the fertilizer retail price in Mali (Diakite and others, 2013). An important reason for this is the poor system of allocating freight whereby trucks can wait for weeks in the coastal ports for a load and must then come back from the Sahel empty or wait a second time for a return load. Other reasons include poor condition of the trucks and roads, freight delays on the roads and in the borders, and payments demanded by corrupt officials.

**Table 1: Commercial Retail Prices of Urea in Selected Coastal and Landlocked (average US\$/ton, 2010-2013)**

Coastal Countries	Landlocked Countries
Ghana = 466	Niger = 643
Benin = 598	Mali = 706
Nigeria = 604	Burkina Faso = 767
Senegal = 674	
Côte d'Ivoire = 740	

Source: AfricaFertilizer.org (consulted 20 May 2014).

Just as transport costs result in high retail prices, they also impose a high cost on government subsidy programs. Since the 2008-09, Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Niger, Nigeria, Senegal, and Togo have each been subsidizing fertilizer up to 50% of the retail price. Improved seeds are usually also included in these programs, but because of prices and the sheer bulk of fertilizer involved, this commodity accounts for the vast majority of program expenditure meaning that any savings on trade costs for fertilizer could be of significant direct benefit to government budgets. As countries look to maximize the efficiency of these programs and eventually move beyond the need for input subsidies, efforts to save on trade costs and promote intra-regional trade are fundamentally important.

### **3. Towards an ECOWAS policy for agricultural inputs**

In an effort to improve on quality and create new opportunities for regional trade, West African policymakers have been working for many years to develop harmonized trade rules for seed and fertilizer.<sup>8</sup> Adoption of harmonized trade rules is a well-established and popular approach to trade facilitation that has helped many countries around the world save on trade costs and improve their competitiveness position. The European Union (EU) and Organization for Economic Cooperation and Development (OECD), for example, already operate well-established harmonized systems for seed trade. Harmonization with international norms, however, is not the only option for improving trade and can potentially create new bottlenecks if the harmonized rules are set too high for users to afford and/or if the requirements are too difficult for countries to implement. Picking the right approach to trade facilitation is therefore an important part of improving farmer access to quality inputs and West Africa's prospects for agriculture development more generally.

<sup>8</sup> Work has also been ongoing since 2006 to develop harmonized rules for regional trade of pesticides. Although pesticides are useful in grain storage and can help with on-farm production, the majority of these chemicals are used on cotton, cocoa, coffee, and vegetables so were not a specific focus of the present study that began as part a project on food staples trade. Side discussions with those involved with pesticide trade, however, found that many of the same issues exist with regard to regional recognition of registration tests, problems with counterfeiting and adulteration, and limited enforcement capacity among others.

For both seed and fertilizer, harmonization has required that a vast number of technical, legal, institutional, and other issues be addressed. Efforts in West Africa to formulate regional regulations for seed began by CILSS in the early 2000s for its member states. Then, in 2004, a separate process was started by UEMOA that was joined by ECOWAS in 2005 and finally by CILSS in 2006. With fertilizer, the formal process began more recently in 2010 and has involved ECOWAS and UEMOA only. Through these deliberations, detailed regulations setting out specific rules for regional trade and quality control of seed and fertilizer were enacted by ECOWAS Council of Ministers in May 2008 and December 2012 respectively (ECOWAS, 2008 and 2012).

In enacting the new trade rules, ECOWAS members agreed to use the powerful legal instrument of *regional regulations*. Per the terms of the Revised ECOWAS Treaty of 1993 and Supplementary Protocol A/SP.1/06/06 of 2006, regional regulations are automatically binding and directly applicable in the entire ECOWAS area once they are enacted. Moreover, where there is a conflict between national and regional rules, the regional regulations take legal precedence and supersede national legislation in the areas legislated on. In the case of seed, Chad and Mauritania had been working on seed harmonization for many years through CILSS and agreed to follow the ECOWAS rules to avoid there being more than one set of harmonized regulations in West Africa. Despite these landmark achievements, and as powerful as the regional instruments are, a great many hurdles remain before harmonized trade of seed or fertilizer can begin.

First, before the regional regulations can be brought into operation, detailed *implementing regulations* specifying how different aspects of each trade system will work must be adopted by the ECOWAS Commission. These instruments are fully developed and have all been validated by regional governments, but so far only one set of implementing regulations for seed has been adopted. Moreover, even though ECOWAS regional regulations supersede domestic laws, the 2008 and 2012 regional regulations prescribe that member countries adopt various supporting regulations at the national level in areas such as licensing requirements and licensing procedures that are not detailed in full by the regional regulations themselves. Conventions between each participating regional body are also required to allow for joint implementation led by ECOWAS. As described in more detail below, these legal processes are still ongoing.

Second, a great many capacity improvements and institutional upgrades are needed before the regional rules can be followed. In designing the regional trade rules, ECOWAS members chose to base the regional regulations on technically advanced international standards. For seed, these standards include variety release procedures determined by the International Union for the Protection of New Varieties of Plants (UPOV), and seed certification procedures set by the Organization for Economic Cooperation and Development (OECD) for field inspection and International Seed Testing Association (ISTA) for laboratory analysis. On the fertilizer side, regional quality control procedures are based on standards set by the AOAC (formerly the Association of Official Analytical Chemists, AOAC) and International Standards Organization (ISO) with EU regulations as an alternative. These systems are each highly effective as quality control instruments, but require specialist skills, advanced laboratory equipment, and other resources to implement that are generally lacking in most of West Africa.

In light of these realities, the regional regulations stop short of making full accreditation by UPOV, OECD, ISTA, AOAC, ISO, and/or other international bodies mandatory. Nevertheless, the ECOWAS

regulations still require that all aspects of the agreed standards be complied with for harmonized trade to take place. This in turn requires that importers have confidence in the exporter's ability to meet and enforce the standards. Without this confidence, importing governments may continue to insist on performing their own quality tests and/or impose other mandatory product registration procedures and checks that harmonization seeks to reduce and even eliminate. To avoid this outcome, the ECOWAS regulations provide for oversight of each country's seed and fertilizer system to be provided by the West Africa Seed Committee (WASC) and West Africa Committee for Fertilizer Control (WACoFeC) respectively. At present, both committees still have to be set up and from there remains to be seen whether importers will have confidence in the system's ability to produce acceptable results.

Despite these challenges, and even though neither set of harmonized trade rules is currently operational, several West African governments have already made important changes to their national regulations and begun to invest in capacity upgrades to help meet the harmonized standards with donor support. These moves are important steps in the right direction and have the potential to transform the markets for seed and fertilizer at the domestic and regional levels even before full implementation of the regulations begins. At the same time, however, the complexities of harmonization and requirements for upgrading that this approach entails also points a fundamental challenge of matching regulatory ambitions with current regulatory resources and regulatory capacities. By choosing to base West African trade rules on advanced international standards, there is a particular risk of overlooking relatively simple improvements that are less expensive to implement and could potentially have greater impact on trade, private competition, farmer choice, and quality improvement in the near term.

### **3.1 Harmonized seed regulations aim to improve variety choice and seed quality**

The interest in West Africa in regional seed policies can be traced back to a FAO sponsored conference held in Abidjan in 1998 that targeted a generic review of seed policies and programs for sub-Saharan Africa. Among other things, this conference recommended establishment of a continent-wide network to coordinate efforts to strengthen seed systems and a working group on the harmonization of seed rules and regulations (Rohrbach and Howard, 2004). As follow-on to the FAO conference, the Sahel Institute (*Institut du Sahel* or INSAH) undertook a series of studies from 1999 to 2000 on the seed sector in seven CILSS countries (i.e. Burkina Faso, Chad, The Gambia, Mali, Mauritania, Niger, and Senegal) that assessed seed sector performance and examined the prospects for regional integration and privatization in the Sahel region. A meeting was then organized by CILSS/INSAH in March 2001 that resulted in an agreement to establish a regional catalog of varieties and develop common criteria for variety registration across nine CILSS countries (Rohrbach and Howard, 2004; Soumare, 2004).

Parallel to these efforts, the FAO launched a pilot project in 2000 aimed at harmonizing national seed regulations in sub-Saharan Africa. In 2004, UEMOA adopted the harmonization agenda for seed in the context of its 2001 Policy on Agriculture (*Politique Agricole de l'UEMOA* or PAU). Following adoption by ECOWAS of its own regional strategy for agriculture in 2005 (i.e. ECOWAP), an

agreement was reached between ECOWAS and UEMOA to extend the seed harmonization work started by UEMOA to include all 15 ECOWAS member countries (Dimithe, 2014).<sup>9</sup>

In December 2005, a joint ECOWAS and UEMOA regional workshop on seed trade was convened in Lomé that gathered public and private sector representatives from all member states. During this meeting, three legal instruments that had been developed by technical experts through various consultations were subjected to a detailed review including what would become the covering regional regulation and two sets of implementing regulations pertaining to the establishment of the regional seed committee and organization of the regional seed catalog. These instruments were formally validated by participants in Lomé with the expectation that the ECOWAS and UEMOA Commissions would submit the instruments to a joint meeting of the ministers in charge of agriculture and thereafter separately to their statutory Council of Ministers in 2006 (Dimithe, 2014).

Meanwhile, the CILSS/INSAH initiative led to adoption by the ministers in charge of agriculture of a convention regulating seed production and trade in Sahel countries in January 2006. Given the possibility of adopting two legal frameworks for seed trade in West Africa with different implementing agencies and different standards for variety release and seed certification, it became necessary to integrate the UEMOA-ECOWAS framework and the one adopted by CILSS into a common framework. Accordingly, a series of consultations and other technical and stakeholder meetings were convened by ECOWAS and UEMOA from June 2006 to April 2007 when a joint regional meeting of ECOWAS, UEMOA, and CILSS was held in Accra to validate the draft instruments agreed by all three regional bodies. The ECOWAS Specialized Technical Committee on Agriculture, Environment and Water approved the validated legal instruments in November 2007 at a meeting in Ouagadougou (Dimithe, 2014).

The ECOWAS Council of Ministers then enacted the main instrument, Regulation C/REG./4/05/2008 on Harmonization of the Rules Governing Quality Control, Certification, and Marketing of Plant Seeds and Seedlings in the ECOWAS Region (ECOWAS 2008) at its 16th Session held in Abuja on 17 and 18 May 2008. Ten months later, in March 2009, the UEMOA Council of Ministers enacted its own version of the regulations (Regulation N° 03/2009/CM Related to the Harmonization of the Rules Governing Quality Control, Certification and Trade of Plant Seeds and Seedlings in UEMOA).

In brief, the Regional Regulation (ECOWAS, 2008) and associated Implementing Regulations (ECOWAS, 2007, 2007a, and 2012a) together provide a detailed set of procedures for variety release, seed certification, and domestic and regional seed trade. The regulations cover 11 major crops chosen because of their importance to food security and regional trade and include the region's four most important cereals (maize, pearl millet, rice, and sorghum), three important tubers (cassava,

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<sup>9</sup> Throughout this process of formulating the regional rules, coordinating support was provided by the joint ECOWAS-UEMOA Marketing Inputs Regionally (MIR) Project implemented by the International Fertilizer Development Center (IFDC) with funding from the Netherlands Directorate-General for International Cooperation (DGIS). Other agencies that supported various parts of the harmonization work included the African Seed Trade Association (AFSTA), the Africa Seed Network (ASN), CILSS/INSAH, FAO, The National Inter-professional Group of Seed and Plants (*Groupe National des Interprofessions des Semences et Plantes*, GNIS), The German Society for International Cooperation (*Deutsche Gesellschaft für Internationale Zusammenarbeit* or GIZ), the International Crops Research Institute for the Semi-Arid Tropics (ICIRSAT) and the West Africa Seed and Planting Material Network (WASNET).

Irish potato, and yam), two major pulses (cowpeas and groundnuts) and two most important vegetables (onion and tomato).

Under the harmonized rules, new varieties will only need to be tested and registered in one member country to be entitled to entry in the “West Africa Catalog of Plant Species and Varieties” after which the variety can be multiplied and traded anywhere in the region. Inclusion in the regional variety catalog will be based on procedures for DUS and VCU testing set by UPOV and the catalog itself will be maintained by the WASC once it is operational.<sup>10</sup> The regional regulations also set out specific procedures for seed certification based on OECD and ISTA guidelines intended to improve seed quality in domestic markets and minimize border delays through recognition of seed certificates issued in accordance with the specified procedures. Underpinning these requirements, all seed professionals including plant breeders, seed producers, wholesalers, retailers, traders, seed packers, brokers, and even transporters involved in seed trade will need to be licensed according to the procedures and guidelines set by individual member countries. An overview of key provisions in the harmonized seed regulations is given in Box 1.

With the enactment of the ECOWAS Regulation of 2008 and UEMOA Regulation of 2009, the ECOWAS and UEMOA Commissions were at last in a position to adopt the corresponding enabling regulations with details of how the seed system will work. The first of these regulations, however, was not adopted until almost four years later when the ECOWAS Commission finally adopted Enabling Regulation 01/06/12 Relating to the Roles, Organization, and Functioning of the WASC on 4 June 2012 (ECOWAS, 2012b).<sup>11</sup> Rather than adopt the other two sets of enabling regulations at the same time, the President of the ECOWAS Commission considered that the WASC should become operational first after which the other enabling regulations could be adopted. To assist in this regard, the ECOWAS Commission gave the West and Central African Council for Agriculture Research and Development (WECARD) based in Dakar a five year mandate to facilitate the setting-up of the WASC and to undertake other steps including development of plans for capacity building activities needed

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<sup>10</sup> A first edition of the regional variety catalog (FAO, 2008) was prepared at the time the main ECOWAS Regional Regulation for seed was enacted with lists of varieties already registered in West African countries. Notably, several varieties listed in this first edition had been registered in more than one country so are already eligible for international trade. Many other varieties, however, have just been registered in one country and because all varieties, including the ones currently registered in multiple countries, were not necessarily tested according to harmonized DUS and VCU criteria in the ECOWAS regulations, this leads to an open-ended question of whether all 17 countries participating in the harmonization process will accept existing varieties without being retested according to the actual agreed procedures. In the spirit of countries desiring free trade and already agreeing to harmonize, this may be a non-issue. So far, however, there are no known examples of varieties released on one country being commercialized in another based on the existence of the 2008 first edition catalog. In the next edition of the catalog to be used for actual harmonized trade, it was agreed that new varieties would have to fulfill all requirements for variety registration before being considered for inclusion in the catalog (email exchange with Robert Guei, Secretary of the Committee on Agriculture, FAO).

<sup>11</sup> During this four-year period, the ECOWAS and UEMOA Commissions went through a long transition during which a new President and new Commissioners were appointed. This contributed to a breakdown in communication between the departments working on seed harmonization and led to multiple delays and postponements of the legal reviews. During this time, however, an agreement was reached between the ECOWAS and UEMOA Commissioners in charge of agriculture that it was no longer necessary for UEMOA to adopt parallel regulations for fertilizer after ECOWAS as was done with the covering sets of 2008 and 2009 regulations for seed.

to move forward with harmonization. WECARD's work began in April 2013 under the West Africa Seed Project (WASP) financed by the United States Agency for International Development (USAID). An overview of the legal instruments that make up the ECOWAS harmonized seed system and the current legal standing of each instrument is given in Table 2.

### **Box 1: Key Provisions of the ECOWAS Seed Regulations**

The ECOWAS Regulation C/REG.4/05/2008 and associated implementing regulations outline harmonized procedures for variety release and seed certification and provide for mandatory licensing of all operators in the seed supply chain. Key provisions include:

- **Requirements for variety registration:** For an improved variety to be released in any country, it must have produced satisfactory DUS and VCU test results from trials carried out under the supervision of the country's national seed committee. The DUS tests may be carried out in a single location while the VCU tests must be conducted in several locations and include at least one set of farmer field trials. The criteria to be used for evaluating DUS and VCU data are based on international standards set by UPOV where they exist.
- **Regional variety catalog:** A variety that has been tested according to agreed DUS and VCU procedures and duly registered in one country's national variety catalog will be entitled to entry in the "West Africa Catalog of Plant Species and Varieties" after which it can be multiplied and traded anywhere in the region. The listing of a new variety in the regional catalog will be valid for 10 years, renewable for periods of five years thereafter.
- **Three seed categories:** For the 11 species covered, national catalogs and the regional catalog will group the varieties under three lists including **List A** for improved varieties whose seeds may be multiplied and traded within the region; **List B** for improved varieties whose seeds may be multiplied within the region for export outside the region; and **List C** (or "special list") for indigenous varieties or landraces that have been described/characterized by a country's NARI. Vegetables included in List A are exempt from VCU trials and crops in List B only require DUS tests.
- **Requirements for seed certification:** Every seed lot intended for domestic or international sale in ECOWAS shall be certified in accordance with international standards set by the OECD for field inspection and ISTA for laboratory analysis or other OECD/ISTA-based rules adopted by ECOWAS.
- **Mutual recognition of variety lists and seed certificates:** Each country must permit the importation and sale of varieties registered in the regional catalog that are certified in accordance with the harmonized rules. Licensed traders shall only be required to submit an advance declaration to the importing country's quality control and certification service.
- **Seed sector actors to be licensed professionals:** Licenses are compulsory for all sector participants, and must be renewed every three years by the quality control and certification service of each member state. Criteria and fees for licensing are defined by each member state. At the discretion of the member state, production licenses may be issued to private companies for any seed category including breeder seed and foundation seed.
- **Access to information:** Member states are required to ensure the full participation of seed sector participants in the process of public decision making on seed related matters and organize public access to seed related information available to public authorities.
- **Harmonized definitions and labeling standards:** Countries shall observe standard definitions of seed terms and ensure that standard labels with a minimum set of information are affixed to all seed packs.
- **Oversight and administration:** The West Africa Seed Committee (WASC), funded by the ECOWAS Commission, will serve to monitor and facilitate implementation of the regulations and support development of national seed sectors.
- **Right to appeal and confidentiality:** Licensed seed professionals have the right to appeal any decision against them by the national seed authority and to have their information treated confidentially.

**Source:** ECOWAS 2007, 2007a, 2008, and 2012a.

**Table 2: Status of ECOWAS Regional Seed Regulations (as of July 2014)**

Legal Instrument/Purpose	Validation Status	Adoption Status	Remarks
<b>Regulation C/REG.4/05/2008</b> Covering instrument sets out main elements of the regional system for seed trade. (ECOWAS, 2008)	<b>Done.</b> First by UEMOA Member States in Nov. 2004, then by seven non-UEMOA ECOWAS member states in Sept 2005, then by all 15 ECOWA member States plus Mauritania and Chad through CILSS between Feb and April 2007.	<b>Enacted</b> by ECOWAS Council of Ministers, May 2008.	UEMOA enacted similar regulations in March 2009 with a few differences from ECOWAS that need to be resolved.  Convention between ECOWAS, UEMOA, and CILSS to allow for joint implementation under review.  Implementation of covering regulations dependent on adoption of enabling regulations.
<b>Enabling Regulation 01/06/12</b> Sets out the roles and functions of the West Africa Seed Committee (WASC). (ECOWAS, 2012)	As above	Approved by ECOWAS and UEMOA Ministers in charge of agriculture in Nov 2007; <b>adopted</b> by ECOWAS Commission in June 2012.	In March 2013, ECOWAS Commission gave WECARD 5-year mandate to facilitate setting up of WASC and its operations.
<b>Draft Enabling Regulation related to the West Africa Seed Catalog</b> (ECOWAS, 2007)	As above	Approved by ECOWAS and UEMOA Ministers in charge of agriculture in Nov 2007; <b>not yet adopted</b> by ECOWAS Commission	President of ECOWAS Commission opted to postpone adoption until WASC is operational.
<b>Draft Enabling Regulation related to quality control, certification, and trade</b> (ECOWAS, 2007a)	As above	As above	As above

Source: Dimithe, 2014.

Although the ECOWAS and UEMOA Commissions collaborated in the development of the harmonized seed regulations, Table 2 shows that the efforts of the two economic communities diverged in the final stages resulting in minor but important differences in each set of regional regulations. One such discrepancy is that the ECOWAS regulations give responsibility to each member state to decide how fees are collected when issuing licenses and charging for seed certification whereas the UEMOA regulations gives this responsibility to the Commission. Another discrepancy is that the ECOWAS regulations define special procedures for inclusion of genetically modified organisms (GMOs) in the regional variety catalog by giving member countries final say on admittance according the biosafety/biosecurity legislation in force in each country whereas the UEMOA regulations exclude GMOs completely. Both issues still have to be resolved. A convention between ECOWAS, UEMOA, and CILSS also needs to be finalized to allow for joint implementation of the regional framework, including the setting up of the regional regulatory committee by ECOWAS.

In formulating the regulations, policymakers also decided to defer deliberations on issues related to phytosanitary control and protection of intellectual property rights (IPRs) to a later date. Phytosanitary harmonization is mainly important when seeds cross international borders and aims to ensure that pest inspections and other quarantine measures are only required for pests and diseases that are not common in all member states. Achieving this level of harmonization requires development of shared quarantine pest lists for each species of plant and is complicated by the fact that many West African countries do not yet have their own national pest lists and/or existing lists need to be updated. Protection of IPRs, on the other hand, is important to private variety introduction and is complicated by restrictions on private variety ownership in some West African countries and by the need for coordination with international bodies including the African Intellectual Property Organization (*Organisation Africaine de la Propriété Intellectuelle*, OAPI) based in Yaoundé and African Regional Intellectual Property Organization (ARIPO) based in Harare that are responsible for intellectual property matters in Francophone and Anglophone countries respectively.

At the national level, the regional regulations call on member states to undertake improvements and adopt complementary supporting regulations in several areas not fully covered by the regional regulations themselves. Details of these required actions are given in Box 2 and show that the harmonized rules demand several types of institutional reform and capacity development. Among other things, qualified seed inspectors and laboratory technicians have to be hired, trained, equipped, and funded, while national seed committees also need to be set up and given resources to operate.

**Box 2: List of Actions Required of Member States to Support the Regional Regulations for Seed and Fertilizer**

The list of actions required of member states to benefit from the regional regulations for seed and fertilizer are nearly identical. The one major exception is that there cannot be a “national fertilizer catalog” because the fertilizer regulations are based on truth in labeling and state that no product registration is required.

Specifically, to benefit from harmonized trade, the ECOWAS regulations require member countries to:

- (i) Publish the regulations in the national gazette within 30 days of being enacted by ECOWAS;
- (ii) Institute a national seed catalog (seed only, no approved lists of fertilizer types shall exist);
- (iii) Set up national bodies for seed/fertilizer control;
- (iv) Specify the conditions and modalities for obtaining a professional card or license, or for its renewal, suspension, and withdrawal;
- (v) Appoint well-trained and qualified inspectors and other competent authority, and grant them the necessary powers as well as adequate resources to carry out their mission;
- (vi) Determine the fee amounts for seed/fertilizer inspection and analysis; and
- (vii) Take all appropriate measures to levy penalties for any violation of the provisions of the regulations.

**Source:** ECOWAS, 2008 and 2012.

For the regulations to be effective there also needs to be broad awareness and understanding of the regulations together with a commitment to regional free trade objectives. As discussed, the regulations grant considerable room for individual countries to set their own procedures, requirements, and fee rates for licensing of seed professionals. This approach is beneficial given the

different levels of development and legal traditions in individual countries, but can have major implications for how countries partake in regional trade and extent to which they benefit from the regional trade rules. Whereas the regional regulations allow production licenses to be issued to private firms for any category of seed including breeder seed and foundation seed, for instance, governments are not specifically required to issue licenses for these purposes. The requirement for everyone involved in seed trade including individual seed growers, seed packers, and seed transporters to obtain a special license may also prove cumbersome. Seed is not a dangerous good and it is hard to understand why truckers should have to acquire a special license to move this commodity.

Even more significantly, countries are not required to provide for private ownership of new varieties even though this is allowed by the regional regulations. Thus far, there has been very little private involvement in seed trade and governments may not see the need to issue such licenses, particularly if they are concerned about weak private sector capacity and/or see this as the best or only way to control against potentially deceptive practices. By not issuing such licenses or by making licensing criteria prohibitively difficult, however, private firms can be shut out from growing into areas where they may have a strategic comparative advantage and could help alleviate some of the demands on overstretched public research and variety maintenance systems. Specifying the conditions and modalities for obtaining a professional card or licenses, therefore, is about much more than establishing an office and setting fee rates for types of business that already exist, and requires policymakers to be fully aware of what the regional rules offer and to understand the implications of different policy choices the regional system requires them to make.

### **3.2 Harmonized fertilizer regulations focus on truth in labeling and quality assurance**

The formal process of harmonizing national legal frameworks for fertilizer began as joint ECOWAS and UEMOA initiative in May 2010 with the objective of strengthening quality control and facilitating progress toward a more competitive regional market. Whereas the work on seed harmonization traces back to the 1998 conference hosted by FAO in Abidjan, the work on fertilizer most clearly links to the 2005 ECOWAP (ECOWAS, 2005) and the Africa Union's 2006 Abuja Declaration on Fertilizer that called for improving the institutional, regulatory, and business environments of the African fertilizer market through regional harmonization (Africa Union, 2006). Unlike seed, CILSS has not been a part of the harmonization process for fertilizer.

Building on experience gained with seed harmonization, and on national legal frameworks that were being developed for fertilizer in Benin, Burkina Faso, Ghana, Mali, and Nigeria, the process of developing harmonized regulations for fertilizer has been much faster than the one for seed. Compared with seed, fertilizer issues are relatively straightforward as quality control mainly involves verification of container weights and declared chemical components rather than the more complex matters that are part of seed trade. Thus far, the fertilizer process has involved three technical validation workshops, one task force meeting, one legal review meeting, one meeting of the

ministers in charge of agriculture, one meeting of the Council of Ministers, and one meeting of the ECOWAS Commission (Dimithe, 2014).<sup>12</sup>

Roughly two and a half years after the start of the process, the ECOWAS Council of Ministers formally enacted Regulation C/REG.13/12/12 Relating to Fertilizer Quality Control in the ECOWAS Region (ECOWAS, 2012) at its ordinary session held in Abidjan on 2 December 2012. To support the Regional Regulation, four implementing regulations have also been developed, validated by national experts, and approved by ministers in charge of agriculture. As shown in Table 3, however, none of the four implementing regulations for fertilizer has so far been adopted by the ECOWAS Commission. Unlike seed, UEMOA has not developed its own parallel set of regulations for fertilizer and has instead agreed to follow the ones enacted by ECOWAS although a formal convention detailing this arrangement still needs to be drafted and signed.

**Table 3: Status of Regional Fertilizer Regulations (as of July 2014)**

Legal Instrument/Purpose	Validation Status	Adoption Status	Remarks
<b>Regulation C/REG.13/12/2012</b> Covering instrument sets out main elements of the regional system for fertilizer quality control. (ECOWAS, 2012)	<b>Done</b> by all 15 ECOWAS Member States in December 2010.	Approved by Ministers in charge of Agriculture in all ECOWAS countries in Sept 2012 and <b>enacted</b> by ECOWAS Council of Ministers in December 2012.	UEMOA and ECOWAS Commissions have agreed that ECOWAS should enact and they will implement jointly. A convention defining this arrangement is still required and not yet drafted.  Implementation of covering regulations dependent on adoption of Enabling Regulations
<b>Draft Enabling Regulation related to the roles and functions of the West Africa Committee for Fertilizer Control (WACoFeC)</b> (ECOWAS, 2012b)	As above	Approved by ECOWAS Ministers in charge of Agriculture in Sept 2012; <b>not yet adopted</b> by ECOWAS Commission.	In March 2013, ECOWAS Commission gave IFDC 5-year mandate to facilitate setting up of WACoFeC and its operations.
<b>Draft Enabling Regulation related to labeling and tolerance limits of fertilizers</b> (ECOWAS, 2012c)	As above	As above	
<b>Draft Enabling Regulation relating to the inspection of fertilizers</b> (ECOWAS, 2012d)	Done by all 15 ECOWAS Member States in Sept 2012	As above	
<b>Draft Enabling Regulation related to the analysis of fertilizers</b> (ECOWAS, 2012e)	As above	As above	

Source: Dimithe, 2014.

<sup>12</sup> Until 2013, the work on fertilizer was carried out with the technical and financial support of International Fertilizer Development Center (IFDC) through the Dutch-funded joint ECOWAS-UEMOA Marketing Inputs Regionally (MIR) Plus project.

In essence, the Regional Regulation (ECOWAS, 2012) and associated Implementing Regulations (ECOWAS, 2012b, 2012c, 2012d, and 2012e) provide a detailed set of procedures for the functioning of domestic and regional fertilizer markets based on truth in labeling and harmonized quality control standards. Consistent with the truth in labeling approach, countries should not maintain approved lists of fertilizer types that can be sold to farmers. Governments, of course, may still prepare fertilizer recommendations for dissemination through extension services, and specify the types of fertilizer they wish to procure in subsidy programs, but must not otherwise dictate what types can or cannot be sold to farmers, or what types may or may not enter their national borders as long as the products are truthfully labeled and do not contain harmful substances.

To back this approach, the regulations require fertilizer to be sold and transported in bags or other containers printed with clear and conspicuous labels that provide a minimum set of information including information on the grade of nutrients when primary nutrients are claimed, guaranteed percent content of each nutrient, the net weight of the container, the sources of nutrients, and the name and address of manufacturer or re-packing agent. The regulations also set out detailed procedures for fertilizer sampling and physical and chemical analysis based on AOAC, ISO and/or EU standards together with specific tolerance limits for bag weight, nutrient content shortages, and maximum allowable heavy metal limits. Under this system, inspectors are vested with the power to inspect, during regular business hours, any premises where fertilizers are manufactured, stored, or sold, and any vehicle or receptacle used to transport fertilizer. Other details of the regional fertilizer rules are given in Box 3.

In principle, countries with such harmonized regulations can freely trade fertilizer between one another with imported fertilizer being subject to the same quality control procedures and level of inspections as it was in the country of origin. In practical terms, however, issues soon arise over the capacity of different countries to implement the required inspections and types of analysis needed to have confidence in the system. If only because inspections are relatively easy to carry out at border posts there is also a risk of inspectors treating foreign fertilizer differently than domestic production by insisting on full inspection of every consignment before allowing foreign fertilizer in. Whether or not the harmonized trade rules will speed international trade, therefore, is something of an open-ended question and is likely to depend on measures that build confidence between countries in each other's quality control procedures. As described above, quality control of fertilizer has been a significant problem in West Africa and is a difficult task since adulteration can easily happen anywhere along the supply chain. Speaking the same language in terms of mandatory labeling standards and maximum allowable limits on nutrient deficiencies together with licensing of fertilizer professionals will help, but is only part of what is required to address a much larger trade facilitation challenge.

Similar to seed, therefore, much remains to be done to make the fertilizer system operational at the regional and national levels. Like seed, the regulations call on Member States to undertake a number of specific actions in order to benefit from harmonized trade including development of licensing procedures, setting up of a national fertilizer quality control body, and appointment and equipping of qualified fertilizer inspectors and fertilizer analysts that will all take time and money to achieve (see Box 2). Just as the ECOWAS Commission gave WECARD a five year mandate to facilitate the harmonization process for seed, the IFDC-implemented West Africa Fertilizer Project (WAFP)

funded by USAID was given a five year mandated in March 2013 to facilitate the process for fertilizer.

### **Box 3: Key Provisions of the ECOWAS Fertilizer Regulations**

The ECOWAS Regulation C/REG.13/12/12 for fertilizer and associated implementing regulations lay out a professional system for the functioning of domestic and regional fertilizer markets based on harmonized quality control standards and labeling requirements. Key provisions include:

- **Product registration is not required:** The regional framework for fertilizer is built around the principle of truth in labeling. Countries therefore must not maintain approved lists of fertilizer types that can be sold to farmers or require product registration tests.
- **Free movement of fertilizers:** Fertilizers that comply with the prescribed quality standards shall be entitled to free movement throughout the ECOWAS region. Prior notification to the competent authority in the concerned countries is all that should be required to import and/or export fertilizer.
- **Standard quality definitions and labeling requirements:** Countries shall observe standard definitions of fertilizer terms and ensure that all fertilizer containers are clearly labeled with a minimum set of information including guaranteed nutrient content.
- **Requirements for inspection and analysis:** Member states are required to develop Inspection and Analysis Manuals based on AOAC, ISO, and/or EU standards that describe the modalities and procedures for fertilizer sampling and inspection and business inspection.
- **Tolerance limits:** The regulations set out specific tolerance limits for nutrient deficiency, weight, and maximum allowable heavy metal limits. Any product that exceeds the prescribed tolerance limits or contains other materials that are injurious to plant health shall not be allowed for sale.
- **Fertilizer producers and traders to be licensed professionals:** Licenses are compulsory for all fertilizer sector participants including importers, manufacturers, agro-dealers, and distributors and must be renewed every three years by the official quality control and certification service of each member state. Every agro-dealer or person selling fertilizer shall display their license in a conspicuous spot.
- **Manufacture and importation:** The conditions and modalities to manufacture and import fertilizer will continue to be governed at the national level by regulations in each member state.
- **Warehouse storage conditions:** Any warehouse used to store fertilizer intended for sale must be adequately ventilated, tidy, and have adequate temperature and moisture levels.
- **Bi-annual reporting:** All manufacturers, importers, and distributors of fertilizer are required to file bi-annual reports about the quantities imported or produced during the semester with their national fertilizer regulatory authority.
- **Access to information:** Member states are required to ensure the full participation of fertilizer sector participants in public decision making on fertilizer related matters and organize public access to fertilizer related information available to public authorities.
- **Oversight and administration:** The West Africa Committee for Fertilizer Control (WACoFeC), funded by the ECOWAS Commission, shall serve to monitor and facilitate the implementation of the regulations and support development of the national fertilizer sectors in the region.
- **Right to appeal and confidentiality:** Manufacturers, importers and distributors will have the right to appeal any decision taken against them by licensing authority and to have their information treated confidentially.

**Source:** ECOWAS, 2012, 2012b, 2012c, 2012d and 2012e.

## **4. Progress and challenges of harmonized input trade**

As shown by the discussion so far, harmonization of regional trade rules is a complex business and takes many years to complete. Even in the case of fertilizer where the process has gone relatively fast, four years have elapsed since the process started and none of the required implementing regulations needed to support the system have been adopted. In the case of seed, the only

implementing regulation so far adopted pertains to the establishment of the WASC and more than two years after its adoption the Committee is not operational.

These observations are not to diminish the importance of harmonization work or the significance of the regional agreements. Policymakers can be very proud for having navigated a vast array of technically demanding and politically challenging trade issues. The regional regulations set out detailed systems that stand to transform domestic and international marketing of seed and fertilizer in West Africa and the work done so far is a clear and considerable achievement. Even before the rules are operational, the process of harmonization has helped focus attention on important quality issues and led to tangible improvements reaching to the farm level. In Burkina Faso, Mali, and Nigeria, seed inspectors are already implementing the ECOWAS certification guidelines albeit on a limited scale. Similarly, licensed fertilizer inspectors in Mali are now sampling at least some supplies of subsidized fertilizer all the way to the distributor level and newly trained inspectors in Burkina Faso say they expect to begin comparable work soon.

Despite the many advantage of harmonization, it is also clear that successful policy reform depends on much more than writing official documents and getting formal approvals. Improving trade at the domestic and regional levels requires a sustained commitment to institutional development backed by ongoing dialogue with a wide range of stakeholders to build support for the new systems and to avoid unexpected negative outcomes. Routine monitoring of the impact on trade costs, volumes and values traded, farm gate prices, quality, and choice is also needed to track progress and measure whether the changes really make a difference to sector performance. Attention to these issues is particularly relevant in the context of West Africa's decision to base its harmonized rules on high-level international standards and risk of countries not being able to meet the standards. With these challenges mind, the next part of the paper now looks at progress being made by individual countries in improving their quality control systems and at other fundamental issues that need to be addressed to support harmonization and improve trade flows in the near and long term.

#### **4.1 There is still a lot to be done**

Many things remain to be done at the regional and national levels to make the harmonized trade rules operational. As discussed, regional committees for both seed and fertilizer need to be set up before trade according to the harmonized rules can begin. This is especially important for seed since the WASC is required to establish the regional variety list. Setting up these committees, however, will not be easy since WASC and WACoFeC are meant to consist of representatives of each country's national seed and fertilizer committee respectively, and several countries do not yet have these. For fertilizer, the implementing regulation pertaining to the establishment of WACoFeC has not been adopted by the ECOWAS Commission. A joint convention between ECOWAS and UEMOA also has to be drafted, validated, and signed in order for ECOWAS to lead implementation of the fertilizer agreement and a joint convention between ECOWAS, UEMOA, and CILSS has to be validated and signed for ECOWAS to lead implementation of the seed agreement. For seed, issues around IPRs and quarantine pest lists also need to be addressed to make the system complete.

Table 4 summarizes an analysis by WASP of the overall progress with national-level seed reforms needed to support the harmonization process. As shown, progress has been spotty whereby Cape Verde and Guinea Bissau have not undertaken any of the required actions identified by WASP while

Benin, Ghana, Nigeria have apparently made good progress in all but a few areas.<sup>13</sup> Taken together, progress appears to have been most consistent with respect to capital improvements (lab facilities, research stations, etc.) and with issuing of decrees calling for the establishment of a national seed committee, which as noted, is an important requirement for establishment of WASC. On the other hand, the table shows that only eight of the 17 participating countries have so far published the 2008 Regional Regulation in their national gazette. None of the countries, in fact, published the Regulation within 30-days of adoption as required by the ECOWAS Commission thereby calling into question the political will of member states to adhere to agreed-upon procedures.<sup>14</sup>

**Table 4: Implementation of Seed Reforms at the National Level According to WASP**

	Publish in Nat'l Gazette	Legal Framework					Procedural Manuals			Strengthening of Capacities		
		National Seed Law	Decree on National Variety Catalog	Decree on National Seed Cmte.	Decree on seed production, quality control, and certification	Decree on Seed Sector Support Fund	Variety Release	Seed Cert.	Phyto Cert.	Human	Capital	Financial
Benin	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	
Burkina Faso	Y			Y		Y				Y	Y	Y
Cape Verde												
Chad												
Côte d'Ivoire	Y			Y	Y					Y	Y	
Gambia				Y	Y		Y	Y	Y		Y	
Ghana		Y	Y	Y	Y		Y	Y		Y	Y	Y
Guinea	Y			Y						Y		
Guinea Bissau												
Liberia											Y	
Mali		Y	Y	Y	Y		Y	Y		Y	Y	
Mauritania				Y							Y	
Niger	Y			Y						Y	Y	
Nigeria	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y
Senegal	Y	Y	Y	Y	Y	Y				Y	Y	Y
Sierra Leone				Y							Y	
Togo	Y	Y	Y	Y	Y	Y				Y	Y	
<b>Total</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>13</b>	<b>8</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>9</b>	<b>13</b>	<b>4</b>

**Source:** WASP, 2014 (data from early January 2014, updated for Senegal which published the ECOWAS regulations in its National Gazette on 25 January 2014 and for Burkina Faso which published on 25 February 2014); others may have published since. **Note:** Chad and Mauritania are participating in the ECOWAS harmonization agreement through CILSS.

Moreover, on close inspection a number of divergences between the picture in Table 4 and what the ECOWAS regulations actually require soon emerge. According to the table, six countries have instituted a national variety catalog, yet in Mali, Nigeria, and Ghana, at least, the national catalogs

<sup>13</sup> Chad which is participating in the ECOWAS harmonization agreement through CILSS has also not undertaken any of the actions identified by WASP.

<sup>14</sup> During fieldwork, authorities in one country told the study team that the 2008 and 2012 Regional Regulations had not been published because they were sent by ECOWAS in pdf format and were being typed.

have no provision for Lists A, B, and C as specified by ECOWAS. Likewise, while Burkina Faso, Mali, and Nigeria have each taken steps to set up a national body for seed control, the committee in Mali is not operational due to a lack of funding and the one in Burkina Faso has so far only dealt with organizational issues. Similarly, on the capital improvement side, the seed laboratory in Liberia has received donated equipment but the equipment is not operational due to lack of electric supply.

Despite the many challenges, good progress has been made in Burkina Faso, Mali, and Nigeria with training and equipping of at least some seed inspectors. In these countries, inspectors are now carrying out a number of certification visits using field manuals based on the ECOWAS guidelines. In Nigeria, the procedures for variety release have similarly been formalized and written down with details of DUS and VCU requirements for each crop covered by the regional system (NASC, 2012).

With donor support, good progress has also been made in Burkina Faso and Mali with building knowledge of the new regulations across a broad section of seed stakeholders. In Nigeria, on the other hand, country investigations found only rudimentary knowledge of the regulations in many key institutions including the Ministry of Trade and Investment. During most interviews, in fact, public and private stakeholders in Nigeria expressed deep distrust for regional trade and said it would not be good to import from other West Africa countries due to the unreliable quality of their neighbor's products. In Liberia, the case study investigations found that knowledge of the seed regulations is virtually nonexistent at every level of the supply chain. Only in Burkina Faso have two cases been brought against alleged violators of seed regulations and in Nigeria, there has been no apparent effort to prosecute cases of counterfeiting despite widespread reports of grain being sold as "certified seed" through commercial and state subsidy channels.

Next, Table 5 summarizes the progress with national-level fertilizer reforms according to an analysis prepared by WAFP. As shown, 11 of 15 ECOWAS countries are classified by WAFP in the "much to be done" category whereas only four countries are classified as having made "some progress" or "almost there".

Similar to seed, a number of divergences from the regional picture provided in Table 5 and the actual requirements for harmonized trade were discovered. The classification of Ghana as "almost there", for instance, may be somewhat generous as there is little evidence to suggest the fertilizer lab in Ghana is markedly superior to the National Bureau of Soils (*Bureau National des Sols*, BUNASOL) lab in Burkina Faso that has also been conducting fertilizer analysis for many years and where similar capacity improvements are ongoing (Eilittä, 2014). Both facilities still require significant material and staff upgrades to meet the country's quality control demands together with improved capacity to draw samples from strategic locations including places where fertilizer is sold to farmers. The main area where Ghana seems more advanced is with respect to the creation of online systems for licensing and compliance with general regulatory requirements which is not actually a requirement of ECOWAS. Likewise, although Table 5 indicates that the pending legal framework for fertilizer in Nigeria is consistent with ECOWAS rules, this is not strictly correct in that Nigeria's current and pending legislation requires testing and registration of all fertilizer types sold to farmers which is directly inconsistent with the ECOWAS approach of truth in labeling (Ayoola, 2014). The Ghana Plants and Fertilizer Act (Republic of Ghana, 2010) also contradicts the regional regulations by providing for a registry of fertilizer types.

**Table 5: Implementation of Fertilizer Reforms at the National Level According to WAFP**

Countries by Tier	Broad Characteristics
<b>Tier 1: Much to be done</b> <u>11 countries:</u> Benin, Côte d'Ivoire, Cape Verde, the Gambia, Guinea, Guinea Bissau, Liberia, Niger, Sierra Leone, Senegal, Togo	<ul style="list-style-type: none"> <li>• Formal regulatory system for fertilizer not in place.</li> <li>• Registration and licensing sometimes done by the Ministry of Agriculture or Ministry of Commerce/Trade.</li> <li>• Quality control sometimes done by standard board or environmental agency.</li> <li>• Limited awareness of the regional regulations among key stakeholders including many government officials.</li> </ul>
<b>Tier 2: Some progress</b> <u>3 countries:</u> Burkina Faso, Mali, Nigeria	<ul style="list-style-type: none"> <li>• Legal framework consistent with ECOWAS rules in place (Burkina Faso and Mali) or finalized and awaiting approval (Nigeria).</li> <li>• Limited implementation of some aspects of the regulations including quality inspections.</li> <li>• Most regulatory staff appointed, but not all trained or operational.</li> <li>• National laboratory designated with some capacity for fertilizer analysis.</li> <li>• Good progress with sensitization of key stakeholders (Burkina Faso, Mali).</li> </ul>
<b>Tier 3: Almost there</b> <u>1 country:</u> Ghana	<ul style="list-style-type: none"> <li>• Legal framework consistent with ECOWAS regulations already in place.</li> <li>• National laboratory appointed and staffed; capacity improvements ongoing.</li> <li>• Web and mobile phone based tracking system developed with facilities for inspection and general compliance of input shops (license validity, packaging, labeling, bag weights).</li> <li>• Online systems operational for registration, import, and license renewal.</li> </ul>

Source: Abridged from WAFP, 2014.

With respect to its five year mandate from the ECOWAS Commission to facilitate progress towards harmonized fertilizer trade, WAFP proposed a long list of activities in its 2014 regional work program (see Box 4). Although some countries have already made good progress in certain areas, the long list of activities proposed by WAFP, together with the fact that most countries are categorized by WAFP as having “much to be done” gives an idea for the immense task ahead.

The long list of actions proposed by WAFP, therefore, also points to a need to be strategic. In proposing to develop new laboratory infrastructure and inspection capacity in each country, for example, question of investment costs and recurrent funding requirements immediately arise that need to be weighed against other urgent things governments and donors need to fund. Especially if a country currently uses little fertilizer and has little and/or no production of its own, it could potentially be served much better in the near to medium term by investing in capacity to carry out spot checks and draw samples at different stages of the distribution chain that are sent for analysis in a regional lab than by developing its own AOAC/ISO compatible facility that is difficult and expensive to maintain.

Likewise, for seed, some ECOWAS countries could reasonably decide they want to rely on seed research done in other countries without having to invest in their own capacity to undertake DUS and VCU trials based on UPOV guidelines. Alternatively, if a country were confident that adequate amounts of certified seed would be supplied by exporting ECOWAS countries, or indeed any world supplier, their own certification system may not have to be very large or elaborate. These points are not to say that modern laboratories and comprehensive variety release and seed certification systems are unimportant, merely that individual countries, ECOWAS as a region, donors, and other stakeholders need to have a well-defined and balanced set of priorities to move forward with

harmonization in a meaningful way. Ultimately, harmonization itself is not the goal, but is rather a way to improve farmer access to quality inputs.

#### **Box 4: Actions Proposed by WAFP to Support Implementation of the ECOWAS Fertilizer Regulations**

The USAID West Africa Fertilizer Project (WAFP) managed by IFDC was given a five year mandate by the ECOWAS Commission in March 2013 to facilitate implementation of the regional regulations. Towards that end, IFDC is expected to help to establish national committees for fertilizer control in each member country as building blocks for establishment of WACoFeC. Other actions to support the harmonization process identified by WAFP in its project work plan are set out below.

- Assess the requirements for establishing a national fertilizer quality control regulatory system.
- Draft and enact supporting fertilizer regulations aligned to ECOWAS regulations.
- Develop a fertilizer quality control organizational structure.
- Prepare job descriptions of the National Fertilizer Regulatory Chief and all staff; hire and/or nominate staff members.
- Adapt the ECOWAS fertilizer inspection and analytical manuals to country needs.
- Develop/adapt all required administrative forms corresponding to prescribed action procedures.
- Identify a designated fertilizer analytical laboratory.
- Specify and procure laboratory equipment and materials as well as those for inspection and sampling.
- Train fertilizer inspectors, chemists, technicians and administrative personnel.
- Organize registration of fertilizer manufacturers, blenders, importers and distributors.
- Assist in conducting a baseline assessment of quality of fertilizer traded in the countries.
- Review implementation of the fertilizer regulatory system two to three years after implementation.

**Source:** WAFP, 2014.

An overview of case study findings on where each of the four countries visited during preparation of this paper stands with respect to the actions required by the ECOWAS regulations for seed and fertilizer (i.e. the items listed in Box 2) is provided in Appendix 1 and 2 respectively. These tables show that progress has been very limited in Liberia where the most tangible improvement has been the recent training of seed inspectors for rice by USAID. Plans were made in 2012 to prepare a national variety catalog in Liberia as part of a seed sector strategy, but there has been little or no action since. Each of the other countries, however, have made moderate to good progress in building new quality control systems. Licensing procedures and fee amounts have nearly all been determined and national bodies for seed and fertilizer quality control have been set up and are mostly operational except in Nigeria where three separate bodies continue to have overlapping responsibility for different aspects of fertilizer control.

#### **4.2 Divergences between regional and national regulations may cause problems and become obstacles to trade**

Another set of considerations as West Africa looks to move forward with harmonization relates to potential divergences between the regional regulations and national laws. In legal terms, the relationship between regional regulations and national legislation is unambiguous. Because ECOWAS countries agreed to use the powerful legal instrument of *regional regulations*, the harmonized instruments supersede national legislation in areas legislated on. They do so automatically and do not require domestication.

In practice, however, this is not always well understood especially by frontline border officials, seed inspectors, and other quality control agents who naturally point to their own national laws as the basis of their enforcement work. Countries, therefore, often choose to domesticate regional regulations by having the rules go through their own national legislative process. Although well intentioned, this process can sometimes lead to divergences from the regional regulations. Nigeria, for instance, currently has national seed and fertilizer legislation pending that follows the ECOWAS regulations in many respects, but departs from agreed principles in important areas such as recognition of regional variety lists and mandatory registration of fertilizer types (Ayoola, 2014). Ghana's Seed and Fertilizer Act of 2010 (Republic of Ghana, 2010) similarly requires all seed importers to submit physical samples to the local seed authority for testing in an apparent contradiction of ECOWAS provisions for recognition of regional seed certificates. Moreover, much of what the regional regulations call on member states to do will take considerable time and resources to achieve. As a result, what is likely to exist for some time is a mixture between previous systems for seed and fertilizer control and the new harmonized ones.

What is more worrying for the long term, therefore, is when countries pass their own seed and fertilizer laws and continue to adhere to those laws even when they exclude conditions set by the regional regulations. Burkina Faso passed new seed and fertilizer legislation in 2006 and 2007 respectively while Mali did so in 2010 and 2006. During the case study visits to these countries, public and private sector stakeholders referred to the national laws as the ones governing their operations and assumed that the national laws were fully consistent with the regional regulations when, in fact, a number of discrepancies do exist. Most of the differences are minor, but in some instances they may become obstacles to trade, especially when one considers the possibility of 15 national fertilizer laws and 17 national seed laws, each slightly different from the regional ones (Eilittä, 2014).

In the case of Mali, for example, the national fertilizer law specifies different maximum variations in nutrient content and in heavy metals than ECOWAS. The Malian framework also includes chrome as a controlled heavy metal that is not listed by ECOWAS meaning that foreign fertilizer could be blocked at the border, but then allows for much higher concentrations of cobalt than ECOWAS that could make it difficult to export its own product. Similarly, although acceptance of uniform and recognizable labels can greatly facilitate trade, Malian regulations dictate different and less specific requirements for labeling of nutrient content than ECOWAS while the national requirements for seed labels also do not fully follow the regional ones. Neither Burkina Faso nor Malian fertilizer law mention the link between the national committees for quality control and the regional ones, and in Burkina Faso, biannual reporting is not required of fertilizer companies as specified in the 2012 ECOWAS Regulation (Eilittä, 2014).

An even more significant break with the ECOWAS approach is in Nigeria where current legislation and the new Fertilizer Control Bill of 2013 each require field tests and committee approval of all new types of fertilizer and fertilizer formulas sold to farmers, which is directly inconsistent with the regional approach of truth in labeling. Fertilizer authorities in Nigeria say this is because they have a responsibility to ensure that the fertilizer is effective and that farmers use correct types for different crops and soil types (Ayoola, 2014). While this may be true, in an open economy these matters should be left to extension services and not dictated by trade law. In Mali and Burkina Faso,

subsidized fertilizers are similarly required to undergo field tests with the result that only certain approved types are allowed under the program (Eilittä, 2014). Although this is different from Nigeria's de-facto ban on non-approved types since a buyer (in this case the government subsidy program rather than the farmer per se) is free to specify any kind of fertilizer they want, the fact that virtually all fertilizer used on food crops in these countries is subsidized means the impact on farmer choice and private competition is arguably the same.

On the seed side, major discrepancies between domestic law and regional regulations also exist in Nigeria whereby the National Agricultural Seed Council (NASC) insists that all varieties intended for sale to farmers must be tested domestically and registered in the national seed catalog. According to NASC officials, recognition of varieties listed in the West Africa regional catalog will end at the point of international trade and only apply to varieties imported for direct use on the importer's farm and not to seed intended for sale to farmers. In defense of their position, NASC officials say that regional variety acceptance would expose Nigeria to dumping unless they do their own DUS and VCU tests first (Ayoola, 2014). Although the ECOWAS catalog is not yet operational and is still no obligation for Nigeria to accept regional varieties, these views contradict both the spirit of regional free trade agreements and letter of the regional regulations, which requires Nigeria and all other countries to allow the free movement and marketing of all seeds that meet the community's standards within the entire territory of ECOWAS.

As shown in Tables 4 and 5 above, many less developed countries in West Africa do not have dedicated national seed or fertilizer legislation. Discrepancies between national laws and the regional regulations are unlikely to be an issue in these countries per se except that countries at a very low level of institutional development are more likely to have different systems, and even a need for different systems, than the very advanced ones called for by ECOWAS. A good example of this is in Liberia where the Central Agriculture Research Institute (CARI) has been working in collaboration with AfricaRice, FAO, and other development organizations to develop procedures for the production of "good quality seed" that are now being adopted by seed companies and associated seed farmers to good effect. These procedures are much less demanding than the OECD- and ISTA-based procedures called for by ECOWAS but are a much more realistic and meaningful way for Liberia to improve on seed quality in the near term than by aiming for very advanced standards. Liberia's is not alone in West Africa in having a long way to go to achieve the ECOWAS standards, and expanding the regulations to explicitly recognize different levels of upgrading could do much to improve quality assurance in individual countries and throughout the region.

### **4.3 National quality control systems are improving but greatly overstretched**

As described, various national level efforts are underway to improve quality control for seed and fertilizer that directly relate to the regional harmonization work. In Nigeria, details of the procedures for variety release based on DUS and VCU criteria adopted by ECOWAS have been published (NASC, 2012) and in Burkina Faso, Mali, and Nigeria seed inspectors are now carrying out at least some certification visits using field manuals that follow the ECOWAS guidelines. Licensed fertilizer inspectors in Mali have similarly started to draw samples of subsidized product at border posts, in central warehouses, and sometimes all the way to the distributor level. Also in Mali, new tender rules for subsidized fertilizer are being developed that specify tolerance limits for nutrient defect. In

Burkina Faso, fertilizer inspectors were recently trained in the ECOWAS guidelines and say they expect to start drawing samples soon.

Various efforts are also underway to upgrade laboratory capacity. In Mali, the Central Laboratory for Plant Seeds (*Laboratoire Central de Semences Végétales*, LABOSEM) received equipment through the World Bank-financed West Africa Agriculture Productivity Program (WAAPP) and in Burkina Faso, the seed laboratory at the Institute for Environment and Agriculture Research (*Institut de l'Environnement et de Recherches Agricoles*, INERA) was similarly equipped with help from FAO. The fertilizer laboratory at BUNASOL in Burkina Faso likewise has plans to procure equipment with funds that have already been awarded by the Alliance for a Green Revolutions in Africa (AGRA).

Despite these and other ongoing improvements, West Africa's emerging quality control systems are greatly overstretched. This is particularly true in the context of expanding input subsidy programs that aim to distribute certified seeds and fertilizer to thousands if not millions of small farmers in some countries. Input subsidies can greatly transform the incentives for agriculture production and introduce farmers who have never before used improved inputs on food crops to the benefits certified seed and fertilizer can have. At the same time, however, there is an important risk of farmers misusing the inputs because of lack of adequate extension advice and of supplying bad inputs because of inadequate quality control. Unless ambitions to supply subsidized inputs are matched with other institutional capacities, therefore, farmers could potentially be put off from using improved inputs in the future, especially if they are required to pay full commercial prices.

In Nigeria, for instance, the Growth Enhancement Support (GES) program was launched in 2012 with the intention of targeting five million additional farmers per year for four years each. Originally, each farmer was meant to receive 25kg of certified rice seed or 20kg of certified maize seed at no cost plus two 50kg bags of fertilizer at 50 percent subsidy for the duration of their four year involvement in the GES. In just the second year of operation, however, the seed component was reduced to 12.5kg per farmer due to a shortage of supply. In response to the GES demand, many new seed companies have emerged for the purpose of seed multiplication. According to the Seed Association of Nigeria (SEEDAN), however, many of these companies and the growers they support have little or no experience in seed production and lack the specialized skills this business requires. Consequently, and because of the large amounts of money being spent on the GES, reports of companies buying grain in the market to disguise as certified seed are common, which in fact is a worse outcome than using self-selected landraces as before.

Against the immense demand for GES seed, the NASC currently employs 56 seed inspectors. In order to meet only the GES's first year goal of supplying 20 to 25kg of certified seed to five million farmers (100,000 to 125,000 tons), this means each inspector would have had to visit some 600 to 745 hectares excluding breeder and foundation seed plots needed to sustain future production.<sup>15</sup> Moreover, the ECOWAS standards for certified maize and rice seed call for three inspections per plot at specific stages in the growing cycle. Given that most seed plots in Nigeria are relatively small, full inspection is not only a gargantuan task but completely impossible for 56 inspectors even without the usual transport constraints and other challenges of working in a developing country setting. In light of this, NASC recently employed 100 first year agriculture graduates through the Youth Corps to

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<sup>15</sup> Rough estimates assuming an ambitious yield of 3 tons certified seed per hectare.

work under the supervision of full seed inspectors. This approach may not be perfect since the graduates have not been fully trained in seed certification, but is still a useful and practical way to improve on a difficult situation. Even so, NASC recognizes that this level of coverage is insufficient and says it is considering allowing accredited private firms to engage in seed certification as an alternative to state certification. This approach would be similar to the system in the EU where private certification has been allowed for years.<sup>16</sup>

On the fertilizer side, Nigeria's quality control systems are similarly overstretched with numerous reports of bad quality and underweight products being sold through the GES and private channels. Unlike seed, where quality control rests squarely with the NASC, three agencies in Nigeria including the Federal Fertilizer Department (FFD), the National Agency for Food and Drug Administration (NAFDAC), and Standards Organisation of Nigeria (SON) each claim responsibility for different and sometimes overlapping aspects of fertilizer control. NAFDAC, for instance, has a broad mandate to control all kinds of food and chemical products and is primarily responsible for inspecting fertilizer at the port of entry but does not have any inspectors trained in fertilizer analysis. For its part, the FFD inspects manufacturing plants and blending facilities, but does not have inspectors working at the distribution or retail levels. The FFD also does not have authority to levy penalties as required by ECOWAS. The National Fertilizer Development Centre in Kaduna is the reference laboratory for checking that the products comply with SON standards, but is currently not operational.

Burkina Faso has subsidized seed and fertilizer since 2008 and faces a similar situation to Nigeria where the demand for quality inputs greatly exceeds current capacity for seed certification and fertilizer inspection and analysis. The country currently has 35 seed inspectors who were recently trained by AGRA. With about 4,900 mainly small seed producers, however, this means each inspector must cover an average of 140 seed producers who need to be visited at three specific times in the crop cycle to meet the OECD-based requirements for field inspection set by ECOWAS. To help inspectors cope, seed producers with less than 5ha each are required to be part of a seed producer group. Like Nigeria's approach of using first year graduates, this is another practical way of utilizing limited resources to meet the demands of the ECOWAS system and support quality improvements in a challenging context.

Another practical alternative to advanced OECD and ISTA-based rules is the FAO's Quality Declared Seed (QDS) system. Originally developed for use in emergency situations, the QDS seed system involves a less-demanding set of protocols in which field inspections and laboratory analysis are only required for 10 percent of seed plots and QDS seed offered for sale respectively. The QDS approach is adapted to a wide range of crops and according to FAO (2006) is well suited to commercial applications where seed suppliers including local cooperatives, farmer groups, non-governmental organizations, and even large private firms find the requirements of full quality control difficult or cost prohibitive. Something similar to the QDS approach is already being used in Liberia where the aim is to produce "good quality seed" based on an even lighter set of production and inspection guidelines than the FAO's rules for QDS seed. Given that most other national seed systems in West Africa are greatly overstretched with little ability to meet high level certification standards, allowing for truthfully labeled QDS seed (or even truthfully labeled "good quality seed") to be traded under the regional system could be a practical way to manage the problem of resource limitations.

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<sup>16</sup> In the United States, seed certification is voluntary and done exclusively by private companies.

In Mali, the approach so far has been to train 80 of 200 phytosanitary inspectors to be seed inspectors. While this is an important step to improving quality control, seed certification is fundamentally different from phytosanitary inspection which itself is a challenging task without the additional burden of visiting many dispersed seed plots. Nevertheless, seed stakeholders in Mali report that quality control has improved recently and say that seed inspections are now taking place if not necessarily the correct number of times or at the required stage in the growing cycle. On the fertilizer side, the national laboratory in Mali is functioning but can only analyze for nitrogen, phosphorus, and potassium and not for other macro- or micronutrients including boron and sulfur that are important elements in fertilizer for cotton. In Liberia, there is no fertilizer laboratory, and the seed laboratory can only perform basic tests for germination and purity.

#### **4.4 Opportunities for private competition remain constrained on many fronts**

In addition to quality improvements, the harmonized regulations seek to facilitate progress towards a more competitive trading environment needed for private sector growth and expansion. As with quality improvements, there are hopeful signs of increasing private sector involvement in seed multiplication, procurement and distribution of subsidized fertilizer, and expansion of private agro-dealer networks more generally. Nevertheless, it is clear that much remains to be done to eliminate fundamental business constraints and promote competition in higher-level areas of input supply including seed breeding and variety maintenance, marketing of improved technologies, and fertilizer supply outside of subsidy programs and other state-managed channels.

##### **4.4.1 Removing barriers to private seed supply**

In the fundamental area of variety release, West African countries continue to be overwhelmingly dependent on their own NARIs and regional CGIAR centers for new germplasm with little or no room for private participation in seed breeding and variety maintenance. Even after the regional variety catalog is operational, this is unlikely to change due to the lack of protection for intellectual property rights and national-level restrictions on private participation in seed supply. In Burkina Faso, for instance, the 2006 Seed Law gives public sector the exclusive mandate for seed breeding and explicitly prohibits patenting of seed technology (Sène, 2014). In Nigeria, privately owned varieties are allowed, yet the NASC requires seed companies to hand over parental germplasm to the state as part of the registration process (Ayoola, 2014). NASC says this is to facilitate DUS and VCU evaluation, but in international seed systems, the only generation of seed that needs to be evaluated is the generation sold to farmers as certified seed. The inbred lines and other parent stock from which certified seed is produced do not need to be tested according to UPOV guidelines. Moreover, even after approval, the NASC does not allow private companies to maintain their own varieties for commercial purposes and insists that all breeder seed must be produced by the NARIs.<sup>17</sup>

The production and maintenance of breeder seed is indeed a technically demanding task and is likely well beyond the capacity of most private seed companies in West Africa at present. The region's NARIs, however, are also severely under-resourced and have little capacity to produce large amounts of different kinds of breeder seed needed to improve variety choice in a meaningful way. In Nigeria, over 110 varieties of maize are listed in the national catalog including 38 new varieties registered since 2009 (NASC, 2013). In reality, however, seed companies say that only around five

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<sup>17</sup> Unlike Burkina Faso, Nigeria does allow private companies to produce foundation seed.

varieties are currently in production including some relatively old varieties registered in the early 2000s and 1990s. Similarly, with rice, seven new varieties have been registered in Nigeria since 2005 yet actual choice of planting material is narrow with just two main varieties in production for farmer use (Ayoola, 2014).

In Burkina Faso, government has an ambitious goal to increase annual production of foundation seed for rice from 22 to 975 tons by 2018, but even at 22 tons, there have been problems with quality and with seed companies not collecting the material produced by INERA thereby leading INERA to reduce production. In Mali, private companies also complain that it is difficult to access foundation seed from the state breeding institute and say that the quality of supply is unreliable.

Support for private variety research and maintenance therefore has many potential advantages. In the first place, private companies have a direct incentive to build markets for their varieties through demonstration plots and outreach activities that NARIs and even public extension services are not always well placed or well equipped to deliver. Owners of private seed technology also have a much stronger incentive to ensure the quality of their seeds and to prevent counterfeiting than companies that are only engaged in seed multiplication. Allowing qualified firms to maintain their own varieties and produce all different generations of seed could also alleviate pressure on overstretched public systems and enable state breeders to focus on neglected crops that are important to food security.

Even in Nigeria where privately bred varieties are allowed to be registered, much more needs to be done to open the seed sector to private sector participation. At first look, Nigeria appears to have enjoyed good success in private competition with seven varieties of maize listed in the national catalog since 2009 having been developed by private firms (NASC, 2013). On closer inspection, however, it turns out that none of these varieties has been made available for farmer use due to limited protection of intellectual property rights and restrictions on variety ownership and maintenance. Pioneer Seed which was recently acquired by DuPont, for example, released a new variety of maize that is resistant to a chemical used to kill the weed striga (which is a widespread threat to cereal production in West Africa), but was only granted full ownership for five years after which the variety will become public property with five percent royalty paid to Pioneer. Pioneer has a similar variety of sorghum pending approval and says that the question of future ownership has become a serious concern. Not only does the short five-year window give little time to undertake promotional work needed to build demand for the new variety, but the NASC has also directed that the seed be multiplied domestically using breeder seed supplied by the Institute of Agriculture Research and Training (IART) which is the NARI responsible for maize thus giving rise to whole other set of practical challenges.

According to the NASC, the policy of insisting on local production is intended to create jobs for local seed growers and to allow its inspectors to carry out the required certification visits. For its part, Pioneer points out that it first needs to identify and train reliable growers and from there will take at least three to four years to multiply large enough volumes of seed before its varieties can be sold to farmers. In the meantime, Pioneer says that it has not been allowed to import OECD and ISTA certified seed of the same variety from Brazil where it already has production capacity. Given that the new variety could potentially benefit millions of farmers right away and that IART's production capacity and NASC's inspection capacity are greatly overstretched, there are many strong arguments for allowing private variety maintenance and imports of certified seed.

Taken together, this example illustrates how national policies for commercialization of seed can still be a major bottleneck to farmer choice, industry growth, and private competition despite the progress with ECOWAS regional harmonization. The 2008 ECOWAS Regulation aims to promote competition by allowing private companies to be licensed for any stage of seed production, but leaves setting the procedures for licensing and decisions on whether or not to grant licenses up to individual member states. Because IPR issues have not been addressed by the regional system, decisions on private variety ownership are also left up to member states. In principle, a NARI could serve to maintain varieties on behalf of private sector but in practice, this is unlikely to be a good solution for the reasons detailed above. Developing a new variety can easily take plant breeders 10 years or more and commonly involves many hundred thousands of dollars in costs. Until private companies are certain of maintaining permanent ownership and even physical control of their parental germplasm at all stages of the supply chain including during variety testing it is likely that West Africa will continue to lag behind other parts of the world and even other parts of Africa where private variety maintenance is allowed and even encouraged.

When the regional seed regulations were formulated, protection of intellectual property rights to support private variety introduction was considered a more complex matter than variety release and seed certification so was deferred to a later stage. In a legal sense, IPR issues including plant variety protection are dealt with in Francophone countries by OAPI and in Anglophone countries by ARIPO. In principle, therefore, any variety protected at OAPI is protected in all 17 Francophone member countries while a variety protected by ARIPO is protected in 19 Anglophone member countries.<sup>18</sup> Nigeria, however, is not a member of ARIPO and Cape Verde is Lusophone so is not a member of either organization. For its part, ECOWAS also provides IPR protection through its regional instruments and allows violators to be prosecuted in the ECOWAS Court of Justice.

Beyond the context of these legal agreements, however, it is fundamentally important to recognize that any seed company that engages in private breeding derives its livelihood from the technologies it produces. This kind of business is very different from multiplying seeds of varieties developed and maintained by CGIAR centers or the NARIs. Companies that engage in private research can hardly afford to risk having their investment in new technology stolen or mishandled. The promise of being able to file, and even eventually win, legal cases with one or more of the regional intellectual property organizations or the ECOWAS Court of Justice therefore provides little practical assurance. The ability to prosecute IPR cases through these channels is still important, but does not need to be, and should not be allowed to be, a precondition for regional seed trade or private competition.

Fortunately, without having to negotiate detailed legal instruments or even having to harmonize the rules for plant variety protection between OAPI and ARIPO, a more direct solution to the IPR problem would be for individual countries to allow private variety ownership and variety maintenance as offered by the 2008 ECOWAS Regulation. Firms licensed for this part of the seed business would need to satisfy appropriate criteria and still be subject to oversight through DUS and VCU testing of the varieties they release and through certification of breeder and foundation seed lots as provided for in the ECOWAS regulations. Initially, very few companies may satisfy these

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<sup>18</sup> In 2012, the IER in Mali applied for 35 recent varieties of seed to be patented with OAPI but did not have resources to pay OAPI's fee of around US\$ 620 per variety (Sène, 2014).

criteria. Only by creating a legal space for private seed companies to maintain control over their technology and to decide how to multiply and market their own varieties, however, can such firms ever be expected to emerge. Patenting by ARIPO and OAPI can still provide legal protection for variety ownership and help with the collection of royalties, but countries could take a much more important step at any time simply by allowing companies to maintain control over their own intellectual property.

#### **4.4.1 Risks of regional fertilizer procurement**

On the fertilizer side, there is a similarly mixed picture. As described by Bumb and others (2012), the overall market structure for fertilizer in West Africa is oligopolistic and/or tender controlled at the import level with greater levels of competition at the wholesale and distribution levels. This picture corresponds with the region's heavy reliance on input subsidies and efforts in some countries to promote private involvement in various aspects of fertilizer supply from importation and blending by large firms to local distribution by smaller agro-dealers. By design, input subsidies in West Africa tend to involve untargeted, pan-territorial price support as in Burkina Faso, Senegal, Mali, and Ghana (Druilhe and Barreiro-Hurlé, 2012). Subsidized fertilizer thus provides a low cost alternative to market-priced fertilizer, which all type of farmers try to access first. The remaining demand is left for private sector to meet except that companies say the size of this market is very hard to predict, especially that subsidized inputs often arrive late (Druilhe and Barreiro-Hurlé, 2012; Eilittä, 2014).

The problem of economies of scale is another barrier to private participation in importation and manufacturing of fertilizer. The small size of West Africa's fertilizer market has therefore led to suggestions that this problem could be overcome, at least in part, by harmonizing fertilizer specifications across the region to create a larger fertilizer market and increase the purchasing power of West African countries (Bumb and others, 2012; UEMOA, 2013). A similar approach has also been proposed for eastern and southern Africa by the COMESA (2012).

In practical terms, however, this strategy for cost savings and market development doesn't stand up for a variety of reasons. First, there is little scope for economies of scale at the import stage since most fertilizer is already imported to West Africa in full boatloads. West African ports cannot handle super freighters and even if they could, it would make little sense to import very large amounts of harmonized granular compound through one or two locations because of bottlenecks with bagging and regional transport. Any harmonized types would still have to be loaded at the source onto separate smaller boats. Bulk procurement may provide some savings on many production runs for different types of granular compounds, but would not lead to saving on transport costs and could possibly lead to higher storage and/or demurrage costs if the boats (or finance) needed to collect each country's allocation are not standing by. Therefore, a better approach would be to allow free movement of any type of fertilizer and let suppliers compete on price as envisioned by the already agreed to ECOWAS regulations.

Second, purchasing of harmonized products at the regional level makes little technical sense. Different soils and different crops each require different types of fertilizer for optimal performance and much work is now ongoing in West Africa to do soil mapping and develop site-specific fertilizer recommendations. Local blending companies can, in fact, easily manufacture fertilizer to any specification according to buyer requirements and soil type using local fillers. Unlike granular

compounds where the nutrients and filler are combined in a single pellet, blended fertilizers consist of many small pellets of each component.

Not only can locally blended products be mixed according any specification, they also offer a potential for massive savings on the transportation of inert fillers that account for around 50 percent of the bulk of finished products including imported granular compounds. Segregation of different size ingredients is an important risk with blended fertilizer, but can be mitigated in different ways such as by using raw materials of similar size pellets. Compared with well-made locally blended fertilizer, therefore, the potential for cost savings from adopting harmonized regional formulations is difficult to see, particularly in inland locations where transport costs are a major factor. If there is no cost savings from harmonized specifications, farmers may as well have the option (or at least potential) to use the best type of fertilizer matched to their specific need rather than a harmonized type suited to general need.

Most fundamental of all, however, a regional procurement approach based on harmonized specifications would be conceptually different from the vision set out in the 2012 ECOWAS Regional Regulation that gives emphasis to truth in labeling and not pre-approved fertilizer types. The ECOWAS rules do, of course, allow buyers (including large central buyers) to specify any type of fertilizer they want, but also seek to promote competition between firms that supply different products. Consolidation of procurement arrangements in the hands of a regional body would not only be financially and logistically challenging, but would directly undermine the competitive mechanisms the ECOWAS regulations seek to create and that are now starting to emerge in some countries and can themselves lead to lower prices.

## ***5. Conclusions and policy recommendations***

Taken together, the analysis has shown that efforts to build harmonized trade systems for inputs in West Africa has many potential benefits and is already leading to important improvements in some national quality control systems. Even though West African countries still have a long way to go to achieve the standards called for by the ECOWAS regulations, discussion of the need for quality improvements and detailing of specific procedures to achieve the desired outcomes has focused attention on important trade matters at the domestic and regional levels. As a result, some countries have now begun to develop new systems for variety release, seed certification, and fertilizer quality control based on the ECOWAS regulations that are already benefitting farmers and stand to make regional trade more competitive and reliable.

Equally, however, the analysis also finds that harmonization is a complex and time consuming approach to trade facilitation. For both seed and fertilizer, the process of harmonization has been ongoing for many years and there are still a great many legal and institutional challenges to overcome before either set of trade rules can be considered operational. The challenges of harmonization are particularly evident in West Africa where countries are at very different stages of development and often have little capacity to implement or even afford international standards that were developed for advanced market economies. Creating competitive markets and improving the quality of input supply in the near to medium term therefore requires much more than enacting formal regulations and establishing new committees and other bodies called for by the regulations

but also demands complementary strategies and stepwise improvements in which regulatory ambitions are matched with current realities.

### 5.1 Getting the most out of the harmonized rules

Much to their credit, West Africa's harmonized regulations already go some distance to providing the needed flexibility. In the first place, the rules only require countries to develop quality control systems that are "based on" UPOV, OECD, ISTA, AOAC, ISO, and/or EU standards without necessarily having to achieve full international accreditation for trade to happen. Experts involved in formulating the regulations also say that some standards were lowered from the international ones in order to make trade easier. On the other hand, the regulations do still require that all agreed standards and certification procedures be adhered to in full as a condition for harmonized regional trade. Given that most countries are unlikely to meet these requirements anytime soon, there is an important risk that the rules themselves could become an obstacle to trade. Without international accreditation, it also remains to be seen just how willing importing countries will be to trust in the exporter's system on the basis of oversight by WASC and WACoFeC alone.

Also to their credit, the regional regulations grant considerable scope for countries to set their own licensing procedures thereby allowing member states to pursue their own development path based on local priorities and local conditions. This approach has many practical advantages in terms of allowing governments at different stages of development to match the regulations to local realities, but also entails certain risks including the potential for some governments inadvertently to shut private operators out from key parts of the seed and fertilizer business. As discussed, few companies in West Africa currently have the capacity to do original seed breeding and variety maintenance, but unless there is secure legal space for these activities to emerge they will never develop to the detriment of regional trade and regional trade competitiveness.

Getting the most out of the harmonized regulations at the national and regional levels, therefore, not only demands a sustained commitment to the free trade objectives that countries expressed through the regulations, but also requires the ability foresee the implications of different choices the regulations allow. For many practical and strategic reasons, insisting on full compliance with every aspect of the new regulations from the very beginning is unlikely to be the most productive way to improve regional trade or even advance the cause of harmonization. New quality systems guided by the ECOWAS regulations are emerging in several countries but will take time to complete. Other national systems also exist that provide very useful if less rigorous levels of assurance even now that deserve to be recognized.

Expanding the scope of the regulations to accommodate different levels of upgrading tailored to local realities, therefore, could be a very good way to improve quality assurance throughout the region. In practical terms, this is something the regional seed and fertilizer committees could address once they are operational. Even before then, and without any need to change the already agreed to regulations, pairs of countries or small groups of countries could decide to negotiate mutual recognition and/or equivalency agreements that help facilitate trade when existing standards systems are different. This option has always existed and could still be good way to connect poor farmers to markets while other work to achieve the full set of ECOWAS standards continues. When dealing with quality issues as opposed safety, these agreements are often easier to

negotiate and implement than full harmonization and can be used as a stepping-stone on the way to harmonization.

Getting the most out of the regional regulations also requires building awareness at all levels of the seed and fertilizer supply chains on what the regional systems seek to achieve, what the regulations entail, and where the process stands. In practical terms, of course, this demands much more than a one-off training of department heads and committee members on the content of the regulations. Large and small seed companies, breeding institutions, seed certification officers, fertilizer importers and blending companies, fertilizer inspectors, frontline border officials, lab technicians, large and small farmers, and political decision makers alike all need to be engaged and kept aware of what is being done to address the input problem and why their support for improved regional trade is important to them and to West Africa as a whole.

## **5.2 Parallel strategies and other simple steps for the near term**

Beyond what needs to be done to make the agreed regulations effective, the analysis also points to a need for simple steps that improve regional trade and help farmers gain access to good quality and affordable inputs right away. Here again the analysis is encouraging with several examples of pragmatic actions already being taken in case study countries that deserve to be shared throughout the region. In the difficult area of seed quality, for instance, Nigeria is using first year agriculture graduates to help with seed certification while Burkina Faso requires seed farmers with small plots to be organized in seed producer groups. Both strategies have their limitations, but are good practical ways to address a difficult challenge and achieve higher levels of quality control than would otherwise be possible with limited resources. In Nigeria, plans are also being discussed to allow private companies to undertake seed certification under official supervision which would be another good way to alleviate pressure on overstretched public agencies that other countries could explore.

In addition to measures like these, of course, any country could also make a unilateral decision to accept proven varieties of seed from neighboring countries whenever it wants without negotiating any kind of agreement or waiting for the regional seed committee or regional variety catalog to be established. Unilateral decisions could also be made to accept fertilizer from reputable manufacturers and transporters without insisting on full inspection of every consignment at the border. Adopting this type of risk-based approach would allow resources to be used for inspections at other places in the supply chain where quality problems also arise. Compared with mandatory inspections that delay traffic at borders, such an approach would be a far more effective way to manage quality risks and is something that countries could introduce right away.

Another practical strategy to improve input quality would be to embrace the FAO's rules for QDS seed certification. Although QDS standards are less rigorous than the OECD and ISTA-based ones recognized by ECOWAS, they are much more practical to implement so would involve less risk of seed with no quality control slipping into subsidy programs and local markets. Acceptance of these standards could be achieved through a mutual recognition agreement between willing countries or by amending the regional regulations themselves. The ECOWAS regulations do already allow for the exceptional issuance of certification labels for non-conforming seed lots, but only in emergency situations. In southern Africa where seed certification systems are much more advanced than in West Africa, on the other hand, the harmonized rules agreed to by the Southern Africa Development

Community (SADC, 2008) allow truthfully labeled QDS seed to be traded at any time, even in commercial situations. To make West Africa's regional standards more relevant to current needs, similar acceptance of QDS standards and/or other standards for truthfully labeled seed may be a good choice and is something the ECOWAS Commission and individual member states could do well to explore.

Straightforward improvements could also be made at the national level to the way breeder seed and foundation seed are supplied by state institutions. Limited variety choice and mismatch between breeder, foundation, and certified seed production are common problems in West Africa. To minimize these outcomes, one practical solution would be to develop systems in which companies doing seed multiplication are required to pay a deposit to the breeding institute when they book their seed requirements. If the company fails to pay the balance and collect the seed by a fixed date, it would lose the deposit; or if the breeding agency fails to deliver the amount booked by the same agreed date, it would also suffer a financial sanction to compensate the seed company (Tripp and Mensah-Bonsu, 2013).

Perhaps more substantively, the analysis also points to many very strong reasons to provide legal space for private companies to engage in variety development, ownership, and maintenance. Lack of protection for intellectual property rights is one factor undermining private sector participation in seed supply in West Africa, but could be largely overcome by allowing qualified firms to maintain full physical control over the varieties they register. The ECOWAS regulations do already allow qualified private companies to be licensed for any stage of seed production and is counterproductive to force qualified firms to hand over parental material to the state as many countries do. Changing these policies where they exist at the national level, therefore, would likely do far more to encourage variety introduction and competition in the near term than laboring to negotiate new regulations that allow IPR violations to be pursued through OAPI, ARIPO, or even the ECOWAS Court of Justice. Private variety owners would still be subject to OECD and ISTA (or even QDS) certification standards to ensure that seeds they market are true copies of registered varieties meaning there is no new risk to quality. Public breeding institutes, on the other hand, would be relieved of at least some of the burden of supplying genetic material for all different crops so could focus more resources on neglected areas that are important to food security.

Similar to the types of direct action proposed for seed, efforts on the fertilizer side would do well to focus on bringing quality inspections as close as possible to the farm level. Inspections at border posts, manufacturing and blending plants, and in central warehouses have their role but are less important from a farmer's point of view than inspections at the distribution and retail levels since adulteration or outright theft from bags can easily happen at any point in the supply chain until they take physical ownership.

Although bag weights can easily be checked with scales, nutrient content is much more difficult to assess and currently requires laboratory analysis. IFDC, the International Center for Research in Agroforestry (ICRAF), and others are reportedly working to develop simple field kits that inspectors could use to get a rough indication of chemical composition on the spot, but this technology does not yet exist (Eilittä, 2014). Fertilizer analysis is by definition an exact science, but when the idea is to discourage untruthful practices even the appearance of an inspection could help, particularly if rough data can be used to identify problem areas and places where follow-up and more precise

analysis is required. Even without field kits, therefore, collecting samples from many locations is something that could be prioritized now so that samples (or even a selection of samples) can be sent to a national, regional, or international lab for partial or full analysis.

### 5.3 Crosscutting requirements for improved input trade

Several other crosscutting conclusions on the opportunities to improve input trade have also emerged. For both seed and fertilizer, the analysis shows it is important to be strategic in selecting the types of investment likely to have the greatest impact. This may sound obvious, except that sometimes these changes can be simple improvements that make better use of existing resources without revolutionary new systems or expensive investment. Upgrading of seed and fertilizer laboratories, for instance, is one of the first things that governments and donors often turn to but may not have as much impact compared with building the capacity of inspectors to draw samples that can be sent elsewhere for analysis or even developing simple systems for quality control that do not require advanced laboratory techniques.

Another conclusion is that efforts to facilitate extra-regional imports must not be neglected in the drive to improve local production and regional trade. To support local seed growers, for instance, the NASC has said that all seed should be multiplied domestically in Nigeria when it could in fact serve the millions of farmers who need improved seed now far better by facilitating extra-regional imports from countries that already have internationally accredited seed systems. Due to capacity limitations and other institutional problems, a great deal of the seed being paid for and given out by the GES is actually recycled grain which is a much worse outcome than using self-saved landraces. Greater acceptance of extra-regional imports, therefore, could not only improve on quality now, but would allow Nigeria to build its own domestic seed system at a realistic pace thereby improving on local supply too.

In a similar respect, long-term success also requires avoiding potential pitfalls. As discussed, good progress has been made with building awareness of the regional regulations in some countries, but even in these places, divergences between national policies and the regional regulations exist and could become important trade obstacles. Policies that favor state procurement of subsidized inputs and a possible move towards regional procurement of fertilizer based on harmonized specifications also threaten private sector growth and regional trade ties.

To help raise awareness of these issues and build a constituency for free trade objectives, one very simple step that WASP and WAFP or even the ECOWAS Commission itself could take right away would be to launch a website (or websites) dedicated to regional input trade. Despite the amount of work that has gone into harmonization, the regional regulations and implementing regulations for seed and fertilizer are not available online which makes the rules unnecessarily difficult for public and private stakeholders to access and discuss. Moreover, although the regulations themselves call for full transparency, some of the implementing regulations for seed have not yet been translated to English so are currently inaccessible to Anglophone countries. Likewise, the NASC has published many very useful documents with support from Iowa State University, including Nigeria's own national variety catalog and manuals with detailed guidelines for variety release and seed certification (NASC, 2012, 2012a, 2013). None of these documents, however, are available online and can only be obtained in person from NASC Headquarters in Abuja.

At a strategic level, support for a regional knowledge platform on input trade would be another good opportunity to explore. Much more than a website where key documents and news on the harmonization process gets posted, such a platform could take the form of an expert working group or think tank that aims to fill information gaps and identify practical solutions to strategic problems. Through ongoing dialogue with governments and other public and private stakeholders, such a platform would also serve to raise awareness of the importance of input trade and provide a conduit for sharing of lessons from around the region on what works and what doesn't work together with best practices from other parts of the developing world where similar efforts to promote harmonization and improved input trade are ongoing. A regional knowledge platform on inputs would thus serve to complement the work of existing stakeholder forums such as the West Africa Seed Alliance and West Africa Fertilizer Stakeholder Forum and to support the regional seed and fertilizer committees with timely information and analysis needed for strategic decision making once they are established.

Finally, as West Africa moves forward with market integration, efforts to monitor progress and measure whether changes in seed and fertilizer rules really make a difference to sector performance are also needed. Some of the most obvious variables to track include the number of varieties of seed and fertilizer types available in each country, number of new varieties of seed registered in the regional catalog each year, types of fertilizer available in local markets, seed and fertilizer prices, quality test results, and changes in crop yields. At the producer level, specific efforts to monitor the impact on poor farmers including what types of seed and fertilizer these growers use, where they get their inputs, and whether or not they are able to access the kinds of inputs they truly desire would also be highly relevant to tracking the effects of policy reform. New data systems including crowdsourcing using very simple SMS-based questionnaires for farmers, traders, and input dealers have recently been piloted by the World Bank in various parts of Africa and might be one way to gather this information.

## References

- African Union (2006). *Abuja Declaration on Fertilizer for an African Green Revolution*, Africa Fertilizer Summit, African Union Special Summit of the Heads of State of Government, Abuja Nigeria 13 June, African Union (AU), Addis Ababa.
- Albehri, A., J. Kaminski, S. Koroma, M. Iafrate, and M. Benali (2013). "West Africa Staple Food Systems: an Overview of Trends and Indicators of Demand, Supply, and Trade" in A. Elbehri (Ed.), *Rebuilding West Africa's food potential: policies and market incentives for smallholder-inclusive food value chains*. The Food and Agricultural Organization (FAO), Rome and the International Fund for Agriculture Development (IFAD), Rome.
- Ayoola, G.B. (2014). *Nigeria: Assessment of Seed and Fertilizer Sectors, Trade, and Harmonization Efforts*, country background report prepared for the World Bank (Regional Trade of Food Staples, P132559), Washington DC.
- Bationo, A., B. Egulu, R. Vargas (2013). *Status of the Implementation of the Abuja Declaration: From Fertilizers to Integrated Soil Fertility Management to end hunger in Africa*. PowerPoint Presentation delivered to a meeting of the Africa Union (AU), Food and Agriculture Organization (FAO), and Global Soil Partnership, 29 October 2013, Berlin.
- Bromley, Daniel; Andrew Cook, Savitri Singh, and Nathan Van Dusen (2011). *Regional Agricultural Transport and Trade Policy Study*, West Africa Trade Hub Technical Report No. 41 (March 2011), West Africa Trade Hub, Accra.
- Bumb, B.L., M.E. Johnson, P.A. Fuentes (2012). *Policy Options for Improving Regional Fertilizer Markets in West Africa*. IFPRI Discussion Paper 01084 (May), International Food Policy Research Institute (IFPRI), Washington, DC.
- COMESA (2012). *The Feasibility of Joint Fertilizer Procurement in Eastern and Southern Africa*, Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA) of the Common Market for Eastern and Southern Africa (COMESA), Lusaka.
- COMTRADE (2014). *UN COMTRADE database*, accessed through the World Integrated Trade Solution online database (<https://wits.worldbank.org/>) on various dates as shown.
- Conway, Gordon (2011). *Governance and Food Supply*, paper presented to the International Development Conference on Scientific Support for Food Security and Global Governance, 28 September, European Commission, Brussels.
- Dimithe, Georges (2014). *An Overview of the ECOWAS Harmonization Process for Seed and Fertilizer: Key Provisions, Major Achievements, and Challenges*, background paper prepared for the World Bank (Regional Trade of Food Staples, P132559), Washington DC.
- Diakite, L., Kergna, A.O., Cisse, I., Coulibaly, A., Traore, A. (2013). *Analyse des effets et impacts de la subvention des intrants agricoles au Mali: rapport final*. Ministère de l'Agriculture, République du Mali, Institut d'Economie Rurale. Ouagadougou.
- Druilhe, Zoé and Jesús Barreiro-Hurlé (2012). *Fertilizer Subsidies in sub-Saharan Africa*, ESA Working Paper No. 12-04 (July), Agricultural Department Economics Division, The Food and Agriculture Organization (FAO), Rome.

- ECOWAS (2005). *Regional Agricultural Policy for West Africa (ECOWAP)*. Twenty-Eight Ordinary Summit of the Heads of State and Government of the Economic Community of West African States (ECOWAS) 19 January, Accra.
- \_\_\_\_\_ (2005a). *Regional Agricultural Policy for West Africa: ECOWAP at a Glance*, The ECOWAS Commission, Abuja.
- \_\_\_\_\_ (2007). *Draft Implementing Regulation Relating to the Organization of the West African Catalogue of Plants Species and Varieties*, The Economic Community of West African States (ECOWAS), The ECOWAS Commission, Abuja.
- \_\_\_\_\_ (2007a). *Draft Implementing Regulation Relating to the Technical Agreements Annexes Defining to the Modalities for Seed Certification and Quality Control of Seed in The ECOWAS Region*, The Economic Community of West African States (ECOWAS), The ECOWAS Commission, Abuja.
- \_\_\_\_\_ (2008). *Regulation C/REG.4/05/2008 on Harmonization of the Rules Governing Quality Control, Certification, and Marketing of Plant Seeds and Seedlings in ECOWAS Region*, Sixteenth Ordinary Session of the Council of Ministers of the Economic Community of West African States (ECOWAS), 17-18 May, Abuja.
- \_\_\_\_\_ (2012). *Regulation C/REG.13/12/12 Relating to Fertilizer Quality Control in the ECOWAS Region*. The Economic Community of West African States (ECOWAS), 2 December 2012, Abuja.
- \_\_\_\_\_ (2012a). *Enabling Regulation 01/06/12 Relating to the Roles, Organization and Functioning of the West African Vegetable Seed and Seedling Committee of the Community*, Economic Community of West African States (ECOWAS), 4 June, Abuja.
- \_\_\_\_\_ (2012b). *Draft Implementing Regulation Relating to the Roles, Organization, and Functioning of the West African Committee for Fertilizer Control*, The Economic Community of West African States (ECOWAS), The ECOWAS Commission, Abuja.
- \_\_\_\_\_ (2012c). *Draft Implementing Regulation Relating to the Labeling and Tolerance Limits of Fertilizers Traded in the ECOWAS Region*, The Economic Community of West African States (ECOWAS), The ECOWAS Commission, Abuja.
- \_\_\_\_\_ (2012d). *ECOWAS Fertilizer Inspection Manual (draft)*, The Economic Community of West African States (ECOWAS), The ECOWAS Commission, Abuja.
- \_\_\_\_\_ (2012e). *ECOWAS Fertilizer Analysis Manual (draft)*, The Economic Community of West African States (ECOWAS), The ECOWAS Commission, Abuja.
- Eilittä, Marjatta (2014). *Opening up the markets for Input Trade in West Africa*, synthesis report prepared for the World Bank (Regional Trade of Food Staples, P132559), Washington DC.
- FAO (2006). *Quality Declared Seed System*, FAO Plant Production and Protection Paper 185, Food and Agriculture Organization of the United Nations (FAO), Rome.
- \_\_\_\_\_ (2008). *West African Catalogue of Plant Species and Varieties*, Food and Agriculture Organization of the United Nations (FAO), Rome.

- Fuentes, Porfirio A.; Michael E. Johnson; and Balu L. Bumb (2011). *Improving Fertilizer Markets in West Africa: The Fertilizer Supply Chain in Ghana*, draft paper for review, International Fertilizer Development Center (IFDC), Muscle Shoals and International Food Policy Research Institute (IFPRI), Washington DC.
- Gisselquist, David and Carl Pray (1999). *Deregulating Technology Transfer in Agriculture: Reform's Impact on Turkey in the 1980s*. World Bank Policy Research Working Paper No. 2086. The World Bank, Washington DC.
- Gisselquist, David; Carl Pray; Latha Nagarajan; and David Spielman (2013). *An Obstacle to Africa's Green Revolution: Too Few New Varieties*, forthcoming in Social Science Research Network (SSRN) working paper series available at: <http://ssrn.com/abstract=2263042>
- Henao, J. and C. Baanante (2006). *Agricultural Production and Soil Nutrient Mining in Africa: Implications for Resource Conservation and Policy Development*. International Fertilizer Development Center (IFDC), Muscle Shoals.
- IFPRI (2012). *Increasing Agricultural Productivity and Enhancing Food Security in Africa: New Challenges and Opportunities*, synopsis of a United Nations Economic Commission for Africa (UNECA) conference, 1-3 November 2011, Addis Ababa, prepared by Kwadwo Asenso-Okyere and Samson Jemaneh, The International Food Policy Research Institute (IFPRI), Washington DC.
- Keyser, John C (2013). *Regional Trade of Food Staples and Crop Inputs in West Africa*, Africa Trade Policy Notes No. 36 (March), Africa Trade Practice, The World Bank, Washington DC.
- \_\_\_\_\_ (2013a). *Opening up the Markets for Seed Trade in Africa*, Africa Trade Working Paper Series No. 2 (October), The World Bank, Washington DC.
- NASC (2012). *Procedure Manual for Crop Varieties Registration and Release in Nigeria*, National Agricultural Seeds Council (NASC), Abuja.
- \_\_\_\_\_ (2012a). *Seed Certification Manual*, National Agricultural Seeds Council (NASC), Abuja.
- \_\_\_\_\_ (2013). *Catalogue of Crop Varieties Released and Registered in Nigeria*, Vol. 5 (January), National Agricultural Seeds Council (NASC), Abuja.
- NEPAD (2011). *Status of Implementation of the Abuja Declaration on Fertilizers for an African Green Revolution*, NEPAD Agency, Policy Alignment and Program Development Directorate, New Partnership for Africa's Development (NEPAD), Midrand.
- Nin-Pratt, A., M. Johnson, E. Magalhaes, L. You, X. Diao, and J. Chamberline (2011). *Yield Gaps and Potential Agricultural Growth in West and Central Africa*. IFPRI Research Monograph, International Food Policy Research Institute (IFPRI), Washington, DC.
- Penn State (2013). *Agronomy Guide*, College of Agricultural Sciences, Pennsylvania State University, University Park. Available online at: <http://extension.psu.edu/agronomy-guide>.
- Republic of Ghana (2010). *Plants and Fertilizer Act, 2010 (Act 803)*, Government Printer, Assembly Press, Accra.
- Rohrbach, D; Minde, I; and Howard J (2003). "Looking Beyond National Boundaries: Regional Harmonization of Seed Policies, Laws, and Regulations" in *Food Policy* No. 28, pp. 317-333.

- Rohrbach, David and Julie Howard (2004). "Looking Beyond National Policies: Regional Harmonization of Seed Markets" in *Seed Trade Liberalization and Agro-biodiversity in Sub-Saharan Africa Proceedings of a Workshop held 5-6 Dec 2002*, D. Rohrbach and J. Howard (Eds.), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Bulawayo.
- SADC (2008). *Technical Agreements on Harmonization of Seed Regulations in the SADC Region: Seed Variety Release, Seed Certification and Quality Assurance, and Quarantine and Phytosanitary Measures for Seed*, Southern Africa Development Community (SADC), SADC Secretariat, Gaborone.
- Sanabria, J., G. Dimithe, and E.K.M. Alognikou (2013). *The Quality of Fertilizer Traded in West Africa: Evidence for Stronger Control*. International Fertilizer Development Center (IFDC), Muscle Shoals.
- Sène, Louis (2014). *Burkina Faso, Liberia and Mali: Assessment of Seed Sector, Trade, and Harmonization Efforts*, country background report prepared for the World Bank (Regional Trade of Food Staples, P132559), Washington DC.
- Setimela, Peter S.; B. Badu-Apraku, W. Mwangi (2009). *Variety Testing and Release Approaches in DTMA Project Countries in sub-Saharan Africa*, The International Maize and Wheat Improvement Center (CIMMYT), Harare.
- Soumare, M.S. (2004). "Liberalization and Harmonization of Seed Legislation and Regulations in West and Central Africa" in *Seed Trade Liberalization and Agro-biodiversity in Sub-Saharan Africa Proceedings of a Workshop held 5-6 Dec 2002*, D. Rohrbach and J. Howard (Eds.), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Bulawayo.
- Tripp, Robert and Akwasi Mensah-Bonsu (2013). *Ghana's Commercial Seed Sector*, Ghana Strategy Support Program, International Food Policy Research Institute (IFPRI), Washington DC.
- UEMOA (2009). "Regulation N° 03/2009/CM related to the harmonization of the rules governing quality control, certification and trade of plant seeds and seedlings in UEMOA" in *Official Journal of UEMOA*, West Africa Economic and Monetary Union (UEMOA), UEMOA Commission, Ouagadougou.
- \_\_\_\_\_ (2013). *Etude de Faisabilité pour la Mise en Place d'un Mécanisme Fiable d'Approvisionnement et de Distribution des Engrais Coton et Céréales des Pays de l'UEMOA et AU Tchad*, Union Economique et Monétaire Ouest Africaine (UEMOA) (West African Economic and Monetary Union), Department of Food Security, Agriculture, Mining and the Environment, UEMOA Commission, Ouagadougou.
- UN (2013). *World Population Prospects, The 2012 Revisions*, The United Nations (UN) Department for Economic and Social Affairs, New York.
- UNECA (2012). *Harnessing Agricultural Potential for Growth and Development in Africa*, United Nations Economic Commission for Africa (UNECA), Addis Ababa.
- WAFP (2014). *Regionalization Work Plan, 2014*, International Fertilizer Development Center, West Africa Fertilizer Program, Accra.

WASP (2014). *Measures undertaken by ECOWAS – CILSS Member States on Seed Harmonization*, Central African Council for Agriculture Research and Development, West Africa Seed Project (WASP), Dakar.

Wanzala, Maria and Rob Groot (2013). *Fertilizer Market Development in Sub-Saharan Africa*, paper presented to IFS conference at Windsor 24 May 2014, International Fertiliser Society (IFS), Leek.

World Bank (2012). *De-Fragmenting Africa: Deepening Regional Trade Integration in Goods and Services*, Poverty Reduction and Economic Management (PREM), Africa Region, The World Bank, Washington DC.

\_\_\_\_\_ (2012a). *Africa Can Help Feed Africa: Removing Barriers to Regional Trade in Food Staples*, Poverty Reduction and Economic Management (PREM), Africa Region, The World Bank, Washington DC.

*Appendix 1: Progress with specific actions required by the ECOWAS regulations for seed in case study countries as of July 2014.*

Required Action	Burkina Faso	Liberia	Mali	Nigeria
(i) Publish 2008 ECOWAS Regulation in National Gazette within 30 days.	Published 25 Feb 2014	Not done	Not done	Published 11 Sept 2013.
(ii) Institute a national seed catalog.	In progress with FAO support. No provision for Lists A, B, and C.	Not done; recommended by draft seed policy of 2012, but little/no action since	Done, but no provision for Lists A, B, and C	Done (first edition in 2009; updated in 2013), but without provision for Lists A, B, and C.
(iii) Set up a national body for seed control.	National Seed Committee (CNS) is operational.	Not done (seed sector coordination currently under donor/govt task force)	National Seed Committee (CNS) established in 2013 but not operational.	National Agriculture Seed Council (NASC) established 2007 and operational.
(iv) Specify the conditions and modalities for obtaining a professional card or license or for its renewal, suspension, and withdrawal in accordance with the ECOWAS regulations.	Done. Private sector not allowed to produce breeder or foundation seed; private variety ownership not allowed.	Not done. National system exists for registration of improved seed producers only. No specific system for registration of other seed professionals.	Done. Seed producers, distributors, wholesalers, importers, and exporters need license; all but producers need to pay a fee. No provisions for private production of breeder seed.	Done, but with many conditions that go beyond ECOWAS requirements. No provisions for private production of breeder seed.
(v) Appoint well-trained and qualified inspectors and other competent authorities, and grant them the necessary powers as well as adequate resources to carry out their mission.	Currently 35 seed inspectors recently trained by AGRA, additional skills and access to equipment required.	USAID recently trained 30 seed inspectors for rice only.	80 seed inspectors currently active but require skills development; seed lab equipped with essential equipment but limited training of staff.	Currently 56 seed inspectors + 100 first year graduates of National Youth Service Corps (far from adequate to meet national need)
(vi) Determine the fee amounts for seed inspection and analysis.	Done	Fee amounts set for improved seed producers only.	Done	Done
(vii) Take all appropriate measures to levy penalties for any violation of the provisions of the	Two cases so far prosecuted, both under appeal.	Little enforcement; no reports of sanctions.	No sanctions yet taken despite reports of counterfeit seed and other violations.	Few measures taken; widespread reports of grain being sold as seed, especially under GES.

*Appendix 2: Progress with specific actions required by the ECOWAS regulations for fertilizer in case study countries as of July 2014.*

Required Action	Burkina Faso	Liberia	Mali	Nigeria
(i) Publish 2012 ECOWAS Regulation in National Gazette within 30 days.	Not done	Not done	Not done	Not done
(ii) Set up a national body for fertilizer control.	Fertilizer law of 2007 created the National Commission of Fertilizer control and 2011 decree specified its function. Still, the Commission has not yet started work.	Not done	National body exists, three meetings as of January 2014 (mainly addressed organizational issues).	Multiple bodies exist including NAFDAC, SON, and FFD each claiming responsibility for different aspects of quality control.
(iii) Specify the conditions and modalities for obtaining a license, or for its renewal, suspension, and withdrawal, in accordance with the relevant provisions of the	Done	No specific license determined.	Registration of distributors and wholesalers required by law. Implementation spotty outside subsidy program.	Provisions for licensing according to ECOWAS rules included in Fertilizer Bill; current system involves licenses from multiple agencies.
(iv) Appoint well-trained and qualified Inspectors and other competent authority, and grant them the necessary powers as well as adequate resources to carry out their mission.	Inspectors identified, but not yet sworn in; laboratory upgrades ongoing.	Not done	Underway. Field inspections being carried out with some positive impact on quality; laboratory capacity still limited.	No inspectors in FFD; NAFDAC inspectors not trained in fertilizer analysis.
(v) Determine the fee amounts for fertilizer inspection and analysis.	Done	Not done.	Fee amounts determined but not all are aware. To date, cost of fertilizer analysis paid by AGRA.	Done (no fees apply).
(vi) Take all appropriate measures to levy penalties for any violation of the provisions of the Regulation.	Penalties identified. Inspection not started yet except for tendered fertilizer at border or warehouse.	Not done	Penalties identified but no known cases prosecuted. With donor support, currently reviewing how quality sanctions can be included in tender documents for subsidy program.	No efforts made to prosecute known violators selling under grade and/or underweight fertilizer.